New Year, New Updates: What to Expect From JEN in 2024

Anna Valdez, PhD, RN, PHN, CEN, CFRN, CNE, FAEN, FAADN, Rohnert Park, CA

As we embark on a new year, I want to take a moment to share some reflections about 2023 and updates on what to expect from the Journal of Emergency Nursing (JEN) in 2024. Before I discuss the changes you can expect to see in 2024, I want to take a moment to thank the people who support JEN, including the people who work diligently behind the scenes to maintain the quality and relevance of this journal.

First, I want to thank Annie Kelly, our managing editor. Annie was the person who first gave me an opportunity to be a reviewer and then a section editor 16 years ago. She is the backbone of this journal and has been a consistent and mindful steward for JEN through many editors and editorial teams. I am grateful for her calm, insightful, and expert presence. I also want to thank our handling editors, Dr Sue Barnason, Dr Mohamed Toufic El-Hussein, and Dr Pat Normandin, who have worked with ongoing dedication and commitment to ensure that JEN publishes relevant and accurate information to guide emergency practice. I can always count on the associate editors to do whatever is needed to move the journal forward.

I would be remiss to not discuss the integral role of our JEN Editorial Board members and leadership team at the Emergency Nurses Association (ENA) and its impact on the success of the journal. I am grateful that they share their expertise and make essential contributions to JEN and the global emergency nursing community. I appreciate the opportunity to collaborate and grow with this expert team of emergency nursing professionals. I am also deeply grateful for our section editors who work tirelessly to recruit and mentor authors and are at times authors themselves for their sections. I was thrilled to see a resurgence of section articles this year and look forward to continued growth in 2024.

Finally, I want to thank our esteemed peer reviewers. Thank you for volunteering your time and expertise to ensure that the articles published in JEN are relevant, timely, accurate, and impactful for emergency nurses. You put in countless unpaid hours carefully reviewing papers and providing critical feedback. Your contributions are immeasurable. Thank you for generously sharing your time and knowledge with us.

In the past year, I have met with several emergency nurses from around the world and ENA committees to better understand the needs of emergency nurses and examine ways that we can collaborate with emergency nurse leaders to positively impact emergency nursing practice. As a result, you can expect some exciting changes in 2024. Below is a summary of some of the key changes you will see with JEN in the new year.

1. JEN will be publishing ENA position statements precisely as written, without further editing, to ensure that the position statements published in JEN do not differ from the original position statements published in the ENA University. Position statements are critical sources of information and guidance for emergency nurses, and our intention is to make them more accessible and easier to apply in practice.
2. ENA Clinical Practice Guideline (CPG) synopses will be published in JEN starting with this issue. CPGs provide current evidence-based practice guidance that emergency nurses in all practice settings can immediately apply in practice. The complete CPGs will continue to be published in ENA University at https://enau.ena.org/. Note: You do

Anna Valdez is an Editor in Chief, Journal of Emergency Nursing; and a Professor and Chair, Department of Nursing, Sonoma State University, Rohnert Park, CA. **ORCID identifier**: https://orcid.org/0000-000-0204-3536; **Twitter:** @drannamvaldez.

For correspondence, write: Anna Valdez, PhD, RN, PHN, CEN, CFRN, CNE, FAEN, FAADN, Department of Nursing, Sonoma State University, 1801 East Cotati Avenue, Rohnert Park, CA 94928; E-mail: drannamvaldez@gmail.com

J Emerg Nurs 2024;50:1-2.
0099-1767

https://doi.org/10.1016/j.jen.2023.11.002

not have to be an ENA member to create an account with ENA University and access these resources. For more details on the use of CPGs, please see the guest editorial in this issue titled Translating Science into Clinical Practice for Your Emergency Department: How ENA's Clinical Practice Guidelines Can Help.[1]

3. In 2023, the Executive Editorial Board members evaluated our current sections in JEN and will be adding two new sections in 2024: Emergency Preparedness/Disaster and Early Career Emergency Nursing. The Emergency Preparedness/Disaster section will be edited by Jamla Rizek who is an expert in international emergency response and disaster management. Given the increase in disasters around the world and the impact of climate change, this is an important area of focus for JEN. The Early Career Emergency Nurse section is being added to mirror the Advanced Emergency Clinicians' Corner section in JEN. Many of the emergency nurses who are practicing at the stretcher side are new to emergency nursing. I have invited Casey Green, Meris Shuwarger, and Sarah Wells to be editors for this section. We will be collaborating with the Emerging Professional Advisory Council to curate this section.
4. With the new year, you can expect JEN to have a new look, as we are unveiling a new journal cover. We are also reinstating the ability to claim continuing education credit online by reading JEN articles. In addition, we will be working on improving our website interface and usability and our social media presence. We hope these technological changes will make it easier for readers to access JEN and share practice information.
5. In 2023, we decided to change our Paper of the Year award structure, and this will be continued in 2024. Rather than one award, we will continue the new practice of having two awards, one for best clinical and one for best research article. This change was made to highlight the important impact that both types of publications have on emergency nursing practice.

The editorial team is looking forward to continuing to grow and collaborate with emergency nurses to ensure that JEN is meeting our readers' practice needs. At next year's 2024 ENA conference, we plan to host a publishing space for aspiring and experienced authors who want to talk with editors about their ideas for potential articles. This will be an open space where you can bring your ideas or feedback to our JEN team. In the meantime, if you are interested in publishing in JEN, you can find a video on navigating publishing on the JEN website at https://www.jenonline.org/. Scroll down to the middle of the page to locate the video.

Finally, I want to thank you, our readers, for the critical work you do every day. Being an emergency nurse is not easy, but you show up shift after shift to care for your community. Our goal at JEN is to support you by providing timely, relevant, and informative publications.

Author Disclosures

Conflicts of interest: none to report.

REFERENCE

1. Delao A. Translating science into clinical practice for your emergency department: How ENA's clinical practice guidelines can Help. *J Emerg Nurs*. 2024;50(1):3-6.

New Year, New Updates: What to Expect From JEN in 2024

Anna Valdez, PhD, RN, PHN, CEN, CFRN, CNE, FAEN, FAADN, Rohnert Park, CA

As we embark on a new year, I want to take a moment to share some reflections about 2023 and updates on what to expect from the Journal of Emergency Nursing (JEN) in 2024. Before I discuss the changes you can expect to see in 2024, I want to take a moment to thank the people who support JEN, including the people who work diligently behind the scenes to maintain the quality and relevance of this journal.

First, I want to thank Annie Kelly, our managing editor. Annie was the person who first gave me an opportunity to be a reviewer and then a section editor 16 years ago. She is the backbone of this journal and has been a consistent and mindful steward for JEN through many editors and editorial teams. I am grateful for her calm, insightful, and expert presence. I also want to thank our handling editors, Dr Sue Barnason, Dr Mohamed Toufic El-Hussein, and Dr Pat Normandin, who have worked with ongoing dedication and commitment to ensure that JEN publishes relevant and accurate information to guide emergency practice. I can always count on the associate editors to do whatever is needed to move the journal forward.

I would be remiss to not discuss the integral role of our JEN Editorial Board members and leadership team at the Emergency Nurses Association (ENA) and its impact on the success of the journal. I am grateful that they share their expertise and make essential contributions to JEN and the global emergency nursing community. I appreciate the opportunity to collaborate and grow with this expert team of emergency nursing professionals. I am also deeply grateful for our section editors who work tirelessly to recruit and mentor authors and are at times authors themselves for their sections. I was thrilled to see a resurgence of section articles this year and look forward to continued growth in 2024.

Finally, I want to thank our esteemed peer reviewers. Thank you for volunteering your time and expertise to ensure that the articles published in JEN are relevant, timely, accurate, and impactful for emergency nurses. You put in countless unpaid hours carefully reviewing papers and providing critical feedback. Your contributions are immeasurable. Thank you for generously sharing your time and knowledge with us.

In the past year, I have met with several emergency nurses from around the world and ENA committees to better understand the needs of emergency nurses and examine ways that we can collaborate with emergency nurse leaders to positively impact emergency nursing practice. As a result, you can expect some exciting changes in 2024. Below is a summary of some of the key changes you will see with JEN in the new year.

1. JEN will be publishing ENA position statements precisely as written, without further editing, to ensure that the position statements published in JEN do not differ from the original position statements published in the ENA University. Position statements are critical sources of information and guidance for emergency nurses, and our intention is to make them more accessible and easier to apply in practice.
2. ENA Clinical Practice Guideline (CPG) synopses will be published in JEN starting with this issue. CPGs provide current evidence-based practice guidance that emergency nurses in all practice settings can immediately apply in practice. The complete CPGs will continue to be published in ENA University at https://enau.ena.org/. Note: You do

Anna Valdez is an Editor in Chief, Journal of Emergency Nursing; and a Professor and Chair, Department of Nursing, Sonoma State University, Rohnert Park, CA. **ORCID identifier**: https://orcid.org/0000-000-0204-3536; **Twitter:** @drannamvaldez.

For correspondence, write: Anna Valdez, PhD, RN, PHN, CEN, CFRN, CNE, FAEN, FAADN, Department of Nursing, Sonoma State University, 1801 East Cotati Avenue, Rohnert Park, CA 94928; E-mail: drannamvaldez@gmail.com

J Emerg Nurs 2024;50:1-2.
0099-1767

https://doi.org/10.1016/j.jen.2023.11.002

not have to be an ENA member to create an account with ENA University and access these resources. For more details on the use of CPGs, please see the guest editorial in this issue titled Translating Science into Clinical Practice for Your Emergency Department: How ENA's Clinical Practice Guidelines Can Help.[1]

3. In 2023, the Executive Editorial Board members evaluated our current sections in JEN and will be adding two new sections in 2024: Emergency Preparedness/Disaster and Early Career Emergency Nursing. The Emergency Preparedness/Disaster section will be edited by Jamla Rizek who is an expert in international emergency response and disaster management. Given the increase in disasters around the world and the impact of climate change, this is an important area of focus for JEN. The Early Career Emergency Nurse section is being added to mirror the Advanced Emergency Clinicians' Corner section in JEN. Many of the emergency nurses who are practicing at the stretcher side are new to emergency nursing. I have invited Casey Green, Meris Shuwarger, and Sarah Wells to be editors for this section. We will be collaborating with the Emerging Professional Advisory Council to curate this section.
4. With the new year, you can expect JEN to have a new look, as we are unveiling a new journal cover. We are also reinstating the ability to claim continuing education credit online by reading JEN articles. In addition, we will be working on improving our website interface and usability and our social media presence. We hope these technological changes will make it easier for readers to access JEN and share practice information.
5. In 2023, we decided to change our Paper of the Year award structure, and this will be continued in 2024. Rather than one award, we will continue the new practice of having two awards, one for best clinical and one for best research article. This change was made to highlight the important impact that both types of publications have on emergency nursing practice.

The editorial team is looking forward to continuing to grow and collaborate with emergency nurses to ensure that JEN is meeting our readers' practice needs. At next year's 2024 ENA conference, we plan to host a publishing space for aspiring and experienced authors who want to talk with editors about their ideas for potential articles. This will be an open space where you can bring your ideas or feedback to our JEN team. In the meantime, if you are interested in publishing in JEN, you can find a video on navigating publishing on the JEN website at https://www.jenonline.org/. Scroll down to the middle of the page to locate the video.

Finally, I want to thank you, our readers, for the critical work you do every day. Being an emergency nurse is not easy, but you show up shift after shift to care for your community. Our goal at JEN is to support you by providing timely, relevant, and informative publications.

Author Disclosures

Conflicts of interest: none to report.

REFERENCE

1. Delao A. Translating science into clinical practice for your emergency department: How ENA's clinical practice guidelines can Help. *J Emerg Nurs*. 2024;50(1):3-6.

Translating Science Into Clinical Practice for Your Emergency Department: How ENA's Clinical Practice Guidelines Can Help

Authors: Andrea Slivinski, DNP, RN, CEN, CPEN, ACNS-BC and Altair M. Delao, MPH, Asheville, NC, and Schaumburg, IL

The use of science to inform nursing clinical practice is most often noted as arising in the late 1800s when nursing began to be recognized as a formal profession but also includes earlier less well-known contributions of underrepresented nurses dating back much earlier.[1,2] Now formally known as evidence-based practice (EBP), this foundational element of nursing combines the best-available evidence and clinical expertise with family and patient preferences to inform clinical practice decisions and, ultimately, improve outcomes.[3-6] In 2009, the Institute of Medicine Roundtable on Evidence-Based Medicine was developed to hardwire EBP into clinical practice, suggesting that "…by the year 2020, 90 percent of clinical decisions will be supported by accurate, timely, and up-to-date clinical information and will reflect the best available evidence."[7] Despite this goal, barriers to implementing EBP into everyday practice are numerable, with some citing an average of 15 years to translate research into clinical practice.[8]

Emergency nurses function in a fast-paced environment and are expected to know practice standards for vast amounts of clinical presentations and diagnoses. However, most do not have adequate time in the clinical setting to search the literature comprehensively nor do most feel adequately prepared to synthesize the evidence into practice recommendations. To fill this need and continue to close the gap between generation of knowledge and translation to practice, many professional organizations develop clinical practice guidelines (CPGs) specific to their area of expertise. The Emergency Nurses Association (ENA) has recognized this need and is committed to having high-quality EBP readily available to support the profession of emergency nursing globally.

Introduction to CPGs

CPGs are evidence-based documents designed to facilitate the application of current research into emergency nursing practice (Figure).[9] Developed by the ENA CPG Committee ("Committee") following a rigorous systematic review process, each CPG focuses on a singular clinical question and provides practice recommendations for emergency nursing.[9] Preparing a CPG is a complex process involving critical thinking throughout and a need to stretch one's perspective beyond the personal work environment to broaden the final content so as to meet the needs of varied ED environments. The Committee uses a well-defined approach to develop CPGs to ensure consistency of the evidence appraisal process and incorporation of current, best-available evidence for practice. ENA believes that "CPGs can contribute to enhanced emergency nursing practice, thereby positively impacting patient care by bridging the gap between practice and current available evidence."[9]

Committee Composition

The Committee comprised 12 members and 1 chairperson, all ENA members who are registered nurses working in emergency care settings and/or in academia, with formal training in research and EBP translation. A medical librarian conducts the in-depth literature search whereas a methodologist participates in review and grading of all literature to be added to the evidence table along with review and comment on the final CPG. In addition, the Committee is assigned a liaison from the ENA Board of Directors and 2 staff members to serve as additional resources. The Committee works in teams of 3 on a given topic with the full Committee

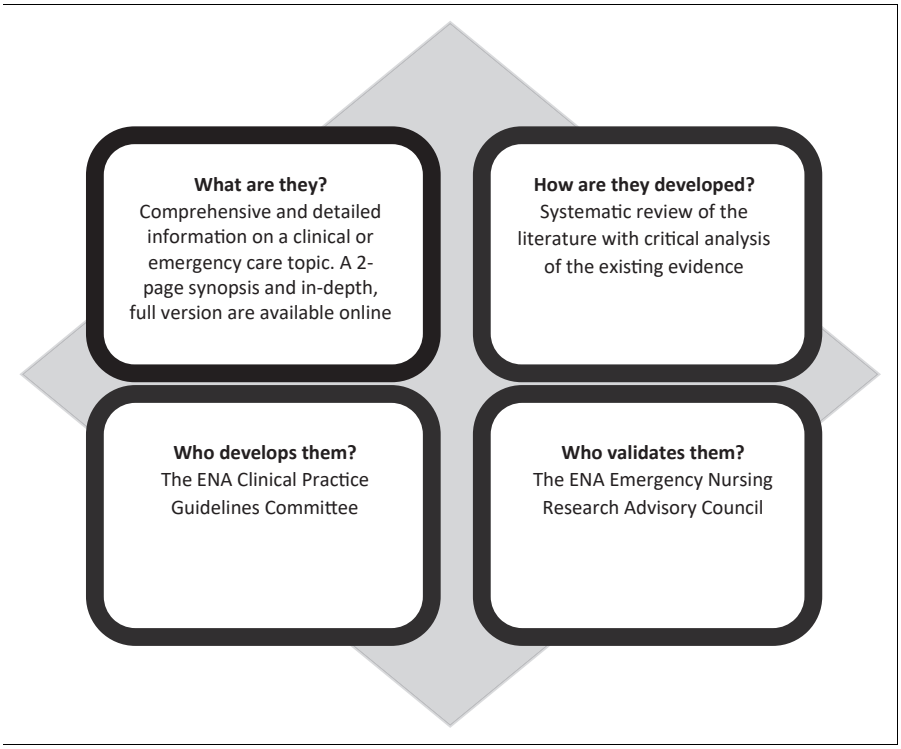
Andrea Slivinski, *Member,* Blue Ridge Chapter, is a Clinical Nurse Specialist, Mission Hospital, Asheville, NC. **ORCID identifier:** https://orcid.org/0000-0003-1397-3904.

Altair M. Delao is a Senior Manager, Research, Emergency Nurses Association, Schaumburg, IL. **ORCID identifier:** https://orcid.org/0000-0001-6017-3227.

For correspondence, write: Altair M. Delao, MPH, Emergency Nurses Association, 930 Woodfield Road, Schaumburg, IL 60173; E-mail: altair.delao@ena.org

J Emerg Nurs 2024;50:3-6.
0099-1767

https://doi.org/10.1016/j.jen.2023.10.012



FIGURE

Clinical practice guidelines overview. (Reproduced with permission from Emergency Nurses Association. Clinical practice guidelines development manual. https://www.ena.org/enau/practice-resource-library. Accessed October 20, 2023.)

giving final approval to all literature included in the final CPG via consensus building.

Content Development

The CPG Committee uses a 6-step approach to provide a consistent method for critically appraising evidence and developing recommendations based on the quality and the level of the evidence (Table 1).

Dissemination and Review Process

CPGs are disseminated by multiple methods, including but not limited to the ENA website as a downloadable document in ENA University, the *Journal of Emergency Nursing*, updates on ENA's social media platforms/mailing lists, ENA's annual conference, and ENA's magazine, *Connection*. CPGs are reviewed and/or revised a minimum of every 4 years to ensure the content is current. This issue of JEN highlights the *Fall Risk Assessment* and *Screening Older Adults for Cognitive Impairment* CPGs, 2 clinical practice topics that are a continual point of concern for emergency nurses in providing optimal care (see Table 2 for full list of CPGs available from ENA).

Impacting Your Practice

ENA's CPGs are developed using a robust and scientific process by members, for members. Using CPGs in your own clinical practice elevates the quality of care in the emergency department and ensures alignment with current scientific evidence. By routinely integrating CPGs into your emergency department, you can bridge the gap between knowledge development and implementation of EBP.

TABLE 1
Overview of CPG development process

Content development	
Topic selection	Selected topics emphasize nursing practices drawing from the best-available clinical and scientific evidence from nursing and related clinical professions. Consideration is given to the applicability to practice, nursing-sensitive patient outcomes, and available evidence when selecting topics. A preliminary review of the literature on selected topics is conducted to determine whether sufficient evidence exists for the development of a CPG.
Defining clinical questions	Designated topics are developed into clinical questions using the PICOT-question format. The question must be researchable, pertinent to emergency nursing practice, and answerable and have a measurable outcome.
Literature search	An exhaustive search of the evidence is conducted by the medical librarian and CPG team for all content relevant to the clinical question. A description of the search inclusion and exclusion criteria is included in the CPG.
Critical appraisal of the literature	Critical appraisal of the evidence is conducted using standardized tools to assist the Committee in determining the quality and level of evidence for each study included in the CPG supporting the final practice recommendations.
Development of the evidence table	The evidence table provides key information about the literature including purpose, sample, methods, findings, implications for practice, and limitations of the study.
Interpreting summative evidence and making recommendations	The recommendations reflect the summative interpretation of evidence along with the clinical judgment and experience of the full Committee. Each recommendation is assigned a level indicating the strength of evidence upon which the recommendation is based.

Reproduced with permission from Emergency Nurses Association. Clinical practice guidelines development manual. https://www.ena.org/enau/practice-resource-library. Accessed October 20, 2023.

TABLE 2
ENA clinical practice guidelines topic list

Title	
Currently available	In development
• Clinical Assessment of Acute Hypovolemia	• Aggression Screening
• Fall Risk Assessment	• Opioid Alternatives
• Family Presence During Resuscitation and Invasive Procedures	
• Gastric Tube Placement Verification	
• Intimate Partner Violence	
• Intranasal Medication Administration	
• Needle-Related and Minor Procedural Pediatric Pain*	
• Prevention of Blood Culture Contamination	
• Prevention of Blood Specimen Hemolysis in Peripherally-Collected Venous Specimens	
• Screening Older Adults for Cognitive Impairment	
• Suicide Risk Assessment	
• The Use of Capnography During Procedural Sedation/Analgesia*	

ENA, Emergency Nurses Association.
* Under revision.

Author Disclosures

Conflicts of interest: none to report.

REFERENCES

1. Mackey A, Bassendowski S. The history of evidence-based practice in nursing education and practice. *J Prof Nurs*. 2017;33(1):51-55. https://doi.org/10.1016/j.profnurs.2016.05.009
2. Batiste DL, Tuner S, Josiah N, et al. Hidden figures of nursing: the historical contributions of Black nurses and a narrative for those who are unnamed, undocumented and underrepresented. *J Adv Nurs*. 2021;77(4):1627-1632. https://doi.org/10.1111/jan.14791
3. American Nurses Association. What is evidence-based practice in nursing?. Accessed October 20, 2023. https://www.nursingworld.org/practice-policy/nursing-excellence/evidence-based-practice-in-nursing/
4. Melnyk BM, Fineout-Overholt E. *Evidenced-Based Practice in Nursing & Healthcare: A Guide to Best Practice*. 5th ed. Wolters Kluwer; 2023.
5. Sackett DL. Evidence-based medicine. *Semin Perinatol*. 1997;21(1):3-5. https://doi.org/10.1016/s0146-0005(97)80013-4
6. Stetler CB. Updating the Stetler Model of research utilization to facilitate evidence-based practice. *Nurs Outlook*. 2001;49(6):272-279. https://doi.org/10.1067/mno.2001.120517
7. Institute of Medicine (US). *Roundtable on Evidence-Based Medicine. Leadership commitments to improve value in healthcare: finding common ground: workshop summary*. National Academies Press; 2009.
8. Melnyk BM. The current research to evidence-based practice time gap is now 15 instead of 17 years: urgent action is needed. *Worldviews Evid-Based Nurs*. 2021;18(6):318-319. https://doi.org/10.1111/wvn.12546
9. Emergency Nurses Association. Clinical practice guidelines development manual. Accessed October 20, 2023. https://www.ena.org/enau/practice-resource-library

CORRIGENDUM

Corrigendum to What Are the Care Needs of Families Experiencing Sudden Cardiac Arrest? A Survivor- and Family-Performed Systematic Review, Qualitative Meta-Synthesis, and Clinical Practice Recommendations [*Journal of Emergency Nursing*, Volume 49, Issue 6, November 2023, Pages 912-950]

Matthew J. Douma, MN, Calah Myhre, BScN, Samina Ali, MD, Tim A.D. Graham, MD, Kim Ruether, MA, Peter G. Brindley, MD, Katie N. Dainty, PhD, Katherine E. Smith, MD, Carmel L. Montgomery, PhD, Liz Dennet, MLIS, Christopher Picard, MN, Kate Frazer, PhD, and Thilo Kroll, PhD, Belfield, Dublin, Ireland, Edmonton, Alberta, Canada, and Toronto, Ontario, Canada

The authors regret that Table 2 was posted as an Article in Press with errors but has since been corrected online and in the November in-print issue.

The authors apologize for any inconvenience caused.

DOI of original article: https://doi.org/10.1016/j.jen.2023.07.001
For correspondence, write: Matthew J. Douma, MN, University College Dublin, Belfield, Dublin, Ireland; E-mail: matthew.douma@ucdconnect.ie
J Emerg Nurs 2024;50:6.
0099-1767

https://doi.org/10.1016/j.jen.2023.11.006

Author Disclosures

Conflicts of interest: none to report.

REFERENCES

1. Mackey A, Bassendowski S. The history of evidence-based practice in nursing education and practice. *J Prof Nurs*. 2017;33(1):51-55. https://doi.org/10.1016/j.profnurs.2016.05.009
2. Batiste DL, Tuner S, Josiah N, et al. Hidden figures of nursing: the historical contributions of Black nurses and a narrative for those who are unnamed, undocumented and underrepresented. *J Adv Nurs*. 2021;77(4):1627-1632. https://doi.org/10.1111/jan.14791
3. American Nurses Association. What is evidence-based practice in nursing?. Accessed October 20, 2023. https://www.nursingworld.org/practice-policy/nursing-excellence/evidence-based-practice-in-nursing/
4. Melnyk BM, Fineout-Overholt E. *Evidenced-Based Practice in Nursing & Healthcare: A Guide to Best Practice*. 5th ed. Wolters Kluwer; 2023.
5. Sackett DL. Evidence-based medicine. *Semin Perinatol*. 1997;21(1):3-5. https://doi.org/10.1016/s0146-0005(97)80013-4
6. Stetler CB. Updating the Stetler Model of research utilization to facilitate evidence-based practice. *Nurs Outlook*. 2001;49(6):272-279. https://doi.org/10.1067/mno.2001.120517
7. Institute of Medicine (US). *Roundtable on Evidence-Based Medicine. Leadership commitments to improve value in healthcare: finding common ground: workshop summary*. National Academies Press; 2009.
8. Melnyk BM. The current research to evidence-based practice time gap is now 15 instead of 17 years: urgent action is needed. *Worldviews Evid-Based Nurs*. 2021;18(6):318-319. https://doi.org/10.1111/wvn.12546
9. Emergency Nurses Association. Clinical practice guidelines development manual. Accessed October 20, 2023. https://www.ena.org/enau/practice-resource-library

CORRIGENDUM

Corrigendum to What Are the Care Needs of Families Experiencing Sudden Cardiac Arrest? A Survivor- and Family-Performed Systematic Review, Qualitative Meta-Synthesis, and Clinical Practice Recommendations [*Journal of Emergency Nursing*, Volume 49, Issue 6, November 2023, Pages 912-950]

Matthew J. Douma, MN, Calah Myhre, BScN, Samina Ali, MD, Tim A.D. Graham, MD, Kim Ruether, MA, Peter G. Brindley, MD, Katie N. Dainty, PhD, Katherine E. Smith, MD, Carmel L. Montgomery, PhD, Liz Dennet, MLIS, Christopher Picard, MN, Kate Frazer, PhD, and Thilo Kroll, PhD, Belfield, Dublin, Ireland, Edmonton, Alberta, Canada, and Toronto, Ontario, Canada

The authors regret that Table 2 was posted as an Article in Press with errors but has since been corrected online and in the November in-print issue.

The authors apologize for any inconvenience caused.

DOI of original article: https://doi.org/10.1016/j.jen.2023.07.001
For correspondence, write: Matthew J. Douma, MN, University College Dublin, Belfield, Dublin, Ireland; E-mail: matthew.douma@ucdconnect.ie
J Emerg Nurs 2024;50:6.
0099-1767

https://doi.org/10.1016/j.jen.2023.11.006

We All Have a Stake in Leading ENA Forward

Chris Dellinger, MBA, BSN, RN, FAEN, Parkersburg, WV

It's exciting to write this message as Emergency Nurses Association (ENA) president. This has long been a dream of mine. Many of you may know that I began this journey in 1994, when I joined the ranks of the emergency department. Five years later, I joined ENA. I knew then that I aspired to become ENA president.

That's the short version, of course. I could talk about my 33 years as a nurse or 29 years spent in the emergency department—from the stretcher side to director. I could tell you about my experiences, those you probably relate to and those that make me unique.

However, as we begin this 2024 journey, I want to focus on leadership—because I believe that each of us is a leader in some way and potentially in 5 ways. This comes from a theory of leadership called coactive leadership. It suggests there are 5 interrelated ways to lead and suggests that a truly effective leader has skills in all 5 of them. I love how they create a truly exceptional leader:

- Leader in front: the boss, the one out front, bringing an organization along for the ride
- Leader behind: the servant leader who's great at empowering and growing people
- Leader beside: the one walking in step with another to cooperatively lead an organization
- Leader in the field: the visionary who sees possibilities and connections to bring to life
- Leader within: the authentic presence inside all of us who, above all, leads the self

I have always loved Mahatma Gandhi's saying, "Be the change that you wish to see in the world," and just recently I realized how much my mother has in common with him. Mom gave me probably the best advice I have ever received when I was a young girl: "Chris, be the best version of yourself each day and, most importantly, try to be better than you were the day before."

What a great prescription for living authentically and being an all-around leader in our personal and professional lives.

My wise mom and that wise adage spoke to me about looking inside myself to find the leader within—the type of leader I want to be—who originates from inside me. I work hard not only to lead with integrity but also to live with it as well, to accept myself as I am, to support who I am becoming, and to be responsible for my actions and thoughts. In other words, develop and use self-authority in every single leadership moment, whether leading myself, leading others, leading collaboratively, or leading as a visionary. At the end of each day, I strive to always remember to simply be me—my authentic self—and to channel the leader within me.

Of course, no 2 leadership journeys are the same. My journey has taught me that I'm an optimist and that I look for the opportunity in everything that comes my way. Maybe that's just an illustration of the concept of "you do you," a phrase that certainly illustrates how I know that I'm being authentic. I believe that, when we channel our leader within, we can incorporate all 5 leadership styles. We can also be leaders in front, leaders behind, leaders beside others, and leaders in the field. The first step is to start being present with ourselves, just as we are, as we grow, and as we are meant to be.

This year, I'm carrying forward a few priorities: to advocate for stronger penalties against those who harm health care workers, to continue growing ENA's presence and impact as the premier association for emergency nurses across the globe, to see ENA represented in all countries, and to be sure our members' voices are heard. We will do that together.

However, for now, I urge you: get in touch with the leader within you. Throughout the year, we'll also explore what it means to lead in front, beside, as a servant, and in the field. As we begin this journey through 2024, let's channel our passion for the field and our purpose for the organization so we will shine as leaders in the ENA.

Chris Dellinger is Director, Emergency, Trauma, and ICU Services, WVU Medicine Camden Clark Medical Center, Parkersburg, WV **Twitter:** @ChrisDellinger2.

For correspondence, write: Chris Dellinger, MBA, BSN, RN, FAEN, Emergency, Trauma, and ICU Services, WVU Medicine Camden Clark Medical Center, 800 Garfield Avenue, Parkersburg, WV 26101; E-mail: Chris.dellinger@board.ena.org

J Emerg Nurs 2024;50:7.
0099-1767

https://doi.org/10.1016/j.jen.2023.10.009

Infectious Diseases in the Emergency Care Setting

EMERGENCY NURSES ASSOCIATION

Description

The evolving nature of infectious diseases means that this position statement will be a living document, not intended to represent all possible infectious diseases at any specific point in time but instead to provide guidance toward available international and reputable resources. Now, more than ever, emergency nurses are subjected to greater potential exposure to a vast array of infectious diseases due to the nature of the practice. As infectious diseases continue to evolve, as witnessed by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the Emergency Nurses Association (ENA) strongly suggests that readers refer to the specific resources recommended in this document for guidance.

Despite advances in research and treatments, infectious diseases remain the leading cause of illness and death worldwide (Centers for Disease Control and Prevention [CDC], nd-c). The speed at which infectious diseases spread today is due, in part, to global migration and travel. Diseases typically thought to exist only in specific areas of the world are now being seen in nontraditional areas. Factors contributing to disease emergence include population growth, climate change, ecological change (eg, increased interaction between humans and animals), international trade, and public health guidance and action (World Health Organization [WHO], 2021, October 21). According to the WHO, climate change is the single biggest health threat facing humanity, with infectious diseases as a component of that threat. Between 2030 and 2050, climate change is expected to cause approximately 250,000 additional deaths per year from malnutrition, malaria, diarrhea, and heat stress. Health professionals worldwide are already responding to the harms caused by this unfolding crisis (WHO, October 21). In addition, there are multiple other factors that affect the spread of infectious diseases, including organism mutation, cultural practices, availability of clean water, adequate sanitation in low- and middle-income countries, drug resistance, natural disasters, immunization practices, and distrust of the medical community. (McGuigan, 2016). A 2021 report from *The Lancet* further explains that climate conditions are becoming increasingly suitable for the transmission of multiple infectious diseases by directly affecting biological features of infectious diseases such as growth, survival, and virulence, as well as their vectors (The Lancet Microbe, 2021). Diseases previously brought under control by vaccinations in the United States may now be transported into the country by travelers from other countries (McGuigan, 2016; WHO, October 21). Education on methods for infectious disease control and containment is a priority. In planning for infectious disease outbreaks, it is essential to include local public health and private resources (Lam et al, 2016; WHO, July 14). Pandemic response highlights a need for prepandemic planning and postpandemic debrief, education, and evaluation of where opportunities arise for further outbreaks and disease management.

ENA POSITION

It is the position of ENA that:

1. Protection of patients, family members of patients, visitors, and staff from infectious diseases and the stigma that may arise from them are addressed appropriately.
2. Emergency nurses monitor current global health advisories.
3. ED surveillance for increased cases of infectious diseases serves as an early warning to health care facilities and can facilitate coordination with appropriate jurisdictional response partners.
4. Emergency nurses identify patients with an infectious disease by implementing a screening process for symptoms and travel history, isolate individuals, and apply necessary infection control measures immediately for patients who screen positive and inform appropriate authorities by complying with mandatory reporting requirements for infectious diseases in the emergency care setting.

5. Emergency departments have plans in place to expedite appropriate isolation of patients with infectious diseases from waiting rooms that may have long wait times and crowding due to staffing and bed shortages.
6. Emergency nurses be trained regularly on how to safely don and doff appropriate levels of personal protective equipment (PPE) to manage patients with infectious diseases.
7. Emergency nurses advocate and participate in recurrent education and training to recognize disease-specific signs and symptoms that require infection control precautions.
8. Health care facilities maintain an adequate supply of biological products, medications, PPE, and medical devices to manage initial incident response.
9. Health care workers demonstrate adequate antibody titers or receive immunizations for infectious diseases as recommended by national health experts in alignment with the ENA position statement *Immunizations and the Responsibilities of the Emergency Nurse.*

Background

As seen with the coronavirus disease 2019 (COVID-19) pandemic, emerging infectious diseases have highlighted an increasing impetus for reinforcement of infectious disease preparedness and response (CDC, n.d.-b). Rapid identification and isolation of patients presenting to the emergency care setting with a potentially infectious disease reduce the risk of exposure and disease transmission to patients, visitors, and staff. It is also critical that emergency nurses inform appropriate public health officials when a patient suspected of having a novel or serious infectious disease presents. The CDC recommends appropriate precautions to prevent contact with blood, body fluids, or any airborne droplet contamination from aerosol-generated medical procedures (n.d.-b). Knowing how to put on (don) and remove (doff) appropriate PPE is critical regardless of the infectious disease.

The span of emerging infectious diseases is changing at a rapid rate, requiring multiple resources for risk assessment, evaluation of patient care processes, and necessary supplies within the health care facility. A pandemic plan and biological mass incident plan is recommended to ensure continuity of care in the event of a widespread outbreak of an infectious disease. Such plans are implemented in concert with appropriate jurisdictional agencies and include procedures for the care of exposed, infected, and deceased individuals (CDC, n.d.-c). For example, the CDC standards encourage limiting transport of patients who require diagnostic and therapeutic procedures if they can be performed in the patient room (CDC, n.d.-b).

The 2014 to 2016 Ebola outbreak highlighted the importance of and need for infection prevention and control training for health care workers, especially those on the frontlines who will likely encounter patients with infectious diseases first (CDC, n.d.-a). The SARS-CoV-2 virus pandemic reinforced this need for ongoing infection prevention and control training. With migration of people growing globally, infectious diseases can now spread at an unprecedented rate (McGuigan, 2016; WHO, October 21). Well-trained staff, educated in the importance of taking a detailed exposure history, including recent travel or exposure to ill persons as well as exposure to pets or other animals, can be the first line of defense in preventing the spread of disease. Respiratory hygiene and cough etiquette, in addition to hand hygiene and PPE, are now considered part of standard precautions (United States Department of Health & Human Services, n.d.). The spread of SARS-CoV-2 by patients and their family members highlights the need for prompt implementation of standard precautions along with patient, family, and visitor education (CDC, n.d.-b).

Pandemic threats are forecast to appear at faster rates, so preparation times between pandemics will grow shorter and emergency nurses must be ready to respond (CDC, n.d.-d). The COVID-19 pandemic showed the world the importance of proactive preparations and the ability to quickly react to changing needs. The impact of an infectious disease outbreak may be mitigated by advanced planning and preparedness. It should start with screening newly hired employees' health, including immunization history, antibody titer assessment, and respirator fit testing requirements (CDC, n.d.-d). According to WHO, one way to ensure a healthy workforce is to generate immunity to infectious disease-specific vaccinations (2021, July 14).

Seven major human diseases have come under some degree of control worldwide because of vaccines: smallpox, diphtheria, tetanus, yellow fever, whooping cough, polio, and measles. (Baker et al, 2022). While vaccinations may be available, some individuals choose not to vaccinate due to fear of side effects or because of religious or personal beliefs. Travelers from countries where vaccination rates are very low pose a risk to emergency care providers and the public in

other countries (WHO, 2021, July 14). Mandatory reporting requirements for confirmed infectious diseases, which vary from state to state, help to control these diseases. According to Jit et al (2021) international coordination when responding to infectious disease outbreaks has greater overall benefit than if each country independently pursues its own self-interest. It is critical that emergency nurses globally remain vigilant and continue work-related preparedness for infectious diseases.

Several resources are available in the event of a public health emergency such as a flu outbreak, natural disaster, or a terrorist attack through the Strategic National Stockpile (SNS), under the office of the Assistant Secretary for Preparedness and Response (United States Department of Health & Human Services, 2021). The SNS includes medications, PPE, and supplies that can be released to individual states in need at the direction of the federal government (United States Department of Health & Human Services, 2021). Given that the SNS may not be immediately available or have adequate supplies to meet the needs of the entire country, as we learned during the COVID-19 pandemic, each facility is expected to have a source for supplies and medications to last until the federal government can provide additional resources. In Canada, people can access a national website to the Public Health Agency of Canada for resource management and precautions related to any emerging health issues (Government of Canada, 2022).

REFERENCES

Baker RE, Mahmud AS, Miller IF, Rajeev M, Rasambainarivo F, Rice BL, Takahashi S, Tatem AJ, Wagner CE, Wang L-F, Wesolowski A, Metcalf CJE. Infectious disease in an era of global change. *Nature Reviews: Microbiology*. 2022;20(4):193-205. http://doi.org/10.1038/s41579-021-00639-z

Centers for Disease Control and Prevention. (n.d.-a). 2014-2016 Ebola Outbreak in West Africa. https://www.cdc.gov/vhf/ebola/history/2014-2016-outbreak/index.html

Centers for Disease Control and Prevention. (n.d.-b). Isolation precautions. https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html

Centers for Disease Control and Prevention. (n.d.-c). Pandemic influenza. https://www.cdc.gov/flu/pandemic-resources/index.htm

Centers for Disease Control and Prevention. (n.d.-d). Why vaccinate. https://www.cdc.gov/vaccines/parents/why-vaccinate/index.html

Government of Canada. Public Health Agency of Canada. 2022, August 26. https://www.canada.ca/en/public-health.html

Jit M, Ananthakrishnan A, McKee M, Wouters OJ, Beutels P, Teerawattananon Y. Multi-country collaboration in responding to global infectious disease threats: Lessons for Europe from the COVID-19 pandemic. *The Lancet Regional Health – Europe*. 2021;9. http://doi.org/10.1016/j.lanepe.2021.100221. Article 100221.

Lam SK, Kwong EW, Hung MS, Pang SM. Bridging the gap between guidelines and practice in the management of emerging infectious diseases: A qualitative study of emergency nurses. *Journal of Clinical Nursing*. 2016;25(19-20):2895-2905. http://doi.org/10.1111/jocn.13343

McGuigan H. Global health and emerging infectious diseases. *Journal of Emergency Nursing*. 2016;42(3):272-275. http://doi.org/10.1016/j.jen.2016.03.006

The Lancet Microbe. Climate change: Fires, floods, and infectious diseases. *The Lancet*. 2021;2(9):e415. http://doi.org/10.1016/S2666-5247(21)00220-2

U.S. Department of Health & Human Services. (2021). *Strategic National Stockpile*. https://www.phe.gov/about/sns/Pages/default.aspx

World Health Organization. (2021, July 14). *Vaccine efficacy, effectiveness and protection*. https://www.who.int/news-room/feature-stories/detail/vaccine-efficacy-effectiveness-and-protection

World Health Organization. (2021, October 21). *Climate change and health*. https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

Authors

Authored by:

Sharon Vanairsdale Carrasco, DNP, MS, RN, APRN, NP, CNS, CEN, ACNS-BC, NP-C, FAEN, FAAN

Dawn Peta, BN, RN, ENC(C)

Reviewed by:

2022 ENA Position Statement Committee

Brenda Braun, MSN, RN, CEN, CPEN, FAEN

Alison Day, PhD, MSc, BSc (Hons), RN, FAEN

Lisa Leiding, DNP, RN, CCHP-RN

Joanne Navarroli, MSN, BS, RN, CEN

Cheryl Riwitis, DNP, RN, FNP, EMT-B, CEN, CFRN, FNP-BC, TCRN, FAEN

Elizabeth Stone, PhD, RN, CPEN, CHSE, FAEN

Jean Proehl, MN, RN, CEN, CPEN, TCRN, FAEN, FAAN, Chairperson

ENA 2022 Board of Directors Liaison

Ryan Oglesby, PhD, RN, CEN, CNE, PHCNS-BC, FAEN, FAAN

2023 ENA Staff Liaison

Domenique Johnson, MSN, RN

Developed: June 2016.

Approved by the ENA Board of Directors: December 2016

Revised and Approved by the ENA Board of Directors: 2022

This position statement replaces statement Communicable Diseases in the Emergency Department, May 2010.

How to cite this article:

Peta D, Vanairsdale Carrasco S. Infectious diseases in the emergency care setting [Position statement]. *J Emerg Nurs*. 2024;50(1):8-11. https://doi.org/10.1016/j.jen.2023.10.005.

ENA Clinical Practice Guideline Synopsis: Fall Risk Assessment

Clinical Question

In ED patients across the lifespan, which fall risk tools accurately identify patients at risk of falling while in the emergency department?

Problem

Falls within the hospital setting are common events associated with significant morbidity and mortality (Cameron et al, 2020). With an estimated 700,000 to 1 million falls during hospitalization each year, falls are a significant contributor to increased hospital cost and patient outcomes (Agency for Healthcare Research and Quality, 2013). A patient fall is defined as "an unplanned descent to the floor with or without injury to the patient" and may result in injuries with subsequent increased health care utilization (Agency for Healthcare Research and Quality, 2013). Any patient across the spectrum of age or physical ability can be at risk of falls related to the physiological changes that occur with medical conditions, medications, procedures, and diagnostic testing (The Joint Commission (TJC), 2015). There are a variety of fall risk assessment tools; however, most of the widely adopted tools have not been studied in the unique ED environment. The evidence regarding fall risk assessment in the emergency department is limited in both quantity and quality. In the current literature review, fall risk assessment study results are often contradictory. Scales may not perform equally between patient groups based on medical diagnoses, individual patient characteristics, or clinical units. In most studies, researchers urge clinicians to further validate the fall risk assessment tool within their own specialty unit or population. More research is needed in the ED setting to determine the most appropriate tool for accurately predicting falls.

Recommendations

		Description of Decision Options/Interventions and the Level of Recommendation	
Adults	Morse	The Morse Fall Scale can be used to predict which inpatients are at risk for falls (Al Tehewy et al., 2015; Harrington et al., 2010; Jewell et al., 2020; Kim et al., 2011; Lee et al., 2020; Pasa et al., 2017).	B
		There is insufficient evidence to determine whether patients with a high Morse Fall Scale score can be further risk stratified to improve accuracy of predicting falls (Gringauz et al., 2017).	INE
		There is insufficient evidence to determine whether the Morse Fall Scale can be translated into Korean and maintain the Morse ability to predict falls (Baek et al., 2014; Sung et al., 2014).	INE
	Johns Hopkins	The Johns Hopkins Fall Risk Assessment Tool can predict which inpatients are at risk for falls (Hur et al., 2017; Klinkenberg & Potter, 2017; Martinez et al., 2019; Poe et al., 2018).	B
		There is insufficient evidence to determine whether the Johns Hopkins Fall Risk Assessment Tool can be translated into Johns Hopkins Chinese and maintain the ability to predict falls (Zhang et al., 2016).	INE
	Hendrich	The Hendrich II Fall Risk Model can predict which inpatients are at risk for falls (Caldevilla et al., 2013; Cho et al., 2020; Hendrich et al., 1995; Hendrich et al., 2003; Hendrich et al., 2020; Ivziku et al., 2011; Jung & Park, 2018; Jung et al., 2019; Kim et al., 2007; Matarese et al., 2015; Park, 2018).	B
		There is insufficient evidence to determine whether the Hendrich II Fall Risk Model performs consistently across patient groups, skill levels, or units (Swartzell et al., 2013).	INE
		There is insufficient evidence to determine whether the Hendrich II Fall Risk Model can be translated into Chinese and maintain the ability to predict falls (Zhang et al., 2015).	INE
	Others	The STRATIFY tool can predict which inpatients are at risk for falls (Aranda-Gallardo et al., 2013; Harrington et al., 2010; Matarese et al., 2015; Oliver et al., 1997; Park, 2018).	C
		There is insufficient evidence to determine whether the Schmid Fall Risk Assessment tool is accurate in predicting fall risk in inpatients (Schmid, 1990).	INE
		There is insufficient evidence to determine whether the Conley, Bobath Memorial Fall Risk Assessment, Auto-Fall RAS, FRAT, SAFR questionnaire, WHeFRA, RxFS fall risk assessment, and HDS tools can predict fall risk (Conley et al., 1999; Flarity et al., 2013; Hester & Davis, 2013; Kim et al., 2011; Lee et al., 2016; MacAvoy et al., 1996; Sitzer, 2016).	INE
		There is insufficient evidence to determine whether the Edmonson Psychiatric Fall Risk Assessment can be used to predict fall risk in the acutely ill psychiatric population (Edmonson et al., 2011).	INE
Pediatrics		The Humpty Dumpty Fall Scale performs inconsistently when predicting pediatric fall risk (Gonzalez et al., 2020; Hill-Rodriguez et al., 2009; McNeely et al., 2018; Messmer et al., 2013; Nassar et al., 2014; Pauley et al., 2014).	B
		The CHAMPS tool accurately predicts risk for falls in pediatric patients (Razmus & Davis, 2012).	C
		The Little Schmidy Fall Risk accurately predicts fall risk in pediatric patients (Franck et al., 2017).	C
		Adult fall risk tools, such as the Hendrich II and the Morse Fall Scale, are not specific or sensitive enough to predict pediatric inpatient falls (Razmus et al., 2006).	C
		There is no evidence that the I'M SAFE tool accurately predicts patients at risk for falls (McNeely et al., 2018).	INE
All Patients		There is insufficient evidence to determine whether patients' risk of falling is affected by individual characteristics, chronic illnesses, reason for presentation to the ED, and overall state of the ED during the visit (Tanrikulu & Sari, 2017).	INE
Emergency Department		The MEDFRAT can accurately predict which patients are at risk for falling in the ED (Flarity et al., 2013; Luo et al., 2020).	C

Level A	Based on consistent and good quality of evidence; has relevance and applicability to emergency nursing practice.
Level B	There are some minor inconsistencies in the quality of evidence; has relevance and applicability to emergency nursing practice.
Level C	There is limited or low-quality patient-oriented evidence; has relevance and applicability to emergency nursing practice.
NR	Not recommended based upon current evidence.
INE	Insufficient or no evidence upon which to make a recommendation.

REFERENCES

Agency for Healthcare Research and Quality. *Preventing Falls in Hospitals: A Toolkit for Improving Quality of Care*. Accessed September 6, 2023. https://www.ahrq.gov/professionals/systems/hospital/fallpxtoolkit/fallpxtkover.html

Al Tehewy MM, Amin GE, Nassar NW. A study of rate and predictors of fall among elderly patients in a university hospital. *Journal of Patient Safety*. 2015;11(4):210-214. http://doi.org/10.1097.PTS.0000000000000117.

Aranda-Gallardo M, Morales-Asencio JM, Canca-Sanchez JC, Barrero-Sojo S, Perez-Jimenez C, Morales-Ferandez A, de Luna-Rodriguez ME, Moya-Suarez AB, Mora-Banderas AM. Instruments for assessment of the risk of falls in acute hospitalized patients: A systematic review and meta-analysis. *BMC Health Services Research*. 2013;13:122. http://doi.org/10.1186/1472-6963-13-122

Baek S, Piao J, Jin Y, Lee S. Validity of the Morse Fall Scale implemented in an electronic medical record system. *Journal of Clinical Nursing*. 2014;23(17):2434-2440. http://doi.org/10.1111/jocn.12359

Caldevilla MN, Costa MAM, Teles P, Ferreira PM. Evaluation and cross-cultural adaptation of the Hendrich II Fall Risk Model to Portuguese. *Scandinavian Journal of Caring Sciences*. 2013;27(2):468-474. http://doi.org/10.1111/j.1471-6712.2012.01031.x

Cameron ID, Dyer SM, Panagoda CE, Murray GR, Hill KD, Cumming RG, Kerse N. Interventions for preventing falls in older people in care facilities and hospitals. *Cochrane Database of Systematic Review*. 2018;9:CD005465. http://doi.org/10.1002/14651858.CD005465.pub4, No.

Cho EH, Woo YJ, Han A, Chung YC, Kim YE, Park H. Comparison of the predictive validity of three fall risk assessment tools and analysis of fall-risk factors at a tertiary teaching hospital. *Journal of Clinical Nursing*. 2020;29(17-18):3482-3493. http://doi.org/10.1111/jocn.15387

Conley D, Schultz AA, Selvin R. The challenge of predicting patients at risk for falling: Development of the Conley Scale. *MedSurg Nursing*. 1999;8(6):348-354.

Edmonson D, Robinson S, Hughes L. Development of the Edmonson Psychiatric Fall Risk Assessment Tool. *Journal of Psychosocial Nursing and Mental Health Services*. 2011;49(2):29-36. http://doi.org/10.3928/02793695-20101202-03

Flarity K, Pate T, Finch H. Development and implementation of the Memorial Emergency Department Fall Risk Assessment Tool. *Advanced Emergency Nursing Journal*. 2013;35(1):57-66. http://doi.org/10.1097/tme.0b013e1827c6a54

Franck LS, Gay CL, Cooper B, Ezrre S, Murphy B, Chang JS, Buick M, Meer CR. The Little Schmidy Pediatric Hospital Fall Risk Assessment Index: A diagnostic accuracy study. *International Journal of Nursing Studies*. 2017;68:51-59. http://doi.org/10.1016/j.ijnurstu.2016.12.011

Gonzalez J, Hill-Rodriguez D, Hernandez LM, Cordo JA, Esteves J, Wang W, Salyakina D, Sarik DA. Evaluating the Humpty Dumpty Fall Scale: An international, multisite study. *Journal of Nursing Care and Quality*. 2020;35(4):301-308. http://doi.org/10.1097/NCQ.0000000000000458

Gringauz I, Shemesh Y, Dagan A, Israelov I, Feldman D, Pelz-Sinvani N, Justo D, Segal G. Risk of falling among hospitalized patients with high modified Morse scores could be further stratified. *BMC Health Services Research*. 2017;17(1):721. http://doi.org/10.1186/s12913-017-2685-2

Harrington L, Luquire R, Vish N, Winter M, Wilder C, Houser B, Pitcher E, Qin H. Meta-analysis of fall-risk tools in hospitalized adults. *Journal of Nursing Administration*. 2010;40(11):483-488. http://doi.org/10.197/NNA.0b013e3181f88fbd.

Hendrich AL, Bender PS, Nyhuis A. Validation of the Hendrich II Fall Risk Model: A large concurrent case/control study of hospitalized patients. *Applied Nursing Research*. 2003;16(1):9-21. http://doi.org/10.1053/apnr.2003.YAPNR2

Hendrich AL, Bufalino R, Grovers C. Validation of the Hendrich II Fall Risk Model: The imperative to reduce modifiable risk factors. *Applied Nursing Research*. 2020;53, 151243. http://doi.org/10.1016/j.apnr.2020.151243

Hendrich AL, Nyhuis A, Kippenbrock T, Soja ME. Hospital falls: Development of a predictive model for clinical practice. *Applied Nursing Research*. 1995;8(3):129-139. http://doi.org/10.1016/s0897-1897(95)80592-3

Hester AL, Davis DM. Validation of the Hester Davis scale for fall risk assessment in a neurosciences population. *Journal of Neuroscience Nursing*. 2013;45(5):298-305. http://doi.org/10.1097/JNN.0b013e31829d8b44

Hill-Rodriguez D, Messmer PR, Williams PD, Zeller RA, Williams AR, Wood M, Henry M. The Humpty Dumpty Falls Scale: A case-control study. *Journal of Specialists in Pediatric Nursing*. 2009;14(1):22-32. http://doi.org/10.1111/j.1744-6155.2008-00166.x

Hur EY, Jin Y, Jin T, Lee SM. Longitudinal evaluation of Johns Hopkins Fall Risk Assessment Tool and nurses' experience. *Journal of Nursing Care Quality*. 2017;32(3):242-251. http://doi.org/10.1097/NQC.0000000000000235

Ivziku D, Matarese M, Pedone C. Predictive validity of the Hendrich fall risk model II in an acute geriatric unit. *International Journal of Nursing Studies*. 2011;48(4):468-474. http://doi.org/10.1016/j.ijnurstu.2010.09.002

Jewell VD, Capistran K, Flecky K, Yongyue Q, Fellman S. Prediction of falls in acute care using the Morse Fall Risk Scale. *Occupational Therapy in Health Care*. 2020;34(4):307-319. http://doi.org/10.1080/07380577.2020.1815928

Jung H, Park HA. Testing the predictive validity of the Hendrich II Fall Risk Model. *Western Journal of Nursing Research*. 2018;40(12):1785-1799. http://doi.org/10.1177/0193945918766554

Jung H, Park HA, Hwang H. Improving prediction of fall risk using electronic health record data with various types and sources at multiple times. *Computers, Informatics, Nursing*. 2019;38(3):157-164. http://doi.org/10.1097/cin.0000000000000561

Kim EA, Mordiffi SZ, Bee WH, Devi K, Evans D. Evaluation of three fall-risk assessment tools in an acute care setting. *Journal of Advanced Nursing*. 2007;60(4):427-435. http://doi.org/10.1111/j.1365-2648.2007.04419.x

Kim KS, Kim JA, Choic YK, Kim YJ, Park MH, Kim HY, Song MS. A comparative study on the validity of fall risk assessment scales in Korean hospitals. *Asian Nursing Research*. 2011;5(1):28-37. http://doi.org/10.1016/s1976-1317(11)60011-x

Klinkenberg WD, Potter P. Validity of the Johns Hopkins Fall Risk Assessment Tool for predicting falls on inpatient medicine services. *Journal of Nursing Care Quality*. 2017;32(2):108-113. http://doi.org/10.1097/NCQ.0000000000000210

Lee JY, Jin Y, Piao J, Lee S. Development and evaluation of an automated fall risk assessment system. *International Journal for Quality in Health Care*. 2016;28(2):175-182. http://doi.org/10.1093/intqhc/mzv122

Lee YS, Choic EJ, Kim YH, Park HA. Factors influencing falls in high- and low-risk patients in a tertiary hospital in Korea. *Journal of Patient Safety*. 2020;16(4):e376-e382. http://doi.org/10.1097/PTS.0000000000000593

Luo S, Kalman M, Haines P. Evaluating a fall risk assessment tool in an emergency department. *Journal for Healthcare Quality*. 2020;42(4):205-214. http://doi.org/10.1097/JHQ.0000000000000233

MacAvoy S, Skinner T, Hines M. Fall risk assessment tool. *Applied Nursing Research*. 1996;19(4):213-218. http://doi.org/10.1016/S0897-1897(96)80127-3

Martinez MC, Iwamoto VE, Latorre MDRDD, Simões AMN, Oliveira APDS, Cardoso CEA, Marques IAB, Vendramim P, Lopes PC, Sant'Ana THSD. Validity and reliability of the Brazilian version of the Johns Hopkins Fall Risk Assessment Tool to assess the risk of falls. *Revista Brasileira de Epidemiologia*. 2019;22, e190037. http://doi.org/10.1590/1980-549720190037, Article.

Matarese M, Ivziku D, Bartolozzi F, Piredda M, De Marinis MG. Systematic review of fall risk screening tools for older patients in acute hospitals. *Journal of Advanced Nursing*. 2015;71(6):1198-1209. http://doi.org/10.1111/jan.12542

McNeely HL, Thomason KK, Tong S. Pediatric fall risk assessment tool comparison and validation study. *Journal of Pediatric Nursing*. 2018;41:96-103. http://doi.org/10.1016/j.pedn.2018.02.010

Messmer PR, Williams PD, Williams AR. A case-control study of pediatric falls using electronic medical records. *Rehabilitation Nursing*. 2013;38(2):73-79. http://doi.org/10.1002/rnj.73

Nassar N, Helou N, Madi C. Predicting falls using two instruments (the Hendrich Fall Risk Model and the Morse Fall Scale) in an acute care setting in Lebanon. *Journal of Clinical Nursing*. 2014;23(11):1620-1629. http://doi.org/10.1111/jocn.12278

Oliver D, Britton M, Seed P, Martin FC, Hopper AH. Development and evaluation of evidence-based risk assessment tool (STRATIFY) to predict which elderly inpatients will fall: Case-control and cohort studies. *BMJ*. 1997;315(7115):1049-1053. http://doi.org/10.1136/bmj.315.7115.1049

Park SH. Tools for assessing fall risk in the elderly: A systematic review and meta-analysis. *Aging Clinical and Experimental Research*. 2018;30(1):1-16. http://doi.org/10.1007/s40520-017-0749-0

Pasa TS, Magnago TSBDS, Urbanetto JDS, Baratto MAM, Morais BX, Carollo JB. Risk assessment and incidence of falls in adult hospitalized patients. *Revista Latino-Americana De Enfermagem*. 2017;25. http://doi.org/10.1590/1518-8345.1551.2862. Article e2862.

Pauley BJ, Houston LS, Cheng D, Johnston DM. Clinical relevance of the Humpty Dumpty Falls Scale in a pediatric specialty hospital. *Pediatric Nursing*. 2014;40(3):137-142.

Poe S, Dawason P, Cvach M, Burnett M, Kumble S, Lewis M, Thompson C, Hill E. The Johns Hopkins Fall Risk Assessment Tool: A study of reliability and validity. *Journal of Nursing Care Quality*. 2018;33(1):10-19. http://doi.org/10.1097/NCQ.0000000000000301

Razmus I, Wilson D, Smith R, Newman E. Falls in hospitalized children. *Pediatric Nursing*. 2006;32(6):568-572.

Razmus I, Davis D. The epidemiology of falls in hospitalized children. *Pediatric Nursing*. 2012;38(1):31-35.

Schmid NA. Federal Nursing Service Award Winner. Reducing patient falls: A research-based comprehensive fall prevention program. *Military Medicine*. 1989-1990;155(5):202-207.

Sitzer V. Development of an automated self-assessment of a fall risk questionnaire for hospitalized patients. *Journal of Nursing Care Quality*. 2016;31(1):46-53. http://doi.org/10.1097/NCQ.0000000000000147

Sung YH, Cho MS, Kwon IG, Jung YY, Song MR, Kim K, Won S. Evaluation of falls by inpatients in an acute care hospital in Korea using the Morse Fall Scale. *International Journal of Nursing Practice*. 2014;20(5):510-517. http://doi.org/10.1111/ijn.12192

Swartzell KL, Fulton JS, Friesth BM. Relationship between occurrence of falls and fall-risk scores in an acute care setting using the Hendrich II fall risk model. *Medsurg Nursing*. 2013;22(3):180-187.

Tanrikulu F, Sari D. Determining patients' risk of falling in the emergency department. *International Journal of Caring Sciences*. 2017;10(2):907-914. http://www.internationaljournalofcaringsciences.org/docs/28_tanrikulu_original_10_2.pdf

The Joint Commission. Preventing falls and fall-related injuries in health care facilities. *Sentinel Event Alert*. 2015;55. https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/sentinel-event/sea_55_falls_4_26_16.pdf

Zhang C, Wu X, Lin S, Jia Z, Cao J. Evaluation of reliability and validity of the Hendrich II Fall Risk Model in a Chinese hospital population. *PloS One*. 2015;10(11), e0142395. http://doi.org/10.1371/journal.pone.0142395), Article.

Zhang J, Wing M, Liu Y. Psychometric validation of the Chinese version of the Johns Hopkins Fall Risk Assessment Tool for older Chinese inpatients. *Journal of Clinical Nursing*. 2016;25(19):2846-2853. http://doi.org/10.1111/jocn.13331

Authors

Andrea Slivinski, DNP, APRN, ACNS-BC, CEN, CPEN, TCRN
Robin MacPherson-Dias, MS, RN, NPD-BC, CEN, TCRN, CPEN, CCRN
Kathy Van Dusen, MSN, RN, CEN, CPEN, NHDP-BC, FAEN
Judith Young Bradford, DNS, RN, FAEN
Susan Barnason, PhD, RN, APRN, CNS, CS, CEN, CCRN, FAEN, FAAN
Lisa Gilmore, DNP, ACCNS-AG, ACCNS-P, ENP-C, FNP-C, NREMT-P, CEN, CPEN, FAEN
Annie Horigan, PhD, RN
Janet Kaiser, DNP, MSN, RN, CEN, NE-BC
Jean A. Proehl, MN, RN, CEN, CPEN, TCRN, FAEN, FAAN
Mary Alice Vanhoy, MSN, RN, CEN, CPEN, NREMT-P, FAEN
Jessica Bishop-Royse, PhD, MS
Altair Delao, MPH

For correspondence, write: Altair Delao, MPH, Emergency Nurses Association, 930 Woodfield Road, Schaumburg, IL 60173; E-mail: altair.delao@ena.org.

Clinical Practice Guidelines can be found at https://www.ena.org/enau/practice-resource-library

Andrea Slivinski is Clinical Nurse Specialist, Mission Hospital, Asheville, NC. ORCID identifier: https://orcid.org/0000-0003-1397-3904. Member, Blue Ridge Chapter.

Robin MacPherson-Dias is Director of Clinical Education, Sutter Health Memorial Medical Center, Modesto, CA. **ORCID identifier:** https://orcid.org/0000-0002-7612-9578. Member, Sacramento Chapter.
Kathy Van Dusen is Clinical Practice Specialist, NTI Nurse Planner, American Association of Critical-Care Nurses, Aliso Viejo, CA. **ORCID identifier:** https://orcid.org/0000-0003-1048-6131. Member, Orange Coast Chapter.
Judith Young Bradford is Professor, School of Nursing, Southeastern Louisiana University, Hammond, LA. **ORCID identifier:** https://orcid.org/0000-0002-8380-5263. Member, Mississippi State Council.
Susan Barnason is Professor of Nursing, University of Nebraska Medical Center, Omaha, NE. **ORCID identifier:** https://orcid.org/0000-0001-8747-234X. Member, Nebraska State Council.
Lisa Gilmore is Trauma, Burn, & General Surgery Nurse Practitioner, Mercy Health, Branson, MO. **ORCID identifier:** https://orcid.org/0000-0002-5515-9508. Member, Missouri State Council.
Ann E. Horigan is Associate Clinical Professor, Emory University, Atlanta, GA. **ORCID identifier:** https://orcid.org/0000-0002-0365-905X. Member, Lorene Newberry Chapter.
Janet Kaiser is Senior Director of Patient Care Services, VCU Health Community Memorial Hospital, South Hill, VA. **ORCID identifier:** https://orcid.org/0000-0002-4774-1960. Member, Central Virginia Chapter.
Jean A. Proehl is Emergency Clinical Nurse Specialist, Proehl PRN, LLC, Cornish, NH. **ORCID identifier:** https://orcid.org/0000-0002-2544-5116. Member, New Hampshire State Council.
Mary Alice Vanhoy is Nurse Manage, University of Maryland, Shore Regional Health, Queenstown, MD. **ORCID identifier:** https://orcid.org/0000-0003-4777-6511. Member, North Carolina Eastern Piedmont Chapter.
Jessica Bishop-Royse is Associate Professor College of Nursing, Rush University, Chicago, IL. **ORCID identifier:** https://orcid.org/0000-0002-9198-3115.
Altair M. Delao is Senior Manager, Research, Emergency Nurses Association, Schaumburg, IL. **ORCID identifier:** https://orcid.org/0000-0001-6017-3227.

How to cite this article:

Slivinski A, MacPherson-Dias R, Van Dusen K, and the 2020 ENA CPG Committee. Fall risk assessment [Clinical practice guideline synopsis]. *J Emerg Nurs*. 2024;50(1):12-16.

ENA Clinical Practice Guideline Synopsis: Screening Older Adults for Cognitive Impairment

EMERGENCY NURSES ASSOCIATION

Clinical Question

Which assessment tools are valid and reliable for the determination of cognitive impairment in patients 65 years and older in the emergency department?

Problem

Cognitive impairment in patients 65 years and older is common in the emergency department (Parke et al, 2011). Cognitive impairment in older adults increases the complexity and risk of adverse outcomes (eg, mortality) after ED discharge (LaMantia et al, 2014). Cognitive impairment encompasses both dementia and delirium because it is not always possible to differentiate between the 2 in the ED setting and the 2 conditions may coexist. Dementia is a chronic, irreversible, neurodegenerative disease characterized by loss of memory and impaired reasoning. Dementia is caused by many different disease processes such as Alzheimer's, Lewy body, vascular, frontotemporal, and mixed diseases. Screening tools do not diagnosis dementia; they only indicate that cognitive impairment is present. Delirium is an acute, reversible alteration in cognitive function with many possible etiologies including physical illness, psychiatric conditions, and medications (Parke et al, 2011). Unfortunately, cognitive impairment, either delirium or dementia, frequently goes unrecognized in the emergency department because cognitive function is not routinely assessed (Arendts et al, 2017; Han et al, 2009; O'Regan et al, 2012; Sendecki, 2014). In one study, emergency physicians' clinical assessment was only 35% sensitive in the detection of delirium (Élie et al, 1998). Other studies have concluded that 65% to 75% of patients with delirium may be underidentified by emergency physicians (LaMantia et al, 2014; Suffoletto et al, 2013). Screening is recommended to detect impaired mental status (eg, delirium or dementia), because cognitive impairment affects disposition decision making and appropriate clinical interventions (Parke et al, 2011; Taylor et al, 2018). In the ED setting, use of a screening tool that is valid, reliable, simple, and easily used by emergency nurses and providers is important (Arendts et al, 2017).

Recommendations

Description of Decision Options/Interventions and the Level of Recommendation	
The Short Blessed Test (SBT; also known as the Orientation-Memory-Concentration Test, Quick Confusion Scale [QCS] and the 6 item Cognitive Impairment Test [6-CIT] is sensitive but not specific in the detection of cognitive impairment (Barbic et al., 2018; Carpenter et al., 2011; Carpenter et al., 2019; Huff et al., 2001; O'Sullivan et al., 2017).	B
The Ottawa 3DY (O3DY) Scale is sensitive but not specific in the detection of cognitive impairment (Bédard et al., 2019; Carpenter et al., 2019; Eagles et al., 2019).	C
The Abbreviated Mental Test 4 (AMT-4) is specific but not sensitive in the detection of cognitive impairment (Dyer et al., 2017; Carpenter et al., 2019; Schofield et al., 2010).	C
The Six-Item Screener (SIS) is specific but not sensitive in the detection of cognitive impairment (Carpenter et al., 2019; Carpenter et al., 2011).	C
The Brief Confusion Assessment Method (bCAM) is sensitive and specific in the of detection cognitive impairment (Baten et al., 2018; Han et al., 2013).	INE
There is insufficient evidence to support the use of the following tools to detect cognitive impairment: • 4 As Test and 4 As Test-French (4AT, 4AT-F) (Gagne et al., 2018; O'Sullivan et al., 2017) • Alzheimer's Disease 8 (AD8), caregiver or patient completed (cAD8, pAD8) (Carpenter, DesPain, et al., 2011; Carpenter, Bassett, et al., 2011; Carpenter et al., 2019) • Bergman-Paris Question (BPQ) (Laguë et al., 2018) • Brief Alzheimer's Screen (BAS) (Carpenter, Bassett et al., 2011) • Confusion Assessment Method–Intensive Care Unit (CAM-ICU) (Han, Wilson, et al., 2014) • Delirium Triage Screen (DTS) (Han et al., 2013) • German Nursing Delirium Screening Scale (Nu-DESC) (Brich et al., 2019) • Modified versions of the CAM or bCAM (Han et al., 2016; Han et al., 2018, Hasemann et al., 2018) • Modified Richmond Agitation Sedation Scale (mRASS) (Grossman et al., 2017) • Month of Year Backward Test (MOTYB, also known as Months Backward Test [MBT]) (Hasemann et al., 2019; Marra et al., 2018) • Predicting Emergency department Delirium with Interactive Computer Tablet game (PrEDICT) (Lee et al., 2019) • Richmond Agitation Sedation Scale (RASS) (Han et al., 2015)	INE
There is insufficient evidence to support the use of a chief complaint "altered mental status" to determine cognitive impairment (Han, Schnelle, et al., 2014).	INE
There is insufficient evidence for the feasibility and acceptability of cognitive impairment screening (Baten et al., 2018; Barbic et al, 2017; Carpenter, Bassett, Fischer et al., 2011; Dyer et al., 2017; Eagles et al., 2019; Han et al., 2009, Han et al., 2013; Han et al., 2016).	INE

Level A	Based on consistent and good quality of evidence; has relevance and applicability to emergency nursing practice.
Level B	There are some minor inconsistencies in the quality of evidence; has relevance and applicability to emergency nursing practice.
Level C	There is limited or low-quality patient-oriented evidence; has relevance and applicability to emergency nursing practice.
NR	Not recommended based upon current evidence.
INE	Insufficient or no evidence upon which to make a recommendation.

REFERENCES

Arendts G, Love J, Nagree Y, Bruce D, Hare M, Dey I. Rates of delirium diagnosis do not improve with emergency risk screening: Results of the Emergency Department Delirium Initiative Trial. *J Am Geriatr Society*. 2017;65(8):1810-1815. http://doi.org/10.1111/jgs.14904

Barbic D, Kim B, Salehmohamed Q, Kemplin K, Carpenter CR, Barbic SP. Diagnostic accuracy of the Ottawa 3DY and Short Blessed Test to detect cognitive dysfunction in geriatric patients presenting to the emergency department. *BMJ Open*. 2018;8(3), e019652. http://doi.org/10.1136/bmjopen-2017-019652

Baten V, Busch H, Busche C, et al. Validation of the Brief Confusion Assessment Method for screening delirium in elderly medical patients in a German emergency department. *Acad Emerg Med*. 2018;25(11):1251-1262. http://doi.org/10.1111/acem.13449

Bédard C, Boucher V, Voyer P, et al. Validation of the O3DY French version (O3DY-F) for the screening of cognitive impairment in community seniors in the emergency department. *J Emerg Med*. 2019;57(1):59-65. http://doi.org/10.1016/j.jemermed.2019.02.007

Brich J, Baten V, Wußmann J, et al. Detecting delirium in elderly medical emergency patients: validation and subsequent modification of the German Nursing Delirium Screening Scale. *Intern Emerg Med*. 2019;14(5):767-776. http://doi.org/10.1007/s11739-018-1989-5

Carpenter CR, Banerjee J, Keyes D, et al. Accuracy of dementia screening instruments in emergency medicine: A diagnostic meta-analysis. *Acad Emerg Med*. 2019;26(2):226-245. http://doi.org/10.1111/acem.13573

Carpenter CR, Bassett ER, Fischer GM, Shirshekan J, Galvin JE, Morris JC. Four sensitive screening tools to detect cognitive dysfunction in geriatric emergency department patients: Brief Alzheimer's Screen, Short Blessed Test, Ottawa 3DY, and the Caregiver-Completed AD8. *Acad Emerg Med*. 2011;18(4):374-384. http://doi.org/10.1111/j.1553-2712.2011.01040.x

Carpenter CR, DesPain B, Keeling TN, Shah M, Rothenberger M. The six-item screener and AD8 for the detection of cognitive impairment in geriatric emergency department patients. *Ann Emerg Med*. 2011;57(6):653-661. doi:j.annemergmed.2010.06.560.

Dyer AH, Briggs R, Nabeel S, O'Neill D, Kennelly SP. The Abbreviated Mental Test 4 for cognitive screening of older adults presenting to the emergency department. *Eur J Emerg Med*. 2017;24(6):417-422. http://doi.org/10.1097/mej.0000000000000394

Eagles D, Otal D, Wilding L, et al. Evaluation of the Ottawa 3DY as a screening tool for cognitive impairment in older emergency department patients. *Am J Emerg Med*. 2020;38(12):2545-2551. http://doi.org/10.1016/j.ajem.2019.12.036

Élie M, Cole MG, Primeau FJ, Bellavance F. Delirium risk factors in elderly hospitalized patients. *J Gen Intern Med*. 1998;13(3):204-212. http://doi.org/10.1046/j.1525-1497.1998.00047.x

Gagné AJ, Voyer P, Boucher V, et al. Performance of the French version of the 4AT for screening the elderly for delirium in the emergency department. *Can J Emerg Med Care*. 2018;20(6):903-910. http://doi.org/10.1017/cem.2018.367

Grossmann FF, Hasemann W, Kressig RW, Bingisser R, Nickel CH. Performance of the modified Richmond Agitation Sedation Scale in identifying delirium in older ED patients. *Am J Emerg Med*. 2017;35(9):1324-1326. http://doi.org/10.1016/j.ajem.2017.05.025

Han JH, Schnelle JF, Ely EW. The relationship between a chief complaint of "altered mental status" and delirium in older emergency department patients. *Acad Emerg Med*. 2014;21(8):937-940. http://doi.org/10.1111/acem.12436

Han JH, Vasilevskis EE, Schnelle JF, et al. The diagnostic performance of the Richmond Agitation Sedation Scale for detecting delirium in older emergency department patients. *Acad Emerg Med*. 2015;22(7):878-882. http://doi.org/10.1111/acem.12706

Han JH, Wilson A, Graves AJ, et al. Validation of the Confusion Assessment Method for the intensive care unit in older emergency department patients. *Acad Emerg Med*. 2014;21(2):180-187. http://doi.org/10.1111/acem.12309

Han JH, Wilson A, Graves AJ, Shintani A, Schnelle JF, Ely EW. A quick and easy delirium assessment for nonphysician research personnel. *Am J Emerg Med*. 2016;34(6):1031-1036. http://doi.org/10.1016/j.ajem.2016.02.069

Han JH, Wilson A, Schnelle JF, Dittus RS, Ely EW. An evaluation of single question delirium screening tools in older emergency department patients. *Am J Emerg Med*. 2018;36(7):1249-1252. http://doi.org/10.1016/j.ajem.2018.03.060

Han JH, Wilson A, Vasilevskis E, et al. Diagnosing delirium in older emergency department patients: Validity and reliability of the Delirium Triage Screen and the Brief Confusion Assessment Method. *Ann Emerg Med*. 2013;62(5):457-465. http://doi.org/10.1016/j.annemergmed.2013.05.003

Han JH, Zimmerman EE, Cutler N, et al. Delirium in older emergency department patients: Recognition, risk factors, and psychomotor subtypes. *Acad Emerg Med*. 2009;16(3):193-200. http://doi.org/10.1111/j.1553-2712.2008.00339.x

Hasemann W, Grossmann FF, Bingisser R, et al. Optimizing the month of the year backwards test for delirium screening of older patients in the emergency department. *Am J Emerg Med*. 2019;37(9):1754-1757. http://doi.org/10.1016/j.ajem.2019.06.035

Hasemann W, Grossmann FF, Stadler R, et al. Screening and detection of delirium in older ED patients: performance of the modified Confusion Assessment Method for the emergency department (mCAM-ED). A two-step tool. *Intern Emerg Med*. 2018;13(6):915-922. http://doi.org/10.1007/s11739-017-1781-y

Huff JS, Farace E, Brady WJ, Kheir J, Shawver G. The quick confusion scale in the ED: Comparison with the mini-mental state examination. *Am J Emerg Med*. 2001;19(6):461-464. http://doi.org/10.1053/ajem.2001.25769

Laguë A, Voyer P, Ouellet M-C, et al. Using the Bergman-Paris Question to screen seniors in the emergency department. *Can J Emerg Med*. 2018;20(5):753-761. http://doi.org/10.1017/cem.2017.412

LaMantia MA, Messina FC, Hobgood CD, Miller DK. Screening for delirium in the emergency department: a systematic review. *Ann Emerg Med*. 2014;63(5):551-560.e2. http://doi.org/10.1016/j.annemergmed.2013.11.010

Lee JS, Tong T, Tierney MC, Kiss A, Chignell M. Predictive ability of a serious game to identify emergency patients with unrecognized delirium. *J Am Geriatr Soc*. 2019;67(11):2370-2375. http://doi.org/10.1111/jgs.16095

Marra, A., Jackson, J. C., Ely, E. W., Get al. (2018). Focusing on inattention: the diagnostic accuracy of brief measures of inattention for

detecting delirium. J Hosp Med, 13(8), 551–557. https://doi.org/10.12788/jhm.2943

O'Regan NA, Fitzgerald J, Adamis D, Molloy DW, Meagher D, Timmons S. Predictors of delirium development in older medical inpatients: Readily identifiable factors at admission. *J Alzheimer Dis*. 2018;64(3):775-785. http://doi.org/10.3233/JAD-180178

O'Sullivan D, Brady N, Manning E, et al. Validation of the 6-Item Cognitive Impairment Test and the 4AT test for combined delirium and dementia screening in older emergency department attendees. *Age Ageing*. 2017;47(1):61-68. http://doi.org/10.1093/ageing/afx149

Parke B, Beaith A, Slater L, Clarke AM. Contextual factors influencing success or failure of emergency department interventions for cognitively impaired older people: a scoping and integrative review. *J Adv Nurs*. 2011;67(7):1426-1448. http://doi.org/10.1111/j.1365-2648.2011.05611.x

Schofield I, Stott DJ, Tolson D, McFadyen A, Monaghan J, Nelson D. Screening for cognitive impairment in older people attending accident and emergency using the 4-item Abbreviated Mental Test. *Eur J Emerg Med*. 2010;17(6):340-342. http://doi.org/10.1097/MEJ.0b013e32833777ab

Sendecki C. The importance of identifying delirium in older adults in the ED: impacts on mortality and quality of life. *Can J Emerg Nurs*. 2014;37(1):25-27.

Suffoletto B, Miller T, Frisch A, Callaway C. Emergency physician recognition of delirium. *Postgrad Med J*. 2013;89(1057):621-625. http://doi.org/10.1136/postgradmedj-2012-131608

Taylor A, Broadbent M, Wallis M, Marsden E. The use of functional and cognitive assessment in the emergency department to inform decision making: A scoping review. *Austr Emerg Care*. 2018;21(1):13-22. http://doi.org/10.1016/j.auec.2017.12.002

Authors

Jean A. Proehl, MN, RN, CEN, CPEN, TCRN, FAEN, FAAN
Susan Barnason, PhD, RN, APRN, CNS, CS, CEN, CCRN, FAEN, FAAN
Janet Kaiser, DNP, MSN, RN, CEN, NE-BC
Judith Young Bradford, DNS, RN, FAEN
Lisa Gilmore, DNP, ACCNS-AG, ACCNS-P, ENP-C, FNP-C, NREMT-P, CEN, CPEN, FAEN
Ann E. Horigan, PhD, RN
Robin MacPherson-Dias, MS, RN, NPD-BC, CEN, TCRN, CPEN, CCRN
Andrea Slivinski, DNP, APRN, ACNS-BC, CEN, CPEN, TCRN
Kathy Van Dusen, MSN, RN, CEN, CPEN, NHDP-BC, FAEN
Mary Alice Vanhoy, MSN, RN, CEN, CPEN, NREMT-P, FAEN
Jessica Bishop-Royse, PhD, MS
Altair M. Delao, MPH

For correspondence, write: Altair M. Delao, MPH, Emergency Nurses Association, 930 Woodfield Road, Schaumburg, IL 60173; E-mail: altair.delao@ena.org.

Clinical Practice Guidelines can be found at https://www.ena.org/enau/practice-resource-library

Jean A. Proehl, *Member, New Hampshire State Council,* is Emergency Clinical Nurse Specialist, Proehl PRN, LLC, Cornish, NH. **ORCID identifier:** https://orcid.org/0000-0002-2544-5116.

Susan Barnason, *Member, Nebraska State Council,* is Professor of Nursing, University of Nebraska Medical Center, Omaha, NE. **ORCID identifier:** https://orcid.org/0000-0001-8747-234X.

Janet Kaiser, *Member, Central Virginia Chapter,* is Senior Director of Patient Care Services, VCU Health Community Memorial Hospital, South Hill, VA. **ORCID identifier:** https://orcid.org/0000-0002-4774-1960.

Judith Young Bradford, *Member, Mississippi State Council,* is Professor, School of Nursing, Southeastern Louisiana University, Hammond, LA. **ORCID identifier:** https://orcid.org/0000-0002-8380-5263.

Lisa Gilmore, *Member, Missouri State Council,* is Trauma, Burn, & General Surgery Nurse Practitioner, Mercy Health, Springfield, MO. **ORCID identifier:** https://orcid.org/0000-0002-5515-9508.

Ann E. Horigan, *Member, Lorene Newberry Chapter,* is Associate Clinical Professor, Emory University, Atlanta, GA. **ORCID identifier:** https://orcid.org/0000-0002-0365-905X.

Robin MacPherson-Dias, *Member, Sacramento Chapter,* is Director of Clinical Education, Sutter Health Memorial Medical Center, Modesto, CA. **ORCID identifier:** https://orcid.org/0000-0002-7612-9578.

Andrea Slivinski, *Member, Blue Ridge Chapter,* is Clinical Nurse Specialist, Mission Hospital, Asheville, NC. **ORCID identifier:** https://orcid.org/0000-0003-1397-3904.

Kathy Van Dusen, *Member, Orange Coast Chapter,* is Clinical Practice Specialist, NTI Nurse Planner, American Association of Critical-Care Nurses, Aliso Viejo, CA. **ORCID identifier:** https://orcid.org/0000-0003-1048-6131.

Mary Alice Vanhoy, *Member, North Carolina Eastern Piedmont Chapter,* is Nurse Manager, University of Maryland, Shore Regional Health, Queenstown, MD. **ORCID identifier:** https://orcid.org/0000-0003-4777-6511.

Jessica Bishop-Royse is Associate Professor College of Nursing, Rush University, Chicago, IL. **ORCID identifier:** https://orcid.org/0000-0002-9198-3115.

Altair M. Delao is Senior Manager, Research, Emergency Nurses Association, Schaumburg, IL. **ORCID identifier:** https://orcid.org/0000-0001-6017-3227.

Emergency Nurses Association's (ENA) clinical practice guidelines (CPGs) are developed by ENA members to provide emergency nurses with evidence-based information to utilize and implement in their care of emergency patients and families. Each CPG focuses on a clinical or practice-based issue and is the result of a review and analysis of current information believed to be reliable. As such, information and recommendations within a particular CPG reflect the current scientific and clinical knowledge at the time of publication, are only current as of their publication date, and are subject to change without notice as advances emerge. In addition, variations in practice, which take into account the needs of the individual patient and the resources and limitations unique to the institution, may warrant approaches, treatments, and/or procedures that differ from the recommendations outlined in the CPGs. Therefore, these recommendations should not be construed as dictating an exclusive course of management, treatment, or care, nor does the use of such recommendations guarantee a particular outcome. CPGs are never intended to replace a practitioner's best nursing judgment based on the clinical circumstances of a particular patient or patient population. CPGs are published by ENA for educational and informational purposes only, and ENA does not "approve" or "endorse" any specific methods, practices, or sources of information. ENA assumes no liability for any injury and/or damage to persons or property arising out of or related to the use of or reliance on any CPG.

How to cite this article:

Proehl J, Barnason S, Kaiser J, and the 2020 ENA CPG Committee. Screening older adults for cognitive impairment [Clinical practice guideline synopsis]. *J Emerg Nurs*. 2024;50(1):17-21.

Frailty Knowledge, Use of Screening Tools, and Educational Challenges in Emergency Departments in Ireland: A Multisite Survey

Authors: Elizabeth Moloney, MD, Mark R O'Donovan, MSc, Duygu Sezgin, PhD, Keith McGrath, MSc, Suzanne Timmons, MD, and Rónán O'Caoimh, PhD, Cork City and Galway City, Ireland

Contribution to Emergency Nursing Practice

- The current literature on indicates that uncertainty exists on how to best facilitate frailty screening in emergency departments.
- This article contributes multifacted proposals to address educational, screening and ED staff resource barriers to routine frailty identification that currently exist.
- Key implications for emergency nursing practice found in this article are that senior ED nursing staff should be empowered to advocate for work practice and education delivery changes.
- An educational champion who promotes protected teaching time for staff and the provision of rapid frailty screening instruments would start to address some issues outlined in this survey.

Abstract

Background: Recognizing frailty and providing evidenced-based management in busy emergency departments is challenging. Understanding the knowledge and educational needs of ED staff is important to design training that might improve patient outcomes.

Objective: This study aimed to explore frailty knowledge of ED staff, use of frailty screening instruments in Irish emergency departments, and educational challenges in the emergency department.

Methods: A multisite survey of ED staff (different specialties) was conducted between April and September 2021. An anonymous online survey was distributed via email. Free-text sections were analyzed using content analysis.

Results: In total, 168 staff (nursing, medical and allied health) participated, representing 9 of 26 Irish emergency departments (35%). Most respondents were nurses (n = 78, 46%). Less than half of respondents had received frailty identification training (n = 81, 48%). One-fifth of emergency doctors and nurses (20%) were unsure how to define frailty. Major barriers to ED frailty screening were resource deficits, insufficient diagnostic pathways from the emergency departments, and lack of education on suitable instruments.

Conclusions: Most of the ED staff surveyed relied on clinical judgment rather than formal training in frailty identification. A high proportion reported poor knowledge and low confidence in recognizing frailty. Dedicated staff with frailty management expertise, bespoke education initiatives, and clearly defined

Elizabeth Moloney is a consultant (attending) geriatrician, HRB Clinical Research Facility, University College Cork, Mercy University Hospital, and Department of Geriatric Medicine, Mercy University Hospital, Grenville Place, Cork City, Ireland. **Twitter:** @DrLizMoloney.

Mark R O'Donovan is a doctoral student, HRB Clinical Research Facility, University College Cork, Mercy University Hospital, Grenville Place, Cork City, Ireland.

Duygu Sezgin is a lecturer, School of Nursing and Midwifery, National University of Ireland, Galway, Galway City, Ireland.

Keith McGrath ix a consultant (attending) geriatrician, Department of Geriatric Medicine, Mercy University Hospital, Grenville Place, Cork City, Ireland.

Suzanne Timmons is a consultant (attending) geriatrician, Center for Gerontology and Rehabilitation, School of Medicine, University College Cork, Cork City, Ireland.

Rónán O'Caoimh is a consultant (attending) geriatrician, HRB Clinical Research Facility, University College Cork, Mercy University Hospital, and Department of Geriatric Medicine, Mercy University Hospital, Grenville Place, Cork City, Ireland.

For correspondence, write: Elizabeth Moloney, MD, HRB Clinical Research Facility, Mercy University Hospital, Grenville Place, Cork City, T12 WE28, Ireland; E-mail: crffrailtyresearch@gmail.com

J Emerg Nurs 2024;50:22-35.
Available online 6 October 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.08.008

frailty screening pathways may help address the issues identified.

Key words: Emergency department; Frailty; Screening; Survey; Older adults; Education

Introduction

Over the last decade, the number of older adults with frailty attending emergency departments has risen worldwide.[1,2] No universal definition for frailty exists but is often described as a state of age-related deficit accumulation.[3] Given that the emergency department is the entry point for access to acute care services for many older patients, societal aging worldwide is expected to result in further increased demands on emergency departments to diagnose and treat this complex cohort.[4] Depending upon definitions, the setting and local service configuration, approximately 5% to 10% of all adults presenting to the emergency department and approximately 30% of patients in acute medical units are older adults with frailty.[5] Frailty prevalence in the emergency department has been examined in several studies, conducted mainly in North America and Europe.[6-9] Prevalence estimates vary from 7% to 80%, reflecting the diversity of frailty definitions and frailty screening methods used, although approximately half of older attendees aged ≥70 years are considered frail.[10-12]

Early identification of frailty in the emergency department is important to improve care for older hospitalized patients, and ED staff are uniquely positioned to positively influence urgent care in this population.[1] However, uncertainty exists on how best to facilitate frailty screening in the emergency departments.[1] To enhance the diagnostic and treatment decisions undertaken, ED staff awareness and knowledge of frailty as a construct, its syndromes, and diagnostic approaches are paramount. Although geriatric emergency medicine (GEM) is emerging as a distinct speciality,[13] data on ED staff knowledge of frailty are lacking. In the United Kingdom, Elliott et al[14] showed that although ED staff are open to identifying frailty and using frailty screening instruments, this is not standardized or widely implemented. In The Netherlands, nurses reported that although the use of screens was useful, most preferred to rely on their clinical judgment, stating their need for additional training.[15] Irish researchers have examined pathway codesign with patient and public representatives via workshops to enhance frailty pathways and knowledge exchange in the emergency departments.[16] A recent rapid realist review, undertaken as part of the Systematic Approach to Improving Care for Frail Older Patients study, reaffirmed the importance of frailty screening in the emergency department and of improving knowledge and awareness of frailty among ED staff to enhance patient outcomes.[17] This process allows co-learning between ED staff and those older adults using acute care services, to ultimately improve quality of frailty pathways.

The development of GEM core competencies over the last 20 years has been driven by coordinated research and multiorganizational clinical practice guidelines.[13] Frailty education initiatives in the emergency department, locally and nationally, have been developed to improve staff awareness, knowledge, and appreciation of the advantages of a blended, integrated approach, combining geriatric and emergency medicine competencies, to improve patient outcomes, although limited information is available on their effectiveness.[17] Multidisciplinary competencies in the care of older adults already exist in the United States, as well as in a European Union-wide frailty specific framework for interprofessional collaborative practice agreed on by ADVANTAGE Joint Action and the European Union Geriatric Medicine Society.[18] Efforts to improve multidisciplinary gerontological knowledge and team working have previously been undertaken. Ellis et al[19] advised collaborative learning opportunities to increase the knowledge and expertise of professionals in the emergency department regarding the specific needs of older people.

To realize these opportunities, a better understanding of the knowledge and learning needs of a range of ED staff and in different countries is required. This was echoed in the new best practice European guidelines on GEM launched by the European Union Geriatric Medicine Society in 2021.[20] These guidelines suggest the need to survey ED staff to explore learning needs and to create opportunities for learning within the emergency department. Given this context, this study aimed to examine the perceptions and knowledge of frailty syndromes and screening, among all grades of ED staff in Ireland, and their perceived learning needs and use of frailty screening tools.

Methods

DESIGN AND SURVEY DEVELOPMENT

The survey was adapted, with permission, from an existing questionnaire developed by Taylor et al[21] to examine barriers to identification of frailty in hospitals. The questionnaire consisted of 25 statements divided into 5 categories (see Supplementary Appendix). Categories included

personal understanding of frailty, identification of frailty, assessments for frailty, management of frailty, and frailty education. Statements were rated on a 3-point Likert scale: agree/disagree/unsure. For the purposes of the survey, frailty was defined in its most broad sense as a vulnerability or the risk of poor health outcomes (any deemed clinically relevant).[22,23] This was selected because no single definition of frailty is accepted at present. Instead, 2 different but complementary models have emerged. These are physical frailty (defined as the presence of 3 of the following: weight loss, exhaustion, weakness, low walking speed, and decreased physical activity) and the multiple deficit accumulation theory of frailty (defined by a frailty index that is based on the proportion of deficits such as comorbidities, risk factors, and impairments that are present from a set list with a decimalized score of ≥0.25 from a total of 1.0 suggesting frailty).[22,23] Respondents were asked to give their opinion on whether all adults aged ≥70 years should be screened for frailty. Older than this age, approximately 20% have frailty[24] although there is as yet no consensus on the optimal age to begin screening in the emergency department.[25]

In addition, 5 free-text questions were also included to allow for open responses on specific topics relating to frailty and education in the emergency department:

1. Are you aware of any consequences of frailty for an older adult?
2. What frailty screening tools, if any, are you aware of?
3. In your opinion, what are the obstacles to frailty screening in your emergency department?
4. In your opinion, what are the challenges to learning in this emergency department?
5. In your opinion, how can education delivery be improved in this emergency department?

In view of the coronavirus disease 2019 (COVID-19) pandemic, the survey was adapted into electronic form to allow distribution to multiple hospitals (SurveyMonkey Momentive Inc, San Mateo, CA). Demographic data collected included hospital location, staff grade (ie, rank denoting seniority such as staff grade nurse, senior staff nurse, clinical nurse manager, clinical nurse specialist), age range, and years of experience of respondents. The first page of the survey gave information on the survey aims and objectives and that data collected would be anonymized before any publication or presentation. Survey participation was highlighted as being a voluntary act and participants could withdraw at any time. Information on data storage (10 years) was also provided. All respondents consented to participate by ticking a box, which was required to allow them to continue to the rest of the survey.

SAMPLING AND RECRUITMENT

Nursing, medical, and allied health staff of all grades, caring for older adults in the emergency department in the Republic of Ireland, were eligible to participate in the survey. There are currently 26 emergency departments available, the largest percentage of which are located in Dublin City and County ($n = 6$, 23%). These hospitals represent a mix of model 3 (24/7 acute surgery, acute medicine, and critical care) and model 4 (model 3 services plus tertiary referral centers with higher level intensive care services) hospitals. The Irish Association for Emergency Medicine in Ireland was contacted to assist with identifying point of contact emergency physicians in these 26 sites. Emergency medicine physicians (point of contact) at each participating site distributed a survey link to all ED staff via an internal staff email. Each ED site gave approximate staff numbers to calculate the overall response rate. This approximation reflects locum and temporary appointments that may occur in an ED setting, which can vary from month to month.

Information about the survey was provided as part of the consent form. A Frailty Intervention Therapy (FIT) team is an interdisciplinary rapid response team comprised of a mixture of health and social care professionals (HSCPs), often a combination of physiotherapists, occupational therapists, and medical social workers as well as speech and language therapists, dieticians, and pharmacists.[26] These teams aim to identify frail patients who present to the emergency department during core hours and provide rapid access and comprehensive multidisciplinary team (MDT) assessment to all patients identified as frail.

DATA COLLECTION

Ethical approval was obtained from the Social Research Ethics Committee, University College Cork, Cork City, Ireland (Log 2021-050A1). The survey was distributed between April and September 2021. This extended time frame was required to account for a cyberattack on the national information technology (IT) system of the Irish Health Service Executive in May 2021 (https://www.gov.ie/en/news/ebbb8-cyber-attack-on-hse-systems),[27] which postponed the survey dissemination for a period of 3 months. All responses were respondent anonymized.

TABLE 1
Descriptive characteristics of the study participants (n = 168)

Variables	n (%)
Geographic location	
Munster	82 (49)
Leinster	67 (40)
Connacht	19 (11)
Biological sex	
Female	112 (67)
Male	56 (33)
Age group	
< 25 y	24 (14)
25-35 y	77 (46)
36-45 y	42 (25)
46-55 y	18 (11)
> 55 y	7 (4)
Years qualified	
< 1 y	26 (15)
1-5 y	46 (27)
6-10 y	34 (20)
> 10 y	62 (37)
Staff categories	
Nurses	78 (46)
Physicians	76 (45)
NCHDs	59 (35)
Consultants	17 (10)
HSCPs	14 (8)

HSCP, health and social care professional; NCHD, nonconsultant hospital doctor.

DATA ANALYSIS

Quantitative data were managed and analyzed using IBM SPSS Statistics software (Version 28. IBM Corp 2017. IBM SPSS Statistics for Windows. Armonk, NY). Given that data were predominantly non-normally distributed, nonparametric tests were used to compare samples. Categorical data and proportions were compared with Fisher exact test including the extension to nonbinary categorical variables developed by Freeman and Halton.[28] Content analysis was used to interpret qualitative data provided by respondents in the 5 free-text answers after each section. Content analysis is a systematic coding and categorizing method used for exploring large amounts of written textual data to identify trends and patterns of words used, frequency of use, and categorize results.[29-31]

Results

STUDY PARTICIPANTS

In total, 168 ED staff were surveyed across the 9 hospital sites that responded (9/26, 35%). Based on direct response rate from primary distributers, who provided approximate staff numbers, we estimate response rate to be 13%.

Most respondents were from Ireland's 2 largest provinces/territories, Munster (82/168, 49%) and Leinster (67/168, 40%). Female respondents accounted for two-thirds of participants (n = 112/168, 67%). Emergency nursing staff made up the largest staff category (n = 78, 46%). Most ED staff were aged between 25 and 35 years (n = 78, 46%) and in senior grade, having more than 10 years of clinical experience (n = 62, 37%). Nonconsultant (nonattending) hospital doctors accounted for more than one-third of respondents (n = 59, 35%). The responses of 15 emergency medicine consultant physicians were included (n = 15, 9%). HSCPs included members (n = 12, 86%) of FIT teams working in the emergency department. Further descriptions of study participants are presented in Table 1.

RESPONSES

The results of the survey are presented by section below and summarized in Table 2. A breakdown of survey responses is further tabulated by age, biological sex, and years qualified in Tables 3–5, and in the Supplementary Appendix, along with a thematic map of the consequences of frailty among older adults attending the emergency department as identified by ED staff.

PERSONAL UNDERSTANDING OF FRAILTY

Only 63% of the ED staff (n = 105) agreed with the statement that they "fully understand the meaning of the clinical term frailty," and one-fifth agreed with the statement that they were not actually sure of the meaning of the term frailty (n = 33, 20%). This indicates significant self-reported knowledge gaps among some ED staff. A higher proportion of doctors (26%) and nurses (17%) were likely to report being unsure of the meaning of frailty compared with HSCPs, who all reported being aware of the definition (P = .04). Most of the HSCP group (n = 12, 86%) were members of FIT teams in the emergency department. This result corresponded to a subsequent question "I use the term frailty in clinical practice but am uncertain of its definition," with which one-third of respondents agreed (n = 55, 33%). Again, a high proportion

TABLE 2
Survey question results based on ED staff group

Question	Total ($N = 168$)	All doctors ($n = 76$)	All nurses ($n = 78$)	All HSCPs ($n = 14$)	*P* value* ($P \leq .05$)
1. Personal understanding of frailty	Agree	Agree	Agree	Agree	
(a) I fully understand the meaning of the clinical term frailty.	105 (63%)	45 (59%)	47 (60%)	13 (93%)	.04*
(b) I use the term frailty in clinical practice but am uncertain of its definition.	55 (33%)	32 (42%)	22 (28%)	1 (7%)	.018*
(c) I am unsure of the meaning of frailty.	33 (20%)	20 (26%)	13 (17%)	0 (0%)	.041*
(d) Frailty is a normal part of aging.	56 (33%)	26 (34%)	29 (37%)	1 (7%)	.078
(e) The frailty status of a patient can be improved through intervention.	156 (93%)	70 (92%)	72 (92%)	14 (100%)	.814
2. Identification of frailty in the emergency department	Agree	Agree	Agree	Agree	
(a) As part of my training, I have been taught how to identify frailty.	80 (48%)	36 (47%)	33 (42%)	11 (79%)	.046
(b) I feel confident identifying frailty.	91 (54%)	39 (51%)	39 (50%)	13 (93%)	.007*
(c) I rely on clinical judgment to identify frailty.	124 (74%)	57 (75%)	59 (76%)	8 (57%)	.357
(d) I use frailty assessment tools to identify frailty.	102 (61%)	40 (53%)	49 (63%)	13 (93%)	.011*
3. Encounters with frailty in the emergency department	Agree	Agree	Agree	Agree	
(a) I encounter patients with frailty regularly in the emergency department.	162 (96%)	72 (95%)	76 (97%)	14 (100%)	.67
(b) I encounter patients with frailty occasionally in the emergency department.	25 (15%)	16 (21%)	8 (10%)	1 (7%)	.135
(c) I rarely encounter patients with frailty in the emergency department.	6 (4%)	3 (4%)	3 (4%)	0 (0%)	1
(d) I discuss what frailty means with my patients.	52 (31%)	22 (29%)	20 (26%)	10 (71%)	.004*
(e) I contact Frailty Intervention Therapy Team services when I encounter frail patients in the emergency department.	146 (87%)	59 (78%)	73 (94%)	14 (100%)	.005*
4. Principles of screening for frailty in the emergency department	Agree	Agree	Agree	Agree	
(a) Should be undertaken on all patients >70 years presenting to the emergency department	140 (83%)	61 (80%)	66 (85%)	13 (93%)	.543
(b) Should be the responsibility of geriatric medicine teams only	10 (6%)	4 (5%)	6 (8%)	0 (0%)	.697

continued

TABLE 2
Continued

Question	Total (N = 168)	All doctors (n = 76)	All nurses (n = 78)	All HSCPs (n = 14)	P value* ($P \leq .05$)
(c) Should be undertaken by all clinicians in hospital	152 (90%)	66 (87%)	72 (92%)	14 (100%)	.283
(d) Should be undertaken by nursing staff in hospital	137 (82%)	66 (87%)	64 (82%)	7 (50%)	.009*
(e) Is best performed in the community	66 (39%)	39 (51%)	23 (29%)	4 (29%)	.015*
(f) Is not feasible in the emergency department	12 (7%)	5 (7%)	7 (9%)	0 (0%)	.735
5. Frailty education	Agree	Agree	Agree	Agree	
(a) I would like more teaching to identify frailty in the emergency department.	148 (88%)	71 (93%)	67 (86%)	10 (71%)	.045*
(b) I learn best via lectures.	85 (51%)	35 (46%)	41 (53%)	9 (64%)	.416
(c) I think posters are a useful learning tool in the emergency department.	129 (77%)	55 (72%)	63 (81%)	11 (79%)	.491
(d) I prefer online learning I can do at my own pace.	96 (57%)	45 (59%)	44 (56%)	7 (50%)	.773
(e) I mainly use national online platforms to learn.	113 (67%)	50 (66%)	52 (67%)	11 (79%)	.728

HSCP, health and social care professional.
* Significant difference comparing column proportions using Fisher exact test.

of doctors (42%) reported this compared with a lower number of nurses and HSCPs (P = .018). Concerningly, one-third of all ED staff considered that frailty was a normal part of aging.

Figure 1 details the qualitative analysis of replies (n = 94, 56%) to the free-text question "Are you aware of any consequences of frailty in an older adult?" A thematic map details the 3 major categories and subcategories that were identified. Category 1 describes the perceived impact on function. The most common features centered around frailty adversely affecting the functional ability of older adults. Increased falls and fractures (n = 56) and reduced independence (n = 26) were identified as major consequences of frailty. Poor mobility (n = 10) was seen as both a contributor and a consequence of falls and fractures, as identified by ED staff. Category 2 described the perceived impact on mental health. Depression and anxiety were highlighted as consequences of frailty (n = 10), which ED staff identified as leading to self-neglect and poor nutrition in some older adults (n = 10). Social isolation was also identified as adversely affecting self-confidence and resilience (n = 5). Category 3 described the perceived impact on health outcomes. Frailty was

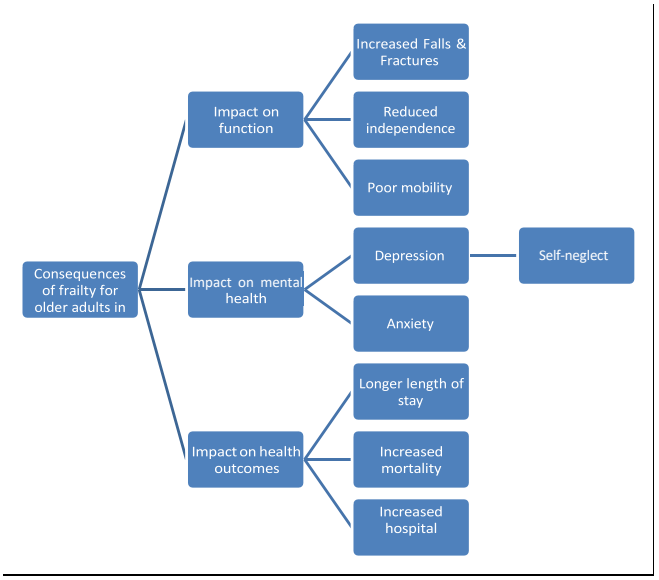


FIGURE 1
Main categories identified by ED staff as consequences of frailty for older adults presenting to the emergency department, with their subcategories included.

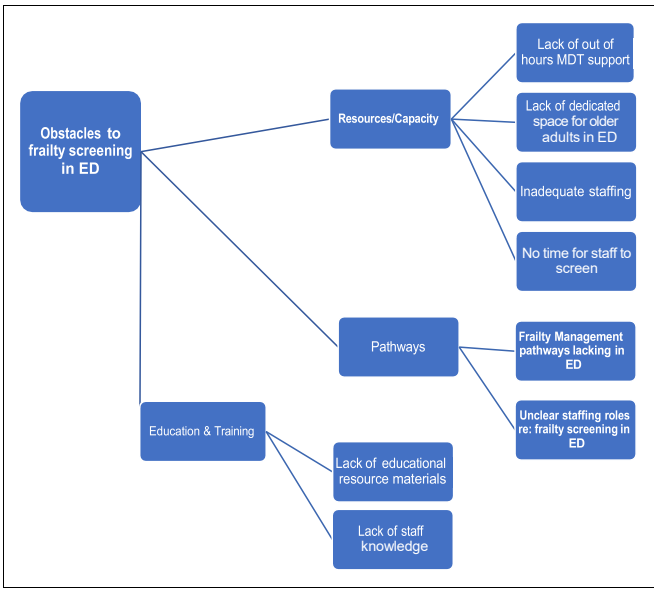


FIGURE 2

Main categories identified regarding barriers to frailty screening and assessment in emergency departments identified by ED staff, including their subcategories.

identified as negatively affecting health outcomes in those older adults assessed in the emergency department. Higher hospital admission rates (n = 10), longer length of stay (n = 9), and increased morbidity and mortality rates (n = 21) were highlighted by ED staff.

IDENTIFICATION, ENCOUNTERS WITH, AND PRINCIPLES OF SCREENING OF FRAILTY IN THE EMERGENCY DEPARTMENT

Almost all staff categories (95%-100%), irrespective of background, agreed with the statement that they regularly encounter patients with frailty in the emergency department, but only approximately half of respondents felt confident identifying it (n = 91, 54%). HSCPs were more confident identifying frailty than doctors and nurses (n = 13, 93%, P = .007). More than half of ED staff reported using frailty assessment tools in the emergency department (N = 102, 61%), yet a markedly high proportion, almost three-quarters (74%), agreed with the statement that they "relied" on clinical judgment. A higher proportion of doctors and nurses relied on judgment than HSCPs, who were more likely to use defined instruments to identify frailty (P = .011). Most respondents indicated a preference for frailty screening to be completed by nursing staff (n = 137, 82%). Younger ED staff, aged ≤35 years, were more likely to suggest that nursing staff were the most appropriate group to screen for frailty in the emergency department (N = 88, 87%, P = .026) (Table 6). In answer to the open-text question "Are you aware of any frailty screening instruments?" fewer than half of respondents replied (n = 82, 48%). Of the replies received, the Clinical Frailty Scale was the most frequently mentioned frailty measure (n = 43, 25%).

REPORTED OBSTACLES TO FRAILTY SCREENING IN THE EMERGENCY DEPARTMENT

In total, 78 replies (46%) were received to the free-text question "In your opinion, what are the obstacles to frailty screening in your emergency department?" This yielded 3 major categories and their subcategories, as illustrated in Figure 2.

Category 1: Resources/Capacity

The most commonly reported barrier to frailty screening was resource constraints in the emergency department. Lack of ED staff time (n = 39) and staffing numbers (n = 12) were identified as major obstacles to routine frailty screening. These respondents described high patient volumes, ED workload, and administration duties as time-dependent activities that had to be completed as a priority. The ED work environment was also described as not being conducive to frailty screening (n = 12). Respondents noted that the physical layout of the emergency department is often a hostile environment for older adults due to noise, crowded thoroughfares, and cramped cubicles. One respondent stated, "Frail patients can attend at any time, we just do not have the time, we do not have out-of-hours frailty screening support. ED is noisy and we have no designated space to screen patients."

Category 2: Education and Training

A lack of knowledge regarding frailty syndromes prevented some respondents from undertaking frailty screening in the emergency department (n = 12). These respondents highlighted both a lack of dedicated teaching on frailty screening and a lack of access to training materials on types of validated frailty instruments for use in the emergency department. One such comment stated, "There is a lack of

frailty knowledge on the ED floor, we have not received formal training in this area."

Category 3: Pathways

Respondents noted that it was often unclear how to manage subacute frailty issues diagnosed while assessing an older adult in the emergency department ($n = 8$). Individual ED management pathways did not include frailty syndromes in all survey sites. These respondents also highlighted a lack of designated staffing roles to screen older adults for frailty syndromes in their own emergency department. One respondent stated, "If you find subacute frailty issues outside of 8AM-4PM, what do you do about it?"

BARRIERS TO AND PROPOSED IMPROVEMENTS TO EDUCATION DELIVERY IN THE EMERGENCY DEPARTMENT

Fewer than half of ED staff surveyed agreed with the statement that they had received education on how to identify frailty ($n = 80$, 48%). Doctors (47%) and nurses (42%) were less likely to have received this than HSCPs (79%) ($P = .046$); however, most HSCP respondents were designated FIT staff. Most ED staff agreed with the statement that they would like additional frailty teaching ($n = 148$, 88%). The preferred mode of receiving information, in order of preference, included posters ($n = 130$, 76%), online national education platforms ($n = 113$, 67%), and self-directed online learning ($n = 96$, 57%).

In open-text responses to the question "How can we improve education delivery in this ED?" one-fifth of respondents ($n = 38$) favored blended learning opportunities with flexibility to access resources 24/7, reflecting their shift-work patterns. Most felt overwhelmed by time pressures to complete clinical tasks in the emergency department, which left no opportunity for dedicated teaching ($n = 77$). One respondent stated "I am too busy, I am too physically exhausted to learn," in response to this question. A small proportion reported missing out on educational sessions because of shift work ($n = 11$).

Many ED staff (107, 68%) provided suggestions for improving the delivery of frailty education in the emergency department. These ideas broadly fell into 2 categories: (1) providing protected learning time in a dedicated teaching space (separate teaching room [$n = 10$], IT access to online-learning resources [$n = 10$], protected rostered learning time [$n = 28$]) and (2) providing a choice of self-directed ($n = 25$) and group ($n = 30$) learning opportunities that are accessible to all staff to reflect shift-work patterns ($n = 22$). Examples given by respondents ($n = 107$) included short education videos, flowcharts, simulation scenarios, case studies, and multidisciplinary group learning.

Discussion

This multisite survey conducted with ED staff in the Republic of Ireland offers a snapshot of the challenges presented by frailty identification and prioritization in busy, acute care environments. To the best of our knowledge, it is the first multisite survey that examines and compares frailty awareness and perceived frailty knowledge/confidence among different ED staff and explores the educational challenges encountered in the ED workplace. The global COVID-19 pandemic has contributed to a change in ED presentations among older adults.[32] Delays in health care utilization and ED presentations by older adults have emerged.[33,34] Older adults presenting to the emergency department are now more likely to be deconditioned, frail, and socially isolated.[35] ED staff are now encountering more complex presentations among this cohort, emphasizing how important frailty knowledge competency has become to deliver appropriate care to these individuals.

This survey targeted ED health care professionals across all grades and found that most (96% of survey respondents) encounter patients with frailty regularly in the emergency department. Despite the rising profile and visibility of GEM,[36] our survey showed mixed results regarding the perceived personal understanding of frailty among ED staff. A significant proportion of doctors and nurses (approximately one-quarter) self-reported a lack of understanding of the concept. This is concerning as frailty is associated with a broad range of adverse outcomes, including disability, falls, fracture, worsening mobility, cognitive decline, and hospitalization.[37] Failure to recognize frailty in the emergency department can lead to delayed diagnosis and intervention.[38] Triage systems used in the emergency department often do not identify frailty and nonspecific complaints present in vulnerable older adults.[39] Therefore, accurate frailty knowledge and assessment skills among ED staff are vital to provide comprehensive acute care management, liaising promptly with specialist older adult services and preventing progression of frailty syndromes by targeted interventions. Without an improvement in frailty education for ED staff, opportunities will be lost to reverse frailty syndromes and serious pathology may go unrecognized.[40]

Overall, respondents felt that no single health care group should have sole responsibility to identify and manage

TABLE 3
Summary of descriptive characteristics of respondents based on biological sex, age, and years professional qualification

Variable	All nurses (n = 78)	All doctors (n = 76)	All HSCP (n = 14)	P value (P < .05)
Biological sex (%F)	65 (83%)	35 (46%)	12 (86%)	<.001
Age (>35 y)	33 (42%)	26 (34%)	8 (57%)	.22
Years qualified (> 10)	36 (46%)	20 (26%)	6 (43%)	.031
Location (Munster)	39 (50%)	39 (51%)	4 (29%)	
Location (Leinster)	34 (44%)	27 (36%)	6 (43%)	.112
Location (Connacht)	5 (6%)	10 (13%)	4 (29%)	

frail older adults in the emergency department. Younger ED staff, aged ≤35 years (n = 56), were more likely to suggest that nursing staff were the most appropriate group to screen for frailty in the emergency department (n = 49, 73%, P = .026). This may reflect age bias between the 2 groups, given that current opinion favors developing shared competencies between emergency medicine and geriatric medicine staff.[37] A large proportion (74%) reported relying on clinical judgment to diagnose frailty, rather than frailty screening tools. Although this intuitive and analytical skill set is encouraged in the ED setting,[41] it is hampered if frailty knowledge is lacking. Factors identified in the survey as affecting frailty knowledge, such as time pressure and patient case mix (increasing acuity), are amplified in the ED environment. The positive impact reported by ED staff of FIT teams in providing advice and specialized geriatric medicine input may be an opportunity to embed frailty education into daily ED work practices. FIT teams have been shown to improve care for older people in the emergency department by reducing the length of stay in the emergency department and admission to hospital and improving satisfaction with care in the emergency department.[42] Dedonato et al[43] have demonstrated that an interprofessional educational session on key GEM topics was successful in improving participants' self-reported ability and confidence in the care of older adults when piloted in an American emergency department. Using FIT teams to reinforce core frailty concepts may also help strengthen interprofessional collaboration among HSCPs and wider ED staff members.

Most ED staff surveyed agreed that frailty identification should be conducted routinely among all adults aged ≥70 years presenting to the emergency department (n = 140, 83%), even though they felt frailty screening was not feasible in the emergency department. Respondents indicated that despite the challenges, the emergency department is an appropriate environment to undertake screening. The positive feedback offered by nursing staff to undertake frailty screening in the emergency department is also encouraging, given that nursing support is crucial to make these assessments feasible. In 2012, the Irish National Emergency Medicine program recommended establishing GEM quality standards and evidence-based practice.[44] In the intervening decade, research has shown that screening creates awareness of the complexity of this patient group among health care professionals, which in turn leads to more patient-centered customized care with an integrated approach.[1,4,45,46] Emphasizing the benefits of frailty identification to ED staff is pivotal to harness support for the wider adoption of screening of geriatric syndromes in the emergency department. Research examining the impact of ED frailty screening on health care outcomes and acute care economic impacts is now needed.

Frailty screening should support more efficient use of time, personnel, and resources directing these to those patients who need it most.[47,48] Both Irish (NEMR 2012) and American (ACEP 2014) GEM guidelines recommend the adoption of simple frailty screening tools for use in the emergency department.[44,49] Limited awareness of frailty screening tools was noted in this survey and is likely caused by resource pressures, knowledge, and training deficits among staff.[9] These findings underline the need to standardize frailty education for ED staff to facilitate early identification of frailty at the "front door" of the hospital and improve patient outcomes.[50,51] Consideration could be given to incorporating mandatory frailty education into ED staff core competencies. Examples such as the Irish National Frailty Education eLearning Program are designed to cater for all grades of health care professionals caring for older adults with frailty.[52] Age and frailty-adjusted risk stratification has been recommended by the European Task Force

TABLE 4
Comparison of the characteristics of all doctors compared with health and social care professionals, based on biological sex, age, and number of years qualified

Variable	All doctors (n = 76)	All HSCP (n = 14)	P value (P < .05)
Biological sex (%F)	35 (46%)	12 (86%)	.008
Age (>35 y)	26 (34%)	8 (57%)	.136
Years qualified (>10)	20 (26%)	6 (43%)	.217
Location (Munster)	39 (51%)	4 (29%)	
Location (Leinster)	27 (36%)	6 (43%)	.171
Location (Connacht)	10 (13%)	4 (29%)	

for Geriatric Emergency Medicine as a strategy to reduce adverse health outcomes in older adults in the emergency department.[51]

It is recommended that ED staff at all levels be given the opportunity to gain knowledge about the care of older people in the emergency department.[38] The 3 main barriers to routine frailty screening indicated by ED staff in this survey underscore the importance of recently published European guidelines on GEM.[20] Assessment of frailty using triage or risk-stratification tools such as the Clinical Frailty Scale (a pictorial scale based on function in activities of daily living scored from 1 "very fit" to 9 "terminally ill") was included among the recommendations. This was the most commonly reported frailty tool that participants were aware of for use in the emergency department (one-quarter of those responding) and reflects that it is widely used internationally in clinical practice and advocated by many policy makers and health care organizations.[53] Data from a recent meta-analysis also suggest it has excellent diagnostic accuracy for frailty in this setting, albeit similar to other instruments such as the PRISMA-7, a simple 7-item questionnaire recommended by the British Geriatrics Society.[54] Other possible

TABLE 5
Comparison of key survey responses based on biological sex

Question	Male (n = 56)	Female (n = 112)	P value (P < .05)
I fully understand the meaning of the clinical term frailty.	38 (68%)	67 (60%)	.398
I use the term frailty in clinical practice but am uncertain of its definition.	20 (36%)	35 (31%)	.603
I feel confident identifying frailty.	32 (57%)	59 (53%)	.625
I use frailty assessment tools to identify frailty.	29 (52%)	73 (65%)	.098
I discuss what frailty means with my patients.	16 (29%)	36 (32%)	.724
I contact Frailty Intervention Therapy Team services when I encounter frail patients in the emergency department.	50 (89%)	96 (86%)	.631
Should be undertaken by nursing staff in hospital	47 (84%)	90 (80%)	.675
Is best done in the community	28 (50%)	38 (34%)	.065
I would like more teaching to identify frailty in the emergency department.	52 (93%)	96 (86%)	.214

TABLE 6
Comparison of key survey responses based on age grouping

Question	Aged ≤35 y (n = 56)	Aged >35 y (n = 112)	P value (P < .05)
I fully understand the meaning of the clinical term frailty.	41 (61%)	64 (63%)	.871
I use the term frailty in clinical practice but am uncertain of its definition.	25 (37%)	30 (30%)	.318
I feel confident identifying frailty.	37 (55%)	54 (53%)	.875
I use frailty assessment tools to identify frailty.	38 (57%)	64 (63%)	.422
I discuss what frailty means with my patients.	24 (36%)	28 (28%)	.308
I contact Frailty Intervention Therapy Team services when I encounter frail patients in the emergency department.	61 (91%)	85 (84%)	.246
Should be undertaken by nursing staff in hospital	49 (73%)	88 (87%)	.026
Is best done in the community	22 (33%)	44 (44%)	.198
I would like more teaching to identify frailty in the emergency department.	59 (88%)	89 (88%)	1

instruments include the FRAIL scale (5-item questionnaire measuring physical frailty) and the Identification of Seniors at Risk tool (a 6-item risk-prediction questionnaire), commonly known as the ISAR, and are also widely used in the emergency department.[54] Our survey results demonstrate that ED staff have a wealth of suggestions and solutions to the current perceived educational barriers. Department-wide consultation with ED staff would be a practical first step in designing a tailored education program for the emergency department. In our survey, ED staff referenced a blended model of learning to cater to the needs of a diverse ED team. Engaging all ED team members in frailty awareness initiatives may be 1 strategy to strengthen older adult inpatient and outpatient pathways, with targeted therapy decisions beginning at the "front door."[52,55]

FINDINGS IN CONTEXT

The results of this study reflect the findings of a Dutch study examining frailty screening practices among emergency nurses who, while reporting that screening instruments are useful, still preferred to rely on their own judgment.[15] These staff nurses also emphasized the importance of education and training on frailty screening.[15] Our findings also mirror surveys undertaken in other countries to evaluate frailty knowledge and the use of screening tools among health care professionals in settings other than the emergency department. Taylor et al[21] surveyed more than 400 clinicians across the National Health Service in the United Kingdom, with 46% of respondents either unsure of or not confident in their understanding of frailty. Liu et al[56] used purposive sampling of 70 nurses and doctors across the emergency department, orthopedics, general surgery, and anesthetics in 3 acute hospitals in Singapore to explore perspectives on frailty screening. More than two-thirds of respondents reported their frailty knowledge as inadequate and some disclosed that frailty was a novel concept to them, having had no previous frailty training at undergraduate or postgraduate level.[56]

Implications for Emergency Nurses

Emergency nurses constituted the largest respondent group in this staff survey, providing rich material to help advocate for departmental improvements. To address the barriers to routine frailty screening in the emergency department and self-reported lack of dedicated frailty education, senior emergency nursing staff should be empowered to advocate for work practice and education delivery changes. An educational champion who promotes protected teaching time for staff and the provision of rapid frailty screening instruments

would start to address some issues outlined in this survey. A flexible, blended teaching model should be considered to meet the unique needs of emergency nursing education, as well as promoting more supported MDT involvement in frailty identification and management pathways in the emergency department.

Limitations

Despite efforts to recruit all sites in Ireland, this survey was not a fully national survey, with responses predominantly from ED staff in large urban hospital emergency departments, potentially limiting the representativeness of data and generalizability. It is possible that, due to more limited resources and busier caseloads, smaller rural hospitals were unable to respond, leading to response bias. Furthermore, the sample was small. Although we attempted to survey all staff in public emergency departments in Ireland, due to challenges with COVID-19 and a cyberattack on the public health care system's IT system, we were unable to do so. To examine the sample we achieved, we conducted a post hoc sample size calculation based on estimated staff numbers in Irish public emergency departments. Using data from Ireland's National Emergency Medicine Program report 2012, updated in 2021,[44] we estimated a total possible sample of 2100. Taking a 95% confidence interval and a 5% margin of error, we estimated a sample size of 325. Hence, the sample of 168 achieved is underpowered, potentially further reducing the accuracy and representatives of the findings. Most replies were from nursing staff, as was expected given that these are the largest discipline group in the emergency department. However, this also reduces the generalizability of the study, specifically the ability to extrapolate the findings to all health care professionals in the emergency department. The highly specialized nature of the HSCP respondents, many of whom were FIT team members who have their dedicated training in older adult care, limits comparison between ED staff groupings, potentially introducing bias. Another limitation that may reduce generalizability is that this study was conducted in a single country with a different health care system from other countries, including compared with those in North America. Different models such as FIT teams do not exist there and in most countries worldwide. Although the survey used has previously been published and only minimal adaption from the original was required for Irish respondents, the validity and reliability of the Irish version were not determined. This may limit comparisons to other study samples and potentially result in measurement bias. However, we believe that face validity was maintained given that the essence was not changed; only the terms were edited to reflect the different health care area (emergency department rather than hospital) and system being examined, for example, different staff grades and service models (eg, frailty teams and learning platforms).

Conclusions

This survey has highlighted poor self-reported knowledge, apparent poor familiarity with frailty tools, and many educational barriers among staff in the emergency departments surveyed. We suggest this can be improved by a multifaceted approach involving (1) cross-collaboration between ED staff and MDT members, (2) the use of validated, simple, emergency department–focused frailty screening instruments, and (3) provision of inclusive education via a flexible, blended teaching model, supported by an educational champion who promotes protected teaching time for ED staff.

Author Disclosures

Conflicts of interest: none to report.

Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2023.08.008.

REFERENCES

1. Samaras N, Chevalley T, Samaras D, Gold G. Older patients in the emergency department: a review. *Ann Emerg Med*. 2010;56(3):261-269. https://doi.org/10.1016/j.annemergmed.2010.04.015
2. Berning MJ, Silva LO JE, Suarez NE, et al. Interventions to improve older adults' emergency department patient experience: a systematic review. *Am J Emerg Med*. 2020;38(6):1257-1269. https://doi.org/10.1016/j.ajem.2020.03.012
3. Rockwood K, Howlett SE. Fifteen years of progress in understanding frailty and health in aging. *BMC Med*. 2018;16(1):220. https://doi.org/10.1186/s12916-018-1223-3
4. Latham LP, Ackroyd-Stolarz S. Emergency department utilization by older adults: a descriptive study. *Can Geriatr J*. 2014;17(4):118-125. https://doi.org/10.5770/cgj.17.108
5. NHS England, NHS Improvement. Same-day acute frailty services. Published 2019. Accessed August 2, 2021. https://www.england.nhs.uk/wp-content/uploads/2021/02/SDEC_guide_frailty_May_2019_update.pdf
6. Pulok MH, Theou O, van der Valk AM, Rockwood K. The role of illness acuity on the association between frailty and mortality in emergency department patients referred to internal medicine. *Age*

Ageing. 2020;49(6):1071-1079. https://doi.org/10.1093/ageing/afaa089

7. Sirois MJ, Griffith L, Perry J, et al. Measuring frailty can help emergency departments identify independent seniors at risk of functional decline after minor injuries. *J Gerontol A Biol Sci Med Sci*. 2017;72(1):68-74. https://doi.org/10.1093/gerona/glv152
8. Alakare J, Kemp K, Strandberg T, et al. Systematic geriatric assessment for older patients with frailty in the emergency department: a randomised controlled trial. *BMC Geriatr*. 2021;21(1):408. https://doi.org/10.1186/s12877-021-02351-2
9. O'Caoimh R, Costello M, Small C, et al. Comparison of frailty screening instruments in the emergency department. *Int J Environ Res Pub Health*. 2019;16(19):3626. https://doi.org/10.3390/ijerph16193626
10. Ellis G, Marshall T, Ritchie C. Comprehensive geriatric assessment in the emergency department. *Clin Interv Aging*. 2014;9:2033-2043. https://doi.org/10.2147/CIA.S29662
11. Fay S, Goldstein J, Armstrong JJ, et al. What do we know about frailty in the acute care setting? A scoping review. *BMC Geriatr*. 2018;18(1):139. https://doi.org/10.1186/s12877-018-0823-2
12. Jørgensen R, Brabrand M. Screening of the frail patient in the emergency department: a systematic review. *Eur J Intern Med*. 2017;45:71-73. https://doi.org/10.1016/j.ejim.2017.09.036
13. Mooijaart SP, Carpenter CR, Conroy SP. Geriatric emergency medicine—a model for frailty friendly healthcare. *Age Ageing*. 2022;51(3):afab280. https://doi.org/10.1093/ageing/afab280
14. Elliott A, Phelps K, Regen E, Conroy SP. Identifying frailty in the Emergency Department-feasibility study. *Age Ageing*. 2017;46(5):840-845. https://doi.org/10.1093/ageing/afx089
15. Warnier RMJ, van Rossum E, Du Moulin MFMT, van Lottum M, Schols JMGA, Kempen GIJM. The opinions and experiences of nurses on frailty screening among older hospitalized patients. An exploratory study. *BMC Geriatr*. 2021;21(1):624. https://doi.org/10.1186/s12877-021-02586-z
16. O'Donnell D, Ní Shé É, McCarthy M, et al. Enabling public, patient and practitioner involvement in co-designing frailty pathways in the acute care setting. *BMC Health Serv Res*. 2019;19(1):797. https://doi.org/10.1186/s12913-019-4626-8
17. Ní Shé É, Keogan F, McAuliffe E, et al. Undertaking a collaborative rapid realist review to investigate what works in the successful implementation of a frail older Person's pathway. *Int J Environ Res Public Health*. 2018;15(2):199. https://doi.org/10.3390/ijerph15020199
18. Roller-Wirnsberger R, Lindner S, Liew A, et al. European Collaborative and Interprofessional Capability Framework for Prevention and Management of Frailty-a consensus process supported by the Joint Action for Frailty Prevention (ADVANTAGE) and the European Geriatric Medicine Society (EuGMS). *Aging Clin Exp Res*. 2020;32(4):561-570. https://doi.org/10.1007/s40520-019-01455-5
19. Ellis B, Carpenter C, Lowthian J, Mooijaart S, Nickel C, Melady D. Statement on minimum standards for the care of older people in emergency departments by the Geriatric Emergency Medicine Special Interest Group of the International Federation for Emergency Medicine. *Can J Emerg Med*. 2018;20(3):368-369. https://doi.org/10.1017/cem.2017.426
20. Lucke JA, Mooijaart SP, Heeren P, et al. Providing care for older adults in the Emergency Department: expert clinical recommendations from the European Task Force on Geriatric Emergency Medicine. *Eur Geriatr Med*. 2021;13:309-317. https://doi.org/10.1007/s41999-021-00578-1
21. Taylor JK, Fox J, Shah P, Ali A, Hanley M, Hyatt R. Barriers to the identification of frailty in hospital: a survey of UK clinicians. *Future Healthc J*. 2017;4(3):207-212. https://doi.org/10.7861/futurehosp.4-3-207
22. Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in elderly people. *Lancet*. 2013;381(9868):752-762. https://doi.org/10.1016/S0140-6736(12)62167-9
23. Sezgin D, O'Donovan M, Cornally N, Liew A, O'Caoimh R. Defining frailty for healthcare practice and research: a qualitative systematic review with thematic analysis. *Int J Nurs Stud*. 2019;92:16-26. https://doi.org/10.1016/j.ijnurstu.2018.12.014
24. O'Caoimh R, Sezgin D, O'Donovan MR, et al. Prevalence of frailty in 62 countries across the world: a systematic review and meta-analysis of population-level studies. *Age Ageing*. 2021;50(1):96-104. https://doi.org/10.1093/ageing/afaa219
25. Abstracts of the 18th Congress of the European Geriatric Medicine Society. *Eur Geriatr Med*. 2022;13(Suppl 1):1-439. https://doi.org/10.1007/s41999-022-00711-8
26. Maloney P, Clancy I, Bernard P, et al. Frailty Intervention Therapy Team (FITT): a step in the right direction-integration of early interdisciplinary assessment in the emergency department. *Int J Integr Care*. 2017;17(5):A420. https://doi.org/10.5334/ijic.3739
27. Cyber attack on HSE systems. Health Services Executive (HSE). gov.ie. Accessed May 10, 2022. https://www.gov.ie/en/news/ebbb8-cyber-attack-on-hse-systems/
28. Lydersen S, Pradhan V, Senchaudhuri P, Laake P. Choice of test for association in small sample unordered r x c tables. *Stat Med*. 2007;26(23):4328-4343. https://doi.org/10.1002/sim.2839
29. Mayring P. Qualitative content analysis. Forum Qualitative Social Research. Published 2000. Accessed February 13, 2013. http://www.qualitative-research.net/index.php/fqs/article/view/1089/2385
30. Pope C, Ziebland S, Mays N. Analysing qualitative data. In: Pope C, Mays N, eds. *Qualitative Research in Health Care*. 3rd ed. Blackwell Publishing; 2006:63-81.
31. Gbrich C. *Qualitative Data Analysis: An Introduction*. 1st ed. Sage Publications; 2007.
32. Howley F, Lavan A, Connolly E, McMahon G, Mehmood M, Briggs R. Trends in emergency department use by older people during the COVID-19 pandemic. *Eur Geriatr Med*. 2021;12(6):1159-1167. https://doi.org/10.1007/s41999-021-00536-x
33. Hennelly N, Lalor G, Gibney S, Kenny RA, Ward M. A cross-sectional study of the relationship between delayed healthcare utilisation and chronic conditions among older adults during the COVID-19 pandemic in Ireland. *HRB Open Res*. 2021;4:112. https://doi.org/10.12688/hrbopenres.13336.1
34. Nab M, van Vehmendahl R, Somers I, Schoon Y, Hesselink G. Delayed emergency healthcare-seeking behaviour by Dutch emergency department visitors during the first COVID-19 wave: a mixed methods

retrospective observational study. *BMC Emerg Med*. 2021;21(1):56. https://doi.org/10.1186/s12873-021-00449-9

35. Ward M, May P, Normand C, Kenny RA, Nolan A. Mortality risk associated with combinations of loneliness and social isolation. Findings from the Irish longitudinal study on ageing (TILDA). *Age Ageing*. 2021;50(4):1329-1335. https://doi.org/10.1093/ageing/afab004
36. Rosen T, Liu SW, Cameron-Comasco L, et al. Geriatric emergency medicine fellowships: current state of specialized training for emergency physicians in optimizing care for older adults. *AEM Educ Train*. 2020;4(suppl 1):S122-S129. https://doi.org/10.1002/aet2.10428
37. Hoogendijk EO, Afilalo J, Ensrud KE, Kowal P, Onder G, Fried LP. Frailty: implications for clinical practice and public health. *Lancet*. 2019;394(10206):1365-1375. https://doi.org/10.1016/S0140-6736(19)31786-6
38. Hogervorst VM, Buurman BM, De Jonghe A, et al. Emergency department management of older people living with frailty: a guide for emergency practitionersEmergency Medicine [Journal]. *Emerg Med J*. 2021;38(9):724-729. https://doi.org/10.1136/emermed-2020-210014
39. Machielse T, De Caluwé R. *Triage Voor de Spoedeisende Hulp*. Bohn Stafleu van Loghum; 2016.
40. Conroy SP, Turpin S. New horizons: urgent care for older people with frailty. *Age Ageing*. 2016;45:577-584. https://doi.org/10.1093/ageing/afw135
41. Noon AJ. The cognitive processes underpinning clinical decision in triage assessment: a theoretical conundrum? *Int Emerg Nurs*. 2014;22(1):40-46. https://doi.org/10.1016/j.ienj.2013.01.003
42. Cassarino M, Robinson K, Trépel D, et al. Impact of assessment and intervention by a health and social care professional team in the emergency department on the quality, safety, and clinical effectiveness of care for older adults: a randomised controlled trial. *PLoS Med*. 2021;18(7):e1003711. https://doi.org/10.1371/journal.pmed.1003711
43. DeDonato E, Hall SE, Hogan TM, Gleason LJ. Interprofessional Education of Emergency Department Team on Falls in Older Adults. *J Am Geriatr Soc*. 2020;68(3):E7-E9. https://doi.org/10.1111/jgs.16358
44. Emergency Medicine. *Emergency Nursing Interest Group. National Emergency Medicine Programme: overview of Emergency Nursing documents developed by the National Emergency Medicine Programme*. Updated November; 2021. Accessed September 10, 2023. Health Service Executive. https://www.rcsi.com/dublin/-/media/feature/media/download-document/surgery/practice/ncp/emergency-medicine/publications/overview-of-emergency-nursing-related-documents.pdf
45. Mooijaart SP, Nickel CH, Conroy SP, et al. A European Research Agenda for Geriatric Emergency Medicine: a modified Delphi study. *Eur Geriatr Med*. 2021;12(2):413-422. https://doi.org/10.1007/s41999-020-00426-8
46. Blomaard LC, Olthof M, Meuleman Y, de Groot B, Gussekloo J, Mooijaart SP. Experiences with and attitudes towards geriatric screening among older emergency department patients: a qualitative study. *BMC Geriatr*. 2021;21(1):198. https://doi.org/10.1186/s12877-021-02144-7
47. Carpenter CR, Shelton E, Fowler S, et al. Risk factors and screening instruments to predict adverse outcomes for undifferentiated older emergency department patients: a systematic review and meta-analysis. *Acad Emerg Med*. 2015;22(1):1-21. https://doi.org/10.1111/acem.12569
48. Kaeppeli T, Rueegg M, Dreher-Hummel T, et al. Validation of the clinical frailty scale for prediction of thirty-day mortality in the emergency department. *Ann Emerg Med*. 2020;76(3):291-300. https://doi.org/10.1016/j.annemergmed.2020.03.028
49. Carpenter CR, Bromley M, Caterino JM, et al. Optimal older adult emergency care: introducing multidisciplinary geriatric emergency department guidelines from the American College of Emergency Physicians, American Geriatrics Society, Emergency Nurses Association, and Society for Academic Emergency Medicine. *J Am Geriatr Soc*. 2014;62(7):1360-1363. https://doi.org/10.1111/jgs.12883
50. Foo CL, Siu VW, Ang H, Phuah MW, Ooi CK. Risk stratification and rapid geriatric screening in an emergency department-a quasi-randomised controlled trial. *BMC Geriatr*. 2014;14:98. https://doi.org/10.1186/1471-2318-14-98
51. van Dam CS, Hoogendijk EO, Mooijaart SP, et al. A narrative review of frailty assessment in older patients at the emergency department. *Eur J Emerg Med*. 2021;28(4):266-276. https://doi.org/10.1097/MEJ.0000000000000811
52. National Integrated Care Programme for Older Persons. National Frailty Education elearning programme. Accessed March 2, 2023. https://www.icpop.org/nationalfrailityeducation#gref
53. Fehlmann CA, Nickel CH, Cino E, Al-Najjar Z, Langlois N, Eagles D. Frailty assessment in emergency medicine using the Clinical Frailty Scale: a scoping review. *Intern Emerg Med*. 2022;17(8):2407-2418. https://doi.org/10.1007/s11739-022-03042-5
54. Moloney E, O'Donovan MR, Sezgin D, et al. Diagnostic accuracy of frailty screening instruments validated for use among older adults attending emergency departments: a systematic review and meta-analysis. *Int J Environ Res Public Health*. 2023;20(13):6280. https://doi.org/10.3390/ijerph20136280
55. Leahy A, McNamara R, Reddin C, et al. The impact of frailty screening of older adults with multidisciplinary assessment of those at risk during emergency hospital attendance on the quality, safety and cost-effectiveness of care (SOLAR): a randomised controlled trial. Trials. 2021 Aug 31;22(1):581. https://doi.org/10.1186/s13063-021-05525-w
56. Liu X, Le MK, Lim AYC, et al. Perspectives on frailty screening, management and its implementation among acute care providers in Singapore: a qualitative study. *BMC Geriatr*. 2022;22(1):58. https://doi.org/10.1186/s12877-021-02686-w

Implementation of a Heparin Infusion Calculator in the Electronic Health Record System as a Risk-Mitigation Strategy in a Community Teaching Hospital Emergency Department

Authors: Deborah Y. Booth, PharmD, MS, BCPS, BCEMP, Sibyl M. Cherian, PharmD, BCPS, BCGP, Jude Lark, BSN, RN, CEN, CCRN, Maria Stratton, MSN, RN, PCCN-K, and Rakesh N. Babu, PharmD, Summit, NJ

Contribution to Emergency Nursing Practice

- The current literature supports the need to safely administer unfractionated heparin infusions in the emergency department. However, there is limited evidence available on the impact of strategies to reduce medication administration errors.
- This article contributes a novel risk mitigation strategy to reduce medication administration errors associated with unfractionated heparin infusions by utilizing health informatics.
- Key implications for emergency nursing practice found in this article are that using an embedded calculator in the electronic health record system can enhance patient safety.

Abstract

Introduction: According to the Institute for Safe Medication Practices, unfractionated heparin is a high-risk medication due to the potential for medication errors and adverse events. Unfractionated heparin is often started in the emergency department for patients with acute coronary syndromes or coagulopathies. Risk-mitigation strategies should be implemented to ensure appropriate initiation and monitoring of this high-risk medication. In 2019, an unfractionated heparin calculator was built into the electronic health record at a community medical center. The purpose of this study was to evaluate the impact of the calculator as a risk-mitigation strategy.

Methods: Patients ≥18 years old admitted between January 1, 2020, and December 31, 2020, were included if they were administered an unfractionated heparin infusion in the emergency department. Patient encounters were excluded if unfractionated heparin order was discontinued before administration. Patient encounters were classified into the unfractionated heparin calculator arm if the unfractionated heparin calculator was used to determine initial dosing, and the remaining patient encounters were classified into the unfractionated heparin no calculator arm. Unfractionated heparin orders were reviewed if a baseline activated partial thromboplastin time was collected and if the correct initial bolus dose and infusion rate were administered. The primary objective is to determine whether the use of unfractionated heparin initiation calculator reduced the rate of medication administration errors.

Deborah Y. Booth is a Clinical Pharmacy Specialist in Emergency Medicine, Department of Pharmacy, Overlook Medical Center, Summit, NJ. **Twitter:** @DYB_EDPharm. **ORCID identifier:** https://orcid.org/0000-0003-0783-115X.

Sibyl M. Cherian is a Pharmacy Supervisor of Medication Safety, Department of Pharmacy, Overlook Medical Center, Summit, NJ.

Jude Lark is a Nurse Educator in the Emergency Department, Overlook Medical Center, Summit, NJ; and *Member, National ENA and the Northern New Jersey Chapter*.

Maria Stratton is a Nurse Manager of Cardiac Telemetry, Overlook Medical Center, Summit, NJ.

Rakesh N. Babu is a Manager of Pharmacy Informatics and Data Engineering, Data Strategy, Atlantic Health System, Morristown, NJ. **Twitter:** @RakeshNBabu. **ORCID identifier:** https://orcid.org/0009-0000-0460-9153.

For correspondence, write: Deborah Booth, PharmD, MS, BCPS, BCEMP, Department of Pharmacy, Overlook Medical Center, 99 Beauvoir Ave, Summit, NJ 07901; E-mail: deborah.booth@atlantichealth.org

J Emerg Nurs 2024;50:36-43.
Available online 7 November 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.10.002

Medication administration errors are defined as baseline activated partial thromboplastin time not collected or incorrectly collected or the administration of incorrect initial bolus dose and infusion rate.

Results: A total of 356 patient encounters with unfractionated heparin orders were included in the primary analysis. There were 13.9% errors (39 of 279) present when the calculator was used and 23.3% (18 of 77) when the calculator was not used ($P = .046$). There was 86% correct administration of heparin (240 of 279) when the calculator was used and 76% correct administrations (59 of 77) when the calculator was not used.

Discussion: The use of the unfractionated heparin infusion calculator in the emergency department led to decrease in medication administration errors. This is the first study to evaluate the integration of an unfractionated heparin calculator into the electronic health record.

Key words: Heparin; Anticoagulation; Medication safety; Risk mitigation; Emergency department; Health informatics

Introduction

Unfractionated heparin (UFH) is a high-risk medication, which is used as an anticoagulant for the treatment and prophylaxis of thromboembolism and prevention of acute ischemic stroke in patients with atrial fibrillation.[1,2] The safe use of anticoagulants is listed as a National Patient Safety Goal for health systems to evaluate processes to reduce harm with this class of medications.[3] Anticoagulants have been associated with errors related to ordering, dosing, administration, and monitoring. For patients who are on UFH therapy, it is important to clinically monitor patients for signs of bleeding and laboratory markers such as activated partial thromboplastin time (aPTT) or anti-Xa.[3-7] In addition, the UFH medication use process is challenging because there are many patient-specific factors that can alter the pharmacodynamic properties of the medication, including extremes of body weight and age.[1] The multitude of factors create challenges for nurses administering this medication and monitoring patient response. As a result, health care professionals should be vigilant with the administration and monitoring processes and should be knowledgeable with institutional protocols and high-risk medication risk reduction strategies, especially in the emergency department.[5,6] Health care systems should address these issues by working collaboratively in an interdisciplinary manner, adopting institutional protocols, and using health care technology to develop risk-mitigation strategies.[6,8-10]

Many institutions use order sets to ensure correct medication ordering, dosing, and monitoring are selected.[10,11] Some common monitoring measures in order sets include laboratory markers, vital signs, or when notification is required for abnormal parameters.[10,11] In addition, institutions may opt to incorporate nurse-driven heparin titration protocols or nomograms.[2,10-13] These protocols are widely adopted in institutions and involve having nurses titrate the UFH rate to specified laboratory markers such as aPTT values or anti-Xa levels.[12-16] UFH protocols are used to standardize processes and to decrease the time required to reach specified therapeutic levels.[14-18] Recommended dosing includes the use of weight-based protocols, which use different target goals based on indications (eg, venous thromboembolisms or atrial fibrillation).[2,17,18] Dosing adjustments and monitoring can be complicated in inpatient settings due to unpredictable UFH pharmacokinetics, lack of knowledge in drug therapy, interruptions in therapy, and inappropriate weight monitoring.[2,17,18] In 1 single-center retrospective analysis at a teaching hospital in Boston, Massachusetts, by Schurr et al,[19] compliance rate for all patients on a nurse-driven heparin infusion in the total nomogram was 84%, and percent of aPTT values in therapeutic range was 36.9% (24.6%). Noncompliance with dosing (defined as any titration that deviated from protocol) had the greatest impact on percentage of aPTT values not in range. This is consistent with other literature that has evaluated weight-based nurse-driven heparin protocols.[10-13]

Literature has also demonstrated that weight-based, nurse-driven heparin protocols can also improve outcomes, time to therapeutic aPTT, and percentage of patients who reached therapeutic aPTT within 24 hours.[12-18] Schurr et al[20] also demonstrated in their study that time to therapeutic aPTT decreased from 18.7 hours to 11.7 hours and that the percentage of patients that reached therapeutic aPTT increased from 74.4% to 88.5%. Both of these end points were statistically significant and point to the benefit of a standardized protocol to improve time to therapeutic anticoagulation.[20]

The Institute for Safe Medication Practices identifies common risks and areas of improvement with UFH that should be evaluated.[1] Many of these solutions are strategies adopted by institutions, such as using commercially prepared UFH solutions, independent double checks, establishment of UFH protocols, order sets, reversal guidelines, and implementation of smart pumps.[1,4,6,7,9] Health systems benefit from having robust targeted protocol education programs that focus on reducing UFH administration

errors.[1,4,6,7] The literature demonstrates that administration errors are avoidable, given that effective protocols can limit increased bleeding risks and prevent the worsening sequelae of thrombosis.[1,4,6,7] Increased knowledge of potential causes and ramifications of UFH administration errors can empower health care professionals including nurses to identify when potential problems may arise in patients receiving UFH.[1,4,6,7] In addition to education, it is possible to implement electronic medical record-based technical safeguards to reduce the likelihood of medication administration errors (MAEs).[1,4,6,7]

To date, there have been no known evaluations of the impact of an integrated UFH administration dose calculator on medication administration-related errors. A novel approach to reduce medication related dosing errors is with the use of a UFH calculator within the electronic health record (EHR) (Figure 1). This is a tool that nurses can use to help improve adherence to UFH titration protocols. This tool is integrated at the point of UFH administration, thereby providing immediate feedback with the correct UFH starting bolus and initial infusion. Furthermore, the UFH calculator can be used to verify subsequent UFH rate titrations based on previous aPTT values. In our institution, the production and implementation of the UFH calculator were a collaborative effort between physicians, pharmacists, nursing, and information technology specialists. The heparin calculator was rolled out in January 2019 for the health system. This study aimed to evaluate the impact of the UFH calculator on reducing medication errors.

After the implementation of a new EHR, Epic Systems (Verona, Wisconsin), optimization began, and medication safety was a major focus. The EHR pharmacy analyst discovered dose calculators could be embedded into the EHR but would require significant time commitment for customization and specific coding to allow for institution specific rounding rules and parameters for UFH. After the 2018 go-live, stakeholders were engaged, and the calculator was customized and embedded in the medication administration record for UFH (Figure 1). The customization incorporated the health system titration protocol, weight-based dosing rounding, and infusion dose caps for all 3 UFH protocols. After the go-live date, when the nurses administered UFH, the calculator would automatically calculate a starting UFH bolus and rate based on the weight to assist with UFH initiation.

The UFH calculator was rolled out in January 2019 and information was released on the creation through monthly updates to the entire health system. Given that this was a new feature within the EHR for the health system, the use of the new calculator was not enforced, and therefore, the training after the implementation was not mandatory. A year later after the calculator was embedded and went live, there continued to be documented reports of UFH infusion administration errors. In collaboration with health informatics team and stakeholders in the UFH calculator project, a step-by-step nursing education was also released regarding use of UFH calculator in December 2019. The education was presented in a 1-page tip sheet to the entire nursing team. In addition, training sessions were provided through unit huddles. However, despite the new education rollout and resources, errors continued to be reported. In response, the authors decided to conduct an audit on the use of the UFH calculator to identify trends and barriers, and to focus on the types and the impact of the medication errors. With each event where the calculator was not used or a medication error occurred, 1-on-1 education was provided to the team member involved, reviewing the importance of the use of the calculator, following the heparin dosing instructions, administration specific information, collection of aPTT level before administration, and setting up the UFH correction for administration. The purpose of this study was to evaluate the impact of the calculator as a risk-mitigation strategy.

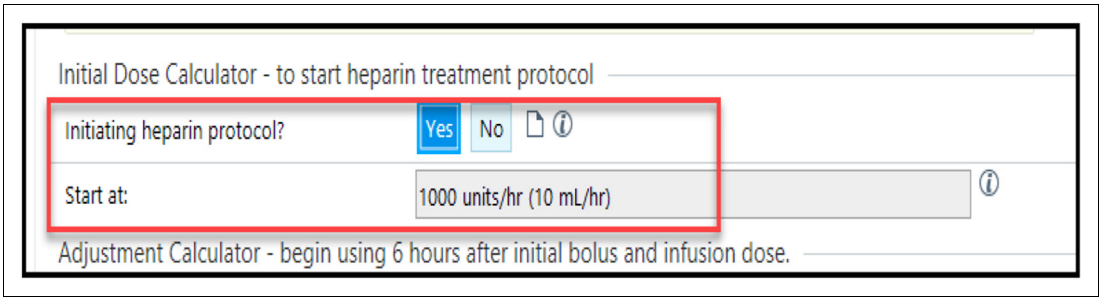


FIGURE 1

UFH calculator electronic health record integration. UFH, unfractionated heparin.

Methods

This is an institutional review board exempt retrospective cohort study that evaluated the relationship between use of the UFH infusion calculator and rates of UFH MAEs. This evaluation was conducted at a community teaching hospital's suburban emergency department from January 1, 2020, to December 31, 2020. The emergency department includes a main campus and a satellite campus, with a combined annual census of more than 80,000 in 2020. Both emergency departments were included in this evaluation. These were unblinded data that were collected by a single reviewer on a regular basis during the week for consistency in evaluating the charts. UFH infusions within the health system are rounded and dose capped weight-based dosing with protocols that are nursing driven. The rounding for the UFH infusions is to the nearest 500 units for the bolus and nearest 100 units per hour for the infusion. Nursing protocol is to collect a baseline aPTT value, administer a bolus of UFH if ordered, and administer the infusion based on the ordered weight-based protocol of either 12 units per kg per hour (max 1000 unit per hour) or 18 units per kg per hour (max 2000 units per hour). The process also includes an independent double check for UFH before administration.

The definitions of MAE were determined by 2 authors and reviewed by all authors that were defined as protocol deviations, which included incorrect starting rate of the infusion, incorrect bolus dose, and missing baseline aPTT collection.

This study's primary outcome is the rate of MAE associated with initiating UFH infusions. Patients were included if they were initiated on a UFH infusion in either the main or satellite campus emergency departments from January 1, 2020, to December 31, 2020. Patients were excluded if they received heparin before arrival to the hospital or if the heparin order was discontinued before the UFH infusion was started. Patients were assigned to the UFH calculator arm (if the UFH calculator was used) or to the UFH no calculator arm (if the calculator was not used). In the medication administration record and nursing flowsheet, there is a section indicating "yes" or "no" for the use of the calculator (Figure 1). Those who selected "yes" indicated the calculator was used and the dose was displayed, whereas those who selected "no" did not select any calculator use and were in the no calculator arm.

Statistical analysis was done using Minitab Statistical Software (Minitab, LLC, State College, Pennsylvania). Primary outcomes data were evaluated with a chi-squared test and baseline characteristics were evaluated with descriptive statistics and *t* test for categorical data.

Results

A total of 356 subjects were initiated on a UFH infusion in the emergency department during the study period. Of those subjects, 279 were started on UFH infusion with the help of the UFH calculator and 77 subjects were started on UFH infusion without the UFH calculator. There were no differences in baseline characteristics between the 2 groups (Table 1). The 2 most common indications for UFH infusion utilization were acute coronary syndrome and thrombosis (Table 1). The rate of MAEs when initiating UFH infusion was 13.9% (39 of 279) when the UFH calculator was used and 23.3% (18 of 77) when the UFH calculator was not used ($P = .046$) (Figure 2 and Table 2).

We performed post hoc subgroup analysis on the types of MAEs observed. The bolus dose administered was incorrect in 3.23% of cases (9 of 279) where the UFH calculator was used versus 3.85% of cases (3 of 77) where the UFH calculator was not used. The initial drip rates were incorrect in 3.94% of cases (11 of 279) where the calculator was used versus 10.26% of cases (8 of 77) where the calculator was not used. No baseline aPTT was collected in 7.17% of cases (20 of 279) where the calculator was used versus 8.97% of cases (7 of 77) where the calculator was not used. Of note, 2 events had 2 errors each with both a missing baseline aPTT and an incorrect drip initiation rate and bolus dose (Figure 3).

Discussion

To date, there has been no literature that evaluates the use of a UFH calculator embedded within the EHR to support adherence to a nurse-driven UFH infusion protocol. Medication errors have been theorized to be prevented with the use of UFH calculators.[10] This calculator is an embedded feature into the EHR, which assists as a double check for the UFH nomogram by providing the initial starting dose and bolus for the UFH infusion when individuals administering UFH select "yes" to initiation. The calculator still requires an independent double check and references to a linked document with the initiation and titration instructions. Incorporating technological advances and development into clinical practice allows for additional safety barriers to be placed.

This novel study shows a strong negative correlation between use of a UFH infusion calculator at the time of infusion initiation and MAE rate. A reduction in errors occurred in obtaining baseline laboratory values and initiation of correct infusion bolus and infusions rates. Obtaining

TABLE 1
Baseline characteristics

Patient characteristics at baseline	UFH calculator used (n = 279)	UFH calculator not used (n = 77)	*P* value*
Age, y (mean ± SD)	64.7 ± 16.6	63.2 ± 15.1	.452
Gender, female (%)	43%	50.6%	.245
Height, cm (mean ± SD)	166.6 ± 28.6	167.1 ± 22.0	.869
Weight, kg (mean ± SD)	87.7 ± 25.7	90.98 ± 26.76	.339
Body mass index, kg/m^2 (mean ± SD)	29.4 ± 8.5	31.2± 7.9	.09
Heparin infusion protocol used, n (%)			
Acute coronary	121 (43.3)	35 (45.5)	.745
Thrombosis	157 (56.7)	40 (51.9)	.501
Other†	1 (0.3)	2 (2.6)	.119
Race, n (%)			
Caucasian	177 (63.4)	53 (68.8)	.370
African American	47 (16.8)	12 (15.6)	.788
Asian	10 (3.6)	1 (1.3)	.468
Other/refused/unknown	45 (16.1)	11 (14.3)	.686

UFH, unfractionated heparin.
* *P* value is based on *t* test for continuous data and 2-proportions test for categorical data; Fisher exact used for n < 5.
† Other includes no protocol, low-intensity protocol, and vascular catheterization protocol.

an accurate baseline aPTT is important to ensure that patients do not already have an elevated baseline aPTT before the start of the infusion. This would pose a challenge for the continued monitoring of UFH infusion. Furthermore, given that UFH infusions are dosed according to weight to obtain a therapeutic aPTT value, deviations from the correct initial weight-based bolus and infusion rates can lead to aPTT levels that are out of range, potentially leading to increased risk of thrombosis or bleeding.

There are several best practice recommendations to enhance safe administration of UFH. These include creation of interdisciplinary education plans, use of UFH dosing

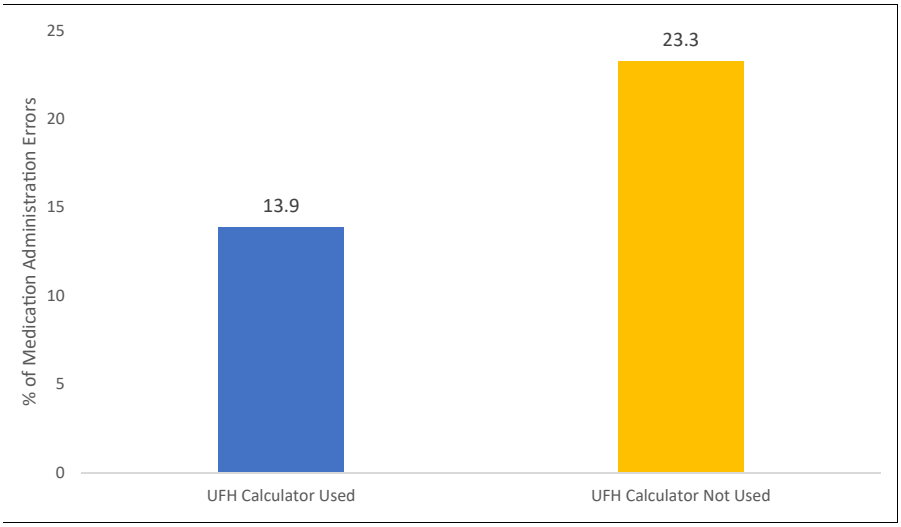


FIGURE 2
Primary outcome. UFH, unfractionated heparin.

TABLE 2
Primary outcome

Primary outcome	UFH calculator used (n = 279)	No UFH calculator used (n = 77)
% MAE	13.9% (39/279)	23.3% (18/77)

MAE, medication administration error; UFH, unfractionated heparin.
$P = .00208$.

nomograms, standardization of UFH concentrations, and development of a consistent process obtaining and recording accurate patient weights. Our institution has already implemented these recommendations and continues to pursue further process improvements. Any additional events continue to be reviewed by a multidisciplinary team to evaluate types of events and methods to prevent them. This included several additional upgrades to the calculator including modification of the dose range to prevent documentation errors between units per hour and mL per hour, additional titration calculator instructions based on the aPTT values, and updates into hold instructions for supratherapeutic aPTT values.

To add to the arsenal of risk-mitigation strategies, this study suggests that the use of an EHR embedded UFH calculator can help prevent medication errors. The high compliance rate of UFH calculator use and large decrease in both overall and subgroup error rates suggest that this intervention may be a method for reducing MAEs. In addition, the use of the calculator by nursing allows for more readily available data that can provide insight into the cause for UFH errors. This allows stakeholders to continually monitor for modifications to the calculator or other system improvements that can be implemented to further reduce errors. This process to build and integrate the calculator and train users will require significant resource allocation from the EHR analysts, clinicians, and relevant stakeholders to ensure a successful implementation.

Nurses face many challenges in their practice. With national nursing shortages and increasing complexity of patients, it can be difficult to maintain optimal care, particularly with high-risk medications that require frequent monitoring. The use of the technology and team-based approach can help prevent adverse drug events and medication errors. In a study by Bates et al,[21] a physician computer order entry system and team-based approach for interventions helps to decrease serious medication errors by 55% and led to a decline of 17% in preventable adverse drug events. Nurses may see similar reductions in risk of MAE by implementing health information technology solutions.

Although previous literature has suggested that direct access to automated infusion rate calculators can supplement nursing care, this is the first study that quantifies the benefit of using the calculator to reduce medication errors. Although the rate of errors decreased, opportunities still exist to further minimize errors. It is important to note

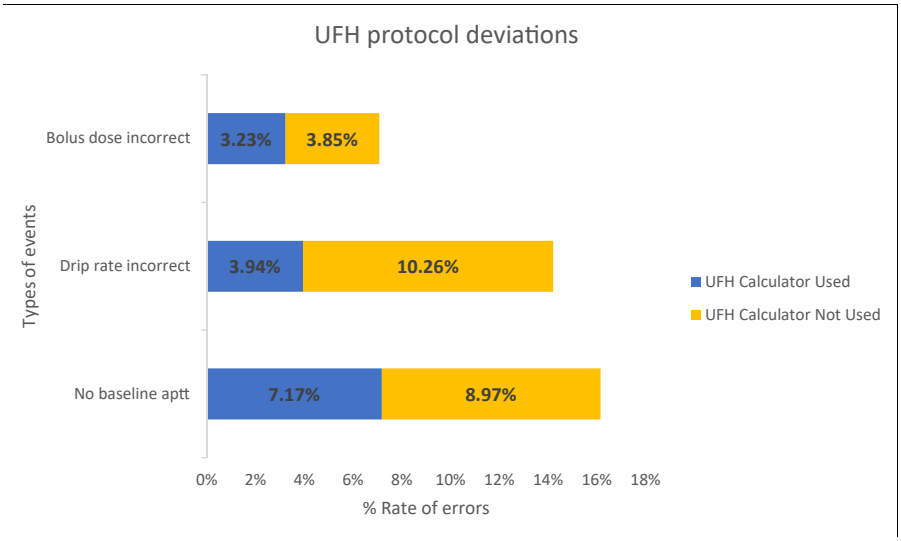


FIGURE 3

UFH protocol deviations (MAEs). *There were 2 events where there were multiple protocol deviations in administration but was only counted for 1 event in the MAE. MAE, medication administration error; UFH, unfractionated heparin.

that the UFH calculator is just 1 of many strategies used to prevent errors in this area. Although technology can be a useful tool, at our institution it is used alongside other strategies. Priority should continue to be placed around interdisciplinary education regarding safe practices. As demonstrated in the early stage of the UFH calculator implementation, given that the training was not mandatory, implementation of technology itself does not prevent errors. Rather, concomitant education must be achieved with a systematic and interdisciplinary manner for technology to be successful.

Limitations

Limitations include the retrospective nature of the study, the concomitant nursing education on the UFH calculator throughout the study period, and the lack of data regarding time in therapeutic range or time to therapeutic range. Given that data were obtained retrospectively through chart review, it is not possible to infer any causal relationship between the reduction in UFH infusion MAE and use of the UFH calculator. There was ongoing widespread and individualized education in the emergency department about the use of UFH calculator, which may have simultaneously increased the number of nurses in the UFH calculator arm and decreased that arm's MAE rate. A power analysis was not done because the data were first collected for an internal audit on the calculator's use. After institutional review board review, this was further expanded to collect data to include in study analysis. However, statistically significant results were noted in the primary outcome, which demonstrate that adequate power was achieved and there was a significant difference between the 2 arms. Finally, because time in therapeutic range or time to therapeutic range was not evaluated, it is difficult to extrapolate how these results may affect clinical outcomes.

Implications for Emergency Nurses

In the fast-paced environment of the emergency department, UFH infusions can be especially challenging for nurses to administer safely because of multiple distractors and barriers to delivery of optimal care, such as the need to obtain an accurate weight before UFH administration. Current challenges with UFH in the emergency department include obtaining an accurate weight before initiation and calculating the correct bolus and infusion rate based on the protocol initiated.[22] Using a UFH calculator implemented into the EHR can help facilitate accurate dose administration and serve as a double check for the emergency nurse.

Conclusion

There is opportunity for innovative health informatics solutions to prevent medication related events. The use of an integrated UFH infusion calculator within the EHR system at our emergency department was associated with reduced medication related events involving UFH infusions. Further evaluation is required to elucidate clinical outcomes and how this solution can complement other risk-mitigation strategies such as smart pumps and identify enhancements to the UFH calculator.

Author Disclosures

Conflicts of interest: none to report.

Acknowledgments

The authors thank Stephanie Chiu, MPH, BS, for providing statistical analysis assistance and Chirag Patel, PharmD, MBA for implementing the heparin calculator.

REFERENCES

1. Institute of safe medication practices (ISMP) list of high-alert medications in acute care settings. ISMP. Published October 2018. Accessed October 18, 2023. https://www.ismp.org/sites/default/files/attachments/2018-10/highAlert2018new-Oct2018-v1.pdf
2. Garcia DA, Baglin TP, Weitz JI, Samama MM. Parenteral anticoagulants: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines, 9th ed *Chest*. 2012;141(2 suppl):e24S-e43S. https://doi.org/10.1378/chest.11-2291
3. National patient safety goals effective January 2023 for the hospital program. The Joint Commission. Published March 29, 2023. Accessed October 18, 2023. https://www.jointcommission.org/-/media/tjc/documents/standards/national-patient-safety-goals/2023/npsg_chapter_hap_jul2023.pdf
4. Millichamp T, Johnston ANB. Interventions to support safe medication administration by emergency department nurses: an integrative review. *Int Emerg Nurs*. 2020;49:100811.
5. Patanwala AE, Warholak TL, Sanders AB, Erstad BL. A prospective observational study of medication errors in a tertiary care emergency department. *Ann Emerg Med*. 2010;55(6):522-526.

6. Peth HA. Medication errors in the emergency department: a systems approach to minimizing risk. *Emerg Med Clin North Am*. 2003;21(1):141-158. https://doi.org/10.1016/S0733-8627(02)00085-8
7. Dreijer AR, Diepstraten J, Bukkems VE, et al. Anticoagulant medication errors in hospitals and primary care: a cross-sectional study. *Int J Qual Health Care*. 2019;31(5):346-352. https://doi.org/10.1093/intqhc/mzy177
8. Ghassemi MM, Richter SE, Eche IM, Chen TW, Danziger J, Celi LA. A data-driven approach to optimized medication dosing: a focus on heparin. *Intensive Care Med*. 2014;40(9):1332-1339. https://doi.org/10.1007/s00134-014-3406-5
9. Rothschild JM, Churchill W, Erickson A, et al. Medication errors recovered by emergency department pharmacists. *Ann Emerg Med*. 2010;55(6):513-521. https://doi.org/10.1016/j.annemergmed.2009.10.012
10. Oertal LB, Heparin Consensus Group. Unfractionated heparin: a nursing dilemma. *Pharmacotherapy*. 2004;24(8 Pt 2):156S-160S. https://doi.org/10.1592/phco.24.12.156s.36111
11. Raschke RA, Reilly BM, Guidry JR, Fontana JR, Srinivas S. The weight-based heparin dosing nomogram compared with a "standard care" nomogram: a randomized controlled trial. *Ann Intern Med*. 1993;119(9):874-881. https://doi.org/10.7326/0003-4819-119-9-199311010-00002
12. Williams TD, Sullivan K, Lacey C, Adoryan S, Watts B. Nurse-driven intravenous heparin protocol: quality improvement initiative. *AACN Adv Crit Care*. 2010;21(2):152-161. https://doi.org/10.1097/NCI.0b013e3181d2f2c6
13. Davis KW, Mcmillan MA, Perkins J, et al. Comparison of Outcomes: nurse-Driven vs. physician-Driven Weight-Based intravenous heparin Protocol. *Medsurg Nurs*. 2016;25(6):385-391.
14. Anand SS, Bates S, Ginsberg JS, et al. Recurrent venous thrombosis and heparin therapy: an evaluation of the importance of early activated partial thromboplastin times. *Arch Intern Med*. 1999;159(17):2029-2032. https://doi.org/10.1001/archinte.159.17.2029
15. Anand SS, Ginsberg JS, Kearon C, Gent M, Hirsh J. The relation between the activated partial thromboplastin time response and recurrence in patients with venous thrombosis treated with continuous intravenous heparin. *Arch Intern Med*. 1996;156(15):1677-1681. https://doi.org/10.1001/archinte.1996.00440140107010
16. Hull RD, Raskob GE, Brant RF, Pineo GF, Valentine KA. Relation between the time to achieve the lower limit of the APTT therapeutic range and recurrent venous thromboembolism during heparin treatment for deep vein thrombosis. *Arch Intern Med*. 1997;157(22):2562-2568. https://doi.org/10.1001/archinte.1997.00440430038005
17. Vandiver JW, Vondracek TG. Antifactor Xa levels versus activated partial thromboplastin time for monitoring unfractionated heparin. *Pharmacotherapy*. 2012;32(6):546-558. https://doi.org/10.1002/j.1875-9114.2011.01049.x
18. Bates SM, Weitz JI, Johnston M, Hirsh J, Ginsberg JS. Use of a fixed activated partial thromboplastin time ratio to establish a therapeutic range for unfractionated heparin. *Arch Intern Med*. 2001;161(3):385-391. https://doi.org/10.1001/archinte.161.3.385
19. Schurr JW, Stevens CA, Bane A, et al. Evaluation of compliance with a weight-based nurse-driven heparin nomogram in a tertiary academic medical center. *Crit Pathw Cardiol*. 2018;17(2):83-87. https://doi.org/10.1097/HPC.0000000000000113
20. Schurr JW, Stevens CA, Bane A, et al. Description and evaluation of the implementation of a weight-based, nurse-driven heparin nomogram in a tertiary academic medical center. *Clin Appl Thromb Hemost*. 2018;24(2):248-253. https://doi.org/10.1177/1076029617721009
21. Bates DW, Leape LL, Cullen CL, et al. Effect of computerized physician order entry and a team intervention on prevention of serious medication errors. *JAMA*. 2008;280(15):1311-1316. https://doi.org/10.1001/jama.280.15.1311
22. Brown M. Medication safety issues in the emergency department. *Crit Care Nurs Clin N Am*. 2005;17(1):5-69. https://doi.org/10.1016/j.ccell.2004.09.009

Triage Accuracy of Emergency Nurses: An Evidence-Based Review

Authors: Krisada Suamchaiyaphum, MSN, Allison R. Jones, PhD, RN, CNS, CNE, and Adelais Markaki, PhD, APRN-BC, FAAN, Birmingham, AL
Section Editor: Andi Foley, DNP, RN, ACCNS-AG, CEN, FAEN

Abstract

Introduction: Accurate triage assessment by emergency nurses is essential for prioritizing patient care and providing appropriate treatment. Undertriage and overtriage remain an ongoing issue in care of patients who present to the emergency department. The purpose of this literature review was to examine factors associated with triage accuracy in the emergency department.

Methods: We conducted an evidence-based literature review using the Cumulative Index to Nursing and Allied Health Literature, PubMed, and Embase. The search focused on peer-reviewed articles in English, available in full text, published between January 2011 and December 2021.

Results: A total of 14 articles met inclusion criteria and revealed the following 3 themes for triage accuracy: triage nurse characteristics, patient characteristics, and work environment. Triage nurses' accuracy rates ranged from 59.3% to 82%, with experience in triage associated with higher accuracy. Patient characteristics influenced triage accuracy, with nontrauma patients being undertriaged and trauma patients often overtriaged. The work environment played a role, as accuracy rates varied based on shift time and patient volume. Competing systems between prehospital and ED triage posed challenges and affected accuracy during fluctuations in patient volumes.

Discussion: This review underscores the complex nature of ED triage accuracy. It highlights the importance of nurse experience, training programs, patient characteristics, and the work environment in enhancing triage decision making. Enhanced understanding of these factors can inform strategies to optimize triage accuracy and improve patient outcomes.

Key words: Accuracy; Emergency department; Nurses; Triage

As the main point of entry for patients who lack routine access to health care, emergency departments rely on the use of a triage system that plays a crucial part in the safe and effective delivery of care to patients. The emergency nurse performs a rapid assessment of patients arriving at the emergency department and prioritizes patient care based on the severity of illness or injury. Triage accuracy is the extent of agreement to which the nurse and expert allocated the patients at the same level of standard guidelines.[1-3] Triage accuracy improves the allocation of limited resources and the effective treatment of patients and is indicative of the quality of emergency care.[3]

Triage errors in the fast-paced and stressful ED environment are common[4] and may complicate patient outcomes through delays in medical care,[5] ultimately harming patients,[6-8] particularly those with time-sensitive illnesses. Delays can also lead to ED crowding and increased mortality.[6,7] The most prevalent form of triage inaccuracy is undertriage or the failure to correctly identify and differentiate the severity of illness (eg, myocardial infarction) of patients from those with less urgent needs (eg, indigestion).[7] In 2013, Rogers et al[8] found that undertriage is related to increased mortality risk (odds ratio [OR], 3.0; 95% confidence interval [CI], 2.4-3.8; $P < .001$), longer ED length of stay (OR, 54.5; 95% CI, 45.5-63.5; $P < .001$), and longer hospital length of stay (OR, 1.7; 95% CI, 1.4-2.1;

Krisada Suamchaiyaphum, Member, Alamaba State Chapter, is a PhD Nursing Student, School of Nursing, University of Alabama at Birmingham, Birmingham, AL; Lecturer, Princess Agrarajakumari College of Nursing, Chulabhorn Royal Academy, Bangkok, Thailand. **ORCID identifier:** https://orcid.org/0009-0002-8941-3786.

Allison R. Jones, Member, Alamaba State Chapter, is an Assistant Professor, School of Nursing, University of Alabama at Birmingham, Birmingham, AL. **ORCID identifier:** https://orcid.org/0000-0001-8710-1944.

Adelais Markaki is a Professor, School of Nursing, University of Alabama at Birmingham, Birmingham, AL. **ORCID identifier:** https://orcid.org/0000-0002-2038-3139.

For correspondence, write: Krisada Suamchaiyaphum, MSN, School of Nursing, University of Alabama at Birmingham, 1720 2nd Ave S, Birmingham, AL; E-mail: ksuamcha@uab.edu

J Emerg Nurs 2024;50:44-54.
Available online 4 November 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.10.001

FIGURE 1

Search strategy: Boolean strings. CINAHL, Cumulative Index to Nursing and Allied Health Literature.

CINAHL search text: ((MH "Accuracy") OR (MH "Validity") OR (MH "Reliability") OR (MH "Triage") OR (MH "Emergency Severity Index"))
AND
((MH "Emergency nursing") OR (MH "Emergency care") OR (MH "Emergency Nurse Practitioner") OR (MH "Triage nurse")) OR "nurs*"
AND
((MH "Emergency department") OR (MH "Emergency room") OR (MH "Emergency center")

PubMed search text: ("Accuracy"[MeSH] OR "Accuracies"[MeSH] OR "Triage"[MeSH] OR "Triages"[MeSH] OR "emergency severity index"[MeSH]")
AND
("Nurse"[MeSH] OR "Registered Nurse"[MeSH] OR "Nursing Personnel"[MeSH] OR "Emergency Nurse"[MeSH] OR "Emergency Care"[MeSH] OR "Emergency Nurse Practitioner"[MeSH] OR "Triage nurse"[MeSH] OR "nurs*")
AND
("Emergency department"[MeSH] OR "Emergency room"[MeSH] OR "Emergency Center" [MeSH])

EMBASE search text:
'accuracy triage nurse emergency department' OR (('accuracy'/exp OR accuracy) AND ('triage'/exp OR triage) AND ('nurse'/exp OR nurse) AND ('emergency'/exp OR emergency) AND department)

$P < .001$). In addition, undertriaged patients were reported to have a 2-fold increase in risk of complications (OR, 2.0; 95% CI, 1.6-2.5; $P < .001$).[8] Conversely, overtriage, or inappropriate labeling of patients with nonurgent presentations to high acuity destination,[7] may lead to the misallocation of limited resources to patients who may not require urgent medical care, leaving those with a more significant need left untreated,[7] increasing the cost of medical care and potentially resulting in worse outcomes.[9]

Although existing literature has examined the factors that affect triage accuracy among emergency nurses, there remains a significant knowledge gap in understanding the dynamic and complex nature of the ED environment and how patient profiles and other factors may influence triage accuracy. Thus, this evidence-based review of literature aimed to critically review and synthesize available evidence on triage accuracy among emergency nurses, with the intent of identifying enablers and barriers associated with improving ED triage accuracy.

Methods

LITERATURE REVIEW

We performed an evidence-based literature review to allow for the inclusion of diverse methodologies and purposive sampling.[10] The search terms triage, accuracy, nurses, and emergency department were used with other common terms to search 3 electronic databases: Cumulative Index to Nursing and Allied Health Literature, PubMed with full-text database along with relevant medical subject heading terms, and Embase. The Boolean strings are presented in Figure 1. Filters were applied to limit searches to peer-reviewed articles published in English, available in full text, and published from January 2011 to December 2021.

Included articles focused on the accuracy of triage and triage instruments used, which included the Emergency Severity Index (ESI), Australian Triage Scale, and Canadian Triage Acuity Scale, and involved emergency nurses or triage nurses as participants. Articles that focused on disaster or mass casualty management, field or nonstandardized triage tools, letters to the editor, case reports, and book reviews were excluded because they comprised a low level of evidence in relation to the topic (Figure 2).

DATA EVALUATION AND ANALYSIS

An independent investigator (K.S.) performed an initial title and abstract screening, followed by a full-text article evaluation and data extraction. Author(s)/year, purpose/study population/sample/setting, study design and level of evidence, and key findings were extracted (see Table). The level of evidence was appraised based on the adapted Rating System for the Hierarchy of Evidence, which considers study design, methodological rigor, and applicability of study findings to practice.[25,26]

TABLE
Triage accuracy of emergency nurses-data extraction and appraisal (n = 14)

Author (y)	Purpose	Sample/setting/triage tool	Design/level of evidence*	Main findings	Themes†
Ameri et al (2021)[11]	To identify factors affecting accuracy of triage in patients with AMI	400 patients triaged at Imam Hossein hospital, Iran Triage tool: ED standardized	Retrospective study design/ level IV	Accuracy rate 82% Accurate triage is more likely in men with chest pain and sweating (OR, 4.5, 2.8, and 2.5; $P < .05$) and those who used prehospital medical services. Patients with indigestion and burning sensation may be undertriaged.	2
Brosinski et al (2017)[12]	To improve the percentage of undertriaged patients to less than 10% using ESI	15 nurses at a military hospital Triage tool: ESI	Quasi-experimental design/level III	Triage accuracy and effectiveness improved with nurses having ED experience, ongoing education, and triage refresher training. ESI 2 patients had the highest undertriage rate before and after refresher training. Nurses with 0-5 years and 11+ years of experience before training had undertriage 26% of patients. After ESI training, undertriage was reduced to 11.9% for nurses with 0-5 years of experience and 0% for nurses with 11+ years of experience.	1
Cetin et al (2020)[13]	To share data on the accuracy and duration of the nurse triage performed in an adult ED	7705 patients triaged at a university hospital Triage tool: ESI	Cross-sectional design/level IV	Accuracy rate 59.3%, with a triage duration of 1.51 (SD = 2.10) minutes The triage duration by accurate triage decisions was longer in patients with ESI 3 1.74 (SD = 1.27) minutes ($P = .01$). Expert nurses with more than 60 months of experience had the highest accuracy rate (61.8%), followed by master, experienced, proficient, and novice (59.4%, 58.4%, 58.2%, and 54.8%, $P = .01$, respectively). The night shift had the highest percentage of accurate triage, with 62.1%, compared with the day and evening shifts ($P = .03$).	1,3
Ekins and Morphet (2015)[14]	To measure the accuracy and consistency of triage in rural, remote, and nursing outpost triage nurse decision making	46 triage nurses at the Western Australian Country Health Service, Australia Triage tool: ATS	Descriptive correlational questionnaire design/level IV	Accuracy rate is higher on ATS 2 (78.3%) and the least accurate on ATS 5 (40.7%). Triage accuracy decreased with less urgent categories. Rural and remote nurses were more accurate than nursing outposts. Postgraduate qualifications did not affect triage accuracy. Fleiss' kappa coefficient was 0.4, representing a fair-to-good level of inter-rater agreement.	1

continued

TABLE
Continued

Author (y)	Purpose	Sample/setting/triage tool	Design/level of evidence*	Main findings	Themes†
Frisch et al (2020)[15]	To identify factors available at initial triage that predict ACS	750 patients arrived via EMS transportation Triage tool: ED standardized	Retrospective study design/ level IV	The predictors for ACS detection during nursing triage were old age, non-Caucasian race, elevated respiratory rate, and the interaction of first ED heart rate by diabetes type II. The area under the receiver operating characteristic curve was 0.75, indicating the model has moderate predictive accuracy.	2
Ghazali et al (2020)[16]	To identify the effect of triage training on the skills and accuracy of triage decisions for the adult trauma patients	143 registered nurses and medical office assistants who performed triage roles at 10 EDs in Malaysia Triage tool: TDMI and PSBQ	Randomized controlled trial/level II	Triage training had a positive impact on the skill and accuracy of triage. The training effectively improved TDMI and PSBQ scores. There were significant differences in the scores between the registered nurses and medical office assistants at post-test and follow-up ($P < .001$).	1
Goldstein et al (2017)[17]	To determine how often patients were allocated to the correct triage and the extent to which they were incorrectly promoted or demoted and to determine the main reasons for the error rate for each category in a nurse-led triage system	1091 patients triaged at the tertiary hospital ED of Gauteng, South Africa Triage tool: ESI	Retrospective study design/ level IV	Accuracy rate 68.3%; 44.4% of patients were overtriaged, whereas 55.6% were undertriaged. ESI category 3 had the highest rate of overtriage (29.4%), whereas category 2 had the highest rate of undertriage (33.4%). Patients with nontrauma were more likely to be undertriaged ($P = .0429$), with an OR of 1.697 (95% CI, 1.025-2.753), and trauma patients were likely to be incorrectly overtriage. Discriminator errors made up most of the mis-triage (57.8%), followed by numerical errors in calculations (21.5%). The most frequent discriminator errors were abdominal pain, chest pain, and shortness of breath.	1,2

continued

TABLE
Continued

Author (y)	Purpose	Sample/setting/triage tool	Design/level of evidence*	Main findings	Themes†
Jordi et al (2015)[18]	To determine accuracy, inter-rater reliability, and subjective confidence of triage nurses at 4 hospitals to determine an ESI from standardized ESI scenarios	69 emergency nurses at 4 EDs: 2 tertiary care hospitals and 2 secondary care hospitals in Switzerland Triage tool: ESI	Cross-sectional design/level IV	Accuracy rate 59.6% The inter-rater reliability of triage nurses was 0.78, indicating agreement. There was no correlation between accuracy triage and postgraduate education, years of ED/triage experience, or years of training. Nurses' confidence was very high (85.5%) with regard to ESI application during clinical practice and high (78%) when rating the written case scenarios.	1
Reay et al (2020)[19]	To identified factors impeding triage decision making	11 triage nurses at 4 urban tertiary care teaching hospitals in a Western Canadian city Triage tool: CTAS	Focus group interview/ level VI	Three themes were related to triage decision making: 1. Multiple competing systems: triage nurses felt caught between assigning ED beds to acute patients in the waiting room and less acute patients arriving by ambulance. The unique contextual factors that practitioners in each system must account for during triage assessment also caused tension (prehospital vs hospital context). 2. Large patient volumes: triage nurses prioritized acute patients while treating all waiting room patients. Stress hampered triage decisions. 3. Personal capacity: triage nurse discussed how experience, expertise, and emotion affect triage decisions. However, emotional exhaustion could impair decision making.	1,3
Roscoe et al (2016)[20]	To examine the triage process, decision rules, and role of the patient's story as a source of information	16 triage nurses at trauma level I ED in a large urban, not-for-profit teaching hospital in the Southeastern United States Triage tool: N/A	Qualitative/level VI	Three sources of information are used: visual, vital, and verbal. Triage nurses mostly relied on visual data, which included the patient's appearance, ease of movement, and response to questions. The vital signs collected during the triage process confirmed initial visual impressions. Triage nurses did not trust patients' stories because they often lied or needed to be redirected. Triage nurses must quickly identify a chief complaint and move patients in a busy ED. External factors, such as crowding in the waiting room, influence how triage nurses listen to patients' stories.	1

continued

TABLE
Continued

Author (y)	Purpose	Sample/setting/triage tool	Design/level of evidence*	Main findings	Themes†
Saban et al (2019)[21]	To explore the association between trait mindfulness and triage accuracy	96 nurses and physicians at the public ED of an academic teaching hospital Triage tool: N/A	Prospective consecutive nested design/level IV	ED workload environment (b = 0.24, $P < .01$) and trait mindfulness (b = 1.80, $P < .01$) were associated with triage accuracy (b = −0.04, $P < .05$). Triage accuracy (b = 1.81, $P < .001$) and collective mindfulness (b = 1.29, $P < .001$) were associated with patient satisfaction (b = −0.32, $P < .001$).	3
Saban et al (2021)[22]	To examine the impact of a reflective practice intervention on ED quality of care	84 nurses and physicians at the public tertiary ED of an Israeli academic teaching hospital Triage tool: CTAS	Pre-post-intervention quasi-experimental design/level III	Triage accuracy was significantly improved after the intervention, as demonstrated by a higher score on Triage Accuracy Assessment Scale 4.8 (SD = 1.5) in the postintervention phase than in the preintervention phase 3.9 (SD = 1.5) ($P < .001$). The postintervention period significantly reduced decision-making time, hospitalization rates 253.30 (SD = 246.75) vs 304.64 (SD = 249.14) min, hospitalization rates (30.3% vs 39.0%; $P < .001$), and hospital length of stay 5.73 (SD = 6.72) vs 6.69 (SD = 6.20) ($P = .04$) comparing preintervention.	1
Sanders and DeVon (2019)[23]	To explore the relationship between patient and nurse characteristics and accuracy of triage in patients with symptoms of AMI	66 emergency nurses at 2 sites in the Southeastern United States Triage tool: ED standardized	Retrospective descriptive study design/level IV	Accuracy rate 54% Non-White patients were more likely to receive an accurate triage level than White patients (OR, 2.07; $P = .01$). Patients who experienced chest pain were more likely to receive an accurate triage level than those who experienced nontraditional AMI symptoms (OR, 2.55; $P = .02$). The older age of emergency nurses triaged patients more accurately (OR, 1.07; 95% CI, 0.98-2.52). Neither education nor experience predicted the triage accuracy.	2
Sutriningsih et al (2020)[24]	To identify factors affecting emergency nurses' perceptions of the triage systems	90 emergency nurses at ED in Indonesia Triage tool: N/A	Cross-sectional design/level IV	Nurse perceptions were associated with knowledge ($P = .017$), working experience ($P = .023$), and training ($P = .041$). Knowledge strongly influenced nurses' perceptions (OR, 2.19; $P = .02$).	1

ACS, acute coronary syndrome; AMI, acute myocardial infarction; ATS, Australian Triage Scale; CI, confidence interval; CTAS, Canadian Triage Acuity Scale; ED, emergency department; EMS, emergency medical service; ESI, Emergency Severity Index; N/A, not applicable; OR, odds ratio; PSBQ, Patient Scenario Base Question; TDMI, Triage Decision Making Inventory.

* Appraisal based on the adapted *Hierarchy of Evidence Rating System*.[25,26]

† Theme: 1, triage nurse characteristics; 2, patient characteristics; 3, work environment.

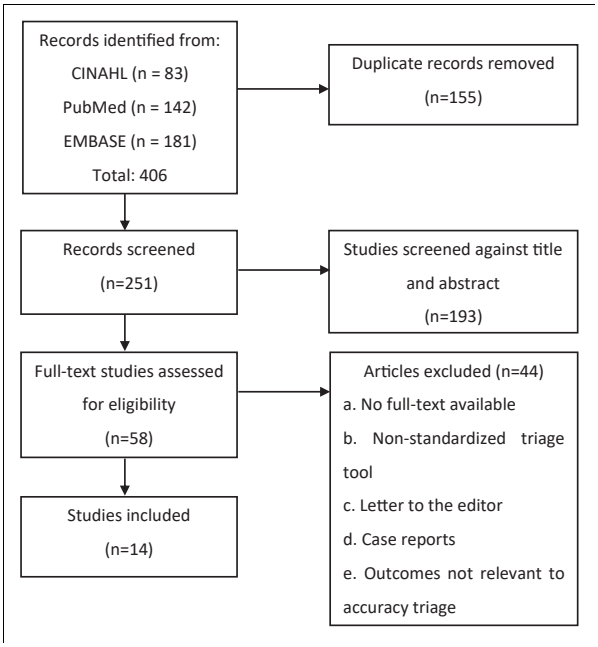


FIGURE 2

A flow diagram. CINAHL, Cumulative Index to Nursing and Allied Health Literature.

Results

A total of 14 articles met inclusion criteria and were kept for data extraction, as presented in Table. Eight articles examined the accuracy of triage in international ED settings, including Australia, Canada, Indonesia, Iran, Israel, Malaysia, South Africa, and Switzerland.[11,14,16-19,22,24] Two studies focused on the United States,[20,23] whereas 4 others did not specify the location.[12,13,15,21] Selected articles included 1 level II evidence (randomized control trial),[16] 2 level III evidence (quasi-experimental design),[12,22] and 9 level IV evidence articles (retrospective and cross-sectional design),[11,13-15,17,18,21,23,24] and 2 level VI evidence articles were qualitative studies with focus group interviews.[19,20] A summary of appraised evidence is presented in Figure 3.

Synthesis of evidence revealed 3 major themes in terms of factors affecting ED triage accuracy: (1) triage nurse characteristics,[12-14,16-20,22,24] (2) patient characteristics,[11,15,17,23] and (3) work environment.[13,19,21]

TRIAGE NURSE CHARACTERISTICS

Across several articles, triage nurse accuracy rate ranged from 59.3% to 82%.[11,13,14,17,18,23] Accuracy rates increased with years of nurses' triage experience.[13,18] In particular, Cetin et al[13] found that expert nurses had improved accuracy rates in comparison with novice triage nurses. In addition, Jordi et al[18] found that nurses with 3 to 4 years of triage experience had a 67.2% accuracy rate, whereas those with less than 1 year of experience had a 58.1% accuracy rate, indicating that the accuracy of triage decisions increased as nurses' ED experience increased. However, Ekins and Morphet[14] found no correlation between years of nursing experience and triage accuracy. Studies by Sutriningsih et al[24] and Reay et al[19] indicate that the ability to recognize specific clinical cues or signs, indicative of high-risk situations, influenced triage decision making.

Nurses' accuracy, knowledge, skill, and judgment in triage decision making vary significantly across studies.[12,16,18] Several programs have been implemented to address these variations and improve triage accuracy. For example, Brosinski et al[12] aimed to reduce the percentage of undertriaged patients to less than 10% using the ESI tool.[27] The project consisted of a 3-month retrospective triage chart review and retraining emergency nurses on using the ESI tool. Investigators found that the undertriage rate decreased by 23.8% after refresher training. Furthermore, after completing the training, nurses felt more confident in their ability to use the ESI tool in clinical practice.[12]

In addition, Reay et al[19] examined personal capacity, which directly affects the nurse's ability to make accurate decisions during triage. Triage nurses rely on information from various sources, such as visual observations, clinical examination, and the patient's reason for visiting the emergency department, to make accurate decisions.[20] However, obstacles to triage accuracy were identified. Roscoe et al[20] identified the lack of clinical competency as the main obstacle affecting triage quality. In addition, Goldstein et al[17] found that numerical miscalculations in vital signs such as heart rate, blood pressure, and respiratory rate were the most common cause of mistakes during triage.

PATIENT CHARACTERISTICS

Most patients arriving at the emergency department experienced nontraumatic illness, with these patients being more likely to be undertriaged. Conversely, those with traumatic injury were more likely to experience overtriage.[17] This was attributed to visual discrimination; for instance, a trauma patient with blood may be regarded as requiring more immediate treatment than a patient with chest discomfort, who may be experiencing an acute myocardial infarction (AMI) that cannot be seen with the naked eye.[17]

Sanders and DeVon[23] explored the relationship between patient characteristics with symptoms of AMI and

FIGURE 3

Adapted *Rating System for the Hierarchy of Evidence*. (Adapted from Dang, D., & Dearholt, S. (2017). *Johns Hopkins nursing evidence-based practice: model and guidelines.* 3rd ed. Indianapolis, IN: Sigma Theta Tau International; Fineout-Overholt, E., Melnyk, B.M., Stillwell, S.B & Williamson, K.M. (2010). Critical appraisal of the evidence: Part I. *American Journal of Nursing, 110*(7), 47-52.)

Level of evidence	Type of evidence
Level I	Systematic review or meta-analysis of randomized control trials (RCTs)
Level II	RCTs
Level III	Controlled trial without randomization
Level IV	Case-control or cohort study
Level V	Systematic review of descriptive or qualitative or mixed methods studies
Level VI	Descriptive or qualitative or mixed methods study
Level VII	Experiential and non-research evidence Literature review Quality improvement Program or financial evaluation Case report
Level VIII	Expert opinion; expert committee or consensus panel

accuracy triage of the ESI level 2. Their study showed that patient race and symptom presentation were significant predictors of triage accuracy; in fact, non-white patients were more likely to receive an accurate triage level than white patients (OR, 2.07; $P = .010$).[23] In addition, patients who experienced chest pain were more likely to receive an accurate triage level than patients who experienced nontraditional AMI symptoms (OR, 2.55; $P = .022$). Similarly, Ameri et al[11] evaluated data from ED-admitted patients with an AMI final diagnosis and found that patients who complained of chest discomfort were diaphoretic upon arrival and those who used ambulance services had better triage accuracy than those who did not. Frisch et al[15] found that patient characteristics such as older age, non-Caucasian race, and elevated respiratory rate were identified as good predictors for accurate triage in detecting AMI.

WORK ENVIRONMENT

The accuracy of nurse triage in emergency departments was influenced by environmental factors such as shift time, patient volume, and individual workload.[13,21] Cetin et al[13] found that the accuracy rate of triage nurses differed by shift times, with the highest rate at 62% on the night shift when the patient volume was lower compared with 59.5% and 57.9% during the day and evening shifts, respectively, when the patient volume was higher. Interestingly, Saban et al[21] reported that an extreme ED workload environment, representing a volume of patients in the ED treatment areas that forces triage nurses to operate beyond their capacity, positively correlated with triage accuracy ($r = 0.11$, $P = .03$). Finally, Reay et al[19] identified competing systems as a significant factor affecting triage decision making. These competing systems refer to the tension that can arise between the prehospital triage system and the ED triage.[19] The misalignment of these systems can lead to confusion and inaccuracies during triage decision making, especially when there are fluctuations in patient volume. The conflicting requirements and protocols between the prehospital and ED triage can also create challenges and hinder the seamless flow of patients, potentially compromising the accuracy and efficiency of the triage process.[19]

Discussion

In the current review, we synthesized the available evidence on ED triage accuracy from 14 articles. The reviewed studies provided valuable insights into nurse triage accuracy, emphasizing the variation of chosen triage tools. Some studies used standardized tools such as ESI or Canadian Triage Acuity Scale, whereas others used nonspecific systems, reflecting the diverse nature of triage practices. These studies also examined undertriage and overtriage, revealing challenges in performing an accurate triage. We identified 3 themes most closely related to greater triage accuracy: triage nurse

characteristics, patient characteristics, and work environment. Factors that enhanced nurse triage accuracy encompassed nursing knowledge,[12,24] training,[12,16,22,24] and experience.[12,13,18,19,24] Conversely, the primary obstacle that hindered accuracy was related to a higher workload.[19,20]

Nurse characteristics included nurse's knowledge, experience, skills, and other personal attributes that influence their triage accuracy. Findings from this review indicate that continuous training programs improve nurses' knowledge and skills, confidence and self-efficacy, and awareness of the importance of accurate and timely triage. The Emergency Nurses Association recommends that triage nurses possess at least 1 year of ED experience, undergo triage training and relevant courses, and hold emergency nursing certification.[28] In addition, the Emergency Nurses Association suggests that aligning regular triage training and refresher courses with incorporating evidence-based practice can improve the quality of care and patient outcomes in emergency departments.

Patient characteristics largely focused on visible aspects of patients upon presentation to the emergency department. Of the studies included in this review, most patients presented to the emergency department with nontraumatic or medical illnesses, and findings suggest that nontrauma patients were more likely to be undertriaged, whereas trauma patients were more likely to be overtriaged. One possible explanation for this discrepancy is visual discrimination, given that trauma patients with visible injuries may be perceived as more critical than those with nonvisible illnesses or ailments and are therefore perceived as requiring a higher level of treatment.

Another patient characteristic that influenced triage accuracy was race. The study by Sanders and DeVon[23] yielded a counterintuitive finding that non-white patients may actually receive more accurate triage assessments than white patients. The impact of race or visible patient characteristics on triage assessments in health care settings is a well-documented and ongoing concern. This review of the current literature highlights the existence of racial and ethnic disparities in health care, including inequalities in triage assessments.[29,30] Research has indicated that patients from racial and ethnic minority groups may experience differences in the triage process, including longer wait times, undertriage, or delayed access to appropriate care.[29,30] For example, Lee et al[31] revealed that Black and Hispanic patients with acute pain were less likely to receive opioids in the emergency department. These disparities can result from various factors, including implicit biases, cultural differences, language barriers, and socioeconomic factors. Efforts should be made to continue examining these concerns and to address inequities in triage practices, so that all patients receive timely and appropriate care, regardless of their gender, race, or visible characteristics.[32,33] The extent to which implicit bias affects ED triage accuracy has yet to be fully elucidated and must be recognized as a complex and multifaceted issue that requires attention and effort from providers, organizations, and policy makers.

Finally, the impact of work environment on the accuracy of ED triage has also become evident. Nurses working in noisy, crowded, and chaotic environments may experience feelings of being overwhelmed and rushed, which can contribute to errors in their decision-making process.[34] In busy and chaotic environments, the presence of excessive noise, high patient volumes, and distractions can disrupt nurses' concentration and hinder their ability to gather information effectively and make accurate triage decisions. Indeed, Ausserhofer et al[35] found that higher patient volume was associated with increased odds of triage errors on the part of emergency nurses. Moreover, personal capacity factors, such as cognitive workload, emotional exhaustion, and burnout, may also influence nurse triage accuracy.[36]

According to Bijani and Khaleghi,[4] challenges and barriers can significantly affect the quality of triage in emergency departments and can be classified into 2 subcategories: clinical competency and psychological capabilities. Therefore, health care organizations should consider these factors when designing interventions to improve the accuracy of nurse triage in the emergency department. Potential strategies include coordination and raising awareness among triage nurses and administration to provide adequate staffing and comprehensive training programs to facilitate triage accuracy and effective decision making.[37]

Implications for Emergency Nurses

This evidence-based review underscores key opportunities to examine how triage accuracy can be improved and mitigate implicit biases in triaging. The development of strategies to improve triage accuracy in the emergency department is critical to achieving optimal effectiveness for health care delivery for both providers and patients. Focusing on the development and implementation of strategies in health care organizations can significantly affect the role of emergency triage nurses, patient care, and the dynamics of the work environment in terms of improving triage accuracy and ultimately leading to better patient outcomes. For instance, focusing on individual triage nurses can involve ongoing or refresher

triage education and training programs aimed at addressing implicit bias. At the ED unit level, efforts to improve the work environment can remove barriers that hinder accurate decision making. Similarly, at the organizational level, addressing challenges such as overcrowding and inadequate staffing can contribute to more effective emergency nursing practices. Importantly, interventions at all levels must be sustainable and regularly evaluated for quality assurance. Further research is needed to explore the effectiveness of specific interventions to improve triage accuracy, the impact of various triage tools and algorithms on accuracy, and methods to improve current triage tools.

Limitations

This literature review focused on articles published after 2011 to capture evidence that reflects current practices. We did not include any articles examining the effect of coronavirus disease-2019 on ED triage accuracy, which has already resulted in both temporary and permanent changes in health care. The definition and assessment of triage accuracy lacked standardization across studies, with some investigators using patient outcome measures and others relying on the agreement between the triage nurse's assessment and the patient's destination. These variations limit the comparability of findings across articles and generalizability across populations. In addition, some investigators combined triage nurses with other health care providers, potentially skewing results from articles solely focused on nurses.

Conclusions

Accuracy in ED triage is paramount for providing timely and appropriate patient care. This evidence-based review has identified 3 major themes that affect emergency nurse triage accuracy: triage nurse characteristics, patient characteristics, and work environment. Delving deeper into this multifaceted issue fuels innovative strategies and interventions. When consistently and systematically applied, these measures significantly enhance ED triage accuracy and lead to improved patient outcomes, redefining excellence in emergency nursing.

Author Disclosures

Conflicts of interest: none to report.

REFERENCES

1. Farrohknia N, Castrén M, Ehrenberg A, et al. Emergency department triage scales and their components: a systematic review of the scientific evidence. *Scand J Trauma Resusc Emerg Med*. 2011;19:42. https://doi.org/10.1186/1757-7241-19-42
2. AlSerkal Y, AlBlooshi K, AlBlooshi S, et al. Triage accuracy and its association with patient factors using Emergency Severity Index: findings from United Arab Emirates. *Open Access Emerg Med*. 2020;12:427-434. https://doi.org/10.2147/oaem.S263805
3. Tam HL, Chung SF, Lou CK. A review of triage accuracy and future direction. *BMC Emerg Med*. 2018;18(1):58. https://doi.org/10.1186/s12873-018-0215-0
4. Bijani M, Khaleghi AA. Challenges and barriers affecting the quality of triage in emergency departments: a qualitative study. *Galen Med J*. 2019;8:e1619. https://doi.org/10.31661/gmj.v8i0.1619
5. Zachariasse JM, van der Hagen V, Seiger N, Mackway-Jones K, van Veen M, Moll HA. Performance of triage systems in emergency care: a systematic review and meta-analysis. *BMJ Open*. 2019;9(5), e026471. https://doi.org/10.1136/bmjopen-2018-026471
6. Stone EL. Clinical decision support systems in the emergency department: opportunities to improve triage accuracy. *J Emerg Nurs*. 2019;45(2):220-222. https://doi.org/10.1016/j.jen.2018.12.016
7. Hinson J, Martinez D, Schmitz P, et al. Accuracy of emergency department triage using the Emergency Severity Index and independent predictors of under-triage and over-triage in Brazil: a retrospective cohort analysis. *Int J Emerg Med*. 2018;11(1):1-10. https://doi.org/10.1186/s12245-017-0161-8
8. Rogers A, Rogers FB, Schwab CW, et al. Increased mortality with under-triaged patients in a mature trauma center with an aggressive trauma team activation system. *Eur J Trauma Emerg Surg*. 2013;39(6):599-603. https://doi.org/10.1007/s00068-013-0289-z
9. Aacharya RP, Gastmans C, Denier Y. Emergency department triage: an ethical analysis. *BMC Emerg Med*. 2011;11(1):1-13. https://doi.org/10.1186/1471-227X-11-16
10. Whittemore R, Knafl K. The integrative review: updated methodology. *J Adv Nurs*. 2005;52(5):546-553. https://doi.org/10.1111/j.1365-2648.2005.03621.x
11. Ameri M, Shahhoseini S, Goli S, Kharatha M, Esmaeili FA. Factors affecting triage accuracy in patients with a definitive diagnosis of acute myocardial infarction. *Australas Emerg Care*. 2021;24(2):81-83. https://doi.org/10.1016/j.auec.2020.09.004
12. Brosinski CM, Riddell AJ, Valdez S. Improving triage accuracy: A staff development approach. *Clin Nurse Spec*. 2017;31(3):145-148. https://doi.org/10.1097/NUR.0000000000000291
13. Cetin SB, Eray O, Cebeci F, Coskun M, Gozkaya M. Factors affecting the accuracy of nurse triage in tertiary care emergency departments. *Turk J Emerg Med*. 2020;20(4):163-167. https://doi.org/10.4103/2452-2473.297462
14. Ekins K, Morphet J. The accuracy and consistency of rural, remote and outpost triage nurse decision making in one Western Australia Country Health Service Region. *Australas Emerg Nurs J*. 2015;18(4):227-233. https://doi.org/10.1016/j.aenj.2015.05.002

15. Frisch SO, Brown J, Faramand Z, et al. Exploring the complex interactions of baseline patient factors to improve nursing triage of acute coronary syndrome. *Res Nurs Health*. 2020;43(4):356-364. https://doi.org/10.1002/nur.22045
16. Ghazali SA, Abdullah KL, Moy FM, Ahmad R, Hussin EOD. The impact of adult trauma triage training on decision-making skills and accuracy of triage decision at emergency departments in Malaysia: a randomized control trial. *Int Emerg Nurs*. 2020;51, 100889. https://doi.org/10.1016/j.ienj.2020.100889
17. Goldstein LN, Morrow LM, Sallie TA, et al. The accuracy of nurse performance of the triage process in a tertiary hospital emergency department in Gauteng Province, South Africa. *S Afr Med J*. 2017;107(3):243-247. https://doi.org/10.7196/SAMJ.2017.v107i3.11118
18. Jordi K, Grossmann F, Gaddis GM, et al. Nurses' accuracy and self-perceived ability using the Emergency Severity Index triage tool: a cross-sectional study in four Swiss hospitals. *Scand J Trauma Resusc Emerg Med*. 2015;23:62. https://doi.org/10.1186/s13049-015-0142-y
19. Reay G, Smith-MacDonald L, Then KL, Hall M, Rankin JA. Triage emergency nurse decision-making: incidental findings from a focus group study. *Int Emerg Nurs*. 2020;48, 100791. https://doi.org/10.1016/j.ienj.2019.100791
20. Roscoe LA, Eisenberg EM, Forde C. The role of patients' stories in emergency medicine triage. *Health Commun*. 2016;31(9):1155-1164. https://doi.org/10.1080/10410236.2015.1046020
21. Saban M, Dagan E, Drach-Zahavy A. The relationship between mindfulness, triage accuracy, and patient satisfaction in the emergency department: a moderation-mediation model. *J Emerg Nurs*. 2019;45(6):644-660. https://doi.org/10.1016/j.jen.2019.08.003
22. Saban M, Drach-Zahavy A, Dagan E. A novel reflective practice intervention improves quality of care in the emergency department. *Int Emerg Nurs*. 2021;56, 100977. https://doi.org/10.1016/j.ienj.2021.100977
23. Sanders SF, DeVon HA. Accuracy in ED triage for symptoms of acute myocardial infarction. *J Emerg Nurs*. 2016;42(4):331-337. https://doi.org/10.1016/j.jen.2015.12.011
24. Sutriningsih A, Wahyuni CU, Haksama S. Factors affecting emergency nurses' perceptions of the triage systems. *J Public Health Res*. 2020;9(2):1808. https://doi.org/10.4081/jphr.2020.1808
25. Dang D, Dearholt SL. *Johns Hopkins Evidence-Based Practice: Model and Guidelines*. 3rd ed. Sigma Theta Tau International; 2017.
26. Fineout-Overholt E, Melnyk BM, Stillwell SB, Williamson KM. Evidence-based practice step by step: critical appraisal of the evidence: part I. *Am J Nurs*. 2010;110(7):47-52. https://doi.org/10.1097/01.NAJ.0000383935.22721.9c
27. Wolf L, Ceci K, McCallum D. *Emergency Severity Index Handbook*. Fifth Edition. Emergency Nurses Association; 2023.
28. Worth M, Davis LL, Wallace DC, Bartlett R, Travers D. Are emergency departments in the United States following recommendations by the Emergency Severity Index to promote quality triage and reliability? *J Emerg Nurs*. 2019;45(6):677-684. https://doi.org/10.1016/j.jen.2019.05.006
29. Deichen Hansen ME, Goldfarb SS, Mercouffer A, Dark T, Lateef H, Harman JS. Racial inequities in emergency department wait times for pregnancy-related concerns. *Womens Health (Lond)*. 2022;18, 17455057221129388. https://doi.org/10.1177/17455057221129388
30. Zook HG, Kharbanda AB, Flood A, Harmon B, Puumala SE, Payne NR. Racial differences in pediatric emergency department triage scores. *J Emerg Med*. 2016;50(5):720-727. https://doi.org/10.1016/j.jemermed.2015.02.056
31. Lee P, Le Saux M, Siegel R, et al. Racial and ethnic disparities in the management of acute pain in US emergency departments: meta-analysis and systematic review. *Am J Emerg Med*. 2019;37(9):1770-1777. https://doi.org/10.1016/j.ajem.2019.06.014
32. Madsen TE, Choo EK, Seigel TA, Palms D, Silver B. Lack of gender disparities in emergency department triage of acute stroke patients. *West J Emerg Med*. 2015;16(1):203-209. https://doi.org/10.5811/westjem.2014.11.23063
33. Aysola J, Clapp JT, Sullivan P, et al. Understanding contributors to racial/ethnic disparities in emergency department throughput times: a sequential mixed methods analysis. *J Gen Intern Med*. 2022;37(2):341-350. https://doi.org/10.1007/s11606-021-07028-5
34. Delmas P, Fiorentino A, Antonini M, et al. Effects of environmental distractors on nurse emergency triage accuracy: a pilot study protocol. *Pilot Feasibility Stud*. 2020;6(1):171. https://doi.org/10.1186/s40814-020-00717-8
35. Ausserhofer D, Zaboli A, Pfeifer N, et al. Errors in nurse-led triage: an observational study. *Int J Nurs Stud*. 2021;113, 103788. https://doi.org/10.1016/j.ijnurstu.2020.103788
36. Reay G, Rankin JA, Then KL. Momentary fitting in a fluid environment: a grounded theory of triage nurse decision making. *Int Emerg Nurs*. 2016;26:8-13. https://doi.org/10.1016/j.ienj.2015.09.006
37. Wolf LA, Delao AM, Perhats C, Moon MD, Zavotsky KE. Triaging the emergency department, not the patient: United States emergency nurses' experience of the triage process. *J Emerg Nurs*. 2018;44(3):258-266. https://doi.org/10.1016/j.jen.2017.06.010

Send submissions to Andi Foley, DNP, RN, ACCNS-AG, CEN, FAEN at andii42@yahoo.com.

Competencies Emergency and Mental Health Nurses Need in Triage in Acute Mental Health Care: A Narrative Review

Authors: Carina Stigter-Outshoven, MCTD, CMHN, RN, Geurt Van de Glind, PhD, Leendert Jan Wieberdink, MA, Ruben van Zelm, PhD, and Arjan Braam, MD, PhD, Utrecht, the Netherlands

Contribution to Emergency Nursing Practice

- Acute mental health triage (AMHT) requires the immediate assessment of correct levels of urgency in unpredictable and complex patient situations in order to initiate appropriate safety measures and follow-up care. In many countries, the professionals designated to conduct AMHT are emergency and mental health nurses.
- This review integrates the current scientific research on AMHT and identifies the high-level competencies in terms of knowledge, skills, and attitudes required by nurses. These are required to balance the potentially competing interests of patients (and their relatives), health care services, the general public, and health care professionals. Achieving this balance requires the application of clinical reasoning.
- Education and training are required to incorporate the clinical reasoning process into AMHT and improve the confidence of AMHT practitioners.

Abstract

Introduction: Emergency and mental health nurses are, in many countries, the designated professionals to conduct acute mental health triage. This review aimed to identify competencies these nurses need in major acute health care services such as emergency and accident departments and mental health crisis services for triage for psychiatric patients in crisis.

Methods: For familiarization and construction of an initial thematic framework, we have searched the databases MEDLINE, CINAHL, Academic Search Premier, and PsycINFO since 1975. For indexing and sorting, the web-based application Rayyan was used to identify relevant studies. ATLAS.ti 22 was used for data extraction, reviewing, summary, and display using labels relevant for our research questions: knowledge, skills, and attitude. For appraisal of the included studies, the Mixed Methods Appraisal Tool and the Scale of the Assessment for Narrative Reviews were used.

Results: Thirty one studies were included and were overall rated as adequate, mostly published since 2000. Competencies

Carina Stigter-Outshoven is a Lecturer, Institute of Nursing Studies, University of Applied Sciences Utrecht, Utrecht, The Netherlands, and a Master Care Trajectory Designer and Community Mental Health Nurse, Department of Emergency Psychiatry, Altrecht Mental Health Care, Utrecht, The Netherlands, and University of Humanistic Studies, Utrecht, The Netherlands. **ORCID identifier:** https://orcid.org/0000-0002-0799-869X.

Geurt van de Glind is a Research Associate, Institute of Nursing Studies, University of Applied Sciences Utrecht, Utrecht, The Netherlands. **ORCID identifier:** https://orcid.org/0000-0002-8647-6581.

Leendert Jan Wieberdink is a Librarian, Institute of Nursing Studies, University of Applied Sciences Utrecht, Utrecht, The Netherlands.

Ruben van Zelm is a Course Manager and Principal Lecturer-Researcher, Institute of Nursing Studies, University of Applied Sciences Utrecht, Utrecht, The Netherlands. **ORCID identifier:** https://orcid.org/0000-0003-0238-6392.

Arjan Braam is a Professor at the Department of Humanistic Chaplaincy for a Plural Society, University of Humanistic Studies, Utrecht, The Netherlands, a Psychiatrist, Department of Emergency Psychiatry, and a Head, Department of Residency Training, Altrecht Mental Health Care, Utrecht, The Netherlands. **ORCID identifier:** https://orcid.org/0000-0002-1460-6201.

For correspondence, write: Carina Stigter-Outshoven, MCTD, CMHN, RN, Altrecht, Institute for Mental Health Care, Emergency Department, Lange Nieuwstraat 119, 3512 PG Utrecht, The Netherlands; E-mail: c.stigter@altrecht.nl

J Emerg Nurs 2024;50:55-71.
Available online 3 October 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.08.005

needed by nurses in AMHT contain a high level of specialist knowledge (risk assessment, de-escalation, triage tools, psychopathology, law/regulations, care pathways), skills (clinical skills, communication, collaboration, coordinating care), and attitude (nonjudgmental, confidence).

Discussion: Emergency and mental health nurses require a significant amount of competencies beyond basic nursing education in acute mental health triage. Most described competencies pertain both to knowledge and skills. Less is known about attitude. To integrate the several competencies knowledge, skills, and attitude, clinical reasoning is needed to organize chaos in unpredictable and complex patient situations.

Key words: Nurse; Emergency; Acute mental health; Triage; Competence

Introduction

As in general health care, triage in acute mental health care (AMH) requires structured short-term assessment to enable timely, qualitative, and proportional care proceedings. Thus, it is a dynamic and contextual process of establishing urgency and follow-up.[1] Errors or gaps in the triage process may increase risks for the patient, their environment, and/or public order[2] and affect health care costs and availability.[3,4]

The word "triage" is derived from the French verb "trier," which means "to sort."[1] In a medical context, triage involves the systematic "sorting" of patients, that is, an immediate assessment of the severity and urgency of their current health status.[5] Structured triage was first documented in military medicine during the Napoleonic Wars.[6] Throughout the First World War, the incessant flow of casualties necessitated the further development of triage.[7] Until approximately 1995, triage in general western health care services seemed to be based solely on clinical judgment and ethical and moral considerations.[8] However, since then, the development, testing, and implementation of triage scales to aid the clinical reasoning process and enhance triage accuracy have become the norm.[9]

In the early years of using these triage scales, Zimmerman's definition of triage[10] was widely embraced: "Triage is a structure which categorizes potential patients into groups for whom an acuity scale is used."[11-13] These triage scales provide levels or categories of urgency. Then, the urgency levels guide decision-making processes related to adjustment of follow-up treatment and referral, ED length of stay, and funding.

Since 2000, scientific papers on acute mental health triage (AMHT) or triage of patients in a psychiatric crisis have been published in increasing numbers.[14,15] The research documented in these publications was mainly conducted in emergency departments of general hospitals or in ambulance or police rapid response services and mainly addressed face-to-face triage.[16,17] Research on triage by nurses via telephone has also been conducted, particularly in Australia and Sweden, partly in the context of long-distance "tele-psychiatry" and due to shortages of available staff.[18-20] However, most of these studies were focused on the development and testing of triage support tools rather than in-depth evaluation of the AMHT process.[21]

Triage in AMH takes place in high-pressure settings involving unpredictable and complex patient situations where risk factors are involved.[22] Repeated triage of the same patient is always a possibility, as is frequent monitoring afterward. Emergency and mental health nurses active in acute health care settings are often the professionals designated to conduct triage.[15,23] However, it is unclear which specific nurse competencies are explicitly required to assess urgency and to determine follow-up actions for psychiatric patients in crisis to provide high-quality, safe, and humane care. This also applies to developments regarding the optimization of triage by nurses concerning competencies beyond the use of instruments.[15,22]

Competencies in health care are defined as specific clusters of knowledge and experience-based skills needed by health care practitioners to perform their professional roles/jobs in health and social care.[24] Competence, by another definition, consists of integrated knowledge, skills, and attitude.[25]

To the best of our knowledge, no overview exists of the competencies emergency (mental health) nurses need to provide high-quality triage to psychiatric patients in crisis. Therefore, the aim of this narrative review is to identify in the scientific literature nurse competencies required for AMHT in major acute health care services. These services include emergency and accident departments and mental health crisis services such as crisis resolution teams.

Such an overview will be useful for both nurse education and AMHT practice. Nursing schools, including those providing both basic and advanced levels of training and education, can use it to evaluate their curricula. Furthermore, it will help AMHT practice organizations to identify development opportunities in the competencies of their staff that perform AMHT. Furthermore, gaps in the scientific literature will be identified.

The following research questions will be addressed in this study: (1) What is known about the competencies emergency nurses need for triage of psychiatric patients in crisis presenting at an emergency department, and (2) how does this apply to emergency mental health nurses conducting triage specifically in AMH services?

Methods

In this narrative review, we used the formal qualitative data analysis process following the first 5 steps described by Ritchie et al,[26] that is, familiarization, constructing a framework, indexing and sorting, reviewing, and data summary and display, for 2 searches.

SEARCH STRATEGY

The following search strategy was used to identify publications relevant to answering both our research questions. For familiarization, constructing an initial thematic framework, and answering the first research question, a MEDLINE search was performed on May 26, 2021, using the Medical Subject Headings terms: triage, emergency, mental health, and nurse/nursing. The goals were 2-fold: (1) to obtain an oversight of triage for psychiatric patients in crisis in different acute health care services and (2) to facilitate the search strategy for answering the second research question. A second search was conducted on October 21, 2022, with the additional terms: assessment, psychiatry, and crisis. For the second search, the databases MEDLINE, CINAHL, Academic Search Premier, and PsycINFO were used.

Inclusion and Exclusion Criteria for Both Searches

This narrative review considered resources documenting competencies needed for emergency (mental health) nurses involved in triage at acute health care services. Accordingly, resources documenting the specific competencies of other health care professionals, such as physicians and psychiatrists, were excluded.

Concepts

The following concepts derived from the research questions were used for the selection process: triage in acute/emergency/mental health care/psychiatry, organization of care, (mental health/psychiatric) nurse, competency, knowledge, skill, attitude, and training. Publications were included when findings on these concepts were present in the document.

For inclusion of publications in the second search, the focus was narrower. Publications were included when findings on triage of psychiatric patients in crisis in the specific context of AMH services were present.

Context

The competencies of nurses working in general acute health care services such as emergency and accident departments as well as ambulances and emergency call centers overlap with the competencies of emergency (mental health) nurses working in AMH, so studies with these contexts were included in search 1. For search 2, these general acute health care services were excluded.

Types of Sources

This narrative review considers scientific literature published in English from 1975 to the present in peer-reviewed journals. All types of research were included.

INDEXING AND SORTING

Study Selection

The results of both searches were collected using RefWorks ProQuest, Ex Librisgroup (2023), and duplicates were removed. Titles and abstracts were assessed by 2 independent reviewers. For this procedure, the web and mobile application for systematic reviews Rayyan, Rayyan Systems Inc. (2016), www.rayyan.ai, was used for screening titles and abstracts in both searches. Publications were selected when relevant to the research questions considering the inclusion and exclusion criteria.

Reviewing Data Extracts

For data extracts from both searches, the full texts of the selected studies were independently reviewed by 2 researchers using ATLAS.ti, version 23 by Scientific Software Development GmbH. (2022), a software application developed for analyzing qualitative research data that is also used

TABLE 1
List of labels used for data extraction

Competence	Study design	Services	Perspective	Background	Country
General	Qualitative	A and E department	Service users	Organization of care	Australia
Knowledge	Quantitative	AMH services	Professionals	History of triage	The Netherlands
Skills	Review			Instruments	Sweden
Attitude	Mixed methods				UK
Training	Other				USA
Confidence					Other
Experience					

AMH, acute mental health care; A and E, accident and emergency.

for transparent data extraction and analyses in reviewing scientific literature.[27] In the current study, it was used to index and sort relevant citations from the selected studies in a structured way using predefined labels and emergent labels during data analysis.[26] Emergent labels were added when 2 reviewers agreed. The predefined and added labels for both searches are presented in Table 1. Note that "labeling" in this review is not used in qualitative data analysis. ATLAS.ti was used as a tool for identifying main labels. Other analytical properties that facilitate qualitative analyses (such as creating a "code tree") were not necessary and were not applied. Findings in the selected publications from both searches were summarized and sorted using the aforementioned competency components "knowledge," "skills," and "attitude." This procedure generated a structured and documented list of citations that were reviewed using ATLAS.ti22 features. The citations on which conclusions are drawn were documented via ATLAS.ti22 features and are available upon request from the corresponding author.

Appraisal

Appraisal of the included studies was performed by 2 independent reviewers. Due to the heterogeneity of study design (qualitative, quantitative, mixed methods) in the literature included, the Mixed Methods Appraisal Tool (MMAT) was used for indication of the quality of the included studies.[28] First, the MMAT validates its own feasibility via 2 quality indicators. Thereafter, each included study is screened using another 5 quality indicators (for mixed-methods studies, 2 sets of 5 quality indicators). All these indicators are either accounted for in the publication or not (based on the judgment of the reviewers). The MMAT score ranges from 0 (very poor) to 7 (very good) for qualitative and quantitative studies and up to 17 (very good) for mixed-methods studies. The Scale of the Assessment for Narrative Reviews (SANRA)[29] was used for the appraisal of included reviews. The SANRA identifies 6 quality items, with 3 levels (0, 1, 2) for each item, indicating the quality of that item as judged by the reviewers. Hence, the SANRA score ranges from 0 (very poor) to 12 (very good). The scores documented in Table 2 for the MMAT and the SANRA represent the average of scores as rated. Appraisal of studies was not used for their inclusion and exclusion, but rather for reasons of interpreting the strength of the evidence base for our findings.

Results

DATA SUMMARY AND DISPLAY

Search Outcome

The search strategy for answering research question 1 resulted in the inclusion of 28 publications. The results are presented in a flowchart as provided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses group (Figure 1).[30]

The second search was based on a more extensive strategy resulting in an increased number of publications. However, given that the second research question focuses on a more specific group, the study selection process revealed a paucity in research focused on identifying competencies for mental health nurses conducting AMHT in specific AMH settings: only 3 studies were included. The results are presented in a flowchart as provided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses group (Figure 2).[30]

Included Studies

A total of 31 studies with heterogeneous design from various countries and services published between 2000 and 2022 were selected.

TABLE 2
Characteristics and appraisal of studies identified in this review

	Search 1						
No.	Author(s)	Title	Year	Country	Design	MMAT* (0-7)	Acute care service
1	Wynaden et al[31]	Emergency department mental health triage consultancy service: a qualitative evaluation	2003	Australia	Qualitative	7	Emergency department/ consultancy
2	Kerrison and Chapman[32]	What general emergency nurses want to know about mental health patients presenting to their emergency department	2007	Australia	Qualitative	4,5	Emergency department
3	Gerdtz et al[33]	Perspectives of emergency department staff on the triage of mental health-related presentations; implication for education, policy and practice	2012	Australia	Qualitative	6,5	Emergency department
4	Broadbent et al[34]	Collegiate presence: explaining homogenous but disparate nursing relationships	2014	Australia	Qualitative	7	Emergency department
5	Broadbent et al[35]	Implications of the emergency department triage environment on triage practice for clients with a mental illness at triage in an Australian context	2014	Australia	Qualitative	7	Emergency department
6	Clarke et al[3]	ED Triage Decision-Making With Mental Health Presentations: A "Think Aloud" Study	2015	Canada	Qualitative	6,5	Emergency department
7	Beks et al[36]	When "you're it': a qualitative study exploring the rural nurse experience of managing acute mental health presentations	2018	Australia	Qualitative	6	Emergency department
8	Broadbent et al[37]	Understanding nurses perspectives of acuity in the process of emergency mental health triage: a qualitative study	2020	Australia	Qualitative	6,5	Emergency department

continued

TABLE 2
Continued

	Search 1						
9	Callender et al[38]	Mental health street triage: comparing experiences of delivery across 3 sites	2021	United Kingdom	Qualitative	6,5	Street triage
10	Arnaert et al[39]	Experiences of emergency triage nurses in the police handover of mentally ill patients: a qualitative descriptive study	2021	Australia	Qualitative	6,5	Emergency department
11	Broadbent et al[14]	Improving competence in emergency mental health triage	2002	Australia	Quantitative	5,5	Emergency department
12	Happell et al[40]	The triage of psychiatric patients in the hospital emergency department: a comparison between emergency department nurses and psychiatric nurse consultants	2002	Australia	Quantitative	6,5	Emergency department
13	Happell et al[13]	Measuring the effectiveness of the national mental Health Triage Scale in an emergency department	2003	Australia	Quantitative	6,5	Emergency department
14	Clarke et al[41]	Education to improve the triage of mental health patients in general hospital emergency departments	2006	Canada	Quantitative	3,5	Emergency department
15	Lafont Rapnouil et al[42]	An Innovative, Nurse-Led Service for Appropriate Management of Psychiatric Emergencies: Initial Findings	2022	France	Quantitative	6	Emergency department/ consultancy
16	Önnheim et al[43]	Self-Perceived Competence of Ambulance Nurses in the Care of patients with Mental Illness: A Questionnaire Survey	2022	Sweden	Quantitative	6,5	Acute prehospital care; Ambulance

continued

TABLE 2
Continued

	Search 1						
17	Heslop et al[44]	Improving continuity of care across psychiatric and emergency services: combining patient data within a participatory action research framework	2000	Australia	Mixed methods	15	Emergency department
18	McDonough et al[45]	Emergency department mental health triage consultancy service: an evaluation of the first year of the service	2004	Australia	Mixed methods	12	Emergency department/ consultancy
19	Sands[15]	Mental health triage: toward a model for nursing practice	2007	Australia	Mixed methods	12,5	Mental health triage/duty service
20	Sands[22]	An Exploration of Clinical Decision Making in Mental Health Triage	2009	Australia	Mixed methods	15	Mental Health triage/duty service
21	Valdez[46]	So Much to Learn, So Little Time Educational Priorities for the Future of Emergency Nursing	2009	USA	Mixed methods	15,5	Emergency department
22	Sands et al[9]	Identifying the core competencies of mental health telephone triage	2013	Australia	Mixed methods	17	Mental health triage/duty service
23	Wand et al[23]	Evaluating an emergency department-based mental health liaison nurse service: a multi sectional translational research project	2021	Australia	Quantitative	7	Emergency department/ consultancy
24	McDonoug et al[47]	Emergency Department Mental Health Triage and Consultancy Service: an advanced practice role for mental health nurses	2003	Australia	Other	Not applicable	Emergency department/ consultancy
25	Goldstein M.K.[48]	Care of patients with mental health issues in the emergency department: a quality improvement project	2022	USA	Other	Not applicable	Emergency department
No.	Author(s)	Title	Year	Country	Design	SANRA[†] (0-12)	Acute care service
26	Broadbent et al[1]	Emergency department mental health triage scales improve outcomes	2004	Australia	Review	7,5	Emergency department

continued

TABLE 2
Continued

	Search 1						
27	Broadbent et al[11]	The development and use of mental health triage scales in Australia	2007	Australia	Review	8	Emergency department
28	Brown et al[49]	Reducing uncertainty in triaging mental health presentations: examining triage decision-making	2014	Canada	Review	7,5	Emergency department

	Search 2						
No.	Author(s)	Title	Year	Country	Design	MMAT (0-7)	Acute care service
1	Aflague and Ferszt[50]	Suicide Assessment by Psychiatric Nurses: A Phenomenographic Study	2010	USA	Qualitative	6,5	Psychiatric hospital emergency assessment service
2	Abdur-Razzaq[51]	Illness episode vs treatment outcome: questions regarding safety	2011	USA	Other	Not applicable	Emergency department
No.	Author(s)	Title	Year	Country	Design	SANRA (0-12)	Source perspective (service user/ professional)
3	Conlon et al[52]	Disclosure of confidential information by mental health nurses, of patients they assess to be a risk of harm to self or others: an integrative review	2019	Australia	Review	10,5	Emergency department

MMAT, Mixed Methods Appraisal Tool; SANRA, Scale of the Assessment for Narrative Reviews.
* Mixed methods appraisal tool (0-7).[28]
† Scale for the Assessment of Narrative Review Articles (0-12).[29]

Three Main Types of Services

Psychiatric patients presenting in crisis are to be assessed for danger to self, probable danger to self or others, distress factors, and psychotic or somatic features.[51] AMHT by nurses is conducted in 3 main services according to the identified publications:

1. In acute general health care services such as accident and emergency departments by emergency nurses and prehospital emergency care by ambulance nurse[36,49,43,46]
2. At accident and emergency departments or in liaison triage using some form of mental health

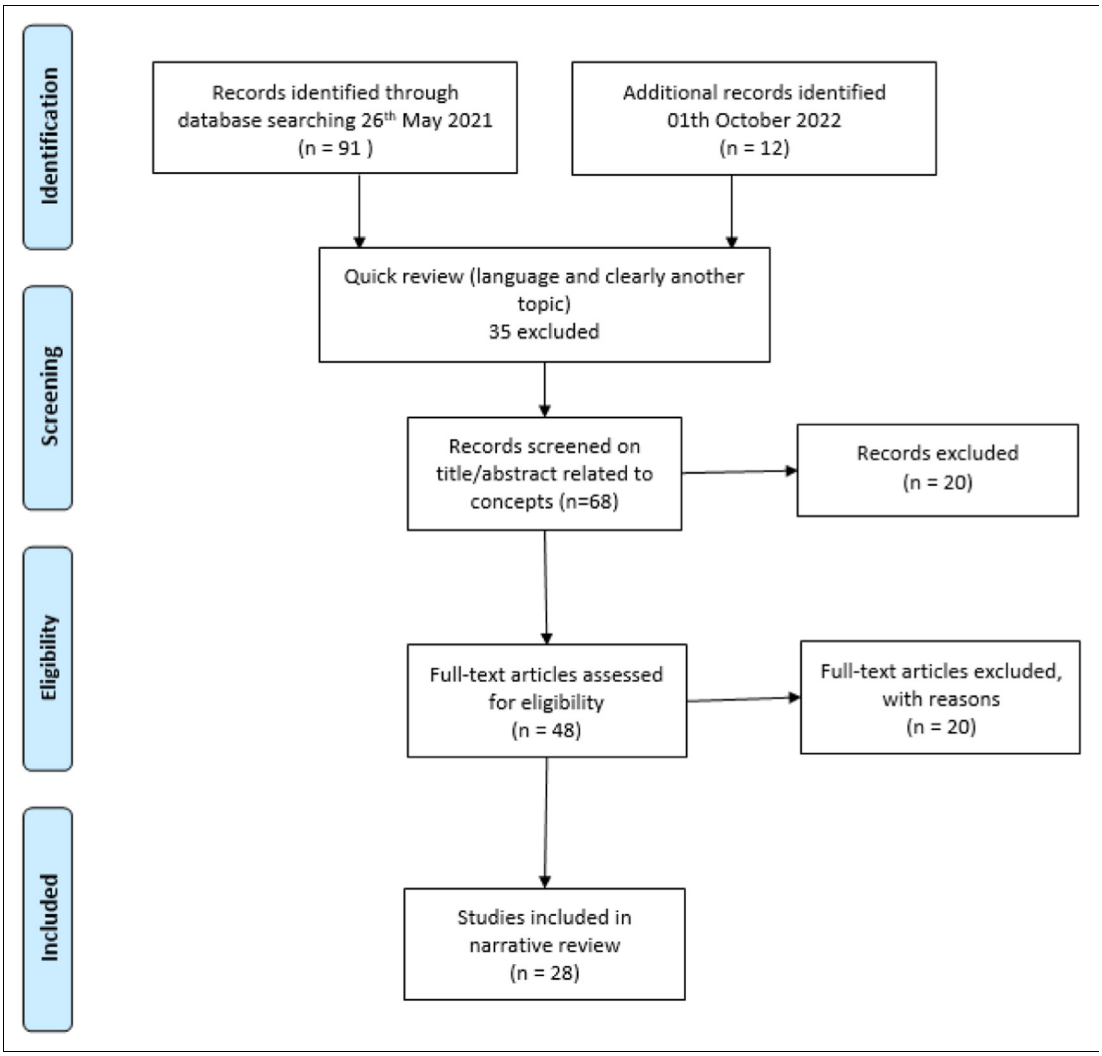


FIGURE 1

PRISMA 2009 flowchart showing the results of search 1. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

expertise, such as consultancy by mental health nurses[23,38,42,45,31]

3. In AMH services such as mental health triage/duty services[9]

To present our findings, we used the general concepts of knowledge, skills, and attitude.

KNOWLEDGE

Emergency Nurses

According to the studies in the search results, emergency nurses in acute health care services conducting AMHT require knowledge of risk assessment, de-escalation techniques, and triage scales.[1,13,14,49,48] Furthermore, psychiatric knowledge, knowledge of mental functioning, and knowledge of common symptoms of psychiatric disorders are needed to enable an accurate assessment of patients with an AMH problem or psychiatric crisis.[1,51] This includes knowledge of the complexities of comorbidities such as drug and alcohol use affecting acuity and influencing triage outcomes.[11,33] Finally, knowledge of legislation regarding the application of mental health acts is mentioned,[51,32] as well as a general knowledge of regional general psychiatric services and referral and access procedures to these services.[43,39,44] Educational activities regarding knowledge for emergency nurses aim at the introduction of an AMHT scale, a risk assessment tool, and modules around

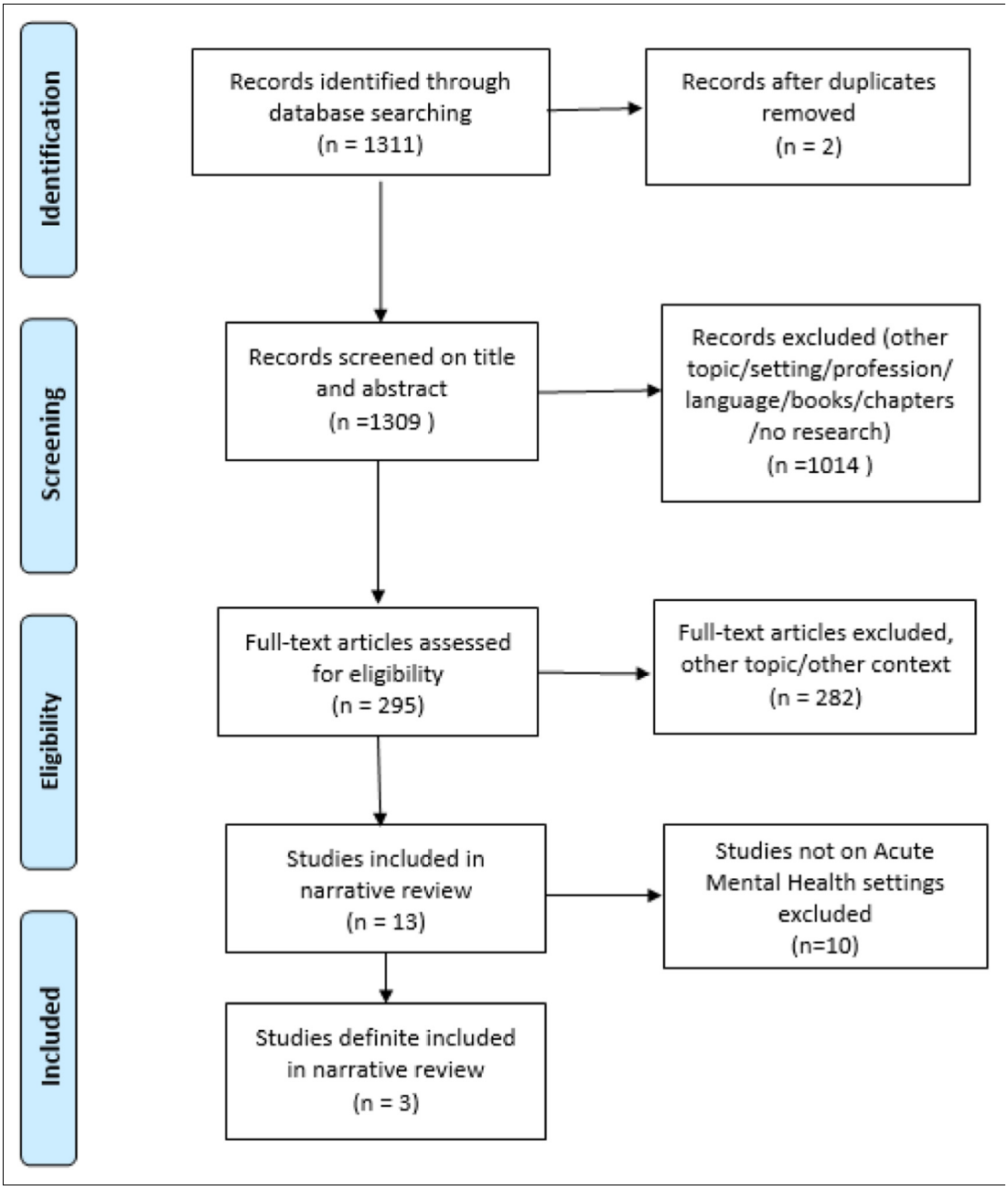


FIGURE 2

PRISMA 2009 flowchart showing the results of search 2. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

mental health and illness in assessing and implementing treatment and management strategies for these patients.[3,14,33,32,44] Targeted case-based training is reported to improve competency for managing specific presentations.[36]

Consultancy Mental Health Nurses

Mental health nurses working as consultants or in liaison triage in different services such as emergency departments and street triage in collaboration with stakeholders such as

the police are equipped with advanced knowledge regarding risk assessment and thorough knowledge of psychiatric emergencies, disorders, and comorbidities to complete a comprehensive assessment in mental health, including knowledge of patient psychiatric history.[38,42,45,31,50,52]

Knowing the (revolving) patients who present at emergency departments is also seen as a benefit of this consultant/liaison role because of the networking of these consultancy nurses with psychiatry and their actual knowledge of contracts or psychiatric advance directives.[31] Several authors emphasize the importance of a working knowledge regarding community resources and facilities.[31,50]

In street triage projects, nurses collaborate with police to improve the response to individuals in a mental health crisis.[38] These street triage projects are organized in various ways consisting of joint responding via face-to-face contact or via telephone consultancy by a nurse sitting in the control room. For these nurses, specialist knowledge regarding risk assessment aims at actual risks and the likelihood of an adverse event in the near future as well as harm prevention.[52]

Mental health nurses in the role of consultants also have an educational role sharing knowledge with the staff working in emergency departments or joint partners such as the police. This can be via formal tutorials but also through role modeling.[38,45] In return, training for ED consultants aims at the introduction of working in an ED environment; gathering specialist knowledge about specific equipment, policies, and procedures; and competencies regarding mental health. Furthermore, knowledge of ED-specific interventions such as cardiopulmonary resuscitation, modified advanced life support, emergency procedures, diabetes education, and documentation regarding various scales (screening, risk assessment, and overall triage) is required. Moreover, education on specific topics such as restraint and managing aggressive behavior is indicated.[45] Joint training is advised for mental health nurses and police officers to facilitate sharing perspectives from which to draw upon when making decisions and to optimize and facilitate interprofessional collaboration.[38,39]

Mental Health Nurses

A high level of specialist psychiatric knowledge is required for mental health nurses working at (telephone) mental health triage services.[9] Thorough knowledge of current psychopharmacology and comorbidities is required.[9] This also applies to accurate and novel youth- and age-specific knowledge.[9] Knowing service structures and social resources is mentioned as being integral to functioning triage.[22] This is supposed to serve the extended role of AMHT in assisting clients to find appropriate pathways to care.[9]

Development of theoretical models to guide the practice of mental health nurses conducting AMHT is suggested.[22] Further development of decision-making frameworks for practice that should be derived from evidence-based research is also recommended.[22,50] Furthermore, specific training to support triage practice and clear parameters regarding risk assessment and working in legal "gray areas" is mentioned.[22,50,52] Training for mental health nurses should be aimed at specific knowledge according to Sands.[22] This includes very different topics such as child and adolescent psychiatry and drug and alcohol assessment.

SKILLS

Emergency Nurses

Clinical skills are needed to assess and manage mental health presentations.[36] Working with triage codes (indicating the level of urgency) requires an increased sensitivity in the ability to assess and categorize patients with mental illness.[11,33] Skills are needed to conduct triage assessments that obtain the best data possible and to decrease waiting times.[51,49,33,34,41] This not only requires knowledge but also skills to enhance the effectiveness of the triage using a triage scale.

As a consequence, eliciting information at triage through communication is essential. Recognizing patient responses[32] and awareness of one's own verbal and nonverbal communication are indicated.[36,43] Effective communication skills and conflict resolution and de-escalation are described as being important.[43,32,39,34,48] Another clinical skill concerns dealing with and caring for clients with mental health illness.[14,44,40]

Coordinating care is inextricably linked to triage of psychiatric patients in crisis. Coordination of care is also tied to collaboration. Fostering collaborative and mentoring partnerships with community mental health teams is an additional strategy to improve emergency nurse competencies and the provision of care in emergency departments. Collaboration facilitates sharing knowledge and leads to better communication and a better relationship between emergency departments and mental health triage staff.[14,36,34] Emergency nurses need to be proactive in directing doctors to policies and guidelines, particularly regarding administering sedative psychopharmacologic treatment.[36,42]

Consultancy Nurses

The abovementioned clinical skills apply to advanced-level consultant nurses, but should be complemented with specific interventional skills such as managing mental health situations, crisis counseling, trauma counseling, and crisis intervention.[45] Coordinating care is core for consultancy mental health nurses working in emergency departments. This should be accompanied by collaboration skills for providing a timely and accessible mental health service consisting of a process of consultation and liaison.[42,45,31] Collaboration with the police in street triage projects is of core importance. It facilitates trust in each other's expertise and supports the working relationship between nurses and police. It also affects shared ownership of decision making and care planning.[38]

More refined skills, such as the ability to remain focused on the task at hand while still being able to monitor the overall atmosphere and environment of the emergency department, are a result of working on an emergency department by a consultant nurse.[47] The provision of a secure, private environment is regarded as an essential skill in areas such as an emergency department.[43,35]

Mental Health Nurses

Mental health nurses are equipped with advanced skills for respectful and professional communication in challenging situations involving verbal abuse or dissatisfaction by service users.[9] This applies to a range of interventions alongside skills such as de-escalation, limit setting, counseling of patients and significant others, and directing to complaints procedures.[9] Risk assessment with the aim of risk prevention, conducting risk management in light of recovery planning, is also required.[52] Mental health nurses are highly skilled in managing the dual roles of ongoing assessment while applying therapeutic skills in communication, such as crisis intervention and supportive counseling during the process of triage.[9] According to Sands,[22] assessing the situation (by telephone) leads to a provisional diagnosis based on previous history and investigation of current (social) circumstances and symptoms. Being able to make decisions under time pressure requires time management skills and advanced communication skills with a determination to achieve positive short- and long-term outcomes for individuals in crisis situations.[9] Verbal communication, the ability to transfer information in writing and using electronic systems for both information search and retrieval and documenting the triage process, is also important.[9]

Mental health nurses active in AMH services possess, beyond assessment and triage, a number of important functions in extended roles regarding coordination of care. This includes providing ongoing support to service users in the community, providing a link of communication between service users and mental health services.[9] Regarding collaboration, nurses also provide advice and education to the community and to other service providers as well as consultancy to the emergency department and assist consumers and families to negotiate pathways to care.[9,44] According to Sands et al,[9] these extended roles distinguish mental health triage from generalist triage models. Negotiation skills are necessary to engage with a broad range of stakeholders.

ATTITUDE

Emergency Nurses

Stigmatizing, negative, or avoidant attitudes toward patients with mental health problems by emergency nurses in emergency departments or ambulance crews are often mentioned in the literature.[1,3,11,14,51,36,49,33,32,44] Social stigma associated with psychiatric diagnoses represents a significant barrier to accurate decision making and can lead to underestimation of urgency.[33,32,44] Nurses should avoid "diagnostic overshadowing," where a focus on a person's mental health diagnosis overrides consideration of their physical needs.[3]

Confidence in dealing with clients with mental illness influences understanding of mental health assessment, triage practice, and attitudes toward these clients in a positive way.[1,45,33,50] A deeper mutual understanding between emergency nurses and mental health nurses based on knowledge, cultural sensitivity, and professional respect allows for improved teamwork, according to Broadbent and Moxham.[34]

Consultancy Nurses

Nurses should not only work with the highest efficiency, efficacy, and effectiveness but as importantly must strive for the highest levels of sensitivity and compassion.[49]

Mental Health Nurses

Mental health nurses' attitude in acute health care services toward psychiatric patients in crisis should be characterized by seeking to identify the best option available to meet the immediate needs of the patient and at the same time prevent actual or additional harm.[9,52]

Discussion

We have searched the literature to define competencies emergency and mental health nurses need in AMHT, in particular what nurses need to know and be able to do to assess urgency and initiate appropriate follow-up actions for psychiatric patients in crisis, providing these patients with high-quality, safe, and humane care.

Competencies as described in the literature are mainly apparent in knowledge and skills and less in attitude issues. Competencies are characterized by the integration of all 3 concepts,[25] because a competence such as knowledge of, for example, communication or risk assessment tools is not enough to provide good quality care. It also requires matching skills and attitude aspects to put it into practice.

The competencies shown in Table 3 provide insight into the requirements for AMHT described in research in the past 75 years. Several series of coherent studies regarding AMHT were published almost 10 years ago (Table 2). This series of publications came from Australia. The reorganization of care in Australia from mainstream mental health services into general health care services along with a more community-based approach provided an impulse for research.[11,44] This research was mainly aimed at AMHT in emergency departments conducted by general nurses and the development and testing of triage scales.[1,11,13] The introduction of these scales along with training programs for this introduction was meant to enhance equity to acute health care for patients with mental health problems.[14] However, specific research for mental health nurses is limited. In addition, just 1 publication describes the perspective of service users (Table 2), indicating a paucity in research focused on service-user experiences related to the AMHT process.[44]

Emergency and mental health care nurses active in acute health care services require a significant amount of education and training beyond basic nursing education to acquire the competencies needed for AMHT.[1,9,46] Competencies for nurses active in acute health care services such as an emergency department or AMH are similar. The difference in requirements lies primarily in the extent of knowledge and skills. Broadbent et al[1] state that "a separation of the disciplines required to treat disorders of mental and physical health is essential because of the extent of the specialist knowledge required."

During triage, the nurse is required to assess current opportunities and bottlenecks from various perspectives under high pressure. To do so in acute scenarios, integrating competencies such as triage skills, diagnostic reasoning, and de-escalation and negotiation skills along with a nonjudgmental attitude is crucial. Factual knowledge is said to be more important to accuracy than years of experience.[53] In contrast, there is also evidence that integrating clinical knowledge and experience-based judgment is associated with more accurate assessments of risk in particular.[3] Negative outcomes can occur if well-proven guidelines or instruments are used by professionals with insufficient training.[30] Incidentally, there is little evidence of good results using solely rational and technocratic risk management methods.[54] These findings show that clinical reasoning cannot be replaced by instruments.

Integrating knowledge, skills, and attitude to support the process of clinical reasoning and decision making seems essential. We found several studies describing decision making by emergency and mental health nurses active in acute health care services.[3,12,22,43,32,39,50,52,37] Clinical decision making is preceded by clinical reasoning, a complex process that uses cognition, metacognition, and discipline-specific knowledge to gather and analyze patient information, evaluate its significance, and to weigh alternative actions.[55] In a broader sense, it is a basic competence of every health professional. It allows them to assess the situation and the health problem presented by the patient. It leads to a conclusion of what needs to be done and, more importantly, why it should be done.[56]

AMHT may be considered to be part of clinical decision making in a patient's journey more than a stand-alone function. To prevent further escalation of a crisis, a combination of multiple knowledge resources and professional competencies are therefore important. For instance, the indiscriminate application or failure to apply security measures could have a stigmatizing effect for people in a psychiatric crisis or consequences for public order.

Nevertheless, the importance of clinical reasoning and theoretical decision-making frameworks based on evidence to support nurses seems absent.[3,22] Uniform triage based on consistency and consensus regarding required competencies and processes is preferred because it increases transparency in decision making.[1,9]

Another finding drawn from the identified studies is that ethical considerations, the conflicts experienced in the delivery of AMH by nurses, and being able to deal with these issues are under-represented in the literature. A limited number of studies note that AMHT occasionally takes place in legal "gray zones."[22,52] A common occurrence in psychiatric practice is health care professionals struggling with essential ethical principles such as "respect for autonomy" and "patient-centered care."[57] This applies when a patient is in a psychiatric crisis and fails to cooperate at that moment with designated health care professionals. It demands flexibility and high-level clinical reasoning to organize chaos in acute, unpredictable, and complex patient situations. This

TABLE 3
Competencies: knowledge, skills, and attitude

Knowledge	Skills	Attitude
○ Risk assessment and de-escalation • Actual risk, adverse events, harm prevention • Restraint and managing aggressive behavior ○ Triage scales ○ Psychiatric disorders • Mental functioning and common symptoms • Psychiatric emergencies • Disorders an comorbidities • Psychopharmacology • Youth and age specific ○ Law/regulations • Mental Health Act • Knowledge of contracts or psychiatric advance directives • Disclosure of confidential information ○ Care pathways/access to care • Community resources and facilities • Service structures and social resources ○ Education • AMHT scale • Risk assessment tool • Mental health and illness • Treatment and care management strategies • Targeted case-based training • Sharing knowledge • Specific knowledge • Joint training	○ Clinical skills • Assessment, management and categorizing mental health presentations • Risk assessment and de-escalation • Triage scales • Crisis counseling, trauma counseling, crisis intervention • Recovery planning ○ Communication • Eliciting information • Effective communication • Conflict resolution • De-escalation • Limit setting • Respectful and professional in challenging situations • Counseling of patients and significant others • Directing to complaints procedures • Negotiation skills • Time management skills • Transfer information in writing • Using electronic systems • Advice • Education • Consultation ○ Coordinating care • Provision of a secure, private environment • Focused on the task at hand while still being able to monitor the overall atmosphere and environment • Consultation and liaison • Negotiate to care pathways ○ Collaboration • Sharing knowledge • Pro active • Fostering collaborative and mentoring partnerships	○ Nonjudgmental ○ Confidence

AMHT, acute mental health triage.

applies especially when opposing interests are to be considered, such as assessing risk versus advocating autonomy for the patient and those who are closely involved.

Despite the recognition of stigmatizing behavior in emergency nurses in AMHT, little is known about competencies needed for decreasing such stigma. According to

Broadbent et al,[1] studies suggest that a culture of avoidance and misunderstanding originates from poor education and preparation in dealing with clients with mental illness. Confidence in dealing with patients with mental illness is a positive step toward providing high-quality, safe, and humane care for psychiatric patients in crisis.[1,3,11,14,49,33,40]

Limitations

We sought to ensure completeness of the available data. The paucity of studies representing the service user's perspective and of studies specifically focused on triage in AMH services can be viewed as a limitation of this review. This paucity reflects the research gap in this topic.

Implications for Emergency Nurses

Nursing schools, including those for both basic and advanced levels, can verify and, when necessary, adjust their curricula based on the findings in this review. AMHT practice organizations will be able to identify gaps in the competency levels of their staff performing AMHT and organize additional education and training.

Conclusions

The scientific research identified in this review shows nurses conducting AMHT require high levels of competencies in terms of knowledge and skills and less in terms of attitude. Furthermore, nurses require significant additional competencies beyond basic nursing education to conduct AMHT. Clinical reasoning is required to correctly apply the appropriate competencies needed to balance the, in many cases, competing interests of patients and their relatives, health care services, the general public, and health care professionals. Thus, education and training are required to improve confidence and incorporate clinical reasoning into the AMHT process.

Data, Code, and Research Materials Availability

Data, labels, and research materials are available upon request with the corresponding author.

Acknowledgments

We thank ZonMw (file number: 60-63800-20), Dr Anneke de Jong, and Dr Roland van de Sande for their support during the process of writing this review.

Author Disclosures

Conflicts of interest: none to report.

REFERENCES

1. Broadbent M, Jarman H, Berk M. Emergency department mental health triage scales improve outcomes. *J Eval Clin Pract*. 2004;10(1):57-62. https://doi.org/10.1111/j.1365-2753.2003.00459.x
2. Aacharya RP, Gastmans C, Denier Y. Emergency department triage: an ethical analysis. *BMC Emerg Med*. 2011;11:16. https://doi.org/10.1186/1471-227X-11-16
3. Clarke DE, Boyce-Gaudreau K, Sanderson A, Baker JA, eds. Triage decision-making with mental health presentations: a "think aloud" study. *J Emerg Nurs*. 2015;41(6):496-502. https://doi.org/10.1016/j.jen.2015.04.016
4. Sunderji N, de Bibiana JT, Stergiopoulos V. Urgent psychiatric services: a scoping review. *Can J Psychiatry*. 2015;60(9):393-402. https://doi.org/10.1177/070674371506000904
5. Gerdtz MF, Collins M, Chu M, et al. Optimizing triage consistency in Australian emergency departments: the Emergency Triage Education Kit. *Emerg Med Australas*. 2008;20(3):250-259. https://doi.org/10.1111/j.1742-6723.2008.01089.x
6. Nakao H, Ukai I, Kotani J. A review of the history of the origin of triage from a disaster medicine perspective. *Acute Med Surg*. 2017;4(4):379-384. https://doi.org/10.1002/ams2.293
7. Thompson G. Medicine in the First World War. Battlefield medicine: triage-field hospital section. Accessed January 19, 2023. https://www.kumc.edu/school-of-medicine/academics/departments/history-and-philosophy-of-medicine/archives/wwi/essays/military-medical-operations/triage-field-hospital-section.html
8. Gilboy N, Travers D, Wuerz R. Re-evaluating triage in the new millennium: a comprehensive look at the need for standardization and quality. *J Emerg Nurs*. 1999;25(6):468-473. https://doi.org/10.1016/s0099-1767(99)70007-3
9. Sands N, Elsom S, Gerdtz M, et al. Identifying the core competencies of mental health telephone triage. *J Clin Nurs*. 2013;22(21-22):3203-3216. https://doi.org/10.1111/j.1365-2702.2012.04093.x
10. Zimmermann PG. The case for a universal, valid, reliable 5-tier triage acuity scale for US emergency departments. *J Emerg Nurs*. 2001;27(3):246-254. https://doi.org/10.1067/men.2001.115284
11. Broadbent M, Moxham L, Dwyer T. The development and use of mental health triage scales in Australia. *Int J Ment Health Nurs*. 2007;16(6):413-421. https://doi.org/10.1111/j.1447-0349.2007.00496.x

12. Brown AM, Clarke DE, Spence J. Canadian Triage and Acuity Scale: testing the mental health categories. *Open Access Emerg Med*. 2015;7:79-84. https://doi.org/10.2147/OAEM.S74646
13. Happell B, Summers M, Pinikahana J. Measuring the effectiveness of the national Mental Health Triage Scale in an emergency department. *Int J Ment Health Nurs*. 2003;12(4):288-292. https://doi.org/10.1046/j.1447-0349.2003.t01-7-.x
14. Broadbent M, Jarman H, Berk M. Improving competence in emergency mental health triage. *Accid Emerg Nurs*. 2002;10(3):155-162. https://doi.org/10.1054/aaen.2001.0377
15. Sands N. Mental health triage: towards a model for nursing practice. *J Psychiatr Ment Health Nurs*. 2007;14(3):243-249. https://doi.org/10.1111/j.1365-2850.2007.01069.x
16. Crook JA. How do expert mental health nurses make on-the-spot clinical decisions? A review of the literature. *J Psychiatr Ment Health Nurs*. 2001;8(1):1-5. https://doi.org/10.1046/j.1365-2850.2001.00338.x
17. Smart D, Pollard C, Walpole B. Mental health triage in emergency medicine. *Aust N Z J Psychiatry*. 1999;33(1):57-69. https://doi.org/10.1046/j.1440-1614.1999.00515.x
18. Ledek V, Deane FP, Lambert G, McKeehan C. Description of a rural Australian free call telephone mental health information and support service. *Australas Psychiatry*. 2002;10(4):365-370. https://doi.org/10.1046/j.1440-1665.2002.00496.x
19. Purc-Stephenson RJ, Thrasher C. Nurses' experiences with telephone triage and advice: a meta-ethnography. *J Adv Nurs*. 2010;66(3):482-494. https://doi.org/10.1111/j.1365-2648.2010.05275.x
20. Roivainen P, Hoikka MJ, Raatiniemi L, Silfvast T, Ala-Kokko T, Kääriäinen M. Telephone triage performed by nurses reduces non-urgent ambulance missions: a prospective observational pilot study in Finland. *Acta Anaesthesiol Scand*. 2020;64(4):556-563. https://doi.org/10.1111/aas.13542
21. Paton F, Wright K, Ayre N, et al. Improving outcomes for people in mental health crisis: a rapid synthesis of the evidence for available models of care. *Health Technol Assess*. 2016;20(3):1-162. https://doi.org/10.3310/hta20030
22. Sands N. An exploration of clinical decision making in mental health triage. *Arch Psychiatr Nurs*. 2009;23(4):298-308. https://doi.org/10.1016/j.apnu.2008.08.002
23. Wand T, Collett G, Cutten A, et al. Evaluating an emergency department-based mental health liaison nurse service: a multi-site translational research project. *Emerg Med Australas*. 2021;33(1):74-81. https://doi.org/10.1111/1742-6723.13583
24. Segen's Medical Dictionary. S.v. "compentencies". Accessed June 1, 2021. https://medical-dictionary.thefreedictionary.com/competencies
25. Baartman LKJ, de Bruijn E. Integrating knowledge, skills and attitudes: conceptualising learning processes towards vocational competence. *Educ Res Rev*. 2011;6(2):125-134. https://doi.org/10.1016/j.edurev.2011.03.001
26. Ritchie J, Lewis J, McNaughton Nicholls C, Ormston R. *Qualitative Research Practice: A Guide for Social Science Students & Researchers*. 2nd ed. SAGE Publications; 2014.
27. Smit B, Scherman V. Computer-assisted qualitative data analysis software for scoping reviews: a case of ATLAS.ti. *Int J Qual Methods*. 2021;20. https://doi.org/10.1177/16094069211019140
28. Hong QN, Gonzalez-Reyes A, Pluye P. Improving the usefulness of a tool for appraising the quality of qualitative, quantitative and mixed methods studies, the Mixed Methods Appraisal Tool (MMAT). *J Eval Clin Pract*. 2018;24(3):459-467. https://doi.org/10.1111/jep.12884
29. Baethge C, Goldbeck-Wood S, Mertens S. SANRA-a scale for the quality assessment of narrative review articles. *Res Integr Peer Rev*. 2019;4:5. https://doi.org/10.1186/s41073-019-0064-8
30. Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *PLOS Med*. 2009;6(7), e1000100. https://doi.org/10.1371/journal.pmed.1000100
31. Wynaden D, Chapman R, McGowan S, McDonough S, Finn M, Hood S. Emergency department mental health triage consultancy service: a qualitative evaluation. *Accid Emerg Nurs*. 2003;11(3):158-165. https://doi.org/10.1016/s0965-2302(02)00237-0
32. Kerrison SA, Chapman R. What general emergency nurses want to know about mental health patients presenting to their emergency department. *Accid Emerg Nurs*. 2007;15(1):48-55. https://doi.org/10.1016/j.aaen.2006.09.003
33. Gerdtz MF, Weiland TJ, Jelinek GA, Mackinlay C, Hill N. Perspectives of emergency department staff on the triage of mental health-related presentations: implications for education, policy and practice. *Emerg Med Australas*. 2012;24(5):492-500. https://doi.org/10.1111/j.1742-6723.2012.01592.x
34. Broadbent M, Moxham L. Collegiate presence: explaining homogenous but disparate nursing relationships. *J Psychiatr Ment Health Nurs*. 2014;21(3):226-233. https://doi.org/10.1111/jpm.12075
35. Broadbent M, Moxham L, Dwyer T. Implications of the emergency department triage environment on triage practice for clients with a mental illness at triage in an Australian context. *Australas Emerg Nurs J*. 2014;17(1):23-29. https://doi.org/10.1016/j.aenj.2013.11.002
36. Beks H, Healey C, Schlicht KG. 'When you're it': a qualitative study exploring the rural nurse experience of managing acute mental health presentations. *Rural Remote Health*. 2018;18(3):4616. https://doi.org/10.22605/RRH4616
37. Broadbent M, Moxham L, Dwyer T. Understanding nurses perspectives of acuity in the process of emergency mental health triage: a qualitative study. *Contemp Nurse*. 2020;56(3):280-295. https://doi.org/10.1080/10376178.2020.1841014
38. Callender M, Knight LJ, Moloney D, Lugli V. Mental health street triage: comparing experiences of delivery across three sites. *J Psychiatr Ment Health Nurs*. 2021;28(1):16-27. https://doi.org/10.1111/jpm.12584
39. Arnaert A, Ahmad H, Grugel-Park A, et al. Experiences of emergency triage nurses in the police handover of mentally ill patients: a qualitative descriptive study. *Arch Psychiatr Nurs*. 2021;35(5):556-561. https://doi.org/10.1016/j.apnu.2021.07.010
40. Happell B, Summers M, Pinikahana J. The triage of psychiatric patients in the hospital emergency department: a comparison between emergency department nurses and psychiatric nurse consultants. *Accid Emerg Nurs*. 2002;10(2):65-71. https://doi.org/10.1054/aaen.2001.0336

41. Clarke DE, Brown AM, Hughes L, Motluk L. Education to improve the triage of mental health patients in general hospital emergency departments. *Accid Emerg Nurs*. 2006;14(4):210-218. https://doi.org/10.1016/j.aaen.2006.08.005
42. Lafont Rapnouil S, Parfait L, Clouzeau J, et al. An innovative, nurse-led service for appropriate management of psychiatric emergencies: initial findings. *Psychiatr Serv*. 2022;73(3):349-352. https://doi.org/10.1176/appi.ps.202000929
43. Önnheim S, Johansson A, Ivarsson B, Hagström C. Self-perceived competence of ambulance nurses in the care of patients with mental illness: a questionnaire survey. *Nurs Rep*. 2022;12(1):226-234. https://doi.org/10.3390/nursrep12010023
44. Heslop L, Elsom S, Parker N. Improving continuity of care across psychiatric and emergency services: combining patient data within a participatory action research framework. *J Adv Nurs*. 2000;31(1):135-143. https://doi.org/10.1046/j.1365-2648.2000.01251.x
45. McDonough S, Wynaden D, Finn M, McGowan S, Chapman R, Hood S. Emergency department mental health triage consultancy service: an evaluation of the first year of the service. *Accid Emerg Nurs*. 2004;12(1):31-38. https://doi.org/10.1016/s0965-2302(03)00054-7
46. Valdez AM. So much to learn, so little time: educational priorities for the future of emergency nursing. *Adv Emerg Nurs J*. 2009;31(4):337-353. https://doi.org/10.1097/TME.0b013e3181bcb571
47. McDonough S, Wynaden D, Finn M, McGowan S, Chapman R, Gray S. Emergency Department Mental Health Triage and Consultancy Service: an advanced practice role for mental health nurses. *Contemp Nurse*. 2003;14(2):138-144. https://doi.org/10.5172/conu.14.2.138
48. Goldstein M. K. Care of patients with mental health issues in the emergency department: a quality improvement project. Emerg Nurse. 2022:30; 12-17.
49. Brown AM, Clarke DE. Reducing uncertainty in triaging mental health presentations: examining triage decision-making. *Int Emerg Nurs*. 2014;22(1):47-51. https://doi.org/10.1016/j.ienj.2013.01.005
50. Aflague JM, Ferszt GG. Suicide assessment by psychiatric nurses: a phenomenographic study. *Issues Ment Health Nurs*. 2010;31(4):248-256. https://doi.org/10.3109/01612840903267612
51. Abdur-Razzaq M. Illness episode vs treatment outcome: questions regarding safety. *Ment Health Rev (Brighton)*. 2011;16(4):197-204. https://doi.org/10.1108/13619321111202359
52. Conlon D, Raeburn T, Wand T. Disclosure of confidential information by mental health nurses, of patients they assess to be a risk of harm to self or others: an integrative review. *Int J Ment Health Nurs*. 2019;28(6):1235-1247. https://doi.org/10.1111/inm.12642
53. Sands N. Mental health triage nursing: an Australian perspective. *J Psychiatr Ment Health Nurs*. 2004;11(2):150-155. https://doi.org/10.1111/j.1365-2850.2003.00697.x
54. Turnbull P, Rodway C, Hunt I. The assessment of clinical risk in mental health services. Accessed February 22 2022 https://pure.manchester.ac.uk/ws/portalfiles/portal/77517990/REPORT_The_assessment_of_clinical_risk_in_mental_health_services.pdf
55. Simmons B. Clinical reasoning: concept analysis. *J Adv Nurs*. 2010;66(5):1151-1158. https://doi.org/10.1111/j.1365-2648.2010.05262.x
56. van Straalen L, Schuurmans M. *Klinisch redeneren voor verpleegkundigen*. Bohn Stafleu Loghum; 2016.
57. Stigter-Outshoven C, van de Sande R, de Kuiper M, Braam A. Using the police cell as intervention in mental health crises: qualitative approach to an interdisciplinary practice and its possible consequences. *Perspect Psychiatr Care*. 2021;57(4):1735-1742. https://doi.org/10.1111/ppc.12743

A Nationwide Study of Emergency Nurses' Triage Decisions for Potential Acute Coronary Syndrome

Authors: John R. Blakeman, PhD, RN, PCCN-K, MyoungJin Kim, PhD, Ann L. Eckhardt, PhD, RN, Stephen J. Stapleton, PhD, MS, RN, CEN, FAEN, and Holli A. DeVon, PhD, RN, FAHA, FAAN, Normal, IL, Arlington, TX, Fargo, ND, and Los Angeles, CA

Contribution to Emergency Nursing Practice

- The current literature on emergency nurses' acute coronary syndrome symptom triage decisions is somewhat limited and dated but indicates that some improvements in triage are necessary.
- This article contributes updated information related to emergency nurses' acute coronary syndrome symptom triage decisions.
- Key implications for emergency nursing practice found in this article are that chest pain is a well-known symptom of acute coronary syndrome for emergency triage nurses and affects their decision making when evaluating a new patient. Additionally, in this national sample of emergency nurses, patient gender did not inform triage decisions. Nurses should follow evidence-based guidelines for the evaluation of patients with a potential cardiac diagnosis.

John R. Blakeman is an Assistant Professor, Mennonite College of Nursing at Illinois State University, Normal, IL. **ORCID identifier:** https://orcid.org/0000-0001-9824-1096; **Twitter:** @JohnBlakeman_RN.

MyoungJin Kim is a Professor, College Statistician, and Director of the Office of Nursing Research, Scholarship, and Innovation, Mennonite College of Nursing, Illinois State University, Normal, IL.

Ann L. Eckhardt is the Associate Chair of Clinical Education, College of Nursing and Health Innovation, Department of Graduate Nursing, University of Texas at Arlington, Arlington, TX.

Stephen J. Stapleton, *Member,* Minnesota ENA Chapter, is Clinical Nurse, Sanford Medical Center Pain Management Clinic, Fargo, ND.

Holli A. DeVon is a Professor and the Associate Dean for Research, Audrienne H. Moseley Endowed Chair in Community Research, University of California, Los Angeles School of Nursing, Los Angeles, CA. **Twitter:** @HolliDeVon.

For correspondence, write: John R. Blakeman, PhD, RN, PCCN-K, Mennonite College of Nursing at Illinois State University, Campus Box 5810, Normal, Illinois 61790-5810; E-mail: jrblak1@ilstu.edu

J Emerg Nurs 2024;50:72-83.
Available online 8 October 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.08.011

Abstract

Introduction: This study aimed to identify the symptoms used to assess angina, determine how emergency nurses make triage decisions for potential acute coronary syndrome, and determine emergency nurses' initial actions.

Methods: This was a cross-sectional, survey-based design. Emergency nurses were recruited through a posting on the Emergency Nurses Association website and through postcards. Measures included demographic data, assessment of angina, and the Nurses' Cardiac Triage Instrument**.** Data were analyzed using descriptive statistics and ordinal logistic regression.

Results: A total of 414 registered nurses with a mean age of 41.7 (SD = 12.0) years participated. They were predominantly female (80.7%), had a baccalaureate degree (60.1%), and worked as a registered nurse for a median 10.0 years. Common terms used to assess angina were chest pain (79.5%), chest pressure (77.3%), chest tightness (72.9%), and chest discomfort (72.5%). The severity of chest pressure (median 5.0, interquartile range 1.0) and nature of chest pain (median 5.0, interquartile range 1.0) had the highest overall median scores to support initial cardiac triage decisions. Associated symptoms of diaphoresis, fatigue, and shortness of breath along with health history contributed to decision making.

Discussion: Emergency nurses primarily used chest symptoms and health history when deciding to evaluate for acute coronary syndrome in the emergency department. Associated symptoms of diaphoresis, fatigue, and shortness of breath, along with health history, also contributed to decision making. Initial registered nurse actions were to obtain an electrocardiogram, prepare the patient for the cardiac catheterization laboratory, and notify the emergency physician of the patient's admission.

Key words: Triage; Emergency department; Acute coronary syndrome; Chest pain; Angina

Introduction

Each year approximately 378,000 patients present to the emergency department with acute myocardial infarction, an average of 1 patient every 83 seconds.[1] Annually in the United States nearly 700,000 people receive a primary diagnosis of acute coronary syndrome (ACS), including unstable angina, non-ST-elevation myocardial infarction, and ST-elevation myocardial infarction (STEMI).[2] Prompt recognition of ACS is critical to facilitate timely treatments to protect and preserve the myocardium.

Emergency nurses are often the first clinicians to assess and/or triage patients presenting to the emergency department with symptoms consistent with ACS[3,4] given that most patients self-transport to the emergency department.[5-7] According to the Emergency Nurses Association (ENA),[8] given the time-critical nature of ACS, patients presenting with possible ACS symptoms and associated risk factors meet the criteria for a level 2 (range 1-5) triage designation based on the Emergency Severity Index. Delays in appropriate triage and incorrect triage level assignments have been reported. Sanders and DeVon[9] found that, in ambulatory patients presenting to the emergency department experiencing symptoms suggestive of ACS, just more than half received an appropriate triage level designation of 2, with those experiencing chest pain approximately 2 and a half times as likely to be appropriately triaged. Counterintuitively, Sanders[10] found that triage delays for patients presenting with potential ACS symptoms were even longer when the triage nurse had more years of experience. For example, treatment guidelines include a 12-lead electrocardiogram (ECG) within 10 minutes of presentation[8] to identify potential ACS, especially STEMI[11]; however, there are documented delays in obtaining ECGs in this time frame.[10,12,13]

Emergency nurses must also consider a variety of signs and symptoms, along with patient history, when assessing for the possibility of ACS during the triage process.[8] Nurses rely on several factors when assessing patients for ACS and formulating triage decisions including their own experiences, patient-specific factors (medical history, gender, risk factors), and presenting symptoms.[3,14] Arslanian-Engoren et al[15] enrolled 158 emergency nurses in a survey-based study and found that triage decisions and actions related to ACS were suboptimal. For example, only 81% of the sample reported having a goal to obtain a 12-lead ECG within 10 minutes of patient arrival, and 7% of respondents indicated that they asked patients about chest pain only "some of the time" or a "little of the time,"[15] even though chest pain is the most common ACS symptom.[16] Given effective, but time-dependent therapies for reperfusion, prompt recognition of ACS is critical and improvements in triage accuracy are needed.[17]

Recent chest pain guidelines from the American Heart Association and American College of Cardiology also emphasize that clinicians should recognize that angina, or chest pain, is "more than pain in the chest" and consider a variety of sensations when assessing for chest pain, including pain, pressure, tightness, and discomfort[18] (p. e337). Importantly, patients may not use the term "pain" when referring to ACS-related angina, so emergency nurses must consider broader terminology.[18] The severity of these chest symptoms experienced by patients with ACS may vary, ranging from mild to severe. Moreover, although women may experience a greater number of ACS symptoms, common ACS symptoms experienced by men and women are similar.[16,18] Thus, an overemphasis on gender differences in ACS symptoms is not supported by the contemporary literature.

PROBLEM STATEMENT, PURPOSE, AND RESEARCH QUESTIONS

Although emergency nurses serve a critical role in identifying patients with potential ACS, a paucity of literature is available describing emergency nurses' triage decisions in patients presenting with possible acute cardiac problems including ACS. The most recent nationwide data regarding emergency nurses' triage practices[14] were published a decade ago and enrolled a modest number of 158 emergency nurses. In addition, in view of the important role that chest symptoms play in helping nurses identify patients with possible ACS,[16] we were interested in determining whether selected sociodemographic variables predicted 2 items on the Nurses' Cardiac Triage Instrument: (1) the nature of chest pain and (2) the severity of chest pressure. The purpose of this study was to explore how emergency nurses make triage decisions for patients presenting with symptoms consistent with ACS. The specific research questions were:

1. What symptom terminology do emergency nurses use to assess for angina in patients presenting to the emergency department?
2. How do emergency nurses make triage decisions related to ACS symptoms?
3. What initial actions do emergency nurses take during triage once ACS is suspected?

Methods

DESIGN

A descriptive, cross-sectional, survey-based design was used. The Illinois State University Institutional Review Board (IRB-2021-177) determined that the study was exempt from review based on the collection of anonymous data.

SAMPLE AND SETTING

Participants were recruited through a posting on the ENA website and through recruitment postcards sent to the ENA membership in March 2022. Participants were included in the study if they (1) were a registered nurse (RN), (2) worked at least part-time in the emergency department, (3) had the ability to complete the Qualtrics survey online, (4) were fluent in English, and (5) performed triage in the emergency department. A sample size of 342 was needed to detect a moderate difference in symptom terminology and triage decisions corresponding to an odds ratio of 1.80 at 80% power with a .05 level of significance. A proportionate number of postcards were sent to a random sample of members in each region based on the number of ENA members in the region. Those who participated in the survey were asked to share the study with relevant others in their professional network. Recruitment was completed in June 2022.

MEASURES

Demographic Data

Participants' age, gender, years of experience as an RN, years of emergency nursing experience, highest level of nursing education, role in the emergency department, and whether or not nurses were certified in emergency nursing were collected. In addition, we asked about the characteristics of the emergency department in which the participant primarily worked, including location (United States state), number of beds, and the status of the emergency department as a certified chest pain center.

Assessment of Angina

To determine how emergency nurses assess for anginal symptoms, we asked participants one multiple-choice question: "When asking a patient about symptoms they are having, which term(s) do you use to determine if they are having angina? (Select all that apply.)" The following options were available: chest pain, chest discomfort, chest heaviness, chest tightness, chest pressure, squeezing in the chest, elephant sitting on the chest, other, and none of these. These response options were selected based on the American Heart Association/American College of Cardiology chest pain guidelines.[18]

Nurses' Cardiac Triage Instrument

Arslanian-Engoren and Hagerty[14] developed the 30-item Nurses' Cardiac Triage Instrument, a tool used to measure emergency nurses' acute cardiac triage decisions. The instrument was developed after several qualitative studies and a comprehensive literature review, and content and face validity were supported through expert review.[14] The instrument includes 3 factors: patient presentation, nurses' reasoning process, and nurse action. Participants are asked to respond on a 5-point Likert scale: 1 = none of the time, 2 = a little of the time, 3 = some of the time, 4 = most of the time, 5 = all of the time. The instrument was originally tested with 158 emergency triage nurses and found to have adequate psychometric properties, including a Cronbach's alpha of .903, .809, and .718 for the 3 factors, respectively. In the present study, the Cronbach's alphas for the Nurses' Cardiac Triage Instrument were .847 for patient presentation factors, .747 for nurses' reasoning process factors, and .518 for nurse action factors.

DATA ANALYSIS

Data were downloaded from Qualtrics and analyzed in IBM SPSS Statistics (version 28.0) (IBM SPSS Statistics, Chicago, IL). Data were cleaned and inspected for missing values. To characterize the sample, standard descriptive statistics were calculated for the sociodemographic variables, including counts and proportions, means and SDs, and median (MDN) and interquartile ranges (IQRs). To describe participants' triage decisions, a median score for each item on the Nurses' Cardiac Triage Instrument was calculated. We selected median as the ideal measure of central tendency to summarize these ordinal-level data. We also calculated the IQR for these items, to assess the degree of variability in the responses. To describe the terms that participants use to assess patients for angina, the proportion of participants who endorsed each response option was calculated. Two ordinal logistic regression models were created to investigate the degree to which nurses use the nature of chest pain and severity of chest pressure to support their initial cardiac triage decision. We chose ordinal logistic regression specifically because the response options for these items were measured in an ordinal fashion with 5 potential options, ranging from "none of the time" (1) to "all of

the time" (5). Ordinal regression allowed us to explore potential predictors across these ordinal-level response options. Potential predictor variables entered into the models included age, gender, years of experience as an RN, years of experience as an emergency nurse, education, certification as an emergency nurse, receipt of triage training, ED bed size, and ENA region. Finally, the predictor variables were tested for multicollinearity and years of experience as an RN was removed because it was highly correlated with years of experience as an emergency nurse ($r = .86$, $P < .001$).

Results

PARTICIPANT CHARACTERISTICS

A total of 449 participants submitted survey responses; however, one was excluded because more than 50% of the data were missing. An additional 34 participants were ineligible for study because they responded that they did not have a role in triage, leaving a final sample of 414. Participants had a mean age of 41.7 (SD = 12.0) years and worked as an RN for a median 10.0 years and as an emergency nurse for a median 8.0 years (Table 1). Most participants were women (80.7%) and had a baccalaureate degree in nursing (60.1%). Nearly half of participants (49.5%) reported being a certified emergency nurse. Participants were working across the country, with most located in ENA regions 3 (42.0%), 1 (18.0%), and 2 (12.7%). Participants indicated that 54.6% of their emergency departments were certified chest pain centers, and approximately half of the emergency departments (53.1%) had 31 or more patient beds. A plurality of nurses (25.8%) were employed in emergency departments with ≥51 beds.

NURSES' ASSESSMENT OF ANGINA

The 4 most common terms endorsed by participants to assess for angina included chest pain (79.5%), chest pressure (77.3%), chest tightness (72.9%), and chest discomfort (72.5%). Elephant sitting on the chest (55.3%) and squeezing in the chest (56.8%) were terms endorsed less often but were still reported by more than half of participants (Table 2).

TRIAGE NURSES' DECISION MAKING

The severity of chest pressure (MDN 5.0, IQR 1.0) and nature of chest pain (MDN 5.0, IQR 1.0) were the most frequently reported cues participants reported using to support initial cardiac triage decisions (Table 3). Several other cues had median scores of 4.0, including presence of diaphoresis (IQR 1.0), fatigue (IQR 1.0), shortness of breath (IQR 2.0), facial expressions (IQR 1.0), patient's history of cigarette smoking (IQR 2.0), patient's history of diabetes mellitus (IQR 1.0), pulse oximeter reading (IQR 2.0), and increased respiratory rate (IQR 1.0). Patient gender (MDN 2.0, IQR 2.0), presence of a fever (MDN 2.0, IQR 2.0), and marital status (MDN 1.0, IQR 0.0) had the lowest median scores indicating that the variables had no influence on triage decisions. Participants primarily reported using their past experience as an RN (MDN 4.0, IQR 2.0) and their intuition (MDN 4.0, IQR 2.0) to inform their triage of patients with potential cardiac problems.

TRIAGE NURSES' INITIAL ACTIONS

Participants indicated that once the decision has been made to triage a patient for a potential acute cardiac problem, they took the following actions "all of the time" (MDN 5.0): alert the ED medical staff of a possible acute cardiac patient (IQR 0.0), provide report to the emergency nurse who will be responsible for the patient (IQR 1.0), obtain a physician-read 12-lead ECG within 10 minutes of ED arrival (IQR 0.0), and transfer the patient to the cardiac catheterization laboratory as soon as possible (IQR 0.0) (Table 3). Specific response percentages for each item in the action portion of the instrument are presented in Table 4.

PREDICTORS OF NURSES' USE OF CHEST PAIN IN TRIAGE PROCESS

Nature of Chest Pain

The only clinical variable in the ordinal regression model predictive of nurses' use of chest pain in triage was bed size (Table 5). Nurses who worked in an emergency department with 51 or more beds, compared with those who worked in an emergency department with 10 or fewer beds, were associated with a 57% decrease in the odds of using the nature of chest pain "all of the time" versus the combined adjacent "___ of the time" categories, given that other demographic and clinical variables were held constant in the model. The other predictor variables in the model were not significant.

Severity of Chest Pressure

Bed size was the lone variable that significantly predicted the use of *severity* of chest pressure as a cue for a cardiac workup (Table 5). Nurses who worked in an emergency department

TABLE 1
Characteristics of participants ($N = 414$)

Variables	
Recruitment method, n (%)	
Postcard	310 (74.9)
Friend or colleague	97 (23.4)
Emergency Nurses Association website	7 (1.7)
Age, mean (SD) in years	41.7 (12.0)
Years as registered nurse, median (range)	10.0 (1-49)
Years as emergency registered nurse, median (range)	8.0 (1-41)
Gender, n (%)	
Woman	334 (80.7)
Man	79 (19.1)
Prefer not to respond	1 (0.2)
Highest level of nursing education, n (%)	
Associate degree or diploma	65 (15.7)
Baccalaureate degree	249 (60.1)
Master's degree	93 (22.5)
Doctorate of nursing practice degree	5 (1.2)
PhD or equivalent degree	2 (0.5)
Role in the emergency department, n (%)	
Staff nurse	218 (52.9)
Charge nurse	134 (32.5)
Manager, assistant manager, or supervisor	26 (6.3)
Director	7 (1.7)
Other	27 (6.6)
Certified emergency nurse	
Yes	205 (49.5)
No	209 (50.5)
Emergency department location, n (%)	
ENA region 1 (AK, CA, HI, ID, MT, NV, OR, UT, WY, WA)	74 (18.0)
ENA region 2 (AZ, CO, KS, LA, NE, NM, OK, TX)	52 (12.7)
ENA region 3 (IL, IN, IA, KY, MI, MN, MO, ND, SD, WI)	172 (42.0)
ENA region 4 (DE, MD, OH, PA, VA, WV, D.C.)	33 (8.0)
ENA region 5 (CT, ME, MA, NH, NJ, NY, RI, VT)	34 (8.3)
ENA region 6 (AL, AR, FL, GA, MS, NC, SC, TN)	32 (7.8)
Travel nurse (variable location)	13 (3.2)
Emergency department is certified chest pain center, n (%)	
Yes	226 (54.6)
No	119 (28.7)
Unsure	69 (16.7)
Number of beds in emergency department, n (%)	
10 or fewer	39 (9.4)
11-20	60 (14.5)
21-30	95 (22.9)
31-40	76 (18.4)
41-50	37 (8.9)
51 or more	107 (25.8)
Unsure	4 (0.9)

continued

TABLE 1
Continued

No attempts were made to estimate missing data, so the total for some variables may not equal 414. Median was used for representing central tendency of non-normally distributed data, whereas mean was used for normally distributed data.

with 31 to 40 beds, compared with those who worked in an emergency department with 10 or fewer beds, were associated with a 67% decrease in the odds of using severity of chest pressure "all of the time" versus the combined adjacent "___ of the time" categories, given that the other demographic and clinical variables were held constant in the model. Nurses who worked in an emergency department with 51 or more beds, compared with those who worked in an emergency department with 10 or fewer beds, were associated with a 72% decrease in the odds of using severity of chest pressure "all of the time" versus the combined adjacent "___ of the time" categories, given that the other demographic variables were held constant in the model.

Discussion

PARTICIPANT CHARACTERISTICS

Our sample demographics mirrored previous reports of emergency nurses.[19] Participants in the present study had a mean age of 41.7 years, had earned a baccalaureate degree,

TABLE 2
Terms used by participants to query patients about ACS-related chest symptoms ($N = 414$)

Term used	n (%)
Chest pain	329 (79.5)
Chest pressure	320 (77.3)
Chest tightness	302 (72.9)
Chest discomfort	300 (72.5)
Chest heaviness	271 (65.5)
Squeezing in the chest	235 (56.8)
Elephant sitting on the chest	229 (55.3)
Other*	15 (3.6)
None of these	4 (1.0)

Participants were asked the following question: "When asking a patient about symptoms they are having, which term(s) do you use to determine if they are having angina?" Participants were invited to select all response options that applied.
ACS, acute coronary syndrome.
* "Other" responses included "unusual sensation in your chest" ($n = 2$), "big weight" ($n = 1$), "crushing chest pain" ($n = 2$), "fullness" ($n = 1$), "sharp chest pain" ($n = 2$), "burning sensation" ($n = 1$), and neck, back, and jaw pain ($n = 2$). Three respondents indicated they ask the patient to tell them what their chest pain "feels like." One participant indicated asking the patient whether their chest pain was reproducible. One participant indicated that patients "may use all these terms"; the participant "would usually use the word chest pain to ask."

and were experienced emergency nurses. There are more than 789,542 emergency nurses currently employed in the United States. The mean age is 41.6 years and only 37.9% of emergency nurses are ≥50 years old.[19] Data for the general nursing population suggest that the average age is 50 years, the median age is 53 years, and 50.9% of nurses are 50+ years old.[19] Eighty percent of all emergency nurses are women, whereas 19.8% are men.[19] Fifty one percent of emergency nurses had at least a bachelor's degree.[19]

NURSES ASSESSMENT OF ANGINA

Chest pain is the most common symptom of ACS, but patients frequently use other descriptors for pain. Gulati et al[18] found that chest pain is often used to describe discomfort and other sensations experienced by patients. It is important to note that, although chest symptoms are the most common ACS symptom, recent chest pain guidelines[18] emphasize that various descriptors of chest pain, such as pressure, tightness, and discomfort, should be considered as a possible ACS symptom, whether located in the chest, shoulders, arms, neck, back, upper abdomen, and jaw.[18] Furthermore, symptoms such as shortness of breath and fatigue should be carefully considered as potential anginal equivalents.[18]

Participants in our study endorsed using multiple chest symptoms when asking patients whether they were experiencing chest pain. In addition, unstable angina commonly presents as chest pain at rest with associated shortness of breath. Our participants sometimes noted other symptoms in assessing angina, including shortness of breath. In addition, the severity of chest pain or pressure has not consistently been associated with ACS.[20] One reason why it is challenging to discharge cardiac patients directly from the emergency department is that those patients admitted to the emergency department who rule out for ACS present with similar symptoms.[21]

TRIAGE NURSES' DECISION MAKING

As expected, triage nurses based their assessment of a potential cardiac diagnosis on symptom presentation and the patient's health history. Nurses most often used the nature of chest pain and the severity of chest pressure when making triage decisions. Other common symptoms of ACS including diaphoresis and shortness of breath were also used. Nurses did use symptoms such as fatigue to make triage decisions, which may reflect an increase in their knowledge of the evidence base for symptoms of ACS.[5,22]

Participants said they used their past experience and "intuition" to inform their decision making. This is consistent with numerous studies.[23–25] Wolf[24] found that nurses used intuition, ED experience, and their "gut feeling" in assigning acuity levels to ED patients. It is possible that participants perceived experience and intuition in similar ways. Of note, gender did not play an important role in triage nurses' decision making. Female gender has been associated with delayed diagnostic testing, treatment, and outcomes in women with myocardial infarction in previous studies.[26,27] This may reflect an emphasis on evidence-based care and a high level of knowledge and skill associated with emergency nursing.[19]

TRIAGE NURSES' INITIAL ACTIONS

Unlike the study by Arslanian-Engoren and Hagerty,[14] the overwhelming majority of emergency nurses in this study reported always obtaining a 12-lead ECG within 10 minutes of arrival and getting the patient to the cardiac catheterization laboratory as quickly as possible. This may be the result of social desirability bias[28] or other response bias given that participants in the study were experienced and well-educated emergency nurses; hence, they were likely aware of

TABLE 3
Nurses' cardiac triage instrument items ($n = 414$)

Item	MDN (IQR)*
I use the following patient cues to support my initial cardiac triage decisions:	
Severity of chest pressure	5.0 (1.0)*
Nature of chest pain (eg, sharp, dull, stabbing)	5.0 (1.0)*
Presence of diaphoresis	4.0 (1.0)*
Too fatigued to answer questions	4.0 (1.0)*
Complaints of shortness of breath	4.0 (2.0)
Facial expressions	4.0 (1.0)
History of cigarette smoking	4.0 (2.0)
History of diabetes mellitus	4.0 (1.0)
Pulse oximetry reading	4.0 (2.0)
Increased respiratory rate	4.0 (1.0)
Complaints of nausea	3.0 (1.0)
General appearance/dress	3.0 (3.0)
Complaints of fatigue	3.0 (1.0)
History of hyperlipidemia	3.0 (2.0)
Minimizes seriousness of symptoms	3.0 (1.0)
Complaints of pain when taking deep breath	3.0 (2.0)
Presence of abdominal pain	3.0 (1.0)
History of alcohol abuse	3.0 (2.0)
Patient gender	2.0 (2.0)*
Presence of a fever	2.0 (2.0)
Marital status	1.0 (0.0)*
I determine that patient cues are suggestive of a cardiac condition based on:	
My past experience as a registered nurse	4.0 (2.0)
My own intuition	4.0 (1.0)
My personal knowledge of the patient as a person who is frequently seen in the ED	3.0 (1.0)
My personal reaction to the patient	2.0 (2.0)
Once I have made the decision to triage the patient as an acute cardiac patient:	
I alert the ED medical staff to an acute cardiac triage patient.	5.0 (0.0)*
I provide report to the emergency nurse who will be responsible for providing nursing care outside of the triage area.	5.0 (1.0)*
My goal, once deciding the patient is likely to have a cardiac condition, is to:	
Obtain a physician-read 12-lead ECG within 10 minutes of ED arrival	5.0 (0.0)*

continued

TABLE 3
Continued

Item	MDN (IQR)*
Get the patient to the cardiac catheterization laboratory as soon as possible, once the determination has been made	5.0 (0.0)*
Make the patient as comfortable as possible	4.0 (2.0)*

ECG, electrocardiogram; ED, emergency department; IQR, interquartile range; MDN, median.
For each of the above items, participants were asked to respond on a 5-point Likert scale: 1 = none of the time, 2 = a little of the time, 3 = some of the time, 4 = most of the time, 5 = all of the time;
* Indicates that floor or ceiling effect was present with the item.

evidence-based guidelines for the treatment of potential ACS. In addition, time to the catheterization laboratory and time to obtain a 12-lead ECG are common quality metrics measured by hospitals, likely reflected in most emergency nurses who reported taking these actions rapidly. Indeed, this finding is also another indication that emergency nurses are following evidence-based practice guidelines.[18] Although most participants reported taking the appropriate action "most of the time" or "all of the time," a few participants did not. It may be necessary to provide periodic education to ensure that all emergency nurses recognize the importance of actions such as obtaining an ECG within 10 minutes.

TABLE 4
Actions taken during triage as reported by participants ($N = 414$)

Item	None of the time n (%)	Little of the time n (%)	Some of the time n (%)	Most of the time n (%)	All of the time n (%)
Once I have made the decision to triage the patient as an acute cardiac patient:					
I alert the emergency department medical staff to an acute cardiac triage patient.	5 (1.2)	2 (0.5)	24 (5.8)	43 (10.4)	340 (82.1)
I provide report to the emergency nurse who will be responsible for providing nursing care outside of the triage area.	8 (1.9)	13 (3.1)	36 (8.7)	71 (17.1)	286 (69.1)
My goal, once deciding the patient is likely to have a cardiac condition, is to:					
Make the patient as comfortable as possible	8 (1.9)	34 (8.2)	82 (19.8)	121 (29.2)	169 (40.8)
Obtain a physician-read 12-lead ECG within 10 minutes of emergency department arrival	0 (0)	0 (0)	1 (0.2)	20 (4.8)	393 (94.9)
Get the patient to the cardiac catheterization laboratory as soon as possible, once the determination has been made	0 (0)	3 (0.7)	6 (1.4)	29 (7.0)	376 (90.8)

ECG, electrocardiogram.
Percentages rounded to nearest whole percent.

TABLE 5
Predictors of nurses' use of chest pain in triage process

Nature of chest pain	Ordered log-odds (estimate)	SE	t	*P* value	OR	95% CI	
						LL	UL
Age	−0.010	0.012	−0.831	.406	0.989	0.966	1.014
Years ED experience	0.006	0.017	0.373	.709	1.006	0.973	1.041
Certified emergency nurse							
No	Ref						
Yes	0.090	0.213	0.425	.671	1.095	0.721	1.662
Gender							
Woman	Ref						
Man	−0.182	0.250	−0.728	.466	0.834	0.511	1.360
Received training for triage role							
Yes	Ref						
No	−0.171	0.305	−0.561	.575	0.843	0.464	1.532
RN education							
Associate's	Ref						
Baccalaureate	0.034	0.291	0.118	.906	1.035	0.585	1.830
Master's	0.250	0.329	0.760	.447	1.285	0.673	2.450
DNP/PhD	0.038	0.749	0.050	.960	1.038	0.239	4.505
ED bed size							
10 or fewer	Ref						
11-21	−0.596	0.443	−1.344	.179	0.551	0.231	1.314
21-30	−0.019	0.421	−0.046	.963	0.981	0.430	1.238
31-40	−0.607	0.435	−1.396	.163	0.545	0.232	1.278
41-50	−0.018	0.501	−0.035	.972	0.983	0.368	2.622
51 or more	−0.848	0.406	−2.086	.037*	0.428	0.193	0.950
ENA region							
Midwest	Ref						
West-Northwest	−0.141	0.275	−0.512	.609	0.869	0.507	1.489
Southwest/Midsouth	−0.348	0.303	−1.150	.250	0.706	0.390	1.278
International-East	−0.124	0.375	−0.331	.741	0.883	0.423	1.843
Northeast	0.166	0.401	0.414	.679	1.181	0.537	2.595
Southeast	0.201	0.390	0.515	.606	1.223	0.569	2.628
Severity of chest pressure	**Ordered log-odds (estimate)**	**SE**	**t**	***P* value**	**OR**	**95% CI**	
						LL	UL
Age	−0.011	0.012	−0.857	.391	0.989	0.966	1.014
Years ED experience	0.003	0.017	0.195	.846	1.003	0.970	1.038
Certified emergency nurse							
No	Ref						
Yes	−0.022	0.214	−0.101	.919	0.979	0.643	1.489
Gender							
Woman	Ref						

continued

TABLE 5
Continued

Severity of chest pressure	Ordered log-odds (estimate)	SE	t	*P* value	OR	95% CI	
						LL	UL
Man	0.054	0.252	−0.214	.830	1.056	0.644	1.731
Received training for triage role							
Yes	Ref						
No	−0.038	0.305	−0.125	.900	0.963	0.530	1.750
RN education							
Associate's	Ref						
Baccalaureate	−0.012	0.290	−0.040	.968	0.989	0.560	1.745
Master's	0.217	0.330	0.657	.511	1.243	0.650	2.378
DNP/PhD	−0.353	0.706	−0.500	.617	0.702	0.176	2.804
ED bed size							
10 or fewer	Ref						
11-21	−0.785	0.470	−1.670	.095	0.456	0.181	1.146
21-30	−0.576	0.445	−1.294	.196	0.562	0.235	1.345
31-40	−1.112	0.461	−2.412	.016*	0.329	0.133	0.812
41-50	−0.504	0.523	−0.963	.335	0.604	0.217	1.684
51 or more	−1.283	0.433	−2.964	.003*	0.277	0.119	0.648
ENA region							
Midwest	Ref						
West-Northwest	−0.162	0.277	−0.584	.559	0.850	0.494	1.465
Southwest/Midsouth	−0.300	0.313	−0.957	.338	0.741	0.401	1.369
International-East	−0.243	0.387	−0.628	.530	0.784	0.367	1.675
Northeast	−0.188	0.409	−0.459	.646	0.829	0.372	1.848
Southeast	−0.485	0.375	−1.293	.196	0.616	0.295	1.284

ED, emergency department; ENA, Emergency Nurses Association; LL, lower limit; OR, odds ration; RN, registered nurse; UL, upper limit.
* Significant at the $P = .05$ level.

PREDICTORS OF NURSES' USE OF CHEST PAIN IN TRIAGE PROCESS

Emergency nurses in this national study made triage decisions to evaluate patients for ACS and other cardiac conditions based largely on the nature and severity of chest pressure. Surprisingly, facial expressions were also used to make triage decisions despite previous research suggesting that the patients' expressions and severity of pain are unreliable diagnostic clues.[29] Sheu et al[29] found in their study that scales providing specific descriptions using the empirically displayed facial actions associated with pain yielded greater sensitivity, inter-rater reliability, and validity as indices of pain. The fact that bed size was the lone variable found to contribute to the prediction model for the use of severity of chest pressure as a cue for a cardiac workup was somewhat unexpected. We could find no literature that associated ED number of beds with the assessment of chest pain. A plurality of nurses in this study worked in emergency departments with ≥51 beds. It is possible that nurses working in large emergency departments have seen a wider range of cases of cardiac patients, have more experience, and have more regular professional education; thus, they use a broader range of signs and symptoms when performing assessments. This is a hypothesis that requires further study.

Limitations

A strength of the study was anonymous data collection from a national sample of emergency nurses. There are, however, limitations to the study. Data were self-reported, so there was no way to objectively verify responses. A large proportion of respondents came from ENA region 3; hence,

generalizability may be limited and reflect regional differences in the importance of participating in research to emergency nurses. Only 9.4% of participants reported working in emergency departments with 10 or fewer beds; therefore, findings may not represent smaller emergency departments and rural settings. Sampling from ENA may also limit generalizability and indicate a sample that was well educated and certified in emergency nursing. Finally, despite strong internal consistency reliability in earlier testing, the Cronbach's alpha for the nurse action domain of the Nurses' Cardiac Triage Instrument was .518 suggesting that these items are not necessarily a reliable measure of nurses' triage decision making.

Implications for Emergency Nurses

As emergency nurses triage patients with potential ACS, it is important to remember that the list of ACS symptoms is similar for individuals of all genders. That is, although the exact *frequency* and *total number* of ACS symptoms experienced by a particular gender may sometimes differ from another gender, the list of symptoms associated with ACS does not differ much. Chest pain (including pressure, heaviness, pressure, and indigestion), shortness of breath, diaphoresis, nausea and vomiting, fatigue, pain between the shoulders, dizziness, and arm, neck, and jaw pain are all important symptoms triage nurses should associate with possible ACS. Importantly, patients with ACS typically present with 2 or more symptoms, so a patient reporting a single symptom is less commonly experiencing ACS. Risk factors and patient history also remain important considerations for triage nurses. Especially when patients present with a high risk of coronary artery disease, triage nurses must carefully assess for ACS, considering a constellation of potential symptoms.

In addition, nurses in this sample recognized the importance of chest pain in the triage of patients; however, nurses must remember that the chest sensations caused by ACS are not always *painful*, per se. Instead, these sensations are often described as pressure, tightness, heaviness, or even indigestion. Thus, including these additional terms may further identify patients with "chest pain" (angina) even when the patient does not perceive the chest symptom they are experiencing to be painful. Moreover, it is important to note that a person's facial expression does not always convey what they are experiencing internally, so triage decisions based heavily on a person's affect or appearance may be faulty.

Finally, it is important to remember the classic adage "time is [heart] muscle." Especially for a patient experiencing STEMI, prompt revascularization is essential. Quickly identifying a patient with possible ACS enables the health care team to rapidly obtain a 12-lead ECG (within 10 minutes of arrival), initiate evidence-based pharmacotherapeutic interventions, and rapidly transfer a patient to the catheterization laboratory to reduce their chance of death and additional complications.

Conclusion

Emergency triage nurses in this study relied on chest symptoms and the severity of chest pressure to support initial cardiac triage decisions. Associated symptoms of diaphoresis, fatigue, and shortness of breath, along with health history, also contributed to decision making. Initial RN actions were to obtain an ECG, prepare the patient for the cardiac catheterization laboratory, and notify the emergency physician of the patient's admission. Overall, triage nurses made decisions grounded on evidence-based practice guidelines and not according to the patient's gender or other personal characteristics.

Author Disclosures

Conflicts of interest: none to report.

This work was supported by a research grant from the Emergency Nurses Association/Sigma Foundation for Nursing Research and by a research grant from the Xi Pi chapter of Sigma. Dr Blakeman was also supported financially by the Illinois State University Provost Office's Educational Diversity Enhancement Program.

Acknowledgments

We thank Ashley Bollhorst, MS, for her assistance in developing the recruitment materials for this study.

REFERENCES

1. Cairns C, Kang K. National Hospital ambulatory medical care survey: 2019 emergency department summary tables. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. Accessed September 19, 2023. https://www.cdc.gov/nchs/data/nhamcs/web_tables/2019-nhamcs-ed-web-tables-508.pdf
2. Tsao CW, Aday AW, Almarzooq ZI, et al. Heart disease and stroke statistics—2022 update: a report from the American Heart Association. *Circulation*. 2022;145(8):e153-e639. https://doi.org/10.1161/CIR.0000000000001052
3. Arslanian-Engoren C. Explicating nurses' cardiac triage decisions. *J Cardiovasc Nurs*. 2009;24(1):50-57. https://doi.org/10.1097/01.jcn.0000317474.50424.4f

4. Foley AL. Not just chest pain: presenting symptoms of acute coronary syndrome by gender: a research to practice summary. *J Emerg Nurs*. 2019;45(4):462-464. https://doi.org/10.1016/j.jen.2019.05.004
5. DeVon HA, Daya MR, Knight E, et al. Unusual fatigue and failure to utilize EMS are associated with prolonged prehospital delay for suspected acute coronary syndrome. *Crit Pathw Cardiol*. 2020;19(4):206-212. https://doi.org/10.1097/hpc.0000000000000245
6. Loh JP, Satler LF, Pendyala LK, et al. Use of emergency medical services expedites in-hospital care processes in patients presenting with ST-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention. *Cardiovasc Revasc Med*. 2014;15(4):219-225. https://doi.org/10.1016/j.carrev.2014.03.011
7. Tataris K, Kivlehan S, Govindarajan P. National trends in the utilization of emergency medical services for acute myocardial infarction and stroke. *West J Emerg Med*. 2014;15(7):744-748. https://doi.org/10.5811/westjem.2014.9.22851
8. Gilboy N, Tanabe P, Travers D, Rosenau A. Emergency Severity Index (ESI): A Triage Tool for Emergency Department Care. Version 4. *Agency for Healthcare Research and Quality*. 2020.
9. Sanders SF, DeVon HA. Accuracy in ED Triage for Symptoms of Acute Myocardial Infarction. *J Emerg Nurs*. 2016;42(4):331-337. https://doi.org/10.1016/j.jen.2015.12.011
10. Charles-Hanmer M-M, ed. *Triage Chest Pain Protocol*. Mount St. Joseph University; 2021. Accessed September 19, 2023. https://etd.ohiolink.edu/acprod/odb_etd/etd/r/1501/10?clear=10&p10_accession_num=msjdn1619697945080865
11. Thygesen K, Alpert JS, Jaffe AS, et al. Fourth universal definition of myocardial infarction (2018). *J Am Coll Cardiol*. 2018;72(18):2231-2264. https://doi.org/10.1161/cir.0000000000000617
12. Maliszewski B, Whalen M, Lindauer C, Williams K, Gardner H, Baptiste D-L. Quality improvement in the emergency department: a project to reduce door-to-electrocardiography times for patients presenting with chest pain. *J Emerg Nurs*. 2020;46(4):497-504. https://doi.org/10.1016/j.jen.2020.03.004
13. Stanfield L. Improvement of door-to-electrocardiogram time using the first-nurse role in the ED setting. *J Emerg Nurs*. 2018;44(5):466-471. https://doi.org/10.1016/j.jen.2017.12.011
14. Arslanian-Engoren C, Hagerty BM. The development and testing of the nurses' cardiac triage instrument. *Res Theor Nurs Pract*. 2013;27(1):9-18. https://doi.org/10.1891/1541-6577.27.1.9
15. Arslanian-Engoren C, Eagle KA, Hagerty B, Reits S. Emergency department triage nurses' self-reported adherence with American College of Cardiology/American Heart Association myocardial infarction guidelines. Research support, non-U.S. gov't. *J Cardiovasc Nurs*. 2011;26(5):408-413. https://doi.org/10.1097/jcn.0b013e3182076a98
16. van Oosterhout RE, de Boer AR, Maas AH, Rutten FH, Bots ML, Peters SA. Sex differences in symptom presentation in acute coronary syndromes: a systematic review and meta-analysis. *J Am Heart Assoc*. 2020;9(9):e014733. https://doi.org/10.1161/jaha.119.014733
17. Frisch SO, Brown J, Faramand Z, et al. Exploring the complex interactions of baseline patient factors to improve nursing triage of acute coronary syndrome. *Res Nurs Health*. 2020;43(4):356-364. https://doi.org/10.1002/nur.22045
18. Gulati M, Levy PD, Mukherjee D, et al. 2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR guideline for the evaluation and diagnosis of chest pain: executive summary: a report of the American College of Cardiology/American Heart Association joint committee on clinical practice guidelines. *Circulation*. 2021;144(22):e368-e454. https://doi.org/10.1161/cir.0000000000001030
19. Schumaker J, Taylor W, McGonigle T. The emergency, trauma, and transport nursing workforce: highlights of a benchmark 2019 survey. *Nurs Manage*. 2019;50(12):20-32. https://doi.org/10.1097/01.numa.0000605152.42445.4b
20. Khan NA, Daskalopoulou SS, Karp I, et al. Sex differences in acute coronary syndrome symptom presentation in young patients. *JAMA Intern Med*. 2013;173(20):1863-1871. https://doi.org/10.1001/jamainternmed.2013.10149
21. Devon HA, Rosenfeld A, Steffen AD, Daya M. Sensitivity, specificity, and sex differences in symptoms reported on the 13-item acute coronary syndrome checklist. *J Am Heart Assoc*. 2014;3(2):e000586. https://doi.org/10.1161/jaha.113.000586
22. DeVon HA, Mirzaei S, Zègre-Hemsey J. Typical and atypical symptoms of acute coronary syndrome: time to retire the terms? *J Am Heart Assoc*. 2020;9(7):e015539. https://doi.org/10.1161/jaha.119.015539
23. Garbez R, Carrieri-Kohlman V, Stotts N, Chan G, Neighbor M. Factors influencing patient assignment to level 2 and level 3 within the 5-level ESI triage system. *J Emerg Nurs*. 2011;37(6):526-532. https://doi.org/10.1016/j.jen.2010.07.010
24. Wolf L. Acuity assignation: an ethnographic exploration of clinical decision making by emergency nurses at initial patient presentation. *Adv Emerg Nurs J*. 2010;32(3):234-246. https://doi.org/10.1097/TME.0b013e3181e972ec
25. Smith A, Cone KJ. Triage decision-making skills: a necessity for all nurses. *J Nurs Prof Dev*. 2010;26(1):E14-E19. https://doi.org/10.1097/nnd.0b013e3181bec1e6
26. Stehli J, Duffy SJ, Burgess S, et al. Sex disparities in myocardial infarction: biology or bias? *Heart Lung Circ*. 2021;30(1):18-26. https://doi.org/10.1016/j.hlc.2020.06.025
27. Shih J-Y, Chen Z-C, Chang H-Y, Liu Y-W, Ho C-H, Chang W-T. Risks of age and sex on clinical outcomes post myocardial infarction. *IJC Heart Vasc*. 2019;23:100350. https://doi.org/10.1016/j.ijcha.2019.100350
28. Krumpal I. Determinants of social desirability bias in sensitive surveys: a literature review. *Qual Quant*. 2013;47(4):2025-2047. https://doi.org/10.1007/s11135-011-9640-9
29. Sheu E, Versloot J, Nader R, Kerr D, Craig KD. Pain in the elderly: validity of facial expression components of observational measures. *Clin J Pain*. 2011;27(7):593-601. https://doi.org/10.1097/ajp.0b013e31820f52e1

The Effect of Mandatory Triage Questions on Triage Processes: A Qualitative Exploratory Study

Authors: Lisa Wolf, PhD, RN, CEN, FAEN, FAAN, Altair Delao, MPH, Paul Clark, PhD, RN, FAEN, Elizabeth Mizerek, PhD, RN, FAEN, and Michael D. Moon, PhD, RN, FAEN, Schaumburg, IL, Louisville, KY, West Windsor Township, NJ, and San Antonio, TX.

Contribution to Emergency Nursing Practice

- The current state of scientific knowledge on emergency nursing process around triage indicates that there are multiple individual and environmental challenges to rapid and accurate identification of the patient at risk of decompensation.
- The main findings of this research are that emergency nurses report challenges to rapid and accurate triage related to regulatory-related questions mandated at the initial triage encounter.
- Key implications for emergency nursing practice from this research are that (1) narrowing the focus of the triage assessment to the identification of patients with physiological or psychological instability may increase both the identification of patients at risk of decompensation and (2) moving regulatory-related questions elsewhere in the ED care trajectory may improve both nursing compliance and patient outcomes.

Abstract

Introduction: The study purpose was to obtain an understanding of both the types of questions mandated for the triage encounter in emergency departments across the United States and how emergency nurses perceive the relevance of these questions to the triage process.

Methods: A qualitative descriptive exploratory study using focus group data was used. Data were collected at an in-person emergency nursing conference held in September 2022. Data were analyzed using Mayring's 8-step process.

Results: Participants ($n = 35$) voiced concerns about a lack of expertise at all points in the triage process. The overarching problem is reported as data required by regulatory agencies are conflated with triage assessment information. Participants in this study reported that the conflation of the triage assessment with regulatory compliance is causing significant issues in the ability of emergency nurses to appropriately evaluate patient presentations. Thematic categories were identified as who's assessing the patients? assessment or compliance? important questions, situationally important questions, questions asked before discharge, and the lack of emergency nurse input.

Discussion: The conflation of regulatory data collection with patient assessment at the initial triage encounter challenges the ability of the emergency nurse to rapidly and accurately identify patients at risk of deterioration. We recommend that initial triage processes encompass questions that focus on establishing the stability of the patient and the safety of the waiting room and include inquiry relevant to the patient presentation.

Key words: Emergency nursing; Triage; Workplace environment; Clinical decision making; Regulatory

Lisa Wolf, *Member, Pioneer Valley Chapter*, is Director, Emergency Nursing Research, Emergency Nurses Association, Schaumburg, IL. **ORCID identifier:** https://orcid.org/0000-0002-7065-470X.

Altair Delao is Senior Research Manager, Emergency Nurses Association, Schaumburg, IL. **ORCID identifier:** https://orcid.org/0000-0001-6017-3227.

Paul Clark, *Member, Kentuckian Chapter*, is Assistant Professor, University of Louisville, Louisville, KY. **ORCID identifier:** https://orcid.org/0000-0003-4990-875X.

Elizabeth Mizerek, Member, West State Council Chapter, is Director of Nursing Education, Mercer County Community College, West Windsor Township, NJ. **ORCID identifier:** https://orcid.org/0000-0002-7768-9032.

Michael D. Moon, *Member, San Antonio Chapter*, is Professor, University of the Incarnate Word, San Antonio, TX. **ORCID identifier:** https://orcid.org/0000-0001-5490-242X.

For correspondence, write: Lisa Wolf, PhD, RN, CEN, FAEN, FAAN, Director, Emergency Nursing Research, Emergency Nurses Association, Schaumburg, IL; E-mail: lisa.wolf@ena.org

J Emerg Nurs 2024;50:84-94.
Available online 21 July 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.06.011

Introduction

The purpose of the triage process in the emergency department is to establish acuity in an effort to connect the patient with the appropriate type of resources needed to address the presenting complaint.[1] This acuity designation aids in determining which area of the emergency department will best serve the patient and whether the patient can safely wait for treatment. However, given the prevalence of long waiting times before the initial provider encounter, the rapid identification of patients needing immediate treatment is critical for patient outcomes, and so the accurate triage assessment of the patient is necessarily a focus of emergency care.

BACKGROUND AND SIGNIFICANCE

The Emergency Severity Index (ESI) is the most commonly used triage algorithm in the United States.[2] It is a 5-level system that uses patient data and predicted resources to assign an acuity level ranging from emergent, requiring lifesaving intervention (1), to stable, needs no resources (5). Levels 1 and 2 comprise patients who are unstable and require immediate intervention, whereas levels 3, 4, and 5 comprise patients who are not unstable and who will require some number of resources to reach a disposition decision. In the ESI algorithm,[1] the critical questions for establishing physiological and psychological stability are (1) is this patient in need of lifesaving intervention? and (2) is this patient at risk of decompensation? Once these questions are answered in the negative, the focus shifts to resource allocation in the stable patient. Depending on the nature of the complaint, this may require a focused assessment and questioning about the patient's medical, surgical, psychiatric, social, and/or medication history to determine whether increased risk of deterioration is present.

Triage nurses must have a broad experience in emergency care and a substantial knowledge base, which includes patient health disruptions, history, and presentation, to make decisions about patients' stability and risk of decompensation. Decisions made by triage nurses at the initial patient encounter are critical to provide ED patients with a safe and appropriate care trajectory; failure to correctly identify a patient's acuity level may lead to negative patient outcomes, up to and including death of the patient.[3,4] Current challenges to this process include increased patient volume and acuity, inadequate or insufficient nurse staffing,[5] and constant distractions from waiting room activity.[6]

The Joint Commission and other regulatory entities require that patients be assessed during an ED visit for a variety of high-risk situations (eg, suicidal ideation, physical/sexual abuse, intimate partner violence [IPV]). Regulatory entities do not dictate when during the visit these assessments must occur, only that they must occur. To meet these regulatory assessment requirements, the temptation is to add them to the triage process, precisely because every patient is triaged, although these questions may not add to the assignation of an accurate acuity level.[7,8] Similarly, ED leaders may place other screenings at triage, especially to screen for communicable diseases,[9] time-sensitive presentations such as sepsis,[10] and safety concerns including risk of violence.[11]

Risk assessment for social determinants of health and associated comorbidities such as mental health status, self-harm behaviors, and various types of abuse is often conducted during triage, yet the evidence is absent regarding whether querying patients during the triage process is the most effective approach to identify at-risk patients. Required screenings and assessments may overburden the triage encounter, lengthening the process and delaying rapid assessment of patients in the triage queue.

Johnson et al[12] reported nurses' understanding of triage assessments to include (1) must ask, (2) actions of triage, (3) relevant but not urgent for triage, and (4) not perceived as relevant. Importantly, participants in Johnson et al[12] study reported that the "must ask" questions included those required by hospital protocol. The nurses did not consider these questions relevant to the patient's presentation and treatment, and so questions regarding HIV status, physical/sexual abuse, substance abuse, and suicidality were all viewed as "checkbox questions" (those that needed to be answered because of regulatory requirements). The Johnson et al[12] study reported these questions as delaying the questions that assessed stability and determined the level of resources required. Answers to checkbox questions had little meaning for the nurses—and thus, also might not reveal critical information related to patient stability. There is inconclusive evidence to determine whether additional screening during triage may be of some value in other areas, such as pregnancy status[13] and firearms injury risk.[14]

Other researchers[15–17] have written about the necessity of maintaining situational awareness and adaptability to meet the demands of the constantly shifting ED environment. The triage nurse is often given responsibility for oversight of the waiting room[17,18] and is frequently called upon to adapt their workflow based on patient volume or concerning patient presentations. Triage nurses must visually assess patients coming in, listen to the greeter or registrar for initial high-risk statements, and manage interruptions even as they are triaging someone else.

There is a need to identify components of the triage assessment process that can be optimized to improve decision making and clinical outcomes.[2,18,19] It is possible that this problem is not "triage" per se, but rather the

distractions from the triage process related to the required screenings. Interruptions in triage regardless of the reason are a leading cause of triage inconsistencies and mistriage.[6] In addition, these screenings are consolidated into an already time-pressured process that by design should rapidly identify the high-risk patient of physical or psychological deterioration. Because ED triage standards rely heavily on the individual's subjective assessment and are subject to the limitations of insufficient evidence and clinician skills in risk stratification, researchers have proposed possible solutions to improve competency and accuracy[2,4,18] and suggest opportunities to improve the efficiency and effectiveness of screening and assessment processes during different phases of the ED visit. These suggestions focus on the engagement of administration, the input of emergency nurses performing triage, and a continuous process of education and competency evaluation.[2,3,18]

The purpose of this study was to obtain an understanding of both the types of questions mandated for the triage encounter in emergency departments across the United States and how emergency nurses perceived the relevance of these questions to the triage process.

Methods

This study used a descriptive qualitative exploratory approach[20-22] collecting data from focus groups. Institutional review board approval was obtained (Advarra, Columbia, MD) before the recruitment of participants. Focus groups were audio recorded. Individual identifiers were redacted from the final transcript before the data were analyzed. Once the findings were verified by the participants, the audio recordings were deleted. The Consolidated Criteria for Reporting Qualitative Research guideline was used in the reporting of this study.

SAMPLE

A purposive representative sample of nurses who have provided patient care in an ED triage area and would be attending the ENA Emergency Nursing 2022 Conference in Denver, CO (September 30 to October 3, 2022), was recruited via email. Inclusion criteria included nurses who were aged >18 years, functioned as an ED triage nurse in the United States, and had >6 months experience in the triage nurse role. There was no assumed relationship between study participants and the research team. Seventy-eight nurses responded to the call for participants.

DATA COLLECTION

Thirty-five participants met in one of 2 focus group sessions. Although the ideal size of a focus group is 8 to 10 subjects, the size of group also can depend upon the experience and comfort of the facilitator with conducting discussions. It is recommended that researchers over-recruit and manage larger groups than under-recruit and have to cancel sessions.[23] Our research team has been conducting focus group data collection for >10 years and has experience in managing larger groups of participants such that everyone has a chance to contribute. The raw data reflect participation of 100% of individuals.

As part of the recruitment process, participants completed an online survey using Qualtrics software[24] that included their demographic information (eg, age, gender, education, nursing experience) and the practice settings in which they worked (eg, type of emergency department, number of annual patient visits). Each of the 2 focus group sessions was facilitated by the principal investigator whereas other members of the research team took field notes and audiotaped the proceedings. In addition, the research team used a common data collection form for note taking and for guiding focus group discussions. Evidence of data saturation was assessed at the close of each focus group session. The focus group discussions were transcribed in their entirety, and the transcripts along with the field notes provided the data for thematic analysis. The questions that guided the semistructured focus group discussion were as follows:

- What is the triage process at your emergency department?
- What kinds of questions are asked at triage?
  - Are those questions mandatory?
  - Is there a hard stop in the electronic health record until those questions are answered?
- How do you understand the purpose of triage?
  - What kinds of information do you collect at triage that support that purpose?
  - What kinds of information could be collected at another time in the care trajectory?
    - What are those pieces of information, and where should they be asked?
    - Does it depend on the patient/presentation?
    - How do you decide?
    - Ideally, how could the flow of information line up with the needs of the patient and the workflow of care?

TABLE
Demographic characteristics of focus group participants and emergency care settings where they work ($n = 35$)

Nurse demographics		ED demographics	
Gender	%	Patient population	%
Female	88.6	General ED	77.1
Male	8.6	Adult-only ED	17.1
Missing	2.9	Pediatric only ED	2.9
		Missing	2.9
Age	Mean (SD)	Facility type	%
Participant age	48.1 (10.9)	Nongovernment, not-for-profit	74.3
		Investor owned, for-profit	11.4
		State or local government	8.6
		Federal government/military/VA	2.9
		Missing	2.9
Education	%	Practice setting*	%
Bachelor's	40.0	Community hospital in/near metro area	62.9
Master's	40.0	Affiliate with women's hospital/ childbirth center	54.3
Doctorate	8.6	Academic medical center	22.9
Diploma	5.7	Freestanding ED	14.3
Associate	2.9	Critical access hospital	11.4
Missing	2.9		
Years of experience	Mean (SD)	Geographic location	%
RN in all settings, including ED	22.3 (11.7)	Urban	31.4
ED nurse only	18.6 (9.9)	Suburban	31.4
RN in current ED	10.6 (9.5)	Mid/small city	28.6
ED role (non-RN)	7.9 (12.9)	Rural	5.7
		Missing	2.9
Role in primary practice setting	%	Annual ED patient visits	%
Staff nurse	37.1	1-5000	0.0
Clinical/nurse educator	17.1	5001-10,000	5.7
Director	11.4	10,001-20,000	5.7
Manager	8.6	20,001-30,000	14.3
Other	8.6	30,001-40,000	14.3
Charge nurse	5.7	40,001-50,000	2.9
CNS	5.7	50,001-75,000	17.1
VP nursing	5.7	75,001-100,000	17.1
Clinical coordinator	2.9	>100,000	14.3
Missing	2.9	Missing	8.6

CNS, clinical nurse specialist; ED, emergency department; RN, registered nurse; VA, Veterans Affairs; VP, Vice President
* Percentages do not equal 100 as more than one response was possible.

DATA ANALYSIS

Demographic data were exported to an IBM SPSS Statistics 22, and descriptive statistics were performed. Data saturation was reached at the conclusion of the second focus group. Members of the research team used a modified version of Mayring's 8-step approach to inductive category development,[25] allowing themes to emerge from the data. These steps include revisiting the research question, determining category

definitions, formulating inductive categories, revising categories as analysis progresses, final working through of texts, and interpretation of results, with formative and summative checks throughout the process. Focus group transcriptions and field notes were analyzed by the principal investigator and members of the research team individually using open coding, simultaneous coding, and subcoding techniques as described by Saldana[26]; the transcriptions were then reexamined as a team to determine the final categories and themes by consensus.[26] Final findings were sent to participants for member checking; 13 of the 35 participants responded and all confirmed the accuracy and appropriateness of data interpretation. This method of analysis and thematic comparison, in addition to member checking and peer debriefings, was undertaken to maintain rigor, determine saturation, and enhance the credibility and dependability of the study's findings.

Results

A total of 35 emergency nurses participated in one of two focus group sessions lasting an hour (see Table for the demographics of this sample). The data yielded 4 main themes of assessment or compliance, who's assessing the patients, establishing safety (subthemes: important questions, situationally important questions, important questions before discharge), and lack of emergency nurse input (see Figure). They discussed several critical elements of this problem, including a lack of primary assessment for stability, expertise at all points in the triage process (specifically a lack of expertise in triage nursing), and an understanding of the purpose of triage by administration. Participants reported that data required by regulatory agencies are conflated with triage assessment information required to assess stability and required resources and that this causes significant issues in the ability of emergency nurses to appropriately evaluate patient presentations.

ASSESSMENT OR COMPLIANCE?

Participants described an initial process in which regulatory data collection is so front loaded that the patient's chief concern was only uncovered during the last part of the encounter. These emergency nurses reported they felt as though the required information took precedence over critical patient information.

> [We need] to rule out things like COVID, have you been out of the country? …any symptoms of COVID? We go through the litany, uh, headache, nausea, vomiting, loss of taste or smell, whatever. Do you have any drugs or alcohol or weapons on you? We do that screening. Are you coughing up blood, which is a TB screening, or do you have paroxysmal cough, meaning pertussis screening for isolation purposes. …Last menstrual cycle…are you feeling safe at home? Are you feeling suicidal? Do you want to hurt anyone else? Any suicide risk factors? Then we have the, well, we would have the complaint [ie, why the patient came to the emergency department] in there, and then a narrative about the complaint. (SN21F)

> We make all of ours [questions] required. You cannot go any further and shut out the note until you complete the Columbia [Suicide Severity Rating Scale] score, until you complete the sepsis score, until you complete whatever other scores that we have in there. There's multiple, multiple [items], and we do a lot of the isolation things too, so we know where and how to place them and, you know, we'll stop our assessment right away at their complaint and do the rest of it in the back if there's something they need to go immediately back for. (SN31F)

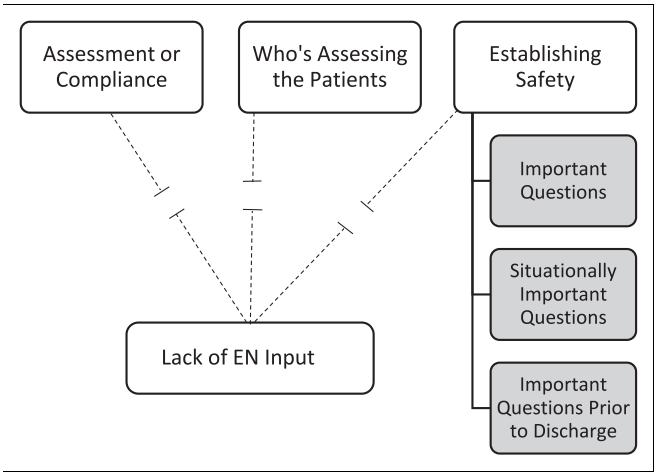


FIGURE
Main and subthemes identified from data. EN, emergency nurse.

Who's Assessing the Patients?

This category focused on the lack of a primary assessment of patient stability. Participants noted that a variety of processes are followed in the triage area. Personnel who initially encounter the patient include emergency nurses and, in

some cases, other staff members, such as respiratory therapists, or patient account representatives. Patients sometimes are "greeted" and not assessed by a nurse but are screened with a variety of questions and/or are taken directly back to an empty emergency treatment room. The concern centered around the training and expertise of the persons determining stability and resource allotment.

> The registrar is the first person to see the patient. They've received some minimal education about trigger words, chest pain, stroke symptoms, et cetera, and alert the triage nurse. However, the triage nurse is not in the waiting room and they will call [information about] the patient back. (SN10F)

> They [patients] walk in through the door. That person over there is called a greeter or a volunteer gives them a clipboard with a paper to fill out. They go into the waiting room, they come back, give it to registration, who registers 'em and gives it to me. (SN6)

> The freestanding place that I'm working at currently pretty much has anybody up front. The person that oriented me to their triage process was an RT [respiratory therapist]. Yeah, and they ask all of the questions, including the suicide, domestic violence. They take vital signs, but it's not until they get back to a room that a nurse assigns a triage level…the whole purpose of this entity is to get people in and out, and they want to get them triaged faster so that they can say that they've been seen by somebody in health care; unfortunately, it's not even like a, a medic that has that field experience. It does not feel safe at all. (SN12F)

Establishing Safety

Participants discussed some general data collection "buckets," which included questions centering on the safety of the waiting room: infection control (eg, travel, symptoms, vaccination status, homicidality (as a patient presentation)), individual safety concerns (eg, identification of the correct patient, abuse, IPV, suicidality, alcohol and drug use/abuse, medication allergies), and, finally, the chief concern on presentation (symptoms and initial assessment of acuity based on how the emergency nurse perceives the "look" or appearance of the patient).

In particular, nurses reported focusing on discrete data that they identified as important to the safety of the individual patient and to those patients and others in the waiting room. Those data fell into one of 3 subthemes: important questions, situationally important questions, and important questions before discharge.

Important Questions. Questions perceived as "important" allow nurses to screen for catastrophic health disruptions (individual safety), communicable diseases (waiting room safety), time-sensitive metrics compliance, and, finally, patient acuity. If all patients could be brought immediately to a treatment area, nurses felt triage as a process would not be difficult. Given unpredictable waiting time, participants reported that what needs to be asked and when it is asked are primarily related to how long the triage nurse thinks those patients are going to be waiting.

> So the important questions are with your assessment, if you need to, if it's, do you have chest pain? If you have chest pain, when did it start? Shortness of breath? Any other criteria that you would you alert to respiratory issues versus cardiac? Those quick things, if you have any immediate, like, I just had a stent, something important like that. (SN5F)

In the discussion of important questions to establish stability or safety, there was very little conversation about actual acuity assignation; participants reported the binary of "sick or not sick" as the driver of triage processes versus an appropriate use of the ESI to assign an acuity score. In addition, and surprisingly, vital signs were not always considered as a discriminator of acuity.

> I'm gonna do my part at triage, sort, sick, not sick, get through that and I'll do my vital signs after I've determined they're not ESI 1 or 2; vital signs aren't absolutely essential, but I need to find out, do I send 'em right back first? I don't care what their vital signs are at that point, I can tell that they're sick. (SN10F)

> A lot of times we have the SAT [oxygen saturation], the PLETH [waveform], and we'll do heart rate respiratory rate SAT because that will guide you if you need the blood pressure. A lot of us more senior nurses still love that blood pressure, but we go off those high-risk vital signs, because that also will kind of guide you to sick, not sick. (SN3F)

This deficit was recognized as a problem, given variability in compensatory ability. Some participants identified vital signs as a critical part of the triage assessment process.

> Each [patient] group has different vitals that will affect [acuity]. I had a kid that came in whose parents gave them skull fractures. Kid was compensating, compensating, compensating, compensating, and then dumped. But no vitals had been done until I walk in and have my nurses do vitals on. (SN16F)

> I want to know your vital signs, why you're here. Like what happened leading up to why you're here in significant past medical history. That's it. What then I can tell by your past medical history correlating with your vital signs and how you physically look, whether you need to get back sooner than later. (SN8F)

Participants expressed concern that nurses with little emergency nursing experience or recently graduated nurses with little nursing experience did not have an understanding of how to safely decide which triage questions were relevant to patient presentation or risk profile.

> Ours [questions] are not hard stops, and that's what I find to be problematic with the newer people doing triage, they're not asking these questions that could make a huge impact on the infection control issues of our department. (SN21F)

> There's really a conundrum here between all the questions that we want to ask to make sure we're not missing something for all these people that are sitting out in the waiting room for 8 hours. Versus these are the only questions I need to know if they're sick… Nobody is perfect and we all make mistakes, but, in the last few years when we have more and more inexperienced nurses working with us, it got more and more difficult. And this is why so much, so many things get missed because we do not have the time to educate them. I mean, it's just we have inexperienced staff nurses, we have inexperienced travelers, and it goes on and on and on and on. And this is when a lot of things have changed not to the better… If you have experience, you think different, you ask different questions once you see, okay, this was the answer. And you get this with experience. (SN19F)

Another challenge to the understanding of "importance" of these initial questions discussed by these nurse participants was the variation in individual and institutional understanding of the purpose of triage as establishing acuity based on decompensation risk. They reported that the triage nurse is the first position lost and often replaced with a greeter or other nonhealth care staff. The replacement of the triage emergency nurse with a nonhealth care trained employee who initially greets the patient in the triage area challenged the understanding of the most important function of the triage process, which is to establish safety and stability.

> [T]he first position that goes away when we're short, is nurse first or nurse greeter… So there's not even a dedicated person standing there to manage all of those questions and, and what your hard stops are. (SN28F)

Situationally Important Questions. Situationally important questions are driven by *patient presentation and history*. Participants reported that questions that do not situationally apply to the patient are meaningless. Nurse participants expressed frustration at what they perceived to be acontextual, regulatory-driven questions. They reported that when asking patients questions that were not relevant to the patient's presentation, they felt the questions were asked out of context and yielded meaningless answers.

> I think the key is, is that many of these questions are really pertinent to the chief complaint. So, you know, if I have a person that has fallen and hit their head, then blood thinner is pertinent, right? If I have a chief complaint of, um, mental health, then suicide screening is pertinent. So they're not high priority on every patient, but they are priority based on chief complaint. It depends on their story. Why are they here? What's, I mean, am I just depressed, and I just want some resources or I'm really down and, and what are their body language cues telling you too. Are they totally disconnected? Do they have a flat affect? I worry about those more versus the tearful, I've just had a horrible stress, whatever. (SN11F)

> I find the one question that patients often give me a very perplexed look is when I'm starting to ask about their, um, advanced directives. And they're like, "But I'm here [because] my foot hurts." Um, and I have to say, "Well, I have to ask these questions." Um, but, um, questions of that nature definitely would fit better when that primary nurse has built a rapport and can ask those questions without it being so impersonal. (SN27M)

Important Questions Before Discharge. Participants reported that many of the regulatory-related questions could be moved to a post-treatment, predischarge phase of care, allowing for patients to be connected with resources or interventions that were not critical to safety or stability on presentation, but might prevent future issues if addressed during the ED visit.

> I want you to add, uh, vaccination history. Like not, you know, I'm talking about adult, you know, like a lot of times pediatrics, you know, I see how that's in their triage about immunizations and COVID. (SN9F) (influenza, tetanus added by group)

> Um, the only thing that is really important than all those screening questions for our doctors is what pharmacy do you prefer to use? Because they call, or they electronically put all the pharmacies through. (SN6F)

> "Tetanus is important if they've got an injury or an open cut but is not for everybody, but that's important before they leave." (ED2M)

In contrast to questions considered important and relevant, participants expressed that regulatory- or reimbursement-related questions were considered less important. Participants identified barriers to both appropriate acuity assessments and data collection to meet regulatory requirements in the triage process as including electronic health record design, staffing, lack of privacy for patients, and interruptions by other patients.

> It's kind of funny though, how they're sometimes in the electronic health record, they're organized. Like I'm asking someone their suicidality screen and the next question is when was your last menstrual period, just the way they ordered it, it's like kind of like, 'Wow, I could have ordered that better. I could have found a different way to do that.' (SN30F)

> "It's a very strange flow. We've asked to make it more creative, more in line with how you actually triage people. And our IT department says that's not possible." (SN28F)

> So for me personally, when I'm at the window, if they're not coming in with a suicidal complaint, I don't think it's effective to ask out front. Um, not just culturally, but if you have someone tearful coming up asking for mental health resources, and you have a whole lobby of people checking in behind them, or a medic standing next to you waiting to check in someone else, I don't think it's appropriate or that I'm gonna get an effective answer if I'm saying, 'Do you feel like harming yourself?' (SN7)

> I think what everyone's saying is really like this cognitive load and burden and the bias that can happen, which is where I think we've tried to maybe be purposeful and add questions that help us improve our cognition, but then at the same time burden us. Which to your point, the interruption is so, is so key because you're in a workflow and you're like, 'Wait, oh, I definitely answered that question for this patient.' But that was actually like three patients ago when they're all the same. (SN29F)

Lack of Emergency Nurse Input

An additional participant consideration in the placement of questions or data collection into the triage process includes a lack of input from staff nurses, charge nurses, and triage nurses; participants reported that administrators who are not providing direct nursing care, regulatory agencies, or state agencies are driving the decision-making process placing new questions into the triage encounter.

> CMS has guidelines of what questions have to be answered, Joint Commission, all of those surveying agencies have questions to answer. And then each hospital then sets some local rules too about what you may have to answer. I think what's always, um, after [specific named number] years of this is, I remember we had triage with seven questions. It's now at our institution 37 questions that are asked. And you know, always challenge people that ask 37 questions if you can do four a minute, your triage time is really taking 15, 15 minutes a patient. (SN24M)

> …[W]hen there's an incident that occurs, um, again within our system, um, we're all pretty closeknit. So generally, we will kind of disseminate that information to everybody, and then if it's something that our risk managers or regulatory people feel that

now something that's part of the action plan to add something into triage. (SN17F)

I just wanna add, just as a director, we get often, um, things from the state that says as of January 1st, you will ask this question and there's no ifs ands or buts, so, it's really hard to determine where, where you're gonna ask it. Sometimes triage [nurses] actually just, just ask it out in triage. But yeah, just keeps adding, adding, adding minutes. (DR1F)

Discussion

The purpose of this study was to obtain an understanding of both the types of questions mandated for the triage encounter in emergency departments across the United States and their perceived relevance to the triage process.

Our participants were concerned about who's assessing the patients and the experience levels of nurses put out in triage. Previous examinations of triage processes[18] suggest that inexperienced nurses are challenged to accurately identify high-risk patients. The focus of the discussion centered around safety.

To establish safety, participants discussed important questions, situationally important questions, and important questions asked before discharge. An additional category of questions that was deemed "unimportant" consisted of questions the participants viewed as completely irrelevant to the ED trajectory of care. This study aligns with the work of Johnson et al,[12] who reported a similar breakdown of triage categories; this difference in the perceived usefulness or relevance of questions asked in the triage encounter may lend itself to a more effective placement of questions such that they are meaningful at that point.

Hinson et al[4] described the common elements of triage systems currently in use and, most importantly, that all are designed to identify and prioritize patients with critical, time-sensitive care needs. These elements universally rely on some level of subjective, data-informed judgment made by trained triage providers. The primary encounter, then, should establish physical and/or psychological stability, and thus, questions that are not related to that objective might be moved to another part of the care trajectory.

Having mandatory, regulatory-related questions or assessments required in the initial triage encounter becomes problematic when nurses do not consider the questions relevant and either do not ask the question or consider the answer as not providing an accurate picture of patient risk status. However, making these checkbox questions a "hard stop" in the electronic triage process, which prevents the nurse from reaching the next set of triage questions unless the current question is answered, can lead to fidelity problems, meaning nurses may be recording an answer to a question, but did not actually ask the question. There is not much literature that touches on this problem, although Boudreaux et al[26] saw this as enough of a concern to explicitly ask whether nurses in their study of ED behavioral health care followed the screening protocol procedure. Wolf et al[13] also found that in 86% of cases, pregnancy-capable patients with specific complaints were not asked about pregnancy status, because the nurses often decided the question was not relevant even when patient symptoms were indicators for high-risk complications of pregnancy.

The current literature supports placing questions unrelated to stability elsewhere in the patient encounter. In particular, Betz et al[27] investigated challenges to identifying ED patients at risk of suicide and recommended inserting secondary screening later in the ED visit or implanting risk stratification tools earlier within the visit. The Johnson et al[12] study also reported a category of assessments based on information relevant to the patient, but not relevant to the triage decision. The participants in the current study confirmed this understanding and emphasized that although the questions they were required to ask in triage were important, they were not urgently related to establishing stability and resource allocation and could wait for a later time during the ED visit.

Research findings suggest benefits to placing assessment questions in more relevant phases of the care trajectory include a better focus on immediate identification of at-risk patients and fewer interruptions that can impede care.[6,28] Participants in our study suggested that the lack of emergency nurse input in this process led to asking regulatory questions unrelated to the patient's chief complaint that would be more effective and useful if asked in a phase of the emergency care trajectory in which the emergency nurse was able to establish a relationship with the patient. Similarly, participants reported that questions about substance use, safety (eg, IPV, elder abuse), and access to care required both privacy and a therapeutic relationship to allow for meaningful responses.

Limitations

The study sample was drawn from a demographically diverse group of emergency nurses. The participants in this study were interested in the topic and able to travel to a national conference; nurses who chose not to participate may have had a different understanding of the

phenomenon, which may limit the transferability of our findings. The large size of the focus groups may have precluded some viewpoints from being heard; however, member checking at both the end of each focus group and also after findings had been sent to participants did not yield any new data.

Implications for Emergency Nurses

Triage is a function performed almost exclusively by emergency nurses, whose contribution to the form and function of this process is critical to maintaining patient safety. The function of triage is to rapidly identify high-risk patients who need immediate care; using this function to address regulatory-driven data collection impedes the safety and accuracy of the triage process. Findings from this study can inform the separation of the patient assessment process from the collection of other data that are not necessary to establishing patient risk at the initial encounter.

Conclusions

The conflation of regulatory data collection with patient assessment at the initial triage encounter challenges the ability of the emergency nurse to rapidly and accurately identify patients at risk of deterioration. Inexperienced triage nurses are further challenged with differentiating between questions that establish stability and questions that meet a regulatory requirement. Participants in this study described challenges to triage that include interruptions, acontextual regulatory questions, and a lack of privacy in the triage area. We recommend that triage processes encompass questions that establish the stability of the patient and the safety of the waiting room and include inquiry relevant to the patient presentation. We also recommend that nurses performing triage have appropriate training and experience in that role to better assist in delineating "important" questions from those less so and moving the less important, regulatory-related questions to later in the patient care trajectory. Future research should focus on strategies for effective placement of regulatory-related questions such that all mandated regulatory data are collected without compromising assessment of patient safety or flow of the patients during the trajectory of their emergency care and treatment.

Author Disclosures

Conflicts of interest: none to report.

Ethical approval from Advarra, Inc, institutional review board (Columbia, MD) # Pro00066174.

Acknowledgments

We gratefully acknowledge the contributions of Christian N. Burchill, PhD, RN, Michael Callihan, PhD, RN, Warren Frankenberger, PhD, RN, and Tania Strout, PhD, RN, for their input in formulating this study and their review of this manuscript.

REFERENCES

1. Wolf L, Ceci K, McCallum D. *Emergency Severity Index Handbook*. 5th ed. Emergency Nurses Association; 2023.
2. Worth M, Davis LL, Wallace DC, Bartlet R, Travers D. Are emergency departments in the United States following recommendations by the Emergency Severity Index to promote quality triage and reliability? *J Emerg Nurs*. 2019;45(6):677-684. https://doi.org/10.1016/j.jen.2019.05.006
3. Yurkova I, Wolf L. Under-triage as a significant factor affecting transfer time between the emergency department and the intensive care unit. *J Emerg Nurs*. 2011;37(5):491-496. https://doi.org/10.1016/j.jen.2011.01.016
4. Hinson JS, Martinez DA, Cabral S, et al. Triage performance in emergency medicine: a systematic review. *Ann Emerg Med*. 2019;74(1):140-152. https://doi.org/10.1016/j.annemergmed.2018.09.022
5. Wolf LA, Perhats C, Delao AM, Clark PR, Moon MD. On the threshold of safety: a qualitative exploration of nurses' perceptions of factors involved in safe staffing levels in emergency departments. *J Emerg Nurs*. 2017;43(2):150-157. https://doi.org/10.1016/j.jen.2016.09.003
6. Johnson KD, Gillespie GL, Vance K. Effects of interruptions on triage process in emergency department: a prospective, observational study. *J Nurs Care Qual*. 2018;33(4):375-381. https://doi.org/10.1097/ncq.0000000000000314
7. Wolf LA, Perhats C, Delao AM, Clark PR, Moon MD, Zavotsky KE. Assessing for occult suicidality at triage: experiences of emergency nurses. *J Emerg Nurs*. 2018;44(5):491-498. https://doi.org/10.1016/j.jen.2018.01.013
8. Sands N. Assessing the risk of suicide at triage. *Australas Emerg Nurs J*. 2007;10(4):161-163. https://doi.org/10.1016/j.aenj.2007.08.004
9. Schwedhelm MM, Herstein JJ, Watson SM, et al. Can you catch it? Lessons learned and modification of ED triage symptom- and travel-screening strategy. *J Emerg Nurs*. 2020;46(6):932-940. https://doi.org/10.1016/j.jen.2020.03.006
10. Althunayyan SM, Alsofayan YM, Khan AA. Shock index and modified shock index as triage screening tools for sepsis. *J Infect Public Health*. 2019;12(6):822-826. https://doi.org/10.1016/j.jiph.2019.05.002

11. Daniel C, Gerdtz M, Elsom S, Knott J, Prematunga R, Virtue E. Feasibility and need for violence risk screening at triage: an exploration of clinical processes and public perceptions in one Australian emergency department. *Emerg Med J*. 2015;32(6):457-462. https://doi.org/10.1136/emermed-2013-202979
12. Johnson KD, Punches BE, Smith CR. Perceptions of the essential components of triage: a qualitative analysis. *J Emerg Nurs*. 2021;47(1):192-197. https://doi.org/10.1016/j.jen.2020.08.009
13. Wolf LA, Delao AM, Evanovich Zavotsky K, Baker KM. Triage decisions involving pregnancy-capable patients: educational deficits and emergency nurses' perceptions of risk. *J Contin Educ Nurs*. 2021;52(1):21-29. https://doi.org/10.3928/00220124-20201215-07
14. Wolf LA, Delao AM, Perhats C, et al. Emergency nurses' perceptions of risk for firearm injury and its effect on assessment practices: a mixed methods study. *J Emerg Nurs*. 2019;45(1):54-66. https://doi.org/10.1016/j.jen.2018.09.010
15. Al-Azri NH. How to think like an emergency care provider: a conceptual mental model for decision making in emergency care. *Int J Emerg Med*. 2020;13(1):1-9. https://doi.org/10.1186/s12245-020-00274-0
16. Benjamin E, Wolf LA. Nurses are every bit of the flow: emergency department nurses' conceptualization of patient flow management. *Nurs Forum*. 2022;57(6):1407-1414. https://doi.org/10.1111/nuf.12834
17. Wolf LA, Delao AM, Perhats C, Moon MD, Zavotsky KE. Triaging the emergency department, not the patient: United States emergency nurses' experience of the triage process. *J Emerg Nurs*. 2018;44(3):258-266. https://doi.org/10.1016/j.jen.2017.06.010
18. Sax DR, Warton EM, Mark DG, et al. Evaluation of the emergency severity index in US emergency departments for the rate of mistriage. *JAMA Netw Open*. 2023;6(3):e233404. https://doi.org/10.1001/jamanetworkopen.2023.3404
19. Patton MQ. *Qualitative Research & Evaluation Methods*. 3rd ed. Sage publications; 2002.
20. Sandelowski M. What's in a name? Qualitative description revisited. *Res Nurs Health*. 2010;33(1):77-84. https://doi.org/10.1002/nur.20362
21. Stebbins RA. *Exploratory Research in the Social Sciences: Qualitative Research Methods Series*. Sage Publications; 2001.
22. Mishra L. Focus group discussion in qualitative research. *TechnoLearn An Int J Educ Technol*. 2016;6(1):1-5. https://doi.org/10.5958/2249-5223.2016.00001.2
23. Qualtrics version December 2022. QualtricsXM. Accessed September 1, 2022. https://www.qualtrics.com
24. Mayring P. Qualitative content analysis: theoretical foundation, basic procedures and software solution. 2014. Accessed August 17, 2022. http://www.ssoar.info/ssoar/bitstream/handle/document/39517/ssoar-2014-mayring-Qualitative_content_analysis_theoretical_foundation.pdf?sequence=1
25. Saldaña J. *The Coding Manual for Qualitative Researchers*. Sage Publications, Ltd; 2021.
26. Boudreaux ED, Miller I, Goldstein AB, et al. The emergency department safety assessment and follow-up evaluation (ED-SAFE): method and design considerations. *Cont Clin Trials*. 2013;36(1):14-24. https://doi.org/10.1016/j.cct.2013.05.008
27. Betz ME, Kautzman M, Segal DL, et al. Frequency of lethal means assessment among emergency department patients with a positive suicide risk screen. *Psychiatry Res*. 2018;260:30-35. https://doi.org/10.1016/j.psychres.2017.11.038
28. Johnson KD, Alhaj-Ali A. Using simulation to assess the impact of triage interruptions. *J Emerg Nurs*. 2017;43(5):435-443. https://doi.org/10.1016/j.jen.2017.04.008

Knowledge, Attitude, Skill, and Practice of Emergency Nurses Regarding the Early Management of Patients With Acute Ischemic Stroke in Beijing

Authors: Yue Du, BS, Ningning Xue, MS, Jianshu Liang, BS, and Yongmei Deng, BS, Beijing, China

Contribution to Emergency Nursing Practice

- The current literature on nurses' knowledge, attitude, and practice regarding the early management of acute ischemic stroke (AIS) indicates various levels of proficiency.
- This article contributes by assessing nurses' knowledge, attitude, and practice in the context of early AIS management.
- Key implications for emergency nursing practice found in this article are the need to enhance knowledge and practice levels to ensure effective early management of AIS.

Abstract

Introduction: Emergency nurses play an important role in the early management of acute ischemic stroke. The purpose of this study was to evaluate the knowledge, attitudes, skills, and practice of emergency nurses in Beijing regarding the early management of acute ischemic stroke.

Methods: This cross-sectional study enrolled emergency nurses in 26 hospitals in Beijing between August and November 2022. Correlations among knowledge, attitude, and skill/practice were evaluated by Pearson correlation analysis.

Results: This study included 564 nurses (82.98% were female). The average knowledge, attitude, and skill/practice scores were 15.48 ± 2.39 (possible range, 0-22), 39.84 ± 4.89 (possible range, 9-45), and 40.59 ± 5.21 (possible range, 13-52). The knowledge was significantly positively correlated with attitude and skill/practice (all $P < .001$). There was also a positive correlation between attitude and skill/practice ($P < .001$).

Discussion: These findings may facilitate the implementation of education/training programs to improve the early management of acute ischemic stroke by nurses in emergency departments.

Key words: Emergency department; Acute ischemic stroke; Knowledge, Attitudes, Practice; Nurses; Management

Introduction

Globally, acute cerebral infarction (ACI) is a major cause of mortality and long-term disability in adults, and approximately 6 million people die each year because of stroke.[1-3] The incidence of ACI in China has risen in recent years,[4] and stroke is an important cause of morbidity and mortality among people in China.[5] The age-standardized incidence and prevalence of ACI in China are 1115 of 100,000 persons and 247 of 100,000 person-years, respectively, and the mortality rate from ACI is approximately 115 of 100,000 person-years.[6] Approximately 70% of all cases of ACI are caused by ischemic stroke secondary to arterial occlusion, and the remainder is because of hemorrhagic stroke.[7,8] Notably, stroke is associated with an in-hospital mortality rate of

Yue Du is Bachelor's Deputy Director and Nurse, Emergency Department of Beijing Tiantan Hospital, Capital Medical University, Beijing, China.

Ningning Xue is Master's Nurse, Emergency Department of Beijing Tiantan Hospital, Capital Medical University, Beijing, China.

Jianshu Liang is Bachelor's Director and Nurse, Nursing Department of Beijing Tiantan Hospital, Capital Medical University, Beijing, China.

Yongmei Deng is Bachelor's Deputy Director and Nurse, Neurology Department of Beijing Tiantan Hospital, Capital Medical University, Beijing, China.

For correspondence, write: Ningning Xue, MS, Emergency Department of Beijing Tiantan Hospital, Capital Medical University, Beijing 100007, China; E-mail: xnn0229@163.com

J Emerg Nurs 2024;50:95-105.
Available online 11 October 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.08.009

approximately 20%,[8,9] emphasizing the importance of early diagnosis and appropriate treatment.

Most patients with acute ischemic stroke (AIS) are first evaluated in the emergency department. The diagnosis of stroke is made on the basis of the clinical presentation, which can include acute loss of balance/coordination, visual disturbances, facial weakness/asymmetry, arm/leg weakness, and speech difficulty/slurring.[10] Guidelines recommend that patients with suspected stroke should be assessed within 10 minutes of arrival at the emergency department, and the clinical evaluations should include prompt triage, history taking, neurologic examination, administration of a stroke screening tool, and neuroimaging.[10-12] The main options available for the treatment of stroke are intravenous thrombolysis (with agents such as tissue plasminogen activator) and endovascular thrombectomy.[7] However, intravenous thrombolysis reduces disability only if administered within 4.5 hours of symptom onset, whereas the clinical benefits of endovascular thrombectomy are observed only if it is performed within 6 hours of stroke onset or up to 24 hours after symptom onset in a subset of patients selected by perfusion imaging.[7,10] Therefore, to ensure that the appropriate therapy can be administered within the narrow time window, nurses need to be able to correctly assess and triage stroke patients in a timely manner.

Identifying the barriers to optimal triage and treatment of patients with ischemic stroke is important because it can help the design and implementation of interventions to enhance the evidence-based management of patients with stroke.[13] Emergency nurses play an important role in the early management of AIS. Knowledge, attitude, and practice (KAP) surveys provide useful data regarding the baseline knowledge, attitudes, beliefs, and behaviors toward a health-related topic.[14] Furthermore, the information provided by KAP surveys can facilitate the design and implementation of education/training programs to overcome issues and barriers that hinder the management of patients with health problems.[14] Therefore, this study aimed to evaluate the knowledge, attitudes, skills, and practices of emergency nurses in Beijing with regard to the early management of patients with AIS.

Methods

STUDY DESIGN AND PARTICIPANTS

This cross-sectional study enrolled emergency nurses in 26 hospitals in Beijing, China, between August 2022 and November 2022. The only inclusion criterion was working as an emergency nurse in Beijing. The exclusion criteria were (1) not a fully qualified nurse and (2) refused to participate in the study.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The research was carried out in accordance with the Declaration of Helsinki. This study was approved by the Institutional Ethics Committee of Beijing Tiantan Hospital affiliated to Capital Medical University (#KY2023-042-01), and all participants provided informed written consent.

QUESTIONNAIRES AND PROCEDURES

The questionnaire was designed according to the 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke published by the American Heart Association/American Stroke Association (AHA/ASA)[15,16] and a previously validated questionnaire that evaluated the knowledge of acute stroke management among health care professionals.[17] The first draft of the questionnaire was modified by 4 experts with senior professional titles, and the final version was administered to 53 emergency nurses as a pretest. Analysis of the pretest results indicated that the questionnaire had good-to-excellent reliability (a Cronbach's α value of 0.898, suggesting good internal consistency).

The final questionnaire was in Chinese and included a total of 58 questions over 4 dimensions (Supplementary Table 1). The first dimension included 13 items collecting demographic information (Table 1). In these items, professional rank is a typical system to China but roughly refers to RN1-2 (junior), RN3 (intermediate), and RN4-5 (senior). The grades of hospital were primary, secondary, tertiary, and private hospital. The specialist nurse is the nurse specialized in a given area (emergency nurse in this study). The second dimension included 22 items evaluating the knowledge of the early management of AIS, and each item was scored 1 point for a correct answer and 0 points for an incorrect or unsure response. The third dimension included 10 items assessing attitudes to the early management of AIS. Each of the first 9 items in the attitude dimension was scored on a 5-point Likert scale, with 5 points indicating a very positive response ("strongly agree") and 1 point indicating a very negative response ("strongly disagree"). The tenth item in the attitude dimension was answered as a multiple-response question. The fourth dimension consisted of 13 items evaluating skill and practice. Dichotomous items in the skill/practice dimension

TABLE 1
Knowledge, attitude, and skill/practice scores stratified according to the baseline characteristics of the study participants

Variable	n (%)	Knowledge score		Attitude score		Skill/practice score	
		Mean (SD)	*P* value	Mean (SD)	*P* value	Mean (SD)	*P* value
Total score		15.48 (2.39)	.717	39.84 (4.89)	.240	40.59 (5.21)	.573
Gender							
Male	17.02%	15.59 (2.19)		40.16 (5.38)		41.03 (4.72)	
Female	82.98%	15.46 (2.43)	.177	39.77 (4.79)	.033	40.50 (5.31)	.326
Age							
20-29 y old	42.38%	15.26 (2.59)		39.92 (5.01)		40.05 (5.62)	
30-39 y old	42.20%	15.66 (2.12)		40.21 (4.60)		41.00 (4.93)	
40-59 y old	15.43%	15.60 (2.47)	.831	38.62 (5.21)	.672	40.94 (4.67)	.585
Education level							
Junior college	35.11%	15.41 (2.46)		39.80 (5.12)		40.56 (4.80)	
Bachelor's degree or higher	64.89%	15.52 (2.35)	.205	39.86 (4.77)	.065	40.61 (5.43)	.810
Professional rank							
Junior (RN1-2)	31.21%	15.43 (2.32)		40.06 (4.98)		40.48 (5.48)	
Intermediate or senior (RN3-5)	68.79%	15.60 (2.53)	.701	39.36 (4.68)	.016	40.83 (4.57)	.471
Years of nursing work							
≤ 5 y	31.91%	15.34 (2.65)		39.90 (4.97)		39.97 (5.78)	
5-10 y	30.14%	15.56 (2.09)		40.62 (4.45)		40.94 (4.74)	
> 10 y	37.94%	15.53 (2.41)	.617	39.14 (5.10)	.227	40.78 (5.10)	.745
Years working in emergency nursing							
≤ 5 y	28.37%	15.58 (2.40)		40.02 (4.92)		40.24 (5.58)	
5-10 y	45.04%	15.41 (2.17)		40.12 (4.59)		40.69 (4.97)	
> 10 y	26.60%	15.39 (2.58)	.542	39.24 (5.14)	.800	41.06 (4.80)	.600
Specialist nurse in the emergency department							
Yes	29.96%	15.51 (2.63)		39.83 (4.79)		40.88 (4.96)	
No	70.04%	15.47 (2.28)	.195	39.84 (4.94)	.917	40.47 (5.32)	.640
Years working as specialist nurse in the emergency department							
< 5 y	47.34%	15.25 (2.97)		39.76 (4.67)		40.41 (5.71)	
≥ 5 y	52.66%	15.74 (2.28)	.238	39.90 (4.92)	.936	41.29 (4.16)	.310
Grade of hospital							
Primary public hospital	5.85%	15.91 (1.93)		39.76 (5.57)		38.70 (7.96)	
Secondary public hospital	13.48%	15.59 (2.07)		39.74 (4.56)		40.95 (4.08)	
Tertiary public hospital	76.24%	15.45 (2.50)		39.81 (4.95)		40.74 (5.13)	
Private hospital	4.43%	15.04 (1.67)	.808	40.68 (3.99)	.776	39.36 (4.76)	.643
Type of hospital							
Specialized hospital	4.26%	15.33 (2.91)		39.67 (3.96)		40.63 (5.96)	
General hospital	95.74%	15.49 (2.36)	.563	39.85 (4.93)	.405	40.59 (5.18)	.140
Frequency of active learning related to AIS							

continued

TABLE 1
Continued

Variable	n (%)	Knowledge score		Attitude score		Skill/practice score	
		Mean (SD)	*P* value	Mean (SD)	*P* value	Mean (SD)	*P* value
Frequently	18.09%	15.40 (2.64)		39.36 (5.22)		40.07 (5.42)	
Sometimes	42.02%	15.69 (1.88)		40.14 (4.72)		41.24 (4.53)	
Occasionally	39.89%	15.30 (2.72)		39.73 (4.92)		40.13 (5.71)	

AIS, acute ischemic stroke; SD, standard deviation.

were scored 4 points for "yes" and 0 points for "no," whereas items with 5 response options were scored using a 5-point Likert scale (from 4 points for "always" to 0 points for "seldom").

A link to the questionnaire was designed and created using a professional online questionnaire software platform (Questionnaire Star; Changsha Ranxing Information Technology Co, Ltd, Changsha, China). The head nurse of the emergency department of each hospital was contacted, and the questionnaires were distributed to the nurses via each emergency department's WeChat (Tencent Holdings Ltd [2018]) group. To ensure the quality and completeness of the questionnaire results, an individual IP address could only be used once for the submission of a completed questionnaire, and it was compulsory for all the items in the questionnaire to be submitted. An Excel spreadsheet was exported from the Questionnaire Star platform, and all the questionnaires were checked for completeness, consistency, and validity by members of the research team.

STATISTICAL ANALYSIS

The analysis was performed using SPSS 26.0 (IBM Corp, Armonk, NY). Continuous data with a normal distribution are expressed as the mean (SD) and were compared between groups using Student's *t* test or 1-way analysis of variance. Categorical data are expressed as frequency (percentage) and were analyzed using the chi-squared test. Pearson correlations were calculated to evaluate the correlations among the knowledge, attitude, and skill/practice scores. All statistical tests were 2-sided, and a P value $<.05$ was considered statistically significant.

Results

BASELINE CHARACTERISTICS OF THE STUDY PARTICIPANTS

The final analysis included completed questionnaires from 564 study participants (468 females, 82.98%). The baseline demographic and clinical characteristics of the participants are presented in Table 1. The geographic distribution of the hospitals in which the respondents were employed is shown in Supplementary Figure 1. Most of the nurses were aged 20 to 39 years (88.58%), had a bachelor's or higher degree (64.89%), and had an intermediate or senior professional title (68.79%). More than two-thirds of the nurses had more than 5 years of nursing work experience (68.09%), and most had more than 5 years of professional experience in an emergency department (71.63%). Approximately 70% of the respondents were specialist nurses. The vast majority of nurses worked in general hospitals (95.74%), and most of the institutions were tertiary public hospitals (76.24%). Education/training in the early management of AIS occurred seldom/never for 40% of the respondents, at least once per month for 42% of the nurses, and at least once per week for 18% of the participants (Figure 1A). The main learning approaches were group study within the department, lessons and training, lectures, and self-study (Figure 1B).

KNOWLEDGE SCORES

The average knowledge score was 15.48 (SD = 2.39) points (possible range, 0-22 points), indicating that the respondents had a moderate level of knowledge about the

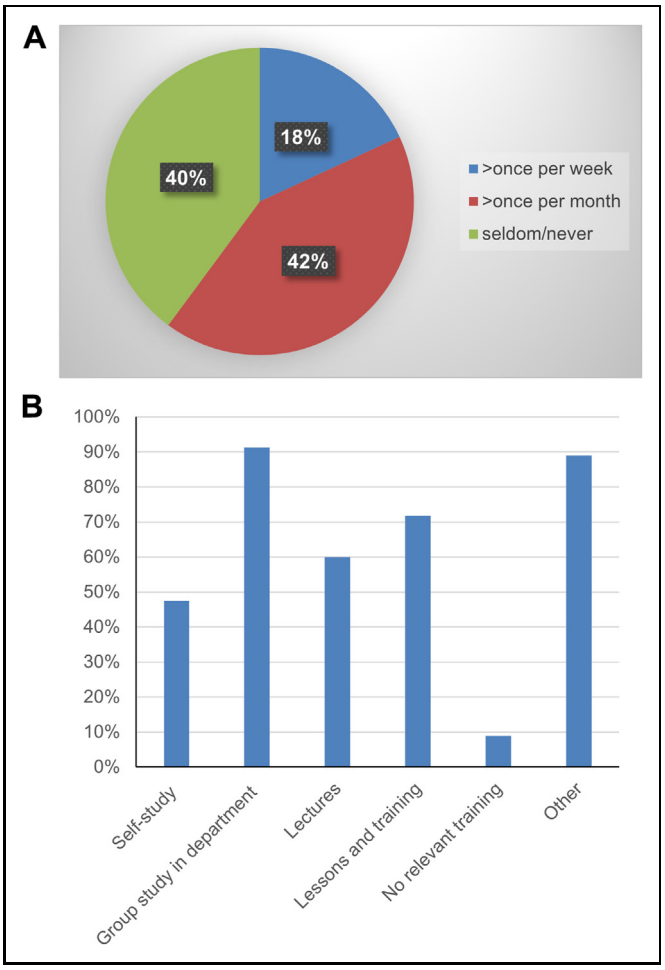


FIGURE 1

Previous education/training in the early management of acute ischemic stroke. (A) Learning frequency. (B) Learning approaches.

early management of patients with AIS. The proportion of nurses giving correct answers to each of the 22 questions in the knowledge dimension ranged from 0.35% to 97.87% (Table 2). Thirteen of the 22 questions (items 2, 4-8, 10, 11, 13, 18-20, and 22) were answered correctly by more than 90% of the respondents, whereas 2 of the questions (items 3 and 17) were answered correctly by more than 75% of respondents. However, approximately half of the nurses were not familiar with the FAST (face, arm, speech, time) algorithm for identifying persons experiencing AIS (item 1), and nearly 60% of the respondents incorrectly believed that high blood pressure should be normalized in a patient with AIS (item 9). Most of the nurses were not aware that a primary goal of AIS management (as stated by the AHA/ASA 2018 guidelines[15,16]) is to ensure that ≥50% of patients requiring intravenous thrombolysis receive it within 60 minutes of admission (87.06%; item 12). Furthermore, the vast majority of respondents incorrectly believed that the nurse must assess the patient's bleeding risk before intravenous thrombolysis is administered for AIS (99.65%; item 14) and that all patients with AIS must undergo a 12-lead electrocardiogram before intravenous thrombolysis (93.44%; item 15). In addition, 70.74% of the respondents incorrectly assumed that patients with AIS are not eligible for thrombolytic therapy if aged ≥80 years (item 16), whereas 77.30% of the nurses incorrectly believed that indwelling urinary catheters should be used routinely in patients with AIS (item 21). Notably, the knowledge score did not differ significantly between groups stratified according to the baseline demographic characteristics (Table 1).

ATTITUDE SCORES

The average attitude score was 39.84 ± 4.89 (possible range, 9-45 points), suggesting that the participants had a strongly positive attitude toward the early management of AIS. The distributions of the responses to the 9 questions in the attitude dimension are summarized in Table 3. The vast majority of the nurses (79%-97%) strongly agreed or agreed with each of the statements in items 1 to 9 (Table 3). As shown in Figure 2, the 2 main barriers to the proper early management of patients with AIS were insufficient knowledge (reported by >70% of respondents) and a large workload (reported by >60% of nurses). In addition, approximately half of the respondents considered limited time/work complexity and lack of experience/confidence as barriers to the proper early management of patients with AIS (Figure 2). Although significant differences in attitude scores were observed between groups stratified according to age ($P = .033$) and years of nursing work experience ($P = .016$), the differences were small in magnitude. In addition, the attitude score did not differ significantly between groups stratified according to the other baseline characteristics (Table 1).

SKILL/PRACTICE SCORES

The skill/practice SCORE for the respondents averaged 40.59 ± 5.21 points (possible range, 13-52 points). Affirmative answers to 8 questions assessing skill were given by 76% to 98% of the nurses (Figure 3A), with the lowest scores given for assessing muscle strength in patients with suspected AIS (76%), identifying patients with suspected AIS (82%), and evaluating swallowing function in patients

TABLE 2
Knowledge scores

Item	Incorrect response	Correct response
1. I am familiar with the FAST principles (face, arm, speech, time) for patients with AIS.	49.65%	50.35%
2. Impairment of consciousness may be a sign of AIS.	7.80%	92.20%
3. High or low blood sugar may cause symptoms similar to AIS.	14.18%	85.82%
4. Patients with AIS may develop visual impairment.	8.8%	91.13%
5. AIS can manifest as limb numbness.	3.37%	96.63%
6. Unsteady gait may be one of the signs of AIS.	2.13%	97.87%
7. AIS can manifest as a decreased level of consciousness.	6.21%	93.79%
8. Assessment of pupil reactivity and head CT should be performed immediately in patients with suspected AIS.	2.8%	97.16%
9. High blood pressure should be normalized in patients with AIS (false).	59.04%	40.96%
10. All patients with AIS should undergo CT as a first-line investigation.	9.22%	90.78%
11. The earlier the treatment, the better the treatment effect in patients with AIS.	2.30%	97.70%
12. A goal of AIS management is that at least 50% of patients who require intravenous thrombolysis should receive it within 90 minutes of admission (false).	87.06%	12.94%
13. Treatment of AIS includes intravenous thrombolytic therapy and endovascular interventional therapy.	4.43%	95.57%
14. Nurses must fully assess bleeding risk in patients with AIS before intravenous thrombolysis (false).	99.65%	0.35%
15. All patients with AIS must undergo 12-lead electrocardiography before thrombolysis (false).	93.44%	6.56%
16. Patients with AIS aged ≥80 years are not eligible for thrombolytic therapy (false).	70.74%	29.26%
17. Intravenous thrombolytic therapy and endovascular interventional therapy can only be carried out in patients with AIS within the treatment window.	27.48%	75.52%
18. Assessment of swallowing function should be performed as early as possible in patients with AIS.	8.33%	91.67%
19. Patients with AIS with malnutrition or at risk of malnutrition should be given early nutritional support.	7.27%	92.73%
20. Active measures to prevent venous thrombosis of the lower extremities should be implemented in bedridden patients with AIS who do not have contraindications.	4.08%	95.92%
21. It is recommended that indwelling urinary catheters should be used routinely in patients with AIS (false).	77.30%	22.70%
22. Patients should not undergo exercise within 24 hours of AIS.	3.90%	96.10%

AIS, acute ischemic stroke; CT, computed tomography.
Data are presented as n (%).

with suspected AIS (82%). According to the responses to 4 questions evaluating practice, 79% of the nurses stated that blood glucose was measured always or usually before thrombolytic therapy in patients with AIS, 70% of the nurses stated that early nutritional support was always or usually provided to those with malnutrition or at risk of malnutrition, 61% of the nurses believed that indwelling urinary catheters were always or usually used routinely, and 57% stated that antihypertensive therapy was always or usually administered before intravenous thrombolysis (Figure 3B). The responses of the study participants regarding the proportion of patients with AIS receiving intravenous thrombolysis within 1 hour of admission are summarized in Figure 3C. The skill/practice score was comparable between groups stratified according to the various baseline characteristics (Table 1).

TABLE 3
Attitude scores

Item	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. I am interested in knowledge about the early management of AIS.	49%	39%	12%	0%	0%
2. I think nurses should have knowledge about the early management of AIS.	57%	37%	6%	0%	0%
3. I think the existing level of knowledge regarding the early management of AIS meets the clinical needs.	44%	39%	15%	2%	0%
4. I believe that formal training in the early management of AIS by nurses can guide clinical work.	53%	41%	6%	0%	0%
5. I believe that nurses play an important role in the early management of AIS.	54%	40%	6%	1%	0%
6. I think it is necessary to have a multidisciplinary emergency stroke team that includes doctors, nurses, and laboratory/imaging staff.	59%	37%	4%	0%	0%
7. I believe that I am capable of performing the nursing duties required for the early management of AIS.	41%	39%	17%	4%	0%
8. I think that the early management of AIS is very important.	59%	38%	3%	0%	0%
9. I believe that knowledge and guidance regarding the early management of AIS should be provided to patients with AIS and their families.	57%	39%	4%	0%	0%

AIS, acute ischemic stroke.

CORRELATIONS AMONG THE KNOWLEDGE, ATTITUDE, AND SKILL/PRACTICE SCORES

Pearson correlation analysis (Table 4) revealed that the knowledge score was significantly positively correlated with the attitude score ($r = 0.237$, $P < .001$) and skill/practice score ($r = 0.415$, $P < .001$). There was also a positive correlation between attitude and skill/practice scores ($r = 0.283$, $P < .001$).

Discussion

A notable finding of this study was that nurses working in emergency departments in China had moderate knowledge, good attitudes, and moderate-to-good levels of skill and practice with regard to the early management of AIS. Furthermore, the KAP scores were significantly correlated with each other. To the best of our knowledge, this is the first survey evaluating the knowledge, attitudes, skills, and practice of nurses regarding the early management of AIS in the emergency department. Our findings provide new insights that may help to inform the design and development of interventions to improve the early management of AIS by emergency nurses.

Previous research on stroke KAP has mainly focused on general populations,[18-20] prehospital delays,[21-23] and clinicians.[18,24] Furthermore, those studies that have enrolled nurses have tended to focus on poststroke care, such as the management of dysphagia.[25,26] To the best of our knowledge, no previous KAP surveys have evaluated the knowledge, attitude, skill, and practice of emergency nurses regarding the early management of AIS. In the present study, the average knowledge score of 15.48 ±

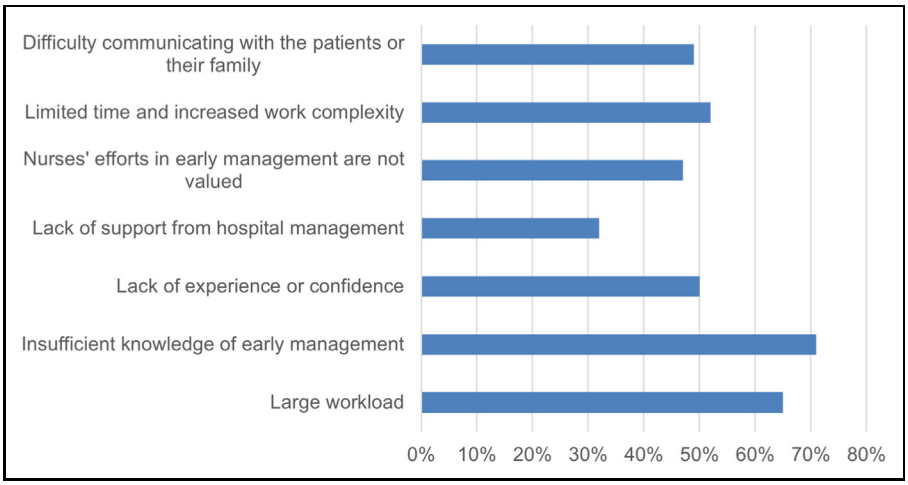


FIGURE 2

Barriers to the proper early management of patients with acute ischemic stroke.

2.39 points suggested that emergency nurses in Beijing had a moderate level of knowledge about the early management of patients with AIS. In addition, the knowledge score did not differ significantly between groups stratified according to baseline demographic characteristics. The proportion of nurses correctly answering each of the 22 questions in the knowledge dimension ranged from 97.87% regarding unsteady gait as a sign of ischemic stroke to only 0.35% for the assessment of the bleeding risk assessment before thrombolysis. In addition, most nurses were unaware of the timing of thrombolysis (AHA/ASA 2018 guideline[15,16]). Furthermore, most nurses incorrectly believed that all patients with AIS must undergo a 12-lead electrocardiogram before intravenous thrombolysis, that patients with AIS are not eligible for thrombolytic therapy if aged ≥80 years, that indwelling urinary catheters should be used routinely in patients with AIS, and that high blood pressure should be normalized in a patient with AIS. Surprisingly, approximately half of the nurses were not familiar with the FAST algorithm that facilitates the identification of people experiencing AIS. These results highlight knowledge gaps among emergency nurses in China that could potentially be targeted by tailored education/training programs. Although no previous surveys have specifically evaluated the KAP of emergency nurses regarding the early management of AIS, there is published evidence that interventions can improve the stroke-related knowledge of health care workers. For example, a study of nurses in the United States found that a stroke competency program improved the knowledge of nurses with regard to the care of patients with stroke.[27] Furthermore, lecture- and simulation-based training was reported to enhance the knowledge of nurses regarding the recognition of stroke symptoms and the initiation of treatment for in-hospital stroke.[28] We suggest that the implementation of educational interventions may help to improve nurses' knowledge of the early management of AIS in the emergency department.

The respondents in this study had a strongly positive attitude toward the early management of AIS, and most baseline characteristics seemed not to influence the attitude score; the only exceptions were age and years of nursing work experience, but the effects of these parameters on attitude score were minor. According to the responses of the nurses, the main barriers to the proper early management of patients with AIS were insufficient knowledge, large workload, limited time/work complexity, and lack ofexperience/confidence. These findings are broadly consistent with previously published data. For example, a review of 45 studies concluded that barriers to thrombolytic therapy included a lack of training in ED staff and poor understanding regarding the prioritization of patients for treatment.[29] In addition, a study in Ghana identified limited staff numbers, inadequate staff development opportunities, and limited knowledge of stroke care interventions as barriers to evidence-based acute stroke care in the acute hospital setting.[30]

The skill/practice score for the respondents was relatively high and not influenced by any of the baseline characteristics. The lowest rates of affirmative answers were given for the assessment of muscle strength in patients with suspected AIS, the identification of patients with suspected AIS, and the assessment of swallowing function

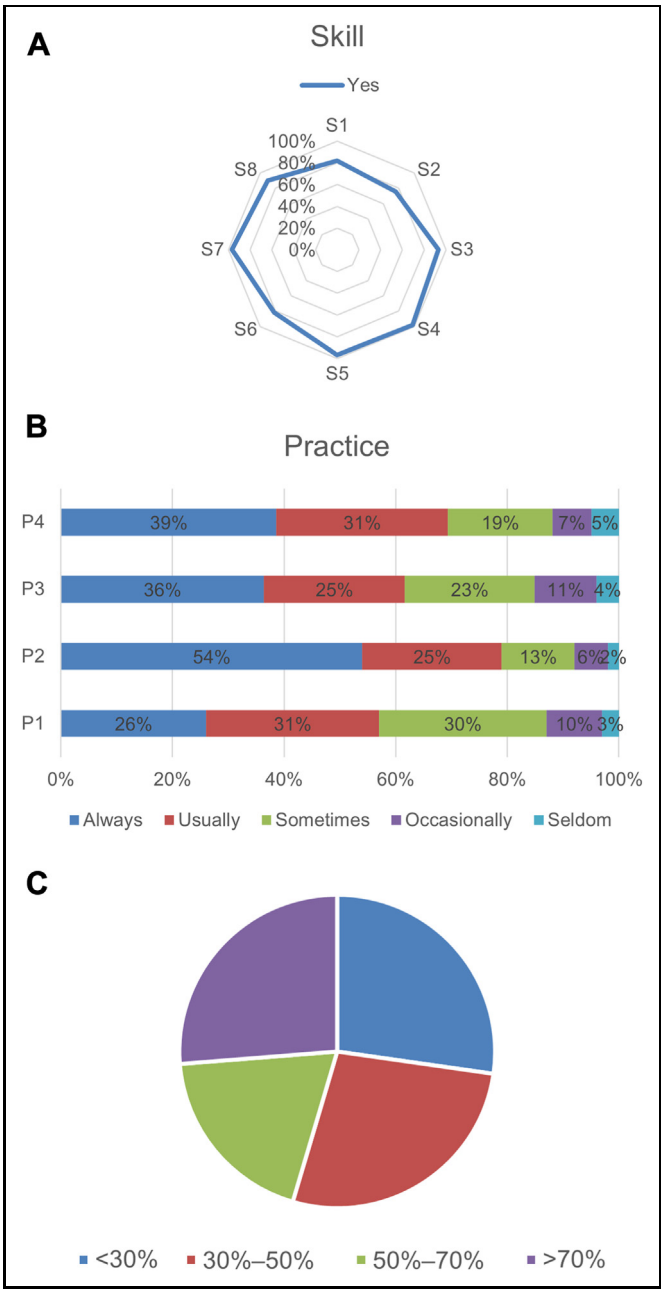


FIGURE 3

Skill and practice scores. (A) Distribution of responses to the 8 questions evaluating skill. S1: I can accurately and quickly identify patients with suspected acute ischemic stroke (AIS). S2: I can accurately and quickly assess muscle strength in patients with suspected AIS. S3: I can safely transport patients with AIS within the hospital. S4: I can quickly cooperate with doctors to rescue patients with AIS and correctly monitor patients' vital signs. S5: I can quickly cooperate with doctors to rescue patients with AIS and prepare the instruments and drugs needed for the rescue therapy. S6: I can perform early evaluation of swallowing function in patients with AIS. S7: I can prepare the instruments and drugs needed for rescue therapy when patients with AIS have thrombolytic complications (such as bleeding, difficulty breathing). S8: I can implement nursing strategies to prevent the formation of lower extremity vein thrombosis in patients with AIS. (B) Distribution of responses to the 4 questions evaluating practice. P1: How often is antihypertensive therapy given before thrombolytic therapy in patients with AIS under my care? P2: How often is blood glucose measured before thrombolytic therapy in patients with AIS under my care? P3: Placement of an indwelling urinary catheter is routinely done in patients with AIS under my care. P4: How often is early nutritional support given to patients with AIS under my care who have malnutrition or are at risk of malnutrition. (C) The proportion of patients with AIS who are treated with thrombolytic therapy within 1 hour of admission.

in patients with suspected AIS. Most considered that blood glucose was measured always/usually before thrombolytic therapy in patients with AIS, early nutritional support was always/usually provided to those with malnutrition or at risk of malnutrition, indwelling urinary catheters were always/usually used routinely, and antihypertensive therapy was always/usually administered before intravenous thrombolysis. Interestingly, less than half of the emergency nurses reported that more than 50% of patients with AIS received thrombolytic therapy within 1 hour of admission (a stated goal in the AHA/ASA 2018 guideline). Notably, the skill/practice score was significantly positively correlated with the knowledge score and attitude score, implying that interventions to enhance knowledge and attitude might lead to improvements in practical skills. Indeed, the implementation of educational interventions aimed at nurses has been reported to improve adherence to stroke guidelines[27] and optimize the prompt management of stroke among hospital inpatients.[31]

Limitations

This study has some limitations. First, the sample size was not large, so it is possible that the analysis may have lacked sufficient statistical power to detect some real differences between groups. Second, this multicenter study only included emergency nurses in Beijing, so the generalizability of the findings to China as a whole remains unknown. Third, although the KAP questionnaire was developed based on established tools, it may have limitations with regard to its ability to assess perceptions regarding the early management of AIS. Fourth, this study did not evaluate whether education/training programs would improve the questionnaire scores. Fifth, the construction of part 2 of the questionnaire may have inadvertently induced a response bias. The format or wording of certain questions might have influenced respondents to default to "yes" or "true" without thoroughly considering their responses. This could lead to an overestimation of the nurse's knowledge levels. In addition, part 2's reliance on simple "yes"

TABLE 4
Analysis of the correlations among knowledge, attitude, and skill/practice scores

Items	Knowledge	Attitude	Skill and practice
Knowledge	1	/	/
Attitude	0.2366 ($P < .001$)	1	/
Skill and practice	0.4148 ($P < .001$)	0.2829 ($P < .001$)	1

or "true" responses might not adequately assess the depth of the nurse's understanding of AIS management. It might not capture nuances or nuances in their knowledge, potentially leading to an incomplete representation of their actual competence. The Likert scale provides a more nuanced approach to understanding attitudes than a binary yes or no response. Future studies could consider other methods for assessing knowledge more precisely (eg, combined dichotomous and ordinal responses).

Implications for Emergency Nurses

This study highlights the importance of continuous education and training programs for emergency nurses to improve their knowledge and practice in the early management of AIS, ultimately leading to better patient outcomes.

Conclusions

The results of this study provide important insights into the knowledge, attitudes, skills, and practices of emergency nurses in China regarding the early management of AIS. We anticipate that these findings may facilitate the design and implementation of education and training programs to enhance the early management of AIS by nurses in emergency departments.

Data, Code, and Research Materials Availability

All data generated or analyzed during this study are included in this published article (and its supplementary information files).

The research was conducted in accordance with the Declaration of Helsinki. This study was approved by the Institutional Ethics Committee of Beijing Tiantan Hospital affiliated to Capital Medical University (#KY2023-042-01), and all participants provided an informed written consent.

Author Disclosures

Conflicts of interest: none to report.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Acknowledgment

We are grateful to all the nurses who participated and the chief nurse who handed out the questionnaire in this study.

Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2023.08.009.

REFERENCES

1. GBD 2017 Causes of Death Collaborators. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet*. 2018;392(10159):1736-1788. https://doi.org/10.1016/s0140-6736(18)32203-7
2. Phipps MS, Cronin CA. Management of acute ischemic stroke. *BMJ*. 2020;368:l6983. https://doi.org/10.1136/bmj.l6983
3. Virani SS, Alonso A, Benjamin EJ, et al. Heart disease and stroke Statistics-2020 update: a report from the American Heart Association. *Circulation*. 2020;141(9):e139-e596. https://doi.org/10.1161/cir.0000000000000757
4. Wang J, An Z, Li B, et al. Increasing stroke incidence and prevalence of risk factors in a low-income Chinese population. *Neurology*. 2015;84(4):374-381. https://doi.org/10.1212/wnl.0000000000001175
5. Zhou M, Wang H, Zeng X, et al. Mortality, morbidity, and risk factors in China and its provinces, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet*. 2019;394(10204):1145-1158. https://doi.org/10.1016/s0140-6736(19)30427-1
6. Wang W, Jiang B, Sun H, et al. Prevalence, incidence, and mortality of stroke in China: results from a nationwide population-based survey of 480 687 adults. *Circulation*. 2017;135(8):759-771. https://doi.org/10.1161/circulationaha.116.025250
7. Campbell BCV, De Silva DA, Macleod MR, et al. Ischaemic stroke. *Nat Rev Dis Primers*. 2019;5(1):70. https://doi.org/10.1038/s41572-019-0118-8
8. Giménez-Muñoz A, Ara JR, Abad Díez JM, Campello Morer I, Pérez Trullén JM. Trends in stroke hospitalisation rates and in-hospital

mortality in Aragon, 1998-2010. *Neurol (Engl Ed)*. 2018;33(4):224-232. https://doi.org/10.1016/j.nrl.2016.06.013

9. Fekadu G, Chelkeba L, Burden KA. Burden, clinical outcomes and predictors of time to in hospital mortality among adult patients admitted to stroke unit of Jimma University medical center: a prospective cohort study. *BMC Neurol*. 2019;19(1):213. https://doi.org/10.1186/s12883-019-1439-7
10. Herpich F, Rincon F. Management of acute ischemic stroke. *Crit Care Med*. 2020;48(11):1654-1663. https://doi.org/10.1097/ccm.0000000000004597
11. Budinčević H, Meštrović A, Demarin V. Stroke scales as assessment tools in emergency settings: a narrative review. *Medicina (Kaunas)*. 2022;58(11):1541. https://doi.org/10.3390/medicina58111541
12. Boulanger J, Lindsay M, Gubitz G, et al. Canadian stroke best practice recommendations for acute stroke management: prehospital, emergency department, and acute inpatient stroke care, 6th edition, update 2018. *Int J Stroke, 6th edition*. 2018;13(9):949-984. https://doi.org/10.1177/1747493018786616
13. Craig LE, McInnes E, Taylor N, et al. Identifying the barriers and enablers for a triage, treatment, and transfer clinical intervention to manage acute stroke patients in the emergency department: a systematic review using the theoretical domains framework (TDF). *Implement Sci*. 2016;11(1):157. https://doi.org/10.1186/s13012-016-0524-1
14. Andrade C, Menon V, Ameen S, Kumar Praharaj S. Designing and conducting knowledge, attitude, and practice surveys in psychiatry: practical guidance. *Indian J Psychol Med*. 2020;42(5):478-481. https://doi.org/10.1177/0253717620946111
15. Wang G, Fang B, Yu X, Li Z. Interpretation of 2018 guidelines for the early management of patients with acute ischemic stroke. *Zhonghua Wei Zhong Bing Ji Jiu Yi Xue. Article in Chinese*. 2018;30(4):289-295. https://doi.org/10.3760/cma.j.issn.2095-4352.2018.04.001
16. Powers WJ, Rabinstein AA, Ackerson T, et al. 2018 Guidelines for the early management of patients with acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*. 2018;49(3):e46-e110. https://doi.org/10.1161/str.0000000000000158
17. Sim CY, Wan Zaidi WA, Shah SA, Wan Yahya WNN, Tan HJ. Knowledge of acute stroke management among healthcare professionals: development and validation of acute stroke management questionnaire (ASMaQ). *J Stroke Cerebrovasc Dis*. 2021;30(1);105421. https://doi.org/10.1016/j.jstrokecerebrovasdis.2020.105421
18. Chang T, Ibrahim S, Ranasinghe HM, et al. Knowledge of stroke, its warning symptoms, risk factors and treatment among the General Public and general practitioners in a South Asian population. *J Stroke Cerebrovasc Dis*. 2020;29(5):104760. https://doi.org/10.1016/j.jstrokecerebrovasdis.2020.104760
19. Sun H, Chen S, Jiang B, et al. Public knowledge of stroke in Chinese urban residents: a community questionnaire study. *Neurol Res*. 2011;33(5):536-540. https://doi.org/10.1179/016164111x13007856084368
20. Romero-Bravo M, de la Cruz-Cosme C, Barbancho MA, García-Casares N. Knowledge on stroke in Spanish population. A systematic review. *Rev Neurol. Article in Spanish*. 2022;74(6):189-201. https://doi.org/10.33588/rn.7406.2021401
21. Yang J, Zhang J, Ou S, Wang N, Wang J. Correction: knowledge of community general practitioners and nurses on pre-hospital stroke prevention and treatment in Chongqing, China. *PLoS One*. 2019;14(3):e0213969. https://doi.org/10.1371/journal.pone.0213969
22. Nishijima H, Kon T, Ueno T, et al. Effect of educational television commercial on pre-hospital delay in patients with ischemic stroke. *Neurol Sci*. 2016;37(1):105-109. https://doi.org/10.1007/s10072-015-2372-1
23. Caminiti C, Schulz P, Marcomini B, et al. Development of an education campaign to reduce delays in pre-hospital response to stroke. *BMC Emerg Med*. 2017;17(1):20. https://doi.org/10.1186/s12873-017-0130-9
24. Al Khathaami AM, Aloraini H, Almudlej S, Al Issa H, Elshammaa N, Alsolamy S. Knowledge and attitudes of Saudi emergency physicians toward t-PA use in stroke. *Neurol Res Int*. 2018;2018:3050278. https://doi.org/10.1155/2018/3050278
25. Deng S, Mao X, Meng X, et al. A comparison of Knowledge, attitude and practice (KAP) of nurses on nursing post-stroke dysphagia patients between iii-A and ii-A hospitals in China: a propensity score-matched analysis. *BMC Nurs*. 2022;21(1):171. https://doi.org/10.1186/s12912-022-00950-x
26. Knight K, Pillay B, Van der Linde J, Krüger E. Nurses' knowledge of stroke-related oropharyngeal dysphagia in the Eastern Cape, South Africa. *S Afr J Commun Disord*. 2020;67(1):e1-e7. https://doi.org/10.4102/sajcd.v67i1.703
27. Reynolds SS, Murray LL, McLennon SM, Bakas T. Implementation of a stroke competency program to improve nurses' knowledge of and adherence to stroke guidelines. *J Neurosci Nurs*. 2016;48(6):328-335. https://doi.org/10.1097/jnn.0000000000000237
28. Ortega J, Gonzalez JM, de Tantillo L, Gattamorta K. Implementation of an in-hospital stroke simulation protocol. *Int J Health Care Qual Assur*. 2018;31(6):552-562. https://doi.org/10.1108/ijhcqa-08-2017-0149
29. Johnson M, Bakas T. A review of barriers to thrombolytic therapy: implications for nursing care in the emergency department. *J Neurosci Nurs*. 2010;42(2):88-94. https://doi.org/10.1097/JNN.0b013e3181ce5a48
30. Baatiema L, de-Graft Aikins A, Sav A, Mnatzaganian G, Chan CKY, Somerset S. Barriers to evidence-based acute stroke care in Ghana: a qualitative study on the perspectives of stroke care professionals. *BMJ Open*. 2017;7(4):e015385. https://doi.org/10.1136/bmjopen-2016-015385
31. Kassardjian CD, Willems JD, Skrabka K, et al. In-patient code stroke: a quality improvement strategy to overcome knowledge-to-action gaps in response time. *Stroke*. 2017;48(8):2176-2183. https://doi.org/10.1161/strokeaha.117.017622

The Impact of Coronavirus Disease 2019 Visitor Restrictions on the Attitudes of Emergency Department Staff

Authors: Robert (Bobby) Winters, RN, BSN, CEN, Anja Stewart, BSN, RN, RNC-OB, Patricia Newcomb, PhD, RN, CPNP Ret, and Regina W. Urban, PhD, RN, NPD-BC, CNE, MA-LPC, Burleson and Arlington, TX

Contribution to Emergency Nursing Practice

- For the first 2 years of the pandemic, patients diagnosed as having coronavirus disease 2019 in the emergency department were not allowed to have visitors, which was stressful for patients and ED staff.
- Beliefs of emergency nurses and nursing assistive personnel regarding visitation restrictions for patients with coronavirus disease 2019 were complex.
- Although respondents favored restrictions, the inner conflict between enforcing stringent policies and meeting the needs of vulnerable patients likely created moral distress in ED personnel.

Abstract

Introduction: During the first 2 years of the pandemic, visitors for patients with COVID-19 were prohibited from emergency departments in the United States with few exceptions, leaving patients without their caregivers and advocates. Little is known about emergency nurses and nursing assistive personnel beliefs regarding this issue. Therefore, this study's purpose was to describe and assess relationships among emergency nursing and assistive personnel attitudes and perceptions regarding emergency department "no-visitor policies" for patients with COVID-19.

Methods: This institutional review board-approved observational study was conducted in a health care system in the Southwestern United States. Nursing personnel ($n = 180$; 21.74% response rate) working in 11 emergency departments completed the survey during the fall of 2021. Bivariate correlations and multivariable linear regression modeling were performed to explore relationships among survey questions.

Results: Most participants (61%) strongly/very strongly believed that restriction of visitors for patients with COVID-19 was necessary for the protection of staff and patients. In addition, 65% reported strongly/very strongly agreeing that it was unethical and 75% felt upset when these patients died alone. Most (81%) strongly/very strongly agreed that exemptions to the policy should be made in some cases, including imminent death. Respondents' recognition of patients' displeasure with visitor policy, recognition that a lack of visitors affected efficiency, and feeling upset when these patients died alone negatively predicted agreement that restriction was necessary.

Conclusion: Although most participants favored visitation restrictions for patients with coronavirus disease 2019, their beliefs were complex. Navigating stringent visitation policies and vulnerable patients' needs can result in moral distress for ED personnel.

Key words: Coronavirus disease 2019; Visitor policy; ED visitor; ED visitation policy; ED staff attitudes; Emergency nursing attitudes

Introduction

As coronavirus disease 2019 (COVID-19), a respiratory disease caused by severe acute respiratory syndrome coronavirus 2, emerged in the United States in early 2020, it

Robert (Bobby) Winters, *Tarrant County Chapter in Texas*, is a Registered Nurse, Texas Health Resources Burleson Emergency Department, Burleson, TX.

Anja Stewart, *Tarrant County Chapter in Texas*, is a Registered Nurse, Texas Health Resources Burleson Emergency Department, Burleson, TX.

Patricia Newcomb is a Nurse Scientist, Texas Health Resources, Arlington, TX. **ORCID identifier:** https://orcid.org/0000-0002-5306-8899.

Regina W. Urban is a Nurse Scientist, Texas Health Resources Arlington Memorial, Arlington, TX. **ORCID identifier:** https://orcid.org/0000-0001-6458-6803.

For correspondence, write: Robert (Bobby) Winters, RN, BSN, CEN, Texas Health Resources Burleson Emergency Department, 2750 SW Wilshire Blvd, Burleson, TX 76028; E-mails: robertwinters@texashealth.org; bobby@bobbywinters.com

J Emerg Nurs 2024;50:106-16.
Available online 30 June 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.06.010

prompted many changes in policies and procedures in health care settings. Due to its novelty, transmissibility, and lethality, health care providers in acute care settings were compelled to take new measures to limit the likelihood of transmission. Initially, the United States Centers for Disease Control and Prevention (CDC) recommended strict guidelines to limit the spread of COVID-19 by prohibiting visitors from the emergency department altogether, with few exceptions.[1] This abrupt change led to a shift in care that omitted valuable family members and their input and left many vulnerable patients without their caregivers and advocates.

REVIEW OF THE LITERATURE

Prepandemic research regarding visitation in the emergency department is sparse. In the intensive care unit (ICU), prepandemic studies suggested postanesthesia care unit patients and families were more satisfied with liberal visitation policies[2] and that many ICU registered nurses (RNs) were in favor of similar liberal policies.[3] In a review of the literature, implementing a completely open ICU visitor policy was often met with institutional barriers.[4] The Emergency Nurses Association (ENA) has long been a proponent of family presence, especially during codes and procedures. The ENA Clinical Practice Guideline: Family Presence During Invasive Procedures and Resuscitation is a well-supported systematic review of 24 high- to moderate-graded studies that strongly support visitation and family presence.[5]

Early COVID-19 research focused on reporting changes needed in clinical practice to prevent viral transmission. One facility in Shanghai developed a process for those suspected (but not yet confirmed) of having the COVID-19 virus; their visitor policy stated that these patients could not leave the room, had to remain masked, and were not allowed to have any visitors.[6] Another hospital in Western China had an elaborate visitation strategy, which involved giving a certificate to visitors of patients who did not have COVID-19 and restricting patients with COVID-19 to no visitors.[7] In 2020, Deitrick et al[8] compiled a review of the current knowledge and application of COVID-19 isolation measures in ED settings and stressed the importance of limiting exposures, implementing visitor restrictions, and clustering nursing care. In the United States, the CDC established guidelines that included limiting visitors to the facility "to those essential for the patient's physical or emotional well-being and care" and restricting visitors during aerosol-generating procedures.[1] As a result, the ENA simply recommended visitation procedures "per CDC guidelines."[9]

As the pandemic progressed, ED-specific research stressed emergency preparedness and the need for a codified identification and isolation process but did not address ED staff attitudes regarding policies related to visitors for patients with COVID-19.[6,10] One author mentioned CDC recommendations to temporarily restrict mothers with COVID-19 from their newborns.[8] Another pediatric facility developed a new position, a nursing site manager, who helped expedite, enforce, and explain visitor restriction policies.[11] In addition to navigating and enforcing visitor restrictions, a lack of resources also limited the ability to properly isolate patients with COVID-19, specifically lack of personal protective equipment such as N95 masks[12] and negative pressure rooms.[8]

The dangers of visitor restrictions during the COVID-19 pandemic were explored in several studies. It is well known that patients and visitors experience separation anxiety and a multitude of other adverse consequences.[6,13] Existing advanced directives[14] and conversations regarding end-of-life decisions[15] were significantly impeded due to lack of visitors. Using a middle range theory of nurses' psychological traumas, Amberson[16] suggested that vicarious (or secondary) nurse trauma could be experienced by witnessing patients die without family presence and by witnessing the distress of other staff.

With regard to ICU caregivers' opinions of restricted visitation policies for families of patients with COVID-19, Herbst and Kuntz[17] found that 64.3% of ICU providers (physician residents, nurse practitioners, and physician assistants) agreed visitation restrictions were appropriate, but 71.4% said that the restrictions had a negative effect on their job satisfaction, with 51.8% reporting symptoms of burnout. Zante et al[18] investigated family members of ICU patients and observed that >90% displayed post-traumatic stress disorder symptomology likely related in part to COVID-19 visitor restriction policies. However, research regarding the effect of COVID-19 related visitation policy changes on ED staff is lacking. Therefore, this study's purpose was to describe and assess relationships among emergency nursing and nursing assistive personnel's attitudes and perceptions regarding ED "no-visitor policies" for patients with COVID-19.

THEORETICAL FRAMEWORK

The theoretical framework underpinning this study was Watson's Philosophy of Science and Caring,[19] which describes the human patient as "a valued person in and of

him or herself to be cared for, respected, nurtured, understood and assisted…" Watson's framework includes 10 primary carative factors essential to nursing practice. The eighth factor is "provision for a supportive, protective and/or corrective mental, physical, socio-cultural and spiritual environment." Restriction of visitors disconnects patients from their usual support system and can erect barriers to this therapeutic environment. Most importantly, Watson's view of nursing is ultimately one of holistic care, describing it as a combination of "persons and human health-illness experiences that are mediated by professional, personal, scientific, esthetic and ethical human care transactions." Holistic care can be threatened when loved ones are not allowed to directly participate in the treatment and plan of care.

Methods

DESIGN, SETTING, AND SAMPLE

A prospective cross-sectional observational research design was used to describe and assess relationships among emergency nursing service personnel's attitudes and perceptions regarding ED "no-visitor policies" for patients with COVID-19. The sample included nurses and nursing assistive personnel (specifically patient care technicians [PCTs] and emergency medical technicians [EMTs]/paramedics) from a single health care system. In this health care system, nurses, PCTs (also known as certified nurses' aides) and EMT/paramedics are employees under the nursing service in emergency departments and work together as a team to care for the patient.

This study is reported using the Strengthening the Reporting of Observational Studies in Epidemiology guidelines.[20] The study was conducted in a faith-based, nonprofit health care system serving 16 counties and more than 7 million people in the Southwestern United States. Eleven emergency departments of varying sizes within the system elected to participate in the study. Study data were collected over a 4-week period during August and September of 2021, approximately 18 months into the COVID-19 pandemic and during the delta wave. At the time of data collection, the hospital system policy prohibited patients with COVID-19 from having visitors in the emergency department, with the only exceptions being "to support patients with impairment or mobility needs."[21] This policy had been in place since March 2020 and was consistent with CDC recommendations at that time. Vaccines for COVID-19 had been available to the public in the United States for approximately 4 to 5 months.

Participants were recruited using convenience sampling, and study participation was voluntary and anonymous. Approval to conduct the study was obtained from the hospital system's institutional review board. To be included in this study, participants must have been at least 18 years old, be able to read and understand English, and be employed as a nurse, PCT, or an EMT/paramedic in 1 of 11 participating emergency departments within the health care system. No inclusion/exclusion criteria were based on the study participants' length of service or professional experience within the emergency department. Other ED personnel, including physicians, respiratory therapists, etc, were excluded because their relationships, time spent with individual patients, and the nature of their work are substantially different from that of nurses and assistive personnel. EMT/paramedics who did not work for the health care system (ie, those working in external emergency services) were also excluded from participation.

MEASURES

A 4-section, 36-question, author-designed online survey requested information from participants about their (1) demographic and professional experiences, (2) attitudes and beliefs about visitor restrictions for patients with COVID-19, and (3) experiences with family or visitor displeasure and (4) 1 open-ended short answer question regarding the COVID-19 visitor policy. Demographic data collected included the participants' age, sex, racial/ethnic group, and educational level. Survey questions that focused on professional experiences of the sample included size of the employing emergency department, hours worked per week, total years of experience in the emergency department, and total years of experience in their current ED role.

Twenty questions used a Likert scale that ranged from 1 (very strongly disagree) to 8 (very strongly agree) to explore participants' beliefs regarding visitor restrictions. Questions 1 to 3 explored participants' beliefs regarding whether the restriction of visitors was necessary to protect staff and patients, whether sufficient evidence existed for these restrictions, and whether prohibiting visitors was therapeutic for patients with COVID-19. Questions 4 to 6 explored participants' beliefs and feelings regarding death and dying of patients with COVID-19 related to the visitation policies. Questions 7 to 16 explored participants' views regarding the visitation policy and their workflow, communication, and job stress/satisfaction levels. Questions 17 to 20 asked participants about patients with COVID-19 and their families' displeasure and behavior

TABLE 1
Demographic and work characteristics of the sample

Variable	Total sample *n* = 180 Mean (SD)	Registered nurses *n* = 141 (78.3%)	Assistive personnel *n* = 39 (21.7%) CNA/PCT *n* = 17 (9.4%) EMT/medics *n* = 22 (12.2%)
Age (in y)	38.42 (10.6) 21-67,	39.15 (10.7) 23-67	35.67 (9.6) 21-51
Sex	Male = 33 (18.3%)	Male = 21 (14.9%)	Male = 12 (30.8%)
	Female = 139 (77.2%)	Female = 116 (82.3%)	Female = 23 (59%)
	Other = 8 (4.4%)	Other = 4 (2.8 %)	Other = 4 (10.3%)
Race	Asian = 6 (3.3%)	Asian = 6 (4.3%)	Asian = 0 (0%)
	Black = 6 (3.3%)	Black = 3 (2.1%)	Black = 3 (7.7%)
	Hispanic = 20 (11.1%)	Hispanic = 16 (11.3%)	Hispanic = 4 (10.3%)
	White = 143 (79.4%)	White = 113 (80.1%)	White = 30 (76.9%)
	Other = 5 (2.8%)	Other = 3 (2.1%)	Other = 2 (5.1%)
Educational level	Technical/professional school/some college = 22 (12.2%)		Technical/professional school/some college = 22 (56.4%)
	Associate's degree = 28 (15.6%)	Associate's degree = 18 (12.8%)	Associate's degree = 10 (25.6%)
	Bachelor's degree = 113 (68.2%)	Bachelor's degree = 106 (75.2%)	Bachelor's degree = 7 (17.9%)
	Master's degree = 17 (9.4%)	Master's degree = 17 (12.1%)	
Participants by hospital size	Large = 66 (36.7%)	Large = 50 (35.5%)	Large = 16 (41%)
	Medium = 48 (26.6%)	Medium = 35 (24.8%)	Medium = 13 (33.3%)
	Small = 66 (36.7%)	Small = 56 (39.7%)	Small = 10 (25.6%)
Hours worked per wk	35.93 (9.5) 8-96	35.82 (10.3) 8-96	36.31 (9.5) 12-50
Years of ED experience	7.9 (9.8) 0.5-45	10.6 (8.4) 1-45	7.1 (6.7) 0.5-22
Years of experience in current ED role.	6.9 (5.7) 0.5-26	7.1 (5.4) 1-25	6.1 (6.5) 0.5-22

CNA, certified nursing assistant; EMT, emergency medical technician; PCT, patient care technician.

related to the visitor policy. Three additional questions asked respondents to quantify the number of times per week that they witnessed aggression, witnessed violence, or called security for assistance. The primary purpose of this study was to gain insight into participants' attitudes and perceptions regarding ED visitor policies enacted during the COVID-19 pandemic, not to develop a formal scale or tool for future measurement.

One open-ended question at the end of the survey asked participants to respond to the following prompt: "Is there anything else you would like us to know regarding your experiences with the COVID-19 visitor policy?" This question will be analyzed and reported separately from the current survey study data.

DATA COLLECTION

An initial recruitment and 2 reminder emails containing a link to the study's informed consent and survey were sent to a total of 828 individuals to invite their participation. Participant data were collected using REDCap, a

TABLE 2
Correlation of responses to visitation restriction beliefs

Survey question	Mean (M) and SD	% answering strongly agree or very strongly agree	Correlation to survey Q1 (belief in visitor restriction)
Q1. The restriction of visitors for patients with COVID-19 is necessary for the protection of staff and patients.	M = 6.3, SD = 2.2	60.9%	1
Q2. There is sufficient evidence-based research to conclude that prohibiting visitors for patients with COVID-19 is effective and scientifically based.	M = 5.1, SD = 2.2	32.8%	0.667*
Q3. It is not therapeutic for our patients with COVID-19 when we prohibit visitors due to COVID-19.	M = 5.2, SD = 2.2	32.8%	−0.430*
Q4. I feel upset when patients with COVID-19 die alone. (Note: the current policy prohibits visitors for patients with COVID-19, even when they are dying.)	M = 7.1, SD = 1.6	75%	−0.268*
Q5. I believe it is unethical for patients with COVID-19 to die alone.	M = 6.5, SD = 2.1	65%	−0.333*
Q6. Exemptions to the COVID-19 visitor policy should be made in some cases, such as imminent death.	M = 7.3, SD = 1.5	81.7%	−0.141
Q7. The presence of visitors is an important component of care in the emergency department.	M = 4.6, SD = 2.2	22.8%	−0.456*
Q8. Lack of visitors for patients with COVID-19 has sometimes made it difficult for me to obtain pertinent patient history.	M = 5.1, SD = 2.2	31.7%	−0.434*
Q9. Lack of visitors for patients with COVID-19 has sometimes made it difficult for me to communicate with patients.	M = 4.8, SD = 2.2	25%	−0.477*
Q10. Lack of visitors for patients with COVID-19 has made my job easier in some respects.	M = 6.1, SD = 1.9	48.9%	0.532*
Q11. As a health care provider in the ED, visitors and patient families are important to me.	M = 5.5, SD = 1.9	30.6%	−0.325*

continued

TABLE 2
Continued

Survey question	Mean (M) and SD	% answering strongly agree or very strongly agree	Correlation to survey Q1 (belief in visitor restriction)
Q12. Lack of visitors for patients with COVID-19 has sometimes made it difficult for me to communicate properly with patients' families.	M = 5.0, SD = 2.2	27.2%	−0.451*
Q13. Lack of visitors for patients with COVID-19 helps me to be more efficient in my patient care.	M = 5.5, SD = 2.1	37.2%	0.508*
Q14. Lack of visitors for patients with COVID-19 helps me to feel less stressed.	M = 5.6, SD = 2.2	37.8%	0.567*
Q15. I have a higher level of job satisfaction with the COVID-19 visitor restriction policy in place.	M = 5.0, SD = 2.3	30.6%	0.581*
Q16. When present, family members and visitors can help ease my workload.	M = 4.26, SD = 2.0	12.8%	−0.388*
Q17. Patients with COVID-19 generally seem displeased with the COVID-19 visitor policy.	M = 5.99, SD = 2.0	49.7%	−0.366*
Q18. Families (and/or visitors) of patients with COVID-19 generally seem displeased with the COVID-19 visitor policy.	M = 6.5, SD = 1.7	61.1%	−0.203*
Q19. I have personally witnessed violence or aggression from patients with COVID-19 due to the COVID-19 visitor policy.	M = 4.5, SD = 2.6	24.4%	−0.196†
Q20. I have personally witnessed violence or aggression from families (and/or visitors) of patients with COVID-19 owing to the COVID-19 visitor policy.	M = 5.7, SD = 2.4	48.5%	−0.128

COVID-19, coronavirus disease 2019.
* Correlation significant at the .01 level (2 tailed).
† Correlation significant at the .05 level (2 tailed).

password-protected web-based application that allowed surveys to be completed in a setting of the participants' choosing using a computer, tablet, or cell phone. A total of 211 participants responded to the survey. Of these, 31 provided incomplete responses that were removed from the survey database. The final sample for analysis consisted of data from 180 participants, for a 21.74% response rate.

DATA ANALYSIS

Summary statistics for demographic and work characteristics of the sample included frequencies and percentages for categorical variables and means, SDs, and ranges for continuous variables. Internal consistency of the entire measure was evaluated using Cronbach's alpha, and principal components analysis was performed to find the items on

the tool that were most informative in the face of less than desirable reliability. Bivariate correlations were calculated to explore the relationships among survey questions. Multivariable linear regression modeling was performed to determine whether selected study demographic, work characteristics, or survey questions could significantly predict participants' belief that the policy to restrict visitors for patients with COVID-19 was necessary.

Results

A total of 180 emergency RNs, PCT/certified nursing assistants, and EMT/medics participated in the study. The average age of study participants was 38.4 years. The sample was predominantly female (77.2%) and White (79.4%) and comprised RNs (78.3%). Most RNs (87.3%) reported having a bachelor's or master's degree. Study participants reported an average of 7.9 years of experience working in ED settings and working an average of 35.9 hours per week. For additional details regarding the demographic and work characteristics of the sample, see Table 1.

A list of the 20 survey questions used in this study and the means, SDs, the percent answering strongly agree or very strongly agree to each question, and the results of bivariate correlations conducted to explore the relationships among the question restriction of visitors for COVID-19 patients is necessary and all other questions on the study survey are presented in Table 2. Statistically significant relationships were noted among almost all questions (see Table 2). A principal components analysis with Varimax rotation showed that the first 2 questions accounted for 86% of the variance in the total score on the tool. The Cronbach's alpha for these 2 questions by themselves was 0.80, which is considered acceptable. The Cronbach's alpha for the entire 20-question survey was 0.56, which is poor. The principal investigator-developed study survey was designed to gain insight into ED staff attitudes and perceptions regarding ED COVID-19 visitor policies, not with a goal to develop a formal scale or tool for future measurement.

The survey questions with the highest mean scores and percentage of participants choosing strongly agree or very strongly agree as an answer focused on participants' views of COVID-19 and patient death. More than half of the respondents reported that they strongly or very strongly agreed that it was unethical (65%) and felt upset (75%) for patients with COVID-19 to die alone. Most of the respondents strongly or very strongly agreed (81.7%) that exemptions to the COVID-19 visitor policy should be made in some cases, such as imminent death.

During the COVID-19 pandemic, policies were enacted that did not allow visitors and/or family members to stay with patients who were COVID-19 positive (or suspected to be COVID-19 positive) in the emergency department. Almost 61% of respondents strongly or very strongly agreed that the restriction of visitors for patients with COVID-19 was necessary for the protection of staff and patients. Almost half (49.7%) strongly or very strongly agreed that patients with COVID-19 generally seemed displeased with the COVID-19 visitor policy and 61.1% reported that families were displeased.

Visitor restrictions were not always well regarded by patients with COVID-19 and their families, and it is likely that at least some of their displeasure with the policy was directed toward ED staff. A substantial number of study participants strongly or very strongly agreed that they had personally witnessed violence or aggression from patients with COVID-19 (24.4%) and from family or visitors (48.5%) of patients with COVID-19 due to the COVID-19 visitor policy. Study participants reported witnessing an average of 3.45 (SD = 6.0) aggressive actions from patients with COVID-19 or their families or visitors weekly. Violent actions from patients with COVID-19, their families, or visitors were witnessed an average of 0.69 times (SD = 1.3) per week. Study participants reported calling security for assistance due to aggression or violence an average of 1 time per week ($x = 1.0$, SD = 1.8).

All study variables except exposure to aggression and violence were regressed on the outcome variable: the strength of belief that visitor restriction is necessary for patients with COVID-19. Cases were weighted for busyness of the emergency department. This resulted in a model in which responses to 9 questionnaire items together significantly accounted for 59% of the variance in the outcome. The magnitude of the adjusted R2 (0.589) in this model represents a large effect size. Notably, age, role in the emergency department, gender, and years of ED experience were insignificant predictors. The significant predictors included belief that there is sufficient evidence-based research (Q2) and that the lack of visitors for patients with COVID-19 helps the respondent to feel less stressed (Q14) and more efficient (Q13), has made their job easier (Q10) and job satisfaction higher (Q15). Additional significant predictors included the belief that visitors are important (Q11), that patients with COVID-19 generally seem displeased when their visitors are not allowed (Q17), that exemptions to the policy should be made in some cases (Q6), and feeling upset when patients with COVID-19 die alone (Q4). Coefficients are presented in Table 3.

TABLE 3
Belief that visitor restriction is necessary for patients with COVID-19, weighted by busyness of ED location

Related variables	Unstandardized B coefficient	Standard error	*t* value	*P* value	95% CI
Q2. Belief that there is sufficient evidence-based research to conclude that prohibiting visitors for patients with COVID-19 is effective and scientifically based	0.446	0.032	13.901	.000	0.383-0.510
Q10. Lack of visitors for patients with COVID-19 has made my job easier in some respects.	0.186	0.048	3.872	.000	0.091-0.280
Q14. Lack of visitors for patients with COVID-19 helps the respondent to feel less stressed.	0.231	0.050	4.635	.000	0.133-0.329
Q15. Job satisfaction is higher when COVID-19 visitor restrictions are in place.	0.140	0.046	.147	.003	0.049-0.230
Q13. Lack of visitors for patients with COVID-19 helps me to be more efficient in my patient care.	−0.123	0.052	−2.375	.018	−0.224 to −0.021
Q11. Visitors and patient families are important to me.	0.080	0.041	1.974	.049	0.000-0.160
Q6. Exemptions to the policy should be made in some cases, such as imminent death.	0.130	0.049	2.669	.008	0.034-0.225
Q4. I feel upset when COVID -19 patients die alone.	−0.170	0.047	−3.651	.000	−0.262 to −0.079
Q17. Patients with COVID-19 generally seem displeased with the COVID-19 visitor policy.	−0.118	0.035	−3.424	.001	−0.186 to −0.050

COVID-19, coronavirus disease 2019.

A second regression was performed that included the number of times per week that aggression or violence related to the COVID-19 visitor restrictions was witnessed or that security personnel were called for assistance, but it was found that exposure to COVID-19 related aggression and violence was not associated with the belief that visitor restriction was necessary.

Discussion

Our study was designed to describe and assess relationships among emergency nursing and nursing assistive personnel's attitudes and perceptions regarding ED "no-visitor policies" for patients with COVID-19. Study data were collected 18 months into the pandemic, during a delta surge, when

vaccines had been available to the public without restriction for approximately 4 to 5 months. At that time, there were no published studies regarding this topic and only a handful of studies had been published regarding COVID-19 related policies in the emergency department.

Participants voiced the strongest opinions around the topic of COVID-19 and patient death. Most agreed that it was unethical for patients with COVID-19 to die without family present, that they felt upset when this happened, and that exemptions to the visitor policy should be made for some cases, such as imminent death. This reflects that ED staff feel moral distress and a duty to facilitate family presence in end-of-life situations. This is similar to what is experienced by ICU nurses[16,22] and is congruent with Watson's eighth carative factor for nursing practice: the provision of a supportive environment for the patient.[19]

Similar to the findings of Herbst and Kuntz[17] in ICU providers, most emergency nurses and nursing assistive personnel (61%) believed that restriction of visitors for patients with COVID-19 was necessary for the protection of staff and patients. In addition, our predictive model identified 9 questionnaire items that significantly predicted 59% of the variance in respondents' beliefs regarding this necessity, the strongest being the belief that there is sufficient evidence-based research to conclude that prohibiting visitors for patients with COVID-19 is effective and scientifically based. Beliefs about how the lack of visitors affected their work also positively predicted staff beliefs that visitor restrictions are necessary. When personnel believed that limiting visitors made their job easier in some respects, reduced stress, and increased job satisfaction, they were more likely to believe that prohibiting visitors was necessary.

However, incongruence exists given that 39% of ED respondents did not believe in the necessity of restrictions. Respondents' recognition of the displeasure with visitor policy by patients with COVID-19, recognition that lack of visitors affected efficiency, and feeling upset when patients with COVID-19 died alone negatively predicted respondents' agreement that restriction was necessary. These respondents may have similar views to those reported by Herbst and Kuntz,[17] who found that most ICU providers reported that visitation restrictions negatively affected their job satisfaction. It is possible that some of these respondents recognized that restricting visitors undermined their ability to provide holistic care as envisioned by Watson's Philosophy of Science and Caring.[19] In future situations where infection-prevention measures may again suggest the need to limit visitors, perhaps a stepwise approach to decision making for hospital visitation could be implemented.[23]

Visitor restrictions in the emergency department were well-intended interventions to mitigate the spread of COVID-19 to other patients and ED staff. However, an unintended outcome was an increase in patient and family stress, fear, and frustration, similar to those reported by families in other health care settings,[18,22,24] and ED staff frequently witnessed these emotions. Participants in this study were aware of patients with COVID-19 and their families experiencing unhappiness with the visitor restrictions, which sometimes resulted in aggression and/or violence. Respondents reported personally witnessing a weekly average of 3.5 aggressive actions by patients with COVID-19 or their visitors. Respondents witnessed violent actions less often, but still needed to call security an average of 1 time per week. According to Wolf et al,[25] "[e]mergency nurses are at significant occupational risk for [workplace violence]… and…mitigation of [workplace violence] requires a zero-tolerance environment instituted and supported by hospital leadership." Exposure to COVID-19 related aggression and violence did not predict participants' belief that visitor restriction was necessary. The reasons for this are unknown.

Limitations

Our study used a convenience sample from only 1 health care system in 1 state and therefore lacks some external validity. Our survey tool was not independently validated. The principal investigator-developed survey was designed to gain insight into ED staff attitudes and perceptions regarding ED COVID-19 visitor policies, not with a goal to develop a formal scale or tool for future measurement. Our study took place at a specific historical moment—data collected during the delta wave of the pandemic may not realistically represent current pandemic experiences or future, nonpandemic views. Experiences with visitor restrictions during the pandemic have changed over time, and many facilities have since amended their COVID-19 visitor policies.

Implications for Emergency Nurses

The strongest opinions regarding COVID-19 visitor restrictions were regarding the death of patients. It is important to remember that not all ED staff agree with the necessity of visitor restrictions and that diversity of staff opinions exists. As the feeling of being upset when patients with COVID-19 die alone negatively predicted respondents' agreement that restriction was necessary, it is to be expected that traumatic COVID-19 death experiences could affect this perception and that ED staff have experienced an increased risk of

moral injury.[25-27] Therefore, all staff should have the opportunity to debrief and be encouraged to access pastoral care, mental health providers, or other trusted sources for spiritual and psychosocial care. Taking action to support the well-being of and to mitigate burnout in ED staff is imperative to help stabilize the ED workforce as the COVID-19 pandemic continues to evolve.

Sadly, aggression and violence are all-too-common occurrences in the ED setting in the United States. Higher rates of health care violence occur in the emergency department, psychiatric, and geriatric care settings.[28] According to the United States Bureau of Labor Statistics, individuals working in health care and social services are 5 times more likely to experience an injury related to workplace violence than workers in other industries.[29] Given that respondents in our study witnessed and/or experienced violence by patients with COVID-19 or their visitors and reported calling security for additional assistance, efforts to increase vigilance and protect ED staff are needed. Many facilities have systems for identifying aggressive or potentially aggressive patients using their electronic health record or by using signs posted on the door of the patients' rooms. It is imperative that the emergency department remains a safe place for all staff, patients, and visitors.

Conclusion

The novel coronavirus 2019 dealt the medical world a devastating blow, as we experienced and responded to a true global pandemic. In response, emergency departments enacted, modified, and rescinded many visitor policies to maintain proper isolation and quarantine of COVID-19 infected and suspected COVID-19 infected patients. This study gives a unique glimpse of nursing staff perspectives during the most restrictive of the policies. It explored how ED staff interpreted these guidelines and elucidates the dichotomous nature of staff attitudes. We hope it can be used to guide policy and improve care for patients in future pandemics.

Data, Code, and Research Materials Availability

Due to the sensitive nature of the questions asked in this study, survey respondents were assured the raw data would remain confidential and would not be shared with other researchers.

Acknowledgments

The authors thank the ED staff who participated in the study survey, the Texas Health Resources nurse scientists who facilitated the Health Science Fellowship where the idea for the study was conceived, and the Texas Health Resources Foundation that funded the opportunity to participate in a year-long health science research fellowship to plan the study.

Author Disclosures

Conflicts of interest: none to report.

REFERENCES

1. Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic. Centers for Disease Control and Prevention. Published 2020. Accessed December 20, 2020. https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html
2. Pagnard E, Sarver W. Family visitation in the PACU: an evidence-based practice project. *J Perianesth Nurs*. 2019;34(3):600-605. https://doi.org/10.1016/j.jopan.2018.09.007
3. DeLano AR, Abell C, Main M. Visitation policies on the adult ICU: nurses' satisfaction and preferences. *Nurs Manage*. 2020;51(2):32-36. https://doi.org/10.1097/01.NUMA.0000617020.50320.d1
4. Ning J, Cope V. Open visiting in adult intensive care units - a structured literature review. *Intensive Crit Care Nurs*. 2020;56:102763. https://doi.org/10.1016/j.iccn.2019.102763
5. Vanhoy MA, Horigan A, Stapleton SJ, et al. Clinical practice guideline: family presence during invasive procedures and resuscitation. *J Emerg Nurs*. 2019;45(1):76.e1-76.e29. https://doi.org/10.1016/j.jen.2018.11.012
6. Hu Y, Wang L, Hu S, Fang F. Facility-level case report of nursing care processes for patients with suspected 2019 novel coronavirus disease in Shanghai, China. *J Emerg Nurs*. 2020;46(6):898-906. https://doi.org/10.1016/j.jen.2020.08.001
7. Wang L, Chen X, Ye L. Integrated infection control strategy to minimize hospital-acquired infection during outbreak of coronavirus disease 2019 among ED health care workers. *J Emerg Nurs*. 2020;46(4):424-425. https://doi.org/10.1016/j.jen.2020.03.016
8. Deitrick K, Adams J, Davis J. Emergency nursing care of patients with novel coronavirus disease 2019. *J Emerg Nurs*. 2020;46(6):748-759. https://doi.org/10.1016/j.jen.2020.07.010
9. Coronavirus disease 2019 frequently asked questions. Emergency Nurses Association. Published 2020. Accessed December 20, 2020. https://www.ena.org/docs/default-source/resource-library/practice-resources/coronavirus-faq.pdf?sfvrsn=1fce97e3_6
10. Schwedhelm MM, Herstein JJ, Watson SM, et al. Can you catch it? Lessons learned and modification of ED triage symptom- and travel-

screening strategy. *J Emerg Nurs*. 2020;46(6):932-940. https://doi.org/10.1016/j.jen.2020.03.006

11. Schmid A, Downey D. Implementing a novel nursing site manager role in the pediatric emergency department for patient and staff safety during the COVID-19 pandemic. *J Emerg Nurs*. 2022;48(1):13-21. https://doi.org/10.1016/j.jen.2021.07.009
12. Binder C, Torres RE, Elwell D. Use of the donabedian model as a framework for COVID-19 response at a hospital in suburban Westchester County, New York: a facility-level case report. *J Emerg Nurs*. 2021;47(2):239-255. https://doi.org/10.1016/j.jen.2020.10.008
13. Castner J, Bell SA, Hetland B, Der-Martirosian C, Castner M, Joshi AU. National estimates of workplace telehealth use among emergency nurses and all registered nurses in the United States. *J Emerg Nurs*. 2022;48(1):45-56. https://doi.org/10.1016/j.jen.2021.07.001
14. Liberman T, Roofeh R, Chin J, et al. Remote advance care planning in the Emergency Department during COVID-19 disaster: program development and initial evaluation. *J Emerg Nurs*. 2022;48(1):22-31. https://doi.org/10.1016/j.jen.2021.09.006
15. Dundin A, Siegert C, Miller D, et al. A pivot to palliative: an interdisciplinary program development in preparation for a coronavirus patient surge in the emergency department. *J Emerg Nurs*. 2020;46(6):760-767. https://doi.org/10.1016/j.jen.2020.08.003
16. Amberson T. Postpandemic psychological recovery and emergency nursing: creating a narrative for change. *J Emerg Nurs*. 2021;47(3):362-365. https://doi.org/10.1016/j.jen.2021.03.002
17. Herbst N, Kuntz J. Impact of Covid-19 visitation restrictions on ICU communication, provider attitudes, and burnout. *Chest*. 2021;160(4):A1035. https://doi.org/10.1016/j.chest.2021.07.960
18. Zante B, Erne K, Grossenbacher J, Camenisch SA, Schefold JC, Jeitziner MM. Symptoms of post-traumatic stress disorder (PTSD) in next of kin during suspension of ICU visits during the COVID-19 pandemic: a prospective observational study. *BMC Psychiatry*. 2021;21(1):1-9. https://doi.org/10.1186/s12888-021-03468-9
19. Watson J. *Nursing: The Philosophy and Science of Caring*. University Press of Colorado; 2008.
20. Strengthening the Reporting of Observational Studies in Epidemiology. STROBE. Published 2023. Accessed December 20, 2020. https://www.strobe-statement.org/
21. Miao W, King K. Hospital visitor policy changes. Published 2020. Accessed December 20, 2020. https://mailchi.mp/texashealth.org/testing_031820-6144937?e=47f993ab6b
22. Hugelius K, Harada N, Marutani M. Consequences of visiting restrictions during the COVID-19 pandemic: an integrative review. *Int J Nurs Stud*. 2021;121:1-10. https://doi.org/10.1016/j.ijnurstu.2021.104000
23. Jones-Bonofiglio K, Nortje N, Webster L, Garros D. A practical approach to hospital visitation during a pandemic: responding with compassion to unjustified restrictions. *Am Jour Crit Care*. 2021;30(4):302-311. https://doi.org/10.4037/ajcc2021611
24. Krewulak N, Jaworska N, Spence KL, et al. Impact of restricted visitation policies during the first wave of the COVID-19 pandemic on communication between critically ill patients, families, and clinicians: a qualitative interview study. *Ann Am Thorac Soc*. 2022;19(7):1169-1176. https://doi.org/10.1513/AnnalsATS.202107-877OC
25. Wolf L, Perhats C, Delao A, et al. Violence and its impact on the emergency nurse. *J Emerg Nurs*. 2020;46(3):354-358. https://doi.org/10.1016/j.jen.2020.01.005
26. Holtz HK, Weissinger GM, Swavely D, et al. The long tail of COVID-19: implications for the future of emergency nursing. *J Emerg Nurs*. 2023;49(2):198-209. https://doi.org/10.1016/j.jen.2022.10.006
27. Dixon E, Murphy M, Wynne R. A multidisciplinary, cross-sectional survey of burnout and wellbeing in emergency department staff during COVID-19. *Australas Emer Care*. 2022;25(3):247-252. https://doi.org/10.1016/j.auec.2021.12.001
28. Brous E. Workplace violence: how it affects health care, which providers are most affected, and what management and staff can do about it. *Am J Nurs*. 2018;118(10):51-55. https://doi.org/10.1097/01.NAJ.0000546381.04422.55
29. Fact sheet: Workplace violence in healthcare, 2018. U.S. Bureau of Labor Statistics. Published 2018. Accessed May 26, 2023. https://www.bls.gov/iif/factsheets/workplace-violence-healthcare-2018.htm

Tracking Staff Mood and Concerns in a Pediatric Emergency Department During the COVID-19 Pandemic

Authors: Michelle N. Odonkor, BA, MPH, Carol Vidal, MD, PhD, Eva Seligman, MD, Theodore Kouo, MD, PhD, and Amyna Husain, DO, MPH, Baltimore, MD

Contribution to Emergency Nursing Practice

- The current literature on the mental health effects of infectious epidemics on health care works indicates experiences of emotional distress during and after the infectious outbreak.
- This article contributes to the literature by reviewing the results of mood and job satisfaction over the course of the epidemic.
- Key implications for emergency nursing practice found in the article are that mood trends fluctuated, yet pediatric emergency nurses had the most exhaustion and lowest confidence over the period of time. Monitoring emergency nurses' mood in real time allows for interventions to mitigate negative mental effects and job satisfaction.

Abstract

Introduction: Few studies have monitored health care worker mood and job satisfaction changes longitudinally throughout an epidemic. The objective of this study was to track staff mood, job satisfaction, questions, and suggestions in a pediatric emergency department over 1 year during the coronavirus disease 2019 pandemic. We hypothesized that staff would experience heightened negative emotions earlier in the pandemic due to uncertainty around hospital protocols and the coronavirus disease 2019 disease process.

Methods: A voluntary, cross sectional descriptive study using an anonymous electronic survey assessed job satisfaction and mood over 4 domains (sad-happy, angry-peaceful, exhausted-energized, fearful-confident) in pediatric emergency department staff members. Responses were reported with Likert scales and free-text fields.

Results: Of 272 survey responses, most were from nurses and clinical technicians (N = 173, 63.6%), followed by physicians and physician assistants (N = 55, 20.2%) and nonmedical staff (N = 44, 16.2%). Department-wide values for the fearful-confident and angry-peaceful domains increased over time ($P = .001$ and $P = .01$, respectively), indicating an overall more confident and peaceful mood in department staff. Job satisfaction did not change over time or by staff role. Nurses and clinical technicians reported the most exhaustion ($P = .002$), and physicians and physician assistants reported the most fear ($P = .03$). We received a total of 71 comments, which we grouped into 4 themes: protocols and procedures, personnel,

Michelle N. Odonkor is a medical student, MS-4, Johns Hopkins University School of Medicine, Baltimore, MD. **ORCID identifier:** https://orcid.org/0000-0003-4510-1887; **Twitter:** @OdonkorMichelle.

Carol Vidal is an Assistant Professor of Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD. **ORCID identifier:** https://orcid.org/0000-0001-5104-2284; **Twitter:** @carol_psych.

Eva Seligman is an Assistant Professor of Pediatrics, in Pediatric Emergency Medicine and Sports Medicine, Johns Hopkins University School of Medicine, Baltimore, MD. **ORCID identifier:** https://orcid.org/0000-0002-6399-7034; **Twitter:** @PEMSportsDoc.

Theodore Kouo is a Pediatric Emergency Medicine physician practiciing at MultiCare Mary Bridge Children's Hospital, Tacoma, WA. **ORCID identifier:** https://orcid.org/0000-0002-9319-1832.

Amyna Husain is an Assistant Professor of Pediatrics, in Pediatric Emergency Medicine, Johns Hopkins University School of Medicine, Baltimore, MD. **ORCID identifier:** https://orcid.org/0000-0001-9123-8185.

For correspondence, write: Amyna Husain, DO, MPH, Department of Pediatrics, Johns Hopkins Hospital, 1800 Orleans St, Baltimore, MD 21287; E-mail: ahusain5@jhmi.edu

J Emerg Nurs 2024;50:117-125.
Available online 20 October 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.08.006

infection risk, and miscellaneous. Comments submitted early in the pandemic centered around intradepartmental protocols and procedures, with a peak in staffing comments 5 months into the pandemic.

Discussion: An electronic survey monitoring mood, job satisfaction, and concerns in a pediatric emergency department identified mood changes in staff over the course of the coronavirus disease 2019 pandemic.

Key words: Pediatric emergency medicine; Coronavirus disease 2019; Severe acute respiratory syndrome coronavirus 2; Morale; Job satisfaction

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has dramatically affected hospital operations in the United States, thereby adding strain and stress on health care workers. Hospitals enacted new protocols for infection control, including the use of personal protective equipment (PPE), testing, and social distancing to slow the spread of infection. Despite much uncertainty about the effects of the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on the pediatric population early in the pandemic, pediatric emergency departments (PEDs) also made service modifications to care for affected children.

As previously documented, epidemics place additional stress on health care workers, such as increased workload and concerns about infection, transmission to others, and social isolation.[1,2] Many health care workers report a sense of ethical obligation to provide care during an epidemic and acknowledge that their jobs inherently carry some occupational hazard.[3-5] Nevertheless, they still admit to experiencing fear for their own health and well-being, as well as the health and well-being of colleagues and family,[2] and many experience significant emotional distress as a result of their experiences during these epidemics.[6,7]

There are well-known psychological effects and long-term health consequences of epidemic-related stressors on hospital staff. For example, a cross-sectional study conducted in Beijing, China, assessed the psychological impact of the 2003 SARS outbreak on hospital staff, including doctors, nurses, and administrative staff. The study found that approximately 10% of those surveyed reported symptoms of post-traumatic stress disorder during the 3-year period after the epidemic. Of those individuals initially reporting post-traumatic stress disorder symptoms, approximately 40% still had symptoms 6 years after the epidemic.[6] Likewise, at a Toronto tertiary referral hospital during the SARS outbreak, 29% of employees (nurses, doctors, allied health care professionals, and nonpatient-care workers) who completed a standard survey received scores suggestive of emotional distress. When broken down by staff role, the highest proportion of workers who experienced emotional distress were nurses (45.1%), followed by allied health care professionals (33.3%), nonpatient-care staff (18.9%), and doctors (17.4%).[7]

Mental health needs typically follow the initial focus on infection control during infectious outbreaks.[8] Understanding staff's well-being and responding to their needs and concerns in real time could potentially help decrease the psychological effects of these outbreaks on hospital staff, yet few studies have examined health care workers' well-being in a PED during an infectious disease outbreak. Moreover, few studies have monitored staff mood and job satisfaction over the course of an epidemic, as changes in protocol, disease burden, and personal experiences accumulate.

This study sought to better understand PED health care workers' mood and job satisfaction over the course of the COVID-19 pandemic. The objectives of this study were (1) to examine trends of staff mood and job satisfaction in a PED and (2) to track thematic elements of staff questions and suggestions over the course of the first year of the COVID-19 pandemic.

We hypothesized that PED staff would experience heightened negative emotions in the earlier stages of the pandemic, when uncertainty about the course of the pandemic would be highest, and that they would experience more positive emotions as they became more familiar with new protocols and more knowledgeable about the SARS-CoV-2 disease course and treatment. We also hypothesized that trends in job satisfaction would differ by staff role.

Methods

SURVEY DESIGN

We created an electronic survey to be completed voluntarily and anonymously by PED staff members regarding their mood and job satisfaction during the COVID-19 pandemic. The survey assessed mood over 4 emotion domains (sad-happy, angry-peaceful, exhausted-energized, fearful-confident) and job satisfaction in PED staff from March 2020 to February 2021. Responses were reported with 5-point Likert scales for emotion domains

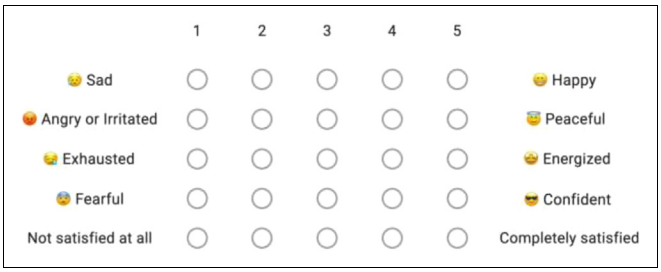


FIGURE 1

Likert scales for the 4 emotion domains and job satisfaction.

(eg, 1 = sad, 5 = happy) and job satisfaction (Figure 1). We also provided free-text fields where participants could write questions and suggestions. There was no limit on the number of times individuals could participate in the survey. Data on staff role within the PED were also collected with each submission.

POPULATION

The study population included both medical and nonmedical staff in a PED in a large academic setting that typically serves approximately 35,000 patients a year. Participants were recruited via department-wide emails sent approximately monthly over the course of the study period. Nonmedical staff in our study included child-life specialists, clinical customer service representatives, patient service coordinators, social workers, environmental services staff, and materials management staff. Medical staff included nurses, clinical technicians, physicians, and physician assistants.

DATA ANALYSIS

Quantitative analyses of the numerical mood data were conducted to identify trends over time and differences in trends by staff role. Wilcoxon rank-sum tests were performed to assess statistical significance. Analyses were performed using SAS 9.04.01M6 software. Analyses were performed using SAS 9.04.01M6 software (SAS Institute Inc).

Qualitative content analysis was conducted manually using the questions and suggestions submitted by the participants. Using published processes for qualitative content analysis,[9] authors M.O., A.H., and C.V. individually identified the meaning units represented within each comment and then discussed the results together until consensus was reached. The meaning units were coded inductively. Next, we classified the meaning units into categories, which were then grouped into themes. Given that some of the questions and suggestions submitted encompassed multiple categories, any given comment could have been classified under multiple themes.

Results

We received 272 survey responses from PED staff. Most responses were from nurses and clinical technicians (n = 173, 63.6%), followed by responses from providers (defined as physician attendings, fellows, residents, and physician assistants) (n = 55, 20.2%), with the least number of responses from nonmedical staff (n = 44, 16.2%) (Table 1). Nine survey responses contained solely free text (3.3%), without mood or job satisfaction data.

During the study period, the average daily census dropped to approximately 50% of the typical census, with a new daily average of 47 visits per day (range: 29-68 visits). In addition, the PED had to make several changes to staff roles, research operations, administrative tasks, and patient management. For example, the number

TABLE 1

Number of survey responses by staff role

Staff role	Number of responses (%)
Nurses and clinical technicians	173 (63.6)
Nurses	127 (46.7)
Charge nurses	32 (11.8)
Clinical technicians	8 (2.9)
Nurse managers	4 (1.5)
Unspecified	2 (0.7)
Providers	55 (20.2)
Physician attendings	31 (11.4)
Fellows	7 (2.6)
Residents	7 (2.6)
Physician assistants (PAs)	5 (1.8)
Unspecified	5 (1.8)
Nonmedical staff	44 (16.2)
Social workers	15 (5.5)
Patient service coordinators	11 (4.0)
Clinical customer service representatives	9 (3.3)
Child-life specialists	4 (1.5)
Materials management	3 (1.1)
Environmental services	2 (0.7)
Total	272

of staff who would respond to the immediate bedside of any severely injured or seriously ill child was reduced; additional roles to monitor compliance with PPE and physical distancing were established when caring for these children; the algorithm used to determine whom to test for SARS-CoV-2 infection was modified every 1 to 2 weeks to account for new information on the virus and its symptomatology; all in-person research was paused until a system for minimizing the number of in-person encounters was established (including remotely obtaining consent); administrators quickly converted meetings to remote video conferences; and educators altered how teaching was conducted. Each of these changes in routine practices was necessary to optimize the safety and efficacy of operations in the PED throughout the pandemic.

MORALE AND JOB SATISFACTION

On the 5-point Likert scales, higher values corresponded to more positive emotions or higher job satisfaction, and lower values corresponded to more negative responses. For example, for job satisfaction, a value of 1 indicated "not satisfied at all," and a value of 5 indicated "completed satisfied" (Figure 1). Department-wide values for job satisfaction (mean = 3.39, 95% CI = 3.26-3.52, P = .28), the sad-happy domain (mean = 3.56, 95% CI = 3.43-3.68, P = .31), and the exhausted-energized domain (mean = 2.87, 95% CI = 2.74-3.01, P = .18) remained constant over time, whereas values for the fearful-confident and angry-peaceful emotion domains changed significantly over time (P = .001 and P = .01, respectively) (Figure 2). Over the 12-month study period, the department-wide mean for the fearful-confident domain improved from 2.38 (95% CI = 1.71-3.06) to 4.17 (95% CI = 3.71-4.62), and the department-wide mean for the angry-peaceful domain improved from 2.38 (95% CI = 1.92-2.85) to 4.00 (95% CI = 3.53-4.47).

When stratifying mood by staff role, only the exhausted-energized and fearful-confident emotion domains varied significantly (P = .002 and P = .03, respectively) whereas job satisfaction (P = .96), the sad-happy domain (P = .09), and the angry-peaceful domain (P = .17) did not vary significantly. The exhausted-energized values trended more negatively than the other emotion domains. Nurses and clinical technicians reported the most exhaustion (mean = 2.69, 95% CI = 2.53-2.86) over the study period, whereas nonmedical staff reported the highest energy levels (mean = 3.35, 95% CI = 3.01-3.68). For the fearful-confident domain, providers reported the lowest

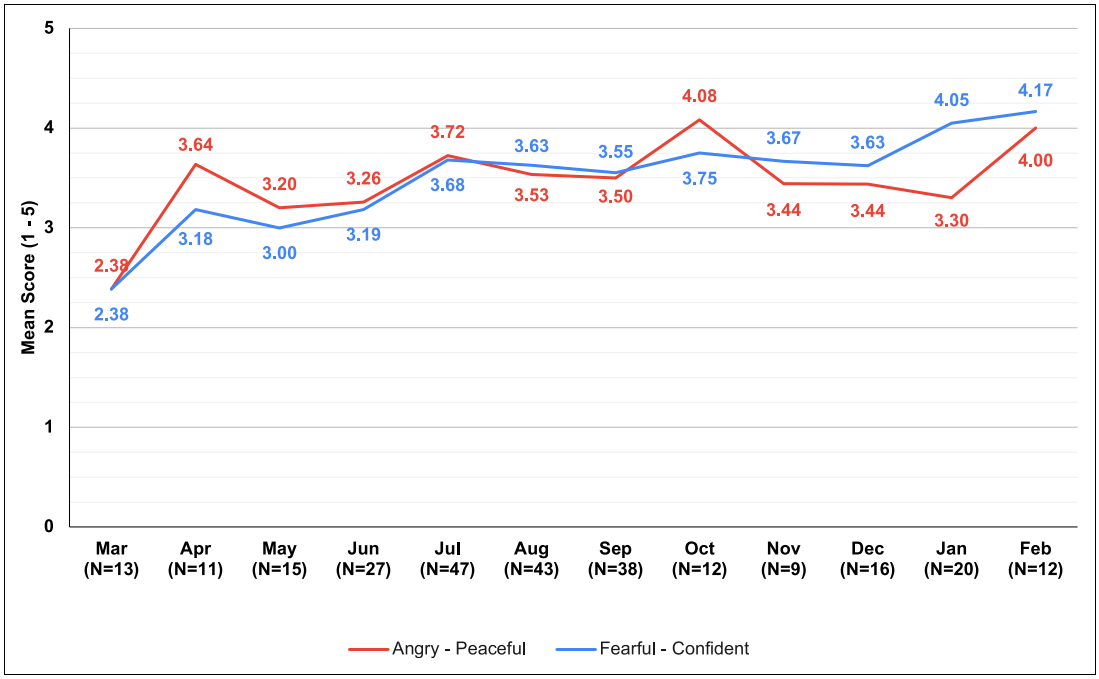


FIGURE 2

Department-wide moods, fearful-confident and angry-peaceful from March 2020 to February 2021.

TABLE 2
Sample questions and suggestions from pediatric ED staff grouped into themes

Themes	Categories	Sample comment
Protocols and procedures	Intradepartmental protocols and procedures	"What is our current testing capacity and when will we be testing all children?"
	Interdepartmental protocols and procedures	"What should we do if a consultant is refusing to see the patient?"
Personnel	Breaks	"Please bring back lunch RNs - they are great for morale and improve job satisfaction."
	Staffing concerns	"We need more support staff scheduled!"
	Compensation	"Hazard pay."
	Morale	"Morale is very poor amongst nursing staff on the unit."
Infection risk	Exposure	"We need to start using the tent again. It's ridiculous to have staff exposed to a room full of 4-5 PUIs."
	PPE	"What is the most effective way to clean n95 masks?"
Miscellaneous	Miscellaneous	"Parking ability in garage. Other parking may become unsafe if state of emergency is enacted and national guard come in heavier numbers while staff are on their shift."

PPE, personal protective equipment; PUI, person under investigation; RN, registered nurse.

confidence (mean = 3.38, 95% CI = 3.04-3.72) over the study period, and nonmedical staff reported the highest confidence (mean = 3.91, 95% CI = 3.57-4.24).

STAFF QUESTIONS AND SUGGESTIONS

PED staff submitted a total of 71 discrete comments (24 questions and 47 suggestions) over the course of the study period, with the number of submitted comments per month decreasing over time from 20 comments in March 2020 to 0 comments in February 2021. The authors categorized all questions and suggestions into 9 main categories: intradepartmental protocols (n = 28), staffing (n = 21), exposure (n = 13), PPE (n = 10), breaks during shifts (n = 11), morale (n = 9), interdepartmental protocols (n = 6), compensation (n = 6), and miscellaneous (n = 5) (Supplemental Table 1). The 9 categories were further grouped into 4 main themes: protocols and procedures, personnel, infection risk, and miscellaneous. Examples of submitted comments, organized by category and theme, may be seen in Table 2. Early in the pandemic, the most common questions and suggestions submitted pertained to intradepartmental protocols and procedures, peaking in the first 2 months. Another prominent thematic peak could be seen in July 2020, 5 months into the pandemic, when PED staff submitted a relatively large number of comments about staffing concerns (Figure 3).

Discussion

The main goals of this study were to trend PED staff mood and job satisfaction and to track thematic elements of staff questions and suggestions over the first year of the COVID-19 pandemic. Although we observed modest increases in scores in the fearful-confident and angry-peaceful emotion domains over time, suggesting more positive emotions after the initial months of the pandemic, job satisfaction scores remained constant. The lack of change in job satisfaction and lack of extreme fluctuations in mood may be partially explained by the fact that pediatric emergency care is a field inherently dedicated to emergencies, including epidemics. As first responders, ED staff may be more knowledgeable about currently occurring infectious outbreaks, as demonstrated by a study assessing knowledge

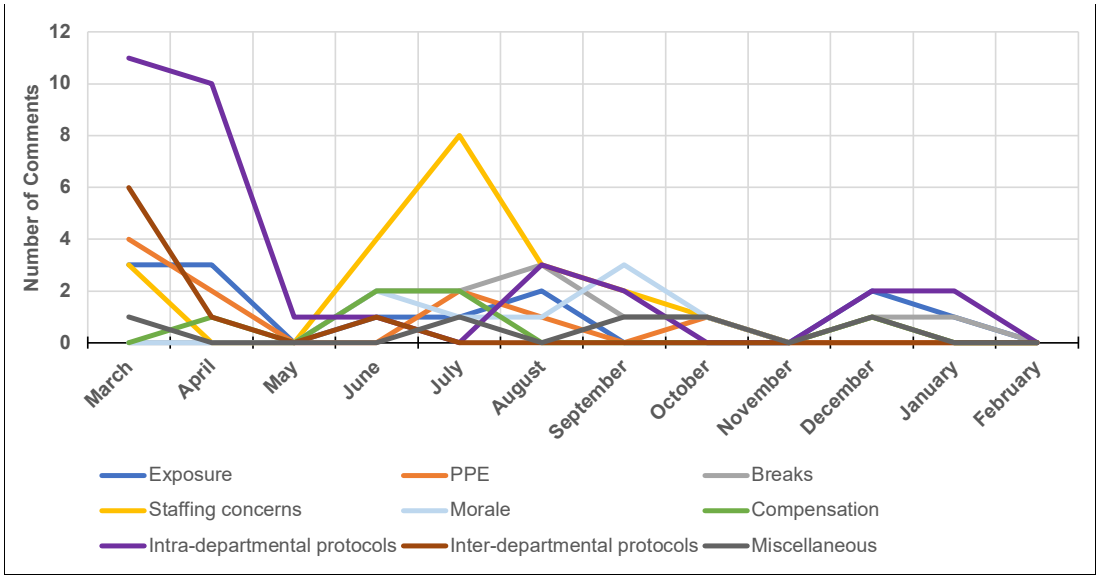


FIGURE 3

Number of questions and suggestions submitted by PED staff from March 2020 to February 2021, reported by category.

about Ebola virus disease epidemiology, transmission, and management among health care workers in a Houston quaternary-care children's hospital. The study found that emergency physicians scored higher than intensive care unit physicians in knowledge about Ebola virus transmission on a questionnaire most participants completed before the first diagnosed case of Ebola in the United States.[10] Increased knowledge may be associated with better physical and mental health-related quality of life, as demonstrated by a separate study conducted in Germany that found worse quality of life outcomes in health care workers with less knowledge about Ebola.[11] These studies suggest that being more knowledgeable about an infectious threat may protect against negative fluctuations in mood and mental health in response to an epidemic. Thus, knowledge and adaptability are potential explanations for the modest fluctuations in mood among our PED staff.

Two major themes encompassing the questions and suggestions submitted by our PED staff were concerns related to staffing and intradepartmental protocols and procedures. Many of the concerns conveyed by the nurses in our sample—about personal and familial safety, PPE availability and ease of use, and staffing changes—were like those reported by health care workers during the 2009 H1N1 influenza pandemic in Hong Kong, Singapore, Greece, and Australia and during the 2003 SARS pandemic in Singapore.[3,12-14] We also saw these themes change over time, with most comments referring to intradepartmental protocols in the first 2 months of the pandemic (March and April 2020), followed by a peak in comments about staffing needs at 5 months (July 2020), with a subsequent peak in comments related to morale and mental health at 7 months (September 2020). These patterns have also been observed during other epidemics, suggesting common trends in health care worker needs during epidemics, although interventions must still be tailored to specific circumstances. For example, a study during the Ebola outbreak of 2014 explored nurses' experiences before, during, and after working in an Ebola treatment center in Sierra Leone, finding changing needs over time. Before deployment, nurses needed practical, task-oriented training; during deployment, the major needs were around the importance of teamwork, positive group morale and dynamics, and a balanced workload; and after deployment, there was a need for "mental health and psychosocial support."[15] This pattern of needs was similar to the evolution of concerns we identified among our PED staff members.

In our study, we found that the exhausted-energized and fearful-confident emotion domains varied significantly by staff role, with nurses and clinical technicians reporting the most exhaustion and providers reporting the lowest confidence over the study period. Our data revealed that staff members may be differentially affected by infectious disease outbreaks and may perceive risk differently.

Similarly, Smith et al[1] investigated the experiences of a variety of United States health care workers with different staff roles who cared for Ebola patients during the 2014 outbreak. They found that hospital leadership, nurses, and physicians were more likely to use mental health support services than support staff and nonleadership personnel.[1] Thus, despite the general adaptability of PED staff, staff members may respond to emergencies differently based on their role, and monitoring trends and concerns in real time can help meet the variety of staff needs that may arise.

In our study, the exhausted-energized emotion domain trended more negatively than the other domains, suggesting that exhaustion was the foremost negative emotion felt throughout the department; however, PED leadership took steps during the study period to prevent low staff morale and improve mood. For example, nursing leadership held voluntary, weekly virtual meetings for staff to discuss concerns. Department leadership also intermittently provided food "morale boosters," such as pizza and candy, during the study period. Although we could not assess the impact of these interventions on improving staff morale, studies have demonstrated that a variety of interventions can work.

This electronic survey tool could potentially be used to monitor staff mood, help determine when interventions are necessary, and measure the success of interventions. Potential interventions include facilitating access to mental health services. For instance, a study evaluating the psychological effects of the 2009 H1N1 pandemic on health care workers in Kobe, Japan, found that health care workers with access to psychiatric services felt less psychological impact, showing the benefits of improved access to mental health services in health care workers exposed to epidemic-related stress. This study also found that increasing communication can be beneficial, given that health care workers who received less frequent information from their hospital about the pandemic felt less protected.[16] In our study, the PED sent weekly email updates to staff to improve communication about changes due to SARS-CoV-2 and to respond to questions and concerns brought up by staff members. During the H1N1 influenza pandemic of 2009, most staff members in an Australian intensive care unit were able to maintain a high level of morale, largely through mutual support and encouragement (including across staff roles), through deliberate measures taken by department leadership to show appreciation for staff members (eg, providing the staff with food and thank you messages), and by maintaining adequate staffing.[14] These studies demonstrate that there are ways to intervene to improve staff morale—namely, through appropriate psychological supports, deliberate displays of appreciation, frequent communication of team updates, and encouragement of a sense of unity among staff members, regardless of role.

Limitations

There were some limitations to our study. First, our response rate may not have been representative of the entire department. There was likely some selection bias present, given that we could not ensure that a representative sample responded while maintaining anonymity. Those most likely to respond could have been those with lower mood, more negative emotions, and/or lower job satisfaction. Given the nature of the reporting, which was voluntary and anonymous, we were unable to track individuals over time or distinguish between respondents who participated in the survey once and multiple times. One potential reason for the low number of responses from other PED staff may have been heightened mental preparedness and adaptability by virtue of working in a field more familiar with responding to local disasters and infectious outbreaks. Additional factors that may have contributed to the low number of responses include nonspecific challenges commonly encountered with surveys, such as lack of interest, lack of time, and survey fatigue. There was also a differential number of responses by staff role, as most responses came from nurses, and a minority came from nonmedical staff. The difference in number of responses between nonmedical staff and nurses may have been explained by the differences in proximity to direct patient interaction. Another study limitation was the lack of baseline data from the department before the COVID-19 pandemic. However, it has been well documented that the COVID-19 pandemic contributed to changes in census and staff redeployment, affecting staff's stress levels and mood.[17] Although changes in mood may also take place seasonally and may be caused by other systemic issues during nonpandemic periods, this study was specifically designed to focus on the overall trends in mood during the pandemic period. Furthermore, the questions and comments we received were very pandemic related, suggesting that the staff responses collected were indeed influenced by the pandemic. Nevertheless, larger and more targeted studies will be needed to assess various aspects of the pandemic period, what mechanisms were involved in staff's mood changes, and which of those mechanisms and trends in mood changes were specific to the pandemic. Finally, although we used single-item questions about job satisfaction and mood that have not been validated, the use of single-item questions to assess mood in repeated measures is common in the literature.[18] The benefits of our survey include its simplicity and effectiveness in settings with

high clinical demands, given that we were able to use it to identify notable findings among the staff members who responded within our department.

Implications for Emergency Nurses

Epidemics are known to place additional stress on health care workers. However, few studies have examined the morale of health care workers in PEDs over the course of an infectious outbreak. Our electronic survey allowed us to monitor PED staff mood and concerns over the course of the COVID-19 pandemic, and most of the responses came from nurses. Although overall job satisfaction remained constant, mood trends fluctuated throughout the pandemic, and many questions and concerns were raised around issues such as staffing and departmental protocols. It will be important to monitor the mood, job satisfaction, questions, and concerns of nurses and other emergency health care workers in real time over the course of infectious outbreaks and other acute health system stressors.

Conclusion

This electronic survey allowed us to successfully monitor staff mood and concerns within our PED over the course of the COVID-19 pandemic. We found that job satisfaction remained constant despite fluctuations in mood domains over the course of the pandemic. Although other studies have evaluated staff mood over the course of epidemics, few have included PED staff or tracked these end points longitudinally. To the best of our knowledge, no other study has published an assessment of the continued monitoring of frontline health care worker mood during a time of increased occupational stress. This electronic survey tool provided the ability to track staff mood and needs in real time, and such capabilities can help guide hospital and departmental leadership in implementing appropriate interventions for addressing staff concerns and optimizing hospital and departmental operations under circumstances that place additional strain on health care staff.

Author Disclosures

Conflicts of interest: none to report.

Dr Vidal currently receives research grant funding from the K12 American Academy of Child and Adolescent Psychiatry (AACAP) Physician Scientist Program in Substance Use Career Development Award (K12DA000357).

Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2023.08.006.

REFERENCES

1. Smith MW, Smith PW, Kratochvil CJ, Schwedhelm S. The psychosocial challenges of caring for patients with Ebola virus disease. *Health Secur*. 2017;15(1):104-109. https://doi.org/10.1089/hs.2016.0068
2. Khalid I, Khalid TJ, Qabajah MR, Barnard AG, Qushmaq IA. Healthcare workers emotions, perceived stressors and coping strategies during a MERS-CoV outbreak. *Clin Med Res*. 2016;14(1):7-14. https://doi.org/10.3121/cmr.2016.1303
3. Koh Y, Hegney D, Drury V. Nurses' perceptions of risk from emerging respiratory infectious diseases: a Singapore study. *Int J Nurs Pract*. 2012;18(2):195-204. https://doi.org/10.1111/j.1440-172X.2012.02018.x
4. Koh D, Lim MK, Chia SE, et al. Risk perception and impact of severe acute respiratory syndrome (SARS) on work and personal lives of healthcare workers in Singapore: what can we learn? *Med Care*. 2005;43(7):676-682. https://doi.org/10.1097/01.mlr.0000167181.36730.cc
5. Aldrees T, Al Ghobain M, Alenezi A, et al. Medical residents' attitudes and emotions related to Middle East respiratory syndrome in Saudi Arabia. A cross-sectional study. *Saudi Med J*. 2017;38(9):942-947. https://doi.org/10.15537/smj.2017.9.20626
6. Wu P, Fang Y, Guan Z, et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. *Can J Psychiatry*. 2009;54(5):302-311. https://doi.org/10.1177/070674370905400504
7. Nickell LA, Crighton EJ, Tracy CS, et al. Psychosocial effects of SARS on hospital staff: survey of a large tertiary care institution. *CMAJ*. 2004;170(5):793-798. https://doi.org/10.1503/cmaj.1031077
8. Kohli P, Virani SS. Surfing the waves of the COVID-19 pandemic as a cardiovascular clinician. *Circulation*. 2020;142(2):98-100. https://doi.org/10.1161/CIRCULATIONAHA.120.047901
9. Bengtsson M. How to plan and perform a qualitative study using content analysis. *NursingPlus Open*. 2016;2:8-14. https://doi.org/10.1016/j.npls.2016.01.001
10. Highsmith HY, Cruz AT, Guffey D, Minard CG, Starke JR. Ebola knowledge and attitudes among pediatric providers before the first diagnosed case in the United States. *Pediatr Infect Dis J*. 2015;34(8):901-903. https://doi.org/10.1097/INF.0000000000000755
11. Lehmann M, Bruenahl CA, Addo MM, et al. Acute Ebola virus disease patient treatment and health-related quality of life in health care professionals: a controlled study. *J Psychosom Res*. 2016;83:69-74. https://doi.org/10.1016/j.jpsychores.2015.09.002
12. Lam KK, Hung SY. Perceptions of emergency nurses during the human swine influenza outbreak: a qualitative study. *Int Emerg Nurs*. 2013;21(4):240-246. https://doi.org/10.1016/j.ienj.2012.08.008
13. Goulia P, Mantas C, Dimitroula D, Mantis D, Hyphantis T. General hospital staff worries, perceived sufficiency of information and associated psychological distress during the A/H1N1 influenza pandemic.

BMC Infect Dis. 2010;10:322. https://doi.org/10.1186/1471-2334-10-322

14. Corley A, Hammond NE, Fraser JF. The experiences of health care workers employed in an Australian intensive care unit during the H1N1 Influenza pandemic of 2009: a phenomenological study. *Int J Nurs Stud*. 2010;47(5):577-585. https://doi.org/10.1016/j.ijnurstu.2009.11.015
15. von Strauss E, Paillard-Borg S, Holmgren J, Saaristo P. Global nursing in an Ebola viral haemorrhagic fever outbreak: before, during and after deployment. *Glob Health Action*. 2017;10(1):1371427. https://doi.org/10.1080/16549716.2017.1371427
16. Matsuishi K, Kawazoe A, Imai H, et al. Psychological impact of the pandemic (H1N1) 2009 on general hospital workers in Kobe. *Psychiatry Clin Neurosci*. 2012;66(4):353-360. https://doi.org/10.1111/j.1440-1819.2012.02336.x
17. Office of the Assistant Secretary for Planning and Evaluation. *U.S. Department of Health and Human Services. "Impact of the COVID-19 pandemic on the hospital and outpatient clinician workforce: challenges and policy responses (issue brief No. HP-2022-13)." ASPE*. Accessed September 11, 2022 https://aspe.hhs.gov/reports/covid-19-health-care-workforce
18. Versluis A, Verkuil B, Lane RD, Hagemann D, Thayer JF, Brosschot JF. Ecological momentary assessment of emotional awareness: preliminary evaluation of psychometric properties. *Curr Psychol*. 2021;40(3):1402-1410. https://doi.org/10.1007/s12144-018-0074-6

Appendix

SUPPLEMENTAL TABLE 1
Categories and sub-categories identified in submitted questions and suggestions (*one question or suggestion could have been placed under multiple categories*)

1. **Intradepartmental protocols & procedures**	**32**
Testing protocol	9
Person under investigation (PUI) protocol	6
Precautions protocol	4
Clinical care protocol	3
Code protocol	2
Patient placement	2
Safety protocol	2
Cleaning protocol	1
Discharge protocol	1
Patient exposure	1
Reporting protocol	1
2. **Staffing concerns**	**22**
Need for additional staffing	11
Efficient use of staff	8
Adult ED providers rotating in PED	2
Staff training	1
3. **Exposure**	**13**
Staff exposure	12
Staff testing	1
4. **Breaks**	**11**
5. **PPE**	**10**
PPE availability	5
Cleaning PPE	1
Donning PPE	1
PPE discomfort	1
PPE donations	1
Wearing masks properly	1
6. **Morale**	9
7. **Interdepartmental protocols & procedures**	8
Interdepartmental policy differences	5
Transport protocol	2
Radiology protocol	1
8. **Compensation**	**6**
Paid leave	1
Hazard pay	3
Shift differential pay	2
9. **Miscellaneous**	**5**
Communication & teamwork	2
Parking	1
Physical environment	1
Survey concern	1

continued

SUPPLEMENTAL TABLE 1
Continued

* ED = emergency department
* PED = pediatric emergency department
* PPE = personal protective equipment

The Effect of Stress Ball Use Applied by Emergency Nurses During Swabbing Procedure on the Pain and Fear Levels of Children Admitted to the Pediatric Emergency Service With the Suspicion of COVID-19: A Randomized Controlled Trial

Authors: Çidem Çiçek, BSc, MSc and Aysel Topan, BSc, MSc, PhD, Ankara and Zonguldak, Turkey

Contribution to Emergency Nursing Practice

- Emergency departments are the units with the highest patient circulation and require fast and very careful behavior. Therefore, the use of nonpharmacologic methods by emergency nurses is quite limited.
- The use of simple nonpharmacologic methods such as the stress ball in invasive and diagnostic procedures in pediatric emergency departments will both reduce the pain and fear of children and ensure that diagnostic procedures are performed more quickly and carefully.
- Stress ball application has been found to be effective in reducing pain and fear levels in children aged 4 to 10 years.

Abstract

Introduction: This study aimed to determine the effect of stress ball use during the swabbing procedure on the pain and fear levels of children admitted to the pediatric emergency department with the suspicion of coronavirus disease 2019. Children with suspected coronavirus disease 2019 were recruited by convenience sampling from the pediatric emergency department of a university hospital in a city in Turkey.

Methods: This study used a random controlled experimental design and had a calculated sample size of 60. There were 30 participants in both the control and experimental groups. The stress ball intervention was applied to the children in the experimental group during the swabbing process, and no intervention was made to the children in the control group during the procedure. The pain and fear levels of the children in the control and experimental groups were measured during the swabbing process. "Descriptive Characteristics Form for Parents and Children," "Wong-Baker Faces Pain Rating Scale," "Children's Fear Scale," and "Stress Ball" were used in data collection. Chi-square, Mann-Whitney U, and Friedman tests were used in the analysis.

Results: Although there was no statistically significant difference between the groups in terms of pain and fear level mean scores before the procedure, a statistically significant difference was found between the groups during and after the procedures ($P < .05$).

Discussion: Giving a stress ball to children aged 4 to 10 years during the swabbing procedure was determined to reduce the pain and fear levels during and after the procedures. It is recommended that stress ball use be applied during the swabbing procedure for children.

Key words: COVID-19; Swabbing; Child; Nurses; Pain; Fear

Çidem Çiçek is a Nurse, Yildirim Beyazit University, Yenimahalle Training and Research Hospital, Ankara, Turkey. **ORCID identifier:** https://orcid.org/0000-0001-6825-0717.

Aysel Topan is a Nurse and an Associate Professor, Zonguldak Bülent Ecevit University, Faculty of Health Sciences, Department of Nursing, Kozlu, Zonguldak, Türkiye. **ORCID identifier:** https://orcid.org/0000-0002-5883-0045.

For correspondence, write: Aysel Topan, BSc, MSc, PhD, Zonguldak Bülent Ecevit University, Faculty of Health Sciences, Department of Nursing, Kozlu, Zonguldak, Türkiye; E-mail: aysel.topan@beun.edu.tr

J Emerg Nurs 2024;50:126-34.
Available online 19 October 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.09.011

Introduction

Emergency care involves rapid interventions by professional health care teams in cases of sudden trauma or illness, aiming to prevent further harm or death for patients.[1] Emergency departments are inherently high-flow units characterized by chaos, trauma, and demand for sharp decision making.[2] Children of all ages present to emergency departments for various reasons, requiring special attention due to their distinct needs compared with adults.[3]

During their everyday lives, children can unexpectedly find themselves unwell due to emerging illnesses. They might arrive in a hospital where unfamiliar and painful medical procedures are performed.[4] Particularly concerning for children, the coronavirus disease 2019 (COVID-19) pandemic that began on January 23, 2020, has affected pediatric emergency units.[5] This is because the transmission of the virus is accepted to occur through coughing, sneezing, respiratory droplets, or aerosols.[6] The primary method for detecting infected individuals is the polymerase chain reaction antigen test performed on nasopharyngeal and oropharyngeal swabs.[7] In children, diagnostic procedures predominantly involve nasal and pharyngeal swabs.[8] Given the potential for transmission from adults to children via contact and airborne routes, potentially traumatic swabbing procedures are performed for suspected infection or following any contact, which can lead to states such as pain, anxiety, fear, and distress.[9]

The American Academy of Pediatrics and the American Pain Society emphasize minimizing stress and pain even in minor procedures. Timely and effective pain management during painful interventions in children will enhance pain tolerance for subsequent procedures.[10] Nurses play an indispensable and crucial role in pain assessment and management.[11,12] A nurse's understanding of the patient and direct communication to learn about their previous experiences and coping mechanisms related to pain set them apart from other health care professionals in pain management.[12]

The American Pain Society has reported that mere assessment and alleviation of pain are insufficient for pediatric patients. During the diagnostic phase, the location, nature, intensity, expression, presence of pain-enhancing or mitigating factors, and results of pain scales should be evaluated.[13]

In pediatric diagnosis and treatment procedures, diverting attention is a frequently preferred method for controlling pain, fear, and anxiety.[14] The method used to divert attention should be attention grabbing and encompass multiple senses (visual, auditory, tactile, etc.). Evidence-based diversion methods for effective pain control encompass techniques such as showing cartoons, inflating balloons and making foam balloons, diverting attention through unrelated conversations by parents, playing music, and using virtual-reality goggles, kaleidoscopes, and attention-diverting cards. These methods can be applied briefly for acute and chronic pain.[15-17]

Studies involving children subjected to painful procedures reveal a paucity of research concerning stress ball application as a diversion method. However, it has been suggested that using a stress ball during procedures such as the swabbing process, vascular access, or catheter insertion, where a child may tense their body, could be a practical nonpharmacologic approach.[18] In this context, this study was conducted to determine the effect of stress ball use on the pain and fear levels of children aged 4 to 10 years who came to the pediatric emergency department of a university hospital during the swabbing process. Two hypotheses were proposed for this study:

Hypothesis 0: Applying a stress ball during the swabbing process has no impact on children's pain and fear levels.

Hypothesis 1: Applying a stress ball during the swabbing process affects children's pain and fear.

Methods

DESIGN

This study was conducted in a nonblinded randomized controlled trial style on children who were admitted to the pediatric emergency department of a university hospital between March 2021 and August 2021 with the suspicion of COVID-19 for the swabbing procedure.

SAMPLE

In the study, children with suspected COVID-19 infection were recruited by convenience sampling from the pediatric emergency department of a university hospital in a city in Turkey.

Sample selection criteria:

1. Children aged 4 to 10 years
2. Children of parents who are able to speak and communicate in Turkish
3. Children whose swab is performed only once
4. Children who do not have any psychological-neurologic diagnosis and a chronic disease
5. Children and children's family who both agree to participate in the study

In the calculation of the sample size, G-Power 3.1 analysis program was used.[19] The required minimum sample

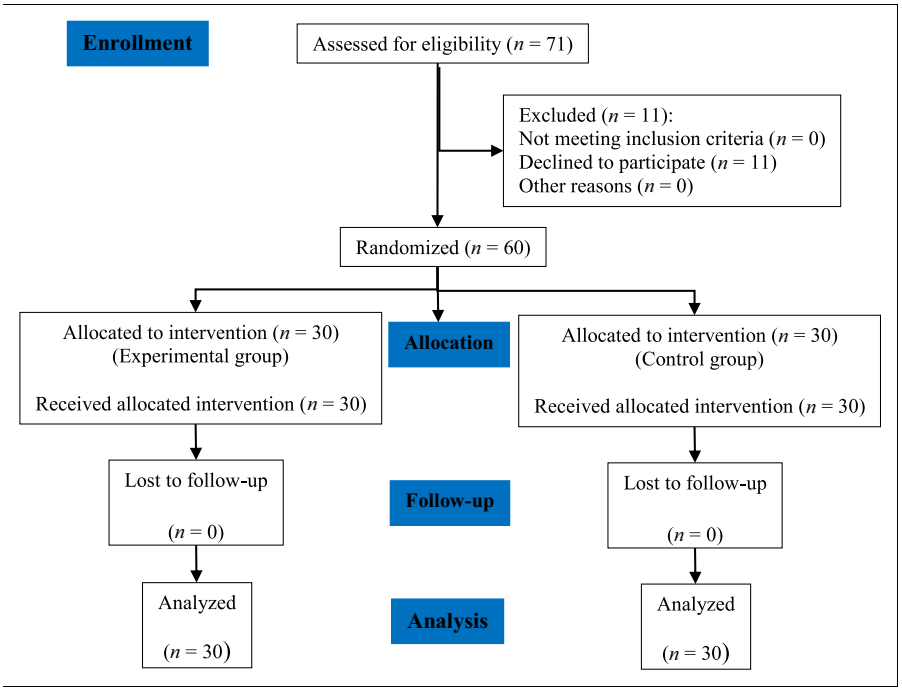


FIGURE
CONSORT diagram. CONSORT, Consolidated Standards of Reporting Trials.

size was determined to be 60. The power analysis was performed with 95% power, 5% type 1 error probability, and 0.8 effect size.

During the study period, 71 children applied to the emergency department for a swabbing procedure due to suspicion of COVID-19 infection. However, a sample size of 60 children who met the inclusion criteria were included in the study. Children who required a swabbing procedure were randomly divided into 2 groups (experimental group and control group). Numbers 1 to 60 were assigned to 2 groups using a computer program without duplication of numbers at randomization. The Consolidated Standards of Reporting Trials flowchart for the operating procedure is shown in Figure.[20]

INSTRUMENTS

Descriptive Characteristics Form for Parents and Children

The questionnaire used in the evaluation of sociodemographic characteristics was prepared by the researcher. The form consisted of questions such as age of parents, educational status of parents, profession of parents, family type, gender, child's age, child's previous experience of pain, COVID-19 pandemic effects, and swabbing procedure.

Wong-Baker Faces Pain Rating Scale (WBS)

WBS was developed by Donna Wong and Connie Morain Baker (1981) and is used in the diagnosis of pain in children between the ages of 3 and 18 years. Depictions of faces and numbers are on the scale. The pain is rated between "0" and "10" points. The level of pain that is felt is described by gradually increasing degrees of facial expression.[21] This scale's Cronbach's alpha was calculated as 0.892 in our study.

Children's Fear Scale (CFS)

CFS, developed by McMurtry et al,[22] aims to assess children's level of fear. It was based on the Faces Anxiety Scale developed by McKinley et al[23] to assess the fear or anxiety of adult patients being treated in the intensive care unit. In the scale, consisting of 5 pictures, lines and faces are used to assess the level of fear with the numbers between "0" and "4." The first picture shows a score of "0," which means "No fear is felt," whereas the last picture shows a score of "4," which means "The most severe fear." The level of fear is directly proportional to the score obtained from the scale. An increase in the score indicates that the level of fear is rising.[22] The Turkish validity and reliability of the

TABLE 1
Descriptive characteristics of children

Characteristics	Experimental group		Control group		χ^2	*P* value
	n	%	n	%		
Gender						
Man	15	50.00	16	53.30	0.067*	.796
Woman	15	50.00	14	46.70		
Child ranking						
First child	12	40.00	13	43.30	0.183*	.913
Second child	14	46.70	14	46.70		
Third child or over	4	13.30	3	10.00		
Age of child (y)						
4	4	13.30	5	16.70	1.356*	.969
5	2	6.70	3	10.00		
6	5	16.70	5	16.70		
7	4	13.30	5	16.70		
8	7	23.30	5	16.70		
9	2	6.70	3	10.00		
10	6	20.00	4	13.3		

* Chi-square test.

scale was performed by Gerçeker et al.[24] This scale's Cronbach's alpha was calculated as 0.907 in our study.

IMPLEMENTATION OF THE STUDY

A single-use stress ball was used during the intervention to prevent the risk of contamination by contact and was presented as a gift to the child at the end of the procedure. During the swabbing, attention was paid to the use of masks, gloves, glasses, and appropriate protective clothing.

Implementation of Swabbing Procedure

The first area for the swabbing procedure in children is the oropharynx. By using a tongue depressor, the posterior wall of the oropharynx is visualized, and a swab is gently rolled along the posterior pharyngeal wall without touching the tonsils. Subsequently, the swabbing procedure is performed from the nasopharynx using the swab previously used for oropharyngeal sampling. The test swab, used for polymerase chain reaction testing, is inserted through the designated nostril, parallel to the palate, and gently rolled along the inferior turbinate, collecting secretion samples. Although children in the control group only underwent specified diagnostic test procedures, those in the intervention group were given stress balls to use during these procedures.

Before the procedure, "Introductory Characteristics Form for Parents and Children," "WBS," and "CFS" were administered to the children both in the experimental and control groups. The researcher evaluated the child's facial expressions using "WBS" and "CFS" after obtaining necessary information about the child from their parents through the "Introductory Characteristics Form for Parents and Children."

The children in the experimental group were given a stress ball immediately after starting the swabbing procedure. During the procedure, the children were told to tighten and loosen the stress ball in their palms. WBS and CFS were applied to the children in the experimental group after swabbing. No application of stress ball or any other intervention was applied to the children in the control group during the swabbing procedure. The children in the control group were administered WBS and CFS during the swabbing procedure.

After the procedure, "WBS" and "CFS" were applied to the children both in the experimental and control groups 5 minutes after the swabbing procedure (Figure).

ETHICAL CONSIDERATIONS

Verbal consent from the children and written consent from their parents were obtained before the data collection process. The ethics committee permission (2020-3-18) was obtained from the Clinical Research Ethics

TABLE 2
Distribution of results regarding the general effect of COVID-19 virus on children in the experimental and control groups

Characteristics	Experimental group		Control group		χ^2	*P* value
	n	%	n	%		
The anxiety state of child						
Fear of losing family members and relatives	5	16.7	6	20	1.443	.837
Restriction of communication with friends and external environment	4	13.3	7	23.3		
Disruption of school life	4	13.3	3	10		
Being at home constantly	13	43.3	10	33.3		
No anxiety	4	13.3	4	13.3		
Need for frequent hand washing						
No	17	56.7	21	70	1.148	.284
Yes	13	43.3	9	30		
Increased consumption of fast food						
No	12	40	19	63.3	3.27	.071
Yes	18	60	11	36.7		
Reluctance to study						
No	21	70	22	73.3	0.082	.774
Yes	9	30	8	26.7		
Late sleep time						
No	18	60	15	50	0.606	.436
Yes	12	40	15	50		
Increased time the child spent on television, computer, and technology						
No	12	40	6	20	2.857	.091
Yes	18	60	24	80		
Other						
No	28	93.3	30	100	2.069	.15
Yes	2	6.7	0	0		

COVID-19, coronavirus disease 2019.

Committee of Ankara Yıldırım Beyazıt University. The necessary institutional permission was obtained from the institution where the research was conducted (E-33373887-771).

EVALUATION OF DATA

IBM SPSS Statistics version 22.0 (IBM) was used in the analysis of the data. Frequency distributions for categorical variables and descriptive statistics for numerical variables were used in the study. Chi-square test was used to examine the relationship between categorical variables. The compatibility of continuous data with the normal distribution was examined using the Kolmogorov-Smirnov test. Parameters that did not show normal distribution were expressed as median (min and max) and categorical variables as numbers (n) and percentage (%). The Mann-Whitney U test in the comparison of the data with 2 groups that did not show normal distribution and the Friedman test statistic in the comparison of the means were used in the study. The results were evaluated at 95% range and 0.05 significance level.

TABLE 3
Comparison of pain scores of the experimental and control groups before, during, and after the procedures

Groups	Before the procedure	During the procedure	After the procedure	Friedman test	*P* value
	Median (min-max)	Median (min-max)	Median (min-max)		
Experimental group	2 (0-4)	3 (2-5)	1 (0-3)	36.69	.000*
Control group	2 (0-4)	5 (2-5)	3 (0-5)	46.889	.000*
Mann-Whitney U test	447.5	101.5	91.5		
P value	.969†	.000†	.000†		

* Friedman test.
† Mann-Whitney U test.

Results

The results regarding the descriptive characteristics of children in the experimental and control groups were presented in Table 1. No significant difference was found between the children in the experimental ($n = 30$) and control ($n = 30$) groups by age ($P = .969$), gender ($P = .796$), and child ranking ($P = .913$). No significant difference was found between the 2 groups with and without stress ball use in terms of fear of losing family and relatives, restriction of communication with friends, disruption of school life, state of being at home constantly, need for frequent hand washing, increased consumption of junk food, reluctance to study, late sleep time, increased time the child spent on television, computer, and technology ($P > .05$) (Table 2).

When the pain scores of the children in the experimental and control groups were compared before, during, and after the procedures, no statistically significant difference was found between the groups before the procedure ($U = 447.500$; $P > .05$). However, there was a statistically significant difference in the pain scores of children in the experimental and control groups during and after the procedures ($U_{Initiative} = 101.500$; $P < .05$; $U_{postinitiative} = 91.500$; $P < .05$). The pain levels of children in the experimental group with stress ball use during swabbing were found to be lower during and after the procedures than those in the control group (Table 3).

In the study, there was a statistically significant difference in terms of the fear scores of children in the experimental and control groups before, during, and after the procedures ($U_{pre\text{-}initiative} = 320.500$; $P < .05$; $U_{initiative} = 70.500$; $P < .05$; $U_{postinitiative} = 78.500$; $P < .05$). It was determined that the fear scores of children in the experimental group with stress ball use during swabbing were lower during and after the procedure than those in the control (Table 4).

Discussion

There were no differences of descriptive characteristics between the children in the control and experimental groups. The homogeneity of these 2 groups reduces bias and strengthens the reliability of the results. In this study,

TABLE 4
Comparison of the fear scores of children in the experimental and control groups before, during, and after the procedures

Groups	Before the procedure	During procedure	After the procedure	Friedman test	*P* value
	Median (min-max)	Median (min-max)	Median (min-max)		
Experimental group	3 (0-4)	2 (1-4)	0 (0-2)	40.539	.000*
Control group	3 (0-4)	4 (2-4)	2 (0-3)	43.143	.000*
Mann-Whitney U test	320.5	70	78.5		
P value	.044†	.000†	.000†		

* Friedman test.
† Mann-Whitney U test.

attention was paid to the homogeneity of the variables that might affect the results of the research. Differences of descriptive features of the children such as age and gender in both groups were not significant ($P > .05$). The fact that the variables are similar between the groups is important to indicate the effect of stress ball use on the pain and fear levels that children experience during the swabbing procedure.

Pain is 1 of the most common causes of fear and anxiety in children patients.[25] This situation is more complicated, especially if the child has painful experiences in previous invasive procedures. In our study, when the experimental group with stress ball use and the control group with no stress ball use were compared, there was not a statistically significant difference between the groups in terms of pain levels before the procedure, but a statistically significant difference was found between the groups during and after the procedures ($U_{Initiative} = 101.500$; $P = .000$; $U_{postinitiative} = 91.500$; $P = .000$). The pain levels of the children in the experimental group with stress ball use for the duration of swabbing were lower during and after the procedures than in the children of the control group. These findings confirm the H1 hypothesis that "The use of stress ball during the swabbing procedure reduces the pain level of children."

There are many pharmacologic and nonpharmacologic methods used to reduce the pain that may occur during medical interventions in children. The use of nonpharmacologic methods by nurses has increased in recent years.[15] Many methods have been tried in invasive procedures such as the use of virtual reality glasses, balloon inflation, cold or hot applications, distraction cards, watching cartoons, and puppet shows.[14] Studies have shown that many nonpharmacologic methods have been tried in various invasive procedures in children and are effective in reducing procedural pain and anxiety. In a randomized controlled study, Gupta et al[26] applied balloon inflation to a group of children and a rubber ball to a group of children for an invasive procedure, but did not apply any intervention to the control group. They stated in their study that the pain levels of groups with balloon inflation and rubber ball were significantly lower than those in the control group.[26] Mutlu and Balcı[27] reported in the study they conducted with the children during venous blood collection that the balloon inflation was effective in reducing pain. Canbulat et al[28] conducted a study with children between the ages of 7 and 11 years, and they found that kaleidoscope use and distracting attention with colored cards during painful invasive procedures were effective methods for reducing procedural induced pain in children. In a study conducted by Piskorz and Czub,[29] it was found that the use of virtual reality glasses during the blood collection procedure in children aged 7 to 17 years was an effective method for reducing the level of pain. When the literature is examined, it is obvious that distraction techniques, which are nonpharmacologic, are effective in reducing procedural induced pain in children.

The COVID-19 virus and the swabbing applied during diagnostic procedures are traumatic situations for children. Sometimes parents delay or reject the swabbing procedure due to the pain that the child may experience.

Sadeghi et al[30] reported in their study that the ball squeezing technique was a distraction technique to reduce the pain of children during intravenous catheter insertion. In a similar randomized controlled study, it was determined that the use of distraction cards, balloon inflation, and ball squeezing methods reduced pain and anxiety levels in children.[31] The results of this study are similar to the findings of other studies in the literature. In this study, a stress ball was used as a distraction method for children during the nasal-oropharyngeal swabbing procedure in the pandemic period, and a study similar to ours has not been found in the literature. In line with this information, it can be said that the results of the study may significantly contribute to the literature.

Children are often fearful of health care procedures, and the COVID-19 pandemic may exacerbate fear in this population. This is because children have had to face radical changes in their lifestyles during the pandemic, such as interruption of education, fear of becoming infected or spreading the virus to vulnerable family members, boredom, frustration, lack of face-to-face contact with peers and teachers, lack of personal space at home, and lack of education.[32] Diagnostic practices and interventions caused by the COVID-19 pandemic can be traumatic for children. The swabbing procedure applied during diagnostic interventions is a traumatic situation for children. The child experiences stress and fear due to the uncertainty of the procedure to be performed on them. Studies have shown that children's medical procedures such as invasive interventions also affect the future life of the child.[33] The more negative experiences children and their parents have, the greater the risk of developmental delays and health problems such as cognitive impairments, substance abuse, depression, and noncommunicable diseases.[34]

In our study, it was determined that the fear scores of children in the experimental group with stress ball use during swabbing were lower during and after the procedures than those in the control group without stress ball or any other intervention. These findings confirm the H2 hypothesis that "Children who are given a stress ball during the swabbing procedure have low levels of fear." When the literature was examined, previous medical procedure experience

was stated as the biggest factor in children's fear of medical procedure. In studies conducted to eliminate the fear of medical procedures, it was reported that nonpharmacologic nursing practices applied to children during interventions reduced the fear of medical procedures.[15,26-28] Therefore, pediatric nurses, who are in contact with children most at hospitals, have important responsibilities in reducing the fear of children during invasive interventions. In this study, the swabbing procedure was an important factor that led to fear in children.

Our study found similar results as other studies that examined the level of fear in children using the distraction method. Barreiros et al[35] reported in a systematic review study that "audio-auditory attention methods" applied to children aged 4 to 10 years reduced their fear and anxiety levels in dental treatment. In a study by Topan and Öztürk Şahin,[36] a puppet show was held once a week for 4 weeks to reduce the fear of primary school children during procedures that required medical intervention, and it was stated that this activity was effective in reducing children's fear of medical procedures. When comparing the results of this study with other studies in the literature, it was concluded that distraction techniques such as stress ball use were effective in reducing children's fear related to medical procedures and this result was found to be similar to other studies. Although this study was appropriately powered, it is a small single-site study and that affects the external validity of findings.

Limitations

The study is limited to the pediatric emergency department of a state hospital in a province. The limitations of the study consist of the criteria for inclusion and exclusion criteria. Children younger than 4 years and older than 10 years, with chronic diseases, disabilities, and psychological and neurologic disorders, and children who could not be swabbed at 1 time were not included in the study. The psychological effects of COVID-19 virus on parents and children were the difficult aspect of the study.

Implications for Emergency Nurses

The use of nonpharmacologic methods is very important in the management of pain and fear in children. These methods applied by emergency nurses in pediatric emergency services are quite limited although their use is very important. Especially given that emergency services are units that need to be treated quickly and very carefully, the method should be simple and fast. Therefore, the use of the stress ball, which is 1 of the simple and inexpensive nonpharmacologic methods, in invasive interventions such as oropharyngeal and nasal swabbing will both reduce the pain and fear of children and ensure that diagnostic procedures are performed more quickly and carefully.

Conclusion

In this study, stress ball use during swabbing was effective in reducing the pain and fear caused by the procedure. It is very difficult to perform the swabbing procedure in pediatric emergency services due to the effects of pain, fear, and trauma in children. For this reason, stress ball use, which is 1 of the nonpharmacologic distraction methods, in invasive procedures should be considered for use in invasive procedures such as oropharyngeal and nasal swabbing.

Author Disclosures

Conflicts of interest: none to report.

REFERENCES

1. Haghparast-Bidgoli H, Hasselberg M, Khankeh H, Khorasani-Zavareh D, Johansson E. Barriers and facilitators to provide effective pre-hospital trauma care for road traffic injury victims in Iran: a grounded theory approach. *BMC Emerg Med*. 2010;10(1):20. https://doi.org/10.1186/1471-227X-10-20
2. Wolf LA, Perhats C, Delao AM, Moon MD, Clark PR, Zavotsky KE. "It's a Burden You Carry": Describing Moral Distress in Emergency Nursing. *J Emerg Nurs*. 2016;42(1):37-46. https://doi.org/10.1016/j.jen.2015.08.008
3. Yıldız S. Development of paediatric emergency care system in the world and in our country. In: Kuğuoğlu S, Sönmez Düzkaya D, eds. *Çocuk Acil Hemşireliği*. Nobel Tıp Kitabevleri; 2021:4-9.
4. Gülseren Eren S. *Comparison of the Anxiety in Children and Their Parents in Cases of Acute and Chronic Illnesses*. Karabük Üniversitesi; 2021.
5. Yalçın H, Dai H, Erkoç E. Parents' emotional states at virus outbreak and their effects on children. *Eurasian J Soc Econ Res*. 2020;7(9):128-142.
6. Rothe C, Schunk M, Sothmann P, et al. Transmission of 2019-nCoV infection from an asymptomatic contact in Germany. *N Engl J Med*. 2020;382(10):970-971. https://doi.org/10.1056/NEJMc2001468
7. Bayır Ö, Toptaş G, Öner MC, Tatar EÇ, Saylam G, Korkmaz MH. Sample collection areas and Orofharyngeal-nasopharyngeal swab procedure for COVID-19 diagnosis. *J Ear Nose Throat Head Neck Surg*. 2020;28(2):31-39.
8. Lin C, Ye R, Xia Y. A meta-analysis to evaluate the effectiveness of real-time PCR for diagnosing novel coronavirus infections. *Genet Mol Res*. 2015;14(4):15634-15641. https://doi.org/10.4238/2015.december.1.15

9. Liu Y, Ning Z, Chen Y, et al. Aerodynamic analysis of SARS-CoV-2 in two Wuhan hospitals. *Nature*. 2020;582(7813):557-560. https://doi.org/10.1038/s41586-020-2271-3
10. Aslan FE. Pain in trauma. In: Şelimen D, ed. *Emergency Care*. Yüce Publications; 2004:390 [in Turkish].
11. Czarnecki ML, Simon K, Thompson JJ, et al. Barriers to pediatric pain management: a nursing perspective. *Pain Manag Nurs*. 2011;12(3):154-162. https://doi.org/10.1016/j.pmn.2010.07.001
12. Çelik S, Baş BK, Korkmaz ZN, Karaşahin H, Yıldırım S. Determination of knowledge and behaviour of nurses about pain management. *Bakırköy Tıp Derg*. 2018;14(1):17-23.
13. Özveren H, Faydalı S, Gülnar E, Dokuz HF. Attitude and applications of nurses to evaluate pain. *J Contemp Med*. 2018;8(1):60-66.
14. Göksu F. *The Effect of Virtual Reality Headset That Is Used During Blood Withdrawal on the Pain Felt by the Children*. Bülent Ecevit Üniversitesi; 2017.
15. İnal S, Canbulat N. Using of distraction methods on procedural pain management of pediatric patients. *J Health Sci Prof*. 2015;2(3):372-378. https://doi.org/10.17681/hsp.47420
16. Kozier B, Berman A, Snyder S, Erb G. *Fundamentals of Nursing Concepts, Process and Practice*. 8th ed. Prentice Hall; 2008.
17. Rezai MS, Goudarzian AH, Jafari-Koulaee A, Bagheri-Nesami M. The effect of distraction techniques on the pain of venipuncture in children: a systematic review. *J Pediatr Rev*. 2017;5(1):26-37. https://doi.org/10.17795/jpr-9459
18. Elçigil A. Factors affecting pediatric Nurse's decision-making in Child's pain management. *Journal of Dokuz Eylul University School of Nursing*. 2011;4(1):48-53.
19. Faul F, Erdfelder E, Lang A-G, Buchner A. G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods*. 2007;39:175-191.
20. Schulz KF, Altman DG, Moher D, CONSORT. CONSORT 2010 statement: updated guidelines for reporting parallel group randomized trials. *Ann Intern Med*. 2010;152(11):726-732. https://doi.org/10.1136/bmj.c332
21. Güdücü Tüfekci F, Erci B. The effect of parents' presence and some factors on children's pain tolerance during painful procedures. *Journal of Atatürk University School of Nursing*. 2007;10(2):30-40.
22. McMurtry CM, Noel M, Chambers CT, McGrath PJ. Children's fear during procedural pain: preliminary investigation of the children's fear scale. *Health Psychol*. 2011;30(6):780-788. https://doi.org/10.1037/a0024817
23. McKinley S, Coote K, Stein-Parbury J. Development and testing of a Faces Scale for the assessment of anxiety in critically ill patients. *J Adv Nurs*. 2003;41(1):73-79. https://doi.org/10.1046/j.1365-2648.2003.02508.x
24. Gerçeker GÖ, Dijle A, Özdemir Z, Bektaş M. Gaining of children's state anxiety and children's fear scale to Turkish language. *E-Journal of Dokuz Eylul University Nursing Faculty*. 2018;11(1):9-13.
25. Özveren H. Ağrı kontrolünde farmakolojik olmayan yöntemler. *Journal of Hacettepe University Faculty of Nursing*. 2011;18(1):83-92.
26. Gupta D, Agarwal A, Dhiraaj S, et al. An evaluation of efficacy of balloon inflation on venous cannulation pain in children: a prospective, randomized, controlled study. *Anesth Analg*. 2006;102(5):1372-1375. https://doi.org/10.1213/01.ane.0000205741.82299.d6
27. Mutlu B, Balcı S. Effects of balloon inflation and cough trick methods on easing pain in children during the drawing of venous blood samples: a randomized controlled trial. *J Spec Pediatr Nurs*. 2015;20(3):178-186. https://doi.org/10.1111/jspn.12112
28. Canbulat N, İnal S, Sönmezer H. Efficacy of distraction methods on procedural pain and anxiety by applying distraction cards and kaleidoscope in children. *Asian Nurs Res*. 2014;8(1):23-28. https://doi.org/10.1016/j.anr.2013.12.001
29. Piskorz J, Czub M. Effectiveness of a virtual reality intervention to minimize pediatric stress and pain intensity during venipuncture. *J Spec Pediatr Nurs*. 2018;23(1), e12201. https://doi.org/10.1111/jspn.12201
30. Sadeghi T, Mohammadi N, Shamshiri M, Bagherzadeh R, Hossinkhani N. Effect of distraction on children's pain during intravenous catheter insertion. *J Spec Pediatr Nurs*. 2013;18(2):109-114. https://doi.org/10.1111/jspn.12018
31. Aydin D, Şahiner NC, Çiftçi EK. Comparison of the effectiveness of three different methods in decreasing pain during venipuncture in children: ball squeezing, balloon inflating and distraction cards. *J Clin Nurs*. 2016;25(15-16):2328-2335. https://doi.org/10.1111/jocn.13321
32. Mohler-Kuo M, Dzemaili S, Foster S, Werlen L, Walitza S. Stress and mental health among children/adolescents, their parents, and young adults during the first COVID-19 lockdown in Switzerland. *Int J Environ Res Public Health*. 2021;18(9):4668. https://doi.org/10.3390/ijerph18094668
33. Birnie KA, Noel M, Parker JA, et al. Systematic review and meta-analysis of distraction and hypnosis for needle-related pain and distress in children and adolescents. *J Pediatr Psychol*. 2014;39(8):783-808. https://doi.org/10.1093/jpepsy/jsu029
34. Araújo LAd, Veloso CF, Souza MdC, Azevedo JMCd, Tarro G. The potential impact of the COVID-19 pandemic on child growth and development: a systematic review. *J Pediatr*. 2021;97:369-377. https://doi.org/10.1016/j.jped.2020.08.008
35. Barreiros D, de Oliveira DSB, de Queiroz AM, da Silva RAB, de Paula-Silva FWG, Küchler EC. Audiovisual distraction methods for anxiety in children during dental treatment: a systematic review and meta-analysis. *J Indian Soc Pedod Prev Dent*. 2018;36(1):2-8. https://doi.org/10.4103/jisppd.jisppd_188_16
36. Topan A, Öztürk Şahin Ö. Evaluation of efficiency of puppet show in decreasing fears of school-age children against medical procedures in Zonguldak (Turkey). *J Pak Med Assoc*. 2019;69(6):817-822.

Testing Interventions to Address Bias About Patients with Opioid Use Disorder in the Emergency Department

Authors: Kylie Yearwood, PhD, RN, CNE, CEN, CHSE, Elyssa Wood, PhD, MPH, BSN, FAEN, Lindsay Schoem, BSN, RN, TCRN, Diane Swengros, MSN, RN, BC-NPD, CHTP/I, Danielle Desilvis-Sapsford, MEd, MS, RN, BSN, CEN, Kenya Jenkins, DNP, RN, April Brown, DNP, NE-BC, RN-BC, AVP, Debra Stanger, MSN, RN, NEA-BC, NPD-BC, Lauren Schwindt, BSN, RN, CEN, Amanda Golino, DNP, APRN, CCRN, CCNS, PMGT-BC, TCRN, Shannon Lyons, BSN, RN, and Audra L. Gollenberg, PhD, Falls Church, Leesburg, Fairfax, Lorton, Alexandria, and Winchester, VA

Contribution to Emergency Nursing Practice

- To provide optimal care for patients diagnosed as having opioid use disorder (OUD), it is critical for nurses to reflect on how bias and stigma affect care in the emergency department, yet there is limited evidence about the effectiveness of educational interventions to address this aspect of professional development.
- Study results indicate that providing an educational experience that includes simulation can significantly change nurse perceptions about patients with OUD and enhance nurse self-efficacy in working with them.
- Providing education using simulation for emergency nurses can affect their perceptions concerning patients diagnosed as having OUD to foster a destigmatized environment to improve patient outcomes.

Abstract

Introduction: Reducing nurse bias about patients with opioid use disorder in the emergency department is critical for providing nonjudgmental care, enhancing patient outcomes, supporting effective communication, and promoting a holistic approach to care. Emergency nurses can make a positive impact on the lives of individuals diagnosed as having opioid use disorder by providing care that is free from stigma and discrimination.

Methods: The study used an observational, pretest-posttest design to compare educational sessions addressing bias and stigma toward patients with opioid use disorder. The study population consisted of emergency nurses who self-selected into a virtual learning experience consisting of e-modules or simulation-based experience consisting of simulation-based experience consisting of simulation, discussion, and a speaker.

Kylie Yearwood is an ENA Member, Northern Virginia Chapter, and Nurse Education Coordinator, Inova Health System Center for Advanced Medical Simulation (ICAMS), Falls Church, VA.

Elyssa Wood is an ENA Member, Northern Virginia Chapter, and Nursing Research Scientist, Inova Health System, Falls Church, VA.

Lindsay Schoem is an ENA Member, Northern Virginia Chapter, and Nurse Specialist, Inova Loudoun Hospital Emergency Department, Leesburg, VA.

Diane Swengros is Education Coordinator, Inova Health System, Nursing Professional Development, Falls Church, VA.

Danielle Desilvis-Sapsford is Clinical Nurse, Inova Fair Oaks Emergency Department, Fairfax, VA.

Kenya Jenkins is Coordinator-Emergency Services, Inova Health System, Nursing Professional Development, Falls Church, VA.

April Brown is an ENA Member, Northern Virginia Chapter, and Campus and Clinical Operations, Emergency, Ancillary and Support Services, Inova Loudoun Hospital, Leesburg, VA.

Debra Stanger is Director Nursing Outcomes/MPD, Inova Loudoun Hospital, Leesburg, VA.

Lauren Schwindt is an ENA Member, Northern Virginia Chapter, and Unit Supervisor, Inova Lorton Healthplex Emergency Department, Lorton, VA.

Amanda Golino is Clinical Nurse Specialist, Critical Care, Inova Loudoun Hospital, Leesburg, VA.

Shannon Lyons is Nurse, Inova Alexandria Emergency Department, Alexandria, VA.

Audra L. Gollenberg is Professor of Public Health College of Arts and Sciences, Shenandoah University, Winchester, VA.

For correspondence, write: Elyssa Wood, PhD, MPH, BSN, FAEN, Inova Health System, Falls Church, VA; E-mail: elyssa.wood@inova.org

J Emerg Nurs 2024;50:135-44.
Available online 10 November 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.09.008

Results: After the intervention, the simulation-based experience group showed an increase in total score postintervention from a mean of 118.6 to a mean of 127.1 ($P < .001$). The virtual learning experience group also showed an increase in total score postintervention from a mean of 116.3 to 120.7 ($P < .001$). Although both groups showed an increase in scores over time, the simulation-based experience group had a greater increase ($P = .0037$). Within the simulation-based experience, there was an increase in scores across all age groups ($P < .05$) but a significantly greater increase in scores among younger nurses (18-29 years) than the older age groups ($P = .006$).

Discussion: Opioid use disorder is a complex condition that requires a comprehensive and holistic approach to care. Study results indicate that providing an educational experience to address stigma about patients diagnosed as having opioid use disorder can significantly affect nurse perceptions about these patients and their self-efficacy when working with them. However, investing in a simulation-based educational experience provides a stronger experience and results in greater change, particularly for younger, less experienced emergency nurses.

Key words: Opioid use disorder; Emergency nurse; Bias; Perceptions; Stigma; Emergency department

Introduction

Opioid use disorder (OUD) is defined as a problematic pattern of opioid use that causes significant impairment or distress.[1] The diagnosis is based on criteria such as unsuccessful efforts to cut down or control use of opioids or use resulting in social problems and a failure to fulfill obligations at work, school, or home.[2] The number of patients diagnosed as having OUD has increased substantially since 2015, and this increase has extended to the number of patients diagnosed as having OUD seen in the emergency department for a variety of conditions.[2] Emergency nurses require intentional, focused education to meet the unique and often challenging care needs of people who use drugs and because accidental drug overdose deaths are at an all-time high in the history of the United States opioid epidemic.[3] Examining how stigma and implicit biases affect care is a critical strategy to providing impartial care to patients diagnosed as having OUD, but it is often an overlooked step for nurse educators and leaders.

BACKGROUND

Stigma is a socially constructed phenomenon that occurs when an individual experiences loss of status or faces discrimination based on a characteristic deemed undesirable by others.[4] People who experience stigma may also experience co-occurring status loss and discrimination that lead to unequal outcomes, particularly in health care.[4] Stigma-based practices can include stereotyping (ie, beliefs about characteristics associated with the group and its members), prejudice (ie, negative evaluation of the group and its members), stigmatizing actions (ie, exclusion from social events, avoidance behaviors, gossip), and discriminatory attitudes (ie, belief that people with a specific health condition should not be allowed to participate fully in society).[5]

Patients diagnosed as having OUD often face stigma and discrimination, which can serve as a barrier to pursuing health care and accessing treatment. One review of public opinion highlighted that some view individuals with substance use disorders (SUDs) and by extension OUD as dangerous and unpredictable, unable to make decisions about treatment or finances, and deserving of blame for their own condition.[6] In some cases, people diagnosed as having OUD may be viewed as having control over their illness and are held responsible or blamed for their drug use.[7,8] These social perceptions about people diagnosed as having OUD are present among health care providers. Patients diagnosed as having OUD have reported feeling judged and blamed, having their pain minimized, and perceiving that they experience delays in care, poor communication, and superficial treatment by health care providers.[9-11] Nurses play a fundamental role in creating a safe and nonjudgmental environment for these patients, fostering trust, and ensuring that individuals diagnosed as having OUD receive the care and support they need.

Because bias and stigma can negatively affect patient outcomes, when nurses hold biased beliefs or attitudes about patients diagnosed as having OUD, it can lead to suboptimal care and compromised patient-provider relationships. Manifestations of implicit bias include avoidance or undertreatment of patients diagnosed as having OUD.[12,13] People diagnosed as having OUD may internalize this stigma, feeling shame and becoming resistant to seeking treatment. Previous studies describe that nurses report insufficient knowledge to identify and manage the care of patients with SUD, have personal safety concerns when caring for patients diagnosed as having OUD, and experience burnout

after providing care for individuals diagnosed as having OUD for extended periods of time.[14-16] By reducing bias, nurses can improve patient outcomes by promoting engagement in treatment, providing support, and providing the comprehensive and compassionate care that these vulnerable patients require.[12,13,17]

Bias can impede effective communication between nurses and patients. When patients feel judged or stigmatized, they may be less likely to disclose relevant information about their opioid use, treatment history, or related health concerns.[18] Nurses who are aware of their biases can create an environment that encourages open and honest communication, enabling better assessment and support for patients with OUD. Emergency nurses on the frontlines of the epidemic have been voicing the need for improved education about OUD for years. In 1 study, nurses requested programs with common spoken language to learn about OUD, including speakers able to discuss their experience, and more training on pain management and best practices for OUD treatment in inpatient settings.[15]

Most tested educational sessions have mixed learning methods on OUD with education on more general SUD. Bell et al[12] declared a critical need for a targeted educational approach specifically to address bias toward patients diagnosed as having OUD because OUD is a separate and distinct condition from SUD. There is a large body of evidence examining the effectiveness of educational sessions to reduce bias and stigma in health care providers; however, these sessions have not been specifically geared toward OUD or the learning needs of emergency nurses.[12] Previously reported educational sessions combined traditional designs, such as lecture, with social and experiential pedagogy, such as simulation and role-play, making it difficult to determine the most effective approach in addressing implicit bias.

OBJECTIVES

This study addresses this gap by exploring the use of targeted educational sessions to affect knowledge, attitudes, and self-efficacy in emergency nurses toward patients diagnosed as having OUD. Educational sessions in this study focused on OUD and specific pedagogical approaches tested between groups to ascertain which approach has the greatest effect on variables that affect implicit bias, such as self-efficacy, social attitudes, community impact, and causative factors related to OUD. The purpose of this study was to answer the research question: Do self-efficacy and social attitudes of emergency nurses related to OUD differ by time (presession vs postsession) between educational learning methods, after controlling for demographics and educational preparation?

Methods

STUDY DESIGN

The study used an observational, pretest-post-test design to compare educational sessions in a 5-hospital health care system in the Mid-Atlantic region. The study population consisted of emergency nurses (licensed practical nurses, registered nurses, nurse practitioners). All study participants were older than 18 years, with the ability to read and write English and worked full time, part time, or as needed.

The educational goals for this intervention were to increase the emergency nurse's self-awareness concerning hidden/open biases against patients diagnosed as having OUD and to improve the quality of care by equipping the emergency nurse with practical tools to enhance the use of compassionate, nonstigmatizing language. Two educational sessions were designed to meet the needs of the study. The first was a virtual learning experience (VLE). This consisted of a set of standard, virtual learning modules from the organization National Harm Reduction Coalition. The learning modules covered understanding of why people use drugs and the social context of drug use, harm reduction approaches to working with people who use drugs, strategies to promote engagement with people who use drugs, and information about stigma and drug use.[19] The module took between 1 and 2 hours to complete and could be completed at an individual pace. The second educational session was an in-person simulation-based experience (SBE). This learning experience was 2 hours long and included a prebrief (10-15 minutes), a simulation scenario (15 minutes), and a debrief (an hour and 30 minutes). The SBE covered the same content as the VLE but with direct application to emergency nursing. In addition, a speaker came during the second half of the debrief to discuss their personal experience with OUD and recovery.

More than 400 participants were invited to participate through flyers and emails, and the study was introduced during preshift safety huddles and staff meetings several weeks before the education sessions were offered. Initially, the study team intended to randomize the sample into study arms. However, because the study took place during the coronavirus disease pandemic when emergency nurse burnout and staffing were at critical levels, the team made the decision to forgo a power analysis and instead make every effort to recruit nurses who felt they had the time and energy to participate in a research study and education

outside of their required competencies. Therefore, nurses self-selected in the education group that fit their schedule best. Participants completed an informed consent and pre-test anonymous survey, engaged in their chosen educational session, and completed a post-test anonymous survey. Institutional review board approval was obtained before the initiation of research activities from the Inova Health System.

THEORETICAL FRAMEWORK

Transformative learning theory (TLT) was used to guide this research study. Mezirow[20] first put forward TLT in the late 1970s, acknowledging that assumptions and previous experiences play a grand part in adult learning experiences.[21] Mezirow[20] posited that learning that embraces reflective thinking and critical discourse has the power to challenge and transform those assumptions and change perceptions adopted by the learner.[21] TLT supports meaningful learning and "perceptive transformation" occurs when learners can build on previous experiences, challenge their assumptions, and embrace critical self-reflection.[21-23] TLT is uniquely fitted for this study design because of its focus on self-reflection and discourse with peers during learning.[7] Briese et al[21] posited that TLT helps to explain how transformation occurs in learning through SBE. Learners are not simply expected to gather and retain new information, but rather face and reflect on their previous experiences, assumptions, and expectations and challenge those if warranted.[23] To change perceptions, there must first be the recognition that problematic perceptions exist, followed by reflection and intentional strategies to make impactful change.

DEVELOPMENT OF THE SIMULATION-BASED EDUCATIONAL INTERVENTION

The objectives set for the SBE intervention matched the 3 objectives for the virtual intervention adapted from National Harm Reduction Coalition's Engaging People Who Use Drugs module.[19] The expected learning outcomes for both interventions were the same, so the objectives were matched as well, to guide development and to help support a true comparison between the 2 interventions. The objectives were:

1. Describe the role of stigma as it relates to access and engagement in health and social services.
2. Identify and replace stigmatizing language associated with drug use with empowering/nonjudgmental terms to promote engagement.
3. Create 3 action steps to adopt and promote compassionate and nonjudgmental interactions with people who use opioids by addressing stigma.[10]

With these objectives in mind and TLT as an overarching guide, we used the Sukhera et al[24] framework for integrating implicit bias recognition into health professions education to draw up the outline for an SBE to serve as the in-person comparison to the virtual training. The Sukhera et al[24] framework delineates 6 concrete steps for outlining education intended to include implicit bias recognition. These 6 steps include "Creating a safe and nonthreatenting learning context; increasing knowledge about the science of implicit bias, emphasizing how implicit bias influences behaviors and patient outcomes, increasing self-awareness of existing implicit biases, improving conscious efforts to overcome implicit bias, and enhancing awareness of how implicit bias influences others.[24]" The evidence-based simulation scenario was developed, following these 6 steps, by a simulationist on the research team. The scenario was reviewed, edited, and approved by the entire team for implementation.

A safe and nonthreatening learning environment was created, as required by the Sukhera et al[24] framework at the outset of the educational experience. Participants were paid their regular hourly rate for the SBE, and the SBEs were offered at each hospital to eliminate the need for travel. We worked closely with representatives and leadership from each emergency department in the system to provide the SBE as an optional educational offering for all emergency nurses, not just those participating in the research study. This helped us ensure that the nurses would be provided protected time, away from patient care, to participate in the session. We offered light snacks during the session, but no other incentives for participation were provided. The simulation educator and a nurse educator on the team were trained to facilitate and debrief the SBE, and every session was facilitated by 1 or both of these team members. The SBE began with a thorough prebrief to establish confidentiality, trust, and rapport. It is crucial to engender an environment wherein the learners can feel safe to explore their own unconscious and conscious bias without fear of judgment.[24] Before initiation of the simulation, we took time to reinforce confidentiality among the participants and between the facilitators and participants. The objectives and parameters for the session were reviewed. We concluded the prebrief by explaining in detail how the 3 simulation scenarios would work with a standardized patient. The SBEs were offered between May and August of 2022.

The simulation scenario itself was set in a busy emergency department and used a standardized patient who was portrayed by a member of the research team. The scenario included role cards for embedded participants that included specific phrases or attitudes to portray during the scenario. The scripts included attitudes and statements that had been shared by patients diagnosed as having OUD as a common experience when encountering some health care professionals while seeking treatment in the emergency department.[10] Finally, each section of the scenario included a nurse role, which was assigned to a volunteer from the participant group.

The debrief was the main focus of the SBE. The Trauma-Informed Psychologically Safe debriefing framework was used to guide the debrief. The Trauma-Informed Psychologically Safe framework outlines a debriefing method that is specifically geared toward processing emotional reactions and allowing participants to critically reflect on the experience rather than simply focusing on learning outcomes or skills.[25] This framework follows 5 phases (orientation, review, catharsis, psychoeducation, and recovery) that move the debrief through a logical processing of emotions and psychoeducation.[26] During the catharsis phase of the debrief, the participants were able to address deeply seated perceptions and bias that they recognized during the scenario and debrief. A nonjudgmental approach was used to encourage participants to reflect honestly with themselves and among each other. This approach engendered powerful discourse about the detrimental sequelae of implicit bias against patients diagnosed as having OUD. The debrief was concluded with a recovery phase, allowing participants to summarize positive lessons learned during the experience and to reinforce new ideas.[25]

VARIABLES

In the absence of a reliable tool to measure nurse bias toward OUD, in 2019 members of this research team designed a survey tool to evaluate nurses' knowledge, attitude, and practice toward patients who use opioids: the Perception of Opioid Use Survey (POUS) instrument.[27] Psychometric testing results support that the POUS is valid, reliable, and significantly correlated with theoretically selected variables, with Cronbach's $\alpha = 0.550$ for the overall scale and each subscale: self-efficacy = 0.796, attitudes = 0.744, community impact = 0.806, and causative factors = 0.763. For the current study, the tool was updated to reflect nonstigmatizing language, as suggested by a panel of community experts who were engaged at the outset of this project.[28] The anonymous survey takes 10 to 15 minutes to complete and consists of a composite score and 4 subscales: nurse self-efficacy (belief in their capacity to execute behaviors necessary to care for a patient diagnosed as having OUD), social attitudes (agreement with commonly held social beliefs about OUD), community impact (beliefs about the impact of OUD on their community), and causative factors (beliefs about the causes of the opioid epidemic). Items on the survey were scored directionally: with higher scores indicating an increase in knowledge and a more positive degree of self-efficacy.

ANALYSIS

Descriptive characteristics of participants in each intervention group were compared using the chi-squared test and, for small cell sizes where appropriate, the Fisher's exact test. A 2-sided test of significance was used for all statistical tests ($P < .05$). A longitudinal analysis was conducted for total scores on the POUS and all 4 subscales using a generalized estimating equations repeated measures analysis with a group × time interaction.[29] Generalized estimating equation is an extension of generalized linear models that accounts for the clustering of observations repeated over time while allowing inferences of the average population response.[30] Several a priori variables were assessed for confounding including family, colleague, and personal experience with opioid reversal programs, as well as age, education level, years of experience as a nurse, and hospital site. None of these were retained given that they did not affect the primary model estimates by more than 10%. Secondary analyses were conducted to determine whether categories of age and years of experience as a nurse affected the amount of growth within the SBE intervention group from pre- to postintervention. The SAS software (SAS Institute Inc., Cary, NC) was used for analysis.[31]

Results

A total of 120 nurses participated in the study: SBE (n = 38) and VLE (n = 82). There were not significant differences between the SBE and VLE groups in terms of age, educational preparation, or years of experience as a nurse (Table 1). Most participants in both groups identified as female, between 18 and 29 years, and had between 0 and 5 years of nursing experience, which reflects current trends in emergency nurse staffing in our health system. In each group, approximately 30% of participants had experience with a friend or colleague misusing opioids. Interestingly,

TABLE 1
Descriptive statistics

Characteristic	Intervention groups		Total	*P* value
	IRL n (%)	VR n (%)	n (%)	
Age				
18-29 y	19 (50.0)	35 (42.7)	54 (45.0)	.56
30-39 y	12 (31.6)	28 (34.2)	40 (33.3)	
40-49 y	4 (10.5)	14 (17.1)	18 (15.0)	
50-59 y	3 (7.9)	3 (3.7)	6 (5.0)	
60-69 y	0 (0)	2 (2.4)	2 (1.7)	
Education				
Associates degree in nursing	4 (10.5)	9 (11.0)	13 (10.8)	.76
Bachelor's degree in nursing	28 (73.3)	64 (78.1)	92 (76.7)	
Master's degree in nursing	6 (15.8)	9 (11.0)	15 (12.5)	
Hospital site				
Freestanding emergency department	10 (25.6)	16 (19.5)	26 (21.5)	.1
IAH emergency department	1 (2.6)	10 (12.2)	11 (9.1)	
IFMC children's emergency department	2 (5.1)	2 (2.4)	4 (3.3)	
IFMC emergency department	11 (28.2)	11 (13.4)	22 (18.2)	
IFOH emergency department	4 (10.3)	10 (12.2)	14 (11.6)	
ILH children's emergency department	0 (0)	8 (9.8)	8 (6.6)	
ILH emergency department	9 (23.1)	16 (19.5)	25 (20.7)	
IMVH emergency department	2 (5.1)	9 (11.0)	11 (9.1)	
Years as a nurse				
0-5	23 (59.0)	49 (60.5)	72 (60.0)	.44
6-10	6 (15.4)	9 (11.1)	15 (12.5)	
11-15	3 (7.7)	16 (19.8)	19 (15.8)	
16-20	2 (5.1)	2 (2.5)	4 (3.3)	
21-25	1 (2.6)	1 (1.2)	2 (1.7)	
26+	4 (10.3)	4 (4.90	8 (6.7)	
Do you work in direct care?				
No	2 (5.1)	2 (2.4)	4 (3.3)	.59
Yes	37 (94.9)	80 (97.6)	117 (96.7)	
Gender				
Female	33 (84.6)	66 (80.5)	99 (81.8)	.37
Male	5 (12.8)	15 (18.3)	20 (16.5)	
Nonbinary/fluid	1 (2.6)	0 (0)	1 (0.8)	
Prefer not to disclose	0 (0)	1 (1.2)	1 (0.8)	
Do you have experience with a friend or colleague misusing opioids?				
No	28 (71.8)	57 (69.5)	85 (70.3)	.8
Yes	11 (28.2)	25 (30.5)	36 (29.8)	

continued

TABLE 1
Continued

Characteristic	Intervention groups		Total	*P* value
	IRL n (%)	VR n (%)	n (%)	
Do you have experience with a family member or significant other misusing opioids?				
No	23 (59.0)	62 (75.6)	85 (70.3)	.06
Yes	16 (41.0)	20 (24.4)	36 (29.8)	
Have you participated in an opioid overdose reversal program?				
No	33 (84.6)	80 (97.6)	113 (93.4)	.01
Yes	6 (15.4)	2 (2.4)	8 (6.6)	

IAH, Inova Alexandria Hospital; IFMC, Inova Fairfax Medical Center; IFOH, Inova Fair Oaks Hospital; ILH, Inova Loudoun Hospital; IMVH, Inova Mount Vernon Hospital; SBE, simulation-based experience; VLE, virtual learning experience.

among the nurses who self-selected to be part of the SBE intervention, approximately 40% of them had a family member or significant other who had a history of misusing opioids. This was a notable difference from the VLE group, who reported that only approximately 24% had a family member or significant other misusing opioids. Also of interest was the significant ($P = .01$) difference between the SBE group (15.4%) and the VLE group (2.4) among those who had participated in an opioid overdose reversal program.

After the intervention, the SBE group showed a statistically significant ($P < .001$) increase in total score postintervention from a mean of 118.6 (standard error [SE] = 2.04) to a mean of 127.1(SE = 2.04). The VLE group also showed a statistically significant ($P < .001$) increase in total score postintervention from a mean of 116.3 (SE = 1.22) to 120.7 (SE = 1.36). Although both groups showed statistically significant increases in scores over time (preintervention to postintervention), the SBE group had a larger effect and a significantly ($P = .0037$) greater increase over time (Table 1).

In analyzing the 4 subscales included in the instrument, participants had a statistically significant ($P < .001$) change in the SBE group as did the VLE group ($P < .001$) for self-efficacy. However, the increase in scores when comparing groups was not statistically significant ($P = .39$). The community subscale did not show significant (SBE [$P = .07$], VLE [$P = .64$]) increases in scores across either intervention group. The cause subscale showed a significant ($P = .009$) increase in scores over time for the SBE group whereas the VLE group did not show a significant change for that

TABLE 2
Least square means for SBE and VLE intervention groups: pre- and postintervention data

Prouder Study: least square means for IRL and VR intervention groups: pre- and postintervention values

	Preintervention: IRL		Postintervention: IRL		Preintervention: VR		Postintervention: VR		*P* value: group x time interaction
	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	
Total score	118.6	(2.04)	127.1	(2.04)	116.3	(1.22)	120.7	(1.36)	.0037
Self-efficacy	46.7	(0.93)	49.6	(0.83)	46.5	(0.64)	48.7	(0.67)	.39
Community	14.7	(0.55)	15.4	(0.56)	14.4	(0.34)	14.3	(0.34)	.08
Cause	20.3	(0.73)	21.9	(0.61)	18.7	(0.48)	19.0	(0.53)	.05
Social	37.0	(1.14)	40.2	(1.03)	36.7	(0.75)	39.0	(0.81)	.29

IRL n = 38, VR n = 82.
SBE, simulation-based experience; SE, standard error; VLE, virtual learning experience.

subscale ($P = .41$). This difference between groups for the cause subscale was significant ($P = .05$). The social subscale had significant increases in scores over time for both groups (SBE [$P < .001$], VLE [$P < .001$]), and the increases across both groups were similar for this subscale (Table 2).

In a secondary analysis considering the differences over time by age groups participating in the SBE intervention, there was a statistically significant ($P < .05$) increase in scores across each age group and there was also a significantly ($P = .006$) greater increase in scores among younger nurses (18-29 years) than the older age groups. Similarly, there was a significantly ($P = .003$) greater increase for the SBE intervention group for nurses who had worked 0 to 5 years in the profession than nurses who had worked 6 or more years. These differences were not shown in the VLE group.

Discussion

This study examined the effectiveness of education about patients with OUD on the perceptions of emergency nurses. The results of this study revealed a significant shift in the perceptions of emergency nurses toward patients diagnosed as having OUD after receiving either VLE or SBE interventions, but a significantly greater effect from the SBE. This change in perception is crucial in providing optimal care and support to patients diagnosed as having OUD, given that negative attitudes and stigma can hinder effective communication, assessment, and connection to treatment and services.[9-11,26]

The findings of this study align with previous research that highlights the effectiveness of education in changing health care professionals' bias.[20,27,28] Studies have shown that knowledge about the neurobiology of addiction, evidence-based treatment options, and harm reduction strategies can positively influence health care professionals' attitudes and reduce stigma.[28] This study adds to the literature by revealing that educational interventions for emergency nurses specifically on OUD can change perceptions in a positive way for this population at high risk of accidental drug overdose death. It is important to note that the SBE intervention showed a significantly larger effect on the perceptions of emergency nurses toward patients diagnosed as having OUD over the more traditional educational methods used by many health care organizations of online modules. Several factors may have contributed to the change in nurses' perceptions after the educational intervention. First, the content of the education program was designed to address common misconceptions, provide accurate information, and emphasize the importance of compassionate care for individuals diagnosed as having OUD specifically in the emergency department. Second, the interactive nature of the educational sessions allowed nurses to engage in role-play, have live discussions with colleagues, and share their personal experiences, fostering a deeper understanding and reflection. The inherent experiential nature of TLT and simulation pedagogy may have contributed to this difference.[17] The impact of critical discourse among participants and the time for reflection on personal biases and how they affect patient care during the SBE debrief contributed to the success of the intervention. Past studies have shown that simulation and debriefing have a greater impact on nurse competency and knowledge retention.[12] Third, the incorporation of a real-life testimony from someone in treatment helped humanize the experience of individuals who live with a diagnosis of OUD and challenge existing biases, which has been found to be a key feature of successful stigma reduction programs.[32]

The significant change in the cause subscale scores was a particularly positive outcome of this study. Inaccurate understanding of the causes of addiction can increase stigma among health care providers toward patients with the disorder. The change in cause subscale scores may demonstrate that participants were able to shift from the belief that OUD is a personal or moral failing and to instead accept that other factors are influential after the intervention, which included evidence-based information on the causes of OUD.

The SBE proved to be significantly impactful across age groups, but more so for the younger nurses in the sample. This was an interesting finding in the secondary analysis showing that SBE had a greater impact on changing perceptions in younger nurses when they might typically opt for a digital learning platform. The secondary analysis also revealed greater changes in perceptions for nurses with fewer years of experience in the profession than more experienced nurses. Further research could include examining barriers to changing perceptions in more experienced nurses and revising education that addresses those barriers.

Limitations

Although the findings of this study are promising, several limitations should be acknowledged. First, the study was conducted in emergency departments from a single health system, which limits the generalizability of the results to other health care settings. Future research should include multiple emergency departments from diverse geographic

locations to enhance the external validity of the findings. Second, the study relied on self-report measures, which are subject to social desirability bias. Future studies could use observational methods or qualitative interviews to gather more in-depth and objective data. The study examined only short-term changes in perceptions immediately after the educational intervention. Long-term follow-up studies are needed to determine the sustainability of these changes over time. Finally, participants self-selected into an educational group, which resulted in a small sample size in the SBE intervention group. This self-selection also means that people who were highly motivated to learn about OUD may have chosen the SBE intervention, resulting in a differential in motivation between groups and limiting generalizability. Therefore, the SBE intervention group may have been a group who was going to respond better to the SBE group than the VLE group, further limiting the generalizability of the findings.

Implications for Emergency Nurses

Findings of this study have substantial implications for health care organizations, emergency nurses, and patients diagnosed as having OUD seeking treatment in the emergency department. Providing transformative educational experiences for emergency nurses can affect their perceptions concerning patients diagnosed as having OUD, fostering a destigmatized environment in which patients can receive care. These results show that the investment in even a short SBE experience to address stigma can have a profound impact on emergency nurses. Both VLE and SBE interventions should be incorporated in prelicensure nursing curriculums and provided for newly graduated nurses working in the emergency department. Efforts should continue to be made to address the structural and systemic barriers that contribute to stigma within health care settings and accurate information concerning the causes of OUD and best practices for caring for patients diagnosed as having OUD should be disseminated from both leaders and educators.

Conclusion

Reducing nurse bias about OUD among patients is crucial for providing nonjudgmental care, enhancing patient outcomes, supporting effective communication, strengthening the provider-patient relationship, and promoting a holistic approach to emergency nursing care. Emergency nurses can make a positive impact on the lives of individuals diagnosed as having OUD by recognizing their biases, fostering a culture of learning and reflection, and providing care that is free from stigma and discrimination.

Author Disclosures

Conflicts of interest: none to report.

Funding for this project came from the Inova Nursing Research and Evidence-Based Practice Fellowship Program and the Inova Foundation.

The authors attest that they have no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements) or nonfinancial interest (such as personal or professional relationships, affiliations, knowledge, or beliefs) in the subject matter or materials discussed in this manuscript.

Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2023.09.008.

REFERENCES

1. Blanco C, Volkow ND. Management of opioid use disorder in the USA: present status and future directions. *Lancet*. 2019;393(10182):1760-1772. https://doi.org/10.1016/S0140-6736(18)33078-2
2. Strang J, Volkow ND, Degenhardt L, et al. Opioid use disorder. *Nat Rev Dis Primers*. 2020;6(1):3. https://doi.org/10.1038/s41572-019-0137-5
3. The drug overdose epidemic: behind the numbers. Centers for Disease Control and Prevention. Published 2023. Accessed August 9, 2023. https://www.cdc.gov/opioids/data/index.html
4. Link BG, Phelan JC. Conceptualizing stigma. *Annu Rev Sociol*. 2001;27(1):363-385. https://doi.org/10.1146/annurev.soc.27.1.363
5. Stangl A, Earnshaw VA, Logie CH, et al. The Health Stigma and Discrimination Framework: a global, crosscutting framework to inform research, intervention development, and policy on health-related stigmas. *BMC Med*. 2019;17(1):31. https://doi.org/10.1186/s12916-019-1271-3
6. Yang LH, Wong LY, Grivel MM, Hasin DS. Stigma and substance use disorders: an international phenomenon. *Curr Opin Psychiatry*. 2017;30(5):378-388. https://doi.org/10.1097/yco.0000000000000351
7. Barry CL, McGinty EE, Pescosolido BA, Goldman HB. Stigma, discrimination, treatment effectiveness, and policy: public views about drug addiction and mental illness. *Psychiatr Serv*. 2014;65(10):1269-1272. https://doi.org/10.1176/appi.ps.201400140
8. The world drug perception problem: countering prejudices about people who use drugs. The Global Commission on Drug Policy. Published September 24, 2018. Accessed August 15, 2023. https://www.globalcommissionondrugs.org/reports/changing-perceptions

9. Blair LM, Ashford K, Gentry L, Bell S, Fallin-Bennett A. Care experiences of persons with perinatal opioid use: a qualitative study. *J Perinat Neonatal Nurs*. 2021;35(4):320-329. https://doi.org/10.1097/jpn.0000000000000059
10. Hawk K, McCormack R, Edelman EJ, et al. Perspectives about emergency department care encounters among adults with opioid use disorder. *JAMA Netw Open*. 2022;5(1), e2144955. https://doi.org/10.1001/jamanetworkopen.2021.44955
11. Jaiteh C, Steinauer R, Frei IA. Individuals with opioid dependence using polysubstances: how do they experience acute hospital care and what are their needs? A qualitative study. *J Addict Nurs*. 2019;30(3):177-184. https://doi.org/10.1097/jan.0000000000000294
12. Bell CA, McCurry MR. Opioid use disorder education for acute care nurses: an integrative review. *J Clin Nurs*. 2020;29(17-18):3122-3135. https://doi.org/10.1111/jocn.15372
13. Maynard K. Reducing student nurse stigmatization of the patient who misuses opioids: a scoping review. *J Addict Nurs*. 2020;31(1):47-59. https://doi.org/10.1097/jan.0000000000000324
14. Cooney MA, Broglio K. Acute pain management in opioid-tolerant individuals. *J Nurse Pract*. 2017;13(6):394-399. https://doi.org/10.1016/j.nurpra.2017.04.016
15. Horner G, Daddona J, Burke DJ, Cullinane J, Skeer M, Wurcel AG. "You're kind of at war with yourself as a nurse": perspectives of inpatient nurses on treating people who present with a comorbid opioid use disorder. *PLoS One*. 2019;14(10), e0224335. https://doi.org/10.1371/journal.pone.0224335
16. Rasheed AHE, El Sheikh MM, El Missiry MA, Hatata HA, Ahmed N. Addiction stigma among mental health professionals and medical students in Egypt. *Addict Disord Their Treat*. 2016;15(4):165-174. https://doi.org/10.1097/adt.0000000000000090
17. Van Boekel LC, Brouwers EP, van Weeghel J, Garretsen HF. Stigma among health professionals toward patients with substance use disorders and its consequences for healthcare delivery: systematic review. *Drug Alcohol Depend*. 2013;131(1-2):23-35. https://doi.org/10.1016/j.drugalcdep.2013.02.018
18. McCurry MK, Avery-Desmarais S, Schuler M, Tyo M, Viveiros J, Kauranen B. Perceived stigma, barriers, and facilitators experienced by members of the opioid use disorder community when seeking healthcare. *J Nurs Scholarsh*. 2023;55(3):701-710. https://doi.org/10.1111/jnu.12837
19. Engaging people who use drugs. Harm Reduction Learning Lab. Accessed August 10, 2020. https://nhrclearninglab.thinkific.com/courses/engaging-people-who-use-drugs
20. Mezirow J. Transformation theory: critique and confusion. *Adult Educ Q*. 1992;42(4):250-252. https://doi.org/10.1177/074171369204200404
21. Briese PM, Evanson T, Hanson D. Application of Mezirow's transformative learning theory to simulation in healthcare education. *Clin Simul Nurs*. 2020;48:64-67. https://doi.org/10.1016/j.ecns.2020.08.006
22. Kitchenham A. The evolution of John Mezirow's transformative learning theory. *J Transform Educ*. 2008;6(2):104-123. https://doi.org/10.1177/1541344608322678
23. Tsimane TA, Downing C. Transformative learning in nursing education: a concept analysis. *Int J Nurs Sci*. 2020;7(1):91-98. https://doi.org/10.1016/j.ijnss.2019.12.006
24. Sukhera J, Milne A, Teunissen PW, Lingard L, Watling C. Adaptive reinventing: implicit bias and the co-construction of social change. *Adv Health Sci Educ Theory Pract*. 2018;23(3):587-599. https://doi.org/10.1007/s10459-018-9816-3
25. Harder N, Lemoine J, Chernomas W, Osachuk T. Developing a trauma-informed psychologically safe debriefing framework for emotionally stressful simulation events. *Clin Simul Nurs*. 2021;51:1-9. https://doi.org/10.1016/j.ecns.2020.11.007
26. Simon R, Snow R, Wakeman S. Understanding why patients with substance use disorders leave the hospital against medical advice: a qualitative study. *Subst Abus*. 2020;41(4):519-525. https://doi.org/10.1080/08897077.2019.1671942
27. Burton A, Barnett S, Wood EB, et al. Development of the perception of opioid use survey instrument. *J Nurs Meas*. 2021;29(2):347-364. https://doi.org/10.1891/JNM-D-19-00100
28. Werder K, Curtis A, Reynolds S, Satterfield J. Addressing bias and stigma in the language we use with persons with opioid use disorder: a narrative review. *J Am Psychiatr Nurs Assoc*. 2021;28(1):9-22. https://doi.org/10.1177/10783903211050121
29. Wan F. Analyzing pre-post randomized studies with one post-randomization score using repeated measures and ANCOVA models. *Stat Methods Med Res*. 2019;28(10-11):2952-2974. https://doi.org/10.1177/0962280218789972
30. Ballinger GA. Using generalized estimating equations for longitudinal data analysis. *Organ Res Methods*. 2004;7(2):127-150. https://doi.org/10.1177/1094428104263672
31. SAS OnDemand for Academics. SAS Institute. Accessed January 9, 2023. https://www.sas.com/en_in/software/on-demand-for-academics.html
32. Bielenberg J, Swisher G, Lembke A, Haug NA. A systematic review of stigma interventions for providers who treat patients with substance use disorders. *J Subst Abuse Treat*. 2021;131, 108486. https://doi.org/10.1016/j.jsat.2021.108486

Engaging Emergency Nurses in Strategies to Address the Social Determinants of Health

Authors: Elyssa B. Wood, PhD, MPH, RN, FAEN, April Brown, DNP, RN-NE, RN-BC, Carol Swamidoss Douglas, PhD, MPH, RNC, John Lawrence, BSN, RN, CPHQ, NPD-BC, Zachary Wotherspoon, DNP, APRN, FNP-BC, RN, CPEN, and Audra Gollenberg, PhD, Falls Church, Leesburg, Fairfax, Alexandria, and Winchester, VA

Contribution to Emergency Nursing Practice

- Previous studies have found that nurses experience barriers when integrating social determinants of health care into their workflow including time constraints and discomfort with conversations about social needs.
- Nurses in this study reported limited knowledge about social determinants of health and a lack of knowledge about community resources for referral. However, emergency nurses who feel connected to their community report higher knowledge and confidence about social needs and are more likely to initiate those important conversations with patients.
- Emergency nurses want to help their patients with social needs when time permits, but they require enhanced education, skill development, and opportunities for connection to their community to be successful.

Abstract

Introduction: For patients with social needs, emergency departments can be an essential bridge between the health care system and the community. Emergency nurses' knowledge of and engagement in this work need to be examined to ensure that efforts for social determinants of health screening and the resulting community connections are effective. However, there is limited research in this area of nursing practice. The purpose of this study is to describe emergency nurses' knowledge about social needs in their community, assess their knowledge of existing community resources, and examine their perceived confidence to respond to the social needs of their patients.

Methods: A cross-sectional survey was conducted with 243 nurses employed in a large regional health care system. Data were collected using an adapted 81-item social determinants of health survey instrument to measure knowledge of social determinants of health, confidence, and frequency of discussing social determinants of health with emergency department patients and awareness of social resources available in the community. Survey participants were asked about barriers to incorporating social determinants of health into their emergency department workflow and to provide general demographic information. Descriptive statistics were used to analyze study results.

Results: Most of the 243 emergency nurse participants believed that addressing social determinants of health was important and that emergency nurses should be involved in issues around social determinants of health. However, most nurses reported limited knowledge about social determinants of health and had very limited knowledge about the resources available in their community to help patients with needs related to food, housing, medical care, and transportation. Nurses reported that although they know that their patients are unlikely to ask for help with social needs during an

Elyssa Wood is Nursing Research Scientist, Inova Health System, Falls Church, VA; and *Member, Northern Virginia Chapter ENA*. **ORCID identifier:** https://orcid.org/0009-0003-6855-4990

April Brown is AVP Campus & Clinical Operations, Inova Loudoun Hospital, Leesburg, VA; and *Member, Lord Fairfax ENA*. **ORCID identifier:** https://orcid.org/0009-0003-7008-3892

Carol Swamidoss Douglas is Ambulatory Nursing, Inova Fairfax Medical Center, Fairfax, VA. **ORCID identifier:** https://orcid.org/0009-0001-6600-3816

John Lawrence is Professional Practice, Inova Mount Vernon Hospital, Alexandria, VA. **ORCID identifier:** https://orcid.org/0009-0009-2032-4399

Zachary Wotherspoon is Senior Director Nursing Services, Emergency Department, Inova Alexandria Hospital, Alexandria, VA.

Audra Gollenberg is Professor of Public Health, Shenandoah University, Winchester, VA. **ORCID identifier:** https://orcid.org/0000-0001-7542-0390

For correspondence, write: Elyssa B. Wood, PhD, MPH, RN, FAEN; E-mail: elyssa.wood@inova.org

J Emerg Nurs 2024;50:145-52.
Available online 8 August 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.06.014

emergency department visit, they are still unlikely to ask their patients about social needs owing to low confidence about having social needs conversations, limited time, and competing care priorities. Participants advocated for greater case manager presence. Feeling connected to the community was significantly correlated to increased knowledge, confidence, and likelihood to ask about social needs ($P < .05$).

Discussion: The emergency department is a logical place for screening for social determinants of health and connecting patients with social needs to community resources. Emergency nurses included in this study acknowledged that they want to address the social needs of their patients but reported that they lack knowledge about both social determinants of health and more importantly about the resources available to help patients with social needs. In general, they did not feel confident discussing social determinants of health with their patients in the emergency department and are unlikely to ask about social needs. Barriers to screening include time, competing care priorities, and lack of knowledge and support needed from case managers. Findings from this study have implications for supporting emergency nurses employed in institutions that seek to address social influences of health for the patients in their communities.

Key words: Nursing; Emergency; Social determinants; Social drivers of health; Screening

Introduction

Confronting and addressing health inequities in our communities is a national priority and requires that nurses develop strategies to address outcomes caused by social determinants of health (SDoH): the conditions in which people are born, grow, play, work, worship, live, and age.[1,2] The circumstances that create SDoH are shaped by the distribution of money, power, and resources at global, national, and local levels and can be grouped into 5 areas: economic security, education, health care access and quality, neighborhood and environment, and the social and community context. Growing evidence reveals the association between inequities and SDoH, with 80% to 90% of health outcomes resulting from these social determinants.[3] Although health equity can be tackled at the population level by addressing SDoH, at the individual level, nurses in clinical areas are called to address health-related social needs such as housing, reliable transportation, food security, and a community support system.[4]

Emergency nurses are often the first and most frequent contact for patients with social needs. Screening and connecting patients to community resources and hospital-wide health initiatives are actions that emergency nurses can use to address these social needs.[5] The Institute of Medicine and the Center for Medicare and Medicaid Services have recommended that health care providers and clinical systems screen for food and housing insecurity; financial strain; transportation, childcare, education, employment, and mental health needs; and exposure to violence and social isolation.[6] In response, health systems are adding a systematic screening tool for SDoH into their electronic health record system. Implementing these screening tools is an essential first step to addressing SDoH, but they are just one part of the needed clinical support. The next step is to understand how the collected information affects health, how to identify the community resources available for referrals, and how best to discuss social needs with patients in a way that does not take away from the relationship they have formed during the ED visit.

There is limited research on the ability of frontline nurses to integrate SDoH into their care. One study revealed that nurses experienced personal discomfort when addressing SDoH and reported a lack of skill and time to address these issues.[7] In a recent qualitative study of acute care nurses, participants described how time constraints and workload demands posed significant challenges that compromised their ability to address social needs for their patients.[8] A study of 768 nurses concluded that nurses need skill development and stronger collaborative partnerships to address identified needs.[9] Although some of these factors may also be true for the emergency nurse, there may be other concerns specific to their work environment. With pressure to treat the emergent medical concern, overflowing waiting rooms, and reduced ED staffing, we need to have a clear understanding of what emergency nurses know about SDoH and what resources we can give them to create the scaffolding between the emergency department and available community resources. The purpose of this study is to describe the emergency nurses' knowledge about SDoH in their community, assess their knowledge of existing community resources, and examine their perceived confidence and ability to respond to the social needs of their patients.

The international human rights framework provides the structure for nurses to advance health equity through SDoH work. The framework is based on the 1948 Universal Declaration of Human Rights, which states that "Everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food,

clothing, housing and medical care and necessary social services."[10] With this overarching directive, the conceptual framework for this study comes from the Agency for Healthcare Research and Quality, in which the clinician, individual, and community resources are interconnected spheres that work together to achieve health equity and reduce health disparities.[5] Where the spheres overlap represents 3 dyadic relationships: the clinician-patient relationship, clinical-community resource relationship, and patient-community resource relationship.[5] The focus of this study is on the clinician-individual relationship (understanding SDoH, screening for SDoH, and assessing for needs) and the clinician-community resource relationship (understanding the resources available in the community and having ways to connect patients to those resources).[5] This study is in alignment with the Healthy People 2030 objective to advance health equity and eliminate disparities.[11] This study also supports our health system's most recent community health need assessments conducted in each of the 5 communities our hospitals serve. To address the findings of the community health need assessments, the assessment outlined strategies including "Empower bedside nurses and case managers to help patients link to care and resources in the community."

OBJECTIVES

The objective of the study was to examine the following question: What do emergency nurses know about SDoH that affects the health outcomes of patients in the emergency department? The 5 study aims were as follows: (1) Describe the knowledge emergency nurses have about SDoH; (2) Assess the knowledge of emergency nurses about the resources available in their community to address SDoH; (3) Examine the perceived confidence of emergency nurses in addressing the SDoH of their patients; (4) Describe emergency nurses' challenges in integrating SDoH into the care they provide during an ED visit; and (5) Explore relationships between variables to look for opportunities to improve screening and referrals for social needs.

Methods

STUDY DESIGN AND SETTING

This was a mixed-methods, descriptive, cross-sectional study. The findings reported here come from the quantitative arm of the study. The study sample included emergency nurses from a large 5-hospital health system in the mid-Atlantic region. Within this health system, nurses provide emergency care in geographically and socially diverse practice areas.

PARTICIPANTS AND STUDY SIZE

Study participants were recruited through emails and flyers distributed only within the health system's emergency departments. The email included a video created by the study investigators explaining the purpose of the study and how the findings would be disseminated to encourage participation in the study. Participants used a link or QR code to open an anonymous electronic survey through an electronic survey platform, which took 10 to 15 minutes to complete. At the survey's end, participants were given a small gift as appreciation for their participation, worth between 3 and 5 USD each. Approximately 410 registered nurses (RNs) and licensed practical nurses are working between the emergency departments in our system. We aimed to recruit 75% of those nurses (307) to participate in the survey. Inclusion criteria were RN or licensed practical nurse in the emergency department, >18 years of age, and with the ability to read and write English.

VARIABLES AND MEASUREMENT

Study variables consisted of scales measuring nurse knowledge, perceived confidence, likelihood to ask about SDoH, and perceived challenges and opportunities. These were measured using an adapted 81-item Social Determinants of Health Assessment Survey, with the original instrument having Cronbach's alphas of 0.97, 0.96, and 0.98 for the 3 survey scales, respectively (J Phillips, personal communication, 2020).[7,9] The survey began with demographic questions, followed by a brief definition of SDoH. Using response options with a range from "not at all" to "extremely," nurses were asked to answer survey questions assessing their confidence in discussing SDoH (social needs) with patients, their likelihood of asking patients about SDoH, and their general knowledge about SDoH.[9] This was followed by several questions that asked nurses how much they knew about community-based programs for patients. This section was adapted to reflect the specific programs available within our health system. Finally, in addition to the questions on the original survey, participants were given a short case study developed for this study, about an ED patient with social needs, and asked to rate their knowledge about connecting the patient to local resources. Items were scored using a 5-point Likert scale (0 = not at all, 1 = slightly, 2 = moderately, 3 = very, 4 = extremely).

STATISTICAL METHODS

Quantitative study data were collected and managed using REDCap, a secure, web-based software platform designed to support data capture for research studies providing (1) an intuitive interface for validated data capture, (2) audit trails for tracking data manipulation and export procedures, (3) automated export procedures for seamless data downloads to standard statistical packages, and (4) procedures for data integration and interoperability with external sources.[12] Data analysis was conducted using SAS software.[13] Descriptive statistics were used to analyze survey responses from participants across the entire hospital system. The responses to the 5-point Likert-type questions were collapsed to create 3 levels of agreement representing "not at all/slightly, moderately, and very/extremely" to aid in interpretation and to be consistent with how the survey questions have been presented in similar research studies. Responses to individual questions were presented as frequencies and percentages. Tests of association and level of statistical significance between SDoH questions and a priori–identified variables (ie, connectedness with the community served by the hospital, length of time as a nurse, duration at site, and distance to hospital site) were conducted using the chi-square test.

Results

PARTICIPANTS

A total of 293 nurses responded to the survey, with 243 completed surveys included in the analysis. Of the nurses who completed the survey, there was a range of nursing experience: 0 to 2 years (29.1%), 3 to 5 years (18.9%), 6 to 10 years (19.3%), and >10 years of experience (32.8%). Most nurses (93.1%) reported that they felt "very" or "somewhat" connected to the community their hospital serves. Almost the entire sample of nurses (98%) reported that they believed that addressing SDoH was necessary, and 92.6% of the nurses who answered this survey reported that nurses should be involved in issues around SDoH.

MAIN RESULTS

Aim 1: Describe the Knowledge Emergency Nurses Have About SDoH

Approximately 75.1% of the nurses who answered this survey reported that they felt only "not at all/slightly" or "moderately" knowledgeable about the social/economic issues that affect the patients they care for in the emergency department.

Aim 2: Assess the Knowledge of Emergency Nurses About the Resources Available in Their Community to Address SDOH

Seventy percent of the 243 nurses who answered the survey reported needing education about what resources were available in their community to assist people with their social needs. Most survey respondents reported that they felt only "moderately" or "not at all/slightly" knowledgeable about access to nutritious foods (77.8%), access to care (67.2%), issues of crime and violence (79.5%), discrimination (73.7%), access to a primary care provider (59.8%), employment (71.3%), environmental conditions (74.6%), health literacy (63.5%), housing (76.6%), income (75.8%), interpersonal violence (77%), social support networks (75.8%), transportation needs (72.5%), and utilities (82%). Only approximately half of the sample (53.7%) reported that they knew how to find out what community resources were available if they needed to provide information to a patient. When asked about community-facing programs that provide care specific to their health system, between 80% and 90% of nurses reported they were only not at all, slightly, or moderately knowledgeable about these resources and programs.

In addition to the survey questions about specific community resources, knowledge about resources was also assessed via a case study and related questions. Given a patient with high social needs, most nurses (55.7%) reported knowing how to help the case study patient find a primary care provider upon discharge. However, in terms of helping the patient find food, most nurses did not know how to help upon discharge (74.2%), and most did not know how to help the patient find housing after discharge (90.2%). Many nurses knew how to help access mental health resources (56.2%) and substance use disorder treatment (45.5%); however, most nurses did not know how to find transportation to future appointments (85.4%). After providing care, most nurses who responded to the survey (81.2%) did not know how to document the patient's social needs in the electronic medical record (EMR).

Aim 3: Examine the Perceived Confidence of Emergency Nurses in Addressing SDoH of Their Patients

In response to this scale, emergency nurses reported low confidence in discussing most SDoH with the patients and families they care for. They were "moderately/slightly" or "not at all" confident asking their patients in the

emergency department about their access to nutritious food (79.1%), finding a primary care provider (66.4%), asking about crime and violence (83.7%), asking about discrimination (82%), employment (83.2%), their environment (81.5%), health literacy (72.5%), housing (85.3%), income (85.2%), intimate partner violence (78.7%), social support (78.3%), transportation (77.9%), and utilities (87.7%).

More than 88% of the nurses surveyed reported that they did not believe their patients would initiate asking about help for a social need if they had one. Despite knowing that their patients are not likely to ask for help, most nurses reported that they were only "moderately/slightly" or "not at all" likely to ask about access to food (78.3%), access to a primary care provider (53.7%), ask about crime and violence (70.9%), ask about discrimination (85.3%), employment (85.3%), their environment (82.4%), health literacy (73%), housing (77.9%), income (89.9%), intimate partner violence (62.3%), social support (75%), transportation (65.6%), and utilities (89.4%).

Aim 4: Describe Emergency Nurses' Challenges in Integrating SDoH Into the Care They Provide During an ED Visit

Nurses were asked to free text answers: "What other barriers do you find to providing ED patients with community resources?" A total of 94 survey respondents (approximately 40%) wrote an answer to this question. There were 4 main topic areas that nurses mentioned in this section of the survey: The first and most frequently mentioned barrier was time:

> "TIME! It takes an exorbitant amount of time to address social issues that ED nurses DO NOT HAVE. No idea what these resources are and who qualifies."

The second barrier mentioned in the survey was lack of knowledge:

> "[Addressing social needs] would have to be a cohesive effort between social work, MDs, and RNs. All of the education cannot be on the RNs, we are overloaded as it is. If plenty of education was given to the RNs about resources, I would make the effort to provide my patients these resources. I was given little to no info about resources for my patients in my nurse residency program."

The third barrier mentioned was competing priorities:

> "Unfortunately, I cannot take the time to provide these patients with the care and attention they so desperately need when I have another patient who is in anaphylactic shock and another who is becoming hypotensive. Social issues take a back seat to physiological ones in the ER."

Finally, many nurses mentioned the critical role of case managers as part of the team:

> "I feel like there is no representation in our ER from case management, and I cannot carry the entire weight of the patients' social issues – I need a team so we can tackle it together."

Aim 5: Explore Relationships Between Variables to Look for Opportunities to Improve Screening for Social Needs

Finally, study analysis showed a significant correlation between nurses' connectedness to their community and their knowledge about SDoH, their confidence in discussing SDoH, and their likelihood to ask about SDoH. More specifically, nurses who perceived being "very" connected to their community were significantly more likely to report greater knowledge about SDoH, higher confidence in discussing SDoH, and a higher likelihood of asking about SDoH than nurses who had a lower perceived connection to their community ($P < .05$ on all SDoH measures), except for knowledge of "access to care" ($P = .09$). On the contrary, distance from the worksite and length of time as a nurse were not significantly associated with any SDoH measures.

Discussion

To examine emergency nurses' knowledge, confidence, and activities related to integrating SDoH activities into their care, we surveyed a cross-section of emergency nurses in a large health system. Almost all the nurses reported that addressing SDoH was essential and that nurses should be involved in assisting patients with social needs. This aligns with findings from other groups of health care professionals such as primary care physicians.[14] However, similar to evidence coming from other nursing practice areas, most of the nurses in this study reported limited knowledge about the social and economic issues that affect their patients, and they were unsure about what resources were available in their community.[7–9] The health system in which this sample of nurses works has a robust community health resource system and partnerships for referral and care outside of the hospital. The discrepancy between willingness to help their patients and tangible knowledge strategies to do so is where the potential lies for system-wide investment in and education for nurses.

Lack of knowledge about SDoH and available community resources most likely contributed to emergency nurses in this study reporting low confidence in discussing SDoH with the patients and families they care for. This lack of confidence and not knowing about available resources resulted in emergency nurses reporting that they were unlikely to ask patients about their social needs. Nurses in this study reported that they were more likely to ask about primary care access and intimate partner violence, both of which are standard triage questions included in the triage system and therefore nurses are accustomed to asking them. Studies have found that most patients report that social risk screening is appropriate in the emergency department and agree with having social risk screening added to the EMR.[15] In several recent studies, participants reported feeling "cared for" and "listened to" when clinicians inquired about social risks and their home environment. Some reported that asking about social risks strengthened the patient-provider relationship.[16,17] These questions, when asked correctly, can make a patient feel cared for and heard, which is an exciting opportunity for connection and relationship building with patients. Knowing this may help nurses feel more confident discussing social needs with patients.

Nurses reported limited time and competing priorities and requested more teamwork around SDoH work, specifically from case management. There will always be a need for emergency nurses to prioritize the care of critically ill and injured ED patients, and social needs will never rise to the same level of urgency. However, training on SDoH screening tools, electronic referral systems that are quick and stay up to date, and education around effectively asking the screening questions are opportunities for addressing these challenges and making SDoH management fit into the ED workflow.

Finally, this study uncovered an exciting area for future research: nurse connectedness to their community. The finding that nurses who report higher perceived connectedness to their community also reported significantly higher rates of knowledge, confidence, and likelihood to ask about social needs was unexpected and, to our knowledge, has not been discussed in previous research. It provides a rich area for future research exploring the potential of nurse connectedness to the community. This was particularly interesting because even though nurses who felt connected to the community were more likely to have conversations about social needs with their patients, overall, the participants reported low levels of knowledge about the specific resources their hospital provided. Future interventions could harness that connection and confidence and build on it with skill development and communication about existing resources.

Limitations

This study has several limitations. First, the findings from this study are particular to the geographic area in which our emergency nurses practice and therefore might not be generalizable. Second, we surveyed nurses during the height of the coronavirus disease pandemic, when many nurses felt the extra strain and workplace dissatisfaction, which may have biased our findings in unknown ways. Third, the concept of SDoH may be new to some of the nurses in our study, which may have limited the validity of their responses. Although SDoH concepts are now being introduced into the curriculum of nursing schools, this was not always the case.

Implications for Emergency Nurses

This study aimed to examine what nurses in the emergency department know about SDoH, the resources available in their community to address SDoH, how confident they are addressing SDoH with their patients in the emergency department, and the barriers and facilitators to addressing SDoH with patients. The study found that the emergency nurses included in this study believed that addressing SDoH was important and that emergency nurses should be involved in issues around SDoH. Without adequate staffing, the burden of social screening combined with competing care priorities with other ED patients makes this work untenable. Although screening and charting social needs in the EMR can be viewed as a first step in the more extensive process of addressing social needs, connecting patients to resources should not be the sole responsibility of the emergency nurse. However, case workers, social workers, and other staff dedicated to managing social needs for patients are not always available to emergency nurses around the clock, and in community hospitals and standalone emergency departments, they may not exist. Best practice is to staff these roles to the maximum capacity to support patients. In their absence, emergency nurses are tasked with screening for and addressing social needs but feel unprepared to do this.

The findings from this study point to the need to educate emergency nurses about SDoH and, more critically, to give them up-to-date and appropriate resources to provide to their patients. The emergency nurses in this study overwhelmingly reported wanting to address social needs and feeling it is part of their job. However, without appropriate education and an easy way to connect patients to resources, they lose confidence in their ability to ask about SDoH and, more importantly, are not likely to ask patients

about social needs. Creating effective education about SDoH and how they affect health in a specific community is the first step in priming nurses from any practice area to engage in this work. The next step in creating effective SDoH engagement is to give nurses simple and easy ways to make referrals and to know about the resources available in their community. Large hospital systems may have strong community health divisions that create effective community partnerships and have resources available to address social needs. However, that work must be communicated and frequently updated for clinical bedside nurses to feel empowered to connect patients to those valuable resources.

Findings from this study have direct implications for supporting the educational and resource needs of emergency nurses employed in health systems that seek to address social influences on health for the patients in their communities. Future work should target education and skill building to increase nurses' confidence in SDoH screening and documentation. Simulation and role-playing modules may effectively provide adequate education, specifically education that improves nurses' confidence in asking social questions and discussing social needs. Adding community-specific competencies and education to ED orientation and continuing education is another innovative avenue for future work. Having community organizations present directly to clinical bedside nurses will increase knowledge and confidence about available resources. This may also address an important finding from this study: feeling connected to the community increased nurses' likelihood of discussing social needs with their patients. Making direct connections with community leaders and care providers may increase community connectedness. Another option could be strengthening nurse engagement with the community through advocacy. Future research can focus on opportunities to strengthen these connections and further examine how community connections affect emergency nurses' ability to address SDoH during an ED visit.

Author Disclosures

Conflicts of interest: none to report.

This study was funded through a seed grant from the Inova Health System.

The authors report that they have no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements) or nonfinancial interest (such as personal or professional relationships, affiliations, knowledge, or beliefs) in the subject matter or materials discussed in this manuscript.

Acknowledgments

We thank Hannah Denman-Grimm and Zita Ribeiro for their assistance with this study.

Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2023.06.014.

REFERENCES

1. Social Determinants of Health. World Health Organization. Accessed September 1, 2022. www.who.int/social_determinants
2. NLN releases a vision for integration of the social determinants of health into nursing education curricula. *Nurs Educ Perspect*. 2019;40(6):390. https://doi.org/10.1097/01.NEP.0000000000000597
3. Hood CM, Gennuso KP, Swain GR, Catlin BB. County health rankings: relationships between determinant factors and health outcomes. *Am J Prev Med*. 2016;50(2):129-135. https://doi.org/10.1016/j.amepre.2015.08.024
4. National Academies of Sciences. *Engineering, and Medicine. A Framework for Educating Health Professionals to Address the Social Determinants of Health*. National Academies Press; 2016. https://doi.org/10.17226/21923
5. Addressing Social Determinants of Health Presentation | AHA. American Hospital Association. 2023. Accessed July 27, 2023. https://www.aha.org/landing-page/addressing-social-determinants-health-presentation
6. Hassmiller SB, Wakefield MK. The Future of Nursing 2020-2030: charting a path to achieve health equity. *Nurs Outlook*. 2022;70(6 suppl 1):S1-S9. https://doi.org/10.1016/j.outlook.2022.05.013
7. Persaud S. Addressing social determinants of health through advocacy. *Nurs Admin Q*. 2018;42(2):123-128. https://doi.org/10.1097/NAQ.0000000000000277
8. Brooks Carthon JM, Hedgeland T, Brom H, Hounshell D, Cacchione PZ. "You only have time for so much in 12 hours" unmet social needs of hospitalised patients: A qualitative study of acute care nurses. *J Clin Nurs*. 2019;28(19-20):3529-3537. https://doi.org/10.1111/jocn.14944
9. Phillips J, Richard A, Mayer KM, Shilkaitis M, Fogg LF, Vondracek H. Integrating the social determinants of health into nursing practice: nurses' perspectives. *J Nurs Scholarsh*. 2020;52(5):497-505. https://doi.org/10.1111/jnu.12584
10. United Nations General Assembly. *The Universal Declaration of Human Rights (UDHR)*. United Nations; 1948. Accessed July 27, 2023. https://www.un.org/en/about-us/universal-declaration-of-human-rights
11. Healthy People 2030. Office of Disease Prevention and Health Promotion, U.S. Department of Health and Human Services. Accessed July 27, 2023. https://health.gov/healthypeople
12. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research Electronic Data Capture (REDCap) – A metadata-driven

methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377-381. https://doi.org/10.1016/j.jbi.2008.08.010

13. StataCorp. *Stata Statistical Software: Release 17*. StataCorp LLC; 2021.
14. Lax Y, Bathory E, Braganza S. Pediatric primary care and subspecialist providers' comfort, attitudes and practices screening and referring for social determinants of health. *BMC Health Serv Res*. 2021;21(1):1-956. https://doi.org/10.1186/s12913-021-06975-3
15. De Marchis EH, Hessler D, Fichtenberg C, et al. Part I: a quantitative study of social risk screening acceptability in patients and caregivers. *Am J Prev Med*. 2019;57(6 suppl 1):S25-S37. https://doi.org/10.1016/j.amepre.2019.07.010
16. Byhoff E, De Marchis EH, Hessler D, et al. Part II: a qualitative study of social risk screening acceptability in patients and caregivers. *Am J Prev Med*. 2019;57(6 suppl 1):S38-S46. https://doi.org/10.1016/j.amepre.2019.07.016
17. Drake C, Batchelder H, Lian T, et al. Implementation of social needs screening in primary care: a qualitative study using the health equity implementation framework. *BMC Health Serv Res*. 2021;21(1):1-975. https://doi.org/10.1186/s12913-021-06991-3

Emergency Nurses' Well-Being in Magnet Hospitals and Recommendations for Improvements in Work Environments: A Multicenter Cross-Sectional Observational Study

Authors: Elise Turnbach, MSN, RN, CEN, Lindsey Coates, MSN, RN, CEN, Florence D. Vanek, MSN, RN, NE-BC, Emma Cotter, MSN, RN, LSSGB, Colleen A. Pogue, PhD, RN, Rebecca R.S. Clark, PhD, MSN, RN, CNM, WHNP-BC, and Linda H. Aiken, PhD, RN, FAAN, FRCN, for the United States Clinician Well-being Study Consortium, Philadelphia, PA

Contribution to Emergency Nursing Practice

- Emergency nurses work in stressful environments, and retention can be challenging. Magnet status is associated with improved nurse outcomes.
- The Magnet advantage does not appear to extend equally to emergency nurses as they experience higher rates of burnout, job dissatisfaction, and intent to leave compared to inpatient Magnet nurses. Emergency nurses are more likely to rate their work environments unfavorably and to express lack of confidence that management will address problems nurses report in patient care.
- Emergency nurses recommend improved nurse staffing and the ability to take uninterrupted breaks as the most important opportunities to reduce burnout and improve wellbeing. Most do not put a high priority on resilience training, appointing a wellness champion, or creating a space for meditation.

Abstract

Introduction: This study aimed to determine the well-being outcomes and quality of work environment among emergency nurses compared with inpatient nurses working in Magnet hospitals and identify recommendations in emergency department work environments that hold promise for enhancing emergency nurses' well-being.

Methods: This is a cross-sectional analysis of multicenter survey data collected in 2021 from 11,743 nurses practicing in 60 United States Magnet hospitals. Nurses report on burnout, job dissatisfaction, intent to leave, work environment, and recommendations to improve well-being.

Results: Emergency nurses are significantly more likely to report high burnout ($P = .04$), job dissatisfaction ($P < .001$), and intent to leave ($P < .001$) than inpatient nurses working in the same Magnet hospitals. Emergency nurses are

Elise Turnbach is Clinical Nurse Education Specialist and Nurse Residency Coordinator, Pennsylvania Hospital, Penn Medicine, Philadelphia, PA.

Lindsey Coates is an Assistant Nurse Manager, Emergency Department, Pennsylvania Hospital, Penn Medicine, Philadelphia, PA; and *Member, Emergency Nurses Association, Philadelphia Chapter*.

Florence D. Vanek is a Director of Nursing Education, Professional Practice, and Magnet Program, Pennsylvania Hospital, Penn Medicine, Philadelphia, PA.

Emma Cotter is Magnet Program Manager, Pennsylvania Hospital, Penn Medicine, Philadelphia, PA.

Colleen A. Pogue is a Postdoctoral Fellow, Center for Health Outcomes and Policy Research, School of Nursing, University of Pennsylvania, Philadelphia, PA.

Rebecca R.S. Clark is an Assistant Professor, Center for Health Outcomes and Policy Research, School of Nursing, University of Pennsylvania, Philadelphia, PA; and a Nurse Scientist, University of Pennsylvania, Pennsylvania Hospital, Penn Medicine, Philadelphia, PA.

Linda H. Aiken, Professor of Nursing and Sociology, University of Pennsylvania, Center for Health Outcomes and Policy Research, School of Nursing, University of Pennsylvania, Philadelphia, PA. **Twitter:** @LindaAiken_Penn

For correspondence, write: Elise Turnbach, MSN, RN, CEN, Pennsylvania Hospital, Penn Medicine, 800 Spruce Street, Philadelphia, PA 19107; E-mail: elise.turnbach@pennmedicine.upenn.edu

J Emerg Nurs 2024;50:153-60.
Available online 26 July 2023
0099-1767

https://doi.org/10.1016/j.jen.2023.06.012

significantly more likely to report insufficient staffing ($P = .001$), an unfavorable work environment ($P < .001$), and lack confidence that management will act to resolve problems in patient care ($P < .001$) but did report significantly better working relationships with physicians ($P < .001$) than their inpatient counterparts. The 2 greatest recommendations to improve well-being included improving nurse staffing (91.4%) and the ability to take uninterrupted breaks (86.7%); the lowest-ranked recommendations were employing more advanced practice providers (25.9%) and appointing a wellness champion (21.2%).

Discussion: High burnout and other adverse nurse outcomes are common among emergency nurses in Magnet hospitals. Modifiable features of ED work environments including inadequate nurse staffing, inability of nurses to take uninterrupted breaks, and lack of responsiveness of management to persistent problems in patient care warrant high priority attention by Magnet hospital leaders.

Key words: Emergency nursing; Burnout; Job satisfaction; Intent to leave; Work environment; Nursing

Introduction

The National Academy of Medicine declared clinician burnout a public health crisis in need of immediate action even before the coronavirus disease 2019 (COVID-19) pandemic.[1] Burnout and dissatisfaction with hospital practice were common among inpatient nurses before the pandemic and have persisted even as the pandemic has receded.[2,3] Emergency nurses have long worked in tumultuous work environments where they regularly face trauma, fluctuating patient volumes, and high patient acuity,[4] yet there is relatively little research on the well-being of emergency nurses compared with inpatient nurses in medical-surgical units and intensive care units, which is the focus of most research on nurse burnout.[5,6] There is evidence to suggest that hospitals with Magnet status have better well-being outcomes among nurses, although it is less clear whether this relationship is true for emergency nurses.[7-9] This is the first large-scale study of 60 United States Magnet hospitals comparing emergency nurse well-being with the well-being of inpatient nurses working in the same Magnet hospitals. If better work environments in Magnet hospitals affect all nurses equally, there should be no differences in well-being in Magnet hospitals between emergency nurses and inpatient nurses.

Researchers have reported high levels of emergency nurse burnout and related well-being outcomes in several studies,[10-14] but less is known about emergency nurse recommendations to improve such outcomes. The purposes of this study are to determine whether emergency nurses have poorer well-being outcomes and work environments than inpatient nurses working in the same Magnet hospitals and to identify promising interventions to improve emergency nurses' well-being.

Methods

Data for this analysis are from a multicenter collaborative study of clinician well-being conducted using a common research protocol at 60 United States Magnet hospitals in 22 states. The participating Magnet hospitals serve as twinning partners in an experiment known as Magnet4Europe introducing the Magnet model to improve clinician well-being in European hospitals (www.magnet4europe.eu).[15] The United States Magnet hospitals participating in Magnet4Europe created a consortium to conduct a study of clinician well-being in their hospitals concurrently with the project in Europe. The main findings from the United States Clinician Well-being Study have been previously published.[16]

Each of the 60 participating United States Magnet hospitals invited nurses and physicians working in adult medical and surgical inpatient settings and the emergency department via email to participate in an anonymous electronic survey. Participation in the study implied consent. Data were collected anonymously from January 2021 to June 2021 (with no unique identifiers such as email, internet protocol addresses, or geocoding information) and sent directly to researchers, who managed data collection and analysis centrally. We limited the study to these clinical areas because all participating hospitals had them. Additional details regarding the survey methodology are published elsewhere.[16] The overall clinician response rate across all participating hospitals was 26% with an average of 262 nurses reporting for each hospital. This study was reviewed by the institutional review board at the study's central analytic university and was deemed exempt.

PARTICIPANTS

The registered nurse sample comprised 11,743 direct care nurses working in emergency departments and adult medical and surgical specialties including general inpatient units, intensive care units, and progressive care units. There were 1585 emergency nurse respondents and 10,158 inpatient nurse respondents from the 60 United States Magnet hospitals.

SURVEY VARIABLES

Nurses were asked a series of questions about demographics including sex, age, work role, years of nursing experience, years in current position, and level of education. Nurses also reported on their level of burnout, job dissatisfaction, and intent to leave. Burnout was measured using the 9-item Emotional Exhaustion subscale of the Maslach Burnout Inventory, a valid and reliable tool in which participants respond using a 7-point Likert scale ranging from never to every day.[6,17-19] The current study classified respondents as having high burnout if their score was higher than the published average for health care workers (≥27).[6,19] Job dissatisfaction was measured with a single item asking "How satisfied are you with your current job?" Nurses responded using a 4-point Likert scale with options ranging from very satisfied to very dissatisfied. We defined job dissatisfaction as those who responded somewhat dissatisfied or very dissatisfied. Intent to leave was measured with a single item yes/no question, "If possible, would you leave your hospital within the next year as a result of job dissatisfaction?"

Items from the Practice Environment Scale of the Nursing Work Index were used to describe nurse work environments.[20] The Practice Environment Scale of the Nursing Work Index is a validated and reliable instrument with established predictive validity and is endorsed by the National Quality Forum.[21] Nurses were asked to indicate the extent to which they agreed that there are good working relationships among nurses and physicians using a 4-point Likert-type scale ranging from strongly agree to strongly disagree. Responses were dichotomized into percent agree (ie, somewhat agree/strongly agree) and percent disagree (ie, somewhat disagree/strongly disagree). Nurses were also asked to indicate their confidence in whether management would act to resolve problems in patient care that clinicians identify using a 4-point Likert scale ranging from very confident to not at all confident. Responses were dichotomized into confident (ie, somewhat confident, confident, very confident) and not at all confident. Staffing was measured by asking nurses whether there were enough nurses to care for patients using a 4-point Likert scale ranging from strongly agree to strongly disagree.[5] As with the clinician relations item, responses were dichotomized into percent agree (ie, somewhat agree/strongly agree) and percent disagree (ie, somewhat disagree/strongly disagree). Overall work environment was reported using a single item question where nurses were asked to rate the overall quality of their work environment on a 4-point Likert scale ranging from excellent to poor. Responses were dichotomized into excellent/good and fair/poor for analysis.

Finally, nurses were asked to select recommendations from a list that was derived from the National Academy of Medicine well-being recommendations and published literature[1,21,22] that would be most effective in reducing their burnout and improving their well-being. Response options were very important, somewhat important, not very important, or not important at all. For the purpose of this research, we included the responses of the nurses selecting "very important" for each item and only for those nurses categorized as having high burnout.

HOSPITAL CHARACTERISTICS

Hospital-level variables were obtained from the American Hospital Association 2019 Annual Hospital Survey and included bed size, teaching status, technology status, trauma care status, and ED annual visit volume. Bed size was defined as small (≤250 beds), medium (251-500 beds), and large (>500 beds). Teaching status was determined by physician residents assigned per bed and defined as non-teaching (no residents), minor (ratio of 1:4 residents to bed), and major (ratio of >1:4 residents to bed) and reported in percentage. Technology status was defined as high or low based on whether the hospital had capabilities for performing open-heart surgery and organ transplants.[23,24] Trauma care status was defined by whether the hospital is a certified trauma center. ED annual visit volume was reported.

ANALYSIS

We compared emergency nurses with inpatient nurses using descriptive statistics (ie, frequencies, percentages, means, and standard deviations). *t*-tests were used for continuous variables including age, years of experience, and years worked at current hospital. Chi-square tests were used for all categorical variables (ie, sex, education, well-being outcomes, and measures of the nurse work environment). We then described interventions which nurses reported as most and least important to reduce burnout and improve

TABLE 1
Characteristics and outcomes of hospital emergency nurses and inpatient nurses in Magnet hospitals ($N = 11,743$)

Characteristic/Outcome	Magnet emergency department	Magnet inpatient	*P* value
Total	1585 (11.9)	10,158 (76.7)	–
Characteristics			–
Female, n (%)	1063 (84.5)	7516 (89.0)	< .001
Age, m (SD)	37.3 (10.2)	36.7 (11.1)	.039
Years of experience, m (SD)	10.8 (9.3)	10.4 (10.0)	.087
Years at current hospital, m (SD)	7.2 (7.3)	7.4 (8.2)	.810
BSN or higher, n (%)	1121 (87.6)	7634 (89.6)	.035
Well-being outcomes, n (%)			
High burnout	794 (53.7)	4859 (50.7)	.036
Job dissatisfaction	427 (27.6)	2325 (23.5)	.001
Intent to leave	753 (49.9)	4070 (42.0)	<.001

BSN, Bachelor of Science in Nursing.

their well-being. Stata version 17.0 was used to conduct analyses.[25]

Results

The Supplemental Table provides information on the characteristics of the 60 Magnet hospitals by size, teaching status, technology status, and whether they were a recognized trauma center, as well as annual visit volume in the emergency departments.

As shown in Table 1, nurses working in emergency departments were significantly less likely to identify as female (84.5% vs 89.0%; $P < .001$), were older (37.3 vs 36.7, $P = .039$), and were less likely to have a Bachelor of Science in Nursing or higher (87.6% vs 89.6%; $P = .035$) than inpatient nurses. Years of nursing experience and years at current hospital did not vary significantly between the 2 groups. More than half of emergency (53.7%) and inpatient (50.7%) nurses were classified as experiencing high burnout. Emergency nurses reported significantly higher levels of job dissatisfaction (27.6% vs 23.5%, $P = .001$), burnout ($P = .036$), and intent to leave (49.9% vs 42.0%, $P < .001$) than inpatient nurses.

Table 2 shows that emergency nurses were significantly more likely than inpatient nurses to rate their work environments as fair or poor (43.5% vs 36.5%, $P < .001$) and to disagree that there are enough nurses to care for patients (61.2% vs 56.5%, $P = .001$). Emergency nurses were also significantly more likely than inpatient nurses to report that they lacked confidence in management to act to resolve problems in patient care (19.1% vs 14.5%, $P < .001$).

TABLE 2
Magnet hospital emergency nurses and inpatient nurses assessments of their work environments ($N = 11,743$)

Work environment factor	Emergency nurses	Inpatient nurses	*P* value
Work environment (% fair or poor)	43.5%	36.5%	< .001
Enough nurses to care for patients (% disagree)	61.2%	56.5%	.001
How confident are you that management will act to resolve problems in patient care (% not at all confident)	19.1%	14.5%	< .001
Physicians and nurses have good working relationships (% agree)	92.5%	87.6%	< .001

TABLE 3
Recommendations selected as very important by emergency nurses with high burnout (N = 794)

Question: what items do you think would be most effective in reducing burnout and improving clinician well-being?	Emergency nurse response
Most highly recommended	
Improve nurse staffing levels	91.4%
Support for all clinicians to take breaks without interruption	86.7%
Improve team communication	58.8%
Reduce emphasis on meeting external quality metrics	58.2%
Increase individual control of scheduling	56.0%
Greater leadership openness to clinician-led innovations	56.0%
Least highly recommended	
Improve usability of electronic health record system	32.6%
Provide resilience training	32.5%
Create time and places for meditation and reflection	32.1%
Establish a clinician wellness committee	31.1%
Delegate more responsibility to nurses clinical decision making	30.3%
Employ more nurse practitioners and/or physician assistants	25.9%
Appoint a clinician wellness champion	21.2%

Notably, both emergency and inpatient nurses reported that physicians and nurses have good working relationships; emergency nurses were significantly more likely to report good working relationships with physicians than inpatient nurses (92.5% vs 87.6%, $P < .001$).

The recommendations that emergency nurses with high burnout reported to be very important and least important in reducing burnout and improving well-being are presented in Table 3. The recommendation that was ranked of highest importance by emergency nurses was to improve nurse staffing levels (91.4%). The ability to take breaks without interruption was ranked second highest (86.7%). The least recommended interventions were to employ more nurse practitioners and/or physician assistants (25.9%) and appoint a clinician wellness champion (21.2%).

Discussion

In this study, we sought to determine whether emergency nurses had poorer well-being outcomes and work environments than inpatient nurses working in the same Magnet hospitals and to identify promising interventions to improve emergency nurses' well-being. Our findings provide evidence that compared with inpatient nurses, emergency nurses experience significantly higher burnout, job dissatisfaction, and intent to leave. Although survey data collection occurred in 2021 during the COVID-19 pandemic, our findings are consistent with research predating the pandemic that also documents poor outcomes among emergency nurses.[10,12] High nurse burnout is concerning because it is associated with increased patient mortality and failure to rescue rates, and longer lengths of stay in hospitals for patients.[6]

This is the first large-scale study of burnout, job dissatisfaction, and intent to leave among emergency nurses working in Magnet hospitals in the United States. Although there is evidence that Magnet hospitals have better work environments and that nurses practicing in Magnet hospitals have lower burnout, are less likely to be dissatisfied with their jobs, and are less likely to plan to leave their jobs within a year,[8,26,27] we found poorer nurse well-being (ie, greater burnout and job dissatisfaction) and higher intent to leave among emergency nurses than inpatient nurses in our Magnet hospital sample. Our results suggest that ED work environments should be a special focus and priority in Magnet hospitals to decrease burnout and improve emergency nurses' well-being. Our study provides clear recommendations from emergency nurses on promising interventions they believe would improve their outcomes in addition to identifying interventions often proposed in the literature that they do not believe would be helpful in reducing their burnout and improving their well-being. These emergency nurse recommendations provide nurse leaders insight and direction to prioritize areas of opportunity. The 2 overwhelmingly recommended interventions are to improve nurse staffing levels and support clinicians to take breaks without interruption. Inadequate nurse staffing is a significant contributor to emergency nurse burnout, which corroborates our findings that emergency nurses with high burnout most frequently selected "to improve nurse staffing" as a recommendation to reduce burnout and improve nurse well-being.[6] The more frequently selected

recommendations align with research showing that the perceived work environment, including support from leaders and dissatisfaction with staffing, is associated with emergency nurse outcomes.[6,27,28]

More than half of emergency nurses thought improving team communication, reducing emphasis on meeting external quality metrics, increasing individual control of scheduling, and greater leadership openness to clinician-led innovations would help reduce burnout and improve their well-being. However, less than one-third of emergency nurses thought resilience training, creating time and places for meditation and reflection, establishing a clinician wellness committee, or appointing a clinician wellness champion would be helpful. This is a noteworthy finding considering these interventions—often directed at improving nurses' personal resilience—are more commonly implemented than interventions to improve work environments that they ranked more highly. The priorities reported by emergency nurses in this study align with those reported in our study of all inpatient nurses.[16] Despite the alignment of recommendations, emergency nurses require special priority in implementing interventions to reduce burnout and improve well-being given their poorer outcomes.

Limitations

The cross-sectional design of the current study limits our ability to determine causal relationships. Another limitation is that data were collected during the COVID-19 pandemic, which was a particularly stressful time for nurses with the threat of becoming infected themselves and possibly passing on the infection to their loved ones, which only added to the pre-existing chaos that has been shown to prevail in ED work environments. However, numerous studies from before the pandemic show that emergency nurses have long experienced challenges to their personal health and well-being.

Both a strength and limitation is that the study is of emergency and in inpatient (medical-surgical) nurses working in Magnet hospitals only. As a strength, there is relatively little research on whether the well-documented Magnet advantage is equally experienced by all nurses in Magnet hospitals. We found it is not, which creates a worthy priority for Magnet hospital leaders. We found that, like non-Magnet hospitals, emergency nurses in Magnet hospitals are more likely to experience high burnout, job dissatisfaction, and intent to leave than inpatient nurses in the same hospitals. As a limitation, our estimates of burnout and other adverse outcomes among emergency nurses cannot be generalized to all emergency nurses. Our estimates are likely on the low side for estimating the national challenges for emergency nurses as the hospitals in our sample have achieved Magnet status.

Implications for Emergency Nurses

Nurse leaders have significant impact on nursing burnout and well-being. The findings from our study can help nurse leaders identify and prioritize interventions to improve the work environment and the well-being of their emergency nurses. Increasing nurse staffing is the top recommendation for improving well-being among emergency nurses. Even their second most important recommendation, ensuring that nurses are able to take uninterrupted breaks, is related to staffing adequacy. Leaders should consider improving their nurse staffing levels.

Emergency nurses are also interested in having more control over their schedules. Hospitals have been slow to embrace self-scheduling, citing concerns about continuity of care. The emergency department, where patients should not be staying long, could be a good opportunity to test self-scheduling innovations emerging out of the gig economy involving applications that match hours for which emergency departments need coverage and hours that individual nurses are willing to provide. For example, supporting clinicians to take breaks without interruptions and giving individuals increased control of their schedule are interventions that leaders can implement in their emergency departments while working to increase nurse staffing.

Our results suggest that leaders should be more critical about spending time and resources on resilience training, appointing a wellness champion, or creating a space for meditation. Emergency nurses are prioritizing improved working conditions over mental health interventions at the individual clinician level. There is a solid evidence base that shows that improved staffing and work environments are associated with improved clinician well-being. Leaders should follow the evidence.

Conclusion

Emergency nurses experience higher levels of burnout and job dissatisfaction and are more likely to intend to leave their current job than inpatient nurses working in the same Magnet hospitals. Nurse understaffing and poor work environments are root causes of adverse emergency nurse

outcomes and should be a priority for attention within Magnet hospitals.

Acknowledgments

United States Clinician Well-being Study Consortium members: Directors: LH Aiken and MD McHugh, Center for Health Outcomes and Policy Research, University of Pennsylvania School of Nursing, Philadelphia, PA. Advocate Christ Medical Center, Oak Lawn, IL, M Cleary, PI; Anne Arundel Medical Center, Annapolis, MD, C Ley, PI; Avera McKennan Hospital and University Health Center, Sioux Falls, SD, CJ Borchardt, PI; Billings Clinic, Billings, MT, JM Brant, PI; Bon Secours/St Elizabeth Youngstown Hospital, Youngstown, OH, BL Turner, PI; Bon Secours/St Mary's Hospital, Richmond, VA, AE Leimberger, PI; Bristol Health, Bristol, CT, K Waterman, PI; Cedars-Sinai Medical Center, Los Angeles, CA, BL Coleman, PI; Cleveland Clinic Foundation, Cleveland, OH, NM Albert, PI; El Camino Health, Mountain View, CA, C Stewart, PI; Emory Saint Joseph's Hospital, Atlanta, GA, D Steele, PI; Emory University Hospital, Atlanta, GA, R Kaplow, PI; Englewood Health, Englewood, NJ, K Kaminsky, PI; Good Samaritan Hospital, Vincennes, IN, HA Hinkle, PI; Hackensack/Jersey Shore Medical Center, RD Besa, PI; Hackensack/Raritan Bay Medical Center and Old Bridge Medical Center, Perth Amboy, NJ, KP Taylor, PI; Hackensack/Riverview Medical Center, R Graboso, PI; Hackensack/University Medical Center, Hackensack, NJ, K Dimino, PI; Huntington Hospital, Pasadena, CA, L Searle-Leach, PI; Kootenai Health, Coeur D Alene, ID, S Albritton, PI; Lehigh Valley Hospital, Allentown, PA, CL Davidson, PI; Loyola University Medical Center, Maywood, IL, T Carrigan, PI; Massachusetts General Hospital, Boston, MA, DA Burke, PI; Mid Coast Hospital, Brunswick, ME, KR Anthony, PI; Morristown Medical Center, Morristown NJ, MO Kowalski, PI; Newport Hospital, Newport, RI, M Rounds, PI; NorthBay Healthcare, Fairfield, CA, JM Tudor, PI; Northwell/Huntington Hospital, Huntington, NY, L Griffis, PI; Northwell/Long Island Jewish Medical Center, New Hyde Park, NY, LM Vassallo, PI; Northwell/Mather Hospital, Port Jefferson, NY, M Mulligan, PI; Northwell/North Shore Medical Center, I Macyk, PI; Northwell/Northern Westchester Hospital, Mount Kisco, NY, C Manley-Cullen, PI; Northwestern/Central DuPage Hospital, Winfield, IL, AE Haberman, PI; Northwestern/Delnor Hospital, Geneva, IL, SL Hutchinson, PI; Northwestern/Lake Forest Hospital, Lake Forest, IL, AL Barnard, PI; Northwestern Memorial Hospital, Chicago, IL, B Gobel, PI; Ohio State University Comprehensive Cancer Center, The James, Hilliard, OH, DL McMahon, PI; OSF Healthcare/Saint Anthony Medical Center, Rockford, IL, MJ Brown, PI; OSF Healthcare/Saint Joseph Medical Center, Bloomington, IL, L Strack, PI; OSF Healthcare/Saint Francis Medical Center, Peoria, IL, SA Emmerling, PI; Penn/Chester County Hospital, West Chester, PA, AR Coladonato, PI; Penn/Hospital of the University of Pennsylvania, Philadelphia, PA, JA Reich, PI; Penn/Lancaster General Hospital, Lancaster, PA, JJ Gavaghan, PI; Penn/Pennsylvania Hospital, Philadelphia, PA, FD Vanek, PI; Penn/Presbyterian Medical Center, Philadelphia PA, JR Ballinghoff, PI; Penn/Princeton Health, Plainsboro Township, NJ, KA Book, PI; Robert Wood Johnson University Hospital, New Brunswick, NJ, K Easter, PI; Southwestern Vermont Health Care, Bennington, VT, PB Seaman, PI; Stanford Health Care, Stanford, CA, ME Lough, PI; Summa Health, Akron, OH, CL Benson, PI; The Miriam Hospital, Providence, RI, M Ducharme, PI; The Valley Hospital, Ridgewood, NJ, Paul Quinn, PI; Thomas Jefferson University Hospital, Philadelphia, PA, DM Molyneaux, PI; UC Davis, Sacramento, CA, L Kennedy; PI; UC Irvine Health, Orange, CA, D Grochow, PI; UC San Diego Health, San Diego, CA, E Nyheim, PI; University of Alabama at Birmingham Hospital, Birmingham AL, SM Purcell, PI; University of Iowa Hospitals and Clinics, Iowa City, IA, K Hanrahan, PI; University of Kentucky HealthCare, Lexington, KY, KB Isaacs, PI; WakeMed Health and Hospitals, Raleigh, NC, JJ Whade, PI.

Author Disclosures

Conflicts of interest: none to report.

This work was supported by the United States Clinician Well-being Study Consortium and the National Institute of Nursing Research, National Institutes of Health (R01 NR014855 and T32 NR007104). American Nurses Credentialing Center provided in-kind support in collaboration between Linda H. Aiken, Ph.D., RN et al., and Magnet recognized hospitals.

Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2023.06.012.

REFERENCES

1. National Academy of Medicine, National Academies of Sciences, Engineering, and Medicine, Committee on Systems Approaches to Improve Patient Care by Supporting Clinician. *Taking action against clinician*

burnout: a systems approach to professional well-being. The National Academies Press; 2019. https://doi.org/10.17226/25521

2. Lasater KB, Aiken LH, Sloane DM, et al. Chronic hospital nurse understaffing meets COVID-19: an observational study. *BMJ Qual Saf*. 2021;30(8):639-647. https://doi.org/10.1136/bmjqs-2020-011512
3. Aiken LH, Sloane DM, McHugh MD, Pogue CA, Lasater KB. A repeated cross-sectional study of nurses immediately before and during the COVID-19 pandemic: implications for action. *Nurs Outlook*. 2023;71(1):101903. https://doi.org/10.1016/j.outlook.2022.11.007
4. Rozo JA, Olson DM, Thu HS, Stutzman SE. Situational factors associated with burnout among emergency department nurses. *Workplace Health Saf*. 2017;65(6):262-265. https://doi.org/10.1177/2165079917705669
5. Aiken LH, Clarke SP, Sloane DM, Sochalski J, Silber JH. Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA*. 2002;288(16):1987-1993. https://doi.org/10.1001/jama.288.16.1987
6. Schlak AE, Aiken LH, Chittams J, Poghosyan L, McHugh M. Leveraging the work environment to minimize the negative impact of nurse burnout on patient outcomes. *Int J Environ Res Public Health*. 2021;18(2):610. https://doi.org/10.3390/ijerph18020610
7. Aiken LH, Smith HL, Lake ET. Lower Medicare mortality among a set of hospitals known for good nursing care. *Med Care*. 1994;32(8):771-787.
8. Kelly LA, McHugh MD, Aiken LH. Nurse outcomes in Magnet and non-Magnet hospitals. *J Nurs Admin*. 2012;42(10 Suppl):S44-S49. https://doi.org/10.1097/NNA.0b013e31822eddbc
9. Johnston ANB, Cabilan CJ, Galbraith S, et al. What impact does Magnet designation have on emergency department nurses' outcomes? A scoping review. *Int Emerg Nurs*. 2020;52:100908. https://doi.org/10.1016/j.ienj.2020.100908
10. Butera S, Brasseur N, Filion N, Bruyneel A, Smith P. Prevalence and associated factors of burnout risk among intensive care and emergency nurses before and during the coronavirus disease 2019 pandemic: a cross-sectional study in Belgium. *J Emerg Nurs*. 2021;47(6):879-891. https://doi.org/10.1016/j.jen.2021.08.007
11. Clark P, Crawford TN, Hulse B, Polivka BJ. Resilience, moral distress, and workplace engagement in emergency department nurses. *West J Nurs Res*. 2021;43(5):442-451. https://doi.org/10.1177/0193945920956970
12. Dixon E, Murphy M, Wynne R. A multidisciplinary, cross-sectional survey of burnout and well-being in emergency department staff during COVID-19. *Australas Emerg Care*. 2022;25(3):247-252. https://doi.org/10.1016/j.auec.2021.12.001
13. Lee MMD, Gensimore MM, Maduro RS, Morgan MK, Zimbro KS. The impact of burnout on emergency nurses' intent to leave: a cross-sectional survey. *J Emerg Nurs*. 2021;47(6):892-901. https://doi.org/10.1016/j.jen.2021.07.004
14. McDermid F, Mannix J, Peters K. Factors contributing to high turnover rates of emergency nurses: a review of the literature. *Aust Crit Care*. 2020;33(4):390-396. https://doi.org/10.1016/j.aucc.2019.09.002
15. Sermeus W, Aiken LH, Ball J, et al. A workplace organisational intervention to improve hospital nurses' and physicians' mental health: study protocol for the Magnet4Europe wait list cluster randomised controlled trial. *BMJ Open*. 2022;12(7):e059159. https://doi.org/10.1136/bmjopen-2021-059159
16. Aiken LH, Lasater KB, Sloane DM, et al. Physician and nurse well-being and preferred interventions to address burnout in hospital practice: factors associated with turnover, outcomes, and patient safety. *JAMA Health Forum*. 2023;4(7):e231809. https://doi.org/10.1001/jamahealthforum.2023.1809
17. Maslach C, Jackson SE. The measurement of experienced burnout. *J Organ Behav*. 1981;2(2):99-113. https://doi.org/10.1002/job.4030020205
18. Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annu Rev Psychol*. 2001;52(1):397-422. https://doi.org/10.1146/annurev.psych.52.1.397
19. Maslach C, Jackson S, Leiter M, Schaufeli W, Schwab R. *Maslach Burnout Inventory*. Vol 21. Consulting Psychologists Press; 1986.
20. Lake ET. Development of the practice environment scale of the nursing work index. *Res Nurs Health*. 2002;25(3):176-188. https://doi.org/10.1002/nur.10032
21. Lake ET, Sanders J, Duan R, Riman KA, Schoenauer KM, Chen Y. A meta-analysis of the associations between the nurse work environment in hospitals and 4 sets of outcomes. *Med Care*. 2019;57(5):353-361. https://doi.org/10.1097/MLR.0000000000001109
22. Carthon J, Brooks M, Brom H, et al. System-level improvements in work environments lead to lower nurse burnout and higher patient satisfaction. *J Nurs Care Qual*. 2021;36(1):7-13. https://doi.org/10.1097/NCQ.0000000000000475
23. Aiken LH, Clarke SP, Cheung RB, Sloane DM, Silber JH. Educational levels of hospital nurses and surgical patient mortality. *JAMA*. 2003;290(12):1617-1623. https://doi.org/10.1001/jama.290.12.1617
24. Silber JH, Williams SV, Krakauer H, Schwartz JS. Hospital and patient characteristics associated with death after surgery: a study of adverse occurrence and failure to rescue. *Med Care*. 1992;30(7):615-629. https://doi.org/10.1097/00005650-199207000-00004
25. StataCorp. *Stata Statistical Software: Release 17*. StataCorp LLC; 2021.
26. Park SH, S Hye, Gass, Stephanie, Boyle, Diane K. Comparison of reasons for nurse turnover in Magnet® and non-Magnet hospitals. *J Nurs Admin*. 2016;46(5):284-290. https://doi.org/10.1097/NNA.0000000000000344
27. Kutney-Lee A, Stimpfel AW, Sloane DM, Cimiotti JP, Quinn LW, Aiken LH. Changes in patient and nurse outcomes associated with magnet hospital recognition. *Med Care*. 2015;53(6):550-557. https://doi.org/10.1097/MLR.0000000000000355
28. Blanchard J, Li Y, Bentley SK, et al. The perceived work environment and well-being: a survey of emergency health care workers during the COVID-19 pandemic. *Acad Emerg Med*. 2022;29(7):851-861. https://doi.org/10.1111/acem.14519

Emergency Nursing Review Questions: January 2024

Author: Benjamin E. Marett, EdD, MSN, CEN, TCRN, CCRN, COHN, NPD-C, NE-C, FAEN, FAHA, Rock Hill, SC
Section Editors: Benny Marett, EdD, MSN, CEN, TCRN, CCRN, COHN, NPD-C, NE-C, FAEN, FAHA and Sara Webb, MSN, C-PNP, CFNP, C-NPT, Paramedic.

These review questions are based on the Emergency Nursing Core Curriculum and other pertinent resources to emergency nursing practice. They offer emergency nurses an opportunity to test their knowledge about their practice.

QUESTIONS

1. A patient is brought to the emergency department complaining of shortness of breath. A 2 pack per day × 25-year smoker describes the difficulty in breathing onset 3 to 4 hours before arrival. The patient's blood sugar is 540 mg/dL. An arterial blood gas analysis is obtained, along with other diagnostic tests. The following blood gas results are reported: pH, 7.30; PaO_2, 84 mm Hg; $PaCO_2$, 35 mm Hg; HCO_3, 16mEq/L. The nurse's assessment of the results would indicate:
   A. Respiratory alkalosis
   B. Metabolic acidosis
   C. Respiratory acidosis
   D. Metabolic alkalosis
2. A power outage has affected the emergency department. You need to administer an intravenous solution of normal saline over 6 hours to a dehydrated patient. You are using a 10 drop/mL intravenous set. Your volume to infuse is 1000 mL. Your drip rate would be:
   A) 28 drops per minute
   B) 48 drops per minute
   C) 60 drops per minute
   D) 80 drops per minute
3. A patient presents to the emergency department after a fall and is observed to have a hemotympanum. Which of the following conditions would the nurse suspect?
   A. Basilar skull fracture
   B. Fractured hyoid bone
   C. Intracerebral bleed
   D. Frontal sinus infection
4. A patient is being transported via emergency medical services from an industrial incident. The patient has been exposed to cyanide. The patient is hypotensive and bradycardic. What antidote medication should the nurse have available for administration on admission to the emergency department?
   A. N-acetylcysteine (NAC) (Mucomyst)
   B. Activated charcoal
   C. Hydroxocobalamin (vitamin B_{12})
   D. Pralidoxime (2-PAM) chloride (Protopam)
5. After a motor vehicular crash, a patient is evaluated in the emergency department. The nurse notes the left pupil to be 7 mm and the right pupil to be 6 mm. The patient is alert and oriented × 4 (time, person, place, situation). Blood pressure is 130/70 mm Hg, heart rate is 84 beats per minute, and respirations are 20 per minute. The Glasgow coma scale is determined to be 15. The pupils are reactive to light. Which of the following would be suspected to explain the unequal pupils?
   A. Tentorial herniation
   B. Recent cocaine use
   C. Orbital entrapment
   D. Physiological anisocoria
6. A patient is 2 days after chemotherapy and presents to the emergency department with lethargy and syncope before admission and has a seizure on admission. The patient's ankles are markedly swollen and crackles are noted in both lungs upon auscultation. The symptoms developed after the first dose of chemotherapy. Laboratory assessment reveals hyperkalemia and hypocalcemia along with metabolic acidosis. The nurse's assessment is suggestive for which of the following?
   A. Serotonin syndrome
   B. Anaphylaxis
   C. Tumor lysis syndrome
   D. Wellens syndrome

Benjamin E. Marett is Past President of ENA, South Carolina State Council, Rock Hill, SC.

For correspondence, write: Benjamin E. Marett, EdD, MSN, CEN, TCRN, CCRN, COHN, NPD-C, NE-C, FAEN, FAHA, South Carolina State Council, Rock Hill, SC; E-mail: bmarett@comporium.net

J Emerg Nurs 2024;50:161-3.
0099-1767

https://doi.org/10.1016/j.jen.2023.08.014

ANSWERS

1. Correct answer: B

Metabolic acidosis can be caused by diabetic ketoacidosis, malnutrition, and other metabolic derangements such as diarrhea and dehydration. This blood gas analysis demonstrates an acidotic pH. The pH is less than 7.35. Normal pH is 7.35 to 7.45, with levels below 7.35 defined as acidosis and levels above 7.45 as alkalosis. The PaO_2 (partial pressure) level is normal (80-100 mm Hg). The PaCO2 is normal (35-45 mm Hg.) The bicarbonate level (HCO_3) is low (normal 22-26 mEq/L). This patient's presentation with a blood sugar of 540 mg/dL would be suggestive of metabolic acidosis. Classic blood gas values for metabolic acidosis would be decreased pH, normal PaO_2, normal $PaCO_2$, and decreased bicarbonate (HCO_3) level (B). Respiratory alkalosis would demonstrate an elevated pH, decreased $PaCO^2$, and a normal bicarbonate (HCO_3) level (A). Respiratory acidosis would show a decreased pH, increased paCO2, and a normal bicarbonate (HCO_3) (C). Metabolic alkalosis would demonstrate an increased pH, normal $PaCO_2$, and an increased bicarbonate (HCO_3) level (D).[1]

2. Correct answer: A

Calculation of a drip rate involves a simple formula: The amount of fluid to be infused in milliliters (mL), divided by the time the fluid is to be infused in minutes, multiplied by the drip factor of the fluid administration set. For this situation, 1000 mL of fluid is to be administered over 6 hours (360 minutes), multiplied by a 10 drops per mL fluid administration set; 1000 mL divided by 360 min = 2.7 mL/min multiplied by 10 drops per mL, for a total of 27.7 or 28 drops per minute (A). The other listed answers are not correct (B, C, D).[2]

3. Correct answer: A

A patient with a basilar skull fracture may demonstrate a hemotympanum or blood behind the tympanic membrane or eardrum. Patients with a middle fossa fracture of the basilar skull may also demonstrate Battle's sign or bruising behind the ear in the mastoid region (A). The hyoid bone is a horseshoe-shaped bone, situated in the midline of the neck. Fractures may present with acute respiratory compromise, commonly seen with strangulation (B). An intracerebral bleed does not typically bleed into the middle ear, behind the tympanic membrane (C). A frontal sinus infection typically presents with facial pain and nasal drainage (D).[3]

4. Correct answer: C

Cyanide causes cellular hypoxia by blocking aerobic metabolism. Supplemental oxygen must be enhanced with the use of an antidote. The most common used is hydroxocobalamin (vitamin B 12). The typical cyanide antidote kit is still used also (sodium nitrite, sodium thiosulfate, and amyl nitrite) (C). N-acetylcysteine (Mucomyst) is the typical antidote for acetaminophen (Tylenol) toxicity. (A). Activated charcoal may be used as an adsorbent for ingested substances but not as an antidote (B). Pralidoxime (2-PAM) chloride (Protopam) is used as an antidote for organophosphate toxicity (D).[4,5]

5. Correct answer: D

Physiological anisocoria is defined as normally unequal pupils of 1 mm or less. This condition may be found in approximately 10% to 20% the general population and must be correlated with a physical examination. If neurologic findings are determined to be abnormal, the pupillary size abnormality must be investigated and managed. Physiological anisocoria is a benign condition possibly owing to transient asymmetrical supranuclear inhibition of the Edinger-Westphal nucleus that controls the pupillary sphincter. The pupil variation is usually 1 mm or less (D). Tentorial or uncal herniation of the brain may exhibit changes in pupillary size and is a sign of major neurologic compromise. This occurs when a portion of the brain and cranial nerves are compressed due to expanding intracranial pressure (A). Because cocaine is a stimulant, it encourages the release of brain chemicals and endorphins in large amounts. The pupils dilate, leading to the terminology of cocaine eyes (B). Entrapment of the eye by the orbital bone due to injury would prohibit the eye from normal movement, not generally causing unequal pupils. The presented patient is not described as having any orbital injury (C).[6,7]

6. Correct answer: C

Tumor lysis syndrome is a potentially life-threatening post-chemotherapy oncology emergency caused by a breakdown of tumor cells within 2 days of chemotherapy. Tumor cell

debris release into the blood system causes many metabolic disturbances including metabolic acidosis, neurologic symptoms, dysrhythmias, and sudden death (C). Serotonin syndrome is a drug-related illness caused by administration of medications affecting serotonin levels. It occurs within minutes of the serotonin elevation (A). Anaphylaxis could occur to any medication, but would occur sooner than 2 days, and usually would not demonstrate metabolic abnormalities initially (B). Wellens syndrome is a cardiac electrocardiographic pattern caused by left coronary artery stenosis (D).[6]

REFERENCES

1. Milici JJ. Respiratory emergencies. In: Foley A, ed. *Sheehy's Manual of Emergency Care*. 8th ed. Elsevier; 2023:105-128.
2. Mometrix Test Preparation. Calculating IV drip rate. Updated February 27, 2023. Accessed August 7, 2023. https://www.mometrix.com/academy/calculations-of-drip-rates/#:~:text=The%20formula%20for%20calculating%20the,drip%20rate%20in%20gtt%2Fmin
3. Foley A. Head, neck, and vertebral column trauma. In: Foley A, ed. *Sheehy's Manual of Emergency Care*. 8th ed. Elsevier; 2023:189-206.
4. DeLaby M. Chemical, biological, radiologic, nuclear threats. In: Sweet V, ed. *Sheehy's Emergency Nursing Principles and Practice*. 7th ed. Elsevier; 2020:178-179.
5. Williams L, Wilkins W. *Nursing 2022 Drug Handbook*. 42nd ed. Wolters Kluwer Health; 2021.
6. Campbell M. Head trauma. In: Blansfield JS, ed. *TNCC Provider Manual*. 8th ed. Jones and Bartlett Learning; 2020:105-110.
7. Lee AG. Anisocoria. Accessed July 27, 2023. Available at: https://collections.lib.utah.edu/ark:/87278/s6cc5cm7

Journal of
EMERGENCY NURSING
JEN
Peer Reviewed Global Resource for Emergency Nursing

Table of Contents

JANUARY 2024 ■ VOLUME 50 ■ NUMBER 1
www.jenonline.org

EDITORIALS

CORRIGENDUM

PRESIDENT'S MESSAGE

ENA POSITION STATEMENT

Publication information: *Journal of Emergency Nursing* (ISSN 0099-1767) is published bimonthly by Elsevier (Radarweg 29, 1043 NX Amsterdam, The Netherlands) and distributed by Elsevier, 230 Park Avenue, Suite 800, New York, NY 10169, USA. Months of publication are January, March, May, July, September, and November. Periodicals postage paid at New York, NY and at additional mailing offices. USA POSTMASTER: Send change of address to *Journal of Emergency Nursing*, Elsevier, Journal Returns, 450 Fame Ave; Hanover, PA 17331 USA. ENA members are encouraged to report address changes to the office by calling (800) 900-9659.

CLINICAL PRACTICE GUIDELINES

CLINICAL

PRACTICE IMPROVEMENT

TRIAGE DECISIONS

RESEARCH

EMERGENCY NURSING REVIEW QUESTIONS

Journal of
EMERGENCY NURSING
JEN
Peer Reviewed Global Resource for Emergency Nursing

Journal of
EMERGENCY NURSING
JEN
Peer Reviewed Global Resource for Emergency Nursing

Journal of
EMERGENCY NURSING
JEN
Peer Reviewed Global Resource for Emergency Nursing

Information for Readers

Customer Service (orders, claims, online, change of address)

Elsevier Health Sciences Division, Subscription Customer Service, 3251 Riverport Lane, Maryland Heights, MO 63043. Tel: 1-800-654-2452 (U.S. and Canada); 314-447-8871 (outside U.S. and Canada). Fax: 314-447-8029. E-mail: journalscustomerservice-usa@elsevier.com (for print support); journalsonlinesupport-usa@elsevier.com (for online support). Address changes must be submitted four weeks in advance.

Yearly Subscription Rates

United States and possessions: Individual $210.00. All other countries (prices include airspeed delivery): Individual $246.00. Current prices are in effect for back volumes and back issues. Further information on this journal is available from the Publisher or from this journal's Web site (www.jenonline.org). Information on other Elsevier products is available through Elsevier's Web site (www.elsevier.com).

Advertising Information

Advertising orders and inquiries can be sent to: USA, Canada, and South America, Kenneth Naylor, Elsevier, phone (646) 617-1622; E-mail: k.naylor@elsevier.com. Recruitment advertising orders and inquiries can be sent to Pat Wendelken, Be Media Partners, LLC; phone (630) 363-6305; E-mail: pat@wendelken.us. Europe and the rest of the world, Julie Toop; phone +44 (0) 1865 843016; fax +44 (0) 1865 843976; E-mail: media@elsevier.com.

General Information

The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).

Reprints. For queries about author offprints, E-mail authorsupport@elsevier.com. To order 100 or more reprints for educational, commercial, or promotional use, contact Derrick Imasa at 212-633-3874, Elsevier Inc., 360 Park Ave South, New York, NY 10010-1710. Fax: 212-462-1935; email: reprints@elsevier.com. Reprints of single articles available online may be obtained by purchasing Pay-Per-View access for $14 per article on the journal Web Site, www.jenonline.org.

Indexed or abstracted in International Nursing Index, the *Cumulative Index to Nursing & Allied Health Literature*, MEDLINE, *Journal Citation Report*, and *Scopus*.

INFORMATION FOR AUTHORS

For information about submitting an article to *JEN* along with step-by-step instructions, please go to https://www.jenonline.org/content/authorinfo.

If you have questions regarding content or submissions, please contact Managing Editor Annie Kelly at anniebkelly@comcast.net or 413-427-3620.

ADDRESS CHANGES: NOTIFY US 6 WEEKS PRIOR TO MOVING. USE ANY OF THE FOLLOWING OPTIONS.

ENA Members

ENA members have 3 options:

1. Phone: Call (800) 900-9659 toll-free between the hours of 8:30 AM and 5:00 PM (CT).
2. Internet: Log onto the ENA Web site at www.ena.org (click on the "Membership" button, select "Members Only" and then "Update My Profile").
3. Fax: Our fax is available 24/7 at (847) 460-4002.

Other Subscribers

1. Phones: US/Canada: (800) 654-2452; Other Countries: (407) 345-4000
2. E-mail: elspcs@elsevier.com
3. Fax: (407) 363-9661
4. Or, mail to:

Journal of Emergency Nursing
Subscription Customer Service
6277 Sea Harbor Drive
Orlando, FL 32887