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EMERGENCY NURSES ASSOCIATION

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The Uncanny Camaraderie Among Emergency Nurses

Terry M. Foster, MSN, RN, CCRN, TCRN, CPEN, CEN, FAEN, Schaumburg, IL

Camaraderie is defined as a mutual trust and friendship among people who spend a lot of time together (sounds like a bunch of emergency nurses, right?). I absolutely love the camaraderie that I have experienced—and continue to experience–over the years with my fellow emergency nurses!

Trust must be earned with this camaraderie, and trust is an incredible asset among emergency nurses. When your coworkers trust you, you have reached the highest pinnacle of professional success. Value this attribute, for it's not easily attained. I need to be able to trust a nurse I'm closely working with. When you think about it, we often spend more time with our coworkers than with our own family—especially during the many holidays we are required to work. Emergency Nurses Association (ENA) members have worked side by side with their own coworkers for many, many years. Emergency nursing is one of the few professions where we have nurses from every generation working side by side. In a term of endearment, we have many "work daughters" or "work sons" that we have helped to orient and mentor. Although in recent years, the tenure in emergency nursing has certainly changed, that dynamic synchrony of an experienced weekend crew or our awesome night shift staff can never be forgotten! How many of us are guilty, when asked to pick up a shift, of checking the schedule first before delivering an answer to see who is working? If it's a good crew—sign me up! Generally, most of us enjoy being busy in the emergency department. During those busy times, there's a certain positive flow and energy that is palpable, and it somehow fuels our soul. And yet, those days when it is literally out of control as you hit the ground running, it can absolutely drain us like nothing else! Verbalizing "we can do this" or "we've got this today" can go a long way. We are all willing to work hard along with somebody. It's a little more frustrating to work for somebody when they're not showing the same amount of effort. After a quick report, we often look around to see "Who are my people today? Who's got my back? Who will help me when I don't even ask for help (but they can tell I need help by the look on my face)?" We've all worked with another nurse who never asks for help, and if they ever do, we know they're drowning!

Or there may be a situation when you suddenly hear a coworker start to use a louder or different tone of voice, either in speaking to a family or in asking for help, and you know it's "all hands on deck" right now! But there's also that feeling you get when you see a fellow emergency nurse getting stressed over a patient's changing condition. You immediately know that if they are stressed, everybody should be too! In camaraderie, nonverbal communication can be at an all-time high. A slight eye roll, a head nod (or shake), and a certain physical posturing can speak volumes to our coworkers! We tend to read our coworkers like a book!

With camaraderie comes wisdom. We can tell immediately when a coworker is troubled or stressed, especially if it's beyond the work environment. A tenured coworker automatically pitches in and helps, as the unspoken support is what's needed most. And a thank you from the recipient is never expected; it's just what we do to help each other.

In addition, we also have a unique camaraderie and familiarity with our physicians and providers, unlike any other area of nursing. We work alongside them 24/7—think about that. They know us and we know them—their quirks, their strengths, and their weaknesses. Those providers know when an experienced nurse comes to them expressing concern about a patient, they had better listen up! We tend not to ever "cry wolf!"

This camaraderie carries over into our ENA work. It's very gratifying to see our members from around the world

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bond immediately at a conference, during a committee meeting, or at a local chapter meeting. We connect at a level that is often difficult to explain to someone outside the emergency nursing profession.

Cherish this camaraderie. I hope it inspires you as an emergency nurse. Nurture it and build on it. It's what great teams are made of, and I'm so glad we have you on our ENA team!

Author Disclosure

Conflicts of interest: none to report.

My Commitment to Emergency Nurses

Anna Valdez, PhD, RN, PHN, CEN, CFRN, CNE, FAEN, FAADN

I became an emergency nurse shortly after graduating from nursing school in the early 1990s. As a new graduate and novice emergency nurse, I remember feeling excited and overwhelmed with my new role. I had so much to learn in those early years. One of my primary sources of information and education was the *Journal of Emergency Nursing* (JEN). There was always a journal copy in the ED break room, and I read every issue cover to cover. I appreciated that the journal published articles that I could apply in practice in real time, and I learned a lot about emergency care standards.

As I gained experience as an emergency nurse, I wanted to give back to the profession. When I finished my master's degree, I decided to become a peer reviewer for JEN. I thought it was a way to give back to the nurses who mentored me and reviewed my work during graduate school. Within a few years, I became a JEN section editor, and eventually, I was invited to join the JEN Editorial Board. I was fortunate to be mentored by Dr. Anne Manton, who appointed me to an associate editor role. I spent 13 years working as an editorial team member at JEN. Each year, I grew fonder of the journal and my emergency nurse colleagues.

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In those early days as an emergency nurse, I would never have imagined that one day I would be the editor in chief of JEN. I am honored and humbled to be back on the editorial team and entrusted with the editor role. I share my background because I want you to know how much the journal and emergency nurses mean to me. I often think about what emergency nurses are experiencing in the current health care climate. I know how hard it is to be an emergency nurse, and I am committed to JEN continuing to provide clinical and research guidance for emergency nurses worldwide. To achieve this goal, I will collaborate with the editorial team, editorial board, publisher, and Emergency Nurses Association (ENA) leadership to make some journal content and delivery adjustments.

According to the recently conducted August 2022 JEN Readership Survey, most readers value the journal, and half of respondents (51%) stated that they read every issue. More than half of the readers who participated in the ENA survey felt the inclusion of clinical practice guidelines (64%) and ENA position statements (52%) were essential to include in the journal. I agree with the readers. A prominent message from the reader survey was that the quality of the articles in JEN is very good to excellent and that readers desire more clinical articles. To that end, I intend to increase the number of clinically relevant articles in the journal and identify and implement methods for making the rigorous research published more accessible to busy emergency nurses. I will be working with the editors and editorial board members to develop a plan for the journal that meets the unique needs of emergency nurses at all levels of practice and in diverse emergency settings. It is my goal that all emergency nurses see the JEN as their journal.

In the coming months, I will be listening to leadership and readers to understand better how the journal can continue to grow while being the premier journal for emergency nurses worldwide. I will meet with several groups to obtain feedback about where the journal excels and where changes are warranted. I welcome feedback from you, the readers of JEN. Some of the areas of focus I am committed to addressing in JEN include, but are not limited to, nurse wellness and healthy practice environments, health and social equity, emerging practice issues such as novel or resurging viruses, and clinical practice guidelines and articles that inform the daily practice of emergency nurses.

Nurse wellness and safe, healthy practice settings are critical in emergency nursing. The upcoming May issue of the JEN will be a special issue on workplace violence curated by guest editor Dr Gordon Gillespie. Workplace violence

continues to be a serious issue in emergency nursing that must be addressed. In addition, emergency nurses are experiencing significant burnout related to a myriad of practice issues, which the current pandemic has exacerbated. Rodriguez et al[1] conducted a multisite United States-based study assessing ED health care professionals' symptoms of anxiety and burnout, work stressors related to coronavirus disease 2019 (COVID-19), and risk of post-traumatic stress disorder. Findings from this study indicated that 68% of emergency nurses felt some level of stress and anxiety related to the COVID-19 pandemic, and 55% of nurses reported experiencing burnout symptoms in the previous week. Another alarming finding was that 23% of nurse respondents screened positive for post-traumatic stress disorder.[1] These findings are consistent with findings from a multicenter study conducted by Chor and colleagues.[2] Chor et al[2] found that the mean score for nurses on the Copenhagen Burnout Inventory was 51.3 (SD 19.6), which indicates moderate to severe burnout, and that was the overall average score for all nurses. The COVID-19 pandemic has taken a significant toll on emergency nurses worldwide who were already working in stressful practice settings and experiencing high burnout levels.[3]

When reflecting on the high levels of stress that emergency nurses experience, it is vital to consider the additional stress experienced by nurses who have been historically marginalized and excluded in nursing. A survey conducted by the Commission to Address Racism in Nursing found that 63% of nurses have experienced racism in their practice setting.[4] Wolf et al[5] conducted a study exploring the experiences that emergency nurses practicing in the United States had with bias and found that racism and other forms of bias were prevalent and detrimental to nurse wellness and patient outcomes. These issues directly affect emergency nursing practice. A recent The Future of Nursing 2020 to 2030 Consensus Study Report from the National Academies of Science, Engineering, and Medicine[6] focused primarily on nurse wellness and health equity. In keeping with this focus, I encourage authors to submit articles about nurse wellness, healthy practice environments, bias, strategies to improve health outcomes, and health equity in emergency nursing. Furthermore, the editorial team will modify the journal author guidelines to ensure that articles published in JEN use inclusive and respectful language that honors the diverse nurses and communities that emergency nurses accompany in care.

The COVID-19 pandemic and the recent resurgence of monkeypox demonstrated the importance of timely guidance on managing novel viruses and illnesses that are emerging or uncommon in specific regions. Emergency nurses must be prepared to pivot and adapt to issues such as novel viruses, climate change, and disasters that will continue to affect their practice. JEN must also be prepared to pivot to address the real-time learning needs of emergency nurses. Therefore, the editorial team at JEN will strive to minimize our time from submission to publication, especially for time-sensitive clinical and research topics.

This year readers can expect to see an increase in clinical and special section articles addressing current practice issues and challenges. The editorial team will continue to publish robust and rigorous research articles and explore ways to make that content easier to comprehend and apply in practice. I understand that measuring a journal's impact goes beyond traditional metrics, and I am committed to JEN positively affecting nurse and clinical outcomes. I welcome your thoughts and feedback as the editorial team develops a shared vision for the future of JEN.

Author Disclosures

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REFERENCES

1. Rodriguez RM, Montoy JC, Hoth KF, et al. Symptoms of anxiety, burnout, and PTSD and the mitigation effect of serologic testing in emergency department personnel during the COVID-19 pandemic. *Ann Emerg Med*. 2021;78(1):35-43. https://doi.org/10.1016/j.annemergmed.2021.01.028
2. Chor WP, Ng WM, Cheng L, et al. Burnout amongst emergency healthcare workers during the COVID-19 pandemic: a multi-center study. *Am J Emerg Med*. 2021;46:700-702. https://doi.org/10.1016/j.ajem.2020.10.040
3. Gómez-Urquiza JL, De la Fuente-Solana EI, Albendin-Garcia L, Vargas-Pecino C, Ortega-Campos EM, Canadas-De la Fuente GA. Prevalence of burnout syndrome in emergency nurses: a meta-analysis. *Crit Care Nurse*. 2017;37(5):e1-e9. https://doi.org/10.4037/ccn2017508
4. Survey shows substantial racism in nursing. American Nurses Association. Accessed December 18, 2022. https://www.nursingworld.org/practice-policy/workforce/racism-in-nursing/national-commission-to-address-racism-in-nursing/survey-shows-substantial-racism-in-nursing/
5. Wolf L, Delao A, Perhats C, et al. The experiences of United States emergency nurses related to witnessed and experienced bias: a mixed methods study. *J Emerg Nurs*. 2023;49:175-197.
6. National Academies of Sciences, Engineering, and Medicine; National Academy of Medicine; Committee on the Future of Nursing 2020–2030, Flaubert JL, Wakefield M, Williams DR, Le Menestrel S. The Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity. *National Academy of Sciences*. 2021.

Letter to the Editor

Letters to the Editor are encouraged and may be submitted at jenonline.org where submission instructions can be found in the Author Instructions.

An Important Suggestion for External Jugular Vein Cannulation

Dear Editor:

I read the article titled "External Jugular Vein Peripheral Intravenous Catheters: An Emergency Nurse's Guide" with great interest.[1] In the article, the authors provide important information about the intravenous (IV) insertion procedure of external jugular cannulation (EJV), which is considered to be one of the popular rescue approaches to difficult IV access. I would like to share my experience as an anesthesiologist with 25 years of experience.

Peripheral IV cannulation is vital in anesthesia and intensive care units. EJV access is handy in cardiac arrest or emergency situations in the operating room and intensive care units and provides emergency access for the anesthesiologist.

Fortunately, the overwhelming majority of EJV cannulations are placed successfully. Traditionally, confirmation of the correct peripheral IV cannulation is made by visualizing an appreciable flash of blood into the chamber of the syringe.[1] However, as mentioned in the study by Adams and Zaryske,[1] a challenge with EJV is that it might be impossible to get a flash of blood into the syringe, owing to the lower blood pressure in the EJV.[2] Even though the common confirmation method for routine peripheral venous procedures is the visualization of blood in the chamber of the syringe, according to my clinical experience, the inability to observe blood does not always indicate incorrect placement for EJV cannulation. Hence, what should be done before considering the EJV cannulation as unsuccessful?

Sound advice could be found in a study published by Bechmann et al.[2] They suggested attaching a small syringe to the needle and holding gentle negative pressure on it while advancing the needle to increase blood return into the syringe and confirm entry into the EJV to solve this problem. We are using an alternative technique in our department which we strongly suggest to our residents when they try to perform EJV cannulation.

During the procedure, if the physician believes that they entered the EJV but no flash of blood appears in the chamber of the syringe, the needle (but not the plastic catheter) should be withdrawn into the plastic catheter slowly; blood may now appear in the plastic catheter (Figure). I am very curious to know which techniques would authors recommend for solving this problem.—*Seza Senturk Apiliogullari, MD, Department of Anesthesia and Intensive Care, School of Medicine, Canakkale Onsekiz Mart University, Canakkale, Turkey; E-mail: drsezaapili@gmail.com.* ***ORCID identifier:*** https://orcid.org/0000-0001-6116-4322. ***Twitter:*** *@SApiliogullar.*

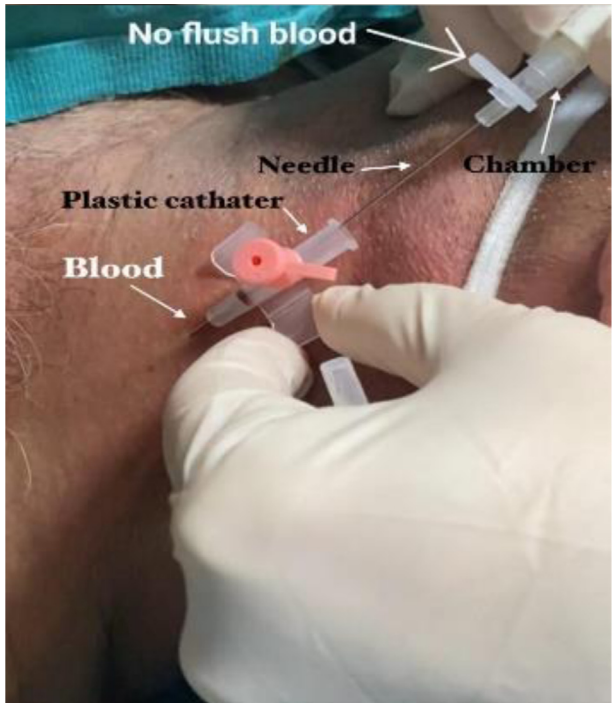

FIGURE
No flash of blood in the chamber but in the plastic catheter.

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REFERENCES

1. Adams A, Zaryske LG. External jugular vein peripheral intravenous catheters: an emergency Nurse's guide. *J Emerg Nurs*. 2022;48(3):303-309. https://doi.org/10.1016/j.jen.2022.01.009
2. Bechmann S, Rahman S, Kashyap V. *Anatomy, Head and Neck, External Jugular Veins*. StatPearls Publishing; 2022.

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Fracture of an Intravenous Cannula in the Hand: A Case Report

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Contribution to Emergency Nursing Practice

- Intravenous cannual fracture is rare, with vague symptoms, and thus may be missed by emergency physicians or nurses. Delayed diagnosis and removal can lead to secondary damage, such as vasculitis or embolization, with critical consequences.
- This case report highlights the risk factors of an intravenous cannula fracture. Oversized catheterization, poor vessel condition, high-risk insertion sites such as the hand, and reattempted catheterization at the same site may cause fracture of a cannula.
- Key implications for emergency nursing practice found in this article are that emergency physicians and nurses should be aware of these risk factors. If a fracture of an intravenous cannula is suspected, physicians/advanced practice nurses should perform early screening tests and rapid removal of the cannula tip.

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Abstract

Background: Intravenous cannula insertion is important, given that it is the most common invasive procedure in the emergency department for blood sampling, fluid resuscitation, and intravenous drug administration. Complications of intravenous catheterization include pain, phlebitis, extravasation, inflammation, and embolization. Fracture of an intravenous cannula is rare, but delayed removal may result in secondary damage, such as vasculitis or embolization, with critical consequences. Here, we report a case of intravenous cannula fracture that occurred in our emergency department.

Case Presentation: A 63-year-old woman with a history of left ovarian cancer visited our emergency department owing to poor oral intake and general weakness. Intravenous catheterization using an 18 gauge cannula was attempted for intravenous fluid administration by a skilled operator, but it failed owing to collapsed veins and poor skin condition. After several attempts, a vein in the patient's hand was ruptured, and the patient complained of severe pain. The cannula was removed, but one-third of the cannula tip could not be seen. X-ray imaging was performed to locate the fragment of the cannula, and venotomy was performed for removal of the foreign body in the emergency department.

Conclusion: Emergency physicians and nurses should be vigilant about potential risk factors that can cause fracture of an intravenous cannula, and after the fracture is discovered, rapid removal of the cannula tip should be performed in the emergency department.

Key words: Peripheral catheterization; Cannula; Complications

Introduction

Intravenous cannula insertion is the most common invasive procedure in the emergency department.[1,2] This procedure is clinically important, because blood can be sampled through the cannula, and it also can be used for intravenous administration of drugs and fluids.

However, catheterization also can cause various complications, including pain, phlebitis, extravasation,

FIGURE 1
Bruise and swelling were visible at the distal part of the cannula insertion site.

inflammation, obstruction, and even embolization.[1-5] Given that fracture of an intravenous cannula is rare, it may be missed by emergency physicians or nurses, and other complications such as phlebitis or extravasation may be assumed in patients with pain or swelling at the cannula insertion site. However, delayed removal of the cannula tip may result in secondary damage, such as injury in surrounding tissue, vasculitis, migration, or embolization.[6-9]

Here, we present a case of an intravenous cannula that broke during catheterization in a patient's hand in our emergency department.

Case Report

A 63-year-old woman with a history of left ovarian cancer with metastasis presented to our emergency department owing to poor oral intake and general weakness. Upon arrival, vital signs including noninvasive blood pressure, pulse, body temperature, and oxygen saturation were confirmed to be normal. Skilled nurses then attempted intravenous catheterization using an 18 gauge cannula, but this failed because the patient's veins were collapsed and her skin condition was poor. After several attempts, the patient complained of severe pain at the site of catheterization in the left hand. The cannula was removed immediately, but one-third of the cannula tip could not be seen, and a bruise developed at the insertion site. To prevent migration of the broken cannula tip, a foam compression dressing was applied to the proximal area (Figure 1).

Simple radiography was performed for differential diagnosis. On the X-ray image, a linear foreign body (FB) with a length of 1.1 cm and depth of 0.3 cm was observed at the site and was assumed to correspond to the left basilar vein (Figure 2A). A venotomy was immediately performed under local anesthesia in the emergency department (Figure 3A

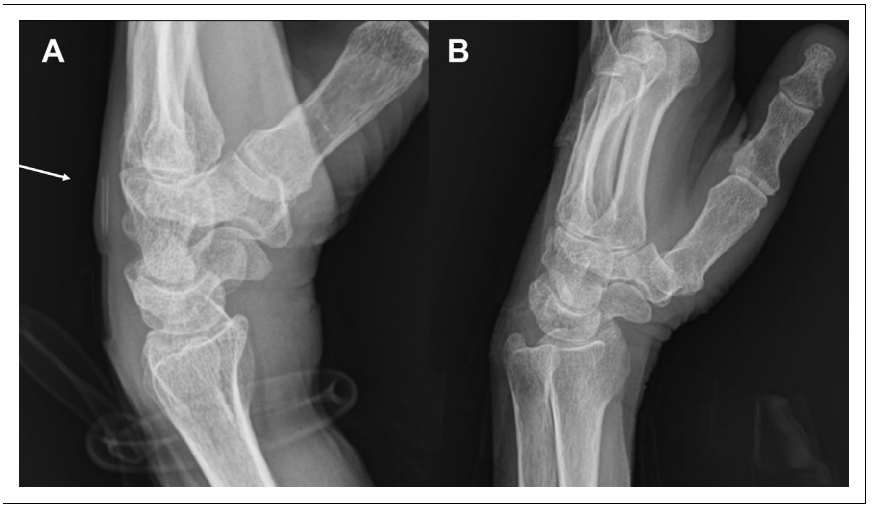

FIGURE 2
(A) X-ray showing a 1.1-cm foreign body suspected to be the broken intravenous cannula in the patient's hand. (B) Follow-up x-ray showing removal of the foreign body.

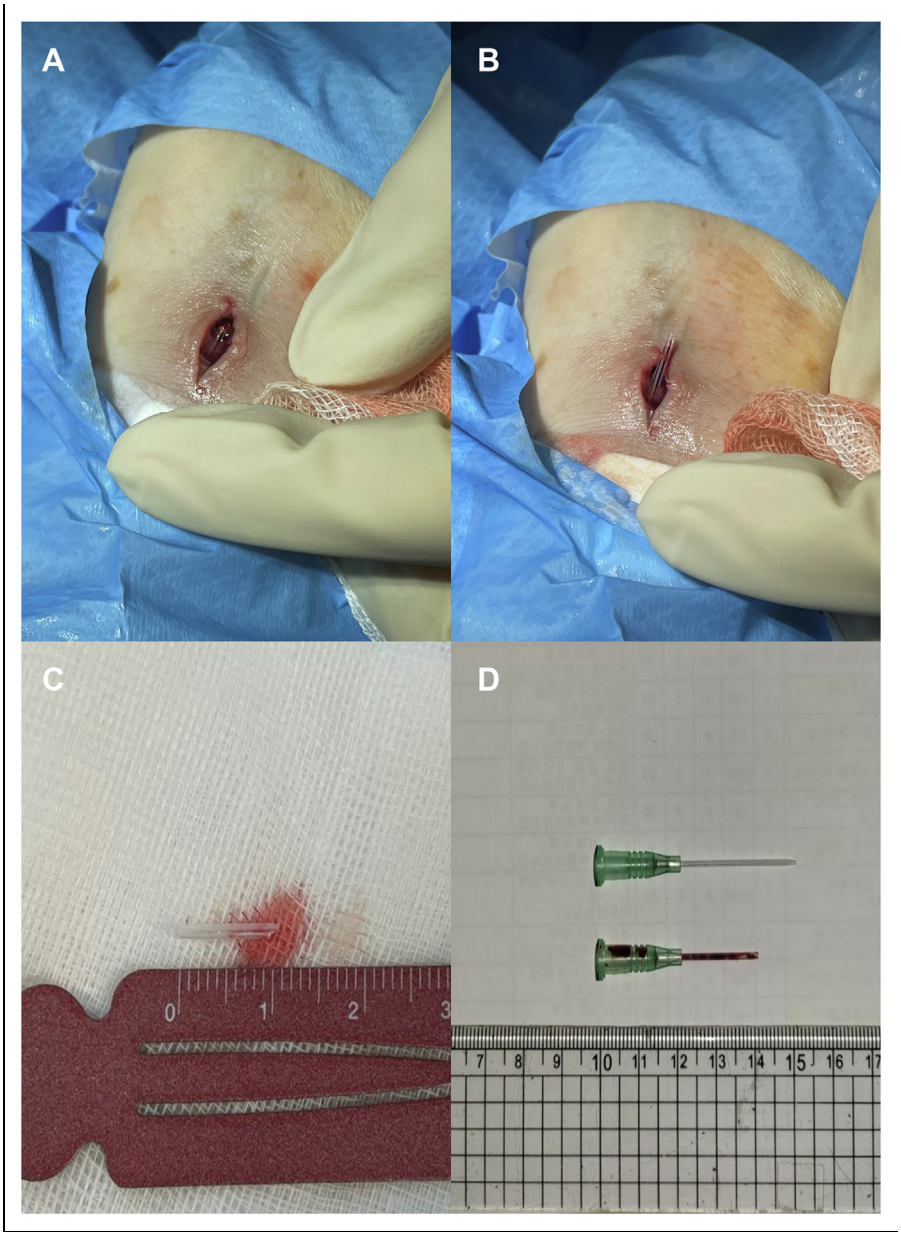

FIGURE 3

(A) The cannula in the patient's body before retrieval. (B) The cannula projecting through a venotomy incision site. (C) The removed 1.1 cm sized cannula tip. (D) Comparison between a normal cannula and the broken cannula.

and B). After the surgical intervention, the piece of broken cannula measuring approximately 1.1 cm was found (Figure 3C and D).

After the procedure, there was no palpable FB in the vicinity, and the FB was not visible on follow-up X-ray (Figure 2B). The patient also reported that the pain had improved. After a few days of hospitalization, the patient had no dyspnea, chest pain, or pain at the site, and vital signs were confirmed to be normal, indicating no secondary complications.

TABLE 1
Clinical information from reported cases of broken intravenous cannula

Authors	Sex/age (y)	Preceding factors	Symptoms	Mechanism	Method	Size	Location	Reattempted catheterization
Bakhshi et al[6]	M/28	Enteritis	FB sensation	Unknown, found after discharge	X-ray	-	Forearm	No
	M/30	None	Pain	Fall injury	X-ray	20 G	Wrist	No
Singh et al[7]	M/-	Enteritis	FB sensation	Found after removal of cannula	CT	-	Forearm	No
Turner and Sommers[9]	F/54	MI	Chest pain, dyspnea	Unknown, found at autopsy	Autopsy	18 G	Forearm	No
Khoo et al[11]	F/30	Intoxication	Pain	Self-inflicted injury	X-ray	16 G	Hand	Yes
Arun et al[10]	M/31	None	FB sensation	Reinsertion of a guide needle	Palpation	18 G	Hand	Yes
Present case	F/63	Ovarian cancer	Pain	Several catheterization attempts	X-ray	18 G	Hand	Yes

CT, computed tomography; F, female; FB, foreign body; M, male; MI, myocardial infarction.

Discussion

Seven cases of a broken intravenous cannula, including our case, are summarized in Table 1. Intravenous cannula shearing refers to catheter destruction or injury that occurs during or after intravenous catheterization.[2] It may occur in patients with severe vascular sclerosis, such as our case, by reducing the elasticity of blood vessels, making intravenous catheterization difficult, and requiring multiple attempts.[6,10] In addition, there were a few case reports that intravenous cannula shearing occurred after direct trauma to the cannula insertion site. Bakhshi et al[6] reported a case that a cannula was broken owing to direct injury to the insertion site by falling. Khoo et al[11] also reported a case that a cannula was broken owing to self-infliction in a patient with poor coordination. Performing intravenous catheterization using a large bore cannula (16 G or 18 G), especially in patients with a poor vascular state or suspected dehydration, may cause cannula shearing. This is because patients with a poor vascular state or suspected dehydration may have more collapsed vessel condition than others, so a cannula that is larger than the diameter of the vessel may require multiple attempts owing to the risk of catheterization failure.[9-13] During a reattempting catheterization, the needle may completely or partially transect a plastic catheter, which may cause the distal part of the catheter to remain as the FB.[10] To reduce these risks, it is necessary to avoid use of an oversized cannula, reattempting catheterization, and high-risk insertion sites such as the hand owing to its vulnerable anatomy (smaller vessel size, curved structure, close to the bone, and highly mobile site).[4] In addition, high-risk patients should be observed closely; palpate the surrounding cannula insertion area when the emergency nurses or physicians have tried in catheterization several times; follow up the patient's symptoms such as pain, chest pain, and dyspnea.

The remaining broken cannula in a vein not only causes simple complications but also can result in serious complications and even death.[7,9,12] Minor and major complications of broken intravenous cannula are summarized in Table 2. Turner and Sommers[9] reported a case in which a broken cannula tip was found in the right atrium of a patient after sudden death. Gschwind also reported a case in which a 5-mm small FB in the patient's cubital vein migrated into the heart.[12] Migration of an intravenous FB to the heart may result in symptoms such as dyspnea or chest pain.[9,12] Therefore, as soon as an intravenous cannula fracture is discovered, emergency physicians and nurses should pay attention to the patient's symptoms, apply a compression dressing to prevent migration, and remove the FB before serious complications can occur.[7,12]

TABLE 2
Summarization of minor and major complications of broken intravenous cannula

Complications	Results	Author
Minor complications	Local inflammation	Bakhshi et al[6]
	FB sensation	Arun et al[10]
	Focal pain	Khoo et al[11]
Major complications	Migration to another site	Singh et al[7]
	Death	Turner and Sommers[9]

FB, foreign body.

X-ray imaging is recommended to confirm the broken cannula tip in the patient's body, and more detailed examinations can be performed by computed tomography in the emergency department.[6,7] After detection, surgical interventions such as venotomy should be performed immediately.[7,10,11]

The strength of our case report is that it gives emergency physicians or nurses a lesson to suspect intravenous cannula fracture when high-risk patients complain of symptoms such as focal pain and FB sensation after intravenous catheterization. However, there is a limitation that our case report does not represent a large number of patients.

Implications for Emergency Nurses

Fracture of an intravenous cannula is rare, with vague symptoms, and thus may be missed by emergency physicians or nurses. However, delayed diagnosis and removal can lead to secondary damage, such as vasculitis, embolization, or migration to the heart, with critical consequences. Oversized catheterization, poor vessel condition owing to previous diseases, high-risk insertion sites such as the hand, and reattempted catheterization at the same site may cause fracture of an intravenous cannula. Therefore, emergency physicians/advanced practice providers and nurses should be aware of these risk factors, and if a fracture of an intravenous cannula is suspected, physicians/advanced practice providers should perform early screening tests and rapid removal of the cannula tip in the emergency department.

Conclusion

Intravenous cannula fracture is a rare but potentially critical complication. Oversized catheterization, poor vessel condition owing to previous disease, high-risk insertion sites such as the hand, and reattempted catheterization at the same site may cause fracture of an intravenous cannula. Emergency physicians/advanced practice providers should be aware of potential risk factors and conduct early screening tests when in doubt. If found, the intravenous FB should be removed immediately in the emergency department.

Data, Code, and Research Materials Availability

Ethical approval has been exempted by our hospital institutional trial review board (IRB file no. 2022-06-017), and we received an informed consent from the patient.

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Author Disclosures

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REFERENCES

1. Marsh N, Webster J, Ullman AJ, et al. Peripheral intravenous catheter non-infectious complications in adults: a systematic review and meta-analysis. *J Adv Nurs*. 2020;76(12):3346-3362. https://doi.org/10.1111/jan.14565
2. Abolfotouh MA, Salam M, Bani-Mustafa A, White D, Balkhy HH. Prospective study of incidence and predictors of peripheral intravenous catheter-induced complications. *Ther Clin Risk Manag*. 2014;10:993-1001. https://doi.org/10.2147/TCRM.S74685
3. Singh S, Prakash J, Shukla V, Singh LK. Intravenous catheter associated complications. *J Assoc Physicians India*. 2010;58:194-196.
4. Kagel EM, Rayan GM. Intravenous catheter complications in the hand and forearm. *J Trauma*. 2004;56(1):123-127. https://doi.org/10.1097/01.TA.0000058126.72962.74

5. Richardson JD, Grover FL, Trinkle JK. Intravenous catheter emboli: experience with twenty cases and collective review. *Am J Surg*. 1974;128(6):722-727. https://doi.org/10.1016/0002-9610(74)90057-9
6. Bakhshi GD, Parikh AK, Rahul K, Bagul AG, Gangawane SD. Broken intravenous angiocath–a case series. *J Med Sci Clin Res*. 2019;7(6):11-14. https://doi.org/10.18535/jmscr/v7i6.03
7. Singh A, Kaur A, Singh M, Kaur S. CT guided removal of iatrogenic foreign body: a broken intravenous cannula. *J Clin Diagn Res*. 2015;9(9):PD28-PD29. https://doi.org/10.7860/JCDR/2015/14344.6549
8. Lee SY, Na HS, Kim MH, et al. A sheared catheter fragment in the wrist after arterial cannulation attempt: a case report. *Korean J Crit Care Med*. 2010;25(2):118-121. https://doi.org/10.4266/kjccm.2010.25.2.118
9. Turner DD, Sommers SC. Accidental passage of a polyethylene catheter from cubital vein to right atrium: report of a fatal case. *N Engl J Med*. 1954;251(18):744-745. https://doi.org/10.1056/NEJM195410282511806
10. Arun O, Oc B, Gunduz E, Oc M, Duman A. Fracture of an intravenous cannula in the vein due to reinsertion of the guide needle: a case report. *J Cardiovasc Surg*. 2014;2:28-29. https://doi.org/10.5455/jcvs.2014224
11. Khoo PJ, Tay KL, Jamaluddin AA, Gunasaker D. Self-inflicted and iatrogenic peripheral intravenous cannula fracture: a case report. *Ann Med Surg (Lond)*. 2018;33:44-46. https://doi.org/10.1016/j.amsu.2018.08.004
12. Gschwind CR. The intravenous foreign body: a report of 2 cases. *J Hand Surg Am*. 2002;27(2):350-354. https://doi.org/10.1053/jhsu.2002.31148
13. Tanabe H, Takahashi T, Murayama R, et al. Using ultrasonography for vessel diameter assessment to prevent infiltration. *J Infus Nurs*. 2016;39(2):105-111. https://doi.org/10.1097/nan.0000000000000159

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A Quality Improvement Initiative on Reducing Blood Culture Contamination in the Emergency Department

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Section Editor: Amber Adams, DNP, RN, CEN

Contribution to Emergency Nursing Practice

- Current literature supports the need to reduce blood culture contamination rates in emergency departments. However, limited evidence is found investigating the comparison of blood culture contamination rates collected from percutaneous venipuncture to other collection sites.
- This article contributes evidence on the effectiveness of specific evidence-based interventions to reduce blood culture contamination rates, including predisinfection with 2% Chlorhexidine gluconate cloths when collecting samples for blood cultures, and surveillance and feedback.
- Key implications for emergency nursing practice include integrating evidence-based practice changes with a robust feedback mechanism to reduce blood culture contamination rates in the emergency department setting.

Abstract

Introduction: Contaminated blood cultures may have detrimental effects on patients, the organization, and antimicrobial stewardship. Patients in the emergency department may need blood cultures collected before antimicrobial therapy. Contaminated blood culture samples may contribute to prolonged hospital stay and also are associated with delayed or unnecessary antimicrobial therapy. This initiative aims to improve the emergency department's blood culture contamination rate that will eventually benefit the patients who will receive timely and proper antimicrobial therapy, and benefit the organization fiscally.

Methods: This quality improvement initiative used the Define–Measure–Analyze–Improve–Control (DMAIC) process. The organization targets blood culture contamination rate of ≤2.5%. Control charts were used to study how blood culture contamination rate changed over time. In 2018, a workgroup was formed to work on this initiative. Improved site disinfection using 2% Chlorhexidine gluconate cloth before the standard procedure of blood culture sample collection was initiated. Chi squared test of significance was used to compare blood culture contamination rates 6 months before and during feedback intervention as well as contamination rate from source of blood draw.

Results: Blood culture contamination rates 6 months before and during feedback intervention showed significant decrease (3.52% before intervention and 2.95% after intervention; $P < .05$). Contamination rates differed significantly based on the source of blood culture draw (7.64% via line, 3.05% via percutaneous venipuncture, and 4.53% via other; $P < .01$).

Discussion: Blood culture contamination rate continued to decrease with the use of a predisinfection process with 2% Chlorhexidine gluconate cloth before blood sample collection process. Practice improvement also was evident with effective feedback mechanism.

Key words: Blood culture contamination; Infection prevention; Antimicrobial stewardship; Emergency department; Quality improvement

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Introduction

Blood cultures are important diagnostic tools for identifying the pathogens responsible for a patient's infection.[1] When indicated, blood cultures should be obtained before starting antimicrobial therapy.[1] Contaminated blood cultures may have detrimental effects (eg, unnecessary antibiotic exposure and prolonged length of stay) on the patient, to the organization, and to antimicrobial stewardship efforts.[2,3] Other consequences include unnecessary antibiotic exposure with the potential for downstream unintended consequences (eg, possible allergic reactions and *Clostridioides difficile* infection).[4] Skoglund et al[5] found that the average length of stay was 2 days longer in patients with contaminated blood cultures than in patients with negative cultures. That same study found that direct and indirect hospital costs of a contaminated blood culture were $12,824 compared with $8286 for a negative blood culture (cost savings of $4538 for preventing a contaminated blood culture).[5]

Studies have been made exploring factors associated with increased contamination in blood culture samples in emergency departments. Chang et al[2] found that blood culture contamination was more likely to occur in critically ill patients, that is, triage levels 1 and 2 (modified Canadian Triage and Acuity Scale), probably because these patients received urgent care, restricting the time for appropriate blood sampling procedures. The same study[2] adds that underlying conditions, that is, end-stage renal disease and older age, were associated with blood culture contamination in emergency departments. Chang et al[2] also discussed that these patients might frequently visit health care facilities and potentially carry skin commensals with antimicrobial resistant genes. In addition, it was explained that blood draw challenges were more likely in these patient groups due to poorly accessible veins.

Literature shows several strategies taken by different organizations to improve their blood culture contamination rates. Self et al[6] and Doern et al[4] found that the use of blood culture collection kits and standardized procedures have been associated with a significant decrease in blood culture contamination. Surveillance and feedback systems also have been shown to result in improved blood culture contamination rates, particularly when contamination rates are reported in a timely manner and directed individually to those who collected the samples.[7,8]

The University of California Davis Medical Center emergency department's blood culture contamination rates were noted to be above the target rate of 2.5%, ranging from 2.79% to 7.28% from 2018 to 2020. The department runs approximately 40 sets of blood culture tests per day. Reducing blood culture contamination aligns with the emergency department's strategic quality and financial stewardship goals. A multidisciplinary workgroup worked robustly to improve this metric using evidence-supported practice changes.

Methods

This process improvement initiative, which was started in 2018 by University of California Davis Medical Center emergency department, used the Define–Measure–Analyze–Improve–Control (DMAIC) model of quality improvement. Data (blood culture contamination rates, dates and times of sample collection, and patients' health record numbers) were collected from EPIC (Epic Systems Corporation) electronic health record reports that feed daily to the organizational dashboards.

This initiative was rolled out in 2018 and has been an ongoing process of analyzing issues, addressing identified issues, and evaluating measures undertaken. Spot analyses were performed as needed. Descriptive statistics were used to study specific time frames (spot analyses for July 2020 and August to September 2021). Contamination rates were plotted against control charts by intervention phases to determine process control and special cause variation. Contamination rates 6 months before and during feedback intervention and contamination rate difference based on source were analyzed using Chi squared test of significance. Statistical analyses were performed using Stata 17.0 (StataCorp LLC). Reporting guidelines[9] were followed to report this initiative's methods and results.

DEFINE

The emergency department was not meeting the target blood culture contamination rate of ≤2.5%. The Centers for Disease Control and Prevention[10] states that because blood is a normally sterile body site, positive blood cultures with a known pathogen have a generally overall high positive predictive value for infection. However, blood culture contamination is a significant problem. In general, all blood culture contamination occurs during collection; the source of contaminants is usually the patient's skin or the hub or cannula of an indwelling catheter (ie, when an existing catheter is used to obtain the specimen). Frequent causes include poor collection technique and insufficient skin disinfection.[10]

MEASURE

The organization targets a blood culture contamination rate of ≤2.5%. The emergency department's blood culture contamination rate from 2018 to 2020 ranged from

2.79% to 7.28% (fiscal year 2019-2020, mean = 4.56%; fiscal year 2020-2021 mean = 3.86%).

The University of California Davis Medical Center determines blood culture contamination by the number of contaminating organisms from percutaneous and/or line blood draws per total blood culture samples collected. If blood culture samples yield to growth of an organism that is not a true pathogen or when multiple nonpathogenic organisms are identified, it will be flagged contaminated (Jordan Jones, CLS, email communication, August 08, 2022).

Whenever an organism on the list is identified, the electronic health record automatically flags the cultures as a possible contamination. Contamination flags and comments are not removed when a provider requests susceptibility testing unless there is >50% of blood culture sets, for an episode (3-day collection period), turned positive with 1 morphotype, and there are no other organisms present in the cultures. There also must be more than one set of culture bottles and this generally applies to the coagulase-negative *Staphylococci* and *Streptococcus* species. Contamination flags also are not routinely removed for other organisms on the contamination list. Blood culture samples from central venous access devices (CVADs) and percutaneous venipuncture collection sets are not treated differently—determining whether there are >50% of the sets collected within a 3-day episode positive with the same single organism. For example, if there are multiple coagulase-negative *Staphylococci* identified in a report denoting multiple morphotypes, the contamination flag will not be removed if one of the 2 organisms is present in multiple sets.

ANALYZE

Through structured problem-solving and continuous improvement approach, several causes of sample contamination were identified as follows: education gap, inappropriately prepared venipuncture site, supplies needed for sample collection were not stored in one location, blood cultures were not included in initial workup orders, fast-paced workflows, time-sensitive procedures, variety of patient population (prehospital environment significantly adds to skin contaminants), drawing blood culture samples from existing intravenous access, contaminated samples drawn from ultrasound-guided intravenous access insertion, contaminated samples from CVADs, and contaminated samples among pediatric patients, patients with coronavirus, and critically ill patients.

IMPROVE

A multidisciplinary workgroup (consisting of ED leadership, clinical nurse leaders, clinical resource nurses, clinical nurses, infection prevention, quality and safety, laboratory) worked collaboratively to improve this metric since 2018. The team worked to heighten department awareness on its standing on this metric. Information was continuously shared through preshift huddles and workgroup meetings wherein strong team engagement was present. Education was reinforced through several avenues such as incorporating content in new-hire orientation, just-in-time coaching, and periodic skills day. Blood culture sample collection has been a standardized procedure for nurses and was added to the Best Practice Advisory for patients meeting Sepsis Analytic Model score ≥8. The use of diversion devices, which passively sideline skin contaminants, had been considered but was not voted on due to cost ($15 per device); alternatively, the team decided to focus on reinforced skin antisepsis instead (Table 1). Notably 2% Chlorhexidine gluconate cloths were added (cost $6) to the standard blood culture sample collection supplies with the purpose of thoroughly cleansing the skin surface before blood draw. The added step of cleaning the site with 2% Chlorhexidine gluconate cloth was not applicable for patients sensitive to chlorhexidine or patients younger than 2 months of age.[11]

It also was emphasized not to draw blood culture samples from existing intravenous accesses. For CVADs, education was rolled out not to routinely draw from these accesses unless the provider suspects infection from the source and orders collection from the access; in that case, one set of blood cultures need to be collected from the CVAD after scrubbing the hub, changing the needleless connector, and scrubbing the hub again, without discarding the first blood draw,[12] and the other set has to be collected from another source. The new process was reviewed by stakeholders and was finalized and published as a departmental policy. To reduce variation in practice, an instructional video demonstrating the practice change was developed and socialized to all ED staff, new-hire and temporary staff included. Dedicated phlebotomists were hired to support staffing-related issues.

CONTROL

ED blood culture contamination rate has been closely monitored since 2018. Starting with overall departmental rates, data available were optimized, generating inferences such as contamination rate per individual collector and contamination by microorganisms. Chart reviews were conducted to

TABLE 1
Improved preparation for blood culture sample collection in the emergency department

1. Clean each sample collection site with one 2% Chlorhexidine gluconate cloth.
   *Not applicable for patients with hypersensitivity or patients <2 mo of age.
2. Perform hand hygiene.
3. Clean the blood culture bottle tops.
   a. Cleanse tops with 3.15% Chlorhexidine gluconate/70% Isopropyl alcohol pad for 5 s and dry for 5 s or 70% Isopropyl alcohol pad for 15-30 s.
   b. Allow to dry.
4. Scrub sample collection site in a back-and-forth motion.
   a. Clean the skin with 70% Isopropyl alcohol pad for 15-30 s. Allow to dry.
   b. Disinfect the skin with 2% Chlorhexidine gluconate/70% Isopropyl alcohol applicator for 5 s. Allow to dry. For patients who are sensitive to chlorhexidine or patients <2 mo of age, cleanse the skin using 10% Povidone-iodine sticks. Allow to dry.

* Because of limited safety data, chlorhexidine is not recommended for use in children <2 months of age.[11]

determine rates by patient acuity and room placement, time of collection, and other circumstances surrounding contamination. Monthly organizational recognition was given to staff nurses who had the greatest number of blood cultures collected without contamination. Regular just-in-time feedback was provided to staff nurses who collected contaminated blood cultures, allowing discussion to identify contributing factors and risk mitigation. Nurses who had repeated patterns or increased contamination rate without improvement were referred to department leadership for further action (ie, repeat skills check-off with clinical resource nurse or educator). Individual contamination rate also was added as a discussion point in the staff performance evaluation wherein department leadership had the opportunity to revisit this skill with staff.

Findings

From January to December 2018, the workgroup was formed. Possible causes of blood culture contamination were identified. Teaching and coaching were found not effective. This prompted the trial of adding predisinfection with 2% Chlorhexidine gluconate cloth before blood culture sample collection process. Trends could not be drawn from blood culture contamination rates; unpredictable upticks and decline were noted. By December 2018, the contamination rate was at its highest at 7.28%.

In 2019, reports also were validated. The use of a diversion device in collecting blood culture samples was considered but was held due to cost. At that time, the

TABLE 2
Test of significance: contamination rate before and during feedback intervention

Contaminated		6 mo during feedback (March-August 2021)	6 mo before feedback (September 2021-February 2022)	Total	
No	Frequency	8456	5500	13,956	χ^2 (1) = 4.0122
	Row percentage	60.59	39.41	100.00	Pr = 0.045
	Column percentage	96.44	97.05	96.68	
Yes	Frequency	312	167	479	Fisher's exact = 0.046
	Row percentage	65.14	34.86	100.00	1-sided Fisher's exact = 0.025
	Column percentage	3.56	2.95	3.32	
Total	Frequency	8768	5667	14,435	
	Row percentage	60.74	39.26	100.00	
	Column percentage	100.00	100.00	100.00	

TABLE 3
Test of significance: contamination rates from line, percutaneous venipuncture, and other sources (March 2021 to February 2022)

Contaminated		Line source	Other sources	Percutaneous venipuncture source	Total	
No	Frequency	546	801	12,209	13,956	
	Row percentage	3.91	5.74	90.35	100.00	$\chi 2\ (1) = 38.2101$
	Column percentage	92.54	95.47	96.95	96.68	
Yes	Frequency	44	38	397	479	
	Row percentage	9.19	7.93	82.88	100.00	$Pr < 0.01$
	Column percentage	7.46	4.53	3.05	3.32	Fisher's exact < 0.01
Total	Frequency	590	839	13,006	14,435	
	Row percentage	4.09	5.81	90.10	100.00	
	Column percentage	100.00	100.00	100.00	100.00	

contamination rate started to show less variation as demonstrated by narrower control limits. Contamination rate during this period ranged from 3.36% to 5.72%.

In 2020, contamination rate fluctuation was noted as well as increased practice variation, which is indicated by widening control limits. A spot analysis done in July 2020

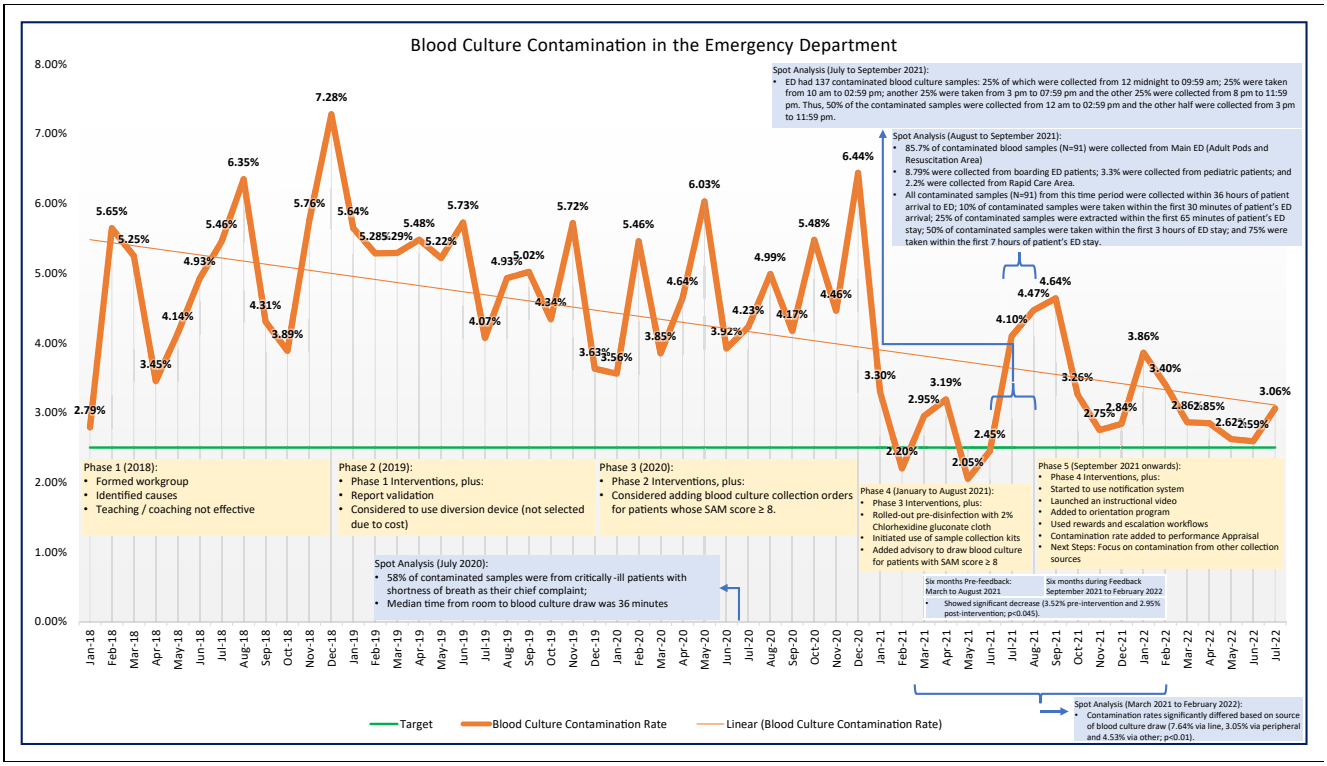
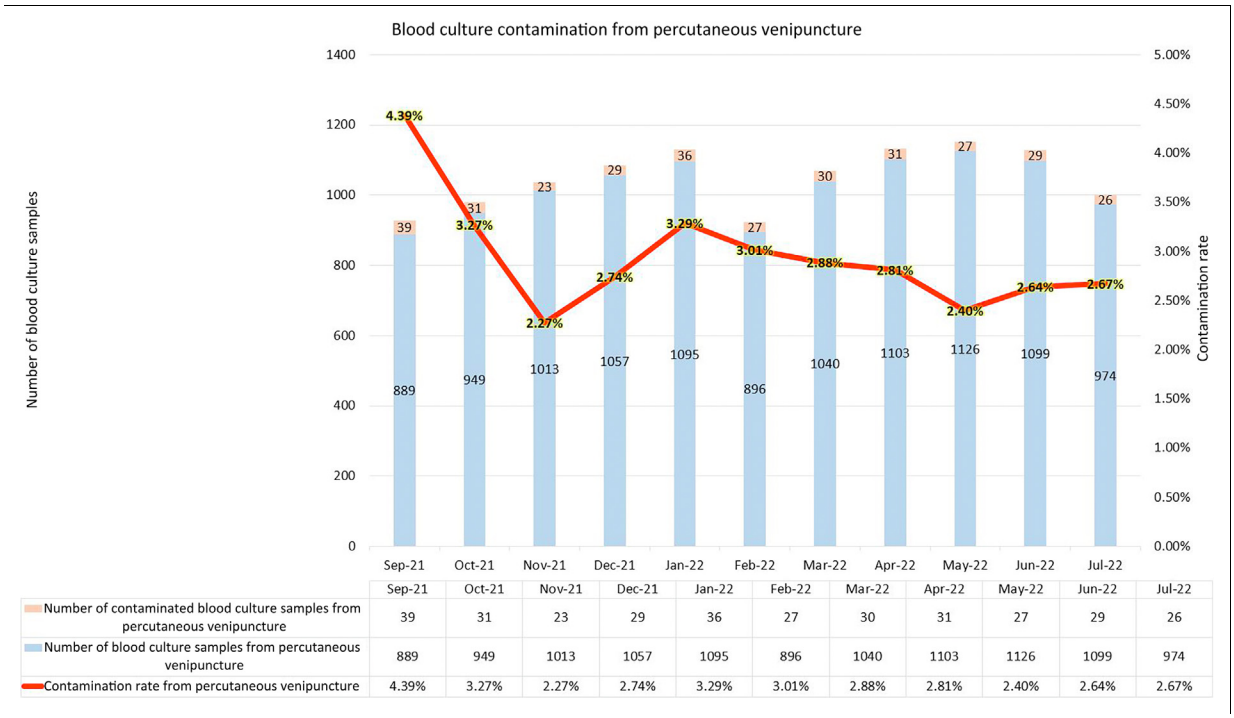


FIGURE 1
Blood culture contamination rate in ED from January 2018 to July 2022. ED, emergency department; SAM, Sepsis Analytic Model.



	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22
Number of contaminated blood culture samples from percutaneous venipuncture	39	31	23	29	36	27	30	31	27	29	26
Number of blood culture samples from percutaneous venipuncture	889	949	1013	1057	1095	896	1040	1103	1126	1099	974
Contamination rate from percutaneous venipuncture	4.39%	3.27%	2.27%	2.74%	3.29%	3.01%	2.88%	2.81%	2.40%	2.64%	2.67%

FIGURE 2

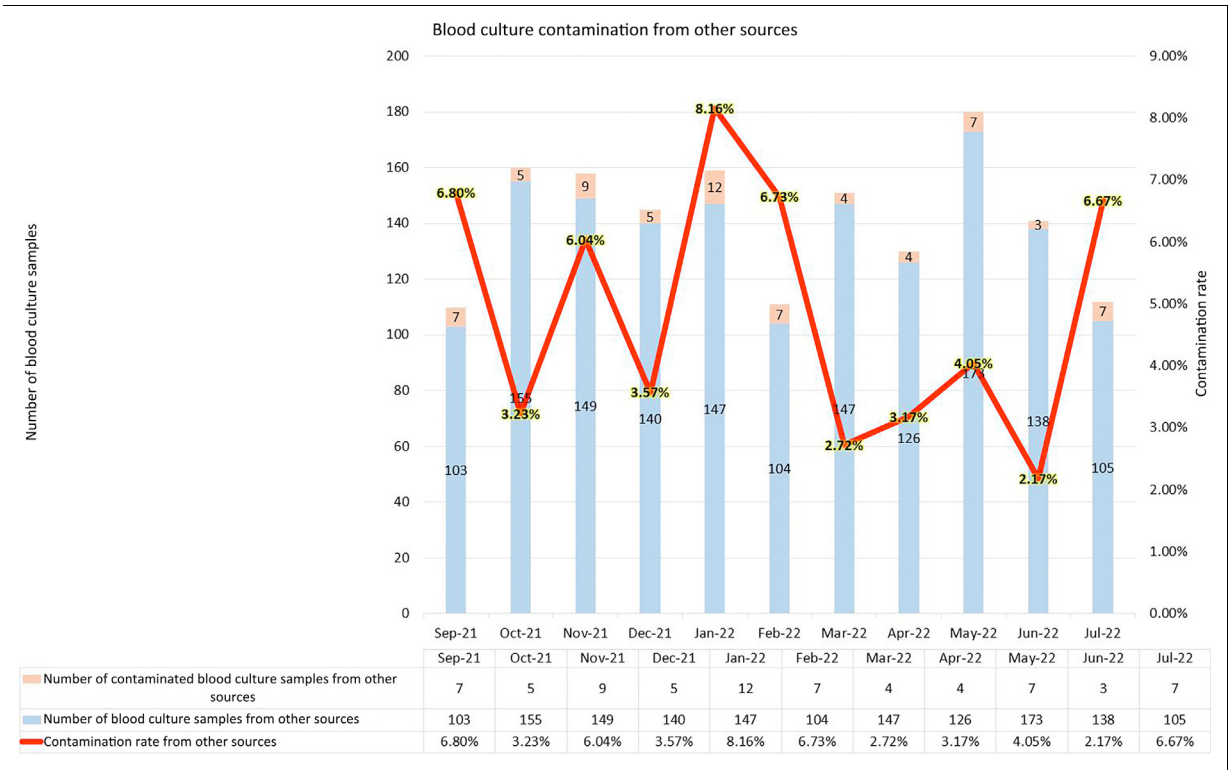
Contaminated and noncontaminated blood culture samples and contamination rate from percutaneous venipuncture.

shows that 58% of contaminated blood culture samples were from critically ill patients with shortness of breath as their chief complaint and that the median time from room to blood culture draw was 36 minutes. Discussion was started on possibly adding blood culture collection order on critically ill patients or on some targeted patient population. Dedicated phlebotomists also was started but later met staffing challenges. Blood culture contamination rate during this period ranged from 3.56% to 6.44%.

From January to August 2021, it was determined that the predisinfection with 2% Chlorhexidine gluconate cloths was helping reduce blood culture contamination, and a request was made to produce blood culture collection kits with this additional product. A Best Practice Advisory to order blood cultures also was added for patients whose Sepsis Analytic Model score was high (≥8). Reports received were further analyzed, and contamination rate per collector was added to the reports enabling more targeted feedback. Decrease in contamination rate and narrowing of practice variation were notable during this period. Blood culture contamination rate ranged from 2.20% to 4.47%. The target blood culture contamination rate was met by the department on 3 occasions: February, May, and June 2021.

The following details were drawn from data collected from August to September 2021: 85.7% of contaminated blood samples ($N = 91$) were collected from the main emergency department (adult pods and resuscitation area), 8.79% were collected from boarding ED patients, 3.3% were collected from pediatric patients, and 2.2% were collected from rapid care area. All contaminated samples ($N = 91$) from this period were collected within 36 hours of patient arrival to emergency department, 10% of contaminated samples were taken within the first 30 minutes of patient's ED arrival, 25% of contaminated samples were extracted within the first 65 minutes of patient's ED stay, 50% of contaminated samples were taken within the first 3 hours of ED stay, and 75% were taken within the first 7 hours of patient's ED stay.

Another spot analysis showed that there were 137 contaminated blood culture samples from July to September 2021, 25% of which were collected from 12 midnight to 09:59 AM, 25% were taken from 10 AM to 02:59 PM, 25% were taken from 3 PM to 07:59 PM, and the other 25% were collected from 8 PM to 11:59 PM. Thus, 50% of the contaminated samples were collected from 12 AM to 02:59 PM, and the other half were collected from 3 PM to 11:59 PM.



	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22
Number of contaminated blood culture samples from other sources	7	5	9	5	12	7	4	4	7	3	7
Number of blood culture samples from other sources	103	155	149	140	147	104	147	126	173	138	105
Contamination rate from other sources	6.80%	3.23%	6.04%	3.57%	8.16%	6.73%	2.72%	3.17%	4.05%	2.17%	6.67%

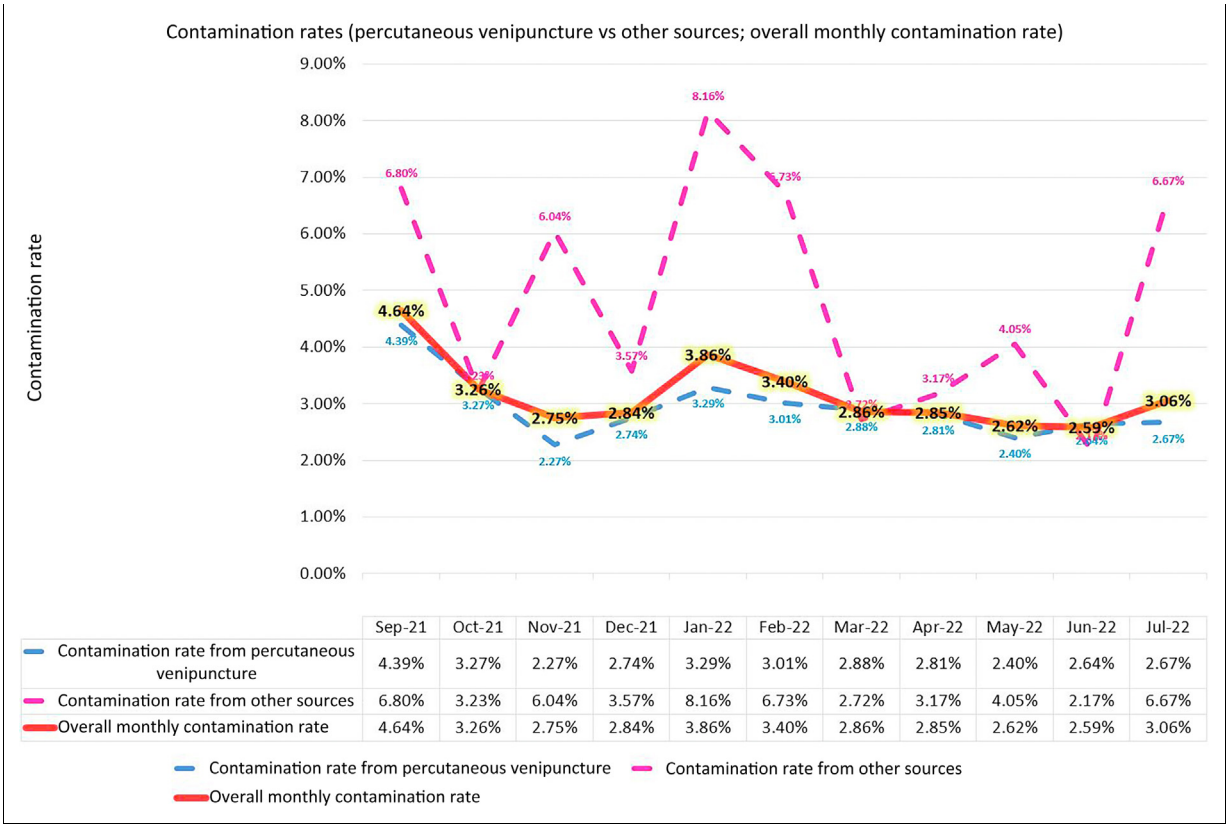
FIGURE 3

Contaminated and noncontaminated blood culture samples and contamination rate from other sources.

Control measures were reinforced since September 2021. On a daily basis, collectors whose samples turned contaminated were notified by email. This process prompted in-person discussion and feedback. Staff nurses were receptive to this process, which is timely, collegial, constructive, and individualized. To further decrease practice variation, a video demonstrating how to use the blood culture collection kit was developed and shared with all staff nurses. This content also was included in the new-hire staff nurses' orientation program. Reward and escalation workflows also were established. Contamination rates of staff nurses also have been included as a discussion point in their performance evaluation. This period has shown a progressive decrease in variation and a downward trend in contamination rate. Blood culture contamination rate in this period ranged from 2.86% to 4.64%.

Blood culture contamination rates also were compared 6 months before (March to August 2021) and 6 months during (September 2021 to February 2022) feedback intervention and showed significant decrease (3.52% preintervention and 2.95% postintervention; $P < .05$) (Table 2). From March 2021 to February 2022, blood culture contamination rates significantly differed based on the source of blood culture draw (7.64% via line, 3.05% via percutaneous venipuncture, and 4.53% via other; $P < .01$) (Table 3).

Figure 1 shows the emergency department's blood culture contamination rate from January 2018 to July 2022, which indicates that the overall monthly rate shows a downward trend. From September 2021 to July 2022 (Figure 2), contamination rate from blood culture samples collected from percutaneous venipuncture ranged from 2.27% to 4.39%. Alternatively, from September 2021 to July 2022, contamination rate from blood culture samples collected from other sources (eg, peripherally inserted central catheter, CVADs) (Figure 3) ranged from 2.17% to 8.16%. Figure 4 demonstrates that the emergency department's monthly overall contamination rates were strongly attributable to the contamination rates from other sources. For instance, in July 2022, the overall contamination rate was 3.06%. It can be noted that contamination rate from percutaneous venipuncture was only 2.67%, but this was greatly affected by the contamination from other sources, which was 6.67%.



	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22
Contamination rate from percutaneous venipuncture	4.39%	3.27%	2.27%	2.74%	3.29%	3.01%	2.88%	2.81%	2.40%	2.64%	2.67%
Contamination rate from other sources	6.80%	3.23%	6.04%	3.57%	8.16%	6.73%	2.72%	3.17%	4.05%	2.17%	6.67%
Overall monthly contamination rate	4.64%	3.26%	2.75%	2.84%	3.86%	3.40%	2.86%	2.85%	2.62%	2.59%	3.06%

FIGURE 4

Monthly overall blood culture contamination rates and contamination rates from percutaneous venipuncture and other sources.

Discussion and Implications

Reducing blood culture contamination in the emergency department has been a challenge due to several factors such as patient volume and acuity, fast-paced workflows, time-sensitive procedures, and staff transition. This improvement initiative investigated and integrated effective measures (ie, use of dedicated phlebotomy,[13,14] education and feedback[13]) in reducing blood culture contamination.

Site predisinfection with 2% Chlorhexidine gluconate cloths significantly reduced skin contaminants. It can be noted that ED patients come from various circumstances such as private residences, the field, or other facilities. This alone is an uncontrollable variable in maintaining aseptic technique during specimen collection indicating the importance to adhere to aseptic technique. Staff nurses were remarkably found to be more receptive and engaged in blood culture contamination reduction initiative with timely, informal, collegial, and individualized feedback.

It remains a challenge to reduce contamination from blood culture samples collected from other sources, such as CVADs. In collecting such samples, the emergency department adheres to scrubbing the hub, changing the needleless connector, and scrubbing the hub again, drawing blood culture samples without discarding the first blood draw.[12] It is of great interest how blood culture samples collected from these sources turned contaminated in the emergency department despite compliance to established workflow. There were several instances wherein blood culture samples collected from a CVAD resulted as contaminated in the emergency department, and upon recollection on the floor (for an instance, repeat blood culture within 3 days of admission), blood culture samples collected from the same CVAD was not flagged contaminated.

Conclusion and Recommendations

In this 4-year period, the emergency department only reached the target rate on 3 occurrences. Keeping the contamination rate ≤2.5% has been a challenge, but the

department is making progress in gradually reducing it and narrowing practice variation. Key drivers for the success of this practice and process improvement initiative are reinforced skin antisepsis (predisinfecting the site with 2% Chlorhexidine gluconate cloth before blood culture sample collection) and an effective surveillance and feedback mechanism. It is critical to note that predisinfecting the sample collection site was instrumental in this initiative. Of equal importance is leveraging timely and individualized feedback to sample collectors.

To date, the department has gained control in reducing contamination on blood cultures collected from percutaneous venipuncture. Future direction is headed to sustaining progress, reinforced coaching and feedback, and more focus on other sources (ie, CVADs) given that the department's overall contamination rate is significantly affected by the increased contamination from these sources.

The use of diversion device might be worth reconsidering given that it was found effective in some studies.[13,15,16] The authors will continue to search, appraise, and synthesize evidence on (1) how skin contaminants differ from contaminants found on lines and (2) how to further reduce blood culture contamination, more specifically in samples collected from other sources.

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Author Disclosures

Conflicts of interest: None to report.

REFERENCES

1. Rhodes A, Evans LE, Alhazzani W, et al. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock: 2016. *Intensive Care Med*. 2017;43(3):304-377. https://doi.org/10.1007/s00134-017-4683-6
2. Chang CJ, Wu CJ, Hsu HC, et al. Factors associated with blood culture contamination in the emergency department: critical illness, end-stage renal disease, and old age. *PLoS One*. 2015;10(10), e0137653. https://doi.org/10.1371/journal.pone.0137653
3. Hughes JA, Cabilan CJ, Williams J, Ray M, Coyer F. The effectiveness of interventions to reduce peripheral blood culture contamination in acute care: a systematic review protocol. *Syst Rev*. 2018;7(1):216. https://doi.org/10.1186/s13643-018-0877-4
4. Doern GV, Carroll KC, Diekema DJ, et al. Practical guidance for clinical microbiology laboratories: a comprehensive update on the problem of blood culture contamination and a discussion of methods for addressing the problem. *Clin Microbiol Rev*. 2019;33(1):e00009-19. https://doi.org/10.1128/CMR.00009-19
5. Skoglund E, Dempsey CJ, Chen H, Garey KW. Estimated clinical and economic impact through use of a novel blood collection device to reduce blood culture contamination in the emergency department: a cost-benefit analysis. *J Clin Microbiol*. 2019;57(1):e01015-e01018. https://doi.org/10.1128/JCM.01015-18
6. Self WH, Mickanin J, Grijalva CG, et al. Reducing blood culture contamination in community hospital emergency departments: a multicenter evaluation of a quality improvement intervention. *Acad Emerg Med*. 2014;21(3):274-282. https://doi.org/10.1111/acem.12337
7. Hopkins K, Huynh S, McNary C, Walker A, Nixon R, Craighead JE. Reducing blood culture contamination rates: a systematic approach to improving quality of care. *Am J Infect Control*. 2013;41(12):1272-1274. https://doi.org/10.1016/j.ajic.2013.02.019
8. Lin CM, Lee WS, Lin FY, Yu FL, Ou TY, Teng SO. Reducing blood culture contamination rates by educational intervention and one-on-one feedback in the emergency department. *J Exp Clin Med*. 2012;4(3):154-156. https://doi.org/10.1016/j.jecm.2012.04.005
9. Moss F, Thomson R. A new structure for quality improvement reports. *Qual Saf Health Care*. 2004;13(1):6-7. https://doi.org/10.1136/qhc.13.1.6
10. Blood culture contamination: an overview for infection control and antibiotic stewardship programs working with the clinical laboratory. Centers for Disease Control and Prevention. Accessed August 9, 2022. https://www.cdc.gov/antibiotic-use/core-elements/pdfs/fs-bloodculture-508.pdf
11. Chapman AK, Aucott SW, Milstone AM. Safety of chlorhexidine gluconate used for skin antisepsis in the preterm infant. *J Perinatol*. 2012;32(1):4-9. https://doi.org/10.1038/jp.2011.148
12. Gorski LA, Hadaway L, Hagle ME, et al. Infusion therapy standards of practice. *J Infus Nurs*. 2021;44(1S Suppl 1):S1-S224. https://doi.org/10.1097/NAN.0000000000000396, 8th edition.

13. Garcia RA, Spitzer ED, Beaudry J, et al. Multidisciplinary team review of best practices for collection and handling of blood cultures to determine effective interventions for increasing the yield of true-positive bacteremias, reducing contamination, and eliminating false-positive central line-associated bloodstream infections. *Am J Infect Control*. 2015;43(11):1222-1237. https://doi.org/10.1016/j.ajic.2015.06.030
14. Snyder SR, Favoretto AM, Baetz RA, et al. Effectiveness of practices to reduce blood culture contamination: a laboratory medicine best practices systematic review and meta-analysis. *Clin Biochem*. 2012;45(13-14):999-1011. https://doi.org/10.1016/j.clinbiochem.2012.06.007
15. Lalezari A, Cohen MJ, Svinik O, et al. A simplified blood culture sampling protocol for reducing contamination and costs: a randomized controlled trial. *Clin Microbiol Infect*. 2020;26(4):470-474. https://doi.org/10.1016/j.cmi.2019.09.005
16. Zimmerman FS, Karameh H, Ben-Chetrit E, Zalut T, Assous M, Levin PD. Modification of blood test draw order to reduce blood culture contamination: a randomized clinical trial. *Clin Infect Dis*. 2020;71(5):1215-1220. https://doi.org/10.1093/cid/ciz971

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The Experiences of United States Emergency Nurses Related to Witnessed and Experienced Bias: A Mixed-Methods Study

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Contribution to Emergency Nursing Practice

- Racism and other biases pose significant disparity concerns in people who are racialized as non-white and the lesbian, gay, bisexual, transgender, queer, intersex, and asexual plus populations specifically, but also in patients with disabilities. The relational basis of nursing as a profession makes identifying and challenging individual and systemic bias difficult.
- This paper provides both quantitative and qualitative data describing nurses' experience with bias; more importantly, it offers explanation and interventions to reduce harm.
- In both our survey and focus group data, we see evidence that racism and other forms of bias are threats to safe patient care and the well-being of nurses. Systemic solutions are suggested.

Abstract

Introduction: The purpose of this study was to obtain a broad view of the knowledge, attitudes, beliefs, and lived experiences of emergency nurses regarding implicit and explicit bias.

Methods: An exploratory, descriptive, sequential mixed-methods approach using online surveys and focus groups to generate study data. Two validated instruments were incorporated into the survey to evaluate experiences of microaggression in the workplace and ethnocultural empathy. Focus group data were collected using Zoom meetings.

Results: The final sample comprised 1140 participants in the survey arm and 23 focus group participants. Significant differences were found in reported experiences of institutional, structural, and personal microaggressions for non-white vs white participants. Respondents who identified Christianity as their religious group had lower mean scores on items representing empathetic awareness. Respondents who identified as nonheterosexual had significantly higher mean total Scale of Ethnocultural Empathy scores, empathetic awareness subscale scores, and empathetic feeling and expression subscale scores. Thematic categories that arose from the focus group data included witnessed bias, experienced bias, responses to bias, impact of bias on care, and solutions.

***Discussion*:** In both our survey and focus group data, we see evidence that racism and other forms of bias are threats to safe patient care. We challenge all emergency nurses and institutions to reflect on the implicit and explicit biases they hold and

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to engage in purposeful learning about the effects of individual and structural bias on patients and colleagues. We suggest an approach that favors structural analysis, intervention, and accountability.

Key words: Bias; Emergency nursing; Workplace environment; Mixed methods; Clinical judgment

Introduction

The profession of emergency nursing is a varied health care practice in terms of patient presentations across the lifespan and across the acuity continuum. The assessment skills and clinical judgment of emergency nurses are critical to the rapid identification of physical or psychological instability and the provision of safe, effective patient care.

Cognitive challenges to accurate assessment and safe care include implicit and explicit bias in the forms of racism,[1,2] ableism, transphobia, and decisional anchoring regarding psychiatric and substance-using presentations.[3] Racism and other biases pose significant disparity concerns in people who are racialized as non-white and the lesbian, gay, bisexual, transgender, queer, intersex, and asexual plus (LGBTQIA+) populations specifically,[4-7] but also in patients with disabilities.[8]

Almost 30 years ago, Barbee[9] described the attributes of nursing as a profession that prevented an open reckoning with racism in nursing education and practice. She outlined 4 elements allowing nurses to avoid openly dealing with racism in the profession: (1) an emphasis on empathy, (2) an individual orientation, (3) a preference for homogeneity, and (4) a need to avoid conflict. Iheduru-Anderson et al[10] suggested in their integrative review that nursing is still unable to identify and mitigate bias in either practice or nursing education. This is highlighted in a recent podcast presented by *Journal of the American Medical Association*[11] questioning the existence of racism in medicine and the discomfort that white physicians feel with the term. The podcast demonstrated an egregious blindness to the systemic and institutionalized racism that affects clinical decision making, what Martinez[12] discusses as an epistemology of ignorance.

The same elements that challenge a discussion of racism and other biases in health care also make a discussion of bias in nursing education and nursing practice difficult. The disciplinary foci of nursing, as described by Barbee,[9] centers on the nurse-patient relationship with emphasis on collaborative, shared care planning. Identifying implicit biases that are structurally supported in this individual context may be challenging. It is here that descriptions of both structural inequities in nursing education and microaggressions in the workplace keep the profession from reflecting on the effects on the patient populations they accompany in care. Microaggressions are a subtle and often daily form of oppression that reinforce unjust power differentials between groups and negatively impact the well-being of people who experience microaggressions.[13]

The United States nursing population is between 73% and 81% white,[14,15] and the National League for Nursing[16] reports that 81% of nursing faculty self-identify as white, but only 60% of the United States population identifies as white. This overwhelming white majority in the profession allows white nurses to identify with a professional role without necessarily acknowledging the racial disparities that dominance can perpetuate.[17] In particular, the lack of diverse faculty and nursing staff deprives the discipline of valuable perspective in academic preparation, clinical care, and theoretical work. Non-white nurses and nursing students also report an almost constant barrage of microaggressions in their daily work.[18] The National Commission for Addressing Racism in Nursing[19] conducted a national survey to evaluate the prevalence of racism in nursing and found that more than half of the participants think there is "a lot of racism in nursing" and 63% of nurses had personally experienced racism, indicating that racism continues to be a serious concern in nursing.

Structural racism and other forms of discrimination take a toll on the nursing profession, the individuals working within it, and, ultimately, the patients and communities they serve. However, little is known about racism and discrimination as they pertain to emergency nurses and emergency nursing practice. The purpose of this study was to obtain a broad view of the knowledge, attitudes, beliefs, and lived experiences of emergency nurses regarding implicit and explicit bias, with the aim of identifying areas of priority for educational and workforce interventions.

Methods

This study used an exploratory, descriptive, sequential mixed-methods approach using a survey and focus groups to generate study data. Survey data were collected to ascertain prevalence of bias among emergency nurses, with focus data used to expand understanding of the survey results.

SAMPLE

A purposive sample was recruited for both survey data collection and focus group participation from a population of emergency nurses working in United States emergency

departments. The sample was recruited using the membership of the Emergency Nurses Association (ENA) and social media. Inclusion criteria included English-speaking emergency nurses practicing in United States emergency departments. Focus group participants were recruited from the larger sample of emergency nurses who consented to survey participation.

QUANTITATIVE DATA COLLECTION

Using Qualtrics software (Provo, UT), survey data were collected online about nurses' demographics, work experience, and education, as well as information about biases experienced in their workplace. Two validated instruments were incorporated into the survey to evaluate: (1) experiences of microaggression in the workplace and (2) ethnic empathy.[20,21]

SURVEY INSTRUMENTS

The Racial and Ethnic Microaggressions Scale (REMS)[20] is a 45-item, validated measure evaluating respondents' experiences of the following 6 factors: (1) assumptions of inferiority, (2) second-class citizen and assumptions of criminality, (3) microinvalidations, (4) exoticization/assumptions of similarity, (5) environmental microaggressions, and (6) workplace and school microaggressions. Respondents used a 5-point Likert scale to report the frequency of experiencing each item, ranging from "I did not experience this event in the past six months" to "I experienced this event 10 or more times in the past six months."

The Scale of Ethnocultural Empathy (SEE)[21] is a 31-item, self-report, validated instrument that measures empathy toward people of racial and ethnic backgrounds different from one's own. Findings from validation studies suggest evidence for a positive, moderate association with a measure of general empathy and a high negative association with a measure of prejudice.[22] SEE items can be divided into 4 subscales: empathetic feelings and expression, empathetic perspective taking, acceptance of cultural differences, and empathetic awareness. Items are rated on a 6-point Likert-type scale (1 = strongly disagree that it describes me to 6 = strongly agree that it describes me). Subscale items are summed to generate individual subscale scores and all items are summed to generate total SEE scores, with higher scores representing higher levels of ethnocultural empathy.

QUALITATIVE DATA COLLECTION

A series of 6 1-hour focus groups were held via virtual Zoom (Zoom Video Communications, San Jose, CA) meetings, which were transcribed by the Zoom software. The transcriptions then were proofread for accuracy by the research team. To expand understanding of the lived experience of emergency nurses in the United States related to institutional, structural, and personal bias, the following questions, derived from a review of the literature and the application of Barbee's[9] work on racism in nursing, framed the discussion:

1. Have you seen or experienced racism, homophobia, ableism, or other forms of discrimination while a nursing student?
2. Have you seen or experienced racism, homophobia, ableism, or other forms of discrimination while a practicing emergency nurse?
3. How do you think that bias affects emergency nurses in their ability to do their work?
4. How do you think bias affects patient care?
5. How do you think bias affects emergency nurses' interactions with other health care team members?

DATA ANALYSIS

Survey data were downloaded to SPSS v. 28 for Windows (IBM Corp, Armonk, NY) for analysis. For continuous variables, normality was assessed visually using histograms and normal quantile-quantile plots. In addition, the ratio of the standard deviation to the mean was computed for each continuous variable. Summary findings for continuous variables are reported as means and standard deviations, with their 95% confidence intervals (CIs) where appropriate. Categorical variables are summarized using frequencies and percentages. In some cases (eg, racial identity), small sample sizes necessitated collapse of the data (eg, white vs non-white) to facilitate statistical comparison. For categorical variables, group comparisons were made using chi-square analysis or Fisher exact test, as appropriate for the data. CIs around the difference between proportions were computed as described by Wilson[23] and Newcombe.[24] For continuous variables, comparisons of group means were made using the t test for independent samples or one-way analysis of variance, as appropriate for the number of groups being considered. Scheffe's test was used to facilitate post hoc comparisons following analysis of variance. In addition, we present mean differences and their 95% CIs to aid in data interpretation. To account for multiple comparisons, Bonferroni's correction was applied when interpreting the results of statistical testing to avoid making a type I error (accepting a false positive).

Qualitative data from Zoom transcripts were analyzed using Mayring's[25] 8-step process by each member of the research team individually and then again collectively to

come to consensus on themes and categories. Member checking was conducted, with 13 of 23 participants responding that we had accurately captured the discussion. No changes to the discussion were necessary based on participant comments.

PROTECTION OF HUMAN SUBJECTS

Institutional review board approval was obtained from Advarra, Inc (Columbia, MD), before the recruitment of participants for the study. The study was approved as exempt from further review with a waiver of signed consent. Survey participants were given a summary of the study and assurance of confidentiality on the opening screen of the online survey. Completion of the online survey implied consent.

To encourage participants to speak freely, a Certificate of Confidentiality was obtained from the National Institutes of Health to ensure the privacy of participant research information, preventing it from being shared with anyone not connected to the research study. Every effort was made to have the researchers collecting focus groups be diverse and culturally concordant with the participants. Focus group slots were made available, and researcher identities were posted for each potential slot so that participants were informed of the positionality of the researchers and could choose groups where they felt comfortable discussing these issues. Focus group participation was limited to persons who met the study criteria and completed the informed consent document and initial survey. Focus group participants were provided with a summary of the study and assurance of confidentiality both on the opening screen of the online registration and at the start of each focus group session. They also were asked to complete a demographic survey before participating in the focus group.

Results

We consider race[26] and gender identity[27] to be socially constructed rather than biological variables, and these descriptions are used to aid in characterizing the sample/study participants and their experiences. We recognize that the human genome project confirmed that race is a social and political construct with no natural division of humans based on genes,[28] and so we included racialized categories to be able to stratify data and explore whether being racialized in specific groups affects the experiences of bias in emergency nursing. The final survey sample comprised 1141 emergency nurses, 82.4% of whom identified as white and 85.8% who identified as heterosexual. Sixty-three percent identified as following a form of Christianity, and 21.4% identified as nonreligious/secular/atheist. Eleven percent reported having a disability, but only 2.9% of this group identified as disabled. Eighty percent of the respondents identified as female, and 80% reported having a bachelor's or master's degree in nursing. Sixty percent of the respondents reported their primary role as charge or staff nurse, working in general community hospital emergency departments that had an average of 30 treatment spaces, and saw an average of 149 patient visits per day. Participants averaged 18 years of experience in nursing, 12 years of emergency department–specific experience, and 5-year tenure in their emergency department. Survey participants represented all 50 states, the District of Columbia, and 1 participant was from a United States territory (see Table 1).

FOCUS GROUP PARTICIPANTS

An initial email was sent to the interested group ($n = 259$), with 1 reminder email. This initial recruitment sample was obtained from the larger survey sample in which the final question asked whether survey participants would like to be contacted to participate in a focus group. Of the potential 259 participants, 64 registered to participate (25%) with 23 (36%) attending a focus group session. Individual focus groups ranged in size from 2 to 7 participants.

The frequencies of select variables that depict the range of historically underrepresented groups in our sample from survey through focus group participants are presented in Table 1. Proportions of the various underrepresented groups across progression through the study are roughly equal; 4 of 6 variables are highest in the final focus group participation column. A targeted attempt was made on social media (Facebook, LinkedIn, Twitter) to recruit for 2 additional focus groups (1 non-white, 1 LGBTQIA+). This yielded 1 additional interested participant (LGBTQIA+); these focus groups were not held owing to an insufficient number of registrants.

Q1: What is the experience of emergency nurses in the United States related to institutional, structural, and personal bias?

TABLE 1
Demographic variables depicting the range of historically underrepresented groups: survey through focus group progression

Demographics	Survey	Focus group progression		
	Participants (N = 1134) n (%)	Interested (*n* = 259) n (%)	Signed up (*n* = 64) n (%)	Participated (*n* = 23) n (%)
Non-white (any)	218 (19.2)	76 (29.3)	12 (18.8)	6 (26.1)
Gender (all)	1094 (96.5)	253 (97.7)	63 (98.5)	22 (95.6)
Non-heterosexual	130 (11.5)	36 (13.9)	7 (9.4)	2 (8.7)
Non-Christianity(including no religion)	356 (31.4)	94 (36.3)	25 (39.1)	10 (43.5)
Disabled	132 (11.6)	33 (12.7)	9 (14.1)	4 (17.4)
Disabled identity	33 (2.9)	7 (2.7)	1 (1.6)	1 (4.3)

The overall question was answered using survey data from the REMS and SEE and qualitative focus group data. We report quantitative data first, with explication from qualitative data second.

SURVEY DATA

Race

Analysis of responses to the REMS revealed significant differences in reported experiences of institutional, structural, and personal microaggressions for non-white vs white participants. Some examples of this are differences in non-white vs white responses to how often they experienced various items on the scale such as "Someone assumed that I grew up in a particular neighborhood because of my race" (non-white 52% vs white 26%, $P < .001$), "I was ignored at school or work because of my race" (non-white 46% vs white 12%, $P < .001$), "I was told that people of color do not experience racism anymore" (non-white 50% vs white 33%, $P < .001$), and "I was told that people of all racial groups experience the same obstacles" (non-white 54% vs white 35%, $P < .001$). The reported frequency of personal microaggressions was significantly different for people who identified as non-white, as indicated by non-white vs white responses to scale items such as "Someone avoided sitting next to me in a public space because of my race" (non-white 32% vs white 7%, $P < .001$), "Someone told me that I was 'articulate' after he/she assumed I wouldn't be" (non-white 48% vs white 9%, $P < .001$), and "An employer or coworker treated me differently than white coworkers" (non-white 49% vs white 3%, $P < .001$). Full details of this analysis are presented in Table 2.

Analysis of responses to the SEE also revealed significant differences in ethnocultural empathy when comparing responses for non-white and white participants. We observed significant differences across all 4 SEE subscales (empathetic feeling and expression, empathetic perspective taking, acceptance of cultural differences, and empathetic awareness) and in total SEE scores, with non-white participants consistently endorsing higher levels of ethnocultural empathy than their white counterparts.

Some of the largest differences in mean scores on individual items included understanding what it feels like to be the only person of a certain race or ethnicity in a group of people (non-white 5.05 vs white 3.06), relating to the frustration that people feel about having fewer opportunities owing to their racial or ethnic backgrounds (non-white 4.47 vs white 3.35), and being aware of institutional barriers that discriminate against racial or ethnic groups aside from one's own (non-white 4.44 vs white 3.71).

Participants who identified as non-white had higher mean scores on items relating to empathetic feeling and expression such as sharing the anger of those who face injustice because of their racial or ethnic background (non-white 4.78 vs white 4.28), appreciation for the cultural norms of people from other racial or ethnic groups (non-white 5.04 vs white 4.72), and expressing concern about race or ethnicity-based discrimination (non-white 4.51 vs white 4.00).

Participants who identified as white endorsed more difficulty relating others' stories about day-to-day experiences with racial or ethnic discrimination (non-white 4.99 vs white 4.08) and putting themselves in the shoes of someone racially or ethnically different from themselves (non-white

TABLE 2
Participant experiences of race and ethnicity-based microaggressions by racial identity

Racial and ethnic microaggressions scale item	White vs non-white		
	White n (%)	Non-white n (%)	Difference % (95% CI) *P* value
I was ignored at school/work because of my race.	102 (11.5)	99 (45.8)	34% (28-41) $P < .001$
Someone's body language showed they were scared of me because of my race.	103 (11.6)	95 (44.0)	32% (26-39) $P < .001$
Someone assumed that I spoke a language other than English.	132 (14.9)	131 (61.0)	46% (39-53) $P < .001$
I was told that I should not complain about race.	133 (15.0)	83 (38.4)	23% (17-30) $P < .001$
Someone assumed that I grew up in a particular neighborhood because of my race.	228 (25.8)	111 (51.6)	26% (19-33) $P < .001$
Someone avoided walking near me on the street because of my race.	29 (3.3)	57 (26.4)	23% (18-29) $P < .001$
Someone told me that she or he was color-blind.	269 (30.5)	95 (44.2)	14% (7-21) $P < .001$
Someone avoided sitting next to me in a public space (eg, restaurants, movie theaters, subways, busses) because of my race.	58 (6.6)	68 (31.6)	25% (19-32) $P < .001$
Someone assumed that I would not be intelligent because of my race.	60 (6.8)	107 (49.5)	43% (36-50) $P < .001$
I was told that I complain about race too much.	64 (7.3)	56 (25.9)	19% (13-25) $P < .001$
I received substandard service in stores compared with customers of other racial groups.	112 (12.7)	122 (56.5)	44% (37-51) $P < .001$
I observed people of my race in prominent positions at my workplace or school.	728 (82.6)	149 (69.3)	13% (7-20) $P < .001$
Someone wanted to date me only because of my race.	59 (6.7)	46 (21.4)	15% (9-21) $P < .001$
I was told that people of all racial groups experience the same obstacles.	309 (35.0)	117 (54.2)	19% (12-26) $P < .001$
My opinion was overlooked in a group discussion because of my race.	125 (14.2)	81 (37.5)	23% (17-30) $P < .001$
Someone assumed that my work would be inferior to people of other racial groups.	52 (5.9)	92 (42.6)	37% (20-44) $P < .001$
Someone acted surprised at my scholastic or professional success because of my race.	41 (4.7)	115 (53.2)	49% (42-55) $P < .001$
I observed that people of my race were the CEOs of major corporations.	732 (83.3)	117 (53.9)	30% (22-36) $P < .001$
I observed people of my race portrayed positively on television.	757 (86.5)	162 (75.0)	12% (6-18) $P < .001$

continued

TABLE 2
Continued

Racial and ethnic microaggressions scale item	White vs non-white		
	White	Non-white	Difference
	n (%)	n (%)	% (95% CI) *P* value
Someone did not believe me when I told them I was born in the United States.	26 (2.9)	48 (22.2)	19% (14-25) $P < .001$
Someone assumed that I would not be educated because of my race.	35 (4.0)	89 (41.6)	38% (31-44) $P < .001$
Someone told me that I was "articulate" after she/he assumed I wouldn't be.	82 (9.3)	103 (47.7)	38% (32-45) $P < .001$
Someone told me that all people in my racial group are all the same.	338 (38.4)	107 (49.5)	11% (4-19) $P = .003$
I observed people of my race portrayed positively in magazines.	724 (81.6)	148 (68.5)	13% (7-20) $P < .001$
An employer or coworker was unfriendly or unwelcoming toward me because of my race.	150 (17.1)	86 (40.0)	23% (16-30) $P < .001$
I was told that people of color do not experience racism anymore.	228 (32.7)	108 (50.0)	17% (10-25) $P < .001$
Someone told me that they "don't see color."	414 (47.1)	124 (57.7)	11% (3-18) $P = .005$
I read popular books or magazines in which a majority of contributions featured people from my racial group.	625 (71.6)	107 (49.8)	21% (15-29) $P < .001$
Someone asked me to teach them words in my "native language."	63 (7.7)	93 (43.9)	36% (39-43) $P < .001$
Someone told me that they do not see race.	388 (44.1)	125 (58.1)	14% (7-21) $P < .001$
Someone clenched her/his purse or wallet upon seeing me because of my race.	22 (2.5)	48 (22.9)	20% (15-27) $P < .001$
Someone assumed that I would have a lower education because of my race.	29 (3.3)	100 (46.5)	43% (37-50) $P < .001$
Someone of a different racial group has stated that there is no difference between the 2 of us.	230 (26.1)	109 (50.7)	25% (17-32) $P < .001$
Someone assumed that I would physically hurt them because of my race.	49 (5.6)	45 (20.9)	15% (10-21) $P < .001$
Someone assumed that I ate foods associated with my race/culture every day.	141 (16.0)	117 (54.4)	38% (31-45) $P < .001$
Someone assumed that I held a lower paying job because of my race.	26 (3.0)	87 (40.5)	38% (31-44) $P < .001$
I observed people of my race portrayed positively in movies.	736 (83.8)	154 (72.3)	12% (5-18) $P < .001$
Someone assumed that I was poor because of my race.	40 (4.6)	85 (39.7)	35% (29-42) $P < .001$

continued

TABLE 2
Continued

Racial and ethnic microaggressions scale item	White vs non-white		
	White	Non-white	Difference
	n (%)	n (%)	% (95% CI) *P* value
Someone told me that people should not think about race anymore.	341 (38.8)	103 (48.8)	10% (3-17) $P = .008$
Someone avoided eye contact with me because of my race.	138 (15.8)	83 (38.9)	23% (16-30) $P < .001$
I observed that someone of my race is a government official in my state.	797 (90.8)	144 (67.3)	24% (17-30) $P < .001$
Someone told me that all people in my racial group look alike.	223 (25.4)	102 (47.7)	22% (16-30) $P < .001$
Someone objectified one of my physical features because of my race.	140 (15.9)	107 (50.0)	34% (27-41) $P < .001$
An employer or coworker treated me differently than white coworkers.	30 (3.4)	106 (49.3)	46% (39-53) $P < .001$
Someone assumed that I speak similar languages to other people in my race.	104 (11.9)	120 (56.0)	44% (37-51) $P < .001$

CI, confidence interval; CEO, chief executive officer.

5.07 vs white 4.23), both items from the SEE empathetic perspective taking subscale. Additional details on ethnocultural empathy in study participants are presented in Table 3.

Religion

Owing to the small sample size, we collapsed self-identified religious affiliations into Christianity and non-Christianity, with the latter group including faith and nonfaith ideals (ie, Buddhist, Muslim, Hindi, Secular, Atheist, nonreligious, and other) given that there were a small number of participants endorsing individual non-Christian faith traditions. When comparing ethnocultural empathy for Christian and non-Christian participants, statistical differences were noted with significantly higher mean scores across all 4 SEE subscales and total SEE scores for non-Christian participants (Table 3).

Respondents who identified Christianity as their religious group had lower mean scores on items representing empathetic awareness such as awareness of institutional barriers that affect people of other racial or ethnic groups (Christian 3.60 vs non-Christian 4.42), insight into how other racial or ethnic groups are systematically oppressed in our society (Christian 3.91 vs non-Christian 4.92), and awareness of how society treats racial or ethnic groups other than one's own differently (Christian 4.44 vs non-Christian 5.09).

Respondents who identified as non-Christian had higher mean scores on the items representing empathetic feeling and expression, including sharing the anger of those who face injustice owing to their racial or ethnic background (Christian 4.20 vs non-Christian 4.74) and expressing concerns about discrimination to people from other racial or ethnic groups (Christian 3.96 vs non-Christian 4.38). Full details of ethnocultural empathy findings by racial identity and religious preference are presented in Table 3.

Gender Identity, Sexual Orientation, and Generation/Age Group

Several gender identity groups (nonbinary/gender nonconforming, 2-spirit, other, prefer not to say) were too small to support statistical comparisons; however, in comparing REMS and SEE data for participants who identified as either male (including transmen) or female (including transwomen), no statistical differences were noted. When comparing SEE mean scores for participants who identified as heterosexual vs nonheterosexual (lesbian, gay, bisexual, pansexual), several significant differences were noted.

TABLE 3
Participant ethnocultural empathy by demographic characteristics

SEE item	White vs non-white			Christian vs non-Christian		
	White	Non-white	Difference	Christian	Non-Christian	Difference
	Mean (SD)	Mean (SD)	Mean difference (95% CI)	Mean (SD)	Mean (SD)	Mean difference (95% CI)
I feel annoyed when people do not speak standard English.	4.68 (1.27)	5.03 (1.27)	−0.35 (−0.54 to −0.16)	4.65 (1.33)	4.99 (1.13)	−0.34 (−0.049 to −0.18)
I don't know a lot of information about important social and political events of racial and ethnic groups other than my own.	4.55 (1.23)	4.62 (1.37)	−0.08 (−0.26 to 0.12)	4.52 (1.26)	4.69 (1.20)	−0.15 (−0.31 to 0.01)
I am touched by movies or books about discrimination issues faced by racial or ethnic groups other than my own.	4.50 (1.36)	4.69 (1.47)	−0.18 (−0.39 to 0.02)	4.46 (1.39)	4.73 (1.37)	−0.25 (−0.43 to −0.07)
I know what it feels like to be the only person of a certain race or ethnicity in a group of people.	3.06 (1.80)	5.05 (1.44)	0.13 (−2.24 to −1.73)	3.45 (1.90)	3.45 (1.89)	−0.06 (−0.30 to 0.18)
I get impatient when communicating with people from other racial or ethnic backgrounds, regardless of how well they speak English.	5.48 (0.85)	5.55 (0.93)	−0.07 (−0.19 to 0.06)	5.51 (0.83)	5.52 (0.87)	0.01 (−0.10 to 0.12)
I can relate to the frustration that some people feel about having fewer opportunities owing to their racial or ethnic backgrounds.	3.35 (1.57)	4.47 (1.70)	−1.12 (−1.36 to −0.89)	3.48 (1.66)	3.71 (1.67)	−0.22 (−0.43 to −0.01)
I am aware of institutional barriers (eg, restricted opportunities for job promotion) that discriminate against racial or ethnic groups other than my own.	3.71 (1.73)	4.44 (1.78)	−0.73 (−0.99 to −0.47)	3.60 (1.75)	4.42 (1.67)	−0.80 (−1.02 to −0.58)
I don't understand why people of different racial or ethnic backgrounds enjoy wearing traditional clothing.	5.61 (0.81)	5.65 (0.87)	−0.04 (−0.16 to 0.08)	5.56 (0.86)	5.72 (0.69)	−0.17 (−0.26 to −0.07)
I seek opportunities to speak with individuals of other racial or ethnic backgrounds about their experiences.	4.35 (1.36)	4.62 (1.38)	−0.27 (−0.47 to −0.07)	4.35 (1.38)	4.56 (1.31)	−0.24 (−0.41 to −0.07)

continued

TABLE 3
Continued

SEE item	White vs non-white			Christian vs non-Christian		
	White	Non-white	Difference	Christian	Non-Christian	Difference
	Mean (SD)	Mean (SD)	Mean difference (95% CI)	Mean (SD)	Mean (SD)	Mean difference (95% CI)
I feel irritated when people of different racial or ethnic backgrounds speak their language around me.	5.05 (1.21)	5.16 (1.26)	−0.11 (−0.30 to 0.07)	4.99 (1.26)	5.28 (1.05)	−0.30 (−0.46 to −0.15)
When I know my friends are treated unfairly because of their racial or ethnic backgrounds, I speak up for them.	4.84 (1.07)	4.99 (1.14)	−0.16 (−0.32 to 0.01)	4.83 (1.10)	4.97 (1.04)	−0.13 (−0.27 to 0.01)
I share the anger of those who face injustice because of their racial and ethnic backgrounds.	4.28 (1.37)	4.78 (1.37)	−0.50 (−0.70 to −0.29)	4.20 (1.41)	4.74 (1.27)	−0.52 (−0.70 to −0.35)
When I interact with people from other racial or ethnic backgrounds, I show my appreciation of their cultural norms.	4.72 (1.01)	5.04 (1.09)	−0.32 (−0.47 to −0.17)	4.73 (1.05)	4.89 (1.01)	−0.17 (−0.30 to −0.03)
I feel supportive of people of other racial and ethnic groups, if I think they are being taken advantage of.	4.76 (1.07)	4.92 (1.27)	−0.16 (−0.32 to 0.01)	4.73 (1.12)	4.91 (1.12)	−0.19 (−0.33 to −0.05)
I get disturbed when other people experience misfortunes owing to their racial or ethnic backgrounds.	5.01 (1.08)	5.26 (1.06)	−0.25 (−0.41 to −0.09)	4.96 (1.10)	5.27 (1.00)	−0.28 (−0.41 to −0.14)
I rarely think about the impact of a racist or ethnic joke on the feelings of people who are targeted.	5.10 (1.16)	5.13 (1.24)	−0.03 (−0.21 to 0.15)	5.08 (1.17)	5.19 (1.14)	−0.15 (−0.29 to 0.00)
I am not likely to participate in events that promote equal rights for people of all racial and ethnic backgrounds.	4.49 (1.54)	4.75 (1.56)	−0.25 (−0.48 to −0.02)	4.35 (1.58)	4.98 (1.37)	−0.62 (−0.80 to −0.43)
I express my concern about discrimination to people from other racial or ethnic groups.	4.00 (1.36)	4.51 (1.35)	−0.52 (−0.72 to −0.31)	3.96 (1.36)	4.38 (1.37)	−0.40 (−0.57 to −0.23)
It is easy for me to understand what it would feel like to be a person of another racial or ethnic background other than my own.	3.11 (1.40)	4.55 (1.48)	−1.44 (−1.65 to −1.23)	3.36 (1.54)	3.46 (1.46)	−0.08 (−0.28 to 0.11)

continued

TABLE 3
Continued

SEE item	White vs non-white			Christian vs non-Christian		
	White	Non-white	Difference	Christian	Non-Christian	Difference
	Mean (SD)	Mean (SD)	Mean difference (95% CI)	Mean (SD)	Mean (SD)	Mean difference (95% CI)
I can see how other racial or ethnic groups are systematically oppressed in our society.	4.12 (1.61)	4.70 (1.63)	−0.58 (−0.82 to −0.34)	3.91 (1.64)	4.92 (1.39)	−1.00 (−1.18 to −0.81)
I don't care if people make racist statements against other racial or ethnic groups.	5.60 (0.80)	5.60 (0.82)	−0.01 (−0.13 to 0.11)	5.57 (0.84)	5.66 (0.74)	−0.10 (−0.19 to 0.00)
When I see people who come from a different racial or ethnic background succeed in the public arena, I share their pride.	4.81 (1.14)	5.19 (1.05)	−0.39 (−0.55 to −0.22)	4.84 (1.15)	4.97 (1.06)	−0.14 (−0.28 to 0.00)
When other people struggle with racial or ethnic oppression, I share their frustration.	4.24 (1.27)	4.87 (1.27)	−0.63 (−0.82 to −0.44)	4.25 (1.33)	4.58 (1.18)	−0.33 (−0.49 to −0.17)
I recognize that the media often portrays people based on racial or ethnic stereotypes.	5.01 (1.18)	5.19 (1.10)	−0.18 (−0.35 to −0.01)	4.95 (1.21)	5.25 (1.04)	−0.28 (−0.43 to −0.14)
I am aware of how society differentially treats racial or ethnic groups other than my own.	4.56 (1.31)	5.04 (1.24)	−0.48 (−0.68 to −0.29)	4.44 (1.34)	5.09 (1.13)	−0.65 (−0.81 to −0.49)
I share the anger of people who are victims of hate crimes (eg, intentional violence because of race or ethnicity).	5.13 (1.15)	5.30 (1.13)	−0.18 (−0.35 to −0.01)	5.11 (1.17)	5.30 (1.06)	−0.19 (−0.33 to −0.04)
I do not understand why people want to keep their indigenous racial or ethnic cultural traditions instead of trying to fit into the mainstream.	5.32 (1.00)	5.32 (1.24)	0.01 (−0.15 to 0.16)	5.23 (1.07)	5.51 (0.97)	−0.30 (−0.43 to −0.17)
It is difficult for me to put myself in the shoes of someone who is racially and/or ethnically different from me.	4.23 (1.29)	5.07 (1.18)	−0.85 (−1.03 to −0.66)	4.37 (1.33)	4.50 (1.23)	−0.14 (−0.031 to 0.03)

continued

TABLE 3
Continued

SEE item	White vs non-white			Christian vs non-Christian		
	White	Non-white	Difference	Christian	Non-Christian	Difference
	Mean (SD)	Mean (SD)	Mean difference (95% CI)	Mean (SD)	Mean (SD)	Mean difference (95% CI)
I feel uncomfortable when I am around a significant number of people who are racially/ethnically different than me.	4.85 (1.17)	5.03 (1.26)	−0.18 (−0.35 to 0.00)	4.89 (1.19)	4.94 (1.16)	−0.06 (−0.21 to 0.09)
When I hear people make racist jokes, I tell them I am offended even though they are not referring to my racial or ethnic group.	4.12 (1.44)	4.19 (1.57)	−0.07 (−0.29 to 0.15)	4.07 (1.45)	4.34 (1.45)	−0.30 (−0.49 to −0.11)
It is difficult for me to relate to stories in which people talk about racial or ethnic discrimination they experience in their day-to-day lives.	4.08 (1.29)	4.99 (1.21)	−0.91 (−1.10 to −0.72)	4.22 (1.32)	4.34 (1.29)	−0.14 (−0.31 to 0.03)
Total and subscale scores	**Mean (SD)**	**Mean (SD)**	**Mean difference (95% CI) P value**	**Mean (SD)**	**Mean (SD)**	**Mean difference (95% CI) P value**
Total SEE score	4.54 (0.623)	4.97 (0.699)	−0.43 (−0.52 to −0.33) t = −7.956, df = 238.581, $P < .001$*	4.54 (0.645)	4.82 (0.641)	−0.28 (−0.36 to −0.19) t = −6.540, df = 1042, $P < .001$
SEE empathetic feeling and expression subscale	4.66 (0.741)	4.93 (0.814)	−0.26 (−0.37 to −0.14) t = −4.432, df = 1076, $P < .001$	4.63 (0.750)	4.90 (0.748)	−0.26 (−0.35 to −0.16) t = −5.246, df = 1065, $P < .001$
SEE empathetic perspective taking subscale	3.89 (0.820)	4.82 (0.798)	−0.92 (−1.05 to −0.80) t = −14.654, df = 1088, $P < .001$	4.04 (0.910)	4.16 (0.863)	−0.12 (−0.24 to −0.01) t = −2.126, df = 1077, $P = .034$
SEE acceptance of cultural differences subscale	5.23 (0.692)	5.37 (0.738)	−0.14 (−0.24 to −0.03) t = −2.511, df = 1088, $P = .012$	5.19 (0.720)	5.40 (0.644)	−0.22 (−0.31 to −0.13) t = −5.035, df = 769.816, $P < .001$*

continued

TABLE 3
Continued

Total and subscale scores	Mean (SD)	Mean (SD)	Mean difference (95% CI) P value	Mean (SD)	Mean (SD)	Mean difference (95% CI) P value
SEE empathetic awareness subscale	4.35 (1.13)	4.85 (1.12)	−0.49 (−0.66 to −0.32) t = −5.699, df = 1091, $P < .001$	4.23 (1.12)	4.92 (1.10)	−0.69 (−0.83 to −0.55) t = −9.692, df = 1081, $P < .001$

CI, confidence interval; SEE, Scale of Ethnocultural Empathy.
* Equal variances not assumed.

Respondents who identified as nonheterosexual had significantly higher mean total SEE scores (4.82 nonheterosexual vs 4.60 heterosexual, $P < .001$), empathetic awareness subscale scores (4.99 nonheterosexual vs 4.38 heterosexual, $P < .001$, equal variances not assumed), and empathetic feeling and expression subscale scores (4.91 nonheterosexual vs 4.69 heterosexual, $P = .002$).

As with gender identity, several generation subgroups (generation Z, silent generation) were too small to support statistical comparison; however, several differences were noted when comparing other groups (baby boomer, generation X, millennials [generation Y]). On one-way analysis of variance, significant differences were noted in mean empathetic awareness subscale scores ($P < .001$) and mean acceptance of cultural differences subscale scores ($P < .001$). On post hoc analysis, it was noted that differences in empathetic awareness were present for the baby boomer vs millennials comparison (4.33 baby boomers vs 4.63 millennials, $P = .007$) and the generation X vs millennials comparison (4.63 millennials vs 4.34 generation X, $P = .004$), indicating that millennial generation participants demonstrated higher levels of empathetic awareness than did their generation X and baby boomer generation counterparts. For the acceptance of cultural differences subscale scores, significant differences were observed when comparing baby boomer vs generation X (5.06 baby boomer vs 5.25 generation X, $P = .002$), baby boomer vs millennial (5.06 baby boomer vs 5.44 millennial, $P < .001$), and generation X vs millennial scores (5.24 generation X vs 5.44 millennial, $P = .001$). This again suggests that millennial generation participants endorsed higher levels of acceptance of cultural differences than their generation X or baby boomer counterparts.

Too few participants ($n = 33$) identified as disabled to support statistical comparison.

FOCUS GROUP DATA

Thematic categories that arose from the focus group data included witnessed bias, experienced bias, responses to bias, impact of bias on care, and solutions (see Table 4 for integrated results).

Witnessed Bias

In this first category, participants reported observing incidents of bias directed at other ED staff and at patients. This bias was described as display of public tolerance for a colleague or patient but feeling private intolerance for the same person; there was reported nontoleration of overt bias but clear existence of overt bias. One participant shared:

TABLE 4
Emergency nurses' reports of witness and experienced bias: integrated findings

Quantitative findings: bias and empathy	Qualitative findings: bias and empathy
There were significant differences across all 4 SEE subscales and total SEE scores, with non-white participants consistently endorsing higher levels of ethnocultural empathy than their white counterparts. (total mean difference [95% CI]: −0.43, t = −7.956, df = 238.581, $P <$ .001)	A seasoned nurse explained her experience with both implicit and explicit bias saying, "I've seen so much bias with nurses in the ER, while they don't show it in the patient room they'll go back out into the nurse's station and bad mouth that patient…what I call patient bashing."
Nonheterosexual participants had significantly higher mean total SEE scores, empathetic awareness subscale scores, and empathetic feeling/expression subscale scores. (total mean difference [95% CI]: −0.22, t = −3.637, df = 1054, $P <$ .001)	A participant described her nursing colleagues' discomfort in working with a transgender female physician: "They [other staff] approached her less, and you could tell through just even their dialogue, that they were uncomfortable how to address her even just simply by her name, you know, doctor."
Participants who identified with Christianity had lower mean scores on items representing empathetic awareness (eg, institutional barriers, systematic oppression, societal treatment) and its effects on people of other racial or ethnic backgrounds. (total mean difference [95% CI]: −0.28 [−0.36 to −0.19], t = −6.540, df = 1042, $P <$ .001)	. . . in my town we've had a large influx of Burmese immigrants, as well as Punjabi immigrants and a lot of times those patients need a language [phone] . . . and so, my colleagues have said, I don't want to go in there. I'm going to be on the phone forever. So I've experienced or witnessed that bias.
Mixed methods inferences: expansive Findings from FG and survey participants were expansive such that the quantitative findings (SEE scores) expanded our knowledge regarding differences in perceptions (by race, gender, religious affiliation) regarding the scope of existing biases, the recognition of harm, and empathy toward people of different racial and ethnic backgrounds than one's own. FG participants reported and acknowledged the occurrence and general intolerance of overt bias (eg, race, gender, and nonconforming sexual identity) directed at ED patients and staff; however, they also described bias as a display of public tolerance for a colleague or patient while harboring private intolerance for the same person. In the context of empathy (which is a cornerstone of nursing), qualitative findings served to expand our understanding of how an individual orientation to providing care influences nurses' perceptions. Empathy does not require or elicit acknowledgment of the institutional and structural elements (eg, policies and processes) that perpetuate bias and racism, nor does it challenge individual nurses to reflect on the ways that they themselves might contribute to its continuation in the workplace.	
Quantitative findings: personal microaggressions	**Qualitative findings: personal microaggressions**
Non-white respondents reported a statistically significant higher frequency of REMS on all REMS items ($P <$ .001 for 43 of 45 items).	Sometimes it's like inappropriate like just being called you know, n****r, like "when are you going to stop being a n****r," that kind of thing. I have experienced, an overt bias toward anyone who is not of their nationality that "You can't understand me, because I am of this nationality." …it's become unkind and very accusatory.

continued

TABLE 4
Continued

Quantitative findings: personal microaggressions	Qualitative findings: personal microaggressions
	Several non-white nurses described their attempts to respond directly to bias:- The honest-to-God truth is that it [patient bigotry] didn't stop until I said something inappropriate back. Um, and I said after about a whole half hour of this I said, "How about I stop being a n****r as soon as you stop being a honky." But you kind of feel, or at least I did, that you had to pick and choose, because if you were going to report everything that happened to you, first off you could probably not have a lot of work done. You don't want to hear people say, you know, "Oh she's pulling the race card." Nurses from nonmarginalized groups also agreed that it was difficult to speak up when they witnessed biased behavior:. "You find a lot of times that people won't intervene, because they don't want to then have a target on them."
Mixed methods inferences: expansive FG data expanded on the results of the REMS item scores by providing insight into the prevalence and effects of personal microaggressions. Several nurses from populations who have been historically marginalized (eg, Black, gay) expressed frustration with speaking up about the discrimination they experienced because of the frequency of these incidents and the psychological and personal harm that resulted. They discussed how they "pick their battles" in self-advocacy, calling out colleagues after witnessing or experiencing bias, or reporting the behavior up the administrative chain. FG participants' reports of not intervening when witnessing bias (out of reluctance to become targets themselves) expanded our interpretation of the frequency of microaggressions, leading to the conclusion that: Individually oriented personal responses or institutional responses of education do little to name or dismantle the historical and structural systems that support biased behavior and could explain, in part, the perpetuation of systemic bias and racism in nursing.	

FG, focus group; REMS, Racial and Ethnic Microaggressions Scale; SEE, Scale of Ethnocultural Empathy.

> I've seen so much bias, with nurses in the ER while they don't show it in the patient room they'll go back out into the nurse's station and bad mouth that patient.. . . . we're very nonjudgmental whenever we're face to face with that patient, but then we go out and about and it's kind of what I call patient bashing. (J, group A)

Another described:

> A lot of them are Black and they're coming for, like a lot more . . . but they're coming, because they don't have a primary care they can't get to primary care. And then it ends up being like if someone is coming in there, like a like 20-year-old Black female, they like get an eye roll immediately. (B, group C)

Emergency nurses also reported witnessing bias against LGBTQIA+ patients and staff specifically owing to "discomfort" or "not understanding." In particular, members of the transgender community were reported as being the targets of bias, as described in the following quote:

> They (other staff) approached her (a transgender female physician) less, and you could tell through just even their dialogue they were uncomfortable how to address her even just simply by her name, you know, doctor. And the other thing that I did notice was patients were uncomfortable, so it was bias from patients to her care. (J, group C)

In addition, participants reported that, although they perceived a decrease in overt gender bias over the past 20 years or so, an "old boys' network" still exists.

> Between the two the females constantly having to defend their opinion, their assessments, their diagnosis, I just feel that it's much more trying for us to get our point across still than it is for our male colleagues, whether they be physicians, PAs, nurse practitioners, or techs. (A, group D)

In discussing other witnessed bias, participants recognize that delivery of linguistically appropriate care can mean delays and that the immediate challenge to appropriate care is the time lag and the effort involved. They report a normalization of overt commentary and bias from peers and patients.

> . . . in my town we've had a large influx of Burmese immigrants, as well as Punjabi immigrants and a lot of times those patients need a language [phone] . . . and so, my colleagues have said, I don't want to go in there. I'm going to be on the phone forever. So I've experienced or witnessed that bias. (C, group B)

The way the participants discussed witnessed bias suggested that emergency nurses can acknowledge their own bias but fail to acknowledge or understand how their own bias causes harm, only describing the biases of other nurses as harmful.

> A lot of them are Black and they're coming for like a lot more primary care, because they're on Medicare they don't want to pay their ER fees so they're not as worried about that. And that's a little bit of an assumption on my part, but then I feel like there ends up being bias, because we see so many people that are coming for maybe not emergent but they're coming, because they don't have a primary. (B, group C)

Experienced Bias

In discussing personally experienced bias, participants in this study reported a pattern of retraumatization—the repeated trauma of being held responsible, penalized, or blamed for reacting to racism directed toward them. Emergency nurse participants who identify with systematically marginalized groups reported daily harm from a constant process of justifying their existence in the workspace, from both patients and leadership.

A participant shared:

> Sometimes it's like inappropriate like just being called you know, n****r, like "when are you going to stop being a n*****r," that kind of thing. Another time and one patient asked me, you know, was I Baptist and I was like, you know, "Why you asked me that?" And it's the "Most colored people are Baptist," that kind of thing. To you know, make blatantly, maybe wanting a different nurse, and they want a white nurse. I have experienced that. (N, group F)

And another reported:

> I mean it's [been] for me for having people have me pretty much go over my entire résumé and asked me how I got into the expensive school that I went to, to ask me if I was a real nurse to being called a, hold on to your pants, . . . a house n****r by a family member and then being called into the office by the manager . . . What I had actually said at the time was, "You know it's 2010 we don't call people that now and that's not appropriate." (L2, group B)

White participants reported frustration with what they understood to be bias toward them for their treatment or

management of patients from other racialized groups. They reported their frustration as a challenge to their ability to provide equal care to all patients.

> I have experienced an overt bias toward anyone who is not of their nationality that "You can't understand me, because I am of this nationality." … It's become unkind and very accusatory and that even though [I] constantly explain, "Look our staff is very diverse, our population's very diverse, we treat everyone the same. Nursing is not about bias, it's about getting you the care you need." . . . It starts out very, very confrontational now . . and some of those cultures now [can be] confrontational toward us and it's ugly, it's unkind. (L, group B)

Emergency nurses discussed how they "pick their battles" both in self-advocacy and in calling out colleagues after witnessing or experiencing bias. Participants reported not intervening when witnessing bias out of reluctance to become targets themselves, as described by one participant:

> You find that a lot of times people won't intervene, because they don't want to then have a target on them. Or you'll notice that there's like a relationship shift, right? You'll notice that now people aren't interacting with you the way that they normally did, because you stuck up for somebody else. (J, group D)

Another participant shared:

> But you kind of feel, or at least I did, that you had to pick and choose, because if you were going to report everything that happened to you first off you could probably not have a lot of work done. You don't want to hear people say, you know, "Oh she's pulling the race card." (L2, group B)

They described resistance to engaging in a more authoritative response; in particular, white nurses reported focusing on cajoling or educating people, rather than setting more systemic expectations for behavior and practice. They reported that they felt directly calling out of behavior did more harm than good.

For example:

> . . . I don't think I ever straight called someone out, I would say I, in like my professional career. I have been called out, you know face-to-face, and actually I feel like it does more harm in the moment than help. (J, group C)

And:

> I wouldn't ever get into that conversation with another nurse. I wouldn't ever confront that nurse. I'm not going to make a difference; I'm not going to change their mind. I'm not going to change their opinion, it's really not worth it. (J, group E)

Some participants reported leaving jobs where they felt they could not confront bias effectively.

> Yes, absolutely I know…personally, I have left positions, because my immediate supervisor had found out about my sexual orientation and decided to target me with bogus write-ups, so I personally have been affected, yes. (J, group E)

Participants also reported responding to a colleague's bias toward a patient by attending to the patient without comment to their peer or report to superiors. They explained this behavior by suggesting that they were reluctant to call something "racist" without knowing for sure the individual's intent. In addition, nurses reported that they are unlikely to intervene by speaking to the nurse or provider when they become aware of bias in care, nor would they escalate the incident to management's attention. Rather than speaking with the nurse at the time bias is observed, nurses discussed intervening directly with the patient.

> I just usually intervene in the moment, the best way I can. Or I'll just say, you know, I'll . . . "Let me go talk to them, let me just go talk to them. I'll take care of it," or "I'll go give that med for you" and then I can intervene that way. (M, group E)

Non-white nurses reported that they had responded to bias from patients directly at times:

> The honest-to-God truth is that it didn't stop until I said something inappropriate back. Um, and I said after about a whole half hour of this I said, "How about I stop being a n****r as soon as you stop being a honky." And then the patient was so in shock that I said that, but that's not how you handle situation. I just felt like upset that I had to go there, because you know you're not supposed to stoop to another person's level. (N, group F)

On a couple of occasions, nurses from populations that have been historically marginalized (eg, Black, gay) also expressed frustration with speaking up about

microaggressions and discrimination they experienced because of the frequency of these incidents and the psychological and personal harm that resulted.

> You still don't feel as if you're getting backed by leadership or management. If you are to say something like "Don't treat me that way," you don't have the right to do that, because what we see is that they do have the right to do that and then they're kind of supported in that behavior. . . (L2, group B)

Impact of Bias on Care

Emergency nurses described that exhibiting bias in assessment or care may downplay symptoms, delay care, or undertreat patients. They explained that bias may affect the frequency of patient assessment, communication with the patient and/or family, and ongoing care.

> One instance I'm thinking specifically, we have a patient with sickle cell and is often, like, highly undertreated. I hear comments all the time, "Well I just gave her, you know, X amount of pain medication," like, "I'm, I can't, you know . . . I can't give any more than that; that's not safe." Just not even recognizing maybe the bias there towards the disease, an individual for pain meds. (J, group C)

> We have a huge problem with addiction, mainly opiates, but it affects the care from the minute the patient arrives — if they're transported as an overdose they stay in overdose and they can stay in overdose for an entire shift, and then a new shift comes in and recognizes, oh, something else is wrong, like you can be an overdose who also has a head bleed, for instance, or a fractured arm, but you know you have in your head, this is just an overdose and you just sort of get the vitals, undress them, go about your way, but we have to remember that. (A, group D)

In addition, the therapeutic relationship between patient and nurse can be damaged, and consequentially, care may suffer. Focus group participants reported that patients exhibiting bias may ultimately have less experienced or angry nurses assigned to them whereas allies who are uncomfortable with racist patients describe not wanting to provide optimum patient care, because the patient's perceived racist behavior is bothering their coworkers to the point of making the work environment intolerable, as described below.

> I said, "Hey, can you go take vitals on them?" and somebody else was like, "Nope, no, no one who is not white is allowed to set foot in that room, because that patient is a jerk." And like, I took that very seriously, as did everybody else, so I'm pretty sure that none of us wanted to go in there after that, and then whatever was supposed to be happening for other patients that we were supposed to be taking care of might not be getting done, because you had to pull somebody else to come with you to go in that room half the time, because patient was inappropriate. (N, group F)

Solutions

Participants in this study reported a perception that institutions are implementing diversity, equity, and inclusion programs as a "checkbox" but the institutions are not focused on actual dismantling of institutionalized biases, diversity-equity-inclusion staff education, and holding individuals accountable for biased behavior. Many of our participants discussed a knowledge of widespread bias in practice but reported a preference for solutions that they themselves could employ, such as modeling behaviors that were more patient centered. The most frequently discussed systemic solution was that of increasing diversity among staff and administration. This was recognized by many participants as a way to improve the socioclinical environment; however, it was equally common to recognize the difficulty of recruiting and retaining a diverse workforce.

One participant offered:

> What you really need are people to talk to people who are not like them, because, in my experience that's what helps people understand that people who don't look like you or don't think like you, are still actual people that you can connect . . . (D, group F)

Discussion

The purpose of this study was to obtain a broad view of the knowledge, attitudes, beliefs, and lived experiences of emergency nurses regarding implicit and explicit bias in the ED workplace, with the aim of identifying areas of priority for educational and workforce interventions. Our sample reflected the general demographic breakdown of nursing in both the survey and focus group arms.

We chose to frame the categories within the structure described by Barbee.[9] In her work, Barbee makes an argument that specific characteristics of nursing, such as an

emphasis on empathy, a focus on the individual, a preference for homogeneity, and a need to avoid conflict prevent a full discussion or reckoning with racism. We maintain that these same characteristics also create challenges for addressing other forms of bias, including ableism and bias against the LGBTQIA+ community, and so have chosen to use this framework to discuss our findings about the many forms of bias reported in this study.

EMPATHY AND THE FOCUS ON THE INDIVIDUAL

Barbee[9] discussed an emphasis on empathy as a barrier to discussion of racism specifically in nursing; she describes her difficulty of writing about a problem in which the challenge of identifying racism in nursing lies in its subtlety and embeddedness. Empathy, as Barbee described it, is transformed into an identification with caring and work and an individual orientation to providing care. Empathy does not acknowledge the structural elements, such as laws, policies, and processes, that are created and enforced outside the individual nurse. Barbee's[9] work is reinforced by the work of Iheduru-Anderson et al,[10] whose integrated literature review suggested that little has changed.

Our participants discussed an individual orientation in both managing and responding to witnessed bias. In survey responses, we saw that white-identifying respondents were more likely to have difficulty putting themselves in the shoes of others who are racially or ethnically different or to relate to stories of other people's experiences with racism or discrimination. Similarly, although our focus group data confirmed this to a large extent, the nurses who offered possible responses to bias were likely to identify individual rather than structural reactions, such as talking to the person who exhibited bias or modeling "better" behavior. In the case of intervening during the care of a patient who was the target of racism or other bias, nurses reported that they might ignore the colleague altogether and respond by providing care to the patient without comment or without reporting this negative behavior up the administrative chain. There was a resistance to structural changes from white participants, preferring these more targeted individual interactions. This focus on individual responses results in the perception that racism is an interpersonal event and therefore remedied by interpersonal interaction[29,30] rather than acknowledging the historical and structural systems that perpetuate discrimination toward minoritized social groups. Similarly, Waite and Nardi[31] discussed the implications of colonialism and racism for nursing leaders, specifically calling out the tendency of leaders to rely on education and conversation to mitigate racism. These individually oriented responses or systemic responses of education do little to name or dismantle the structures that support this negative behavior and could explain, in part, the perpetuation of systemic bias and racism in nursing.

However, we found that specific groups of participants, specifically millennials, those who identified as non-white, and who identified as non-Christian, endorsed higher levels of ethnocultural empathy. This is possibly related to the higher levels of education for all millennials and specifically the higher participation in the workforce of women. Most millennial voters affiliate with the democratic party or lean democratic,[32] and this may account for generational differences on specific issue areas, from views of racial discrimination and immigration to foreign policy and the scope of government. There is an increased prevalence of interracial marriage among millennials; in this generation, only 56% of the population identified as non-Hispanic white.[33] Other authors reported that non-white people endorse higher levels of ethnocultural empathy,[34] which aligns with our findings. With regard to religious identification and empathy, Galen[35] reported that the oft-assumed association between persons who identify their religious affiliation as Christian and prosocial behaviors and attitudes is false and may be a result of self-reporting, a conclusion supported by our findings as well.

A PREFERENCE FOR HOMOGENEITY

Both our sample and the nursing population in general are approximately 80% white in comparison with the general population of the United States, which is approximately 60% white. A preference for homogeneity manifests as a repeated statement of "We're all the same, we treat everyone the same" or taking a "color-blind" approach: "the color-blind individual, by ostensibly failing to see race, fails to see racism and falls into racist passivity. The language of color blindness–like the language of 'not racist'–is a mask to hide racism"[36](p.10). Although our white participants were insistent in this claim, they also provided anecdotes of discrimination toward Black patients. One example described how Black patients from a catchment area presenting to an emergency department in a white, wealthy suburb were "labeled" when colleagues interpreted those presentations as less emergent, suggesting that the very presence of a person of color in an emergency department in a white majority geographic area is immediately subject to judgment. The literature presents us with evidence that bias against women, non-white identifying, and transgender people exists, specifically in the areas of pediatrics,[4,37,38] mental health,[39] pain management,[40] and sepsis.[41] Our

survey data revealed a relationship between identifying as non-white and agreeing with statements such as "I was told that people of color do not experience racism anymore" and "I was told that people of all racial groups experience the same obstacles." The insistence on homogeneity does harm to patients, because it impedes the ability of a nurse to challenge their own bias-induced blind spots in assessment and treatment. In addition, when we take a "color-blind" approach, we erase the experiences and histories of Black, indigenous, Latinx, Asian, Pacific Islander, and other people of color, thereby ignoring the racist policies and structural inequities that produce poorer health outcomes for our patients and their communities.

A NEED TO AVOID CONFLICT

Both nurses who witnessed bias and those who experienced it discussed the need to "pick their battles," regarding whether to challenge a patient or colleague in the moment. Most reported direct responses to bias as rare and as a last resort, particularly when they are the "only" person of color, LGBTQIA+, or disabled person in the department or if they do not want to be targeted as "difficult." These data are supported by work on bullying in ED settings,[42] where emergency nurses were reluctant to call out inappropriate behaviors and biases, and this extended to nurse-patient assignments incongruous with a nurse's experience level or workload. Similarly, in this study, nurse-patient assignment was used to avoid dealing with patients who exhibited discriminatory or aggressive behavior toward staff who were non-white, transgender, or gay. In addition, in previous bullying research, emergency nurses tended to use strategies such as being the guilty bystander,[43] avoiding challenging colleagues or patients so that they do not become the target, or maintaining the status quo, where they will attend to patients but not challenge colleagues or report the biased behavior up the administrative chain for fear of causing trouble. Rarely did they call it out or use more direct responses to address bullying behaviors.[42] This suggests that an individualized, passive approach to reducing the widespread occurrence of violence at work is not an effective strategy, whether these workplace violence occurrences are microaggressions or acts of physical aggression.

SOLUTIONS

Nurse participants suggested that one necessary solution to address bias in health care is to increase diversity. Similarly, other organizations have emphasized the need for increased diversity for nursing students and faculty and nurses in practice.[44-46] However, these papers did not directly address entrenched structural racial inequities as a core contributor to health inequities.

Approaches to address the negative impact of implicit bias and cognitive stressors on health disparities, medical decision making, and inequities in patient care include shared decision making with patients, empathy for their situation, and emotional regulation,[47] increasing opportunities for contact with individuals from different groups (Institute for Healthcare Improvement and Institute for Healthcare Improvement Multimedia Team, 2017; National Academies of Science Engineering and Medicine, 2021),[48] and bias-mitigating strategies, such as counter stereotypic imaging, habit replacement, mindfulness, partnership building, and perspective taking.[49] However, these suggestions from important health care organizations are targeted at individual providers, not at systems, and may not help tackle systemic racism and bias in nursing.

Systemic and institutional changes are needed to address bias, including racism, in health care organizations. Historically, nursing leaders have viewed bias as an interpersonal issue, while neglecting the need to focus on evidence-based systemic and institutional actions. Although individual-level work is needed for nurses and other health care professionals to gain an awareness of personal biases, Marcelin et al[50] discussed that a shift in culture is necessary at the organizational level. Using the nursing process, emergency nurse leaders must assess the climate and outcomes in their unit and health system. Traditional assessment strategies such as climate surveys are a good step, but leaders must move beyond assessing the climate and culture of their organization to taking meaningful steps to create change. The path to addressing bias in health care and health inequities must be laid out with clearly defined actions and systems for accountability. Marcelin et al[50] discussed several strategies including developing a leadership commitment to culture change, diversity and cultural humility training, intentional diversification of experiences, stereotype awareness, and mentorship/sponsorship of historically excluded people. McLemore[51] proposed a retrofit, reform, and reimagine model that can be used to determine the best approach to address the systemic factors that perpetuate bias and health inequities including policies, processes, and systems. Using these approaches, nurse leaders working in collaboration with their communities can identify the types of strategies needed to ensure health equity.

Limitations

The limitations of this study include the use of a convenience sample drawn from ENA members leading to potential for selection bias. In addition, those who voluntarily participated in a study about experiences involving racism and other biases may have different thoughts and feelings than nonresponders. A large and diverse survey sample and further corroboration from focus group findings allow some generalizability. However, given that both survey and focus group samples were recruited from the ENA member database, there may be response bias that does not reflect unknown differences between members and nonmembers.

Implications for Emergency Nursing

We recommend, in addition to individual reflection, staff education, and staff accountability, that organizations be required to implement actions to mitigate inequities such as examining the ways that institutional and systemic policies and processes perpetuate bias and racism in nursing. Organizations, including nursing schools, must commit to implementing evidence-based strategies for increasing the recruitment and retention of nurses from diverse communities, teaching all employees about cultural humility and the importance of culturally informed care, opening and maintaining a dialogue with systematically marginalized groups to address their concerns, and implementing meaningful changes that reduce bias, racism, and other forms of discrimination. It is important to have systems of accountability built into an organization; health care facilities can make their diversity, equity, and inclusion goals public and provide regular updates on their progress, thus holding themselves accountable to the communities they serve.

Conclusions

In both our survey and focus group data, we see evidence that racism and other forms of bias are threats to both safe patient care and the well-being of nurses. It is well established that nurses commonly carry some bias, whether it is recognized by the individual or not (Groves et al).[52] We challenge all emergency nurses to reflect on the implicit and explicit biases they hold, to educate themselves on how to identify and manage their personal biases, and to engage in purposeful learning about the effects of individual and structural bias on patients and colleagues.

Data, Code, and Research Materials Availability

Ethical approval from Advarra, Inc IRB (Columbia, MD) # Pro00054611.

Author Disclosures

Conflicts of interest: none to report.

REFERENCES

1. Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care. In: Smedley BD, Stith AY, Nelson AR, eds. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. National Academy Press; 2002.
2. Hall WJ, Chapman MV, Lee KM, et al. Implicit racial/ethnic bias among health care professionals and its influence on health care outcomes: a systematic review. *Am J Public Health*. 2015;105(12):e60-e76. https://doi.org/10.2105/ajph.2015.302903
3. Kerner J, McCoy B, Gilbo N, et al. Racial disparity in the clinical risk assessment. *Community Ment Health J*. 2019;56(4):586-591. https://doi.org/10.1007/s10597-019-00516-3
4. Puumala SE, Burgess KM, Kharbanda AB, et al. The role of bias by emergency department providers in care for American Indian children. *Med Care*. 2016;54(6):562-569. https://doi.org/10.1097/mlr.0000000000000533
5. Parameshwaran V, Cockbain BC, Hillyard M, Price JR. Is the lack of specific lesbian, gay, bisexual, transgender and queer/questioning (LGBTQ) health care education in medical school a cause for concern? Evidence from a survey of knowledge and practice among UK medical students. *J Homosex*. 2017;64(3):367-381. https://doi.org/10.1080/00918369.2016.1190218
6. Stewart K, O'Reilly P. Exploring the attitudes, knowledge and beliefs of nurses and midwives of the healthcare needs of the LGBTQ population: an integrative review. *Nurse Educ Today*. 2017;53:67-77. https://doi.org/10.1016/j.nedt.2017.04.008
7. Johnson TJ. Racial bias and its impact on children and adolescents. *Pediatr Clin North Am*. 2020;67(2):425-436. https://doi.org/10.1016/j.pcl.2019.12.011
8. VanPuymbrouck L, Friedman C, Feldner H. Explicit and implicit disability attitudes of healthcare providers. *Rehabil Psychol*. 2020;65(2):101-112. https://doi.org/10.1037/rep0000317
9. Barbee EL. Racism in US nursing. *Med Anthropol Q*. 1993;7(4):346-362. https://doi.org/10.1525/maq.1993.7.4.02a00040
10. Iheduru-Anderson K, Shingles RR, Akanegbu C. Discourse of race and racism in nursing: an integrative review of literature. *Public Health Nurs*. 2020;38(1):115-130. https://doi.org/10.1111/phn.12828
11. Mandavilli A. JAMA editor placed on leave after deputy's comments on racism. New York Times. Published. April 10, 2021. Accessed October 15, 2021. https://www.nytimes.com/2021/03/25/health/jama-bauchner-race-medicine.html
12. Martinez GA. Law, race, and the epistemology of ignorance. *Hastings Race Pover Law J*. 2020;17(2):507.

13. Williams MT. Microaggressions: clarification, evidence, and impact. *Perspect Psychol Sci*. 2020;15(1):3-26. https://doi.org/10.1177/1745691619827499
14. Smiley RA, Lauer P, Bienemy C, et al. The 2017 national nursing workforce survey. *J Nurs Regul*. 2018;9(3):S1-S88. https://doi.org/10.1016/s2155-8256(18)30131-5
15. By the numbers: nursing statistics. Carson-Newman University Online; 2022. Accessed May 23, 2022. https://onlinenursing.cn.edu/news/nursing-by-the-numbers.
16. Nurse educator demographics: disposition of full-time nurse educators by race-ethnicity. National League for Nursing. Published 2017. Accessed April 1, 2022. 2017. http://www.nln.org/newsroom/nursing-educationstatistics/nurse-educator-demographics
17. Bell B. White dominance in nursing education: a target for anti-racist efforts. *Nurs Inq*. 2020;28(1):e12379. https://doi.org/10.1111/nin.12379
18. Carter BM, McMillian-Bohler J. Rewriting the microaggression narrative: enhancing nursing students' ability to respond. *Nurse Educ*. 2021;46(2):96-100. https://doi.org/10.1097/nne.0000000000000850
19. Commission's foundational report on racism in nursing. American Nurses Association. Published. 2022. Accessed May 1, 2022. https://www.nursingworld.org/practice-policy/workforce/racism-in-nursing/national-commission-to-address-racism-in-nursing/commissions-foundational-report-on-racism-in-nursing/.
20. Nadal KL. The racial and ethnic microaggressions scale (REMS): construction, reliability, and validity. *J Couns Psychol*. 2011;58(4):470-480. https://doi.org/10.1037/a0025193
21. Wang YW, Davidson MM, Yakushko OF, Savoy HB, Tan JA, Bleier JK. The scale of ethnocultural empathy: development, validation, and reliability. *J Couns Psychol*. 2003;50(2):221-234. https://doi.org/10.1037/0022-0167.50.2.221
22. Albiero P, Matricardi G. Empathy towards people of different race and ethnicity: further empirical evidence for the scale of ethnocultural empathy. *Int J Intercult Relat*. 2013;37(5):648-655. https://doi.org/10.1016/j.ijintrel.2013.05.003
23. Wilson EB. Probable inference, the law of succession, and statistical inference. *J Am Stat Assoc*. 1927;22(158):209-212. https://doi.org/10.1080/01621459.1927.10502953
24. Newcombe RG. Interval estimation for the difference between independent proportions: comparison of eleven methods. *Stat Med*. 1998;17(8):873-890. https://doi.org/10.1002/(sici)1097-0258(19980430)17:8%3C873::aid-sim779%3E3.0.co;2-i
25. Mayring P. Qualitative Content Analysis: Theoretical Foundation, Basic Procedures And Software Solution. *SAGE Publications Ltd*. 2004.
26. Roberts D, *Fatal Invention: How Science, Politics, and Big Business Re-Create. Race in the Twenty-First Century*. The new Press; 2011.
27. Hyde JS, Bigler RS, Joel D, Tate CC, van Anders SM. The future of sex and gender in psychology: five challenges to the gender binary. *Am Psychol*. 2019;74(2):171-193. https://doi.org/10.1037/amp0000307
28. Jones KM, Cook-Deegan R, Rotimi CN, et al. Complicated legacies: the human genome at 20. *Science*. 2021;371(6529):564-569. https://doi.org/10.1126/science.abg5266
29. O'Connor MR, Barrington WE, Buchanan DT, et al. Short-term outcomes of a diversity, equity, and inclusion institute for nursing faculty. *J Nurs Educ*. 2019;58(11):633-640. https://doi.org/10.3928/01484834-20191021-04
30. Thurman WA, Johnson KE, Sumpter DF. Words matter: an integrative review of institutionalized racism in nursing literature. *ANS Adv Nurs Sci*. 2019;42(2):89-108. https://doi.org/10.1097/ans.0000000000000265
31. Waite R, Nardi D. Nursing colonialism in America: implications for nursing leadership. *J Prof Nurs*. 2017;35(1):18-25. https://doi.org/10.1016/j.profnurs.2017.12.013
32. Bialik K, Fry R. Millennial life: how young adulthood today compares with prior generations. Pew Research Center. Published 2019. Accessed May 10, 2022. https://www.pewresearch.org/social-trends/2019/02/14/millennial-life-how-young-adulthood-today-compares-with-prior-generations-2/Accessed
33. Fry R., Igielnik R., Patten E. How millennials today compare with their grandparents 50 years ago. Pew Research Center. Published July 27, 2020. Accessed April 1 2022. https://www.pewresearch.org/fact-tank/2018/03/16/how-millennials-compare-with-their-grandparents/.
34. Uehline DA, Yalch MM. The association between racial privilege and ethnocultural empathy. *J Humanist Psychol*. 2021. https://doi.org/10.1177/00221678211059026
35. Galen LW. Does religious belief promote prosociality? A critical examination. *Psychol Bull*. 2012;138(5):876-906. https://doi.org/10.1037/a0028251
36. Kendi IX. How to Be an Antiracist. *One World*. 2019.
37. 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
38. Zhang X, Carabello M, Hill T, He K, Friese CR, Mahajan P. Racial and ethnic disparities in emergency department care and health outcomes among children in the United States. *Front Pediatr*. 2019;525:7. https://doi.org/10.3389/fped.2019.00525
39. Cook BL, Zuvekas SH, Carson N, Wayne GF, Vesper A, McGuire TG. Assessing racial/ethnic disparities in treatment across episodes of mental health care. *Health Serv Res*. 2014;49(1):206-229. https://doi.org/10.1111/1475-6773.12095
40. 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
41. DiMeglio M, Dubensky J, Schadt S, Potdar R, Laudanski K. Factors underlying racial disparities in sepsis management. *Healthcare (Basel)*. 2018;133(4):6. https://doi.org/10.3390/healthcare6040133

42. Wolf LA, Perhats C, Delao AM, Martinovich Z. Validation of a grounded theory of nurse bullying in emergency department settings. *Int Emerg Nurs*. 2021;100992:56. https://doi.org/10.1016/j.ienj.2021.100992
43. Fitzgerald E, Myers J, Clark P. Nurses need not be guilty bystanders: caring for vulnerable immigrant populations. *Online J Issues Nurs*. 2016;8(1):22. https://doi.org/10.3912/ojin.vol22no01ppt43
44. Campaign for action. Future of Nursing. Published. Accessed January 10, 2022. 2010. https://campaignforaction.org/wp-content/uploads/2020/01/r2_CCNA-0029_2019-Dashboard-Indicator-Updates_1-28-20.pdf.
45. National Academies of Sciences, Engineering, and Medicine; National Academy of Medicine; Committee on the Future of Nursing 2020–2030, et al, eds. The Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity. National Academies Press; 2021.
46. Enhancing diversity in the workplace. American Association of Colleges of Nursing. Accessed May 1, 2022. https://www.aacnnursing.org/News-Information/Fact-Sheets/Enhancing-Diversity
47. Quick safety 23: implicit bias in health care. The Joint Commission. Accessed January 10, 2022. 2016. https://www.jointcommission.org/en/resources/news-and-multimedia/newsletters/newsletters/quick-safety/quick-safety-issue-23-implicit-bias-in-health-care/implicit-bias-in-health-care/#.Y34mtXZBzIU
48. How to reduce implicit bias. Institute for Healthcare Improvement Multimedia Team. Accessed May 1, 2022. 2017. http://www.ihi.org/communities/blogs/how-to-reduce-implicit-bias
49. Narayan MC. CE: addressing implicit bias in nursing: a review. *Am J Nurs*. 2019;119(7):36-43. https://doi.org/10.1097/01.NAJ.0000569340.27659.5a
50. Marcelin JR, Siraj DS, Victor R, Kotadia S, Maldonado YA. The impact of unconscious bias in healthcare: how to recognize and mitigate it. J Infect Dis. 2019;220(220 Suppl 2):S62–S73. https://doi.org/10.1093/infdis/jiz214
51. McLemore MR. Using retrofit, reform, and reimagine to advance toward health equity. *J Perinat Neonatal Nurs*. 2022;36(2):99-102. https://doi.org/10.1097/jpn.0000000000000639
52. Groves PS, Bunch JL, Sabin JA. Nurse bias and nursing care disparities related to patient characteristics: a scoping review of the quantitative and qualitative evidence. *J Clin Nurs*. 2021;30(23-24):3385-3397. https://doi.org/10.1111/jocn.15861

The Long Tail of COVID-19: Implications for the Future of Emergency Nursing

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Contribution to Emergency Nursing Practice

- Emergency nurses work in stressful environments exposing them to significant rates of moral distress, traumatic stress, and workplace violence; often leading to a high prevalence of burnout. The impact of COVID-19 on emergency nurses' trauma and resilience remains under documented.
- This study contributes to the research on emergency nurses' lived experiences providing care during the COVID-19 pandemic. Particularly, how morally injurious situations and trauma impacted nurses' professional identity.
- Emergency nurses have been wounded during the pandemic. It is imperative to develop and implement interventions to support nurses' mental health and well-being and repair nurses' professional identity.

Abstract

Introduction: COVID-19 has led to exacerbated levels of traumatic stress and moral distress experienced by emergency nurses. This study contributes to understanding the perspectives of emergency nurses' perception of psychological trauma during COVID-19 and protective mechanisms used to build resilience.

Method: The primary method was qualitative analysis of semistructured interviews, with survey data on general resilience, moral resilience, and traumatic stress used to triangulate and understand qualitative findings. Analyses and theme development were guided by social identity theory and informed by the middle range theory of nurses' psychological trauma.

Results: A total of 14 emergency nurses were interviewed, 11 from one site and 3 from the other. Almost all nurses described working in an emergency department throughout the pandemic as extraordinarily stressful, morally injurious, and exhausting at multiple levels. Although the source of stressors changed throughout the pandemic, the culmination of continued stress,

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moral injury, and emotional and physical exhaustion almost always exceeded their ability to adapt to the ever-changing landscape in health care created by the pandemic. Two primary themes were identified: losing identity as a nurse and hopelessness and self-preservation.

Discussion: The consequences of the pandemic on nurses are likely to be long lasting. Nurses need to mend and rebuild their identity as a nurse. The solutions are not quick fixes but rather will require fundamental changes in the profession, health care organizations, and the society. These changes will require a strategic vision, sustained commitment, and leadership to accomplish.

Key words: Emergency department; Nurses; Trauma; COVID-19; Moral resilience

Introduction

Emergency departments are a vital part of the health care system, handling a wide variety of patient concerns and acting as a safety net for many people. In addition, emergency departments are also one of the most stressful environments for nurses, with significant rates of burnout, moral distress, and traumatic stress.[1-3] Emergency nurses experience high rates of workplace violence from patients and family members[4,5] and, like all nurses, have high rates of other workplace injury.[6] Emergency departments struggle to retain nurses,[7,8] which places remaining nurses under increased strain and puts patients at risk. Limits in resources during the pandemic, especially nurse staffing, have led to an increase in "ED boarding,"[9] where individuals are admitted for treatment but still occupy space in the emergency department awaiting transfer. This backlog of ED patients contributes to increased stress and increases the likelihood of errors and decreased quality of care.[10]

The consequences of this historic, unprecedented event for nurses go beyond "burnout," a workplace phenomenon characterized by emotional exhaustion, lack of efficacy, and callousness.[11] The combination of individual, health system, and societal factors are deeply wounding to the moral fiber, identity, and integrity of nurses. Emergency nurses have been placed into situations during the pandemic that led to moral injury.[12,13] Moral injury in health care is a type of suffering characterized by exposure to circumstances that violate one's values and beliefs, eroding integrity, capability, and perception of basic goodness, and creating psychological, behavioral, social, or spiritual distress.[12] These nurses faced challenges with ever-changing protocols, shortages of resources, expedited time constraints, and the responsibility of refusing patient visitors.[14,15] Emergency nurses were expected to provide care and follow guidelines, often against their own beliefs and values as a nurse and as part of the nursing profession. This left emergency nurses with massive emotional struggles leading to guilt and remorse, wishing that they could have performed differently, even though the decisions were likely unavoidable at the time.[12,14] Work-related trauma, feelings of institutional betrayal, and moral injury came together to create potentially morally injurious events and erosion of nurses' moral core, identity, and worth.[13,16]

These various types of trauma, moral injury, and system-wide abandonment have contributed to nurses leaving, or considering leaving, the profession.[17] A major driver of attrition may be erosion of their nursing identity; nurses with low professional identity are more likely to report intent to leave jobs and the profession.[18,19] As the COVID-19 pandemic continues, nurses face obstacle after obstacle; their self-concept and integrity as nurses have been challenged, especially in relationship with patients, families, coworkers, leaders, and organizations.[12,13,15] Moral resilience, "the capacity of an individual to preserve or restore integrity"[20] (p. 489), has been proposed as a protective resource to support nurses whose integrity has been threatened or violated.[20] Moral resilience, a domain within the broader construct of resilience, harnesses the inherent integrity of persons to restore their moral agency to choose actions that are aligned with their values.[21] Like generic resilience, it is a strength-based construct that empowers people to respond to adversity rather than become victimized and powerless.[21] Understanding emergency nurses' experiences of the COVID-19 pandemic and how it impacted them and their professional identity may provide information useful for designing and implementing interventions to support them and the health care system. The purpose of this exploratory study is to better understand the perspectives of emergency nurses' psychological trauma and resilience during COVID-19 and protective mechanisms used to build resistance. This will not only inform local interventions but also contribute to the emerging body of knowledge on trauma and resilience during a pandemic.

Methods

THEORETICAL FRAMEWORKS

Foli's Middle Range Theory of Nursing Trauma articulates how nurses' daily caring work exposes them to many potentially traumatic events[22] (see Table 1 for critical concepts).

Emergency nurses are particularly susceptible to trauma, including secondary trauma, vicarious/secondary trauma, historical trauma, workplace violence, system-induced trauma, insufficient-resource trauma, second-victim trauma, and trauma from disaster, resulting from the experience of and witnessed suffering of primary trauma.[22] In addition to usual trauma exposure, during the pandemic, emergency nurses experienced increased risk of disaster-related trauma, insufficient-resource trauma, system-induced trauma, and workplace violence. Unfortunately, the COVID-19 pandemic has further exacerbated existing problems and created new concerns for emergency nurses.[15,17,23]

Social identity is a person's awareness of who they are based on membership in a group(s). Social identity theory was developed during the 1970s by Tajfel and Turner[24] to emphasize the importance of group membership to social identity and accentuate how group membership can be a source of pride and self-esteem. This theory explains phenomena that occur between groups, such as discrimination and stereotyping.[25] More recently, social identity theory has gained merit as a framework explaining social identity and group memberships' relationships with health and well-being,[26-28] highlighting how body and mind are conditioned by group belonging.[29] This framework has been used to examine stressful life transitions, including reactions to trauma, using the social identity model of identity change[30] (SIMIC) and shows that negative responses to trauma can lead to significant changes in social identity.

Social identity theory has been applied to the nursing profession and suggests that the nursing identity is constructed through a process of social belonging in multiple communities (the professional, the health system, the unit, etc.), in relationship with other individuals (patients, coworkers), and in relationship with external groups (eg, the public).[31] The SIMIC was used to understand changes in emergency nurses' professional and personal identity from their experiences during the COVID-19 pandemic.

METHODS/DESIGN

This study used a concurrent, mixed-methods design.[32] The primary method was qualitative interviews, with survey data used to triangulate and understand qualitative findings. A qualitative descriptive approach guided this study, which seeks to provide a straightforward description of a phenomenon of interest.[33] Univariate descriptive approaches to statistical analysis were used for quantitative data, and integration occurred through weaving of qualitative and quantitative findings to triangulate emergency nurses' experiences. Analysis and theme development were guided by social identity theory[22] and informed by the middle range theory of nurses' psychological trauma.[22] Participants provided their consent to participate. The potential risk of psychological distress during the interview was outlined, and information was provided for employee assistant program. The study was approved by the Institutional Review Board of Reading Hospital and Missouri Baptist Medical Center.

SAMPLE AND SETTING

Study sites were 2 magnet-designated, acute care hospitals. One site is a midwestern hospital whose emergency department is not a trauma center and cares for 100 patients per day, with approximately 40 of those being patients with COVID-19. The second site is a level 1 trauma center on the U.S. East Coast and is the tenth busiest emergency department in the U.S.

The target population was nurses working in the emergency department with patients with COVID-19. Fourteen nurses from the emergency department who provided direct care for patients with COVID-19 participated in this study. All participants were Caucasian females with professional nursing experience ranging from 2 to 20 years of practice. Two nurses were master's prepared, and 12 nurses had Bachelor of Science in Nursing degrees. Purposeful sampling was used, with potential participants identified by clinical staff as those who had rich experiences on the phenomenon.

TEAM

The research team consisted of 4 doctorally prepared nurse researchers, 4 critical care nurses, a medicine nurse, 1 nurse administrator, and a hospital chaplain. Each stage of the research process was evaluated by the entire group to reduce individual researcher bias. Two doctorally prepared nurse researchers conducted all interviews (1 at each site). Frontline nurses who were not participants in the study confirmed themes and identified and provided member checking, which increases credibility of findings as based in the data and the lived experience of those who experience the phenomenon.[34]

RECRUITMENT

After approval, a study flyer was emailed to all nurses working in the emergency departments who had direct contact with patients with COVID-19 and placed throughout ED

TABLE 1
Foli's middle range theory nurse-specific traumas

Nurse-specific traumas	Examples from this study
Vicarious/secondary trauma ■ Indirect trauma that occurs when exposed to difficult or disturbing images or stories	"The hardest part was seeing them see their loved ones dying."
Historical trauma ■ Multigenerational trauma experienced by populations historically subjected to long-term mass trauma	Not discussed
Workplace violence ■ Emotional, psychological, or physical trauma experienced because of direct assaults, threats, or harassment in the workplace	"It's more of dealing with the general public, where it just becomes a drag. When I come into work, I'm like, who is going to yell at me tonight. People have been attacking staff when we tell them to put a mask on. Patients will say, you're wrong, you don't know what you are talking about."
System-induced trauma ■ Psychological trauma stemming from organizational systems that have been created to abate trauma	"I was just waiting for someone to die for us to change our process. It was such a bizarre process, and it felt like we were hurting people. We didn't really know what we were doing. It was hard to go to bed at night."
Insufficient-resource trauma ■ Psychological trauma that occurs when there is a lack of knowledge, personnel, equipment, or supplies needed to perform professional duties	"People have gotten out of nursing altogether, because COVID broke them. We keep trying to get our staffing back to where it needs to be but as soon as we get two people hired, four people leave."
Second-victim trauma ■ Traumatic stress experienced by clinicians involved in incidents with harm to others for which they feel responsible	"He was my first patient that's ever died that I've felt physically responsible. That sat with me for a long time. I mean, it just sucks, because we need help in here."
Trauma from disasters ■ Psychological trauma experienced by clinicians who play an active role in natural disasters or traumatic events	"It's always hard. Every death or code hits me differently. There have been times where I have to step away. Even if I don't know the person, I still have to mentally debrief from it."

units. The flyer provided a brief study description, eligibility criteria, and investigator's contact information. Research team members also attended shift huddles to describe the study and provide additional flyers. Fourteen emergency nurses contacted investigators, and all 14 nurses were eligible and agreed to participate. They completed surveys followed by interviews. Interviews were scheduled at a mutually convenient time. Data saturation was met with a sample of 13 participants. A confirmatory interview was completed to verify saturation.

DATA COLLECTION STRATEGY

Written consent was obtained before completing surveys. Participants completed surveys of the following measures using a secure web application for managing databases developed by Vanderbilt University (REDCap), before semistructured interviews: the 10-item Connor–Davidson Resilience Scale[35] (CD-RISC 10; assesses resilience), the revised Impact of Event Scale[36,37] (IES-R; measures traumatic stress), and the 17-item Rushton Moral Resilience Scale[38] (RMRS; measures moral resilience). Participants

TABLE 2
Themes and illustrative quotes

Losing identity as a nurse

Potentially moral injurious situations (RMRS 45.9 [SD = 4.6])

- "Basically, it's a cluster F-U-C-K, just how unsafe my job has gotten."
- "There have been times where it's been unsafe, and that—I was not okay with that. I went home crying one time, and it takes a lot for me to get that upset, because I'm just so used to the ER. It's one thing to be drowning and to be exhausted. It's another thing for it to feel unsafe, which I'm not okay with for two reasons. One, for my patients, I don't want patients being in an unsafe environment, but, also, that's my license."
- "It's a crisis, when you have people in these rural areas, that you can't get up here, because there's not a bed for them. When we're holding patients in the ER, for 36 hours, because there's no bed. We're not trained to do that. When I've got 30 people out in my waiting room, that nobody's monitoring. I've got 30 people out there. They're sick. They're just waiting. It feels like a third world country. It just really does. This isn't how it's supposed to be."
- "I'm one person. I don't know what the heck I'm supposed to do. I have them on the monitor, no one else is helping me, and we were going back and forth. It was right before we did, once the doctor finally came in the room and we were intubating—or about to intubate that gentleman, the ICU doctor is calling to say, 'Actually, don't intubate,' so then the emergency room doctor and the ICU doctor are arguing. It was just this total chaotic feeling."
- "Why are we trying to keep this one, or this person, alive. They're so old and their quality of life is not going to be good. Why are we intubating them and doing all this stuff to them? I don't think that's more—I don't think that's professional values."

Broken social contract with the community

- "Honestly, I feel like a lot of people are just won't take responsibility and won't stay home and won't get the vaccine and this could've ended a lot—maybe not ended, but could've been a whole lot better if people would've just acted like adults."
- "I feel like people who maybe would've been a little more restrained before this started are now—they just let loose and they don't care…. I still have good patients that are nice, but a lot of people are just mean and don't care and we get yelled at."
- "I've noticed my coworkers, their very first question would be like, 'Are they vaccinated or not vaccinated?' because that's gonna change how they treat the patient, and that is extremely disheartening, and it shows a lot of people's true colors."

Betrayal by the organization

- "Oh, it's horrible. I've never wanted to cry at work and now pretty much want to every day…. We furloughed a bunch of nurses that left, didn't come back. I think a lot of people burned out; a lot of people got scared. Now, we have the nursing shortage."
- "My eyes have been opened up to, at the end of the day, it just feels like a hospital is still a business at the end of the day, and all they care about is making money…that's not why I joined nursing to begin with…. It just makes me question my entire career."
- "It was either Emergency Nurses Week or Nurses Week… but that's when they told us they were taking away our 401K match and all this other stuff. They weren't giving us raises or any of this other stuff. It was just kind of like, you're dealing with all this shit, but you're not going to get any of this other stuff to make it worth it, so here you go."
- "When we got emails that we're low on PPE and you have to wear the same N95 for three, four, five shifts, and you have to send it off to hospital to have it cleaned, and then that process, after they realized wasn't even correct, that we had to stop doing that, or saving our isolation gowns."
- "Now, we're seeing a hundred patients a day, and there's nowhere for them to go. For the first time, I've worked in this ER for 17-18 years, we're boarding. I had a 93-year-old woman in the waiting room for six hours the other day, 93-year-old. That kills my heart. That is so hard to see. It's defeating is what it is."
- "You only get an email whenever you mess up. You never get an email like, 'Oh, you did a really good job. Pat on the back.' Nobody cares. Nobody cares at all, like, 'Okay, you triaged nine people in 30 minutes.' Nobody cares at all. You only get called out if you do bad things. The only emails I get, it's like, 'Oh, you forgot to raise that two milligrams of morphine in the Pyxis. Don't forget.' It's just stuff like that… they send out the weekly huddle, and random people get a kudos, but I don't know. I don't feel like you get recognized."
- "They post little pieces of paper in the bathroom, like, 'Oh, okay, you can reach out to this therapist,' but, I mean, that's pretty much it, so then if you do that, then you're gonna get labeled like, 'Oh, okay, well, (Nurse) had to go therapy, because she's having

continued

TABLE 2
Continued

Losing identity as a nurse
Potentially moral injurious situations (RMRS 45.9 [SD = 4.6])
anxiety or PTSD,' blah, blah, blah, and then, 'Oh, I don't think we can talk to her that way.' You know what I mean? Nobody wants to get—and that's such a big stigma that shouldn't be that way of being labeled like that."
• "I think it is too hard, because you hear these people that are like leaving here and going to travelers, and they're making $100 an hour, and these are people that have been nurses for less than two years. Then here, I've been a nurse for nine."
Traumatic stress responses to the experience of being a nurse during COVID-19 (IES-R median 28 range 8-73)
• "I just feel empty. It just feels like I come into work. I do my job."
• "I have anxiety before I go into work, the night before. I have anxiety walking into work. I have anxiety the entire time I'm at work, and the only sense of peace that I feel that day is walking out, knowing like, 'Oh, I get to go home. Thank God. I made it through.' I mean, it's hugely impacted. I can't talk about work. I used to be able to talk about work. I don't want to talk about work."
• "I'm taking care of these patients. I'm trying not to bring this stuff home. I'm trying to be safe myself so then I don't get COVID, and then there's that anxiety of taking care of these patients that this is my job. I need to do that, but then I also don't want to get COVID or something to happen to this baby that I've tried seven years for and just did all of those things, and it finally worked. I just felt like there was a lot of anxiety with it."
• "Oh, it's horrible. I've never wanted to cry at work and now pretty much want to every day.
• "I think mental health was a huge challenge at that point, at least for me."
• "I just try to explain the mental and emotional stress of it is exhausting."
Hopelessness and self-preservation (CD-RISC 10 31.2 [SD = 4.6])
■ "I'm just not as happy as I normally would be. Because I watch the news and stuff and I come home from here and I'm just maybe in a bad mood, would be more often than I normally would be. I try not to be, and I just don't want to go."
■ "Mm-hmm. I feel like, 'cause I still go in and I do what I'm supposed to, but like I don't—I won't talk to people. I just go in and I do what I'm supposed to. I don't want to make that sound like I'm not doing what I'm supposed to, 'cause I'm taking care of people. I'm definitely doing that, but I'm not as maybe talkative and stuff 'cause I've got a bunch of stuff to do. I just want to get it done. I just want to get through my shift and get out of here."
■ "Even if they gave those resources, I feel like it's not gonna make a change, and that's a big reason why I'm leaving. It just feels like there's just no end in sight. We don't have the resources. Staffing-wise, if they would address that issue, that would help a lot. A pay increase, that would always be nice. I don't even think I have an answer for that one in the least. I'm sorry. (Laughter)"
■ "We had people quit to go travel, because why wouldn't you go make more money than doing this, if you're gonna get yelled at. You might as well go do this and make money."
■ "I physically need to remove myself, so I've been searching for a job since August. People are always like, 'Oh, I'm getting out of here,' and I never thought I would get to that point. It just was so heartbreaking, but it's gotten to that point 'cause this was a great place to work. I love my coworkers. It's just pushed me over the edge to where the night before I go into work, I can't sleep. I have so much anxiety. It's been keeping me up at night. Walking into work, I just have no idea what's gonna happen. I mean, that's how the emergency room kind of always is, but it's just gotten so much worse."
■ "We have no choice. The only choice we have is to quit, and where that's gonna get us? Because every single job is like this now."

RMRS, Rushton Moral Resilience Scale; CD-RISC, Connor–Davidson Resilience Scale; IES-R, Impact of Event Scale-Revised; ER, emergency room; ICU, intensive care unit; PTSD, posttraumatic stress disorder; PPE, personal protective equipment.

were informed that participation was completely voluntary, that they were free to withdraw at any time without penalty, that participation and nonparticipation would not be considered as part of their employment, and that they could refuse to answer any questions. Participants all chose to be interviewed in person; interviews took place in private offices and were recorded for later transcription. Interviews lasted an average of 30 minutes. Semistructured guides were used for interviews. Survey data were not available to the interviewer and were integrated during analyses. (See Table 2)

DATA ANALYSIS

Qualitative descriptive design allows the researcher to discover the who, what, and where of events or experiences while gaining insight from participants regarding a poorly understood phenomena.[33] Because this study sought to understand the traumatic stress and resilience of emergency nurses who cared for patients with COVID-19, qualitative description was the most appropriate method. The research team read transcribed interviews in their entirety to develop an overall understanding of participant experiences. The template style was used to organize data using codes.[39] Template style is a particular type of thematic analysis focused on hierarchical coding, which can be changed with the needs of the study and ongoing analyses. Initial codes were developed a priori based on constructs of resilience, traumatic stress, and moral resilience. Codes were expanded upon and added to through inductive analysis through an inductive-deductive hybrid approach.[40] Team members evaluated codes and assisted with theme development and verification. The research team had ongoing discussions to ensure that participant experiences and perceptions were not dismissed because of researcher bias.

Results

A total of 14 emergency nurses were interviewed, 11 from one site and 3 from the other. Nurses had high levels of both general resilience and moral resilience (CD-RISC 10, 31.2 [SD = 4.4]; RMRS 45.9 [SD = 4.6]). CD-RISC 10 scores were as follows: 25th percentile = 29; 50th percentile = 32; 75th percentile = 36. RMRS is a 17-item scale, with higher scores indicating greater resilience. There are no established cutoff scores for the RMRS. Despite having high levels of resilience and moral resilience, participants revealed that the adversity they faced exceeded their individual capacity to prevent psychological trauma from occurring. Almost all reported that they had been highly impacted by the events of the COVID-19 pandemic (IES-R median = 28, range 8-73). Nurses described working in an emergency department throughout the pandemic as extraordinarily stressful, morally injurious, and exhausting at multiple levels. Although the stressors changed throughout the pandemic, the culmination of continued stress, moral injury, and emotional and physical exhaustion almost always exceeded their ability to adapt to the ever-changing landscape in health care created by the pandemic. The particular experiences of nurses differed for individuals and between settings, but important patterns emerged during analyses, demonstrating shared experience. Two primary themes were identified: losing identity as a nurse, and hopelessness and self-preservation. See Table 2 for exemplar quotes.

LOSING IDENTITY AS A NURSE

Emergency nursing was exhausting and physically taxing for participant nurses, with virtually no downtime, but they cared deeply and had strong professional identity as a nurse. This identity developed from their membership in the profession of nursing.[27] Unfortunately, as they felt unmoored from the social connections and reinforcements that had previously affirmed and supported this identity, their self-concept of being a nurse fell apart slowly throughout the pandemic. In this study, there were several factors that threatened nurses' identity and core values: being able to provide compassionate, respectful, and safe patient care and a commitment to the organization, patients, and the community. Four subthemes describe the different factors that related to the loss of identity as a nurse, with each nurse experiencing a unique blend of these experiences: (1) potentially morally injurious situations; (2) broken social contract with the community; (3) betrayal by the organization; and (4) traumatic stress responses to the experience of being a nurse during the COVID-19 pandemic.

Potentially Morally Injurious Situations

Foli's second-victim trauma, which is stress experienced by clinicians involved in incidents with harm to others for which they feel responsible, was evidenced through their moral injury. Morally injurious events are situations in which one's moral code is violated either through their own transgressive actions or inactions or through perceived betrayal by others.[41] Respondents reported being unable to fulfill their professional ethical values and commitments to provide safe care for their patients. A shortage of nurses and organizational resources relating to Foli's insufficient-resource trauma further damaged the nurses' professional

identity. Despite these constraints, nurses were expected to be able to provide care that was commensurate with their competence and skill. They reported that systems that had previously worked, such as temporary ED boarding, were breaking down and causing patient injury. The emergency nurse participants experienced situations in which patient care decisions made by other team members did not align with their ethical values. Despite these challenges, nurses' moral resilience scores measured by the RMRS remained above 37, with the highest score of 54, indicating higher moral resilience.

Broken Social Contract with the Community

Social identity requires interactions with people in the "in group" and the "out group" to support the alignment with their nursing image. Nurses' social contract with the community is integral to their nursing identity.[42] Participants of this study asserted that that social contract was broken, and nursing's identity as the "heart" of the health care system has been severed. Community members who had not been vaccinated or were violent toward staff violated their sense of how nurses support the community and are, in turn, supported by them. SIMIC conveys the loss of support and threatens social identity and well-being.[28] They could not see themselves as being able to fully commit to the health of the community when the community would not fulfill its part of the social contract, which eroded their sense of being a nurse.

Betrayal by the Organization

Relating to Foli's system-induced trauma, participants' well-being suffered greatly from failure of health care organizations to provide support, leading to the loss of professional identification as nurses. Nurses felt that there was a significant misalignment between what their organization provided to them and what they needed and deserved during the COVID-19 pandemic. Organizational cost-saving measures added to the nurse's perceptions of their health care organization's betrayal of their commitments when they were asking nurses to do more with less or to assume additional risk. They provided examples of nurses being furloughed, supplies being unavailable or rationed, (especially personal protective equipment), and loss of benefits such as retirement and tuition reimbursement that made the job worthwhile. They described organizational responses to resource scarcity as lack of caring or support. Attempts by health care organizations to offer typical forms of support felt stigmatizing, and inequities in compensation made them feel devalued. All of these came together and led to the conclusion that they were no longer a valued member of the health care team, a core element of nursing identity.

Traumatic Stress Responses to the Experience of Being a Nurse During COVID-19

Nurses report their experience of working during COVID-19 as being traumatic but often in a cumulative way, rather than a single traumatic event. Emergency nurses felt depleted, numb, lacking compassion, and possessing a sense of anxiety and dread. They had a disconnection from their work and purpose and fears about infecting their loved ones. They reported experiencing unfamiliar intensity of emotions along with an escalation of distress. Trauma experienced by nurses during COVID-19 undermined the values of nurses' identity. Nurses' commitment, significance, and deeply distressing experiences were not recognized or addressed by the community or health care organizations and consequently jeopardized nurses' identity. They acknowledged the mental health consequences of their experiences and impact of attempting to explain their experiences to others. This finding was confirmed with 12 participants who completed the survey. An IES-R score of 33 or greater is indicative of probable diagnosis of posttraumatic stress disorder.[36] Five of 12 participants (42%) scored above 33, with the highest score 73. These trauma experiences, which were tied to their experiences as nurses, made their professional identity sometimes painful, rather than a source of strength and meaning.

HOPELESSNESS AND SELF-PRESERVATION

The first theme described their previous experiences, but emergency nurses also spoke about themselves now and in the future during the long tail of COVID-19. A sense of hopelessness permeated their work and made them take actions to preserve themselves. Many of the factors that led to the loss of nursing identity contributed to their hopelessness, a sense that their life and work were at an all-time low. Some nurses were stuck in this hopeless phase, not knowing what to do but feeling a deep sense of "this does not matter" as they struggled on. Others described how they had felt hopeless but gathered the strength to make changes. The erosion of their nursing identities profoundly changed their commitment to their jobs and the profession. They concluded that it was not possible to simply return to practice as it was before COVID-19. They created mental and emotional barriers around work and began searching for new roles and new ways of being. Working as a "travel"

nurse was a common "next step" toward self-preservation, with nurses looking for similar clinical experiences but better pay, which they hoped would make the work more meaningful. Others searched for jobs in outpatient settings or discussed leaving the profession entirely. Self-preservation was viewed as a demonstration of their strength, as they realized that their needs did not align with their previous identity or current situation.

Discussion

This study contributes to the research on frontline nurses' lived experience providing care during the COVID-19 pandemic, especially how potentially morally injurious situations and trauma impacted their nursing identity. Consistent with other qualitative and quantitative findings, emergency nurses experienced various types of trauma caring for patients during the pandemic.[14,43] Traumatic stress was comparable to those experiencing or witnessing profoundly difficult events such as war and assault.[44,45] Foli's middle range theory of nurses' psychological trauma-informed data interpretation with theoretical assumptions that all nurses experienced trauma, and the 7 types of trauma were reflected in their experiences. Furthermore, it facilitated a method to identify and distinguish the different types of nurse-specific trauma experienced by participants.

This study expands the understanding of how emergency nurses experience traumatic stress and potentially morally injurious events, which have an eroding effect on nurses' identity. This erosion of professional identity in these changed circumstances creates a disorientation that unmoors even the most confident nurse. When they are unsure who they are and what they stand for, their foundational values as a nurse are violated, and their integrity is threatened. Moral injury results when there is a traumatic or unusually stressful circumstance where people may perpetrate, fail to prevent, or witness events that contradict deeply held moral beliefs and expectations.[14,15] When nurses' core ethical values are threatened by morally injurious situations, their identity as a nurse suffers.[15] Despite the reality that the pandemic created unprecedented resource constraints, nurses continued to appraise their identity based on prepandemic standards and, in some instances, viewed their inability to provide the usual level of care harshly, even though alternatives were not possible. Nurses' professional identities were eroded by the transgressions and betrayals of others, such as decisions made by leaders to constrain the usual decisions nurses make in implementing their roles. Even more damaging is when these events lead to fundamental questioning of "Am I still a good person?" for having participated in or precipitated actions contrary to their personal and professional values, producing negative moral and patient outcomes.

Facing traumatic stress, lack of support from the health care system and, often, active opposition from the community, emergency nurses felt discouraged and disengaged. Their identity as a nurse, often carefully constructed for years, was broken down. The reciprocal social relationships and purpose that had helped them to manage in difficult times was no longer effective. Even for the resilient, identity breaks down when these interactions no longer support a positive social identity or a sense of belonging in a valued group. A fracture in the social contract with the public has been particularly injurious for nurses.[42] Professional identity is formed and continues to evolve throughout a nurse's career and is affected by self-concept (enacting the role) and context (setting). A misalignment results in additional stress and difficulty in retention. Nurses who feel that their nursing identity is fraying from unsupportive systems that violate their sense of being a nurse leave the profession or change jobs.[46,47]

Nurses in this sample reported feelings that vacillated between hopelessness and empowerment exercising their moral agency choosing actions that preserved their health, well-being, and integrity. Instead of viewing leaving as abandonment or failure, choosing to change their situation could be viewed as integrity-preserving action.[21] Viewing their actions as indicative of their resilience aligns with the quantitative findings that found that, despite their struggles, emergency nurses had high levels of general and moral resilience. The problem was not a deficit of resilience but rather that external circumstances limited their ability to enact their values. Harnessing their inner resources despite the adversity to do what is right personally and professionally is a hallmark of moral resilience. In this context, choosing to leave a position or the profession can be an ethical decision that demonstrates moral fortitude and integrity. Shifting the narrative from victimization to taking empowered action and exercising self-stewardship is critical in moving forward.[48]

Limitations

This study has some limitations. Nurses were recruited from 2 institutions, and all were female. There were few nurses from ethnic/racial minority groups. Nurses who had already left the emergency department were not included. These factors limited the voices and perspectives of the unrepresented. Further research should examine the perspectives of emergency nurses not represented in this study. In particular, understanding the perspectives and needs of nurses

who left the emergency department may be important for recruitment and retention.

Implications for Emergency Nurses

Moral injury and damage to nurses' identities must change from being understood as rare or extreme events to something that many, if not most, nurses experienced during the COVID-19 pandemic.[49,50] This normalization process is important and has implications for administration and policy. First, we must recognize that "common" should not be taken as "acceptable"; the largest health care workforce in the United States is deeply wounded, which cannot be denied. Rather, normalization is acknowledging that the profound consequences of cumulative trauma and injury cannot be ignored or treated only at the individual level but as a systemic problem. Rather than seeing injured nurses as abnormal or the "problem to be fixed," managers and administrators must adopt a trauma-informed workplace approach that accepts nurses as being in a process of recovery and transformation.[51] The impact on nurse's identity highlights the need to establish pathways for nurses to return to practice if they have chosen to leave jobs or the profession. Loss of identity may not be permanent; some nurses who experience trauma and moral injury may seek to return, and administration must proactively seek to make this process welcoming and successful.

Nurses are frustrated with health care institutions and leadership. A lack of acknowledgment, unmet needs, and feelings of powerlessness during the pandemic have led nurses to feel betrayed.[23] The profession of nursing has been affected significantly with changes in practice and delivery of health care.[52,53] Nurses need encouragement to seek assistance with their mental health and well-being. Likewise, solutions are needed to prevent incivility toward nurses, including those who left during the pandemic and have returned to practice. Leaders need to provide a safe place for nurses to talk about feelings as well as have crisis response available when issues arise.

Conclusion

The consequences of the pandemic on nurses are likely to be long lasting. The levels of trauma experienced by emergency nurses eroded their identity as nurses and caused them to doubt that continuing as a nurse is a worthwhile professional decision. Nurses need to mend and rebuild their identity as a nurse. They will not heal without acknowledgment of their trauma, feelings of betrayal, and reconstruction of their professional identity. This will require sustainable system-level interventions as well as individual supports. Betrayal from the organizations that were supposed to support them in their work sharply eroded their nursing identity and continues to impair efforts in rebuilding it. The solutions are not quick fixes but rather will require fundamental changes in the profession, health care organizations, and society. These changes will require a strategic vision, sustained commitment, and leadership to accomplish.

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Author Disclosures

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REFERENCES

1. Hooper C, Craig J, Janvrin DR, Wetsel MA, Reimels E. Compassion satisfaction, burnout, and compassion fatigue among emergency nurses compared with nurses in other selected inpatient specialties. *J Emerg Nurs*. 2010;36(5):420-427. https://doi.org/10.1016/j.jen.2009.11.027
2. Hunsaker S, Chen HC, Maughan D, Heaston S. Factors that influence the development of compassion fatigue, burnout, and compassion satisfaction in emergency department nurses. *J Nurs Scholarsh*. 2015;47(2):186-194. https://doi.org/10.1111/jnu.12122
3. Meadors P, Lamson A, Swanson M, White M, Sira N. Secondary traumatization in pediatric healthcare providers: compassion fatigue, burnout, and secondary traumatic stress. *Omega (Westport)*. 2009;60(2):103-128. https://doi.org/10.2190/om.60.2.a
4. Pich J, Hazelton M, Sundin D, Kable A. Patient-related violence against emergency department nurses. *Nurs Health Sci*. 2010;12(2):268-274. https://doi.org/10.1111/j.1442-2018.2010.00525.x
5. Speroni KG, Fitch T, Dawson E, Dugan L, Atherton M. Incidence and cost of nurse workplace violence perpetrated by hospital patients or patient visitors. *J Emerg Nurs*. 2014;40(3):218-295. https://doi.org/10.1016/j.jen.2013.05.014
6. Dressner MA, Kissinger SP. Occupational injuries and illnesses among registered nurses. Monthly Labor Review, US Bureau of Labor Statistics. Accessed August 15, 2022. https://doi.org/10.21916/mlr.2018.27
7. Roche M, Diers D, Duffield C, Catling-Paull C. Violence toward nurses, the work environment, and patient outcomes. *J Nurs Scholarsh*. 2010;42(1):13-22. https://doi.org/10.1111/j.1547-5069.2009.01321.x
8. Sawatzky JA, Enns CL. Exploring the key predictors of retention in emergency nurses. *J Nurs Manag*. 2012;20(5):696-707. https://doi.org/10.1111/j.1365-2834.2012.01355.x

9. Tuttle E, Wisecup C, Lemieux E, Wang X, Modrykamien A. Critically ill patients boarding in the emergency department and the association with intensive care unit length of stay and hospital mortality during the COVID-19 pandemic. *Proc (Bayl Univ Med Cent)*. 2022;35(2):145-148. https://doi.org/10.1080/08998280.2021.2014761
10. do Nascimento Rocha HM, da Costa Farre AGM, de Santana Filho VJ. Adverse events in emergency department boarding: a systematic review. *J Nurs Scholarsh*. 2021;53(4):458-467. https://doi.org/10.1111/jnu.12653
11. Dall'Ora C, Ball J, Reinius M, Griffiths P. Burnout in nursing: a theoretical review. *Hum Resour Health*. 2020;18(1):41. https://doi.org/10.1186/s12960-020-00469-9
12. Rushton CH, Turner K, Brock RN, Braxton JM. Invisible moral wounds of the COVID-19 pandemic: are we experiencing moral injury? *AACN Adv Crit Care*. 2021;32(1):119-125. https://doi.org/10.4037/aacnacc2021686
13. Song YK, Mantri S, Lawson JM, Berger EJ, Koenig HG. Morally injurious experiences and emotions of health care professionals during the COVID-19 pandemic before vaccine availability. *JAMA Netw Open*. 2021;4(11):e2136150. https://doi.org/10.1001/jamanetworkopen.2021.36150
14. Hossain F, Clatty A. Self-care strategies in response to nurses' moral injury during COVID-19 pandemic. *Nurs Ethics*. 2021;28(1):23-32. https://doi.org/10.1177/0969733020961825
15. Swavely D, Romig B, Weissinger G, et al. The impact of traumatic stress, resilience, and threats to core values on nurses during a pandemic. *J Nurs Adm*. 2022;52(10):525-535. https://doi.org/10.1097/nna.0000000000001194
16. Brewer KC. Institutional betrayal in nursing: A concept analysis. *Nurs Ethics*. 2021;28(6):1081-1089. https://doi.org/10.1177/0969733021992448
17. Raso R, Fitzpatrick JJ, Masick K. Nurses' intent to leave their position and the profession during the COVID-19 pandemic. *J Nurs Adm*. 2021;51(10):488-494. https://doi.org/10.1097/nna.0000000000001052
18. Sheehan C, Tham TL, Holland P, Cooper B. Psychological contract fulfilment, engagement and nurse professional turnover intention. *Int J Manpow*. 2019;40(1):2-16. https://doi.org/10.1108/IJM-08-2017-0211
19. Hu H, Wang C, Lan Y, Wu X. Nurses' turnover intention, hope and career identity: the mediating role of job satisfaction. *BMC Nurs*. 2022;21(1):43. https://doi.org/10.1186/s12912-022-00821-5
20. Holtz H, Heinze K, Rushton C. Interprofessionals' definitions of moral resilience. *J Clin Nurs*. 2018;27(3-4):e488-e494. https://doi.org/10.1111/jocn.13989
21. Rushton CH. *Moral Resilience: Transforming Moral Suffering in Healthcare*. Oxford University Press; 2018.
22. Foli KJ. A middle-range theory of nurses' psychological trauma. *ANS Adv Nurs Sci*. 2022;45(1):86-98. https://doi.org/10.1097/ans.0000000000000388
23. Simonovich SD, Webber-Ritchey KJ, Spurlark RS, et al. *Moral distress experienced by US nurses on the frontlines during the COVID-19 pandemic: implications for nursing policy and practice*. 8. SAGE Open Nurs. 2022, 23779608221091059. https://doi.org/10.1177/23779608221091059
24. Tajfel H, Turner JC. An integrative theory of intergroup conflict. In: Austin WG, Worchel S, eds. *The Social Psychology of Intergroup Relations*. Brooks/Cole; 1979:33-37.
25. Turner JC. *Social identification and intergroup behaviour: some emerging issues in the social psychology of intergroup relations*. 1978:401-466.
26. Steffens NK, Haslam SA, Schuh SC, Jetten J, van Dick R. A meta-analytic review of social identification and health in organizational contexts. *Pers Soc Psychol Rev*. 2017;21(4):303-335. https://doi.org/10.1177/1088868316656701
27. Muldoon OT, Haslam SA, Haslam C, Cruwys T, Kearns M, Jetten J. The social psychology of responses to trauma: social identity pathways associated with divergent traumatic responses. *Eur Rev Soc Psychol*. 2019;30(1):311-348. https://doi.org/10.1080/10463283.2020.1711628
28. Praharso NF, Tear MJ, Cruwys T. Stressful life transitions and wellbeing: a comparison of the stress buffering hypothesis and the social identity model of identity change. *Psychiatry Res*. 2017;247:265-275. https://doi.org/10.1016/j.psychres.2016.11.039
29. Jetten J, Haslam SA, Cruwys T, Greenaway KH, Haslam C, Steffens NK. Advancing the social identity approach to health and well-being: progressing the social cure research agenda. *Eur J Soc Psychol*. 2017;47(7):789-802. https://doi.org/10.1002/ejsp.2333
30. Jetten J, Haslam SA, Iyer A, Haslam C. In: Sturmer S, Snyder M, eds. *Turning to others in times of change: social identity and coping with stress*. The Psychology of Prosocial Behavior.
31. Willetts G, Clarke D. Constructing nurses' professional identity through social identity theory. *Int J Nurs Pract*. 2014;20(2):164-169. https://doi.org/10.1111/ijn.12108
32. Creswell JW, Clark VLP. *Designing and Conducting Mixed Methods Research*. 3rd ed. Sage publications; 2017.
33. Doyle L, McCabe C, Keogh B, Brady A, McCann M. An overview of the qualitative descriptive design within nursing research. *J Res Nurs*. 2020;25(5):443-455. https://doi.org/10.1177/1744987119880234
34. Polit DF, Beck CT. *Essentials of nursing research: appraising evidence for nursing practice*. Lippincott Williams & Wilkins; 2009. https://bhw.hrsa.gov/sites/default/files/bureau-health-workforce/data-research/np-survey-highlights.pdf
35. Campbell-Sills L, Stein MB. Psychometric analysis and refinement of the connor–Davidson resilience scale (CD-RISC): validation of a 10-item measure of resilience. *J Trauma Stress*. 2007;20(6):1019-1028. https://doi.org/10.1002/jts.20271
36. Christianson S, Marren J. The impact of event scale-revised (IES-R). *Medsurg Nurs*. 2012;21(5):321-322.
37. Creamer M, Bell R, Failla S. Psychometric properties of the impact of event scale-revised. *Behav Res Ther*. 2003;41(12):1489-1496. https://doi.org/10.1016/j.brat.2003.07.010
38. Heinze KE, Hanson G, Holtz H, Swoboda SM, Rushton CH. Measuring health care Interprofessionals' moral resilience: validation of the Rushton moral resilience scale. *J Palliat Med*. 2021;24(6):865-872. https://doi.org/10.1089/jpm.2020.0328
39. Brooks J, McCluskey S, Turley E, King N. The utility of template analysis in qualitative psychology research. *Qual Res Psychol*. 2015;12(2):202-222. https://doi.org/10.1080/14780887.2014.955224
40. Fereday J, Muir-Cochrane E. Demonstrating rigor using thematic analysis: a hybrid approach of inductive and deductive coding and theme

development. *Int J Qual Methods*. 2006;5(1):80-92. https://doi.org/10.1177/160940690600500107

41. Borges LM, Holliday R, Barnes SM, et al. A longitudinal analysis of the role of potentially morally injurious events on COVID-19-related psychosocial functioning among healthcare providers. *PLoS One*. 2021;16(11), e0260033. https://doi.org/10.1371/journal.pone.0260033
42. Fry-Bowers EK, Rushton CH. Who will be there to care if there are no more nurses? The Hastings Center. Published September 23, 2021. Accessed August 15, 2022. https://www.thehastingscenter.org/who-will-be-there-to-care-if-there-are-no-more-nurses/
43. Rushton CH, Thomas TA, Antonsdottir IM, et al. Moral injury and moral resilience in health care workers during COVID-19 pandemic. *J Palliat Med*. 2022;25(5):712-719. https://doi.org/10.1089/jpm.2021.0076
44. Murphy D, Ross J, Ashwick R, Armour C, Busuttil W. Exploring optimum cut-off scores to screen for probable posttraumatic stress disorder within a sample of UK treatment-seeking veterans. *Eur J Psychotraumatol*. 2017;8(1), 1398001. https://doi.org/10.1080/20008198.2017.1398001
45. Rash CJ, Coffey SF, Baschnagel JS, Drobes DJ, Saladin ME. Psychometric properties of the IES-R in traumatized substance dependent individuals with and without PTSD. *Addict Behav*. 2008;33(8):1039-1047. https://doi.org/10.1016/j.addbeh.2008.04.006
46. Chachula KM, Myrick F, Yonge O. Letting go: how newly graduated registered nurses in Western Canada decide to exit the nursing profession. *Nurse Educ Today*. 2015;35(7):912-918. https://doi.org/10.1016/j.nedt.2015.02.024
47. Rudman A, Gustavsson P, Hultell D. A prospective study of nurses' intentions to leave the profession during their first five years of practice in Sweden. *Int J Nurs Stud*. 2014;51(4):612-624. https://doi.org/10.1016/j.ijnurstu.2013.09.012
48. Stovall M, Hansen L, van Ryn M. A critical review: moral injury in nurses in the aftermath of a patient safety incident. *J Nurs Scholarsh*. 2020;52(3):320-328. https://doi.org/10.1111/jnu.12551
49. Amsalem D, Lazarov A, Markowitz JC, et al. Psychiatric symptoms and moral injury among US healthcare workers in the COVID-19 era. *BMC Psychiatry*. 2021;21(1):546. https://doi.org/10.1186/s12888-021-03565-9
50. Riedel PL, Kreh A, Kulcar V, Lieber A, Juen B. A scoping review of moral stressors, moral distress and moral injury in healthcare workers during COVID-19. *Int J Environ Res Public Health*. 2022;19(3):1666. https://doi.org/10.3390/ijerph19031666
51. Calma E, Sayin Y. *The case for investing in trauma-informed management practices in the workplace: knowledge, practice, and policy that can improve life outcomes in the District of Columbia*. D.C. Policy Center. Published; 2022. Accessed August 15, 2022. https://www.dcpolicycenter.org/publications/trauma-informed-management/
52. Al-Amin M, Hefner JL, Hogan TH, Li K. Sustainers: hospitals with sustained superior performance. *Health Care Manag Rev*. 2021;46(3):248-256. https://doi.org/10.1097/HMR.0000000000000269
53. Bourgault AM. What will the new normal look like? *Crit Care Nurs*. 2022;42(3):8-10. https://doi.org/10.4037/ccn2022740

Uncovering the Experience: Return to Work of Nurses After Parental Leave

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Contribution to Emergency Nursing Practice

- To the best of our knowledge, this is the first study describing the emergency nurse experience of parental leave and return to work. ED characteristics, such as limitless patient volumes, violence, overcrowding, and patient boarding, likely affect the return to work experience.
- Work engagement, lactation, and childcare were the major themes identified during data analysis. Coronavirus disease 2019 affected each theme.
- Organization driven strategies, such as provision of managerial check-ins, return-to-work reorientation, supplementary lactation support, and leadership-provided accommodation, may lighten burdens experienced by emergency nurses navigating parental leave and return to work.

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Abstract

Introduction: To understand the experiences of emergency nurses who have returned to work after parental leave, specifically relating to the return to work transition, work-life balance, work engagement, and opportunities to continue human milk expression.

Methods: Nurses ($N = 19$) were recruited from 5 emergency departments within 1 hospital system in the United States Midwest. Nurses ($n = 11$) were eligible to participate in a one-on-one interview if they had returned from parental leave within 6 months of the interview date. Nurses ($n = 8$) were eligible to participate in a focus group if they had returned from parental leave within 2 years of the interview date. Interviews were structured and data collection concluded when researchers believed data saturation was reached. Interviews were audio recorded and transcribed verbatim. Data were analyzed using Braun and Clarke's qualitative thematic analysis 6-phase framework.

Results: Three major themes from the data were identified: (1) work engagement, (2) lactation, and (3) childcare. Work engagement was broken down into the subthemes: lack of communication, perceived engagement expectations, and actual engagement. Lactation was broken down into the subthemes: the act of pumping, lactation breaks, and lactation rooms. The coronavirus disease 2019 pandemic impact on return-to-work is described under each major theme.

Discussion: Our findings provide insight into the unique challenges and experiences of nurses navigating parental leave and return-to-work in the emergency department. Strategies such as provision of managerial check-ins, return to work reorientation, lactation break coverage, enhanced supplementary lactation support, and leadership-provided accommodation may lighten the burden of these challenges and improve the returning nurse's job satisfaction.

Key words: Return to work; Parental leave; Emergency service; Hospital; Job satisfaction; United States; COVID-19

Introduction

Nurses are the largest group of health care professionals in the United States, and 88.9% of registered nurse positions are held by women.[1,2] Roughly 50% of United States nurses are of childbearing age.[1,2] This suggests that nearly half of the nursing labor force may navigate parental leave, return to work, and the unique challenges associated. Although there are studies focusing on women returning to work after parental leave, there is a lack of studies describing the return-to-work experience of United States nurses.

Returning to work after parental leave can be a stressful time for new parents. Nurses may face additional stressors during return to work given that their working environment is often low in flexibility (eg, needing someone to cover breaks), commonly consists of 12-hour shifts, and involves physical and mental demands not found in other professions.[3] Gorman[4] conducted a literature review of studies looking at emergency nurse resilience. One theme discussed was the ED work environment and the unique challenges associated with it.[4] These challenges may influence nursing return-to-work. Notably, emergency departments do not place limitations on patient volumes and are unpredictable in nature.[4] Emergency nurses are susceptible to occupational stress when there is a mismatch between their job demands, the amount of control they have over these demands, and the support networks available.[4]

Parental leave in the United States is often 12 weeks, drastically less than that offered in a neighboring country, Canada, where parents may take 78 weeks of leave.[5,6] Many women continue to report significant health concerns related to childbirth at 6 months postpartum and beyond.[6] During this time, women may be struggling with anxiety, depression, physical recovery from childbirth, and/or fatigue associated with caring for an infant.[7-9] A study evaluating return-to-work in the academic setting found that women who reported worse health at work reentry had symptoms of anxiety or depression nearly every day.[7] The experience of ill health in the postpartum period also can contribute to absenteeism and presenteeism in the workplace.[7,10] More research is needed to understand the experience of parental leave among United States nurses within the hospital setting. Owing to the limited data on this topic, we chose to conduct a qualitative descriptive study to better understand this phenomenon.

During an era when nursing retention and engagement are a growing priority, health care institutions may find value in understanding return to work experiences to identify interventions that support parents working in the nursing profession.[11,12] The purpose of our study was to shed light on the return to work experience of emergency nurses, with a particular focus on the return to work transition itself, work-life balance, work engagement, and opportunities to continue human milk expression.

Methods

ORGANIZATIONAL SUPPORT THEORY

The organizational support theory was used during data interpretation.[13] The theory emphasizes perceived organizational support: the extent to which employees perceive that their organization values their contributions and cares for their well-being.[13] If an organization wishes to optimize perceived organizational support, the following principles should be considered: (1) employee attribution (correctly understanding the needs of your employees), (2) social exchange (when employees feel supported by their organization of employment they, in turn, feel a responsibility to support the organization in achieving its goals), and (3) self-enhancement (optimal perceived organizational support is associated with fulfillment of an employees' socioemotional needs).[13]

PARTICIPANTS AND SETTING

Participants ($N = 19$) were recruited using convenience sampling from a large, university-affiliated health care system in the United States Midwest. Recruitment methods included posted flyers and emails sent out to the entire ED nursing listserv where recruitment took place. Participants were recruited from 5 emergency departments within the health care system across urban, suburban, and rural areas. Many participants ($n = 10$) worked at the largest hospital, located in an urban setting. Participants who had returned from parental leave within the previous 6 months were eligible to participate in a one-on-one interview, and those who had returned from parental leave within the previous 2 years were eligible to participate in a focus group. Some participants were interviewed before the COVID-19 pandemic began, whereas others were interviewed during the pandemic. See Table 1 for a breakdown of participants interviewed using one-on-one interviews vs focus groups and whether the interview occurred before or during the COVID-19 pandemic.

STUDY DESIGN

For this qualitative descriptive study, we aimed to understand the return to work experiences of emergency nurses after parental leave. We used structured interview guides

(Table 2) for one-on-one interviews and focus groups. The focus group interview guide was a pared-down version of the one-on-one interview guide. Interview questions were adapted from a qualitative study evaluating the return-to-work experiences of occupational therapists after taking parental leave.[14] Author permission to use and adapt this interview guide was obtained. Institutional review board approval was received in October 2019 and data collection occurred from November 2019 to December 2020. Interviews and focus groups were initially conducted in-person but were moved to a virtual format owing to the COVID-19 pandemic. Before the COVID-19 pandemic began, one participant for the one-on-one interviews requested a phone interview, as opposed to in-person.

DATA COLLECTION

Interviews, one-on-one (11) and focus group (3), were facilitated by the first author. Focus groups also were attended by an observer (second or fourth author) for the purpose of recording nonverbal communication, voice tone, and voice inflection. Authors involved in the interview process received training from experts in research methodology (authors 3 and 5) on how to optimize rigor, validity, and reliability in qualitative methodology when conducting and analyzing interviews. One strategy used to support rigor, validity, and reliability was the use of a structured interview guide (Table 2). Each 30- to 60-minute interview began with the first author obtaining verbal consent, by reading the consent form verbatim, allowing participants to ask questions, and the opportunity to proceed or withdraw from the interview. Once consented, the structured interview commenced. To avoid influencing participant responses and groupthink, the facilitator and observers minimized verbal and nonverbal cues of agreement or disagreement with the interviewee's answers.[15] Interviews were audio recorded and transcribed verbatim. Confidentiality was ensured by interviews occurring in private spaces, names of participants not being associated with statements made, and requiring focus group participants to avoid discussing any interview details after the conclusion of the focus group.

We theorized that the farther out a participant was from return to work, the greater the limits to their recall. One-on-one interviews were chosen for those with optimal recall (returned to work within 6 months of interview date). Focus group interviews were chosen for those at increased risk of recall difficulties (returned to work within 2 years of interview date). We theorized that participant recall of memories may be optimized in a focus group setting, where the dialogue between participants may cause a memory to reemerge.[16] Interviews and focus groups were held until researchers believed data saturation was reached, and the properties and dimensions of each theme were well defined.

DATA ANALYSIS

Data analysis was conducted by the first and second author using Braun and Clarke's[17] qualitative thematic analysis 6-phase framework: (1) familiarize self with data, (2) generate initial codes, (3) search for themes, (4) review themes, (5) define themes, and (6) produce a report.[17] To minimize bias, the first 3 phases of qualitative thematic analysis were completed independently. This independent work involved (1) listening to the audio recordings and reading the interview transcripts and notes repetitively, (2) line-by-line coding, and (3) grouping of similar codes into themes. Initial themes were similar among authors. The third and fifth authors, being experts in research methodology, assisted with reviewing and defining each theme (Figure). All authors contributed to the delineation of the study results through this report.

RIGOR AND TRUSTWORTHINESS

All authors involved in data collection and analysis were nurses with a bachelor's degree or higher. Three of the authors identified as female; the fourth author identified as male. The first author had experienced return to work after taking parental leave at an emergency department featured in this study. As nurses and/or parents, we engaged in reflexivity by acknowledging how our personal experiences may influence how we understand and interpret participants' experiences.[18] Validity and credibility of findings were assured by using a research team to analyze and discuss the meaning and interpretation of the data.[19] More specifically, prolonged engagement with the data and peer debriefing ensured credibility.[19] Prolonged engagement with the data involved multiple rounds of transcript reading and analysis consisting of coding, revising codes, and regular team discussion lasting a total of 8 months. Peer debriefing included team members sharing and revising analysis and selection of quotes and themes.[19] A sufficient description of methodology and contextualization of participants' experiences supported the transferability of findings.[19] We demonstrated confirmability through discussions about potential biases and using peer debriefing to ensure an accurate presentation of the data.[20]

TABLE 1
Distribution of participants between one-on-one interviews and focus groups, before and during the COVID-19 pandemic

Type of interview	Total number of interviews	Number completed before COVID-19	Number completed during COVID-19	Conduction method	Number of participants
One-on-one	11	6	5	In-person: 5 Phone: 3 Zoom: 3	Per group: 1 Total: 11
Focus group	3	1	2	In-person: 1 Phone: 0 Zoom: 2	Per group: 3, 3, 2 Total: 8

COVID-19, coronavirus disease 2019.

Results

Three major themes from the data were identified: (1) work engagement, (2) lactation, and (3) childcare. Work engagement was further broken down into subthemes related to lack of communication, perceived engagement expectations, and actual engagement. Lactation was further broken down into subthemes related to the act of pumping, lactation breaks, and lactation rooms. Data were collected before and during the COVID-19 pandemic. The data collected during COVID-19 demonstrated interconnectedness between COVID-19 and return to work; therefore, the impact of COVID-19 is described within each major theme (Figure).

THEME 1: WORK ENGAGEMENT

Data pertaining to work engagement are divided into the subthemes: lack of communication, perceived engagement expectations, and actual engagement.

Lack of Communication

Communication with staff is an important tool for organizations to use in demonstrating support for their employees.[13] Dissemination of information at this organization often occurs either at large (eg, human resources) or through departmental directors, managers, or charge nurses. Participants overwhelmingly described a lack of communication around parental leave and return to work expectations. Through both the processes of preparing for and returning from parental leave, participants described relying on coworkers with parental leave experience for direction. Participants felt disappointed that this guidance was not actively provided by the organization.

Participants described being unsure whether their leave was approved, sometimes up until giving birth, and spoke of receiving inconsistent information depending on the leave personnel they conversed with. Some participants endorsed that, during their leave, their hospital system transitioned to a different third party leave administration company. Communication of this change was missed and only discovered when a peer informed them. Participants endorsed wishing the process was better structured.

> I feel like the first thing that's coming to mind is how to apply for the leave and everything like that, and I feel like the general direction was, "Oh, you should just ask somebody that went on maternity leave before" or "Call HR (Human Resources)." There wasn't a lot of guidance.

Participants did not feel as though the organization was supporting them through leave and return to work because of this lack of communication.

Perceived Engagement Expectations

Perceived engagement describes what nurses believe is expected of them when returning from leave. Participants described their return to work after approximately 12 weeks of leave as "business as usual," being expected to immediately perform at the same capacity as when they left. With ED policies and procedures in continual flux, most participants wished for brief reorientation. Nurses commonly reported a desire to check in with management upon return, providing an opportunity for them to ask questions and discuss needs and expectations.

Nurses described actively and passively requesting accommodation from leadership (eg, reducing hours, flexible scheduling, excusing occasional tardiness). Mostly, nurses

TABLE 2
One-on-one interview guide

Question
1. Thinking back to the time leading up to going on parental leave, please describe what aspects of preparation for parental leave were easy or straightforward.
2. Please describe what aspects of preparation for parental leave were difficult.
3. How many weeks of parental leave did you take?
4. Did you find yourself thinking about work while being on parental leave, please elaborate?
5. Since becoming a parent to your new baby, do you feel differently about working (for example, do you have thoughts of not working, working less, working more, changing roles, etc.), please describe?
6. Please describe what (if any) aspects of return to work you looked forward to.
7. Please describe what (if any) aspects of return to work you stressed about.
8. Please describe anything that made your transition back to work easier.
9. Please describe anything that made you transition back to work harder.
10. Is there anything that could have helped with your transition back to work?
11. Were you lactating when you returned to work (if no, skip to question 17)?
12. Please describe what your lactation goals were upon returning to work, for example: avoiding supplementing with formula, pumping every "x" number of hours, etc.
13. Did you achieve your lactation goals, please elaborate?
14. Please describe your experience surrounding use of lactation rooms in the workplace.
15. Please describe your experience surrounding use of lactation breaks in the workplace.
16. When taking lactation breaks, please describe how you believe your coworkers felt?
17. Please describe your experience with balancing work and personal life since returning from parental leave.
18. Please describe how you are satisfied with your work-life balance.
19. Please describe how you are dissatisfied with your work-life balance.
20. Please describe how your experience with return to work after parental leave has influenced your engagement in your role as a nurse at the organization.
21. Is there anything else you would like to share about your experience?

This interview guide was adapted from Parcsi and Curtin.[14] Used with permission.

spoke positively of leadership accommodation; however, when unaccommodated, they questioned whether they were valued at the organization. Fears of receiving a poor annual review and even termination were discussed. Parental leave requires nurses to use, and commonly exhaust, their paid time off (PTO) and/or "leave" hours allotted by the state. As a result, if a nurse is unable to attend their shift after return to work (eg, personal illness, caring for a sick child), they may not have the PTO or leave hours to cover it, which could result in institutional penalization.

> ...I don't think that working parents deserve special circumstances, but I think just on a human level of understanding and being a little bit more compassionate to your employees about, "I might be running late" and "I might be just doing the best I can…" Yeah, so I think that makes it hard for me, in particular, to maintain my loyalty to this facility and the department, because it tends to make me wonder, "Am I valued?"

Actual Work Engagement

Participants expressed genuine joy in return to work, specifically through the lenses of reuniting with peers and resuming their nursing roles. Many described infant care as monotonous and were thankful to break from that to "use a different part" of their brain. Participants often described their role of nurse as being central to their identities: "The adult interaction and just getting back to something that was part of me. Nursing has always been a part of my life and really important to me, so validating that

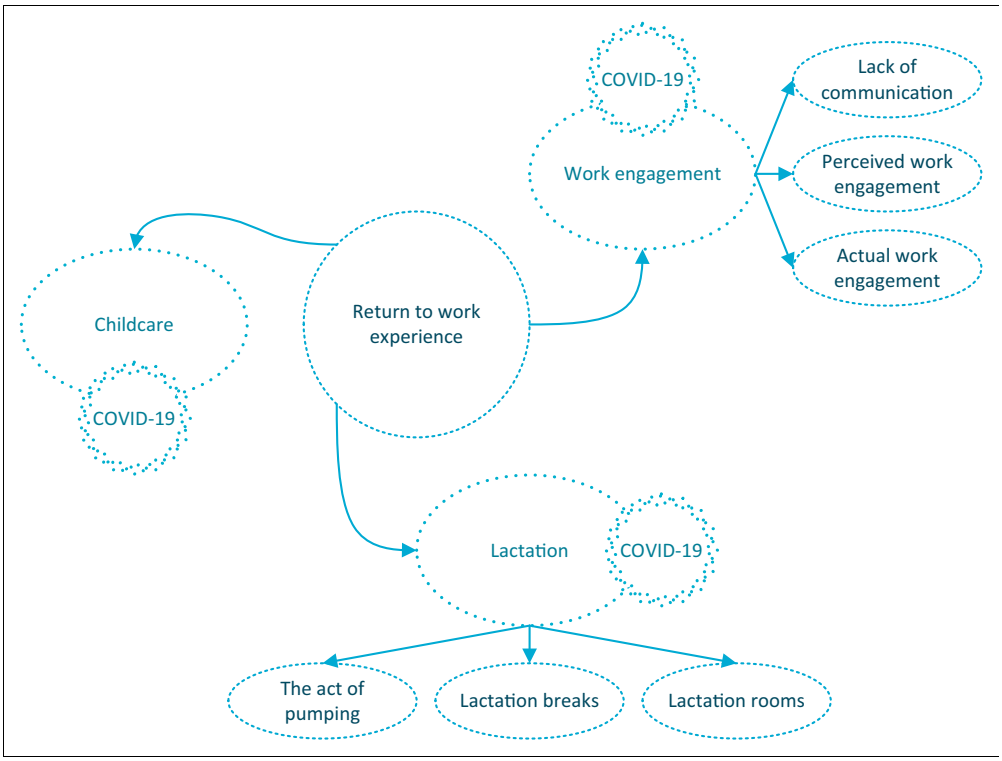

FIGURE 1

Study findings broken down into themes and subthemes. COVID-19, coronavirus disease 2019.

part of my identity still, that it wasn't lost, that was important."

However, in addition to this joy, most participants expressed new limits in their work engagement and tension in balancing their parental and working roles. Many were dissatisfied with their current work-life balance and described reprioritizing their child and/or family above work. Reducing work hours and declining extra commitments (eg, overtime, volunteering, committees) were some of the ways nurses disengaged in search of improved work-life-family balance. Some participants with a high level of work engagement before parental leave described wishing to maintain that same level of engagement upon return to work, whether that was achievable or not. Other participants, many of whom were parents to multiple children, demonstrated reduced workplace engagement before parental leave and continued disengagement upon return to work. However, many who described their current state as disengaged hoped this was temporary, endorsing intent to reengage with their career at a later point. "I'm committed when I'm there, but outside of that I don't have a lot to give right now, but hang on, I will again."

Limitations in the "ability to give" led nurses to feel insecure in their positions, fearful of job loss, and generally anxious and stressed, which often led to further disengagement.

COVID-19 Impact on Work Engagement

Early in the pandemic, some obstetric providers were instructing pregnant nurses to start parental leave early.[21] However, existing leave policies did not specify the risk of contracting COVID-19 as a medical indication for early leave, despite the recommendations of some nurses' obstetric providers. Some nurses who successfully took leave early described having less time off with their baby after birth.

> Because of COVID, I was taken out of patient care 4 weeks before my due date. I did a lot of work from home, and I had to use up a lot of PTO, because there was only so much work from home stuff that I could do, and I was really trying to avoid taking parental leave before my due date because of COVID, because I wanted that whole 12 weeks after I gave birth.

Nurses who took leave during the COVID-19 pandemic described heightened struggles with disengaging. ED response changed on a near-daily basis and nurses on leave expressed fears of feeling "lost" when they returned if they did not stay aware of changes during leave. Nurses reported taking it upon themselves to check their work email regularly to keep abreast of departmental changes (eg, pandemic response) and to gain a general sense of how their peers were faring.

The pandemic pushed committee meetings to virtual platforms, allowing attendance from home. Nurses described being able to continue committee participation upon returning to work because of the virtual platform but expressed uncertainty toward continuing if in-person participation were to be reinstated.

Upon returning, similar to times before the COVID-19 pandemic, nurses did not receive gentle reinsertion or reorientation to the department. They instead described feeling as if they were "on their own" to figure it out. Nurses also recognized the risk of their work environment and had fears of bringing home COVID-19 infection to their family. Some described fear in assisting with care of COVID-19 positive patients. This demonstrates the returning nurses' "child first, work second" reprioritization and a barrier to fully engaging with work.

THEME 2: LACTATION

All participants were lactating upon return to work and needed to perform human milk expression (pump) while at work.[22-24] Most participants did not meet personalized lactation goals, despite readjustment of expectations owing to the demands of the job, and experienced reduced milk supply upon returning. Data collected about lactation were organized into 3 subthemes: the act of pumping, lactation breaks, and lactation rooms.

The Act of Pumping

A single human milk expression (pumping) session involves multiple steps in addition to actual lactation.[22,24] These steps include transport of equipment, locating an available and appropriate area, supply setup, human milk expression, milk storage, cleaning equipment, supply storage, and transport back to nurse assignment.[22,24] Some participants felt as though peers who had not personally experienced lactation in the workplace were unaware of said steps and why lactation breaks require a significant amount of time.

> There's some loss of time getting to the place to pump, getting everything ready or washed up at the end. Even though you may be only pumping for X amount of minutes, there's extra time on top of that, so there's just always this pressure of time, feeling that you're taking time and you need to get back.

Nurses described rushing through the steps of lactation in an attempt to be respectful to their peers and resume their nursing assignment.

Lactation Breaks

Participants wished to express human milk at work at the same time of day that they would be feeding their infant if they were at home (approximately every 3-4 hours). However, owing to the unpredictability and busyness of the emergency department, many participants adjusted those expectations, recognizing that they would need to be flexible with timing of these breaks (eg, taking a lactation break later in the shift). Participants spoke of the importance of self-advocacy in both requesting a lactation break and finding coverage. Some nursing assignments were reported as easier (eg, team leader) or harder (eg, triage) to step away from. Participants often felt supported by peers with human milk expression experience, but emphasized that even this was dependent upon whether it was convenient for their peers:

> I think most were supportive when it was convenient [for my peer]. I think most were supportive if I wasn't busy, but it wasn't a priority to them if we were busy if that makes sense. So, as long as it wasn't going to be super inconvenient for them, it was no big deal; of course, I could go; but if it was going to be inconvenient for them, then there was a little bit more hesitation.

Participants did not describe active pushback from peers when requesting and taking breaks; however, nurses described fears of how their peers perceived them for taking breaks. Some recalled overhearing peers speak negatively of lactating nurses. Participants described experiencing profound guilt and anxiety while taking a lactation break, ranging from worrying about their patients while away to feeling guilty about peers covering their assignment. Participants described having to "catch up" on patient care upon returning.

> I had two pretty sick patients… …I had asked my neighbors to cover me and take care of some things, and at that time I was met with, "Oh, yeah sure, no problem." And then when I came back, no one had done anything or checked on any patients and my patient was hypotensive.

To counteract this, breaks were rushed, resulting in inability to relax, which is an essential component of successful letdown in human milk expression.[25]

> I stress about how long I've been away. I don't take my time. I grab my stuff and run up to the lactation room and pump really fast and then come back down, throw everything in my locker, in the freezer, pee really fast and then run back to my assignment, so it's not a leisurely time for pumping.

Overall, nurses described tension between fulfilling their "nursing role," burdening peers, and providing for their child. Participants desired intentional and planned lactation break coverage, thinking this would lead to less stress, anxiety, and guilt.

Lactation Rooms

Participants' reports indicated that lactation room characteristics varied markedly across the health care system. Differences in lactation rooms by hospital site included distance from the emergency department, availability to staff only or the public as well, availability of equipment, likelihood of availability, and cleanliness. Participants reported that some lactation rooms did not contain a sink for washing hands and cleaning pumping equipment. If barriers were great, nurses chose to express human milk in spaces not designated for lactation (eg, offices, break room).

> For us, we have a pumping room, but it's about a 5-minute walk from the department, and I found myself at first taking the time, but then I was realizing I was having to cut that pumping time short, so I stopped doing that, and I just would step into somebody else's office that was not being used.

When participants conducted human milk expression in spaces not designated for lactation, they noted that those rooms lacked the supplies or privacy, among other characteristics and qualities, necessary to fully support human milk expression. However, for those who felt it necessary to use such spaces, it was evident that the alternative options were even less appealing.

COVID-19 Impact on Lactation

Each emergency department had an individualized pandemic response and experience (eg, staffing and patient volumes), all of which influenced lactation breaks. For some, staffing improved and patient volumes decreased, making it easier to take appropriately timed lactation breaks.

> In the pre-COVID era it would have been very difficult to do that [pumping], and the guilt of stepping away would have been a lot higher. However, we have been very well-staffed and not as volume-heavy with patients, so I think I've been very lucky with coming back to work during this time.

For others, the opposite was true, given that staffing was inadequate and patient volumes increased. For these participants, the COVID-19 situation created more barriers to taking lactation breaks. "Someone is like, 'You should just tell him you have to take a break.' I'm like, 'But nobody's getting a lunch break, so it sounds like a diva to be like, I have to go take a [lactation] break. None of you got one, but I need one.'"

THEME 3: CHILDCARE

Nurses expressed that childcare was a heavy source of stress upon returning to work. This appeared to be most pronounced in first-time parents. Participants described worrying about their work schedule upon return and whether it would align with their childcare plan.

> While on parental leave, I was concerned about scheduling, how my schedule would be once I returned to work. That was actually pretty stressful for me, just being on maternity leave, and I'm like, "Okay, I didn't do my schedule." "God, how is it gonna look when I come back?" "Are they gonna honor when I call them and say (when) I can work." So that was a little stressful just because of childcare issues.

Nurses considered the price of childcare and indirect costs of working (eg, parking, gas) to assess whether working made financial sense. For some, the takeaway income after these costs was minimal, creating a mental conflict. In the end, those nurses chose to continue working. Motivators for continuing to work included the desire to maintain their career and responsibility to provide health insurance coverage for their families.

Participants described feeling conflicted, stressed, and guilty about leaving their infant under the care of others. Nurses described worrying that their child would not take a bottle or cope well without them. They also described sadness in missing key milestones owing to perceptions of parental leave being too short and the child too young. Simultaneously, nurses saw benefit to self and child in allowing others to watch their child, stating, "I like coming to work. It's good for me. I think it's good for my kids to have to learn to be with someone that's not me."

When childcare was provided by immediate family, this provided a significant sense of relief. Alternatively, nurses lacking family to provide childcare endorsed increased anxiety and difficulty focusing at work.

COVID-19 Impact on Childcare

Arranging childcare for infants during the pandemic was often affected by fear for the child's safety. For many, daycare was not viewed as an option.

> Because of the pandemic, we didn't want to enter her into daycare for illness reasons, for-you know, in case of getting her sick and me thinking that it was COVID-related or also potentially getting other kids sick, because I'm working in the emergency department, and if I bring home something.

As an alternative strategy, when possible, participants collaborated with their partners to cover childcare. Some described changing their schedules or going to part-time status to achieve this childcare arrangement.

Discussion

Findings from this study suggest that parental leave and return to work are a transitional process associated with heightened stress. Because roughly 50% of the nursing profession is composed of women of childbearing potential, a substantial number of nurses navigate this stressful transition.[1,2]

The organizational support theory suggests that when organizations invest in family-focused supports for their employees, employee perceived organizational support increases.[13] When perceived organizational support increases, job performance and work engagement follow suit.[13] Therefore, organizations wishing to optimize perceived organizational support may choose parental leave and return to work as one focal point. The organizational support theory recognizes the importance of understanding employee needs to ensure appropriate supports are available.[13] Findings from this study pinpoint areas that emergency nurses identified as sources of stress and may represent areas where increased organizational support is needed. Perceived organizational support strategies for nurses navigating parental leave and return to work are discussed next.

ENGAGEMENT

Navigating the time period before, during, and after parental leave requires nonintuitive and department-specific knowledge.[26] Our participants reported a lack of communication from leadership regarding the process of taking parental leave and return to work. This is consistent with other studies in which physician mothers reported confusion and lack of communication regarding parental leave policies.[26-28] Our findings suggest that pertinent parental leave information should be easily located, comprehendible, and, perhaps, directly provided to employees.[26] Based on recommendations of our participants, much of this pertinent information may be effectively disseminated using one-on-one check-ins between the department manager and employees. These check-ins also may provide the opportunity for employees to ask questions and communicate concerns. Managerial efforts to create a personal connection with employees, including understanding details of their home situation or struggles, may assist in engaging staff.[13,29]

In addition, participants in our study reported that reorientation to the unit, or a gradual return to work process, may have helped to lessen their stress. This is consistent with literature suggesting that employers who wish to retain working parents may consider offering support such as flexible scheduling, the option to return to work at reduced hours, and having open and honest conversations about what will and will not work.[7,14,30] A "gentle" return to work option consisting of fewer work hours for the first few weeks may be beneficial for some nurses, given that more than one-quarter of postpartum mothers report not feeling in optimal health (mental or physical) at the time of return to work.[7] During reorientation, education on departmental and practice changes that occurred during their leave should be emphasized.

Our research participants reported wanting to be engaged at work at the level they were before parental leave, but learning to balance work and life responsibilities as a new parent made it difficult to achieve this goal. Previous literature emphasizes that achieving a healthy work-life balance is challenging for returning parents and trade-offs are inevitable when working and also being a parent.[30] Managerial check-ins may be used to understand sources of work-life imbalance to, at minimum, demonstrate compassion, which may increase the employee's commitment to the organization.[13] Another option that organizations may wish to consider in support of staff engagement is allowing virtual attendance for committee meetings. A study looking at

using a virtual platform for family educational services during the COVID-19 pandemic found an increase in client engagement and satisfaction in addition to improvements to program access and equity.[31] Participants spoke of being able to continue participating on hospital committees, because the pandemic had pushed meetings to a virtual platform. If it were not for the virtual platform, they could not conceive continued committee involvement after returning to work

LACTATION

Findings from this study suggest that more lactation supports are needed as evidenced by the amount of stress, anxiety, and guilt associated with lactation in the workplace. Previous research demonstrates that the more challenges employees experience surrounding human milk expression in the work setting, the lower their job satisfaction.[32] This suggests that minimizing challenges faced by lactating employees may be seen a priority to employers, perhaps through the provision of lactation supports.

One lactation support that our participants reported to be lacking was the provision of planned, covered lactation breaks. A study of United States nurses found that finding time to take a lactation break was the biggest barrier to maintaining lactation in the workplace.[3] Although our participants were allowed to take lactation breaks, they spoke of needing to self-advocate and, at times, sensed peer frustration while taking them. There also appears to be a correlation between department busyness and ease of stepping away for a lactation break.[3,23] Participants who returned to work during the pandemic spoke of either reduced or heightened barriers to lactation breaks, directly related to their department's experience of the pandemic (eg, less busy and increased staffing or more busy and decreased staffing). Literature suggests that for lactation supports to be truly effective, they must be accompanied by a genuine sense of support from peers and leadership.[23] La Leche League International estimates that the lactation portion of human milk expression takes 15 minutes or more per breast and recommend double pumping (pumping both breasts simultaneously) to maximize milk supply.[33] Those 15 minutes do not account for all other required steps of taking a lactation break that were discussed in the Results section of this study.[22,24] Based on our findings, if organizations do not have sufficient staffing to support consistent lactation break coverage, they may want to consider strategically assigning lactating nurses to roles in the emergency department that are easier to step away from.

Investment in high-quality lactation rooms is another lactation support strategy that organizations may wish to consider. Literature has shown a correlation between the quality of lactation rooms and staff satisfaction with both the lactation room and ease of human milk expression.[34] Furthermore, when employees perceived lactation rooms to be high quality, they subsequently feel more supported by peers, leadership, and the organization.[34,35] Based on our findings, ideas to increase lactation room quality include installation of lockers proximal to the lactation room for storage of personal breast pumps and supplies, presence of human milk designated mini fridges, and providing multiple lactation rooms (ideally, staff designated) near departments. These ideas may ease challenges associated with lactation in the workplace.

CHILDCARE

Our participants identified childcare as a major source of stress during return to work. Childcare management during return to work has been pinpointed as a stressor in the literature and the COVID-19 pandemic appears to have amplified these challenges.[26,30,36] Our participants who navigated return to work during the COVID-19 pandemic spoke of adapting childcare arrangements owing to daycare changes and concern for child safety. This aligns with Shanafelt, et al,[36] who identified sources of stress for health care professionals in the United States during the COVID-19 pandemic, including fears of bringing home a workplace exposure and access to childcare. In our study, participants spoke of seeking leadership accommodation to support their childcare arrangements. Perceived organizational support was compromised when participants were unaccommodated and they questioned whether they were valued.[13] This outcome may incentivize organizational leadership to, when possible, be flexible in supporting and accommodating needs of the returning nurse's childcare arrangement.

Our participants spoke to the financial burden presented by childcare costs. A United States study evaluated the relationship between cost of childcare and maternal employment broken down by state.[37] The authors found that, in states where childcare costs were higher, mothers were less likely to work full time and more likely to work part time.[37] Inversely, when childcare costs were lower, mothers were more likely to work full time.[37] One of our participants mentioned that, after accounting for childcare, gas, and parking costs, their take-home income was marginal. This factor led the participant to consider reducing hours and even resigning.

Organizations wishing to retain staff with young children may want to consider aiding in childcare costs or providing staff with affordable childcare options.[37]

Limitations

Demographic details of our participants were not collected to mitigate risk of them being identified by leadership and peers. Because we were collecting data about workplace experiences and interviewing current employees of the organization, we felt anonymity was particularly important. We recognize that a lack of demographic data for our participants may reduce the transferability of this study.

Data were collected before and during the COVID-19 pandemic. Data collected before COVID-19 were done almost exclusively in-person, whereas data collected during the COVID-19 pandemic were done virtually. It is possible that our results would be different if data were collected using one method (eg, only in-person or only virtually). In addition, data collected during the pandemic looked different from data collected before COVID-19. This suggests that the return to work experience was different for these 2 groups and may have been more appropriately analyzed as separate data sets. Although both data sets spoke to similar aspects of return to work, data collected during the pandemic had COVID-19 laced into nearly every response. This speaks to the level of impact that COVID-19 has had on emergency nurses. We chose to analyze both data sets together, because our data collection was far from complete when the COVID-19 pandemic began.

Conclusion

Our findings shed light on the experiences and challenges emergency nurses face when taking parental leave and returning to work. These experiences and challenges may be used to inform policy and allocation of resources with the returning nurse in mind. Strategies such as managerial check-ins, reorientation, enhanced lactation support, and leadership-provided accommodation may improve the returning nurse's job satisfaction. Policy change and implementation of such supports will require departmental, and perhaps, organizational awareness of the challenges faced by this group and commitment to make it better. More research is needed in this area, especially as the COVID-19 pandemic continues, and changes to the nursing profession are ever-present.

Author Disclosures

Conflicts of interest: none to report.

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REFERENCES

1. Smiley RA, Ruttinger C, Oliveira CM, et al. The 2020 national nursing workforce survey. *J Nurs Regul*. 2021;12(1):S1-S96. https://doi.org/10.1016/S2155-8256(21)00027-2
2. Women in the labor force: a databook. U.S. Bureau of Labor Statistics. Published April 2021. Accessed September 25, 2022. https://www.bls.gov/opub/reports/womens-databook/2020/home.htm
3. Wambach K, Britt E. Breastfeeding support experiences of registered nurses in a large children's hospital system. *J Obstet Gynecol Neonatal Nurs*. 2018;47(5):632-640. https://doi.org/10.1016/j.jogn.2018.07.007
4. Gorman VL. Future emergency nursing workforce: what the evidence is telling us. *J Emerg Nurs*. 2019;45(2):132-136. https://doi.org/10.1016/j.jen.2018.09.009
5. EI maternity and parental benefits, what these benefits offer. Government of Canada. Accessed September 25, 2022. https://www.canada.ca/en/services/benefits/ei/ei-maternity-parental.html#shr-pg0
6. Lucia-Casademunt AM, Garcia-Cabrera AM, Padilla-Angulo L, Cuellar-Molina D. Returning to work after childbirth in Europe: well-being, work-life balance, and the interplay of supervisor support. *Front Psychol*. 2018;9:68. https://doi.org/10.3389/fpsyg.2018.00068
7. Falletta L, Abbruzzese S, Fischbein R, Shura R, Eng A, Alemagno S. Work reentry after childbirth: predictors of self-rated health in month one among a sample of university faculty and staff. *Saf Health Work*. 2020;11(1):19-25. https://doi.org/10.1016/j.shaw.2019.12.006
8. Hsu HC, Wickrama KAS. Maternal life stress and health during the first 3 years postpartum. *Women Health*. 2018;58(5):565-582. https://doi.org/10.1080/03630242.2017.1316344
9. Schwab-Reese LM, Ramirez M, Ashida S, Peek-Asa C. Psychosocial employment characteristics and postpartum maternal mental health symptoms. *Am J Ind Med*. 2017;60(1):109-120. https://doi.org/10.1002/ajim.22666
10. Wickramasinghe ND, Horton J, Darshika I, et al. Productivity cost due to postpartum ill health: a cross-sectional study in Sri Lanka. *PLoS One*. 2017;12(10):e0185883. https://doi.org/10.1371/journal.pone.0185883
11. Gomez-Salgado J, Dominguez-Salas S, Romero-Martin M, Romero A, Coronado-Vazquez V, Ruiz-Frutos C. Work engagement and psychological distress of health professionals during the COVID-19 pandemic. *J Nurs Manag*. 2021;29(5):1016-1025. https://doi.org/10.1111/jonm.13239
12. Lavoie-Tremblay M, Gélinas C, Aubé T, et al. Influence of caring for COVID-19 patients on nurse's turnover, work satisfaction and quality of care. *J Nurs Manag*. 2022;30(1):33-43. https://doi.org/10.1111/jonm.13462
13. Kurtessis JN, Eisenberger R, Ford MT, Buffardi LC, Stewart KA, Adis CS. Perceived organizational support: a meta-analytic evaluation of organizational support theory. *J Manag*. 2017;43(6):1854-1884. https://doi.org/10.1177/0149206315575554

14. Parcsi L, Curtin M. Experiences of occupational therapists returning to work after maternity leave. *Aust Occup Ther J*. 2013;60(4):252-259. https://doi.org/10.1111/1440-1630.12051
15. Hampshire N, Califano G, Spinks D. Focus groups. In: Hampshire N, Califano G, Spinks D, eds. *Mastering Collaboration in a Product Team: 70 Techniques to Help Teams Build Better Products*. Springer; 2022:26-27.
16. Tracy SJ. *Qualitative Research Methods: Collecting Evidence, Crafting Analysis, Communicating Impact*. John Wiley and Sons; 2019.
17. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77-101. https://doi.org/10.1191/1478088706qp063oa
18. Macbeth D. On "reflexivity" in qualitative research: two readings, and a third. *Qual Inq*. 2001;7(1):35-68. https://doi.org/10.1177/107780040100700103
19. Morse JM. Critical analysis of strategies for determining rigor in qualitative inquiry. *Qual Health Res*. 2015;25(9):1212-1222. https://doi.org/10.1177/1049732315588501
20. Lincoln YS, Guba EG. *Naturalistic Inquiry*. SAGE Publications; 1985.
21. Zahn CM, ACOG statement on COVID-19 and pregnancy. The American College of Obstetricians and Gynecologists. Published June 24, 2020. Accessed September 25, 2022. https://www.acog.org/news/news-releases/2020/06/acog-statement-on-covid-19-and-pregnancy
22. Edemba PW, Irimu G, Musoke R. Knowledge attitudes and practice of breastmilk expression and storage among working mothers with infants under six months of age in Kenya. *Int Breastfeed J*. 2022;17(1):33. https://doi.org/10.1186/s13006-022-00469-6
23. Vilar-Compte M, Hernandez-Cordero S, Ancira-Moreno M, et al. Breastfeeding at the workplace: a systematic review of interventions to improve workplace environments to facilitate breastfeeding among working women. *Int J Equity Health*. 2021;20(1):110. https://doi.org/10.1186/s12939-021-01432-3
24. Eglash A, Malloy ML. Breastmilk expression and breast pump technology. *Clin Obstet Gynaecol*. 2015;58(4):855-867. https://doi.org/10.1097/GRF.0000000000000141
25. Gomez L, Verd S, de-la-Banda G, et al. Perinatal psychological interventions to promote breastfeeding: a narrative review. *Int Breastfeed J*. 2021;16(1):8. https://doi.org/10.1186/s13006-020-00348-y
26. Freeman G, Bharwani A, Brown A, Ruzycki SM. Challenges to navigating pregnancy and parenthood for physician parents: a framework analysis of qualitative data. *J Gen Intern Med*. 2021;36(12):3697-3703. https://doi.org/10.1007/s11606-021-06835-0
27. MacVane CZ, Fix ML, Strout TD, Zimmerman KD, Bloch RB, Hein CL. Congratulations, you're pregnant! Now about your shifts….: the state of maternity leave attitudes and culture in EM. *West J Emerg Med*. 2017;18(5):800-810. https://doi.org/10.5811/westjem.2017.6.33843
28. Juengst SB, Royston A, Huang I, Wright B. Family leave and return-to-work experiences of physician mothers. *JAMA Netw Open*. 2019;2(10):e1913054. https://doi.org/10.1001/jamanetworkopen.2019.13054
29. Duru DC, Hammoud MS. Identifying effective retention strategies for front-line nurses. *Nurs Manag (Harrow)*. 2022;29(1):17-24. https://doi.org/10.7748/nm.2021.e1971
30. Landon E, Selk A. Understanding the experiences of obstetrics and gynaecology residents who take parental leave during training in Canada: a needs assessment. *J Obstet Gynaecol Can*. 2018;40(11):1453-1458. https://doi.org/10.1016/j.jogc.2018.04.001
31. Corvin J, Nabours B, Bularca S, Haile A. Approaching a new normal: lessons learned transitioning family education programming to a virtual environment. *Health Promot Pract*. Published online September 18, 2021. https://doi.org/10.1177/15248399211034814
32. Jantzer AM, Anderson J, Kuehl RA. Breastfeeding support in the workplace: the relationships among breastfeeding support, work-life balance, and job satisfaction. *J Hum Lact*. 2018;34(2):379-385. https://doi.org/10.1177/0890334417707956
33. Pumping milk. La Leche League International. Accessed August 29, 2022. https://www.llli.org/breastfeeding-info/pumping-milk/
34. van Dellen SA, Wisse B, Mobach MP, Albers CJ, Dijkstra A. A cross-sectional study of lactation room quality and Dutch working mothers' satisfaction, perceived ease of, and perceived support for breast milk expression at work. *Int Breastfeed J*. 2021;16(1):67. https://doi.org/10.1186/s13006-021-00415-y
35. van Dellen SA, Wisse B, Mobach MP. Effects of lactation room quality on working mothers' feelings and thoughts related to breastfeeding and work: a randomized controlled trial and a field experiment. *Int Breastfeed J*. 2022;17(1):57. https://doi.org/10.1186/s13006-022-00499-0
36. Shanafelt T, Ripp J, Trockel M. Understanding and addressing sources of anxiety among health care professionals during the COVID-19 pandemic. *JAMA*. 2020;323(21):2133-2134. https://doi.org/10.1001/jama.2020.5893
37. Ruppanner L, Moller S, Sayer L. Expensive childcare and short school days = lower maternal employment and more time in childcare? Evidence from the American time use survey. *Socius*. 2019;5:1-14. https://doi.org/10.1177/2378023119860277

Determining Clinical Judgment Among Emergency Nurses During a Complex Simulation

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Contribution to Emergency Nursing Practice

- Clinical judgment is essential to providing sound patient care. Clinical judgment requires the nurse to notice a patient's condition, interpret the condition, respond to the needs of the patient, and reflect on that response.
- The main finding of this paper is that emergency nurses often shift their focus to task completion rather than clinical judgment when under a typical workload of the emergency department.
- Recommendations for translating study findings into emergency clinical practice include evaluating clinical judgment using simulated experiences and providing targeted education to fill the identified gaps and maintain workload levels that allow the emergency nurse to implement its use.

Abstract

Introduction: Clinical judgment is imperative for the emergency nurse caring for the acutely ill patients often seen in the emergency department. Without optimal clinical judgment in the emergency department, patients are at risk of medical errors and a failure to rescue.

Methods: A descriptive observational approach using the Lasater Clinical Judgment Rubric evaluated nurses during a task that required recognition of clinical signs of deterioration and appropriate clinical care for simulated patients.

Results: A total of 18 practicing emergency nurses completed only 44.6% of the patient assessments leading to low levels of clinical judgment throughout the simulation. Nurses expressed 4 levels of clinical judgment: exemplary ($n = 1$), accomplishing

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($n = 6$), developing ($n = 9$), and beginning ($n = 2$). On average, nurses completed 69% of required tasks.

Discussion: Assessments were completed less than half the time, demonstrating a breakdown in the noticing phase of clinical judgment. The nurses shifted to task completion focus with minimal use of clinical judgment. As the nurses remained task oriented, several medication and medical errors were noted while caring for the simulated patients. Experience and education did not influence observed clinical judgment among the participants. Given the extreme demands placed on the emergency nurse, it cannot be assumed that nurses have developed or can use clinical judgment when caring for their patients. Time and training targeting clinical judgment are essential for emergency nurse development.

Key words: Emergency nurse; Clinical judgment; Failure to rescue; Patient outcome assessment

Introduction

Clinical judgment is essential in providing care for patients in the emergency department. It is developed through practice to gain experience and knowledge to provide continuous critical analysis of patient needs.[1] Tanner[2] describes this in nursing as "an interpretation of the patient's needs, concerns, or health problems to determine an action to be taken, modifications of standard approaches, or new approaches based on the patient's response to treatment" (p. 204). The emergency nurse must be able to apply evidence available in the situation to the patient's medical needs while detecting and interpreting the clinical indications of deterioration.[3] Developing effective clinical judgment improves the emergency nurse ability to deliver safe and effective patient care in the emergency department despite challenges such as staffing deficits, fatigue, and other barriers to quality care.[4,5] This development can occur in the emergency department through cumulative experience with the broad complaints seen and through targeted education to address high-risk, low-incidence patient presentations.

A lack of clinical judgment can lead to medical errors, estimated to be the third leading cause of death in the United States.[6] A medical error can occur with the omission or commission of an act, error in the execution of a task, or deviation from an approved process that may or may not cause patient harm.[6] Medical errors are often classified as either a medication error[7] or a failure or delay in rescuing a patient.[8] Failure to rescue has been linked to the concept of failing to recognize, failure to relay the information to the provider, and failure to react to the patient condition.[9] A failure to rescue can occur in any health care setting, including the emergency department. The condition of the patient when they present to the emergency department must be accurately assessed and reported to the provider, and appropriate care must be implemented in a timely manner. Effective clinical judgment by the emergency nurse is critical in the limitation of failure to rescue in the emergency department.

Emergency departments are complex environments with multiple patients, protocols, and demands that lead to an environment at high risk of medical errors and that requires a high level of clinical judgment. Clinical judgment assists the emergency nurse to develop skills in rapidly and accurately assessing and interpreting the clinical meaning of assessment findings. In a setting where patients are essentially unknown and acutely ill, it is challenging yet vital for the emergency nurse to be able to make meaning of assessment data and conclusions about the risk and need for intervention.[2] The high workloads typical to the emergency department limit the time needed for the emergency nurse to use clinical judgment, often leading to a focus on task completion rather than applying good clinical judgment[10] and then appropriately prioritizing care.

Simulation is useful for providing clinical experiences and targeted education in the development of clinical judgment[11] and nursing skills[12-15] in a realistic yet safe environment and as a means to evaluate the clinical judgment of the nurse.[11,16] Lasater[16] expanded upon the thinking like a nurse concept[2] to develop the Lasater Clinical Judgment Rubric (LCJR) to evaluate the stages of clinical judgment based on the translation of this model through high-fidelity experiences in the simulation setting. Clinical judgment was modeled using 4 aspects, noticing, interpreting, responding, and reflecting.[2] The effective use of simulation to evaluate clinical judgment in nursing education[11-13,17,18] should continue into the health care setting to evaluate and enhance the professional development of the emergency nurse.[19,20]

Understanding promotion of clinical judgment within the emergency department is critical to the safe and effective care of acutely ill patients. The use of clinical judgment, barriers to use, and patient outcomes can be explored effectively within a simulated environment. Thus, the objective of this pilot study was to use the LCJR to explore clinical judgment

within a sample of emergency nurses with varying levels of education and experience in a simulated learning environment representative of the emergency setting. It was hypothesized that more experienced nurses would demonstrate higher proficiency and clinical effectiveness and that a higher patient load would result in lower levels of observed clinical judgment. Pilot data collected in this study were used to calculate power analysis for future expansion of this work.

CONCEPTUAL FRAMEWORK

This study integrated a model of professional development with a method for assessing clinical performance to conceptualize the development of clinical judgment in emergency nurses. Benner's[21] novice to expert model describes the progression of a nurse through 5 levels of proficiency: novice, advanced beginner, competent, proficient, and expert. Successful progression requires the nurse to develop clinical judgment through the application of experience to current situations. According to this model, a nurse typically will achieve competency in their work after 2 to 3 years of experience and then continue to develop to the proficient level with additional experience. Benner[21] notes that not all nurses will achieve the expert level, although some will continue to progress to this level. The model posits that for a nurse to advance their level of competence, mentorship and guidance in the clinical setting are essential.[21] This model of progression emphasizes a development of critical thinking that may be viewed through a lens of cognitive activities described by Lasater.[16]

The LCJR was developed to assess the expression of clinical judgment in nursing students by examining the 4 stages of noticing, interpreting, responding, and reflection.[16] Although the true measurement of clinical judgment may be confounded by the context of care, the nurse's background, and the nurse-patient relationship,[2] observed clinical judgment also reflects the base level intersection of confidence, aptitude, skill, and experience[11] in the emergency nurse. Thus, to investigate expertise, the rubric was applied to active emergency nurses of various levels of experience within a simulated ED assignment.

Methods

STUDY DESIGN

This pilot study used a descriptive, observational approach to determine emergency nurse recognition of clinical cues of deterioration and appropriate clinical care for simulated patients in the simulation laboratory of the primary investigator's academic nursing institution. Emergency nurses were assigned either 3 or 4 simulated patients and evaluated through direct observation of the research team using the LCJR and an experiment-specific task checklist.

SETTING

The simulation environment consisted of 4 rooms equipped to appear like an emergency department with supply carts, telemetry monitoring, and hospital bed. The telemetry monitors were programmed to look like the monitors within the local hospital. A nurse's station was provided outside of the simulation rooms with telemetry for remote monitoring of the simulated patients. The environment is arranged around a central observation room that includes audiovisual monitoring equipment in each room and one-way glass for visual observation.

SIMULATION DEVELOPMENT

The simulation was designed with recommended modifications to the National League for Nursing Jeffries Simulation Framework to include 2 high-fidelity mannequins, 2 standardized patients,[22] and a standardized family member for the pediatric patient. Simulations were chosen from a bank of validated simulation experiences provided through the mannequin manufacturer.[23-25] The scenario and expected outcomes for each patient are described in Table 1. A random subsample of nurses with <5 years and all nurses with >5 years' experience ($n = 11$) received a fourth patient to determine whether the addition of a fourth patient produced an observable impact on emergency nurse performance.

SCENARIO

Individual participants reported to the simulation laboratory to complete the study. Before the start, each received a tour of the simulation space, orientation to the equipment, the standardized patients, and high-fidelity simulators. The scenario began with a nursing handoff report for the 3 current patients. The initial patients in the scenario included a pediatric patient being seen for an exacerbation of his asthma that was stable awaiting admission to the floor (patient 1), a young adult with a severe headache and elevated blood pressure with complete workup and awaiting medication administration (patient 2), and a new middle-aged patient with a complaint of recent-onset chest pain (patient 3) (see Table 1). All participants

TABLE 1
Description of the simulation scenario

Patient	Scenario	Expected actions
Pediatric simulator Mother at bedside: SP[25] Asthma	Asthma exacerbation Stable but wheezing slightly Awaiting bed availability on floor Vital signs: • BP: 109/74 mm Hg • HR: 126 bpm • RR: 26 cpm • O_2 saturation: 90% on 100% face mask	• Update provided to mother • Respiratory assessment of patient • Administration of methylPREDNIsolone
Young adult: SP[23] Headache, elevated BP, stroke during simulation	Headache Elevated BP Basic laboratory tests drawn Awaiting CT results Vital signs: • BP: 190/140 mm Hg • HR: 90s bpm • RR: 24 cpm • O_2 saturation: 94% on RA	• Update patient • Results of CT scan • Treat BP • Neurological assessment • Treat headache
Middle-aged patient simulator[24] New-onset chest pain	New-onset chest pain 7/10 pain No significant history No home medications Cardiac workup/EKG orders Vital signs: • BP: 90s/50s mmHg • HR: 130s bpm • RR: 20s cpm • O_2 saturation: 93% on RA	• Cardiovascular assessment • Obtain 12-lead EKG • Initiate peripheral IV access • Address patient BP • Treat patient chest pain • Address patient heart rate
Elderly patient: SP[25] Influenza-like symptoms	New patient Fever, cough, congestion Very needy Distracts staff Vital signs: • Real-time vital signs of SP • Assess patient complaint • Administer ordered medications • Provide for needs of patient	

BP, blood pressure; CT, computed tomography; SP, standardized patient; EKG, electrocardiogram; IV, intravenous; HR, heart rate; RR, respiratory rate; RA, room air.

received the same handoff report and were permitted to choose their patient prioritization. Of note, the second patient had a blood pressure of 190/140 mm Hg and the third patient had a blood pressure of 90/40 mm Hg, both requiring immediate intervention.

At the 25-minute mark of the simulation, 11 participants received a fourth patient experiencing influenza symptoms during the COVID-19 pandemic. Randomization was completed before participants arriving to the simulation using a digital randomization tool.[26] The fourth patient was added at random for participants having <5 years' experience. All members of the research team participating in the simulation were masked to condition until the 20th minute of the simulation. All nurses with >5 years' experience received the fourth patient to ensure meaningful workload in the scenario. At

TABLE 2
Scoring using Lasater model[16] of clinical judgment: exemplary, 4; accomplished, 3; developing, 2; and beginning, 1

Category of clinical judgment	1	2	3	4	5	6	7	8	9	10	11	12	13	14*	15*	16*	17*	18*
Noticing																		
Focused observation	2	3	3	3	3	2	3	2	2	2	2	2	2	3	2	4	2	2
Recognizing deviation	1	3	3	3	3	1	3	1	1	1	1	1	1	2	1	4	1	1
Information seeking	2	3	3	3	3	2	2	3	1	1	1	2	1	3	1	4	1	2
Interpreting																		
Prioritizing data	1	3	3	3	3	1	3	1	1	1	1	1	1	2	1	4	2	1
Making sense of data	2	3	3	2	3	1	3	1	2	2	2	2	1	2	1	4	2	2
Responding																		
Calm, confident manner	3	4	3	3	4	3	3	3	3	3	3	3	3	3	3	4	4	3
Clear communication	3	4	4	3	4	3	3	3	3	3	3	3	3	4	4	4	4	4
Well-planned intervention	1	3	3	3	4	1	3	2	1	1	1	1	1	2	1	4	1	1
Being skillful	3	3	3	3	4	2	3	2	3	2	3	3	2	4	4	4	4	3
Reflecting																		
Self-analysis	3	3	3	3	3	3	3	3	3	2	3	3	2	3	2	4	2	3
Commitment to improve	4	4	4	4	4	4	4	4	4	3	4	4	3	4	3	4	4	4
Total score	25	36	35	34	38	23	34	25	24	21	24	25	20	32	23	44	27	26

* The second group of experienced nurses (columns 14-18).

35 minutes, patient 2 developed a higher blood pressure, became nonverbal, and demonstrated weakness on the left side, necessitating lifesaving rescue. The simulation was stopped when the participant recognized the deterioration of patient 2 and called for additional support or at 10 minutes after the change in status. After the completion of the simulation, a plus-delta method debriefing session[27] was conducted by a trained member of the research team, allowing for self-assessment of both positive feedback and discussion of areas of improvement for each learner.

PARTICIPANTS

After approval of the institutional review board at the primary investigator's academic institution, emergency nurses were recruited from a community-based hospital in West Alabama. For inclusion in this pilot study, participants had to be a nurse actively practicing at the bedside in the emergency department with <10 years of experience and had completed the orientation process. Social media posts were shared to Facebook, Twitter, and Instagram accounts. Posts were made to ED group pages within the West Alabama region to increase recruitment. Participants were further recruited via word of mouth within the ED units by members of the research team and other participants for this pilot study. The sample size for this pilot study was deemed sufficient to accomplish proof of concept for this design given limitations arising from the funding available to compensate participants and the availability of emergency nurses local to the investigator's academic institution. Demographic data for the participants were collected for age, sex, years of experience in emergency department, and degree.

VARIABLES

Data Collection

Outcome measures included (1) completed nursing assessments, (2) stages of clinical judgment as scored by the LCJR,[16] and (3) completion of nursing tasks. Multimodal data were collected through direct observation of nurses engaged in the simulation, completion of the LCJR, an expected actions checklist, and discussion after simulation with participants and among the researchers to clarify any discrepancies. Informed consent and demographic data were obtained from all participants. Observation was

conducted by the lead investigator who is a certified EN and a second investigator trained in emergency nursing. The LCJR[16] was completed for each participant and discussed among the research team after each simulation. Although no experimenters were blind to study aims, analyses used objective performance criteria to reduce the impact of observer bias.

Clinical Judgment Assessment Description

Stages of clinical judgment for the simulation was measured using the LCJR (Table 2)[16] to produce a numerical value. Clinical judgment was scored by the first author while the participant completed the simulation then discussed with the participant during the debrief process. At the completion of the simulation, all members involved in conducting the simulation discussed the results and achieved consensus on the assigned score. Video recording of the simulation allowed for members of the team to review video to resolve any disagreements.

The standard scoring for the rubric evaluates nurses on 11 signs of clinical judgment on a scale of 1 (beginner), 2 (developing), 3 (proficient), and 4 (expert), corresponding to total score indicators of 11 as a beginner (minimum score), 22 as someone developing, 33 as the proficient accomplishment of the criteria, and 44 as exemplary performance (maximum score). Based on Benner's[21] novice to expert model suggesting that a nurse achieves competency after being on the job for 2 to 3 years, we would expect those participants with <5 years' experience to be progressing toward proficient status and those with >5 years' experience to perform as proficient practitioners with some progressing toward or achieving the expert level.

Task Completion

Task completion was measured using a checklist developed and scored collaboratively by the research team through direct observation of the simulation. The checklist encoded 17 critical actions required to achieve competent quality of care for all patients. Scores are reported as percent of activities completed owing to differences between participants in the number of patients they received. Accuracy of the checklist was verified by discussing actions with the participant during the debrief of the scenario after simulation completion. Patient assessments were verified through direct observation of each patient encounter and then discussed at the completion of the simulation during the debrief process.

ANALYSIS

All data were collected on paper, entered into spreadsheet software, and transferred to SPSS version 27 (IBM, Chicago, IL) software for analysis. Participants were placed in groups based on their years of experience and assignment to the fourth patient condition for *t* test comparison. Descriptive data were analyzed for the participants.

Results

Participants ($n = 18$) were primarily female (72%) with an average age of 31.1 years (range: 21-43) and an average emergency nurse experience of 3.5 years (range: 0.75-9). All nurses held an Associate Degree in Nursing (ADN) except for 3 nurses with >5 years' experience who held a Bachelor of Science in Nursing (BSN). See Table 3 for full demographic data. All demographic questions were asked using a free-response space to allow the participant to provide their personally preferred descriptors, if any. Demographic data were collected for the purpose of ensuring a sample representative of the workforce at the recruitment site. No significant differences were noted based on demographic data or the addition of the fourth patient relating to scores on the LCJR or task completion.

COMPLETED NURSING ASSESSMENTS

Nursing assessment completion was determined by direct observation of the nurse interacting with the simulated patient and then discussed during the debrief session. Nursing assessment was completed 44.6% of the time on the assigned patients with 5 participants completing all required assessments. Pediatric patient 1 was assessed by 8 of the 18 nurses (44%) with 5 completing the assessment who had <5 years' experience (38.4%) and 3 with >5 years' experience (60%). Patient 2 (severe headache with elevated blood pressure) was assessed by 5 nurses (27.8%) with 4 nurses having <5 years' experience (30.8%) and 1 with >5 years' experience (20%) completing this assessment. The patient with chest pain was assessed by 8 nurses with 6 nurses with <5 years' experience (46.2%) and 2 with >5 years' (40%) completing the assessment. Of the participants receiving the patient with influenza symptoms ($n = 11$), 8 nurses completed the assessment consisting of 3 <5 years' (50%) and all 5 with >5 years' experience (100%). Total assessments completed were 0 ($n = 5$), 1 ($n = 6$), 2 ($n = 1$), 3 ($n = 3$), and 4 ($n = 3$), with 5 nurses assessing all patients.

TABLE 3
Demographics

Participant	Age	Sex	Years of experience	Degree
1	21	F	0.75	ADN
2	22	F	1	ADN
3	28	F	1	ADN
4	43	F	3	ADN
5	33	F	2	ADN
6	35	F	0.75	ADN
7	35	M	2.5	ADN
8	24	F	1	ADN
9	26	M	4	ADN
10	27	F	2	ADN
11	29	F	2	ADN
12	28	M	3	ADN
13	28	F	5	ADN
Mean	29.2		2.1	
Nurses with <5-y experience above, >5-y experience below				
14	40	F	6	BSN
15	39	F	9	BSN
16	37	F	8	ADN
17	33	M	7	BSN
18	32	M	5	ADN
Mean	36.2		7	
Mean total	31.1		3.5	

M, male; F, female; ADN, Associate Degree in Nursing; BSN, Bachelor of Science in Nursing.

CLINICAL JUDGMENT SCORES ACHIEVED

Total clinical judgment scores observed by the research team for the simulation ranged from 20 to 44. Average scores for the nurses with <5 years' experience were 28 (SD = 6.3) and for the nurses with >5 years' experience 30.4 (SD = 8.3). The scoring for participants during the simulation is presented in Table 2. One participant completed the simulation with an exemplary score, 6 achieved a score of accomplishing the simulation, 9 scored as developing, and 2 scored in the beginning range.

Noticing

Average scores in the noticing category ranged from 1.3 to 4 across all participants. The mean score for noticing was 2.1 with a mean score of 2.1 for nurses with <5 years' experience and 2.2 for nurses having >5 years' experience. Most nurses (11 of 18) scored as beginners in the category of recognizing deviation. When caring for the patient presenting with chest pain, only 8 nurses appeared to notice the hypotensive state of the patient before treating the patient with a nitrate.

Interpreting

Average scores for the interpreting category range from 1 to 4. The average across the participants was 1.97, with scores of 1.92 for the nurses having <5 years' experience and 2.1 for those having >5 years. Eight of the nurses with <5 years' experience and 2 with >5 years scored as beginners in the prioritizing data category of interpreting. When caring for the patient presenting with chest pain, only 8 of the 18 nurses addressed the hypotensive state of the patient during treatment indicating a lack of interpreting the patient need before treatment.

TABLE 4
Expected action completion percentage

	Expected actions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Pediatric patient	Update mother	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Assessment		X	X		X		X					X		X		X		X
	Medication						X	X	X			X			X	X	X	X	X
Migraine patient	Update patient	X	X		X		X		X	X	X	X	X	X	X	X	X	X	X
	Assessment		X	X		X		X									X		
	Review CT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Treat blood pressure		X	X	X	X		X	X	X		X	X	X	X	X	X		X
	Treat headache	X			X		X		X				X	X				X	
Chest pain patient	Assessment		X	X		X		X		X		X			X		X		
	EKG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	IV access	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Treat blood pressure		X	X	X	X		X					X				X		
	Treat chest pain	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Address heart rate	X	X			X	X	X		X	X			X		X	X	X	X
Influenza symptoms	Assessment		X	NA	NA	NA	NA	X			NA	NA	NA	X	X	X	X	X	X
	Medication	X		NA	NA	NA	NA	X		X	NA	NA	NA		X		X		
	Needs	X	X	NA	NA	NA	NA		X	X	NA	NA	NA	X	X	X	X	X	X
Percent		59	82	71	64	79	64	82	59	65	59	64	71	65	76	65	88	65	71

CT, computed tomography; EKG, electrocardiogram; IV, intravenous.

Responding

Average scores for the responding category range from 2.25 to 4. The average across the participants was 2.9, with scores of 2.8 for the nurses having <5 years' experience and 3.3 for those with >5. Ten participants, 7 with <5 years and 3 with >5 years, scored as beginners in the well-planned intervention category of responding. In responding to the hypotensive state seen in the patient presenting with chest pain, only 8 nurses treated the hypotension in this patient.

Reflecting

Average scores for the reflecting category range from 2.5 to 4. The average across the participants was 3.3, with scores of 3.34 for the nurse having <5 years' experience and 3.3 for the nurse having >5 years. Four participants scored as developing in this category with none scoring as beginners. In reflecting upon the care of the patient presenting with chest pain, 10 nurses did not treat the hypotension in the patient even after giving the nitrate and subsequent drop in blood pressure related to the treatment.

COMPLETED NURSING TASKS

Patient care was measured through the completion percentage of the "expected actions" listed in Table 4. One nurse with >5 years' experience completed almost all the expected actions for all patients. Task completion percentage ranged from 59% to 88% of the task with an average of 69% of the tasks being successfully completed. Among the nurses with <5 years' experience, 68% of tasks were completed whereas 73% of the expected tasks were completed by those nurses with >5. Among the nurses with a BSN, 68.7% of the tasks were completed whereas the ADN nurses accomplished 69.5% of the tasks. Task completion for each patient can be found in Table 5.

Discussion

The purpose of this study was to investigate clinical judgment in a sample of emergency nurses with varying levels of education and experience as they engaged a complex quality of care task in a simulated learning environment representative of the emergency setting. In response to higher proficiency and

clinical effectiveness, the addition of the fourth patient, increasing the patient ratio to 4:1, was expected to increase the workload for the nurse participants and affect clinical effectiveness, but it did not have a significant effect on the outcomes. It is hypothesized by the research team that this increased patient load did not affect the participants as expected owing to the patient ratio being lower than the nurses experience on their unit, familiarizing them with incomplete execution of standard-of-care activities.

To investigate lower levels of observed clinical judgment, we used a standard simulation in this study with outcome measures including (1) complete nursing assessments, (2) completion of nursing tasks, and (3) clinical judgment stage as scored by the LCJR. The simulation was representative of a typical assignment in the emergency setting. Results of the analysis demonstrate that participant nurses completed an average of 44.6% of expected nursing assessments and 69% of expected tasks in the simulation. Participants with <5 years of experience scored an average of 28.0 (SD = 6.3) and nurses with >5 years' experience scored an average of 30.4 (SD = 8.3) on the LCJR. Of the 18 participants, most performed in the developing range or below. Specifically of concern, based on the framework presented by Burke et al[9] of recognizing, relaying, and reacting to the condition of patient 3 who was experiencing chest pain, a failure to rescue occurred in 11 participants. Most of the participants failed to recognize or treat the low blood pressure before administering the nitrate.

Overall, our findings indicate that a normally assigned patient load was not associated with expected differences in level of clinical judgment given nurse education and experience, but gravely, this was caused by pervasive deficits in all areas of the clinical judgment framework described by Lasater[11] and Tanner.[2]

COMPLETED NURSING ASSESSMENTS

An appropriately focused assessment (noticing) is fundamental to effective clinical judgment[28] and is the basis for making quality decisions involving patient care.[29] In this study, only 44.6% of the required assessments were completed with only 5 nurses completing assessment on all their simulated patients. A nurse is unable to notice, interpret, respond appropriately, and reflect on patient care[2] without an assessment. This lack of assessment and ability to practice sound clinical reasoning leads to failure to rescue[5] as seen with both patient 3 (chest pain) and patient 2 (headache and elevated blood pressure).

Clinical judgment[2,9] remains vital in reducing failure to rescue and medical and nursing errors. Competent patient assessment is critical for all nurses[30] and must be completed on all emergency patients; however, assessment is easily missed when the emergency nurse is performing in crisis mode.[31] It is possible that this problem originates in the initial training of nurses. Hughes et al[32] report that 44% of nursing faculty in the study reported student performances that received failing grades yet nevertheless reported passing those students. This was reported both as a function of lack of time in the clinical area to fully assess students and of coercive or disruptive student behaviors. This lack of preparation of the new graduate nurse places a heavy burden on the clinical agency to develop new graduate nurses to a level of fundamental competence in the complex environment of the emergency department.

CLINICAL JUDGMENT

Participants of this study were hypothesized to fall into the beginning, developing, accomplished, and exemplary levels of Benner's novice to expert model[21] based on their experience in nursing. In this study, participants scored below their expected level of clinical judgment with a higher-than-expected percentage of participants scoring as beginning within each component of the LCJR given the experience of the sample.

This simulation demonstrated a breakdown in the noticing phase of clinical judgment represented best by the low completion rate of patient assessments. When caring for patient 3 experiencing chest pain, only 44% (6 nurses with <5 years' and 2 nurses with >5 years) noticed the low blood pressure during their assessment. Doing somewhat better at interpreting, most knew that the standard treatment for patients experiencing chest pain is to administer nitrates and selected analgesia,[33] which often causes a decrease in blood pressure in patients who are hypotensive.[34,35] The need to treat the blood pressure before administering the nitroglycerin was noted by 6 of the nurses having <5 years' experience and 3 of the nurses with 5 to 10 years' experience. For responding, 5 nurses with <5 years' and 1 nurse with 5 to 10 years' experience addressed the blood pressure by obtaining an order for a fluid bolus before the administration of the nitroglycerin. The nurse who did not treat the blood pressure before administering nitroglycerin noted the need to intervene after giving the medication and responded by obtaining an order for a fluid bolus after. The eighth nurse who noticed the low blood pressure decided not to administer the medication at all

TABLE 5
Task completion for simulation results

Patient	Scenario	Completion
Pediatric simulator Mother at bedside: SP Asthma	Asthma exacerbation Stable but wheezing slightly Awaiting bed availability on floor. Vital signs: • BP: 109/74 mm Hg • HR: 126 bpm • RR: 26 cpm • O_2 saturation: 9% on 100% face mask	• All updated the mother. • 8 completed the assessment. • 9 administered the ordered medication.
Young adult: SP headache, elevated BP, stroke during simulation	Headache Elevated BP Basic laboratory tests drawn Awaiting CT results Vital signs: • BP: 190/140 mm Hg • HR: 90s bpm • RR: 24 cpm • O_2 saturation: 94% on RA	• 15 nurses updated the patient. • All reviewed the CT results. • 14 treated the high BP, and 7 treated the headache. • Of those treating the BP, only 6 nurses with less than 5-y experience and 3 nurses with more than 5-y experience treated the BP within the first 10 min of the simulation. • A neurologic assessment was completed by 3 participants across both groups. • 1 nurse performed a National Institutes of Health stroke scale assessment.
Middle-aged patient simulator New-onset chest pain	New-onset chest pain 7/10 pain No significant history No home medications Cardiac workup/EKG orders Vital signs: • BP: 90s/50s mm Hg • HR: 130s bpm • RR: 20s com • O_2 saturation: 93% on RA	• 8 participants completed the assessment. • 7 treated the low BP. • 12 addressed the high heart rate. • All participants started the IV, obtained an EKG, and provided treatment for the chest pain. • 7 nurses with <5 y and 4 nurses with >5 y gave the patient with chest pain nitroglycerin without correcting the BP (90/50). • With the administration of the first nitroglycerin the BP was lowered to 84/46, yet 4 nurses (3 < 5 y, 1 > 5 y) gave the second nitroglycerin and metoprolol without correcting the BP despite the decrease related to treatment. • 1 nurse (<5 y) administered morphine to the patient with chest pain without an order for the medication.
Elderly patient – SP Influenza-like symptoms	New patient Fever, cough, congestion Very needy Distracts staff Real-time vital signs of SP	• 8 completed the assessment. • 5 provided the ordered medication. • 10 provided for the patient's needs.

SP, standardized patient; EKG, electrocardiogram; BP, blood pressure; HR, heart rate; RR, respiratory rate; RA, room air.

and moved to the next patient without effective treatment of the chest pain.

The lack of noticing the low blood pressure by the nurses led to the inability to engage in successful interpreting of the abnormal parameter, also leading to inappropriate responding to the patient crisis. Without completing an assessment, 7 less experienced and 3 more experienced nurses treated the patient and administered the nitroglycerin. A lack of reflecting through reassessment of the patient led 4 nurses to give a second nitroglycerin and metoprolol, resulting in further hypotension. One nurse proceeded to erroneously administer morphine to the patient without an order for the medication. A shift in practice occurred away from clinical judgment while caring for this patient to incorrect task performance. Across participants, there was a concerning pattern of failure to assess the patient condition and inconsistencies in application of assessment data.

Experience and expertise in nursing are often seen as the same but should not be used interchangeably.[36] Experience did not translate to higher levels of clinical judgment for this observed simulation when assessed using the LCJR.[11] Based on Benner's[21] novice to expert model, it was expected that the more experienced nurses would have all demonstrated proficient clinical competence levels, yet 80% of the more experienced participants scored in the developing stage. This is corroborated by previous research that reported that in a medical-surgical unit even the experienced nurses demonstrated poor clinical judgment.[37] Of concern in this area is the finding from our study that when faced with the complex workload typical of an ED assignment, the focus changed from using clinical reasoning to task completion, leading to errors in treatment and failure to rescue.[38-40]

The question remains of the importance of experience in clinical judgment beyond competence as a practitioner.[37] Fero et al[41] examined the performance of nurses' clinical judgment and reported no difference between new graduate nurses and those with <10 years' experience. Clinical judgment skills were not influenced by years of experience in intensive care unit or medical-surgical nurses.[37] Further research is needed to examine the relationship between years of experience and clinical judgment specific to emergency nurses.

The development of nursing expertise is influenced by education in theory and practical knowledge,[42] and professional values[43] that can be applied to actual situations but no difference in clinical judgment was seen between ADN- and BSN-prepared nurses. Beyond the initial education of a nurse, mentorship and training are critical in the development of clinical judgment.[21,44,45] Given the high rate of turnover currently being experienced in nursing,[46] the ability to place new graduates with experienced nurses to develop clinical judgment can be difficult.

COMPLETED NURSING TASKS

Nurse workload has been associated with negative patient outcomes, often based on the omission of care needed for a patient.[47] In our observed simulation, we found indications that given the typical workload of the emergency department, nurses tend to become a "machine," rather than applying sound clinical judgment,[38] which leads to missing vital steps in patient care. A nurse who feels overloaded at work is more likely to have an error in patient care[4] as attention shifts to task completion rather than the application of clinical judgment and reasoning to the situation.[40] The participant that missed the stroke stated, "[I was] overwhelmed by the simulation. My focus was on the chest-pain patient, because they needed the most things done." Such a focus on task completion during multitasking has shown to be a risk to patient safety.[39]

A focus on task completion rather than assessment can result in even typical workloads contributing to failure to rescue. This was noted specifically in the care of our simulated patient with chest pain where lack of assessment, lack of interpretation, and lack of response created a situation in which the simulated patient deteriorated. Failure to rescue has previously been explained as being caused by inattentional blindness or the inability to notice a change, because it is unexpected even among expert practitioners.[48,49] Failure to rescue has been linked to the workload of emergency nurses[50] and is of great concern in the emergency department. In this study, we assumed that experience improves clinical judgment as a function of exposure to paradigm cases as described by Benner,[21] but this is not what was observed. Again, the causes of the repeated failure to rescue in this study seem to be linked less to the workload and more to a lack of assessment and interpretive skills.

Limitations

The study had important limitations. This was a self-selecting group of emergency nurses from the 1 regional medical center, limited to a small sample, academic preparation lacking diversity, and a single work environment. Although this sample was representative of nurses employed at this hospital, it did not provide a sample with adequate size and diversity to determine whether clinical judgment or task completion was influenced by the education level of the participants. Although not generalizable to all

emergency nurses, these results contribute to a growing body of knowledge emphasizing the importance of emergency nurse workload and training on patient outcomes.

Implications for Emergency Nurses

Emergency nurses are routinely under a heavy workload, simultaneously caring for multiple patients, including some who are critically ill. The observed clinical judgment during this simulation was much lower than expected. It cannot be assumed that years of experience in the emergency setting alone translate to higher levels of clinical judgment. Educators and unit leadership might better align the resources of the department and hospital to support the success of the emergency nurses via continuing education, simulated practice, and evaluation of clinical judgment rather than isolated tasks or "skills" to provide for patient needs. Surge policies and means to decompress the emergency department are critical in allowing the emergency nurse to be able to take the time to assess and manage each patient rather than forcing a focus on task completion.

Conclusions

Emergency nurses are constantly under a heavy workload, simultaneously caring for multiple critically ill patients. The observed clinical judgment during this simulation was much lower than expected with even the experienced nurses scoring in the developing stage of LCJR. It cannot be assumed that years of experience alone translates to higher levels of clinical judgment in the emergency department. Given the cognitive and practice demands placed on the emergency nurse, it also cannot be assumed that all nurses have clinical judgment capacity related to their experience or educational levels when caring for their patients. Along with continuing education, the priority of unit leadership might be to limit nursing workload, allowing the emergency nurse to develop and use sound clinical judgment rather than forcing a focus on task completion.

Education for the emergency nurse also must focus on developing and enhancing clinical judgment. This means that unit educators should continue to evaluate nurses with simulation-based learning experiences to identify gaps in clinical reasoning after their formal education completes and remediate appropriately. These authors recommend that further research be conducted using larger samples and multiple sites to determine whether our findings are representative of contemporary nursing practice in more than one setting.

Data, Code, and Research Materials Availability

Ethical approval from the University of Alabama (IRB #20-12-4144).

Author Disclosures

Conflicts of interest: none to report.

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REFERENCES

1. Kienle GS, Kiene H. Clinical judgement and the medical profession. *J Eval Clin Pract*. 2011;17(4):621-627. https://doi.org/10.1111/j.1365-2753.2010.01560.x
2. Tanner CA. Thinking like a nurse: a research-based model of clinical judgment in nursing. *J Nurs Educ*. 2006;45(6):204-211. https://doi.org/10.3928/01484834-20060601-04
3. Towfik AF, Mostafa GM, Mahfouz HH, Mohamed SA. Effects of self-learning package about critical thinking on intern-nurses' knowledge, disposition and skills. *International Egyptian Journal of Nursing Sciences and Research*. 2022;2(2):548-567. https://doi.org/10.21608/EJNSR.2022.212570
4. Roth C, Wieck KL, Fountain R, Haas BK. Hospital nurses' perceptions of human factors contributing to nursing errors. *J Nurs Admin*. 2015;45(5):263-269. https://doi.org/10.1097/NNA.0000000000000196
5. Kiymaz D, Koc Z. Identification of factors which affect the tendency towards and attitudes of emergency unit nurses to make medical errors. *J Clin Nurs*. 2018;27(5-6):1160-1169. https://doi.org/10.1111/jocn.14148
6. Makary MA, Daniel M. Medical error-the third leading cause of death in the US. *BMJ*. 2016;353:i2139. https://doi.org/10.1136/bmj.i2139
7. Shitu Z, Aung MMT, Tuan Kamauzaman TH, Ab Rahman AF. Prevalence and characteristics of medication errors at an emergency department of a teaching hospital in Malaysia. *BMC Health Serv Res*. 2020;20(1):56. https://doi.org/10.1186/s12913-020-4921-4
8. Chung JJ, Earl-Royal EC, Delgado MK, et al. Where we fail: location and timing of failure to rescue in trauma. *Ann M Surg*. 2017;83(3):250-256.
9. Burke JR, Downey C, Almoudaris AM. Failure to rescue deteriorating patients: A systematic review of root causes and improvement strategies. *J Patient Saf*. 2022;18(1):e140-e155. https://doi.org/10.1097/PTS.0000000000000720

10. Gorgich EA, Barfroshan S, Ghoreishi G, Yaghoobi M. Investigating the causes of medication errors and strategies to prevention of them from nurses and nursing student viewpoint. *Glob J Health Sci*. 2016;8(8):54448. https://doi.org/10.5539/gjhs.v8n8p220
11. Lasater K. High-fidelity simulation and the development of clinical judgment: students' experiences. *J Nurs Educ*. 2007;46(6):269-276. https://doi.org/10.3928/01484834-20070601-06
12. Campbell D, Clark PC. An initiative using simulation to aid in retention of advanced cardiac life support knowledge and skills in an emergency department nurse residency program. *Dimens Crit Care Nurs*. 2020;39(1):33-38. https://doi.org/10.1097/DCC.0000000000000394
13. Ito K, Sugimoto M, Tsunoyama T, et al. A trauma patient care simulation using extended reality technology in the hybrid emergency room system. *J Trauma Acute Care Surg*. 2021;90(5):e108-e112. https://doi.org/10.1097/TA.0000000000003086
14. Purdy E, Borchert L, El-Bitar A, Isaacson W, Bills L, Brazil V. Taking simulation out of its "safe container"-exploring the bidirectional impacts of psychological safety and simulation in an emergency department. *Adv Simul (Lond)*. 2022;7(1):5. https://doi.org/10.1186/s41077-022-00201-8
15. Rode J, Callihan M, Barnes B. Assessing the value of large-group simulation in the classroom. *Clin Simul Nurs*. 2016;12(7):251-259. https://doi.org/10.1016/j.ecns.2016.02.012
16. Lasater K. Clinical judgment development: using simulation to create an assessment rubric. *J Nurs Educ*. 2007;46(11):496-503. https://doi.org/10.3928/01484834-20071101-04
17. Salameh B, Ayed A, Kassabry M, Lasater K. Effects of a complex case study and high-fidelity simulation on mechanical ventilation on knowledge and clinical judgment of undergraduate nursing students. *Nurse Educ*. 2021;46(4):E64-E69. https://doi.org/10.1097/NNE.0000000000000938
18. Goldsworthy S, Muir N, Baron S, et al. The impact of virtual simulation on the recognition and response to the rapidly deteriorating patient among undergraduate nursing students. *Nurse Educ Today*. 2022;110:105264. https://doi.org/10.1016/j.nedt.2021.105264
19. 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
20. Campbell D, Fetters L, Getzinger J, Perko A, Slater S. A clinical nurse specialist-driven project to improve emergency department triage accuracy. *Clin Nurse Spec*. 2022;36(1):45-51. https://doi.org/10.1097/NUR.0000000000000641
21. Benner P. From novice to expert. *Am J Nurs*. 1982;82(3):402-407.
22. Cowperthwait A, NLN. NLN/Jeffries simulation framework for simulated participant methodology. *Clin Simul Nurs*. 2020;42:12-21. https://doi.org/10.1016/j.ecns.2019.12.009
23. Beyer B, Curtis KL. Cerebral vascular accident, care of the patient with an acute. ECS Program for Nursing Curriculum Integration (PNCI). Accessed April 4, 2022. https://www.caehealthcare.com/patient-simulation/learning-modules/pnci-program-for-nursing-curriculum-integration/
24. Kindred C. Chest pain management of the medical-surgical patient. ECS Program for Nursing Curriculum Integration (PNCI). Accessed April 4, 2022. 2005. https://www.caehealthcare.com/patient-simulation/learning-modules/pnci-program-for-nursing-curriculum-integration/
25. CAEHealthcare. MUSE. Accessed April 4, 2022. https://caehealthcare.com
26. Research randomizer (version 4). Accessed November 1, 2022. http://www.randomizer.org/
27. Kainth R. Dynamic Plus-Delta: an agile debriefing approach centred around variable participant, faculty and contextual factors. *Adv Simul (Lond)*. 2021;6(1):35. https://doi.org/10.1186/s41077-021-00185-x
28. Brunt BA. Models, measurement, and strategies in developing critical-thinking skills. *J Contin Educ Nurs*. 2005;36(6):255-262. https://doi.org/10.3928/0022-0124-20051101-05
29. Nibbelink CW, Brewer BB. Decision-making in nursing practice: an integrative literature review. *J Clin Nurs*. 2018;27(5-6):917-928. https://doi.org/10.1111/jocn.14151
30. Jarvis C, Eckhardt A. *Physical Examination and Health Assessment*. 8th ed. Elsevier; 2020.
31. Vasli P, Dehghan-Nayeri N. Emergency nurses' experience of crisis: a qualitative study. *Jpn J Nurs Sci*. 2016;13(1):55-64. https://doi.org/10.1111/jjns.12086
32. Hughes LJ, Mitchell ML, Johnston ANB. Just how bad does it have to be? Industry and academic assessors' experiences of failing to fail–A descriptive study. *Nurse Educ Today*. 2019;76:206-215. https://doi.org/10.1016/j.nedt.2019.02.011
33. Lu L, Liu M, Sun R, Zheng Y, Zhang P. Myocardial infarction: symptoms and treatments. *Cell Biochem Biophys*. 2015;72(3):865-867. https://doi.org/10.1007/s12013-015-0553-4
34. Vallerand AH, Sanoski CA. *Davis's Drug Guide for Nurses*. 17th ed. F. A. Davis; 2021.
35. Lee PM, Gerriets V. *Nitrates*. StatPearls Publishing; 2022.
36. McHugh MD, Lake ET. Understanding clinical expertise: nurse education, experience, and the hospital context. *Res Nurs Health*. 2010;33(4):276-287. https://doi.org/10.1002/nur.20388
37. Ali-Abadi T, Babamohamadi H, Nobahar M. Critical thinking skills in intensive care and medical-surgical nurses and their explaining factors. *Nurse Educ Pract*. 2020;45:102783. https://doi.org/10.1016/j.nepr.2020.102783
38. Wolf LA, Dela AM, Perhats C, Clark PR, Edwards C, Frankenberger WD. Traumatic stress in emergency nurses: does your work environment feel like a war zone? *Int Emerg Nurs*. 2020;52:100895. https://doi.org/10.1016/j.ienj.2020.100895
39. Douglas HE, Raban MZ, Walter SR, Westbrook JI. Improving our understanding of multi-tasking in healthcare: drawing together the cognitive psychology and healthcare literature. *Appl Ergon*. 2017;59(Pt A):45-55. https://doi.org/10.1016/j.apergo.2016.08.021
40. Cornell P, Riordan M, Townsend-Gervis M, Mobley R. Barriers to critical thinking: workflow interruptions and task switching among nurses. *J Nurs Admin*. 2011;41(10):407-414. https://doi.org/10.1097/NNA.0b013e31822edd42

41. Fero LJ, Witsberger CM, Wesmiller SW, Zullo TG, Hoffman LA. Critical thinking ability of new graduate and experienced nurses. *J Adv Nurs*. 2009;65(1):139-148. https://doi.org/10.1111/j.1365-2648.2008.04834.x
42. Dreyfus H, Dreyfus S. The relationship of theory and practice in the acquisition of skill. In: Benner P, Tanner C, Chesla C, eds. Expertise in Nursing Practice: Caring, Clinical Judgment, and Ethics. Springer; 1-24.
43. Kubsch S, Hansen G, Huyser-Eatwell V. Professional values: the case for RN-BSN completion education. *J Contin Educ Nurs*. 2008;39(8):375-384. https://doi.org/10.3928/00220124-20080801-05
44. Jessee MA. Pursuing improvement in clinical reasoning: the integrated clinical education theory. *J Nurs Educ*. 2018;57(1):7-13. https://doi.org/10.3928/01484834-20180102-03
45. Jessee MA, Tanner CA. Pursuing improvement in clinical reasoning: development of the clinical coaching interactions inventory. *J Nurs Educ*. 2016;55(9):495-504. https://doi.org/10.3928/01484834-20160816-03
46. 2022 NSI National Health Care Retention and RN Staffing Report. NSI Nursing Solutions. Accessed March 18, 2022. https://www.nsinursingsolutions.com/Documents/Library/NSI_National_Health_Care_Retention_Report.pdf
47. Griffiths P, Saville C, Ball J, et al. Nursing workload, nurse staffing methodologies and tools: a systematic scoping review and discussion. *Int J Nurs Stud*. 2020;103:103487. https://doi.org/10.1016/j.ijnurstu.2019.103487
48. Drew T, Vo ML, Wolfe JM. The invisible gorilla strikes again: sustained inattentional blindness in expert observers. *Psychol Sci*. 2013;24(9):1848-1853. https://doi.org/10.1177/0956797613479386
49. Jones A, Johnstone MJ. Inattentional blindness and failures to rescue the deteriorating patient in critical care, emergency and perioperative settings: four case scenarios. *Aust Crit Care*. 2017;30(4):219-223. https://doi.org/10.1016/j.aucc.2016.09.005
50. 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

Using Comic-Based Concussion Discharge Instructions to Address Caregiver Health Literacy in the Emergency Department

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Contribution to Emergency Nursing Practice

- Comic-based discharge instructions may be more effective than the traditional text-based discharge instructions in improving the caregivers' recall of concussion discharge instructions.
- Clinicians are encouraged to explore a variety of resources, such as infographics, to maximize the delivery of high-quality discharge instructions for families of varying health literacy.
- Identifying social determinants of health and addressing health literacy is critical to effective delivery of discharge instructions to families in the emergency department.

Abstract

Introduction: This study compared the effectiveness of comic-based with text-based concussion discharge instructions on improving caregiver knowledge. This study also examined the role of social determinants of health on comprehension instructions.

Methods: This was an observational study of the caregivers of pediatric concussion patients. Caregivers' health literacy and demographics related socioeconomic factors were obtained. After the patients' evaluation in the emergency department, caregivers were given printed comic-based concussion discharge instructions. Caregivers were contacted 3 days later and tested overall knowledge of discharge instructions' content. These survey results were compared with historical controls who received text-based instructions.

Results: A total of 120 participants were recruited, and 86 participants completed follow-up procedures. When comparing the caregivers' recall ability with a comic-based vs traditional text-based instructions, caregivers with comic-based content were more likely to accurately recall overall discharge instructions (77.5% vs 44%, $P < .001$), particularly physical rest and activity restrictions (86.5% vs 63%, $P < .001$). Caregivers also were less likely to misidentify a red flag symptom (7.5% vs 19%, $P < .04$). Comic-based instructions did not increase recall of cognitive rest instructions or postconcussive symptoms. When examining demographic factors, caregivers who could not recall 3 postconcussive symptoms were more likely to be Hispanic or Black, less likely to be college educated, and more likely to have low health literacy.

Discussion: Novel methods should be explored to adequately prepare caregivers for continuing postconcussive care at home. Discharge instructions must be tailored to address caregivers' baseline health literacy and how caregivers digest and retain information.

Key words: Comic; Concussion; Discharge instructions; Health literacy; Pediatric emergency department

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Introduction

It is estimated that nearly 2 million cases of pediatric mild traumatic brain injury (mTBI) (also known as concussion) occur annually in pediatric patients at the age of ≤18 years

in the United States.[1,2] The initial acute care visit (eg, emergency department or urgent care) is often the only point of care for pediatric patients with mTBI. Traditionally, management of suspected mTBI in the acute care setting has primarily focused on identifying patients at risk of intracranial injury and passively recommending symptom monitoring, activity restriction, and follow-up for patients with prolonged symptoms.[2-5] Patients and families then must independently navigate the health care and school systems to chart their path to recovery from injury. However, this approach has led to disparities in mTBI care and clinical outcomes, with some studies demonstrating that <50% of youth initially seen in the emergency department seek follow-up care, regardless of specialty.[6,7]

Keeping in mind that the initial acute care visit may be the only point-of-care contact for a pediatric patient with mTBI, it is prudent that content management and delivery are adherent to the Centers for Disease Control and Prevention (CDC) best practices to optimize addressing these disparities. CDC recommends that health care providers give patients and their families with comprehensive discharge instructions about common postconcussive symptoms and symptoms indicative of more severe injury, colloquially known as "red flag" symptoms within the medical community.[8] In the ED setting, pertinent information is typically conveyed by physicians and nurses via verbal communication with a printed set of text-based discharge instructions for the family. Evidenced-based guidelines for discharge instructions allow physicians to maximize the effectiveness of their communication with patients and their families regarding their diagnosis. However, regardless of the accuracy and quality of the information contained within discharge instructions, their effectiveness may be limited by method of delivery, the health literacy of those receiving instructions, or the socioeconomic disparities affecting those receiving instructions.[9]

Several studies have demonstrated that approximately one-half of all parents who present to emergency departments have a low baseline health literacy.[10] Unsurprisingly, this also affects parents' ability to retain information and recall the appropriate interventions for overall recovery and worsening conditions during the discharge process.[11,12] Despite current best efforts to improve the process, our recent study of caregivers of patients with mTBI demonstrated that nearly 20% of caregivers given text-based discharge instructions failed to identify at least 3 common postconcussive symptoms, and 19% falsely identified a red flag symptom (eg, facial droop, slurred speech, seizure, coma) as a common postconcussive symptom.[13] Given these findings, it is imperative to consider alternative ways to deliver discharge instructions to address low health literacy in caregivers and explore any potential variables that contribute to poor retention.

Several studies have explored the feasibility of novel and alternative methods for delivering discharge content that is easily digestible for families.[14-20] However, very few studies to date have assessed the effectiveness of these alternative methods as adequate tools to directly address the problem of information delivery and retention to low health literacy populations, especially caregivers in the context of pediatric concussions. The purpose of this study was to evaluate the effectiveness of comic-based concussion discharge instructions compared with traditional text format discharge instructions in improving caregivers' knowledge of pediatric mTBI in relation to their child's current condition, recovery, and ability to successfully recall common and "red flag" concussion symptoms. This study also analyzed any additional demographic factors (such as race/ethnicity, sex/gender, education, and level of health literacy) that may have been associated in the comprehension of concussion discharge instructions to determine whether comic-based discharge instructions are more or less effective as a vehicle for discharge delivery in families with potential health care disparities.

Methods

This was an observational study of the parents or guardians of patients treated in the emergency department for mTBI. The study occurred within the emergency department of Children's Wisconsin, a tertiary care center. Participants included in the study were caregivers of patients aged 6 to18 years who were evaluated and diagnosed as having mTBI, as defined by the criteria set in the Acute Concussion Evaluation form (which has been endorsed by the CDC as a standardized tool to evaluate for mTBI). Exclusion criteria included patients being admitted, non-English speaking families, and patients without a legal guardian present. After informed consent, the caregivers' baseline health literacy was assessed by administering the Newest Vital Sign (NVS), a validated tool for assessing health literacy. NVS scores of 0 to 3 of 6 were considered low health literacy, and scores of 4 to 6 were considered adequate health literacy. After this assessment, caregivers also were asked to complete a demographic survey that evaluated different socioeconomic factors. After the survey was completed, caregivers were finally given a handout of concussion discharge instructions in a comic format (see Figure 1). Verbal instruction was given as part of usual care at the time of discharge. Research assistants observed the ED discharge instruction process, and key points were recorded using a discharge content checklist.

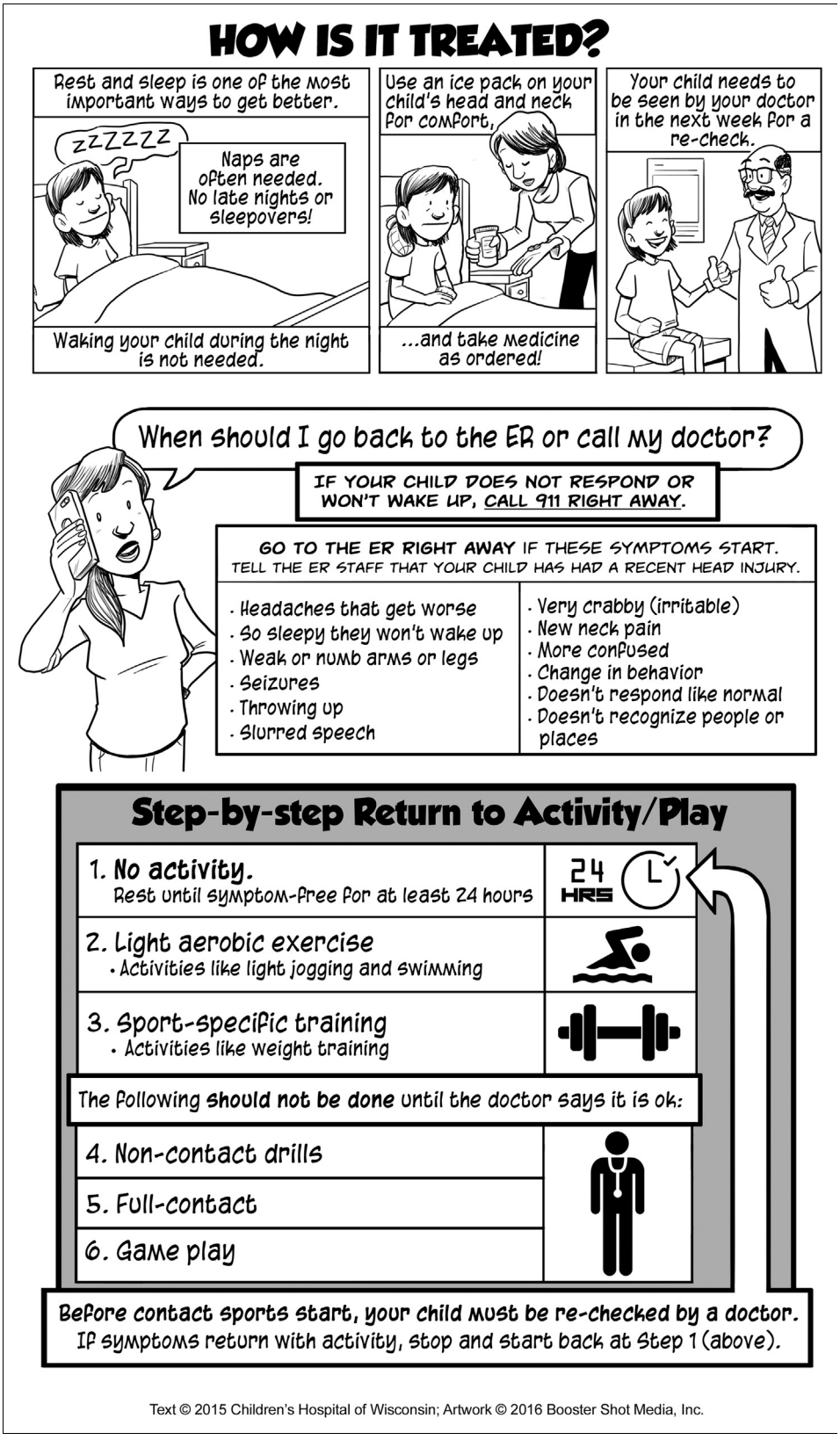

FIGURE 1

Sample of the discharge instructions in comic format. ER, emergency room; HRS, hours.

TABLE 1
Difference in discharge instructions as assessed using the PEMAT-P materials

PEMAT-P	Text based	Comic based
Understandability score	52.9%	88.2%
Key differences:		
• Layout: uses visual cues to draw attention to key points	N	Y
• Visual aids: make content more easily understood	N	Y
• Visual aids: reinforce rather than distract from the content	N/A	Y
• Visual aids: clear titles and captions	N/A	Y
• Visual aids: illustrations clear and uncluttered	N/A	Y
• Visual aids: uses simple tables	N/A	Y
Actionability score	42.8%	71.4%
Key differences:		
• Uses the charts, graphs, tables, or diagrams to take actions	N	Y
• Uses visual aids whenever they could make it easier to act	N	Y

PEMAT-P, Patient Education Materials Assessment Tool for printed; N/A, not available; N, no; Y, yes.

Caregivers then were contacted 3 days after the patient's discharge from the emergency department and asked to complete a follow-up survey via a phone call. The survey was divided into 2 sections; "Content Questions" tested caregivers on their ability to correctly recall the information from comic-based vs text-based discharge instructions (which served as a metric for comparison of retention rate with each set of discharge instructions). "Readability Questions" assessed the caregivers' response to how well organized and understandable the discharge instructions were in a comic-based format vs a text-based format. The survey responses from the "Content Questions" section were scored based on the number of correct answers.

Results of the current sample who received comic-based discharge instructions were then historical controls from our recent study in which recall was assessed for text-based discharge instructions and usual care verbal instructions.[13] "Readability Questions" also were scored to compare the understandability of comic-based and text-based discharge instructions using the Patient Education Materials Assessment Tool for printable materials (see Table 1).[21] The Patient Education Materials Assessment Tool is a systematic method to evaluate and compare printed patient education materials based on whether patients will be able to understand (understandability score) and act on information (actionability score). The significance of both results were analyzed using a chi-square test of independence and 2-sample unpaired t tests as the standard statistical methods of analysis (with significance set as $P < .05$). Significant correlations among the caregivers' demographic information (such as race/ethnicity, baseline health literacy, education, and socioeconomic status) and their recall ability of discharge instructions also were analyzed using the same methods.

Results

A total of 120 participants were recruited in the emergency department to receive comic-based discharge instructions, and 86 participants successfully completed the follow-up survey. Demographic data on caregivers are as follows (see Table 2): 77.9% were female, 20.9% self-identified as Black, and 15.1% were Hispanic. The median age was 39.5 years, 44.2% were college graduates, and 52.3% reported a household income >$40,000/year. Overall average score was 4.69 on the NVS test with 17.5% of caregivers' scores suggesting low health literacy.

After being provided comic-based discharge instructions, 77.5% of caregivers recalled overall recommendations for postconcussive management, with 86.5% being able to recall physical rest and activity restrictions and 38.8% being able to recall cognitive rest, such as school restrictions; 70% successfully recalled 3 postconcussive symptoms. At the same time, 30% could not name 3 of these symptoms (15 caregivers could not recall 2 or more postconcussive symptoms; 3 caregivers reported other symptoms not listed in the discharge instructions such as neck, back, or chest pain; and 2 caregivers named unusual symptoms, such as "seeing the color orange."). Moreover, 7.5% of caregivers

TABLE 2
Caregiver demographics

Caregiver demographic	% (n) / median (IQR)
Gender, % (n)	
• Female	77.9 (67)
Age, median (IQR)	39.5 (35-45)
Race, % (n)	
• Black	20.9 (18)
• White	70.9 (61)
• Asian	0 (0)
• Native American	1.2 (1)
• Pacific Islander	1.2 (1)
Ethnicity, % (n)	
• Hispanic	15.1 (13)
Educational level, % (n)	
• 8 grade or less	1.2 (1)
• Some high school	3.4 (3)
• High school	16.2 (14)
• Some college	34.8 (30)
• College	20.9 (18)
• Advanced degree	23.3 (20)
Insurance, % (n)	
• Private	66.3 (57)
• Public	36.0 (31)
• Self-pay	1.2 (1)
Household income, % (n)	
• <$20,000	7 (6)
• $20,000-$30,000	11.6 (10)
• $30,000-$40,000	14.0 (12)
• >$40,000	52.3 (45)
Health literacy, median (IQR)	5 (4-6)
• Low literacy (NVS <3), % (n)	17.4 (15)

IQR, interquartile range; NVS, Newest Vital Sign.

misidentified a red flag symptom as a common postconcussive symptom, with the most common misidentification being seizures, slurred speech, and not being able to wake up/blacking out.

When examining demographic factors, caregivers who could not recall 3 postconcussive symptoms were more likely to be Hispanic or Black (55.6% vs 23.1%, $c^2 = 5.31$, $P < .03$), less likely to be college educated (66.7% vs 84.6%; $c^2 = 9.71$, $P < .05$) (see Figure 3), and more likely to have low health literacy (3.83 vs 5.14, $P < .01$) (see Figure 4). Misidentification of red flag symptoms was not associated with health literacy level or any demographic factors. There was no statistical difference between gender and recall ability ($c^2 = .62$, $P = .43$). When comparing successful recall of postconcussive symptom and the caregivers' NVS scores, those who could successfully recall discharge instructions were significantly more likely to have higher NVS scores (4.95 [SD = 1.47], 95% confidence interval 4.55-5.34) than those who could not recall the discharge instructions (4.12 [SD = 1.94], 95% confidence interval 3.32-4.92, t [78] = 2.11, $P = .02$) (see Fig. 4).

When comparing the results of caregivers' ability to recall discharge instructions in a comic-based format ($n = 86$) vs a traditional text format ($n = 99$) from the previous study,[13] caregivers who received comic-based discharge instructions were more likely to accurately recall overall discharge instructions than those with a traditional text format (77.5% vs 44%, $c^2 = 20.03$, $P < .001$), particularly with information about physical rest and activity restrictions (86.5% vs 63%, $c^2 = 12.58$, $P < .001$) (see Figure 2). Interestingly, comic-based discharge instructions had no effect on the caregivers' recall of cognitive rest instructions (38.8% vs 40%, $c^2 = .05$, $P = .82$) or postconcussive symptoms (70% vs 80%, $c^2 = 3.75$, $P = .05$) than text-based instructions. However, caregivers with the comic-based discharge instructions were less likely to misidentify red flag symptoms (7.5% vs 19%, $c^2 = 5.02$, $P = .03$) than caregivers with text instructions.

Discussion

Although the discharge process in the emergency department has evolved to include print-out instructions to reinforce supportive care instructions and return precautions for parents and guardians, current studies show that a physical copy of text-based instructions alone is not enough, and alternative methods (such as a visual aid) may be required to supplement or even replace the current discharge process. Although previous studies have explored the ease of access and usability of alternative methods, this study demonstrated that an alternative visual aid supplement in the form of a comic-based format seemed to better enhance memory retention of the discharge instruction contents than the traditional text-based format only. Even if overall retention and recall of information decline over time, the comic-based instructions still demonstrated some retention of pertinent information, such as red flag symptoms, more effectively than text-based instructions alone. Investigators have developed alternative means to communicate concussion information and guide recovery using web-based[15-17]

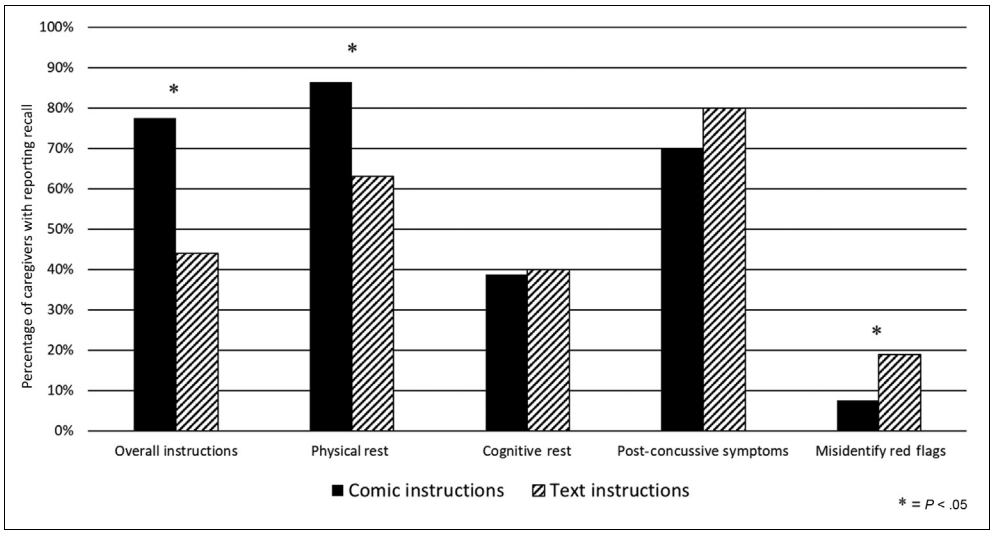

FIGURE 2

This figure compares the caregivers' recall of discharge contents with comic vs text instructions. Caregivers who received comic-based discharge instructions were significantly more likely to successfully recall overall discharge instructions (77.5% vs 44%, $c^2 = 20.03$, $P < .001$) than caregivers who received text-based discharge instructions, particularly with physical rest and activity restrictions (86.5% vs 63%, $c^2 = 12.58$, $P < .001$). Caregivers with comic-based discharge instructions also were less likely to misidentify a red flag symptom (7.5% vs 19%, $c^2 = 5.02$, $P = .03$). Comic-based discharge instructions had no significant effect on the caregivers' recall of cognitive rest instructions (38.75% vs 40%, $c^2 = .05$, $P = .82$) or common postconcussive symptoms (70% vs 80%, $c^2 = 3.75$, $P = .05$) compared with text-based discharge instructions.

or smartphone applications.[18-20] These novel approaches may offer promise to improve concussion education and management, but need to be studied to ensure they are accessible for patients with low health literacy.

This study also highlighted potential racial and socioeconomic disparities that may be correlated to the caregivers' ability to recall the contents of the discharge instructions. We found that Black and Hispanic caregivers were approximately twice as likely as white caregivers to demonstrate unsuccessful recall of discharge contents in this study, supporting the growing evidence of racial disparities in health care. Education level and baseline health literacy seemed to influence the caregivers' ability to understand and recall discharge instructions. Although the role of socioeconomic factors and health literacy is complex, it is nonetheless essential to acknowledge that they contribute to health care disparities that providers must address to achieve equitable care for all.

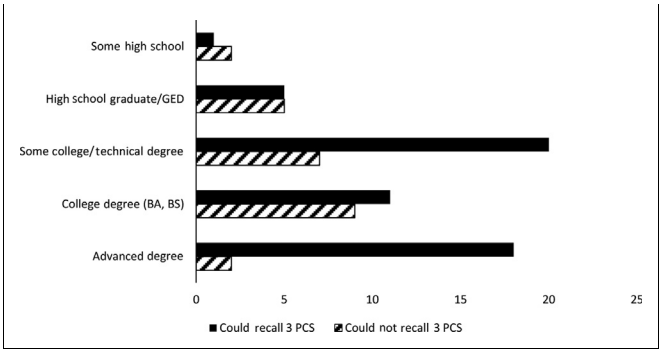

FIGURE 3

This figure compares the caregivers' ability to recall 3 postconcussive symptoms based on completed education level. Caregivers with higher levels of education were more likely to successfully recall contents from the discharge instructions compared with those with lower levels of education ($c^2 = 9.71$, $P = .0456$). GED, General Educational Development Test; PCS, postconcussive symptom.

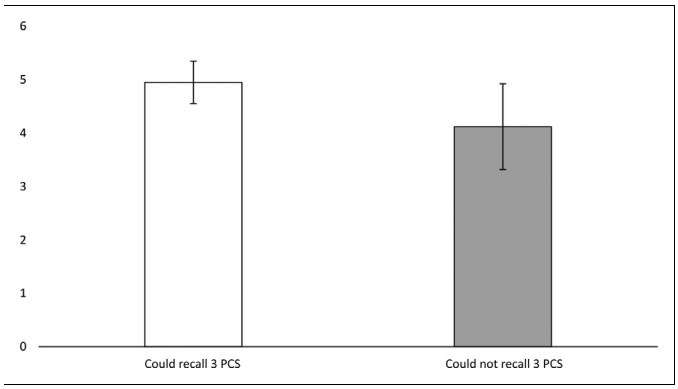

FIGURE 4

This graph compares the caregivers' ability to recall 3 PCS and their average health literacy score from the NVS test. Caregivers who could successfully recall 3 PCS were significantly more likely to have higher NVS scores (4.95 [SD = 1.47], 95% CI 4.55-5.34) than caregivers who could not recall 3 PCS (4.12 [SD = 1.94], 95% CI 3.32-4.92, t [78] = 2.11, $P = .02$). PCS, postconcussive symptom; NVS, Newest Vital Sign.

Limitations

This study had several limitations. One of 3 of subjects was lost to follow-up. In addition, subjects were historical controls for whom health literacy, education, and household income were not available. Therefore, we could not assess whether comic-based instructions were better for patients with low health literacy. Further research is necessary to understand the relationship among socioeconomic factors, health literacy, and the best approach to address this health inequity.

Implications for Emergency Nursing

Several alternative methods, such as video instructions, phone applications, and web-based content, have been introduced as options to deliver high-quality discharge instructions to families in the emergency department effectively. However, their effects on improving recall with discharge instructions have yet to be thoroughly explored. This study highlights the efficacy of visual aids, such as a comic-based format, as an appropriate alternative method that nurses can use to improve memory retention for concussion care recommendations before discharge from the emergency department and to address the families' understanding of symptoms and treatment of patients with mTBI. Regardless of the methods selected, nurses are highly encouraged to use a multimodal approach (such as text instructions with a supplemental visual aid and verbal reinforcement) to maximize the delivery of discharge instructions to families caring for patients with mTBI owing to the importance of postconcussive care and follow-up in overall recovery. In addition to delivering discharge contents, nurses should be aware of any social determinants of health that could influence the caregivers' ability to digest and recall discharge instructions.

Conclusion

Addressing health literacy is critical to providing appropriate discharge education and improving postconcussive care. A visual supplement, such as a comic-based format, incorporated into discharge instructions can improve memory retention of discharge content in families caring for patients with mTBI. This can serve as one of many methods to help reduce the burden of concussions for families discharged from the emergency department and may help address social determinants of health affecting caregivers understanding.

Author Disclosures

Conflicts of interest: none to report.

REFERENCES

1. Bryan MA, Rowhani-Rahbar A, Comstock RD, Rivara F. Seattle Sports Concussion Research Collaborative. Sports- and Recreation-Related Concussions in US Youth. *Pediatrics*. 2016;138(1), e2154635. https://doi.org/10.1542/peds.2015-4635
2. Halstead ME, Walter KD. Council on Sports Medicine and Fitness. American Academy of Pediatrics. Clinical report–sport-related concussion in children and adolescents. *Pediatrics*. 2010;126(3):597-615. https://doi.org/10.1542/peds.2010-2005

3. Stillman A, Alexander M, Mannix R, Madigan N, Pascual-Leone A, Meehan WP. Concussion: evaluation and management. *Cleve Clin J Med*. 2017;84(8):623-630. https://doi.org/10.3949/CCJM.84A.16013
4. Corwin DJ, Grady MF, Joffe MD, Zonfrillo MR. Pediatric mild traumatic brain injury in the acute setting. *Pediatr Emerg Care*. 2017;33(9):643-649. https://doi.org/10.1097/PEC.0000000000001252
5. McCrory P, Meeuwisse WH, Aubry M, et al. Consensus statement on concussion in sport: the 4th International Conference on Concussion in Sport, Zurich, November 2012. *J Athl Train*. 2013;48(4):554-575. https://doi.org/10.4085/1062-6050-48.4.05
6. Grubenhoff JA, Deakyne SJ, Comstock RD, Kirkwood MW, Bajaj L. Outpatient follow-up and return to school after emergency department evaluation among children with persistent post-concussion symptoms. *Brain Inj*. 2015;29(10):1-6. https://doi.org/10.3109/02699052.2015.1035325
7. Seabury SA, Gaudette E, Goldman DP, et al. Assessment of follow-up care after emergency department presentation for mild traumatic brain injury and concussion: results from the TRACK-TBI study. *JAMA Netw Open*. 2018;1(1), e180210. https://doi.org/10.1001/JAMANETWORKOPEN.2018.0210
8. Langlois J. *Heads Up: Brain Injury in Your Practice A Tool Kit for PhysiAcians*. Centers for Disease Control and Prevention; 2008.
9. Samuels-Kalow ME, Stack AM, Porter SC. Effective discharge communication in the emergency department. *Ann Emerg Med*. 2012;60(2):152-159. https://doi.org/10.1016/J.ANNEMERGMED.2011.10.023
10. Morrison AK, Schapira MM, Gorelick MH, Hoffmann RG, Brousseau DC. Low caregiver health literacy is associated with higher pediatric emergency department use and nonurgent visits. *Acad Pediatr*. 2014;14(3):309-314. https://doi.org/10.1016/J.ACAP.2014.01.004
11. Glick AF, Farkas JS, Nicholson J, et al. Parental management of discharge instructions: a systematic review. *Pediatrics*. 2017;140(2), e20164165. https://doi.org/10.1542/PEDS.2016-4165
12. Glick AF, Farkas JS, Rosenberg RE, et al. Accuracy of parent perception of comprehension of discharge instructions: role of plan complexity and health literacy. *Acad Pediatr*. 2020;20(4):516-523. https://doi.org/10.1016/J.ACAP.2020.01.002
13. Thomas DG, Bradley L, Servi A, et al. Parental knowledge and recall of concussion discharge instructions. *J Emerg Nurs*. 2018;44(1):52-56. https://doi.org/10.1016/j.jen.2017.04.012
14. Kolberg K, Larson J, Almeida A, et al. The feasibility of using comic-based concussion discharge instructions: gauging likeability and knowledge improvement among adolescents and parents. *Pediatr Emerg Care*. 2021;37(12):E1603-E1610. https://doi.org/10.1097/PEC.0000000000002133
15. Babcock L, Kurowski BG, Zhang N, Dexheimer JW, Dyas J, Wade SL. Adolescents with mild traumatic brain injury get SMART: an analysis of a novel web-based intervention. *Telemed J Health*. 2017;23(7):600-607. https://doi.org/10.1089/TMJ.2016.0215
16. Kurowski BG, Wade SL, Dexheimer JW, Dyas J, Zhang N, Babcock L. Feasibility and potential benefits of a web-based intervention delivered acutely after mild traumatic brain injury in adolescents: a pilot study. *J Head Trauma Rehabil*. 2016;31(6):369-378. https://doi.org/10.1097/HTR.0000000000000180
17. Dexheimer JW, Kurowski BG, Anders SH, McClanahan N, Wade SL, Babcock L. Usability evaluation of the SMART application for youth with mTBI. *Int J Med Inform*. 2017;97:163-170. https://doi.org/10.1016/J.IJMEDINF.2016.10.007
18. Sandhu H, Wilson K, Reed N, Mihailidis A. A mobile phone app for the self-management of pediatric concussion: development and usability testing. *JMIR Hum Factors*. 2019;6(2), e12135. https://doi.org/10.2196/12135
19. Kantorski B, Commisso DR, Sanford-Dolly CW, Pollock JA. The use of a mobile application to teach concussion-related health knowledge. *J STEM Outreach*. 2020;3(1). https://doi.org/10.15695/JSTEM/V3I1.05
20. Schmidt M, Fisher AP, Sensenbaugh J, et al. User experience (re)design and evaluation of a self-guided, mobile health app for adolescents with mild traumatic Brain Injury. *J Form Des Learn*. 2020;4(2):51-64. https://doi.org/10.1007/S41686-019-00038-X
21. The Patient education materials assessment tool (PEMAT) and user's guide. Agency for Healthcare Research and Quality. Accessed September 13, 2022. https://www.ahrq.gov/health-literacy/patient-education/pemat-p.html

Perspective of Emergency Pediatric Nurses Triaging Pediatric Patients in the Emergency Department: A Phenomenographic Study

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Contribution to Emergency Nursing Practice

- Most pediatric patient data are provided by parents. Hence, pediatric emergency nurses need specialized clinical knowledge and skills for gathering information.
- The main findings of this study are that pediatric emergency nurses triage patients by using an integrated approach with structured triage system guidelines, their level of competencies, and the available ED resources.
- Our key implication for emergency nursing practice is that a better understanding of pediatric emergency nurses' cognitive structures may promote the development of an improved and more competent pediatric triage system.

Abstract

Introduction: Triage, a process to determine illness severity, is implemented by emergency nurses to prioritize treatment and provide care for a maximum number of patients using limited resources. The competency of emergency nurses and a highly reliable triage are crucial for the provision of emergency care. Pediatric patients are different from adult patients in certain aspects, such as growth-phase characteristics, communication ability, and the onset of disease; these aspects often pose challenges during their primary triage. This study explored how emergency nurses triage pediatric patients using the Korean Triage and Acuity Scale.

Methods: Eleven emergency nurses ($N = 11$) working in the pediatric emergency department of a university hospital in Seoul, South Korea, were recruited using purposive sampling methods. Phenomenography was used to investigate the strategies by which these nurses use the Korean Triage and Acuity Scale to triage pediatric patients.

Results: The findings comprised 2 descriptive categories: 6 approaches on how to triage patients (categories of how) and 3 strategies (categories of what) used by pediatric emergency nurses to triage pediatric patients with the Korean Triage and Acuity Scale.

Discussion: The experience and proficiency of emergency nurses are essential factors for the effective triage of pediatric patients. Our findings qualitatively elucidate different ways of understanding pediatric triage and indicate the need for pediatric triage education programs.

Key words: Emergency nursing; Phenomenography; Triage; Qualitative research

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Introduction

Triage aims to prioritize and categorize patients visiting the emergency department for the provision of first aid and emergency treatment.[1,2] The triage system appears in many formalized systems worldwide. The Australian Triage Scale, Canadian Triage and Acuity Scale, Emergency Severity Index, Manchester Triage Scale, and South African Triage Scale are representative of international triage scales.[3] In Korea, the Canadian Triage and Acuity Scale-based Korean Triage and Acuity Scale (KTAS) is currently used.[4]

The KTAS triages patients in the emergency department based on symptomatic evaluation. The emergency

nurse accords the patient a KTAS score, depending on their symptoms; this score determines the patient's waiting time while the provider evaluates the corresponding treatment requirements (emergency, KTAS stages 1-3; subemergency, KTAS stages 4-5).[4] The KTAS categorizes pediatric and adult patients as <15 and >15 years, respectively.[4] Pediatric patients require specific severity assessment methods and additional considerations, owing to their anatomy and physiology, as well as psychosocial behaviors.[5] The first-impression assessment is based on the Pediatric Assessment Triangle, which assesses the patient's overall appearance, respiratory capacity, and circulation.[6] However, triage for pediatric and adult patients is currently similar, despite the need for variations in evaluating pediatric emergencies based on the patient's growth phase.[7] Emergency nurses use their capabilities and judgment to triage pediatric patients.[1,8] Therefore, it is necessary to impart training in professional pediatric triaging to improve emergency pediatric treatment outcomes.[9]

Triage is a rapid process that may result in an overestimation or underestimation of the emergency.[8] Global studies report insufficient evidence for the validity of pediatric triage systems and raise concerns regarding undertriages.[10] Moreover, studies report variations in pediatric triage between general and pediatric emergency nurses.[9,10] Ebrahimi et al[11] investigated the level of inter-rater reliability of pediatric triage systems through a meta-analysis of literature in electronic databases up to March 1, 2019; even though their findings suggest an acceptable reliability in the pediatric emergency department, further studies are needed. According to Heffernan et al,[12] the accuracy of 4 pediatric emergency triage systems (SALT, JumpSTART, Triage Sieve, and CareFlight)[13] was poor, demonstrating an unacceptable degree of undertriage. Another study[7] reported that although the inter-rater reliability of the pediatric triage system was accurate, discrepancies in the down-triage proportions for abnormal heart and respiratory rates varied according to the triage performers' professions. Several studies suggest that insufficient training of triage performers, particularly nurses, is a major reason for low triage accuracy.[14,15] Furthermore, most pediatric patients consult nonpediatric specialty centers,[16] which reinforces the need for systematic pediatric triage education for all ED personnel.[9]

According to the Emergency Nurses Association, triage should be performed by registered nurses who have completed standardized training courses.[17] However, these courses do not include training in decision-making and effective communication skills, which are required during the triage process.[18] Furthermore, variable triage guidelines and inconsistencies in nurses' entry qualifications to triage, in-hospital workflow management, and inadequate triage training among different hospitals may contribute to the causes of low triage accuracy.[19]

A recent study suggests that triage accuracy depends on the work experience (particularly, triage implementation) of emergency nurses, given that triage scales are used to assess a patient's illness or injury severity and they do not provide information on triage decisions.[20] Specific protocols are required for primary triaging of pediatric patients; therefore, it is important to understand the cognitive structure of the triaging systems used by pediatric emergency nurses and integrate this knowledge into general emergency nursing education. Therefore, this study sought to gain an understanding of the perspective of pediatric emergency nurses while triaging pediatric patients using the KTAS.

Methods

DESIGN

This qualitative study used a phenomenography approach, given that the focus of the methodology was describing the variations—or perspectives—of pediatric triage and how pediatric emergency nurses triage their pediatric patients.

METHODOLOGICAL CONSIDERATIONS

Phenomenography aims to qualitatively clarify the different ways in which human beings experience a phenomenon.[21] The basic concept is that the only world with which human beings can communicate is the world of their own experience.[21] The underpinnings of phenomenography relate to the philosophy of phenomenology; in both approaches, the research aims to illuminate human perception and experiences.[22] However, the difference between the 2 methodologies is that phenomenology describes an individual's conscious and lived experience of a phenomenon.[23] In contrast, phenomenography describes differences in the ways to understand and experience another individual's experience of the phenomenon.[21,22] One great strength of phenomenography is the methodology of examining collective human perspectives on the phenomenon in question, rather than individual perspectives.[22] This methodology is referred to as a second-order perspective (how emergency nurses triage pediatric patients in the emergency department) that aims to describe people's thoughts about the world, rather than a first-order perspective to capture the world's essence.[22] These features of phenomenography are presented in the results section as categories of description (the varying ways of experiencing a phenomenon) and an

TABLE 1
Demographic characteristics of emergency nurses ($N = 11$)

Characteristics	Values
Total participants, N	11
Gender: female, n (%)	11 (100)
Age, mean (SD), y	31.7 (3.3)
Educational degree	
Bachelor's, n (%)	10 (91)
Master's, n (%)	1 (9)
Registered nurse, n (%)	11 (100)
Nursing experience, mean (SD), y	7.7 (3.6)
Pediatric nursing experience, mean (SD), y	5.5 (2.6)
KTAS triage experience, mean (SD), y	4 (2.2)

KTAS, Korean Triage and Acuity Scale.

outcome space (the hierarchical relationship between categories of description).[24]

As an evolving research methodology, phenomenography centers on the "conceptualization method" of participants' world experience.[21] It also provides a means by which knowledge on how people experience phenomena can be revealed.[23] Therefore, this method was appropriate for our study.

We adopted phenomenography research by applying a second-order perspective and investigated the "conceptualization method" of pediatric emergency nurses who triage patients using the KTAS tool, to determine these nurses' subjective perspectives during triage.

PARTICIPANTS

The authors posted notices in the pediatric emergency department of a university hospital located in Seoul, South Korea, to recruit participants. A total of 11 emergency nurses were recruited using purposive sampling. The participants were KTAS certified and experienced in pediatric patient triaging (the opportunity to complete KTAS education and acquire qualifications is provided to nurses with >1 year of ED experience) (Table 1). Given that there is no fixed number of appropriate research subjects in phenomenography, in-depth interviews were conducted until qualitative interview data reached theoretical saturation.

VIGNETTE CONSTRUCTION

Four clinical case vignettes comprising vital signs and pain were created, based on previously reported causes of triage errors in the KTAS evaluation[7,8,25] (Table 2), to explore the perspectives of participants during triage of pediatric patients using KTAS.

Vignettes 1 and 2 focused mainly on vital signs. In vignette 1, fever was the main complaint. A previous study reported that, in Korea, pediatric patients aged 1 to 4 years frequently visited the emergency department, and the most common cause was fever.[25] Therefore, vignette 1 was established as a 12- to 48-month-old child admitted to the emergency department with fever. Vignette 2 was a case of fever in patients who take immunosuppressants. Although level 2 was specified, based on KTAS, it was established after considering that emergency nurses' decision-making process was unclear and differed in clinical practice. Vignettes 3 and 4 considered pain as the main concept. Studies reveal that the highest incidence of abdominal pain among pediatric patients requiring hospitalization was among those aged 5 to 14 years.[25] Hence, vignette 3 was set as a case of abdominal pain in a 5-year-old child. Considering language development in the preschool age, although it is easy for such a child to express the desired words, relatively unclear communication is a possible factor. Vignette 4 was a case of a pediatric patient who visited the emergency department without a specific underlying disease, often owing to injury-related causes, including fractures. This case was chosen to understand the experience of the emergency nurse in a situation where triage was decided based on pain alone, in the absence of other related factors, including underlying diseases.

Five experts (2 pediatric ED physicians and 3 KTAS-qualified emergency nurses with >8 years of clinical experience in pediatric triage) performed a content validity analysis of the 4 vignettes. The questionnaire for validation was a 5-point Likert scale (ranging from 1 = lowest to 5 = highest) comprising 2 items: whether they agreed that the 4 vignettes were akin to a situation experienced at the pediatric emergency department and whether the 4 vignettes included the general indicators required for KTAS. Validity was calculated by comparing the sum of scores graded 1 and 2 with that graded 4 and 5.[26] The calculated content validity was 0.95.

DATA COLLECTION

Data were collected between February and March 2021 at a single university hospital in Seoul, South Korea. Individual interviews were conducted in the ED meeting room and were based on the 4 vignettes. The interviews lasted 30 to 40 minutes and were audio recorded and transcribed verbatim. Field notes were taken during the interview to record participants' points. The interview questions were as

TABLE 2
Vignettes for using KTAS to triage pediatric patients

Core concept	Vignettes	Case-vignettes
Vignette related to vital signs	1	Patient A (F/38 months) visited the ED, crying in her mother's arms. According to the mother, the patient refused to eat in the past 5 hours and has had a fever of 38.2 °C (100.76 °F). There is no history of any underlying diseases. The exact time of taking antibiotics is unknown. Vital signs: blood pressure, unchecked; body temperature, 38.7 °C (101.66 °F); heart rate, 189 bpm; respiration rate, 38 breaths per minute
	2	Patient B (M/4 years) visited the ED with a fever of 38.9 °C (102 °F) approximately 3 hours earlier. The patient regularly takes immunosuppressants. Vital signs: blood pressure, 110/68 mm Hg; body temperature, 36.7 °C (98.06 °F); heart rate, 102 bpm; respiration rate, 22 breaths per minute
Vignette related to pain	3	Patient C (M/5 years) was transferred to the ED from a nearby pediatric clinic. He is stomping his feet and having abdominal pain. His parents are demanding a fast treatment process and report no change in his feces. Patient C says "my belly hurts," looking around the ED curiously.
	4	Patient D (F/7 years) visited the ED after falling from a horizontal bar approximately 2 hours earlier. The patient complains of right elbow pain and has no superficial abnormalities. Vital signs were unchecked owing to patient refusal.

bpm, beats per minute; ED, emergency department.

follows: (1) What are the KTAS stages for each vignette? (2) On what basis did you decide the KTAS stage for each vignette? (3) What factors influence the KTAS stage for each vignette? and (4) For patient triage using pediatric KTAS, what do you think are the most important competencies in a nurse?

DATA ANALYSIS

Data were analyzed according to the phenomenographic procedure described by Dahlgren and Fallsberg.[27] The process comprised 7 steps: familiarization, compilation, condensation, grouping, comparison, naming, and contrastive comparison.[27] First, the researchers read the transcribed data repeatedly to familiarize themselves with each interview. Subsequently, the representative statements pertaining to the participants' opinions were underlined and summarized. The researchers compared the statements to identify sources of variations, such as differences and similarities in the nurses' experiences; similar statements were grouped together. Concepts and categories were identified by confirming their relationships, and thus, descriptive categories were derived and named to express a substantial meaning. Finally, for contrastive comparison, the significance of the relationships between the descriptive categories was identified. The logical relationship conceptions (descriptive categories) were represented through an outcome space.[22]

The final phenomenography result, the outcome space (a diagrammatic representation), presents the relationship between the descriptive categories and their hierarchical structure.[22]

ETHICAL CONSIDERATIONS

This study was approved by the institutional review board (IRB) of Seoul National University, Seoul, Republic of Korea (IRB no. H-2101-097-1189). After explaining the purpose of the study to all participants and confirming their voluntary participation, the first author distributed the consent form containing the purpose protocol to each participant. Participants provided a written informed consent to

TABLE 3
Inter-rater agreement of the vignettes using the KTAS

Vignettes	Core concept	No of participants rating KTAS levels ($N = 11$)					Inter-rater agreement (%)		
		Level 1	Level 2	Level 3	Level 4	Level 5			
1	Vital signs	1	0	9	1	0	81.8	86.4	81.8
2		0	10	1	0	0	90.9		
3	Pain	0	0	2	9	0	81.8	77.9	
4		0	0	3	8	0	72.7		

KTAS, Korean Triage and Acuity Scale.

participate in the study. Their confidentiality was maintained by deidentifying interview records, and collected data were in a coded and depersonalized format; data folders were stored on a password-protected computer.

Results

The inter-rater agreement regarding the triaging of the 4 vignettes by the 11 pediatric emergency nurses was 81.8%. The KTAS had a maximum of 2 levels of disagreement in vignette 1 and a 1-level disagreement in vignettes 2, 3, and 4 (Table 3).

HOW NURSES TRIAGE PEDIATRIC PATIENTS USING KTAS

We identified 6 descriptive categories of how nurses triaged pediatric patients using KTAS.

Categories of How 1. The Constructed Guideline Base

The constructed guideline base refers to the nurse finding a reference point that corresponds to the main complaint, assessing other patient indicators, and considering these in the patient classification, based on the KTAS guidelines. This involves the nurse assessing the patient's vital signs or pain score, checking whether this value is within the normal or abnormal range, and subsequently triaging the patient according to the KTAS guidelines.

Categories of How 2. Recognition of Variations That Can Be Explained by the Characteristics of Children

This category states that a mere ED visit can affect pediatric patients; therefore, it relies on environmental factors in the emergency department that may give these patients a feeling of instability. In addition, it focuses on characteristics of the pediatric patient's developmental stage.

Categories of How 3. Coordinating the Child's Body Indicators With the Child's Appearance

This category indicates that the observed outward appearance of the pediatric patients coordinates with their measured indicators.

Categories of How 4. Consideration of Possible Change in Level of Emergencies

This category considers the level of emergency that the pediatric patient's symptoms may trigger. The nurse may decide that an acute situation may become serious, even if the patient's emergency level is relatively low during their ED visit. This helps to avoid delays in the appropriate treatment time. Conversely, it prevents overestimating the pediatric patient's triage level owing to verbal/nonverbal patient expressions, even if the level of emergency that can cause these symptoms is not high.

Categories of How 5. Recognition of Resources in the Emergency Department for Treatment Intervention

This category relies on nurses recognizing the human/material resources that are involved in treating a pediatric ED patient and applying this knowledge in triage. It focuses on efficiently using limited ED resources enabling the right patient to receive timely care.

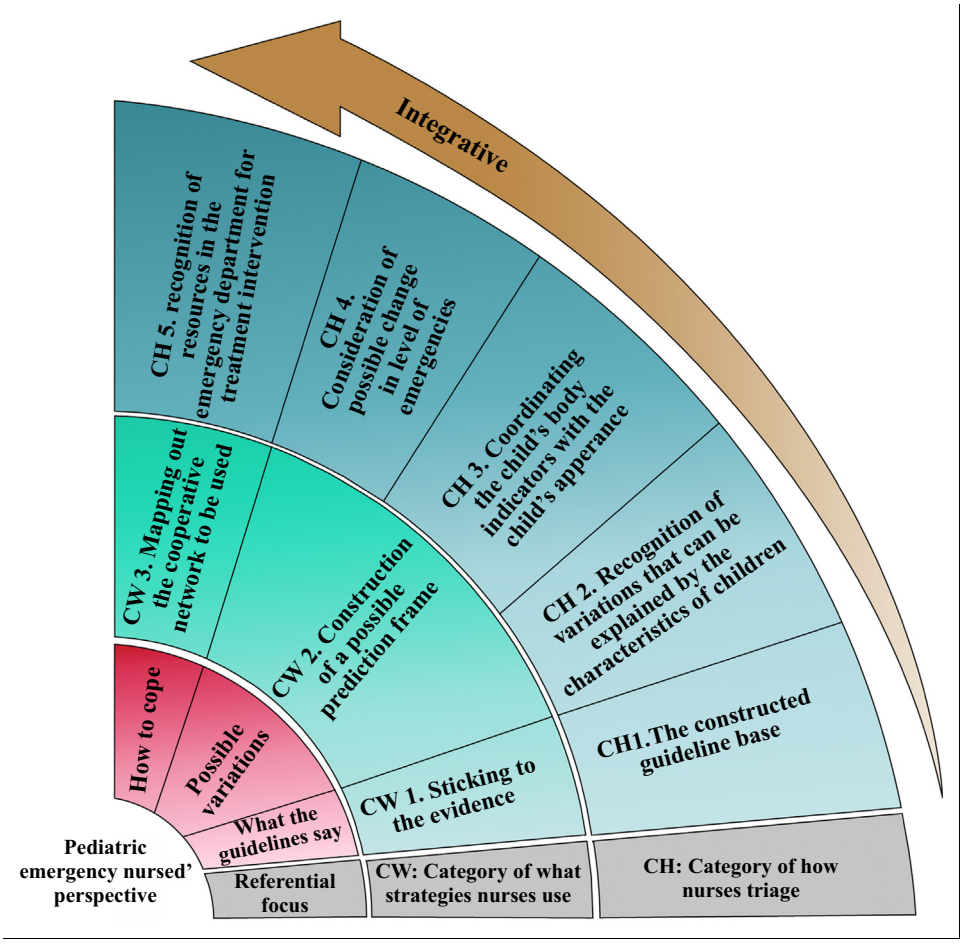
STRATEGIES NURSES USE TO TRIAGE PEDIATRIC PATIENTS USING KTAS

We identified 3 descriptive categories of what strategies nurses use to triage pediatric patients using KTAS.

TABLE 4
Representative quotations from the interviews for each category

Categories		Representative quotations
How nurses triaged pediatric patients using KTAS (categories of how)	Categories of how 1. The constructed guidelines base	"The pulse is 189, which is abnormal, so I triage the patient as level 3 by selecting 'Vital signs outside the normal range.'" (nurse with 10 years of clinical experience)
	Categories of how 2. Recognition of variations that can be explained by the characteristics of children	"The vital signs are not well measured, because the child is crying, but even if the child has a fever and a fast pulse, it is a situation in which the pulse can rise to this level when the child has a fever and is crying a lot. I don't think it will. It doesn't seem like it's because the child is playing well or something like that, so I did level 4 at the level of a child who has a fever, but looks healthy. Children who do not usually have a specific underlying disease cry, sneeze, and have a phobia of the hospital itself, have poorly measured vital signs, and even if they are measured, they are not accurate." (nurse with 9 years of clinical experience)
	Categories of how 3. Coordinating the child's body indicators with their appearance	"The child complained of severe abdominal pain as he rolled around, but his vital signs are well measured, and he says he is sick, but he is focused enough to slowly observe something while looking around here and there. So, it looked like a situation where it didn't look that painful, so I gave it to level 4." (nurse with 9 years of clinical experience)
	Categories of how 4. Consideration of possible changes in levels of emergencies	"I give level 2, because a child who has a fever on immunosuppressants can have a shock situation. However, there is no clearly identifiable deformation, and for the broken arm, I think I give a slightly lower level. Because it doesn't look that urgent. Just because a child's arm is broken doesn't mean anything will happen right away. It is different if there is an obvious deformity or in the case of a child with underlying disease." (nurse with 4 years of clinical experience)
	Categories of how 5. Recognition of resources in the emergency room for treatment intervention	"Giving level 3 or higher is also related to resource allocation. It seems that the child can sit and wait. In the pain of children, of course, I see the face scale, but I consider this part." (nurse with 4 years of clinical experience) "Since the child has fallen on the floor and complains of pain in the right elbow, we will proceed with the imaging test even if there is no visual deformation. If there is any evidence of fracture in the child, it will be linked to orthopedic treatment, so I gave level 3 in this case." (nurse with 5 years of clinical experience)
What strategies nurses use to triage pediatric patients using KTAS (categories of what)	Categories of what 1. Sticking to the evidence	"The nurse must not be agitated. The caregivers of pediatric patients are very irritable. Of course, there are times when the situation itself is a great event. So, if I can't control my mind and shake myself, things seem to get twisted. Nurses should never lose their composure and evaluate based on evidence." (nurse with 4 years of clinical experience)
	Categories of what 2. Construction of a possible prediction frame	"I believe that nurses should be able to anticipate situations where the unpredictable can happen. If I see a lot of patients and know, 'Oh, this could happen,' should I say it's easier to do?" (nurse with 10 years of clinical experience) "When classifying patients using KTAS, the necessary competency for nurses is the ability to quickly and accurately judge emergency situations." (nurse with 3 years of clinical experience)
	Categories of what 3. Mapping out the cooperative network to be used	"When a patient arrives at the emergency room, it is necessary to quickly classify the degree of emergency and treat it as quickly as possible. The emergency room requires collaboration with other medical professionals, so a nurse needs to connect it to the right medical team as soon as possible." (nurse with 7 years of clinical experience) "There is something I can do for my child in a short time, but if that judgment is ambiguous, I should not hesitate to ask for help as much as possible, and it should be possible." (nurse with 9 years of clinical experience)

KTAS, Korean Triage and Acuity Scale.



FIGURE

Outcome space of perspective of pediatric emergency nurses who triaged pediatric patients. The outcome space is created based on a referential focus on the CW and CH, and the relationship between descriptive categories and their hierarchical structure is shown.[22] CW, categories of what; CH, categories of how.

Categories of What 1. Sticking to the Evidence

This category uses objective criteria, without influence by surroundings during triage and determination of the patient's emergency level. This signifies a need for an evidence-based process that nurses can use to clearly recognize the KTAS criteria and accurately triage the patient.

Categories of What 2. Construction of a Possible Prediction Frame

This category relies on nurses' aptitude to acquire sufficient knowledge and experience (including in ED scenarios) in predicting future situations while triaging pediatric patients. The emergency department is a place where diverse patients present with complaints of several symptoms. Nurses construct a predictable frame about "what may happen" and "how to manage" to accurately triage patients in a relatively short period.

Categories of What 3. Mapping Out the Cooperative Network to Be Used

This category presents the emergency department as a place where medical staff of various professions collaborate. Therefore, the nurse who triages a first-time pediatric patient should aid in the formation of a cooperative team network that swiftly responds to the patient's needs.

Next, the supporting quotations from emergency nurses' interviews for these findings are presented (Table 4).

STRUCTURE OF THE OUTCOME SPACE

Our results were presented as the outcome space, a perspective of how pediatric emergency nurses determine the triage category. Categories of description were conceptually organized within each frame, according to their referential aspects.[22] The outcome space was created around a referential focus of "categories of how" and "categories of what," structured as "what the guidelines say," "possible variations," and "how to cope." These descriptive categories also were integrity-based hierarchies (Figure). At the lowest level, nurses triaged pediatric patients according to the guidelines. At the intermediate level, nurses cited possible variations in triaging pediatric patients beyond the guidelines. "Mapping out the cooperative network to be used" referred to the communication ability and acumen of pediatric emergency nurses who were the first point of contact for a pediatric patient visiting the emergency department. In addition, "recognition of resources in the ED to intervene in treatment" involved the pediatric emergency nurses' comprehension of the workflow process of the emergency department, including human/material resources. The referential focus of "how to cope," which indicated that nurses effectively coped with pediatric emergencies, was structured as the highest level.

Discussion

This study defined descriptive categories based on the qualitatively different ways in which emergency nurses triage pediatric patients in the emergency department. Our findings show that the descriptive categories of KTAS-based triaging of pediatric patients mandate nurses to follow established criteria or adapt to the situation, based on the characteristics of individual patients. In addition, available ED resources or the possibility of an acute situation were considered.

We also obtained insight on the applicability of the pediatric emergency nurses' practical knowledge in triaging patients. An existing literature review reported situations wherein the determination of patient severity via only the triage and acuity scale was difficult, owing to pediatric patient characteristics.[9] In the present study, the referential focus "possible variations" presented the pediatric emergency nurses' experienced-based perspective; they suggested that these variations were a reference factor for triaging pediatric patients in the emergency department. Therefore, the nurses' empirical knowledge about pediatric patients' characteristic reactions to the ED setting, their outward appearance, and gradual change of their condition help determine triage.

In this study, the descriptive categories of "how" and "what strategies" that emergency nurses use to triage pediatric patients revealed that participants wanted to maintain objectivity in emergency classification (comply with evidence-based guidelines). Work in the emergency department has a team approach; nurses have a significant responsibility in the initial triage, which determines the priority of the care team during the subsequent patient management process. Hence, emergency nurses require support for their role, and initiatives are needed to reduce their stress related to resolving system issues.[20]

Most participants presented an objective viewpoint, based on each pediatric patient's characteristics and the physiological basis of triage. Nevertheless, some nurses focused on managing patient characteristics, in addition to the appropriate use of ED resources. This indicates that even nurses who triage pediatric patients are aware of their additional responsibility to lead the overall flow of the emergency department. Emergency nurses' work stress increases, owing to conflicts with the physicians, while they are coordinating the efficient treatment flow for inpatients. Simultaneously fulfilling the needs of the patients and physicians may cause further conflicts with physicians owing to prioritization differences.[28] Therefore, emergency nurses should play an integral role in managing the emergency department in a cohesive manner and creating a cooperative network. One study suggested that ED staff considered their respective ethos to facilitate interprofessional collaboration.[28] However, this indicates that ED resources and the nurses' culture should be considered when performing triage. In our findings, the referential focus of "how to cope" implied that, during triage, nurses considered constructing a cooperative network by recognizing ED resources for a multidisciplinary team approach.

Data on effective training methods for general emergency nurses pertaining to pediatric triaging in the emergency department are currently inconclusive. Thus far, literature has focused on pediatric patient classification methods and reported that simulation programs and standardized curricula may be effective.[9,29] Therefore, 2 methods of pediatric classification education—namely, paper case studies and fidelity simulations—were considered effective training methods for general emergency nurses.[30,31] Significantly, a previous study noted that educational simulations based on various scenarios applicable to an ED situation in any medical institution are effective for understanding the triage of actual pediatric emergency patients.[31]

Our findings suggest that effective training for pediatric triage in the emergency department should include active discussions with health care providers involved in triaging for knowledge sharing and improved comprehension, in addition to the training methods currently used. This approach could reduce medical errors by ensuring a cooperative relationship between multidisciplinary health care providers[32] and positively affect the integrated management of emergency nursing practice.[28] Therefore, emergency nurses should efficiently discern a situation through effective communication and teamwork with ED personnel; this competence development concerns the provision of high-quality nursing and ensuring patient safety in pediatric emergency department.

Limitations

This study has some limitations. First, the data were obtained from a purposive sample of pediatric emergency nurses working at a single university hospital in South Korea. Hence, the participants might not be representative of pediatric emergency nurses at other locations. However, this study aimed to use a phenomenographic methodology to identify the nature and empirical structure of the triage of pediatric patients determined by emergency nurses and not to generalize the characteristics of a phenomenon. Second, because this study was conducted in the ED environment of one university hospital in South Korea, our results may vary depending on other countries' emergency system settings and situations. Third, based on our results, the nurses' triage concurrences for the 4 vignettes were relatively high, given that they had already performed triage at the pediatric emergency department. However, most nurses who triage pediatric patients are general emergency nurses, who are unfamiliar with the characteristics of children[14]; hence, these nurses' pediatric triage concurrence with the KTAS may be lower than reported in the present study. Fourth, our study used a limited number of case-based vignettes. Researchers specifically chose the familiar vignettes seen at pediatric-specific emergency departments in our country; therefore, further studies with large sample-sized multicenter settings are required for validation.

Implications for Emergency Nursing

Emergency nurses should recognize that pediatric emergency patients require a focused assessment. Our results described that the cognitive structures of pediatric emergency nurses on triage provided deeper insight into the triage process, to ensure patient safety and acquire proficiency in emergency nursing. Based on our findings, a resolution for an appropriate pediatric triage system can be developed, increasing awareness of available educational opportunities.

Conclusion

The objective of rapid triage in the emergency department is to enable medical staff (physicians and nurses) to identify patients at potential risk, based on clinical data, subjective information and previous experience, and a cognitive and intuitive process in emergency services.[33]

This study explored the cognitive structure of emergency nurses' perspectives of pediatric triage using KTAS.[4] We also observed the need for enhanced educational resources, pediatric emergency nursing clinical competencies, and appropriate allocation of ED resources for an accurate pediatric triage assessment.

We believe that an awareness of the differences among emergency nurses regarding their understanding of the pediatric triage process is a powerful tool to develop a curriculum for nursing education and is a meaningful suggestion in diverse ED environments. We suggest that further validation studies be performed regarding descriptive categories of our results.

Data, Code, and Research Materials Availability

Owing to ethical concerns, the individual interviews' supporting data cannot be made openly available. This study was based on the participants' interview data, and the IRB consent upholds the certainty that individual participants are guaranteed anonymity of personal information and safety of research data. Upon publication of this study, quotes from participants who shall remain anonymous can be shared.

This study was approved by the IRB of Seoul National University, Seoul, South Korea (IRB no. H-2101-097-1189). After explaining the purpose of the study to all participants and confirming their voluntary participation, the first author (Y.J.A.) distributed the consent form containing the purpose protocol to each participant. The participants provided a written informed consent to participate in the study.

Author Disclosures

Conflicts of interest: none to report.

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REFERENCES

1. Alshaibi S, AlBassri T, AlQeuflie S, Philip W, Alharthy N. Pediatric triage variations among nurses, pediatric and emergency residents using the Canadian triage and acuity scale. *BMC Emerg Med*. 2021;21(1):146. https://doi.org/10.1186/s12873-021-00541-0
2. Leeies M, Ffrench C, Strome T, Weldon E, Bullard M, Grierson R. Prehospital application of the Canadian triage and acuity scale by emergency medical services. *CJEM*. 2017;19(1):26-31. https://doi.org/10.1017/cem.2016.345
3. 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
4. Choi DH, Hong WP, Song KJ, et al. Modification and validation of a complaint-oriented emergency department triage system: a multicenter observational study. *Yonsei Med J*. 2021;62(12):1145-1154. https://doi.org/10.3349/ymj.2021.62.12.1145
5. Manguy AM, Joubert L, Oakley E, Gordon R. Psychosocial care models for families of critically ill children in pediatric emergency department settings: a scoping review. *J Pediatr Nurs*. 2018;38:46-52. https://doi.org/10.1016/j.pedn.2017.10.014
6. Fernández A, Ares MI, Garcia S, Martinez-Indart L, Mintegi S, Benito J. The validity of the pediatric assessment triangle as the first step in the triage process in a pediatric emergency department. *Pediatr Emerg Care*. 2017;33(4):234-238. https://doi.org/10.1097/PEC.0000000000000717
7. Lee B, Chang I, Kim DK, Park JD, Korean Society of Pediatric Emergency Medicine. Factors associated with triage modifications using vital signs in pediatric triage: a nationwide cross-sectional study in Korea. *J Korean Med Sci*. 2020;35(16), e102. https://doi.org/10.3346/jkms.2020.35.e102
8. Oh BY, Kim K. Factors associated with the undertriage of patients with abdominal pain in an emergency room. *Int Emerg Nurs*. 2021;54, 100933. https://doi.org/10.1016/j.ienj.2020.100933
9. Recznik CT, Simko LM. Pediatric triage education: an integrative literature review. *J Emerg Nurs*. 2018;44(6):605-613.e9. https://doi.org/10.1016/j.jen.2018.01.003
10. de Magalhães-Barbosa MC, Robaina JR, Prata-Barbosa A, Lopes CS. Validity of triage systems for paediatric emergency care: a systematic review. *Emerg Med J*. 2017;34(11):711-719. https://doi.org/10.1136/emermed-2016-206058
11. Ebrahimi M, Mirhaghi A, Najafi Z, Shafaee H, Hamechizfahm Roudi M. Are pediatric triage systems reliable in the emergency department? *Emerg Med Int*. 2020;2020, 9825730. https://doi.org/10.1155/2020/9825730
12. Heffernan RW, Lerner EB, McKee CH, et al. Comparing the accuracy of mass casualty triage systems in a pediatric population. *Prehosp Emerg Care*. 2019;23(3):304-308. https://doi.org/10.1080/10903127.2018.1520946
13. Bazyar J, Farrokhi M, Khankeh H. Triage systems in mass casualty incidents and disasters: a review study with a worldwide approach. *Open Access Maced J Med Sci*. 2019;7(3):482-494. https://doi.org/10.3889/oamjms.2019.119
14. Genisca AE, Sampayo EM, Mackey JM, Johnson L, Crouse HL. Assessment of attitudes toward the emergency triage system in Belize. *Glob Pediatr Health*. 2020;7. https://doi.org/10.1177/2333794X20911581
15. Moon SH, Shim JL. Triage accuracy of pediatric patients using the Korean triage and acuity scale in emergency departments. *J Korea Acad Industr Coop Soc*. 2018;19(11):626-634. https://doi.org/10.5762/KAIS.2018.19.11.626
16. Akbayram HT, Coskun E. Paediatric emergency department visits for non-urgent conditions: can family medicine prevent this? *Eur J Gen Pract*. 2020;26(1):134-139. https://doi.org/10.1080/13814788.2020.1825676
17. ENA. Position statement: Triage qualifications and competency. *J Emerg Nurs*. 2017;43(6):571-574. https://doi.org/10.1016/j.jen.2017.08.008
18. Johnson KD, Schumacher D, Lee RC. Identifying strategies for the management of interruptions for novice triage nurses using an online modified Delphi method. *J Nurs Scholarsh*. 2021;53(6):718-726. https://doi.org/10.1111/jnu.12683
19. Peng L, Luo Z, Wu L. Triage practice in emergency departments in tertiary hospitals across China: a multicenter national descriptive survey. *Nurs Health Sci*. 2021;23(2):490-497. https://doi.org/10.1111/nhs.12833
20. 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
21. Marton F. Phenomenography–describing conceptions of the world around us. *Instr Sci*. 1981;10(2):177-200. https://doi.org/10.1007/BF00132516
22. Barnard A, McCosker H, Gerber R. Phenomenography: a qualitative research approach for exploring understanding in health care. *Qual Health Res*. 1999;9(2):212-226. https://doi.org/10.1177/104973299129121794
23. Stolz SA. Phenomenology and phenomenography in educational research: a critique. *Educ Philos Theory*. 2020;52(10):1077-1096. https://doi.org/10.1080/00131857.2020.1724088
24. Yates C, Partridge H, Bruce C. Exploring information experiences through phenomenography. *Libr & Inf Res*. 2012;36(112):96-119. https://doi.org/10.29173/lirg496
25. Kwak YH, Kim DK, Jang HY. Utilization of emergency department by children in Korea. *J Korean Med Sci*. 2012;27(10):1222-1228. https://doi.org/10.3346/jkms.2012.27.10.1222
26. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res Nurs Health*. 2007;30(4):459-467. https://doi.org/10.1002/nur.20199
27. Dahlgren LO, Fallsberg M. Phenomenography as a qualitative approach in social pharmacy research. *J Soc Adm Pharm*. 1991;8(4):150-156.
28. Dreher-Hummel T, Nickel CH, Nicca D, Grossmann FF. The challenge of interprofessional collaboration in emergency department team triage-an interpretive description. *J Adv Nurs*. 2021;77(3):1368-1378. https://doi.org/10.1111/jan.14675

29. Jang JH, Kim SS, Kim S. Educational simulation program based on Korean triage and acuity scale. *Int J Environ Res Public Health*. 2020;17(23):9018. https://doi.org/10.3390/ijerph17239018
30. Recznik CT. *Comparison of Two Methods of Pediatric Triage Education*. Dissertation. Duquesne University; 2018.
31. Recznik CT, Simko LC, Travers D, Devido J. Pediatric triage education for the general emergency nurse: a randomized crossover trial comparing simulation with paper-case studies. *J Emerg Nurs*. 2019;45(4):394-402. https://doi.org/10.1016/j.jen.2019.01.009
32. Janes G, Mills T, Budworth L, Johnson J, Lawton R. The association between health care staff engagement and patient safety outcomes: a systematic review and meta-analysis. *J Patient Saf*. 2021;17(3):207-216. https://doi.org/10.1097/PTS.0000000000000807
33. Moura BRS, Nogueira LS. Performance of the rapid triage conducted by nurses at the emergency entrance. *Rev Lat Am Enfermagem*. 2020;28:e3378. https://doi.org/10.1590/1518-8345.3467.3378

Emergency Departments Treating Veterans for Suicide: Ensuring Quality Care for Veterans Outside of Department of Veterans Affairs Health Care Facilities

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Contribution to Emergency Nursing Practice

- Veterans are at high risk of suicide, and rural veterans are at higher risk of suicide than nonrural veterans.
- Although emergency departments typically inquire about veteran status for billing purposes, this status is not used in assessing, treating, or referring patients for additional care. Implementing veteran-specific suicide assessment and intervention best practices could improve quality care for all ED patients.
- Emergency departments can improve suicide care for at-risk veterans. Identification of veteran status can allow for veterans affairs treatment after discharge. Additional education about mental health and suicide prevention should be provided to emergency clinicians, including using available VHA online education about veteran-specific suicide risk factors and community service providers.

Abstract

Introduction: Veterans die by suicide at higher rates than nonveterans. Given that the emergency department is often the first point of entry to healthcare following a suicide attempt, it would be beneficial for community providers to have knowledge of the characteristics, medical issues, and effective treatments most often associated with those having served in the military to ensure guideline concordant and quality suicide care. This study aimed to identify assessment and referral practices of emergency departments at rural community hospitals related to care for suicidal veterans and explore the feasibility and acceptability of identifying veterans in need of postdischarge aftercare.

Methods: This qualitative exploratory study involved content analysis of semistructured interviews. Ten emergency clinicians from 5 rural Arkansas counties with high suicide rates were interviewed about their experiences working with suicidal

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patients within the emergency department and perceptions of assessment, management, and referral practices.

Results: Although most of the emergency departments had a process for assessing for suicide risk, emergency clinicians did not always feel confident in their knowledge of assessing and caring for suicidal patients. Military history was not included in assessment, treatment, or aftercare planning, nor were brief interventions such as safety planning or lethal means safety education provided.

Discussion: Best practices for suicide assessment and management of veterans exist; however, challenges specific to the emergency department regarding staff training and engaging the community to effectively link at-risk veterans to needed care hinder implementation. Veteran-inclusive assessment and intervention practices could enhance the quality of care provided in community emergency departments.

Key words: Suicide; Emergency departments; Critical care; Veteran; Treatment; Continuity of care

Introduction

The 2022 Veterans Health Administration (VHA) Suicide Report continues to document an alarming rate of veteran suicide, with 16.8 veterans dying by suicide daily.[1] Given that the emergency department is often the first point of entry to health care after a suicide attempt, it would be beneficial for community providers to have knowledge of the characteristics, medical issues, and effective treatments most often associated with those having served in the military to ensure guideline concordant and quality suicide care.[2]

Studies investigating health care utilization among those who die by suicide within the general population reveal that many contacted a health care provider in the year before death,[3-9] indicating a missed opportunity for screening and identification of risk. In addition, rural compared with urban veterans have increased suicide risk stemming from constraints on mental and physical health care access; lower quality of life; socioeconomic inequalities in income, education, and community resources; and increased firearm ownership.[10-15] Individuals at risk of suicide may present for care in a variety of settings to include primary care clinics, social service agencies, urgent care, or the closest medical facility with an emergency department.[16,17]

Current Joint Commission standards mandate that emergency departments screen patients at risk of suicide,[18–20] and thus, all health care providers in the emergency department, especially frontline workers such as nurses, should have knowledge of suicide screening.[21–23] Risk assessment and mitigation,[23] including lethal means counseling and the ability to develop a suicide safety plan, may also be helpful.[2,18,24] Training all clinical staff in the emergency department provides an opportunity to discuss what broader systems are in place when a patient presents to the emergency department in crisis.[20] By all staff in training, it emphasizes how other services and professionals might be available to high-risk patients that nurses could consider triaging to. This qualitative pilot study aimed to assess real-world practices in rural community emergency departments in a southern state with a high rate of suicide. Our goal was to determine whether assessment of suicide risk and military service history among patients reporting suicidal ideations or attempts were common practices in this setting. We also aimed to explore the acceptability and feasibility of community emergency departments referring at-risk veterans to mental health care at a VHA facility or other community organizations after discharge. Finally, this study explored policies and practices of emergency departments regarding suicide risk assessment, identification of military history, aftercare planning for patients with identified suicide risk, and tracking of aftercare.

Methods

STUDY DESIGN AND THEORETICAL FRAMEWORK

This study was a qualitative exploratory study design involving semistructured interviews with key informants (see below) and content analysis.[24–40] Key informant interviews aimed to identify current clinical practices related to the care of suicidal patients and explore the acceptability, feasibility, and determinants of the use of a standardized suicide screening and risk assessment, identification of military history, and discharge and referral practices for continuity of care between community emergency departments and VHA facilities or other mental health organizations. The Consolidated Framework for Implementation Research, which outlines 5 theory-driven domains associated with implementation, informed qualitative key informant interview questions exploring determinants of suicide prevention practices.[29,30] Ethical approval to conduct the study was attained from the Central Arkansas Veterans Health Care System Institutional Review Board. The Consolidated Criteria for Reporting

Qualitative Research was used in the development of this manuscript.[31]

SELECTION OF KEY INFORMANTS

This study used purposive sampling of clinicians working in community hospital emergency departments in rural counties with high rates of suicide deaths. Emergency clinicians, including physicians, nurses, social workers, and other health care providers, and administrators at 2 of 10 identified hospitals were sent a recruitment email by the research team and invited to participate. We conducted interviews with emergency clinicians recruited from these 2 hospitals before the COVID-19 pandemic. After a year-long delay owing to health care deployment and focus on the pandemic, we collaborated with our Arkansas Department of Health partners to send a recruitment email to the point of contacts for rural hospitals in Arkansas. Our inclusion criteria were community hospitals located in the top quartile of rural identified counties that had a high number of veterans and/or a high suicide rate in their service area. This secondary recruitment effort resulted in the addition of 3 hospitals, for a total of 5 hospitals in the study. The study spanned July 2019 to March 2021 with funding provided by the VHA.

SETTING

The novelty of this work is two-fold: first, few contemporary studies have assessed suicide prevention practices in nonveteran emergency departments, and second, the geographic setting is understudied in regard to suicide. Arkansas (the study location where the study team is employed) is a rural state that is home to approximately 227,840 veterans, of which an estimated 114,261 (50.15%) are enrolled in Veterans Affairs (VA) health care.[32,33] The justification for the study is also based on the state having a high rate of gun ownership and in 2019 ranked 14th nationally in suicide deaths, with 62.7% of suicide deaths in Arkansas involving a firearm and 70.6% of those were veterans.[32–37]

PERSONAL CHARACTERISTICS

The first author, a female who has a doctorate in counseling, conducted the interviews. She was employed by the VHA and completed postdoctoral training in mental health services research, completed a mentored suicide prevention research fellowship, and has conducted numerous qualitative studies using interviews. The senior member of the research team is a National Institute of Mental Health postdoctoral fellowship trainee in suicide research and has been a VHA social work researcher for nearly 20 years who provided guidance and feedback on this and other completed collaborative projects and manuscripts.

RELATIONSHIP WITH PARTICIPANTS

A relationship was established between the first 2 study sites and the first author before study commencement owing to her work on a statewide initiative to integrate veterans into the state suicide prevention plan. The participants knew this background and the reasons for doing the research owing to the research team sharing the informed consent and study documents with the participants before participation as part of recruitment efforts. The interviewer's reasons for conducting this study were based on demographic knowledge of county-level suicide rates in the state of Arkansas, her home state, and the high rate of suicide in rural areas in this and other areas of the United States.

DATA COLLECTION METHODS, INSTRUMENTS, AND TECHNOLOGIES

Eligible participants—those employed in an emergency department located in the state of Arkansas—were emailed a description of the study purpose and a copy of the previously pilot-tested interview questions, and an interview was scheduled. The semistructured interview guide focused on 6 categories: the practices and procedures emergency departments use in the (1) identification of military history, (2) assessment for suicidal ideation and suicide risk, (3) treatment/stabilization for reported suicidal crisis, and (4) aftercare instructions and referral practices; (5) perceptions of common suicide attempt methods among ED patients; and (6) recommendations about how to improve care for veterans reporting suicidal crisis (see Table). During the interview, the interviewer explained the study and conducted the interview. Interviews lasted approximately 30 minutes. There were no repeat interviews owing to technology challenges or returned transcripts of interviews or field notes for member checking.

DATA ANALYSIS

Each interview was audio recorded using Audacity for Windows version 3.0.0[38] and stored on a VHA secure server. Audio recordings were transcribed verbatim by administrative staff trained in transcription services. Transcripts were reviewed by the principal investigator, who is a doctorally trained clinical researcher with experience in qualitative

TABLE
Example key informant interview questions

CFIR domain	Example interview questions
Intervention characteristics	What kinds of changes or alterations do you think you will need to make to identify military history, assess for suicide risk, refer Veterans for mental health treatment, and track aftercare? Are these practices acceptable and feasible within your emergency department?
Inner setting	Would your emergency department assess for suicide risk of ED patients? Would your ED ask about military service history or Veteran status? How well does this inquiry fit into your existing practices? How do you think your organization's culture (general beliefs, values, assumptions that people embrace) will affect whether and how these questions are asked? What are the discharge practices for patients reporting suicide risk? What tracking or follow-up practices does your emergency department use for patients reporting suicide risk?
Outer setting	How well do you think these procedures will meet the needs of the individuals served by your hospital? How do you think the individuals served will respond to these procedures?
Characteristics of individuals	On a scale from 1 to 10, how confident are you that you will be able to successfully implement the inquiry of military history, provide veteran-specific referrals at discharge, and provide follow-up to discharge suggestions? What gives you that level of confidence (or lack of confidence)? Would each of these practices be acceptable to and feasible for you in your practice?
Implementation process	Who would need to be engaged to implement identification and tracking of veterans at risk of suicide? What costs would be incurred to implement the practices described? Would each of these practices be acceptable and feasible within your ED system?

CFIR, consolidated framework for implementation research; ED, emergency department.

methods, for completeness and accuracy. She corrected any errors or omissions before entry into Atlas.ti, version 7[39] a software program that facilitates management, coding, and analysis of narrative data. Two members of the study team who were trained in qualitative analysis read each interview and coded them independently to identify primary themes that emerged. Coding and saturation were discussed, and any discrepancies were identified and discussed until 100% agreement was met. Resulting themes were guided by the previously developed interview guide and discussed and approved by 2 additional doctoral-level investigators from the team who possess qualitative expertise to ensure there were no additional identified concerns.

REPORTING

Criteria for assuring scientific rigor in qualitative research include consistency, reliability of coding, auditability, and validity.[40–43] An audit trail was kept of the procedures, with all quotes identifiable. To assure consistency and mitigate bias, all interviews used the same broad opening and probing questions, and transcripts were monitored for problems such as drift or failing to probe for answers in enough detail to maximize the interview content. Participant quotations are presented to illustrate the major themes and findings, which were consistent.

Results

Participants included 10 clinicians, including 6 nurses (4 emergency nurses, 1 nurse case manager, and 1 nurse patient experience specialist), 2 social workers, 1 case worker, and 1 emergency physician employed in rural community hospitals in Arkansas.

PERCEPTIONS OF SUICIDE ATTEMPT METHOD

All participants perceived that overdose was the most prominent method of suicide attempt among their ED patients. Most participants perceived the drugs used by most patients for the suicide attempt were drugs the patient obtained

illegally. Other suicide attempt methods reported included cutting, hanging, and asphyxiation. No participant mentioned firearms as a method used by patients for suicide attempts or mentioned lethal means counseling as an intervention. One participant said, "Usually if somebody attempts with a firearm, they are successful, honestly."

SETTING, INTERVENTION, AND INDIVIDUAL CHARACTERISTICS: CURRENT PRACTICES AND PROCEDURES

Identification of a Patient's Military Service

Each of the 5 emergency departments identified veteran status only during administrative registration at triage and only for billing purposes. Emergency clinicians did not inquire about military service as part of clinical assessment or treatment practices. Veteran status was also not considered for treatment or for referral purposes. One participant indicated it is only discussed if the patient disclosed their veteran status voluntarily: "The only true time that would be assessed is when our … insurance people go and talk to the patient and … they tell them at that time they are a veteran or say if they have TRICARE or something like that." Another participant stated, "Point blank, we don't ask that question in the emergency department." Participants reported no identified barriers to asking about military history as it related to assessment and triage, and they consistently indicated the military service questions could be added to the triage questioning with relative ease if approved by the leadership of the facility. They also indicated that collecting these data could be facilitated through the electronic health record system.

Suicide Screening and Risk Assessment

Most participating emergency departments reported some procedure for identifying suicidal ideation among all patients presenting to the emergency department; however, one suggested that they asked questions about mental health more broadly but did not ask all patients about suicidal ideation. Although no participant was able to specify the exact suicide assessment instrument used, participants indicated that the questions generally asked whether the person had thought of harming themselves, and if so, they would be asked additional questions that would guide the plan for treatment. One participant described the assessment as, "Every time for every patient during triage, we ask if they feel like they want to hurt themselves. We ask if they have felt down, depressed, or hopeless. Do you have any thoughts of harming yourself? Do you have a plan? Have you recently thought about killing or harming yourself?" No participant was able to provide copies of assessment tools or exact wording of triage questions.

Treatment/Stabilization Process

All participating emergency departments described procedures to stabilize the patient in a separate, safe location, removing all potentially harmful objects, and monitoring to determine whether inpatient or outpatient services were warranted. Participants reported observation time varied based on the patient's intoxication level. If the individual was deemed to be at imminent suicide risk, they would be immediately referred to inpatient services. However, if intoxicated, the patient would be held in the emergency department until sober enough for the clinician to reassess. One participant said, "Half of them we see are intoxicated with other drugs onboard. The other half is just truly intoxicated with a blood alcohol level of 0.2 or 0.3 and say that they don't want to live anymore, whether that's associated with depression or alcohol.… We have to sober them back up and then reassess."

Aftercare Instructions and Referral Practices

Participants were asked to describe their aftercare instructions. If outpatient services were warranted, most participants said this was done by referral, with one institution providing a warm hand-off either by phone or online telehealth visit. One facility had an inpatient mental health unit, whereas others had to collaborate with other facilities that provided inpatient mental health care. Participants at one hospital mentioned a community mental health provider serving the catchment area that would either meet the patient at the hospital for further assessment or conduct the assessment using an online, face-to-face platform. One participant said, "The main thing we do is always contact [name of local counseling clinic]. We can also do video conferencing with them. They can talk to … and interview the patient." Some participants said that a patient can be held at a critical care unit until an inpatient facility was identified and a bed made available.

Three of the 5 participating emergency departments provide a resource document to the patient at discharge. Three emergency departments are using nonharm contracts with patients. Two of the participating emergency departments provide a follow-up call to the patient after discharge. Some participants discussed concerns for their facility's

aftercare instructions, such as concerns about access to timely follow-up care. One participant said,

> I believe it says on the ER discharge paperwork, follow up within 3 to 5 days. A lot of times that's not physically possible. They can't actually get into a community behavioral health provider within that time frame. Either they can't get their insurance pre-approved, or they don't physically have an opening for those patients, especially here in rural Arkansas. So, our ideal is 3 to 5 business days, but I think probably the reality is more like 10 to 14 days.

This participant went on say,

> Fourteen days is not a feasible amount. It's not going to meet their needs. So, a reasonable amount of time where they could look forward to that tomorrow or the next day. And then in the very near future set up a longer appointment where we can visit. I feel like technology and that local connection, meeting them at their local VA clinic or whatever. It's kind of like a carrot of a thing, a face-to-face connection.

Another participant reported that when a patient indicates they are a veteran, are enrolled in care through the VHA, and are suicidal, a referral is made to the VHA, but placement in VA-supported community services is not always possible. The participant said,

> With some VA doctors, it's hard to get patients' home health. Those are some barriers with that. It takes a lot. Usually there's a call list. We'll call, get the person on the list. Most of the times we've done it, the patient ended up just staying here, and then was ready for discharge and we just discharged them. I don't think it's been really successful chance for us, but it is an option in case they needed it. It takes so many days that, at that point, they were already ready for discharge.

IMPLEMENTATION PROCESS: RECOMMENDATIONS TO IMPROVE ED CARE FOR ALL SUICIDAL PATIENTS

In general, participants indicated a need to improve management and treatment of all patients with suicidal thoughts or attempts in the emergency department. Overall, reports from ED staff indicate they thought treatment options for suicidal behavior were limited compared with traditional procedures in the emergency department. Participants identified their roles being to provide emergency care for physical ailments and having limited, if any, training in mental health care. Participant comments were primarily within 2 target areas: staff training and education and engaging the community to support linkage and referral efforts.

Training and Education of Emergency Clinicians on Mental Health and Suicide Interventions

Participants recommended additional education about mental health, suicide risk factors, and suicide treatment options owing to the limited resources available in rural settings. One participant said,

> I want to get an in-service for my nurses over mental health.… Just some tactics about building rapport.… We're not mental health, but just to get some education because sometimes there is a day or 2 gaps where we have to take care of patients while waiting placement. Our techs and nurses would obviously benefit from anything to take better care of somebody who is going through a crisis.

Another participant commented how they were trained not to cross the line of providing mental health care but instead leaving that for the mental health professional. They said,

> Mental health is one of the biggest stigmas in the United States as we speak right now. No one knows what to do with it. Nobody knows when you can talk about it. I have nurses that struggle if somebody is suicidal, and I'm like, they already know they are suicidal. Let's build a rapport with them and treat them. There's just this stigma and this cloud that goes along with it. So, I do think that we would definitely benefit from getting involved, diving deep into our community.

Community Support Efforts for Linkage and Referral

Comments were made indicating disbelief that the health care system was going to solve the suicide crisis. One participant suggested that veteran-serving organizations will need to collaborate to effectively link at-risk veterans to needed care, saying,

> It's not going to be one organization that comes in and says, "OK, we are pushing out mental health for veterans." It's not going to be just the VA.... It's going to be a collaboration to kick it off, and it will be

> tough.… We are not mental health. We don't have a mental health facility at [town name], so the biggest thing would have to be in a collaboration effort with organizations to push out and work together to figure out what this community would need, what our weaknesses are, and how to best serve them.

In addition to recommending improved access to mental health services in the emergency department and collaboration among veteran-serving organizations in the community, participants recommended the development and promotion of web resources, including telehealth, websites, chatrooms, and online support, that link veterans in suicidal crisis to health care services, resources, and peer support. In addition, several comments were made about the need to develop and promote community services for treatment and postdischarge support. This included linking those experiencing suicidal thoughts to community resources, support groups, and other people with similar experiences. One participant said,

> If they feel alone in the things that they go through, as a health professional, I cannot understand. I was not in a war zone. I can't imagine what they have seen. I can't imagine what they have gone through and all of the trauma that has taken place. My perspective in the things we are lacking, it doesn't necessarily start in our ED, but in this community. They don't need to feel alone. They don't need to feel like they can't talk about it. Or, they need to be surrounded by people that understand what they've gone through and can help them and that is the safe place.

This participant went on to say,

> These people feel like they have got no help. We could identify them all day long, but pushing them off to the next thing, if you don't have a community-based resource where you have people who have walked through that. I have a friend who, her husband dealt with (posttraumatic stress disorder), and he helped veterans with the same thing around the world and travels. I think that's what we need, because I don't think our health care system is ever going to be able to address that. But I think if we individualize the problem and make it community based, I think that would help.… Build that community around the veterans and what they are going through.

Participants also recommended improving veteran-centric care and support by welcoming veterans from the community to volunteer by assisting other veterans who were seeking care in that facility. One hospital reported current discussions on improving veteran awareness and support among providers to include magnets on the doors of identified veterans so that staff would know about their military service, as well as instituting a veteran ambassador program where identified veterans would receive a visit each day from a veteran ambassador. This would be an opportunity to learn more about any concerns or needs of the veteran and the potential for linkage to resources. Although the participant indicated there were veterans interested in establishing the program, identified barriers included facility buy-in and commitment to build the infrastructure needed to promote and sustain efforts.

Discussion

This study is novel in that it documents the variability in management practices of patients with suicide ideation in rural Arkansas emergency departments, as well as the lack of assessment and referral practices related to identifying military history, suicide risk, and postdischarge aftercare of patients admitted to community emergency departments serving rural Arkansas. Although all hospitals assessed veteran status for billing purposes, this was not a characteristic used in assessing, treating, or planning aftercare of patients. Participants recommended identifying military history as part of assessment practices for diagnosis and treatment, recognizing the importance of using this information in aftercare planning to promote continuity of care and connection with veteran-specific mental health services, and believed this would be possible at their hospital if presented to and approved by hospital administration. Finally, participants in this study identified many implications for improvements that could be made in the areas of suicide care education and involving the community for support.

Our findings highlight the need to educate all emergency clinicians, including nurses, social workers, and physicians, about suicide risk, suicide prevention interventions, lethal means counseling, and mental health broadly, as well as about risk factors and services specific to veterans. The VHA currently provides training for clinical and nonclinical staff about suicide and how to assist people experiencing warning signs for suicide, and the online ICAR^{2}E[44] tool was created by the American College of Emergency Physicians and the American Foundation for Suicide Prevention for civilian patients at risk of suicide. However, clinicians in this study were unaware of these resources. Findings from this study suggest that all emergency clinicians might benefit from these resources to better manage suicidal patients in general and to

coordinate available services and care within the broader health care environment. Another finding is that collaboration with veteran-serving organizations might better link at-risk veterans to needed care from existing community services and resources, as well as providing more services that promote these connections to veteran-specific services.

Limitations

One limitation of this study was the extended time frame and changes to recruitment for the project owing to the coronavirus disease 2019 pandemic. Some ED staff responded to recruitment emails reporting inability to participate owing to the competing demands on their time owing to the pandemic. Potential sample bias may be caused by the recruitment modification using a snowball approach seeking participants from any rural hospital in the state and limiting the sample owing to budget and timeline restrictions, yet there was great consistency in the responses received from the 10 participants, and unless specified, we only reported findings consistently reported by at least 8 participants. A second limitation is that responses about policies and procedures are only the opinions of the participants. Each interview ended with a request to receive a copy of the facilities policies and procedures for treating suicidal patients in the emergency department. Although many indicated they would send the documents, none were received. Additional methods and resources for collecting this information may be needed in future studies.

Implications for Emergency Nurses

Many clinicians noted practices that are at odds with current best practices for managing ED patients at risk of suicide.[45–48] Three of the participating emergency departments in this study disclosed that they are using nonharm contracts with patients at risk of suicide—a practice that is no longer recommended by suicide prevention organizations, given that it does not protect the clinician against subsequent malpractice claims and may unethically restrict a patient's choices when they may be already struggling for control.[49] Despite evidence about the efficacy of safety planning,[50,51] lethal means counseling,[52,53] and postdischarge caring contacts,[54] no emergency department in our study reported use of these as part of a routine clinical practice. Training on suicide prevention interventions,[55] such as safety planning, coupled with stabilization and medication management, as indicated in the VA/Department of Defense CPG for the Assessment and Management of Patients at Risk for Suicide (https://www.healthquality.va.gov/guidelines/MH/srb/), could potentially improve care for ED patients and promote safety in the time between ED discharge and follow-up.

Other recommendations for emergency departments to include in veteran-specific assessments include screening for posttraumatic stress disorder (PTSD).[56] The VA/Department of Defense CPG for PTSD and Acute Stress Disorder (https://www.healthquality.va.gov/guidelines/MH/ptsd/)[57] recommend screening for comorbid conditions such as PTSD when evaluating a patient's suicide risk. In the nonmilitary population, approximately 6% to 7% of adults experience PTSD; however, in the veteran population in 2016, the VHA reported 10.6% of veterans had a diagnosis of PTSD. In veterans who served in Afghanistan and/or Iraq, 26.7% had a diagnosis of PTSD. Because the veteran's medical history may not be available in the emergency department, additional screening using the Primary Care PTSD Screen for DSM-5[58] and the PTSD Checklist for DSM-5[59] may be warranted.

Conclusion

Findings from this study indicate that participating ED providers assessed for suicidal ideation within ED settings, but the staff did not always feel confident in their knowledge of suicide and how to intervene. In addition, military history, which confers increased suicide risk, was not taken into consideration for treatment and referral, nor were veterans linked back to treatment at the VA, which uses evidence-based interventions such as safety planning, lethal means safety education, and postdischarge caring contacts. These suicide prevention strategies, which are unavailable in many community emergency departments, have been shown to reduce suicide mortality. Identification of veteran status in the emergency department can potentially improve connections to VA care, thereby increasing the potential for suicidal veterans to receive evidence-based interventions in VA settings after ED discharge. Although further investigation using a larger sample is warranted, findings suggest a need for all emergency clinicians, especially emergency nurses who are on the front lines, to have educational opportunities to learn about issues commonly reported by those with military service history, such as suicide risk, and interventions for suicide in the emergency department and veteran-specific health care services and resources.

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Author Disclosures

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Data are stored, monitored, and available per the Central Arkansas Veterans Health Care System Institutional Review Board guidelines.

REFERENCES

1. Office of Mental Health and Suicide Prevention. *2022 National Veteran Suicide Prevention Annual Report*. U.S. Department of Veterans Affairs; 2022. Accessed October 18, 2022. https://www.mentalhealth.va.gov/docs/data-sheets/2022/2022-National-Veteran-Suicide-Prevention-Annual-Report-FINAL-508.pdf
2. National strategy for preventing veteran suicide 2018-2028. U.S. Department of Veterans Affairs. Published 2018. Accessed March 4, 2022. https://www.mentalhealth.va.gov/suicide_prevention/docs/Office-of-Mental-Health-and-Suicide-Prevention-National-Strategy-for-Preventing-Veterans-Suicide.pdf
3. Owens PL, Fingar KR, Heslin KC, Mutter R, Booth CL. Emergency department visits related to suicidal ideation, 2006-2013. In: *Healthcare Cost and Utilization Project (HCUP) Statistical Briefs*. Agency for Healthcare Research and Quality; 2017.
4. Bridge JA, Olfson M, Fontanella CA, Marcus SC. Emergency department recognition of mental disorders and short-term risk of repeat self-harm among young people enrolled in Medicaid. *Suicide Life Threat Behav*. 2017;48(6):652-660. https://doi.org/10.1111/sltb.12377
5. Dekker WPH, Vergouwen ACM, Buster MCA, Honig A. Acceptance of guidance to care at the emergency department following attempted suicide. *BMC Psychiatry*. 2017;17(1):332. https://doi.org/10.1186/s12888-017-1491-z
6. Ahmedani BK, Simon GE, Stewart C, et al. Health care contacts in the year before suicide death. *J Gen Intern Med*. 2014;29(6):870-877. https://doi.org/10.1007/s11606-014-2767-3
7. Leavey G, Rosato M, Galway K, Hughes L, Mallon S, Rondon J. Patterns and predictors of help-seeking contacts with health services and general practitioner detection of suicidality prior to suicide: a cohort analysis of suicides occurring over a two-year period. *BMC Psychiatry*. 2016;16(1):120. https://doi.org/10.1186/s12888-016-0824-7
8. Targum SD, Friedman F, Pacheco MN. Assessment of suicidal behavior in the emergency department. *Innov Clin Neurosci*. 2014;11(9-10):194-200.
9. Larkin GL, Beautrais AL. Emergency departments are underutilized sites for suicide prevention. *Crisis*. 2010;31(1):1-6. https://doi.org/10.1027/0227-5910/a000001
10. Wallace AE, Weeks WB, Wang S, Lee AF, Kazis LE. Rural and urban disparities in health-related quality of life among veterans with psychiatric disorders. *Psychiatr Serv*. 2006;57(6):851-856. https://doi.org/10.1176/ps.2006.57.6.851
11. Weeks WB, Wallace AE, Wang S, Lee A, Kazis LE. Rural-urban disparities in health-related quality of life within disease categories of Veterans. *J Rural Health*. 2006;22(3):204-211. https://doi.org/10.1111/j.1748-0361.2006.00033.x
12. West A, Weeks WB. Physical and mental health and access to care among nonmetropolitan Veterans Health Administration patients younger than 65 years. *J Rural Health*. 2006;22(1):9-16. https://doi.org/10.1111/j.1748-0361.2006.00014.x
13. Cukrowicz KC, Brown SL, Mitchell SM, Roush JF, Hirsch JK. Feasibility of assessing suicide ideation and history of suicidal behavior in rural communities. *Suicide Life Threat Behav*. 2018;48(5):522-530. https://doi.org/10.1111/sltb.12378
14. McCarthy JF, Blow FC, Ignacio RV, Ilgen MA, Austin KL, Valenstein M. Suicide among patients in the Veterans Affairs health system: rural-urban differences in rates, risks, and methods. *Am J Public Health*. 2012;102(Suppl 1):S111-S117. https://doi.org/10.2105/AJPH.2011.300463
15. Bonnar KK, McCarthy M. Health related quality of life in a rural area with low racial/ethnic density. *J Community Health*. 2012;37(1):96-104. https://doi.org/10.1007/s10900-011-9422-2
16. *Recommended standard care for people with suicide risk: making health care suicide safe*. National Action Alliance for Suicide Prevention. Education Development Center, Inc.; Published 2018. Accessed October 4, 2021. https://theactionalliance.org/sites/default/files/action_alliance_recommended_standard_care_final.pdf
17. Stuck AR, Wilson MP, Chalmers CE, et al. Healthcare usage and suicide risk screening within one year of suicide death. *J Emerg Med*. 2017;53(6):871-879. https://doi.org/10.1016/j.jemermed.2017.06.033
18. R3 report: requirement, rationale, reference. The Joint Commission. Published November 20, 2019. Accessed November 8, 2021. https://www.jointcommission.org/-/media/tjc/documents/standards/r3-reports/r3_18_suicide_prevention_hap_bhc_cah_11_4_19_final1.pdf.
19. Facts about suicide. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Published April 2021. Accessed October 4, 2021. https://www.cdc.gov/suicide/facts/index.html
20. Carroll R, Metcalfe C, Gunnell D. Hospital management of self-harm patients and risk of repetition: systematic review and meta-analysis. *J Affect Disord*. 2014;168:476-483. https://doi.org/10.1016/j.jad.2014.06.027
21. Bolster C, Holliday C, O'Neal G, Shaw M. Suicide assessment and nurses: what does the evidence show? *Online J Issues Nurs*. 2015;20(1):2. https://doi.org/10.3912/OJIN.Vol20No01Man02

22. Clua-García R, Casanova-Garrigós G, Moreno-Poyato AR. Suicide care from the nursing perspective: a meta-synthesis of qualitative studies. *J Adv Nurs*. 2021;77(7):2995-3007. https://doi.org/10.1111/jan.14789
23. Runeson B, Odeberg J, Pettersson A, Edbom T, Jildevik Adamsson I, Waern M. Instruments for the assessment of suicide risk: a systematic review evaluating the certainty of the evidence. *PLoS One*. 2017;12(7):e0180292. https://doi.org/10.1371/journal.pone.0180292
24. Office of the Surgeon General. National Action Alliance for Suicide Prevention. *2012 National Strategy for Suicide Prevention: Goals and Objectives for Action: A Report of the U.S. Surgeon General and of the National Action Alliance for Suicide Prevention*. 2012. US Department of Health & Human Services.
25. Columbia-Suicide Severity Rating Scale (C-SSRS) risk assessment (lifeline crisis center version). https://suicidepreventionlifeline.org/wp-content/uploads/2016/09/Suicide-Risk-Assessment-C-SSRS-Lifeline-Version-2014.pdf
26. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med*. 2001;16(9):606-613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x
27. Zero Suicide Institute. Toolkit: engage. Education Development Center. Accessed March 30, 2022. https://zerosuicide.edc.org/toolkit/evidence-base/engage
28. Zero Suicide Institute. Toolkit: treat-intervention/treatment. Education Development Center. Accessed March 30, 2022. https://zerosuicide.edc.org/toolkit/treat/interventiontreatment#footnote1_
29. Damschroder LJ, Lowery JC. Evaluation of a large-scale weight management program using the consolidated framework for implementation research (CFIR). *Implement Sci*. 2013;8(1):51. https://doi.org/10.1186/1748-5908-8-51
30. The Consolidated Framework for Implementation Research–Technical Assistance for Users of the CFIR Framework. Center for Clinical Management Research. Consolidated framework for implementation research team. Accessed March 3, 2018. https://cfirguide.org/
31. Tong A, Sainsury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19(6):349-357. https://doi.org/10.1093/intqhc/mzm042
32. *Arkansas vital statistics.* Suicide Rates in Arkansas. Arkansas Department of Health; 2017.
33. Veteran population projection model 2016. Office of Enterprise Integration, Data Governance & Analytics. U.S. Department of Veterans Affairs. Published June 2017. Accessed September 15, 2017. https://www.va.gov/vetdata/docs/Demographics/New_Vetpop_Model/Vetpop16_Executive_Summary.pdf
34. Miller M, Hemenway D. Guns and suicide in the United States. *N Engl J Med*. 2008;359(10):989-991. https://doi.org/10.1056/nejmp0805923
35. America's Health Rankings analysis of CDC WONDER. multiple cause of death files, explore suicide in Arkansas–2019 annual report. United Health Foundation. America's Health Rankings. Accessed March 30, 2022. https://www.americashealthrankings.org/explore/annual/measure/Suicide/state/AR
36. Anestis MD, Anestis JC. Suicide rates and state laws regulating access and exposure to handguns. *Am J Public Health*. 2015;105(10):2049-2058. https://doi.org/10.2105/ajph.2015.302753
37. Anestis M, Capron DW. The associations between state veteran population rates, handgun legislation, and statewide suicide rates. *J Psychiatr Res*. 2016;74:30-34. https://doi.org/10.1016/j.jpsychires.2015.12.014
38. Audacity. Softonic. Accessed October 4, 2021. https://audacity.en.softonic.com/?ex=BB-1857.0
39. Muhr T, Friese S. *User's manual for ATLAS*. Scientific Software Development; 2004.
40. Bernard HR, Ryan GW, Wutich AY. *Analyzing Qualitative Data: Systematic Approaches*. Sage Publications; 2010.
41. Guba EG, Lincoln YS. *Naturalistic Inquiry*. Sage Publications; 1985.
42. Morse M, Field A. *Qualitative Research Methods for Health Professionals*. Sage Publications; 1995.
43. Speziale HJ, Carpenter DR. *Qualitative Research in Nursing: Advancing the Humanistic Imperative*. 5th ed. Lippincott Williams and Wilkins; 2011.
44. Wilson M, Moutier C, Wolf L, Nordstrom K, Schulz T, Betz ME. ED recommendations for suicide prevention in adults: The ICAR2E mnemonic and a systematic review of the literature. *Ann Emerg Med*. 2020;38(3):571-581. https://doi.org/10.1016/j.ajem.2019.06.031
45. Betz ME, Wintersteen M, Boudreaux ED, et al. Reducing suicide risk: challenges and opportunities in the emergency department. *Ann Emerg Med*. 2016;68(6):758-765. https://doi.org/10.1016/j.annemergmed.2016.05.030
46. Wilson MP, Moutier C, Wolf L, Nordstrom K, Schulz T, Betz ME. Emergency department recommendations for suicide prevention in adults: the. *Am J Emerg Med*. 2020;38(3):571-581. https://doi.org/10.1016/j.ajem.2019.06.031
47. Betz ME, Boudreaux ED. Managing suicidal patients in the emergency department. *Ann Emerg Med*. 2016;67(2):276-282. https://doi.org/10.1016/j.annemergmed.2015.09.001
48. Caring for adult patients with suicide risk a consensus guide for emergency departments. Suicide Prevention Resource Center. Education Development Center, Inc.; Published 2015. http://www.sprc.org/sites/default/files/EDGuide_full.pdf. [Accessed 30 May 2018].
49. McMyler C, Prymachuk S. Do no-suicide contracts work? *J Psychiatr Ment Health Nurs*. 2008;15(6):512-522. https://doi.org/10.1111/j.1365-2850.2008.01286.x
50. Stanley B, Brown GK. Safety planning intervention: a brief intervention to mitigate suicide risk. *Cogn Behav Pract*. 2012;19(2):256-264. https://doi.org/10.1016/j.cbpra.2011.01.001
51. Stanley B, Brown GK, Brenner LA, et al. Comparison of the safety planning intervention with follow-up vs usual care of suicidal patients treated in the emergency department. *JAMA Psychiatry*. 2018;75(9):894-900. https://doi.org/10.1001/jamapsychiatry.2018.1776
52. Diurba S, Johnson RL, Siry BJ, et al. Lethal means assessment and counseling in the emergency department: differences by provider type and personal home firearms. *Suicide Life Threat Behav*. 2020;50(5):1054-1064. https://doi.org/10.1111/sltb.12649
53. Boggs JM, Quintana LAM, Powers JD, Hochberg S, Beck A. Frequency of clinicians' assessments for access to lethal means in persons at risk for suicide. *Arch Suicide Res*. 2020:1-10. https://doi.org/10.1080/13811118.2020.1761917
54. Luxton DD, June JD, Comtois KA. Can postdischarge follow-up contacts prevent suicide and suicidal behavior? A review of the

evidence. *Crisis*. 2013;34(1):32-41. https://doi.org/10.1027/0227-5910/a000158

55. Veterans Health Administration. TRAIN. Learning Network. Train.org. Accessed December 7, 2021. https://www.train.org/vha/welcome
56. Ostacher MJ, Cifu AS. Management of posttraumatic stress disorder. *J Am Med Assoc*. 2019;321(2):200-201. https://doi.org/10.1001/jama.2018.19290
57. *VA/DOD clinical practice guideline for the management of posttraumatic stress disorder and acute stress disorder*. Department of Veterans Affairs. Department of Defense; Published June 2017. Accessed October 10, 2021 https://www.healthquality.va.gov/guidelines/MH/ptsd/VADoDPTSDCPGFinal012418.pdf
58. Primary Care PTSD Screen for DSM-5 (PC-PTSD-5). National Center for PTSD. Accessed October 10, 2021. https://www.ptsd.va.gov/professional/assessment/documents/pc-ptsd5-screen.pdf
59. PTSD: national center for PTSD. US Department of Veterans Affairs. Accessed October 10, 2021. https://www.ptsd.va.gov/professional/assessment/adult-sr/ptsd-checklist.asp#obtain

Evidence-Based vs Informal Suicide Training: Nurse Confidence and Comfort With Suicidal Patient Care

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Contribution to Emergency Nursing Practice

- Suicide-specific intervention training is associated with improved nurse confidence and patient care. Benefits of different types of training and mechanisms of training impact have not been thoroughly examined.
- Evidence-based suicide intervention training is associated with increased confidence, comfort, and perceived ability to care for suicidal patients and lower burnout than informal/lay person training.
- Suicide-specific training is associated with increased comfort caring for suicidal patients because of its positive relationship with confidence.

Abstract

Introduction: Emergency nurses are on the front line of patient care for suicidal persons, yet many nurses report feeling unprepared to effectively manage suicidal patients owing to a lack of suicide-specific training. The purpose of this study was to examine the suicide-specific training experiences of emergency nurses and evaluate how training relates to burnout, confidence, and comfort working with suicidal patients.

Methods: Emergency nurses at critical access and community hospitals completed an anonymous online survey during work hours. The survey included questions about training experiences, burnout, confidence, and comfort working with suicidal patients, perceptions of the quality and interactive nature of training, and desires for future suicide-specific intervention training.

Results: Group comparisons among the 117 emergency nurses revealed that those who received evidence-based/expert-delivered training reported greater confidence, comfort, and perceived ability to treat suicidal patients and lower burnout than those who received informal or no training. Those with informal training reported greater confidence and ability to treat suicidal patients, but similar levels of comfort and burnout as those with no training. Mediation analyses showed that training was associated with greater comfort working with suicidal patients through its effect on increased confidence. A majority desired additional suicide-specific training.

Discussion: Evidence-based/expert-delivered professional training in suicide intervention is associated with improved confidence, comfort, and perceived ability to care for suicidal patients and lower burnout. Providing evidence-based suicide intervention training may improve quality of care for suicidal patients by improving emergency nurse confidence and comfort for treating these high-risk patients.

Key words: Emergency nurse; Suicide; Patient care; Burnout; Attitude of health personnel

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Introduction

Worldwide, there are approximately 700,000 deaths related to suicide every year,[1] and ED visits related to suicide continue to increase.[2] Approximately 45% of patients who die because of suicide have contact with a health care provider within a month before their death and up to 90% within a year before their death.[3] Nurses who work in the emergency department tend to be among the first to have contact with a person in a suicidal crisis and often

play a central role in managing care; thus, nurses are said to be on the "front lines" of suicide prevention.[4,5] However, research has shown that many nurses do not receive adequate training to equip them to care for patients who are suicidal, and those who do often report the training is insufficient.[4,6] Lack of sufficient training, even an ED-specific orientation training, has been associated with nurse burnout and turnover.[7]

Burnout may be particularly high among emergency nurses who lack suicide-specific training, given those with little training tend to report higher levels of hopelessness, fears, frustrations, and inadequacies in their care of suicidal patients.[8] High burnout also is associated with more negative attitudes and decreased comfort working with suicidal patients.[9] These experiences have all been associated with poorer patient care, including avoidance of suicidal patients, insufficient suicide risk assessment, and poor engagement with patients,[1,10-12] which then is linked to poorer patient outcomes. Lack of suicide-specific training among nurses also has been shown to correspond with lower levels of confidence in caring for suicidal patients, greater anxiety/fear, and negative attitudes or apathy toward suicidal patients.[4,11,13] Conversely, nurses who receive suicide-specific training have demonstrated positive changes in their attitudes, perceived competence, fear/anxiety, and knowledge for working with suicidal patients in the short term.[14] In addition, qualitative reports from mental health nurses show that receiving training resulted in improved attitudes toward, confidence in, and an increased willingness to engage with suicidal patients.[15] Although training contents and styles have varied considerably across studies, they consistently find that training has contributed to improvements in nurses' ability to respond appropriately and engage in more effective suicide risk assessment and management of patients,[12,16] underscoring the importance of suicide-specific training for emergency nurses.

Although studies have shown that training is associated with a variety of emotional, cognitive, and skill-based improvements for nurses, there remains a lack of knowledge about whether different types of training produce stronger positive changes than others. A recent study of mental health care providers (2.1% nurses) found that the perceived sufficiency of suicide-specific training was a significant mediator of a training's relationship to improved comfort and willingness to work with suicidal patients.[17] This result is similar to that reported by Jahn and colleagues[18] who found that perceived sufficiency of training was more strongly related to lower fear of patient suicidal behavior and greater knowledge and skill working with suicidal patients than years of professional experience. Few studies have examined how the sufficiency, quality, or content of nurse trainings relate to the positive outcomes mentioned earlier. It may be that evidence-based or expert-delivered suicide prevention/intervention trainings are perceived as more sufficient and produce stronger outcomes than other less formal or agency-created trainings. Evidence-based trainings are likely to provide current, evidence-based best practices and reflect training in suicide intervention core competencies,[19,20] whereas agency-created or informal trainings may provide less depth or skill-emphasis and focus on procedural tasks such as documentation rules. However, the nurse training literature lacks information about whether evidence-based/expert-delivered suicide trainings relate to more positive outcomes than the informal trainings often provided by hospitals to staff as part of professional development. This study aimed to address this gap in knowledge.

In addition, there is limited research examining mechanisms that may explain how training affected nursing attitudes and comfort for working with suicidal patients. Studies show that perceived self-efficacy, or the belief and confidence in one's ability to perform a task, is a strong predictor of comfort and willingness to attempt the task.[21-23] According to the theory of planned behavior,[24] confidence to engage in a behavior (eg, intervene with a suicidal patient) is the strongest predictor of whether a behavior will occur. Supporting this idea further, Osteen and colleagues[16] found that self-efficacy significantly mediated the effects of an evidence-based suicide intervention training on mental health providers' (17% nurses) use of suicide intervention practices 4 months after training. However, this is 1 study and focused on a broad range of mental health providers, so its generalizability to emergency nurses is uncertain. It is very possible that nurses' attitudes toward and comfort working with suicidal patients are positively affected by training through increased confidence, but studies have not yet examined this possibility among nurses.

The aim of the current study was to examine how training experiences, or lack thereof, relate to emergency nurses' confidence, attitudes, and burnout when working with suicidal patients. We hypothesized that nurses who report receiving suicide-specific, evidence-based/expert-delivered training will report higher levels of confidence, less burnout, and more positive attitudes/comfort working with suicidal patients than those reporting informal/lay person trainings or no training. Second, we hypothesized that confidence would mediate the relationship between training experience and attitudes/comfort working with suicidal patients. Knowing this information will assist with decisions about professional development and training initiatives for emergency nurses who care for suicidal patients.

TABLE 1
Descriptive demographic features and ED experiences of sample

Demographic statistics	Frequency (%)
Sex	
Male	13 (11.1)
Female	104 (88.9)
Race/ethnicity	
White/Caucasian	113 (97.4)
Black/African American	1 (0.9)
Native American	2 (1.7)
Type of hospital	
Critical access	67 (57.3)
Community hospital	50 (42.7)
Have you worked with a suicidal patient in the ED?	
Yes	115 (98.3)
No	2 (1.7)
Nursing degree	
BSN (RN)	82 (70.7)
ADN (LPN)	15 (12.9)
Other (APRN, etc.)	19 (16.4)
How often do you encounter patients who are suicidal in the ED?	
Rarely	7 (6.0)
Occasionally	24 (20.5)
Often	58 (49.6)
Almost always/most shifts	28 (23.9)
Years of experience	
<5 y	18 (15.4)
5-10 y	38 (32.5)
11-20 y	36 (30.8)
21-30 y	18 (15.4)
31-40 y	7 (6.0)

ED, emergency department; BSN, Bachelor of Science in Nursing; RN, registered nurse; ADN, Associate Degree in Nursing, LPN, licensed practical nurse; APRN, advanced practice registered nurse.

Methods

PARTICIPANTS AND PROCEDURES

The targeted participants of this study consisted of emergency nurses within critical access (eg, <25 inpatient beds with stays <96 hours; often located in rural areas) and community hospitals in the northwestern region of a major health care system located in the Midwestern United States. All full-time emergency nurses were contacted via their work email and invited to participate in an anonymous online study during work hours. Interested nurses could click on a link within the invitation email that directed them to the consent page of the study survey. Those agreeing to participate in the study then were shown the survey questions. All data collection was conducted using the Qualtrics survey platform, and participation was anonymous. The study procedures were approved by the ethics review committee at the hospital system where data were collected, and the university affiliated with the first author.

SURVEY MEASURES

Participants were asked to state their age, gender identity, race/ethnicity, type of nursing degree, years of experience, and how often they encounter suicidal patients (response range 1 = rarely to 4 = almost always/most shifts).

To measure emergency nurses' confidence in suicidal patient care, an adaptation of an 8-item scale used to measure undergraduate nurses' confidence in care for oncology patients[25] was used. Items were adapted so that instead of referring to care of oncology patients, items referred to suicidal patients. Consistent with the original scoring guidelines, participants responded to each item (eg, "How confident are you in your ability to manage suicide risk of a patient?") using a 10-point Likert-type scale ranging from "0; Not at all confident" to "10; Totally confident." Total scale scores are calculated by averaging the response values across items so that higher scores indicate greater confidence. The adapted scale has not been psychometrically validated but internal consistency estimates within our sample were strong (Cronbach's $\alpha = 0.92$). In addition, a principal axis factor analysis with oblimin rotation supported a single factor structure (eigenvalue = 5.297) accounting for 66.22% of the variance with all item loadings >0.680 (range = 0.680-0.859).

The occurrence of burnout within our sample was measured using the 9 items of the emotional exhaustion and depersonalization subscale from the Nurse-Experienced Time Pressure, Burnout, and Patient Safety Interaction Questionnaire.[26] Scale scores are calculated by averaging the response values so that higher scores indicate higher burnout. This burnout subscale has strong psychometric properties and had strong internal consistency within the current sample (Cronbach's $\alpha = 0.89$).

To evaluate comfort/attitudes toward working with suicidal patients, the full, 11-item Understanding Suicidal Patients Scale[27] was used. Items evaluated comfort working

TABLE 2
Suicide-specific training options participants endorsed and categorization

Training option	n (%) of participants	Categorization
Question, Persuade, Refer*	3 (2.6)	Informal/lay person
Applied Suicide Intervention Skills Training	1 (0.9)	Evidence based
Yellow Ribbon*	3 (2.6)	Informal/lay person
Assessment and Management of Suicide Risk	8 (6.8)	Evidence based
Zero Suicide	4 (3.4)	Evidence based
Recognizing and Responding to Suicide Risk	5 (4.3)	Evidence based
Collaborative Assessment and Management of Suicide	4 (3.4)	Evidence based
Agency-offered/hospital-offered professional development	37 (31.6)	Informal/lay person
Agency-offered/hospital-offered documentation or procedure training	16 (13.7)	Informal/lay person
Continuing education program by suicide expert	26 (22.2)	Evidence based
Other†	28 (23.9)	–
Have not received suicide-specific training	29 (24.8)	No training

Participants could choose all that they participated in so summed percentages will exceed 100.

* Programs were coded as informal/lay person given that they are designed to teach the general public to recognize warning signs and refer at-risk individuals to the emergency department/mental health services.

† Written responses were coded, with most reflecting company-offered procedural training.

with and attitudes toward suicidal patients (eg, "I find it difficult to understand a person who at attempted suicide" reverse coded; "A patient who has attempted suicide is the kind of person whom I like to help"). Total scale scores are calculated by averaging the response values across items so that higher scores indicate greater comfort and more positive attitudes toward patients. The Understanding Suicidal Patients Scale has shown strong psychometric properties in previous studies,[28,29] and in the current sample, an adequate internal consistency was observed (Cronbach's $\alpha = 0.63$).

To measure experiences with suicide-specific training, participants responded to items evaluating the perceived quality and amount of suicide-specific training they had received. Items asked participants to estimate how many trainings in suicide risk assessment/intervention they have had, the recency of their last training (range = "Within the past week to more than 2 years ago"), how interactive the training was (eg, did it include role plays or simulations; 0 = not at all interactive; 10 = very interactive), the perceived quality of the training received (0 = very poor; 10 = extremely good), and perceptions of whether the training provided adequate skills to care for suicidal patients (1 = strongly disagree; 5 = strongly agree). Additional items asked participants to rate the extent to which training improved their ability to care for suicidal patients (0 = no improvement; 10 = extreme improvement) and levels of agreement to a statement reflecting a desire to receive further training in treating suicidal patients (1 = strongly disagree; 5 = strongly agree). Finally, participants also indicated which trainings they had participated in from a list of 11 options that presented "suicide-specific evidence-based/expert-delivered," "informal/lay person," or "no training" categories (see Table 2 Evidence-based/expert-delivered interventions refers to those providing professional skill development. Some programs listed such as Question, Persuade, Refer and Yellow Ribbon do have an evidence base support their use as a general public suicide awareness program but they do not provide clinical/professional skill intervention training so were categorized as "informal/lay person trainings."). Participants who reported more than one training experience were coded according to their highest-level training (eg, if reporting both hospital-provided training and expert training, they were coded into the evidence-based/expert-delivered group).

DATA ANALYSIS

Before analyses, data were inspected for normalcy, outliers, and missingness. All variables demonstrated acceptable skew (−0.68 to 0.59) and kurtosis (−0.06 to 0.55). Missing data were <3% across all measures and completely missing at random ($\chi^2 = 1.76$, $P = .624$), so missing values were replaced with the item mean. Descriptive statistics were calculated and reported as frequencies, percentages, means,

TABLE 3
Training group differences

Outcome variable	No training $n = 28$ Mean (SD)	Informal/lay person training $n = 54$ Mean (SD)	E-B/expert training $n = 34$ Mean (SD)	Univariate effect size *d*
Total scale: comfort	3.58 (0.39)	3.59 (0.34)	3.77 (0.29)*,†	0.49‡
Total scale: confidence	5.99 (1.65)	7.18 (1.65)*	8.10 (1.30)*,†	1.05§
Total scale: burnout	3.45 (1.02)	3.40 (0.91)	2.95 (0.76)*,†	0.56‡
Item: improve ability to treat	1.03 (1.68)	4.56 (2.40)*	5.72 (2.46)*,†	1.59§
Item: provided adequate skills	2.36 (1.16)	3.20 (1.12)*	3.81 (1.23)*,†	0.97§
Item: overall perceived quality	0.92 (1.76)	4.86 (2.37)*	5.50 (2.53)*	1.61§
Item: interactive	0.78 (1.64)	3.87 (2.12)*	5.10 (2.00)*,†	1.64§

All analyses controlled for the effects of years of experience and frequency of encounters with suicidal patients.
E-B, evidence based.
* Group differs from no training.
† Group differs from informal training.
‡ $P < .05$.
§ $P < .01$.

and standard deviations. Group differences were tested using a MANCOVA with years of experience and frequency of contact with suicidal patients as covariates, with follow-up pairwise comparisons using a Bonferroni correction. Bivariate Pearson correlations were calculated to ensure significant relationships among the variables before running mediation analyses. Tests of the mediation hypothesis controlled for the effects of years of experience and frequency of contact with suicidal patients. Mediation analyses were conducted using model 4 of the PROCESS macro[30] for SPSS (IBM Corp, Armonk, NY) that included 5000 bootstrapped resamples and bias corrected confidence intervals to determine significance. We conducted all analyses using the SPSS version 24.0.

Results

A total of 132 nurses accessed the survey. Six declined to participate and 15 had more than 50% missing data resulting in a final sample size of 117 emergency nurses (88.9% female, 97.4% white). The mean age of participants was 41.38 years (SD =10.28; range 24-63), with an average of 13.82 years of experience (SD = 9.52, range = 6 months-41 years). Almost every nurse ($n = 115$, 98.3%) reported having some experience with suicidal patient care. Additional descriptive information about the sample is presented in Table 1.

As shown in Table 1, almost all participants ($n = 115$, 98.3%) reported working with suicidal patients in the emergency department and a majority do so often to almost always ($n = 86$, 73.5%). A quarter of the emergency nurses ($n = 29$, 24.8%) reported receiving no training for working with suicidal patients. Of those who received training, 54 (46.2%) reported receiving unstructured/lay person trainings, most of which included employer-provided, brief webinars around procedures and charting, whereas 34 emergency nurses (29.1%) reported having completed at least one suicide-specific, evidence-based professional skill intervention training (see Table 2). A notable majority ($n = 86$, 73.5%) reported agreeing/strongly agreeing with a desire to receive more training for working with suicidal patients in the emergency department, 24 (20.5%) reported being neutral, and 7 (6%) disagreed with wanting more training.

Training-group comparisons showed there were significant differences among the 3 training groups, $F(14,210) = 7.25$, $P < .001$, $d = 1.39$, across all variables assessed (see Table 3). Overall, the pattern of results indicated emergency nurses who received suicide-specific evidence-based/expert-delivered intervention trainings reported more perceived ability to care for suicidal patients, comfort and confidence working with suicidal patients, and the lowest burnout than those who received unstructured/lay person or no training. Those with informal/lay person training reported more positive outcomes than those with no training on most variables but did not differ from each other on comfort working with suicidal

patients (mean difference = 0.01, $P = .89$) and burnout (mean difference = 0.06, $P = .78$). A similar pattern of differences was observed for feeling as though training provided adequate skills for working with suicidal patients. Of note, there were no differences between the evidence-based/expert trained group and informal/lay person training group on perceived quality of training received, but the evidence-based/expert trained group reported more interactive training than both the informal/lay person and no-training groups, $F(2111) = 37.23$, $P < .001$, $d = 1.64$ (see Table 3).

Bivariate correlations showed significant relationships between training, confidence, and comfort ($r = 0.29$-0.48). Burnout did not have a significant correlation with any of the other variables ($r = -0.07$ to -0.18) and therefore was not included in any mediational analyses. The model specifying confidence as the mediator of the effect of training on comfort working with suicidal patients was significant, $F(3113) = 4.04$, $P < .01$, $d = 0.65$, explaining 12.4% of the variance in comfort working with suicidal patients. Training had a direct, significant effect on increased confidence (standardized b = 0.45, $t = 5.81$, $P < .01$), and confidence had a direct, significant effect on increased comfort (standardized b = 0.32, $t = 2.95$, $P < .01$). With confidence as the mediator in the model, the direct effect of training on comfort working with suicidal patients was nonsignificant (standardized b = 0.02, $t = 0.22$, $P = 0.82$), but the indirect effect of training through confidence was significant, standardized effect = 0.14, standard error = 0.06, 95% confidence interval, 0.04 to 0.26. This indicates that confidence fully mediated training's effect on comfort working with suicidal patients, supporting the study hypotheses.

Discussion

These findings support our hypotheses, showing that training is associated with increased confidence, positive attitudes/comfort, and perceived ability to care for suicidal patients and reduced burnout among emergency nurses above and beyond the effects of years of experience. In addition, the positive effects seem to be more robust for nurses who have received evidence-based/expert-delivered, suicide-specific intervention training and therefore are likely to provide a better foundation to ensure high-quality ED care of suicidal patients. Previous studies evaluating the pre-post effects of different suicide training programs have documented improvements in nurses perceived knowledge, attitudes toward, and comfort and willingness to work with suicidal patients.[14,31,32] The current results further support these findings and extend them by showing that the type of training received may be important, with evidence-based/expert-delivered suicide intervention trainings being related to stronger positive outcomes for nurses. In addition, our data show that one potential reason for why training improves comfort working with suicidal patients is because training likely increases confidence in one's ability to work this high-risk population of patients.

The current data show that emergency nurses who received evidence-based/expert-delivered training on suicide interventions reported a more positive outcome on all the variables relative to those who had only informal/lay person training and those reporting no training. The evidence-based/expert training group nurses were more confident and comfortable working with suicidal patients, reported greater perceived adequacy of their skills, and reported lower burnout. This has important implications given other research showing that increased confidence in one's abilities and skills is associated with enhanced patient care[16,31,33] and important to providing high quality services. Although the informal/lay person training group of nurses did report more confidence and improved ability to treat suicidal patients than the nurses who had no suicide-specific training, these 2 groups did not differ on their comfort treating suicidal patients or burnout. This suggests that although informal/lay person training may contribute some benefit over no training, it does not seem to relate to improved comfort working with suicidal patients. Nurses who have low comfort working with suicidal patients have been found to hold more negative attitudes toward suicidal patients, which then is related to poorer patient interactions, outcomes, and satisfaction with services.[4,12] Nurses with lower reported comfort working with suicidal patients also may be more likely to experience increased distress when working with these patients,[10,15] potentially contributing to the higher burnout observed among emergency nurses.[34] Thus, providing evidence-based, suicide-specific intervention training to nurses may be one way to enhance patient care while also potentially improving nurse job satisfaction and reducing burnout. Additional studies are needed to examine how different types of training affect patient care and nurse burnout.

The finding that training is associated with emergency nurses' comfort working with suicidal patients through its effect on increased confidence adds to the literature examining training effects. Most previous work has emphasized pretraining and posttraining outcomes without attending to some of the mechanisms for the changes observed. The current data show improved confidence in one's ability, skill, and capability for treating suicidal patients is one factor likely to underlie the beneficial effects of suicide-specific training, above and beyond years of experience (see also

Manister[35]). This finding also is consistent with recent work documenting that self-efficacy acts as a mediator between training and improved care of suicidal patients.[16,31] Further complementing these results, a large portion of the current sample indicated a strong desire for additional suicide-specific intervention training to support their work in the emergency department, which also is consistent with other studies.[15,36] Given that many nurses in our sample reported frequent work with suicidal patients, often daily, providing foundational suicide-specific intervention training appears essential to supporting high quality patient care.

Limitations

Owing to the cross-sectional survey design of this study, cause and effect relationships cannot be determined so additional experimental and longitudinally designed studies are needed. Our data also are limited by the homogeneity of the sample (predominantly female, white), small sample size, and restricted geographic region, all of which limit generalizability. However, we did have relatively equal distribution between community/city and critical access/rural emergency departments. The use of only self-report assessment has limitations of response biases and potential retrospective recall inaccuracies. In addition, our measure of confidence in suicidal patient care was adapted from a different measure without previous evaluation of its psychometric properties, and although reliability and factor analyses in the current sample suggest it likely has validity, additional psychometric evaluation is needed. Given the focus on suicidal patient care, participants may have responded in more socially desirable ways to the items than how they truly feel, but we did not account for this in our study. Some participants who reported receiving no suicide-specific training still reported receiving some hours of training (eg, related to job onboarding/charting) and rated the quality of training. It is unclear why they responded in this way, and review of their responses indicated most reported hours of training related to new employee training regarding procedures related to suicidal patients, but we had no way of further validating these responses. Furthermore, the assessment of the recency of training limited the longest option to 2 or more years ago, making it hard to know how many of the 18 participants (15.4%) endorsing this option may be recalling the impact of a training completed 3, 5, or even 10 years ago. Finally, our low overall response rate may have been influenced by the timing of our study that occurred during a COVID-19 surge in the region, resulting in staff who were generally too busy to complete the survey. Thus, those who did complete the survey may have been more comfortable with, or interested in the topic of, working with suicidal patients.

Implications for Emergency Nursing

These findings suggest that providing some type of suicide-specific intervention training is likely better than no training, but when they can, hospitals may want to consider providing their nurses with evidence-based/expert-delivered, suicide-specific intervention trainings for working with suicidal patients. Doing so may help to prevent or lower burnout and improve nurse confidence and also may contribute to improved patient care. Studies indicate emergency nurses often believe they lack the skills and knowledge to assess and treat suicidal patients effectively, which impedes their ability to provide high-level care.[4,14] Providing evidence-based and skill-focused suicide intervention training is likely to best meet nurses' needs. Finally, although the current study did not examine specific curriculums or styles of instruction, suicide prevention experts have outlined key competencies[37-39] supported by research for treating suicidal patients and recommendations for the use of interactive teaching methods (eg, role plays, simulations).[40,41] Providing interactive, evidence-based training specific to assessing and managing suicide risk among ED patients is likely to benefit both the nurses providing care and the patients receiving care.

Conclusion

Emergency nurses who have greater confidence in their ability to care for, and comfort working with, suicidal patients tend to provide better care with more positive patient outcomes. The current results support providing evidence-based/expert-delivered suicide-specific intervention training to emergency nurses to enhance nurse confidence and comfort in their abilities to assess, intervene with, and treat suicide risk among patients.

Author Disclosures

Conflicts of interest: none to report.

REFERENCES

1. Suicide in the world. World Health Organization. Accessed June 5, 2022. https://www.who.int/publications/i/item/9789240026643
2. Owens PL, Fingar KR, Heslin KC, Mutter R, Booth CL. Emergency department visits related to suicidal ideation, 2006-2013. In: *Healthcare*

Cost and Utilization Project (HCUP). Agency for Healthcare Research and Quality; 2017.

3. De Leo D, Draper BM, Snowdon J, Kõlves K. Contacts with health professionals before suicide: missed opportunities for prevention? *Compr Psychiatry*. 2013;54(7):1117-1123. https://doi.org/10.1016/j.comppsych.2013.05.007
4. Bolster C, Holliday C, Oneal G, Shaw M. Suicide assessment and nurses: what does the evidence show? *Online J Issues Nurs*. 2015;20(1). https://doi.org/10.3912/OJIN.Vol20No01Man02, 1-1.
5. Morrissey J, Doyle L, Higgins A. Self-harm: from risk management to relational and recovery-oriented care. *J Ment Health Train Educ Pract*. 2018;13(1):34-43. https://doi.org/10.1108/jmhtep-03-2017-0017
6. Graves JM, Mackelprang JL, Van Natta SE, Holliday C. Suicide prevention training: policies for health care professionals across the United States as of October 2017. *Am J Public Health*. 2018;108(6):760-768. https://doi.org/10.2105/ajph.2018.304373
7. Lee MM, 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
8. Saunders KEA, Hawton K, Fortune S, Farrell S. Attitudes and knowledge of clinical staff regarding people who self-harm: a systematic review. *J Affect Disord*. 2012;139(3):205-216. https://doi.org/10.1016/j.jad.2011.08.024
9. Briggs A. Nurses' attitudes to supporting people who are suicidal in emergency departments. *Emerg Nurse*. 2018;26(1):30-36. https://doi.org/10.7748/en.2018.e1785
10. O'Connor S, Glover L. Hospital staff experiences of their relationships with adults who self-harm: a meta-synthesis. *Psychol Psychother Theor Res Pract*. 2016;90(3):480-501. https://doi.org/10.1111/papt.12113
11. Masuku S. Self-harm presentations in emergency departments: staff attitudes and triage. *Br J Nurs*. 2019;28(22):1468-1476. https://doi.org/10.12968/bjon.2019.28.22.1468
12. de Beurs DP, de Groot MH, de Keijser J, et al. The effect of an e-learning supported Train-the-Trainer programme on implementation of suicide guidelines in mental health care. *J Affect Disord*. 2015;175:446-453. https://doi.org/10.1016/j.jad.2015.01.046
13. Rayner G, Blackburn J, Edward K, Stephenson J, Ousey K. Emergency department nurse's attitudes towards patients who self-harm: a meta-analysis. *Int J Ment Health Nurs*. 2018;28(1):40-53. https://doi.org/10.1111/inm.12550
14. Ferguson MS, Reis JA, Rabbetts L, et al. The effectiveness of suicide prevention education programs for nurses. *Crisis*. 2018;39(2):96-109. https://doi.org/10.1027/0227-5910/a000479
15. McGough S, Wynaden D, Ngune I, Janerka C, Hasking P, Rees C. Mental health nurses' perspectives of people who self-harm. *Int J Ment Health Nurs*. 2020;30(1):62-71. https://doi.org/10.1111/inm.12814
16. Osteen P, Frey JM, Woods MN, Ko J, Shipe S. Modeling the longitudinal direct and indirect effects of attitudes, self-efficacy, and behavioral intentions on practice behavior outcomes of Suicide Intervention Training. *Suicide Life Threat Behav*. 2016;47(4):410-420. https://doi.org/10.1111/sltb.12288
17. Mitchell SM, Taylor NJ, Jahn DR, et al. Suicide-related training, self-efficacy, and mental health care providers' reactions toward suicidal individuals. *Crisis*. 2020;41(5):359-366. https://doi.org/10.1027/0227-5910/a000647
18. Jahn DR, Quinnett P, Ries R. The influence of training and experience on mental health practitioners' comfort working with suicidal individuals. *Prof Psychol Res Pract*. 2016;47(2):130-138. https://doi.org/10.1037/pro0000070
19. Rudd MD. Core competencies, warning signs, and a framework for suicide risk assessment in clinical practice. In: Nock MK, ed. *The Oxford Handbook of Suicide and Self-Injury*. Oxford University Press; 2014:323-336.
20. Rudd MD, Cukrowicz KC, Bryan CJ. Core competencies in suicide risk assessment and management: implications for supervision. *Train Educ Prof Psychol*. 2008;2(4):219-228. https://doi.org/10.1037/1931-3918.2.4.219
21. Lee SJ, Osteen PJ, Frey JJ. Predicting changes in behavioral health professionals' clinical practice skills for recognizing and responding to suicide risk. *J Soc Soc Work Res*. 2016;7(1):23-41. https://doi.org/10.1086/685037
22. Aldrich RS, Harrington NG, Cerel J. The willingness to intervene against suicide questionnaire. *Death Stud*. 2013;38(2):100-108. https://doi.org/10.1080/07481187.2012.738763
23. Muehlenkamp JJ, Hagan CR. Factors predicting intent to intervene with a potentially suicidal peer. *Arch Suicide Res*. 2020;24(4):483-497. https://doi.org/10.1080/13811118.2019.1635933
24. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Processes*. 1991;50(2):179-211. https://doi.org/10.1016/0749-5978(91)90020-t
25. Edwards D, Anstey S, Kelly D, Hopkinson J. An innovation in curriculum content and delivery of cancer education within undergraduate nurse training in the UK. What impact does this have on the knowledge, attitudes and confidence in delivering cancer care? *Eur J Oncol Nurs*. 2016;21:8-16. https://doi.org/10.1016/j.ejon.2015.12.003
26. Teng CI, Shyu YIL, Chiou WK, Fan HC, Lam SM. Interactive effects of nurse-experienced time pressure and burnout on patient safety: a cross-sectional survey. *Int J Nurs Stud*. 2010;47(11):1442-1450. https://doi.org/10.1016/j.ijnurstu.2010.04.005
27. Lönnqvist J, Suokas-Muje J. Staff's attitudes toward patients who attempt suicide. *Crisis*. 1986;7:47–53. PMID 3780272
28. Samuelsson M, Åsberg M, Gustavsson JP. Attitudes of psychiatric nursing personnel towards patients who have attempted suicide. *Acta Psychiatr Scand*. 1997;95(3):222-230. https://doi.org/10.1111/j.1600-0447.1997.tb09623.x
29. Botega NJ, Reginato DG, da Silva SV, et al. Nursing personnel attitudes towards suicide: the development of a measure scale. *Braz J Psychiatry*. 2005;27(4):315-318. https://doi.org/10.1590/s1516-44462005000400011
30. Hayes AF. *Introduction to Mediation, Moderation, and Conditional Process Analysis : A Regression-Based Approach*. The Guilford Press; 2022.
31. Blair EW, Chhabra J, Belonick C, Tackett M. Non-psychiatric nurses' perceived self-efficacy after an educational intervention on suicide prevention and care. *J Psychosoc Nurs Ment Health Serv*. 2018;56(6):43-51. https://doi.org/10.3928/02793695-20180305-03

32. Kishi Y, Otsuka K, Akiyama K, et al. Effects of a training workshop on suicide prevention among emergency room nurses. *Crisis*. 2014;35(5):357-361. https://doi.org/10.1027/0227-5910/a000268
33. Obando Medina C, Kullgren G, Dahlblom K. A qualitative study on primary health care professionals' perceptions of mental health, suicidal problems and help-seeking among young people in Nicaragua. *BMC Fam Pract*. 2014;15(1):129. https://doi.org/10.1186/1471-2296-15-129
34. Witczak-Błoszyk K, Krysińska K, Andriessen K, Stańdo J, Czabański A. Work-related suicide exposure, occupational burnout, and coping in emergency medical services personnel in Poland. *Int J Environ Res Public Health*. 2022;19(3):1156. https://doi.org/10.3390/ijerph19031156
35. Manister NN, Murray S, Burke JM, Finegan M, McKiernan ME. Effectiveness of nursing education to prevent inpatient suicide. *J Contin Educ Nurs*. 2017;48(9):413-419. https://doi.org/10.3928/00220124-20170816-07
36. Rebair A, Hulatt I. Identifying nurses' needs in relation to suicide awareness and prevention. *Nurs Stand*. 2017;31(27):44-51. https://doi.org/10.7748/ns.2017.e10321
37. Bernert RA, Hom MA, Roberts LW. A review of multidisciplinary clinical practice guidelines in suicide prevention: toward an emerging standard in suicide risk assessment and management, training and practice. *Acad Psychiatry*. 2014;38(5):585-592. https://doi.org/10.1007/s40596-014-0180-1
38. Cramer RJ, Ireland JL, Long MM, Hartley V, Lamis DA. Initial validation of the suicide competency assessment form among behavioral health staff in the national health services trust. *Arch Suicide Res*. 2020;24(Suppl 2):S136-S149. https://doi.org/10.1080/13811118.2019.1577194
39. Kotowski A, Roye C. Development of instructional competencies for assessing and managing suicide risk for baccalaureate nursing education: A modified Delphi study. *Issues Ment Health Nurs*. 2017;38(3):233-242. https://doi.org/10.1080/01612840.2016.1248256
40. Luebbert R, Popkess A. The influence of teaching method on performance of suicide assessment in baccalaureate nursing students. *J Am Psychiatr Nurs Assoc*. 2015;21(2):126-133. https://doi.org/10.1177/1078390315580096
41. Davison J, Mackay B, McGivern MJ. The potential of simulation to enhance nursing students' preparation for suicide risk assessment: a review. *Open J Nurs*. 2017;07(02):129-144. https://doi.org/10.4236/ojn.2017.72012

Medication Discussions With Patients With Cardiovascular Disease in the Emergency Department: An Opportunity for Emergency Nurses to Engage Patients to Support Medication Reconciliation

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Contribution to Emergency Nursing Practice

- The purpose of this study was to investigate patient engagement in medication discussions and patient characteristics associated with those discussions.
- This study found a positive association of medication knowledge with engagement in medication discussions and that patients with financial vulnerabilities (ie, difficulty paying bills) were more likely to engage in medication discussions than those with no such vulnerability.
- Key implications of this study are that assessments of patients financial vulnerabilities and medication knowledge can help identify opportunities for clinicians to use enhanced patient engagement strategies to facilitate medication discussions during the ED visit for patients at higher risk of potential medication adverse events.

Abstract

Introduction: This study aimed to investigate the level of patient involvement in medication reconciliation processes and factors associated with that involvement in patients with cardiovascular disease presenting to the emergency department.

Methods: An observational and cross-sectional design was used. Patients with cardiovascular disease presenting to the adult emergency department of an academic medical center completed a structured survey inclusive of patient demographics and measures related to the study concepts. Data abstracted from the electronic health record included the patient's medical history and emergency department visit data. Our multivariable model adjusted for age, gender, education, difficulty paying bills, health status, numeracy, health literacy, and medication knowledge and evaluated patient involvement in medication discussions as an outcome.

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Results: Participants' ($N = 93$) median age was 59 years (interquartile range 51-67), 80.6% were white, 96.8% were not Hispanic, and 49.5% were married or living with a partner. Approximately 41% reported being employed and 36.9% reported an annual household income of <$25,000. Almost half ($n = 44$, 47.3%) reported difficulty paying monthly bills. Patients reported moderate medication knowledge (median 3.8, interquartile range 3.4-4.2) and perceived involvement in their care (41.8 [SD = 9.1]). After controlling for patient characteristics, only difficulty paying monthly bills (b = 0.36, $P = .005$) and medication knowledge (b = 0.30, $P = .009$) were associated with involvement in medication discussions.

Discussion: Some patients presenting to the emergency department demonstrated moderate medication knowledge and involvement in medication discussions, but more work is needed to engage patients.

Key words: Medication reconciliation; Patient involvement; Medication; Cardiovascular; Emergency department

Introduction

Unintentional medication discrepancies (UMDs) are unexplained mismatches in patients' medication orders across different care areas, and they occur in nearly half of hospitalized patients.[1-3] Most of these errors have the potential for moderate to severe patient harm.[2,4-6] Patients receiving care in emergency departments are in a high-risk environment for these errors.[7-9] A hallmark of the dynamic, complex ED setting is the existence of several care transition points including (1) home to ED evaluation, (2) ED discharge to home, (3) ED admission to inpatient hospitalization, and (4) ED evaluation to skilled nursing facility. At each of these care-transition points, the risk of unintentional medication errors is high,[10,11] making ED patients particularly vulnerable to adverse drug events.

Owing to the high rates of patients with cardiovascular disease (CVD) encountered in ED settings, which are a high-risk environment for medication errors, this patient group is highly vulnerable to medication errors.[12,13] As of 2019, nearly 900,000 deaths in the United States were attributed to CVD, with coronary heart disease as the leading cause of death (41.3%) followed by other minor CVD (17.3%), stroke (17.2%), high blood pressure (11.7%), heart failure (HF) (9.9%), and diseases of the arteries (2.8%).[14] A recent report by the American Heart Association[14] indicates the cost of CVD to the health care system as $378.0 billion with direct costs accounting for $226.2 billion and lost productivity/mortality as $151.8 billion. Nearly 668,000 annual ED visits for acute HF occur in the United States and of these 83.7% are admitted.[15] More importantly, their high 30-day hospital readmission rate[16] and increased exposure to the health care setting, age (>65 years), high comorbidity burden,[3,17,18] and associated polypharmacy increase the risk of adverse drug events and medication nonadherence.[18,19] One possible way to reduce these patients' risk of adverse drug events could be through in-depth medication discussions in the ED setting.

Medication reconciliation (MedRec) is the formal process whereby patients' medication orders are verified, compared, and documented during care transitions.[1,2,16-19] MedRec significantly reduces UMDs.[17,18,20] A key MedRec component is obtaining a best possible medication history (BPMH) using at least 2 sources of data (eg, the patient, their family or caregivers, the health record or outside pharmacy). The BPMH constitutes a "comprehensive, systematically derived"[20] medication list that is usually initiated in the emergency department, can be completed by any health care practitioner, and culminates in the preadmission medication list, a critical foundation for subsequent MedRec.[21-23] The detailed and systematic BPMH process increases the accuracy of medication lists and reduces the potential for medication errors.[22,24-26] Patients are an integral part of BPMH, and their engagement with health professionals during the MedRec process is crucial for an accurate preadmission medication list.[27] Importantly, patient engagement reduces the potential for adverse drug events[28] and improves patient safety during care transitions.[29] Patient involvement in medication discussions may reduce the potential for adverse drug events,[28] improve patient safety during care transitions,[29] and enhance the continuity of care following discharge.[30,31] Patient characteristics (ie, age,[32-34] education level,[35] race,[36] or gender[33]), patient health status,[37] social support,[10] and perceived health competence[38] are also important in medication discussions. However, data measuring ED patients' desire for or involvement in medication discussions are lacking. The Emergency Nurses Association position paper on medication management highlights the important role emergency nurses play in preventing UMDs.[5,39] Although pharmacists and pharmacy technicians are increasingly used in ED settings to obtain medication histories and facilitate MedRec,[40] nurses remain the largest workforce per 10,000 health professionals (85.3%)[41] and provide patient care 24 hours a day. Moreover, the feasibility of pharmacy staff to conduct MedRec in emergency departments is limited by contextual factors such as resource and

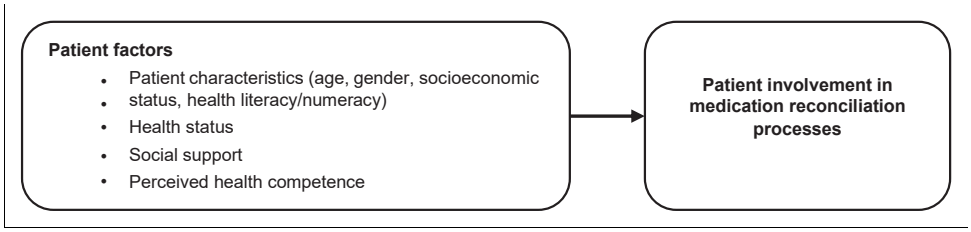

FIGURE
Proposed relationship between study variables.

staffing limitations.[42,43] Because ED clinical practice is complex and diverse, nurses' function as specialist-generalists carries various responsibilities. By engaging patients in discussions surrounding their medications, a robust medication list can be generated as the foundation for subsequent MedRec.[39] For this study, patient engagement is defined as patients' participation and involvement in treatment decisions, information sharing with health care providers (HCPs), their perception of HCP facilitation of patient decision making, and information sharing during medication history taking.[28]

OBJECTIVE

The purpose of this study was to investigate the level of patient involvement in MedRec processes and to explore factors associated with that involvement in patients with CVD presenting to the emergency department. We hypothesized that patient characteristics (age, gender, socioeconomic status, and health literacy/numeracy), health status, social support, and perceived health competence would be associated with patient involvement in the MedRec processes (Figure).

Methods

STUDY DESIGN, SETTING, AND SAMPLE

We conducted an observational and cross-sectional study using an in-person structured survey and chart abstraction for data collection. A convenience sample of patients was drawn from the population of patients with CVD presenting at the time of the study to an academic medical center in the Southeastern United States (annual census ~70,000 patients per year) who met the study inclusion criteria. Patients were eligible if they were ≥18 years old, were English speaking, were clinically stable, had a medical history of CVD (ie, hypertension, HF, myocardial infarction, unstable angina, arrhythmia, pulmonary embolism, or deep vein thrombosis), and were willing and able to give an informed consent. We excluded patients with altered mental status, with hemodynamic instability, who were transferred from assisted living or long-term care, on isolation precautions, or from a vulnerable population (ie, prisoners, cognitively impaired, and children/minors). Patients were required to be alert and stable and able to express their thoughts during interviews without compromising patient safety. The Vanderbilt University Institutional Review Board (# 171196) approved the study.

DATA COLLECTION AND STUDY MEASURES

Senior undergraduate or graduate students approached eligible ED patients and introduced them to the study. Patients who were interested were provided with a hard copy consent document, which was reviewed with the patient. After consent, students facilitated completion of the patient survey during the patients' ED visit. Students received training on the study protocol and associated procedures and also completed training in the ethical conduct of research before starting data collection. Surveys were administered in written and verbal format via a paper form. Patients were provided the option to either complete the survey themselves or have the student read the questions and note patient responses using a paper copy of the survey document. Subsequently, all paper responses were entered into a Research Electronic Data Capture (REDCap) study database within 1 week after the interview. REDCap is a secure, web-based software platform designed to support data capture for research studies.[44,45] To ensure the reliability of the data collected, all responses were double entered into the REDCap database. The 2 entries were compared and discrepancies corrected until all data matched the paper responses. If patient demographic information was not clear from the patient responses or otherwise needed to be verified, key study personnel reviewed the electronic health record for the patient to collect that information.

Measurement

Survey questions were derived from the literature but also included existing measurement scales with established validity and reliability.[46-51] Descriptive survey items were reviewed by experts and subsequently pilot tested in a group of ED patients for clarity and appropriateness and to establish content and face validity. After providing consent and while still in the emergency department, patients completed a survey of sociodemographic characteristics (age, gender, socioeconomic status [SES], and health literacy/numeracy), health status, social support, medication knowledge, and medication involvement.

Self-rated health status was assessed using 5 of 10 items from the National Institutes of Health Patient-Reported Outcomes Measurement Information System global health status questionnaire.[46] A 5-point Likert scale was used to ask about overall health, quality of life, physical and mental health, and satisfaction with social activities and relationships. A score was generated by averaging the responses of the 5 items (range 1-5, Cronbach's alpha = 0.76).

Numeracy was assessed using the Subjective Numeracy Scale. Each of the 3 items comprising the scale has a scale from 1 to 6. A score is generated by summing responses to the items (possible range 3-18), with higher scores reflecting better subjective numeracy (Cronbach's alpha = 0.71). Health literacy was assessed using the Brief Health Literacy Scale, which consists of 3 items on a 5-point Likert scale summed to create a total score. Scores have a possible range of 3 to 15, with higher scores indicating higher subjective health literacy (Cronbach's alpha = 0.77).

For assessing patient medication knowledge, this study used 5 items from an existing scale previously created to assess patient-perceived medication knowledge and confidence for medication use (general knowledge and drug interaction knowledge) on a 5-point Likert scale of strongly disagree to strongly agree. A multidisciplinary group of experts established content validity and psychometric evaluation indicated a one-factor model and high internal consistency (Cronbach's alpha = 0.74).[52,53] Responses in this study were averaged for a knowledge score (Cronbach's alpha = 0.68).

Patient engagement in MedRec processes was assessed using the modified Perceived Involvement in Care Scale (M-PICS). The original PICS is a self-report tool to assess patients' perception of physician-patient communication occurring during medical encounters.[48,54] It comprised a total of 14 items, with each item response ranging from "1" (strongly disagree) to "5" (strongly agree). The PICS and M-PICS were previously administered only to outpatient samples[48,49]; thus, the wording of questions was modified to fit with the ED and MedRec context. In this study, the M-PICS phrase "health care provider (HCP)" was replaced with "emergency room staff." Furthermore, because the focus of this study was patient involvement in medication discussions, the items were slightly adapted, including using the term "medication(s)" to replace references to treatment, procedures, or symptoms. The 3 M-PICS subscales included in this study were HCP facilitation (5 items) (eg, emergency room staff encouraged me to talk about personal concerns I may have about my medications), patient information (5 items) (eg, I asked emergency room staff to explain my medicines to me in greater detail), and patient decision making (4 items) (eg, I expressed concern about the new medicines they recommended and prescribed).[49] Responses to the 14 items were totaled to arrive at an overall M-PICS score with a possible range of 14 to 70 (Cronbach's alpha = 0.83).

DATA ANALYSIS

IBM SPSS Statistics (version 27; IBM Corp, Armonk, NY) was used for data analysis. Frequency distributions were used to summarize the categorical data. Normally distributed continuous data were summarized using mean and SD; skewed data were summarized using median and interquartile range (IQR). Pearson correlations and multiple linear regression analyses were used to assess the associations of the patient characteristics with their reported involvement in medications discussions. Skewed distributions were transformed to normal using the square root function before inclusion in those parametric statistical procedures. An alpha of 0.05 was used for determining statistical significance ($P < .05$).

Results

SAMPLE CHARACTERISTICS

The median age of the 93 participants who completed the key study measures was 59 years (IQR 51-67). Most participants were white or Caucasian ($n = 75$; 80.6%), not Hispanic or Latino ($n = 90$; 96.8%), and married or living with a partner ($n = 4$ 6; 49.5%). In addition, 34 patients (41%) reported being employed, and 31 patients (36.9%) reported an annual household income of <$25,000. Almost half ($n = 44$, 47.3%) reported that paying their monthly bills was somewhat or always difficult. See Table 1 for details.

TABLE 1
Demographic Characteristics (N = 93)

Characteristics	Median (IQR)	IQR	*n*	%
Age	59.0	51-67		
Gender				
Male			46	49.5
Female			47	50.5
Race				
White or Caucasian			75	80.6
Black or African American			16	17.2
Other			2	2.2
Hispanic or Latino				
No			90	96.8
Yes			3	3.2
Highest level of education ($N = 92$)				
Less than high school			32	34.8
High School			31	33.7
Bachelor's degree and higher			29	31.5
Employment Status				
Employed			34	41.0
Self-employed			3	3.6
Not employed and not seeking employment			3	3.6
Retired			29	34.9
Unable to work (disabled)			14	16.9
Household Income ($N = 84$)				
<$25,000			31	36.9
$25,000-50,000			15	17.9
$51,000-$100,000			26	31.0
>$100,000			12	14.3
Difficulty Paying Bills				
Very difficult			14	15.1
Somewhat difficult			30	32.3
Not very difficult			16	17.2
Not at all difficult			33	35.5
Marital Status				
Married/Partnered			46	49.5
Separated/Divorced/Widowed			25	26.9
Single			22	23.7
Companion at the hospital with patient				
None indicated			31	33.3
Spouse/Partner			32	34.4
Adult child			9	9.7
Other relative			10	10.8

continued

TABLE 1
Continued

Characteristics	Median (IQR)	IQR	*n*	%
Friend			3	3.2
Other (ex-husband; neighbor)			2	2.2
>1 companion			6	6.5

Summaries of the participant's responses to how they manage their medications and how comfortable they were discussing medications with the ED staff are presented in Table 2. Most were quite comfortable talking with the ED staff about their medications ($n = 84$, 90%). Most reported using either the original bottles ($n = 55$, 59%) or a pillbox ($n = 53$, 57%) to keep track of their medications. Although 62% ($n = 58$) reported that they took either their original pill bottles or some type of list of medications with them on a visit to their physician, only 42% ($n = 39$, 42%) brought any of those items or lists with them to the emergency department. Finally, more than half ($n = 54$, 58%) stated they were able to fully manage their medications on their own. Of those who stated they had a family member who assisted them with their medications and reported how they assisted them ($n = 39$), the most commonly reported type of assistance was with picking up the medications from the pharmacy ($n = 30$, 76.9%) and reminding them to take the medications ($n = 25$, 64.1%) (Table 2).

PATIENT INVOLVEMENT IN MEDICATION DISCUSSIONS

The mean score for overall perceived involvement in care was in the middle of the possible range of scores for that measure (Table 3) (41.8 [SD = 9.1]). Of the subscale scores, HCP facilitation of involvement in care scored the highest (3.6 [SD = 0.8]), followed by patient information (2.8 [SD = 0.9]) and patient decision making (2.5 [SD = 0.9]). Patient-reported subjective numeracy (median 4.6, 75th lower and upper IQR 3.6-5.4), Brief Health Literacy scores (12.1, 10.0-15.0), and medication knowledge (3.8, 3.4-4.2) trended toward the upper range of each scale.

As shown in Table 4, compared with participants reporting no difficulty paying bills, those reporting it was very difficult to pay bills had significantly higher patient involvement in medication discussion scores (b = 0.35, $P = .002$). This finding was very similar after controlling for all other patient characteristics (b = 0.36, $P = .005$). Furthermore, a statistically significant positive association was observed between participant medication knowledge scores and their reported involvement in medication discussions (unadjusted, b = 0.33, $P = .001$; adjusted, b = 0.30, $P = .009$). None of the other patient characteristics demonstrated statistically significant associations with level of involvement in medication discussions while in the emergency department (Table 4).

Discussion

This study addressed important knowledge gaps of patient involvement in MedRec processes and associated factors with involvement in patients with CVD presenting to the emergency department. To the best of our knowledge, this study is the first to highlight patient factors associated with involvement of patients with CVD in ED medication discussions. Awareness of these factors could aid health care workers in how to target and engage patients with CVD less involved during medication discussions. In addition, these findings may increase overall understanding of the reasons for why some patients are more involved in these discussions and why others are not, with the possibility to inform interventions designed to increase patient engagement.

Difficulty paying monthly bills and medication knowledge were associated with greater patient involvement during medication discussions in the emergency department. Patient characteristics such as demographics (eg, age, gender, education), health literacy, health status, and social support were not associated with statistical significance. This study found that those participants who indicated paying bills as most difficult were more involved in their medication discussions. Underlying financial difficulties and stress could explain difficulty paying bills. Patients without steady or sufficient income may be more astutely aware of their medical needs and monitor the necessity and affordability of medications prescribed. Close managing of finances related to medications could result in patients being overall more aware of what medications they are taking and, thus, may account for more involvement in their medication management than patients without difficulties paying bills. Another possible explanation for patients of lower SES

TABLE 2
Medications management ($N = 93$)

Medication management strategies	*n* (%)
Comfort asking questions during the ED visit	
Very uncomfortable	7 (7.5)
Uncomfortable	0 (0.0)
Neutral	2 (2.2)
Comfortable	20 (21.5)
Very comfortable	64 (68.8)
Medication tracking methods*	
Original pill bottle(s)	55 (59.1)
Pillbox	53 (57.0)
Handwritten list	24 (25.8)
Printed list	23 (24.7)
Application	7 (7.5)
Electronic list	9 (9.7)
Pictures	2 (2.2)
Other	10 (10.8)
None	0 (0.0)
Medication identification methods during physician office visits*	
Original pill bottle(s)	19 (20.4)
Pillbox	3 (3.2)
Handwritten list	16 (17.2)
Printed list	14 (15.1)
Application	2 (2.2)
Electronic list	4 (4.3)
Pictures	1 (1.1)
Other	7 (7.5)
None	35 (37.6)
Medication identification methods during ED visits*	
Original pill bottle(s)	20 (21.5)
Pillbox	3 (3.2)
Handwritten list	7 (7.5)
Printed list	10 (10.8)
Application	1 (1.1)
Electronic list	3 (3.2)
Pictures	1 (1.1)
Other	2 (2.2)
None checked	54 (58.1)
Companion contribution to medication management	
No, I am able to manage my own	54 (58.1)
No, but would like to have someone	0 (0.0)
Yes, someone helps me	39 (41.9)
If someone helps, what do they do ($N = 39$)*	
Keep handwritten list	8 (20.5)
Keep printed list	3 (7.7)
Use application	1 (2.6)
Keep electronic list	0 (0.0)
Pictures	0 (0.0)
Assist with pick up from pharmacy	30 (76.9)
Assist with payment	13 (33.3)
Assist with understanding how to take	20 (51.3)
Remind	25 (64.1)
Organize meds	15 (38.5)
Other	3 (7.7)

ED, emergency department.
* Response option "Check all that apply."

having greater involvement in medication discussion is that patients of lower SES typically have a more severe level of disease and more comorbidities[55] that require more patient involvement than less severe disease. Health care workers should remain diligent in knowing the disparities observed in patients with financial difficulties including affording their medications. Therefore, ED clinicians (nurses, providers, pharmacists, pharmacy technicians) and social workers or case managers should discuss resources (eg, food, transportation, generic medication choices vs name brands, pharmacy coupons, and free trials) and monetary aids with these patients during discussions about medication.

In this study, a lack of medication knowledge was associated with less involvement in medication discussions. Previous studies demonstrated that a lack of medication knowledge among patients with CVD[56] may contribute to medication nonadherence.[57] Therefore, enhancing patients' medication knowledge is imperative to affect the downstream effects of poor medication knowledge on patients' medication adherence. Less medication knowledge may leave a patient feeling helpless and result in difficulty engaging the patient in the conversation. Health care professionals should work with patients to educate them on CVD medication, risk factors,[58] and nonpharmacological

TABLE 3
Patient factors ($n = 93$)

Measure	Possible range	Observed range	Mean (SD)
Modified Perceived Involvement in Care Scale overall score	14-70	26-67	41.8 (9.1)
HCP facilitation subscale	1-5	2-5	3.6 (0.8)
Patient information subscale	1-5	1-5	2.8 (0.9)
Patient decision-making subscale	1-5	1-5	2.5 (0.9)
Global health status (PROMIS)	1-5	1-5	3.0 (0.8)
			Median (IQR)
Subjective numeracy scale	1-6	1-6	4.6 (3.6-5.4)
Brief health literacy scale	3-15	4-15	12.1 (10.0-15.0)
Medication knowledge	1-5	2-1	3.8 (3.4-4.2)

HCP, health care provider; IQR, interquartile range; PROMIS, Patient-Reported Outcomes Measurement Information System.

TABLE 4
Summaries of regression analysis results: univariate and multivariate associations of patient factors with involvement ($n = 93$)

Patient factors	Unadjusted		Adjusted	
	Beta	*P* value	Beta	*P* value
Age	−0.06	.571	0.02	.851
Female	0.02	.883	−0.04	.750
Highest level of education (≤HS)				
Some college	−0.04	.727	−0.01	.952
Bachelor's degree and higher	−0.15	.204	−0.05	.738
Difficulty paying bills (none)				
Not very	0.03	.803	0.06	.642
Some	0.16	.172	0.19	.147
Very	0.35	.002	0.36	.005
Global health status (PROMIS)	0.03	.759	0.07	.530
Numeracy (SNS)*	0.15	.162	0.10	.371
Health literacy (BHLS)*	−0.03	.753	−0.08	.520
Medication knowledge*	0.33	.001	0.30	.009

Multiple $R = 0.49$, $P = .020$; $R^2 = 0.24$ (adjusted $R^2 = 0.13$).
BHLS, Brief Health Literacy Scale; HS, high school; PROMIS, Patient-Reported Outcomes Measurement Information System; SNS, Subjective Numeracy Scale.
* Square root transformed to normal distributions.

prevention and use education as a tool to increase patient involvement in medication discussions.[59] In addition, greater medication knowledge among patients with HF was found to be associated with fewer ED visits.[59] Thus, patients' education concerning medications could lead to more involvement in medication discussions and less subsequent ED admissions. Future research should examine the interactions between paying bills and medication knowledge to deduce the nature of the relationship of each factor on involvement in medication discussions.

Involvement in treatment decisions and medication behavior can be promoted by HCPs as they share information with patients and enhance shared decision making.[60] For patients with CVD, shared decision making can be integrated to assess patient risk and inform them about the risks of medications. As Wai et al[61] demonstrated, most patients ($n = 98$; 87%) are willing to use a self-administered medication history form to improve ED workflow efficiencies. Prey et al[62] similarly found that patients were willing to engage in MedRec processes using an electronic medication review tool. This study suggests that patient involvement in medication discussions is not always ideal and is influenced by patient factors, yet deploying shared decision-making tools such as a self-administered medication history form or an electronic medication review tool might facilitate patient engagement. As the Emergency Nurses Association noted,[5] medication management involves multiple disciplines and requires a collaborative partnership. Although pharmacists and pharmacy technicians are the ideal persons to perform medication history taking and MedRec, emergency nurses can support MedRec efforts through collaboration and effective communication.[39] Furthermore, nurses can promote important facilitators of patient engagement in patient safety initiatives by encouraging patients, sharing information, and establishing patient-centered care.[63]

As this study demonstrated, patients use a variety of medication management skills to keep track of their medications, with pillboxes and pill bottles being predominantly used. However, when asked what they brought to the emergency department to manage their medications, most patients reported none, whereas 21.5% reported bringing the original pill bottles and 10.8% indicated the use of a medication list. Therefore, emergency nurses' education of patients on accurate medication lists is vital to MedRec efforts and patient medication safety. Mechanisms to alert primary care providers when patients present to the emergency department without their medications or a medication list also would facilitate additional patient instructions.

Limitations

The use of self-report increases the risk of bias, including social desirability, response bias, and nonresponse bias. Social desirability was limited by ensuring participant confidentiality and privacy. Nonresponse bias is possible, because those who decline to participate may be inherently different from those who agreed to participate. Selection bias also is possible given that we excluded those patients who were in extremis (eg, trauma patient) or unable to talk to study staff (eg, delirious or dementia). Steps to enhance the rigor of the study included training of staff in the study protocol and procedures, using valid, reliable survey measures, and pilot testing the survey before use. The study was conducted in the emergency department of only one academic medical center, which may not reflect the patient and staff experiences of other emergency departments. Patients were included as they presented to the emergency department, and we aimed to include patients with diverse demographic backgrounds. However, our sample was predominantly white, older individuals and therefore may not be reflective of other ED patient populations.

Implications for Emergency Nurses

Targeted patient engagement strategies and the use of secondary information sources (eg, family members, electronic health record medication lists, community pharmacy data) might be key to establish the patient's preadmission medication list, a foundation for subsequent MedRec. When patients and families actively partner with the health care system to improve their health and health care, the risk of adverse drug events diminishes[28] and patient safety during care transitions improves.[29] The lack of knowledge about their medications might put patients at an increased risk of medication discrepancies and poor medication adherence. Subsequently, more discrepancies and poorer adherence may contribute to repeat ED visits, hospital readmissions, and higher health care costs. Repeated encounters with the health care system further expose patients to medication discussions and further risk of discrepancies. Therefore, patients who lack medication knowledge should be prioritized when conducting MedRec and teaching patients about their medications. Furthermore, an assessment of patients' level of difficulty paying bills and their medication knowledge during ED evaluation might help to identify and target those patients who would benefit from more in-depth discussions on their medications during the ED visit. Although some patients reported the use of pillboxes and pill bottles to manage their medications, the use of medication lists or smartphone applications to manage their medications was rarely reported. Furthermore, most patients did not bring their medications with them to the emergency department. With the wide adoption and use of smartphones, emergency nurses teaching patients to record medication lists on their smart phones or educating them in the use of smartphone applications to manage their medications would increase the availability of patient medication lists during ED visits and facilitate MedRec.

Conclusions

Patient characteristics are drivers of patients' involvement in medication discussions during the ED visit including difficulty paying bills and high medication knowledge. Engaging patients in medication discussions during ED visits is an important step in reducing medication discrepancies and potential adverse events.

Data, Code, and Research Materials Availability

The study was reviewed and approved by Vanderbilt University Institutional Review Board.

Author Disclosures

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REFERENCES

1. Lehnbom EC, Stewart MJ, Manias E, Westbrook JI. Impact of medication reconciliation and review on clinical outcomes. *Ann Pharmacother*. 2014;48(10):1298-1312. https://doi.org/10.1177/1060028014543485
2. Belda-Rustarazo S, Cantero-Hinojosa J, Salmeron-Garcia A, Gonzalez-Garcia L, Cabeza-Barrera J, Galvez J. Medication reconciliation at admission and discharge: an analysis of prevalence and associated risk factors. *Int J Clin Pract*. 2015;69(11):1268-1274. https://doi.org/10.1111/ijcp.12701
3. Gleason KM, McDaniel MR, Feinglass J, et al. Results of the Medications at Transitions and Clinical Handoffs (MATCH) study: an analysis of medication reconciliation errors and risk factors at hospital admission. *J Gen Intern Med*. 2010;25(5):441-447. https://doi.org/10.1007/s11606-010-1256-6
4. Eggink RN, Lenderink AW, Widdershoven JW, van den Bemt PM. The effect of a clinical pharmacist discharge service on medication discrepancies in patients with heart failure. *Pharm World Sci*. 2010;32(6):759-766. https://doi.org/10.1007/s11096-010-9433-6
5. Vasileff HM, Whitten LE, Pink JA, Goldsworthy SJ, Angley MT. The effect on medication errors of pharmacists charting medication in an emergency department. *Pharm World Sci*. 2009;31(3):373-379. https://doi.org/10.1007/s11096-008-9271-y
6. Walker PC, Bernstein SJ, Jones JN, et al. Impact of a pharmacist-facilitated hospital discharge program: a quasi-experimental study. *Arch Intern Med*. 2009;169(21):2003-2010. https://doi.org/10.1001/archinternmed.2009.398
7. Medication reconciliation: another change planned. *ED Manag*. 2010;22(11):3-4.
8. Vira T, Colquhoun M, Etchells E. Reconcilable differences: correcting medication errors at hospital admission and discharge. *Qual Saf Health Care*. 2006;15(2):122-126. https://doi.org/10.1136/qshc.2005.015347
9. Gleason KM, Brake H, Agramonte V, Perfetti C. Medications at Transitions and Clinical Handoffs (MATCH) toolkit for medication reconciliation. *Prepared by the Island Peer Review Organization*. 2012;11(12):0059. Accessed June 21, 2021. https://www.ahrq.gov/sites/default/files/publications/files/match.pdf.
10. Mixon AS, Neal E, Bell S, Powers JS, Kripalani S. Care transitions: a leverage point for safe and effective medication use in older adults-a mini-review. *Gerontology*. 2015;61(1):32-40. https://doi.org/10.1159/000363765
11. Kripalani S, Jackson AT, Schnipper JL, Coleman EA. Promoting effective transitions of care at hospital discharge: a review of key issues for hospitalists. *J Hosp Med*. 2007;2(5):314-323. https://doi.org/10.1002/jhm.228
12. Dickstein K, Cohen-Solal A, Filippatos G, et al. ESC guidelines for the diagnosis and treatment of acute and chronic heart failure 2008: the Task Force for the diagnosis and treatment of acute and chronic heart failure 2008 of the European Society of Cardiology. Developed in collaboration with the Heart Failure Association of the ESC (HFA) and endorsed by the European Society of Intensive Care Medicine (ESICM). *Eur J Heart Fail*. 2008;10(10):933-989. https://doi.org/10.1016/j.ejheart.2008.08.005
13. Blank FS, Tobin J, Macomber S, Jaouen M, Dinoia M, Visintainer P. A "back to basics" approach to reduce ED medication errors. *J Emerg Nurs*. 2011;37(2):141-147. https://doi.org/10.1016/j.jen.2009.11.026
14. 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
15. Storrow AB, Jenkins CA, Self WH, et al. The burden of acute heart failure on U.S. emergency departments. *JACC Heart Fail*. 2014;2(3):269-277. https://doi.org/10.1016/j.jchf.2014.01.006
16. Calvillo-King L, Arnold D, Eubank KJ, et al. Impact of social factors on risk of readmission or mortality in pneumonia and heart failure: systematic review. *J Gen Intern Med*. 2013;28(2):269-282. https://doi.org/10.1007/s11606-012-2235-x
17. Parejo MIB, Borrego AMJ, Ruiz JA, et al. Medication list assessment in Spanish Hospital emergency departments. *J Emerg Med*. 2015;48(4):416-423. https://doi.org/10.1016/j.jemermed.2014.06.063
18. Mendes AE, Lombardi NF, Andrzejevski VS, Frandoloso G, Correr CJ, Carvalho M. Medication reconciliation at patient admission: a randomized controlled trial. *Pharm Pract (Granada)*. 2016;14(1):656. https://doi.org/10.18549/PharmPract.2016.01.656
19. Maher RL, Hanlon J, Hajjar ER. Clinical consequences of polypharmacy in elderly. *Expert Opin Drug Saf*. 2014;13(1):57-65. https://doi.org/10.1517/14740338.2013.827660
20. Johnston R, Saulnier L, Gould O. Best possible medication history in the emergency department: comparing pharmacy technicians and pharmacists. *Can J Hosp Pharm*. 2010;63(5):359-365. https://doi.org/10.4212/cjhp.v63i5.947
21. De Winter S, Vanbrabant P, Spriet I, et al. A simple tool to improve medication reconciliation at the emergency department. *Eur J Intern Med*. 2011;22(4):382-385. https://doi.org/10.1016/j.ejim.2011.03.010
22. Remtulla S, Brown G, Frighetto L. Best possible medication history by a pharmacy technician at a tertiary care hospital. *Can J Hosp Pharm*. 2009;62(5):402-405. https://doi.org/10.4212/cjhp.v62i5.828
23. MacDonald N, Manuel L, Brennan H, Musgrave E, Wanbon R, Stoica G. Reliability of best possible medication histories completed by non-admitted patients in the emergency department. *Can J Hosp Pharm*. 2017;70(4):263-269. https://doi.org/10.4212/cjhp.v70i4.1675
24. Mueller SK, Sponsler KC, Kripalani S, Schnipper JL. Hospital-based medication reconciliation practices: a systematic review. *Arch Intern*

Med. 2012;172(14):1057-1069. https://doi.org/10.1001/archinternmed.2012.2246

25. Schnipper JL, Mixon A, Stein J, et al. Effects of a multifaceted medication reconciliation quality improvement intervention on patient safety: final results of the MARQUIS study. *BMJ Qual Saf*. 2018;27(12):954-964. https://doi.org/10.1136/bmjqs-2018-008233
26. Mueller SK, Kripalani S, Stein J, et al. A toolkit to disseminate best practices in inpatient medication reconciliation: Multi-center Medication Reconciliation Quality Improvement Study (MARQUIS). *Jt Comm J Qual Patient Saf*. 2013;39(8):371-382. https://doi.org/10.1016/s1553-7250(13)39051-5
27. Tobiano G, Chaboyer W, Teasdale T, Raleigh R, Manias E. Patient engagement in admission and discharge medication communication: a systemic mixed studies review. *Int J Nurs Stud*. 2019;95:87-102. https://doi.org/10.1016/j.ijnurstu.2019.04.009
28. Manias E, Rixon S, Williams A, Liew D, Braaf S. Barriers and enablers affecting patient engagement in managing medications within specialty hospital settings. *Health Expect*. 2015;18(6):2787-2798. https://doi.org/10.1111/hex.12255
29. Manias E, Hughes C. Challenges of managing medications for older people at transition points of care. *Res Social Adm Pharm*. 2015;11(3):442-447. https://doi.org/10.1016/j.sapharm.2014.10.001
30. Bradley EH, Sipsma H, Curry L, Mehrotra D, Horwitz LI, Krumholz H. Quality collaboratives and campaigns to reduce readmissions: what strategies are hospitals using? *J Hosp Med*. 2013;8(11):601-608. https://doi.org/10.1002/jhm.2076
31. Carman KL, Dardess P, Maurer M, et al. Patient and family engagement: a framework for understanding the elements and developing interventions and policies. *Health Aff (Millwood)*. 2013;32(2):223-231. https://doi.org/10.1377/hlthaff.2012.1133
32. Al-Foraih M, Somerset S. Factors affecting adherence to statins in hypercholesterolemic Kuwaiti patients: a cross-sectional study. *Med Princ Pract*. 2017;26(1):35-40. https://doi.org/10.1159/000450644
33. Damlien L, Davidsen N, Nilsen M, Godo A, Moger TA, Viktil KK. Drug safety at admission to emergency department: an innovative model for prioritizing patients for medication reconciliation (PRIOMER). *Eur J Emerg Med*. 2017;24(5):333-339. https://doi.org/10.1097/MEJ.0000000000000355
34. Lee YY, Kuo LN, Chiang YC, et al. Pharmacist-conducted medication reconciliation at hospital admission using information technology in Taiwan. *Int J Med Inform*. 2013;82(6):522-527. https://doi.org/10.1016/j.ijmedinf.2013.01.006
35. Osorio SN, Abramson E, Pfoh ER, Edwards A, Schottel H, Kaushal R. Risk factors for unexplained medication discrepancies during transitions in care. *Fam Med*. 2014;46(8):587-596.
36. Street Jr RL, Gordon H, Haidet P. Physicians' communication and perceptions of patients: is it how they look, how they talk, or is it just the doctor? *Soc Sci Med*. 2007;65(3):586-598. https://doi.org/10.1016/j.socscimed.2007.03.036
37. Dolansky MA, Hawkins MA, Schaefer JT, et al. Association between poorer cognitive function and reduced objectively monitored medication adherence in patients with heart failure. *Circ Heart Fail*. 2016;9(12):e002475. https://doi.org/10.1161/circheartfailure.116.002475
38. Bachmann JM, Goggins KM, Nwosu SK, Schildcrout JS, Kripalani S, Wallston KA. Perceived health competence predicts health behavior and health-related quality of life in patients with cardiovascular disease. *Patient Educ Couns*. 2016;99(12):2071-2079. https://doi.org/10.1016/j.pec.2016.07.020
39. Navarroli JE. Emergency Nurses Association position statement: medication management and reconciliation in the emergency setting. *J Emerg Nurs*. 2022;48(1):88-93. https://doi.org/10.1016/j.jen.2021.10.003
40. Rubin EC, Pisupati R, Nerenberg SF. Utilization of pharmacy technicians to increase the accuracy of patient medication histories obtained in the emergency department. *Hosp Pharm*. 2016;51(5):396-404. https://doi.org/10.1310/hpj5105-396
41. Centers for Disease Control and Prevention. National Center for Health Statistics. NCHS fact sheets. Published June 25, 2019. Accessed March 7, 2020. https://www.cdc.gov/nchs/about/fact_sheets.htm
42. Boockvar KS, Santos SL, Kushniruk A, Johnson C, Nebeker JR. Medication reconciliation: barriers and facilitators from the perspectives of resident physicians and pharmacists. *J Hosp Med*. 2011;6(6):329-337. https://doi.org/10.1002/jhm.891
43. Kennelty KA, Chewning B, Wise M, Kind A, Roberts T, Kreling D. Barriers and facilitators of medication reconciliation processes for recently discharged patients from community pharmacists' perspectives. *Res Social Adm Pharm*. 2015;11(4):517-530. https://doi.org/10.1016/j.sapharm.2014.10.008
44. Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: building an international community of software platform partners. *J Biomed Inform*. 2019;95:103208. https://doi.org/10.1016/j.jbi.2019.103208
45. 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
46. Hays RD, Bjorner JB, Revicki DA, Spritzer KL, Cella D. Development of physical and mental health summary scores from the patient-reported outcomes measurement information system (PROMIS) global items. *Qual Life Res*. 2009;18(7):873-880. https://doi.org/10.1007/s11136-009-9496-9
47. Smith MS, Wallston KA, Smith CA. The development and validation of the Perceived Health Competence Scale. *Health Educ Res*. 1995;10(1):51-64. https://doi.org/10.1093/her/10.1.51
48. Lerman CE, Brody DS, Caputo GC, Smith DG, Lazaro CG, Wolfson HG. Patients' Perceived Involvement in Care Scale: relationship to attitudes about illness and medical care. *J Gen Intern Med*. 1990;5(1):29-33. https://doi.org/10.1007/bf02602306
49. Smith MY, Winkel G, Egert J, Diaz-Wionczek M, DuHamel KN. Patient-physician communication in the context of persistent pain: validation of a modified version of the patients' Perceived Involvement in Care Scale. *J Pain Symptom Manage*. 2006;32(1):71-81. https://doi.org/10.1016/j.jpainsymman.2006.01.007
50. Chew LD, Bradley KA, Boyko EJ. Brief questions to identify patients with inadequate health literacy. *Fam Med*. 2004;36(8):588-594.
51. Fagerlind Stahl AC, Gustavsson M, Karlsson N, Johansson G, Ekberg K. Lean production tools and decision latitude enable conditions for

innovative learning in organizations: a multilevel analysis. *Appl Ergon*. 2015;47:285-291. https://doi.org/10.1016/j.apergo.2014.10.013

52. Okere AN, Renier CM, Morse J. Development and validation of a survey to assess patient-perceived medication knowledge and confidence in medication use. *J Nurs Meas*. 2014;22(1):120-134. https://doi.org/10.1891/1061-3749.22.1.120
53. Okere AN, Renier CM, Tomsche JJ. Evaluation of the influence of a pharmacist-led patient-centered medication therapy management and reconciliation service in collaboration with emergency department physicians. *J Manag Care Spec Pharm*. 2015;21(4):298-306. https://doi.org/10.18553/jmcp.2015.21.4.298
54. Brody AA, Gibson B, Tresner-Kirsch D, et al. High prevalence of medication discrepancies between home health referrals and centers for Medicare and Medicaid services home health certification and plan of care and their potential to affect safety of vulnerable elderly adults. *J Am Geriatr Soc*. 2016;64(11):e166-e170. https://doi.org/10.1111/jgs.14457
55. Ali S, Moghei M, Krahn M, Chessex C, Grace SL. Health care use and associated time and out of pocket expenditures for patients with cardiovascular disease in a publicly funded health care system. *Can J Cardiol*. 2018;34(1):52-60. https://doi.org/10.1016/j.cjca.2017.10.005
56. Mochari H, Ferris A, Adigopula S, Henry G, Mosca L. Cardiovascular disease knowledge, medication adherence, and barriers to preventive action in a minority population. *Prev Cardiol*. 2007;10(4):190-195. https://doi.org/10.1111/j.1520-037x.2007.06619.x
57. van Dalem J, Krass I, Aslani P. Interventions promoting adherence to cardiovascular medicines. *Int J Clin Pharm*. 2012;34(2):295-311. https://doi.org/10.1007/s11096-012-9607-5
58. Espejo M, Magabo S, Rivera-Castro A, et al. Qualitative study of knowledge, perception, and behavior related to hypertension and cardiovascular disease risk reduction among hypertensive African-Americans in urban Inner City of south Bronx, New York. *J Racial Ethn Health Disparities*. 2019;6(1):197-206. https://doi.org/10.1007/s40615-018-0514-x
59. Hope CJ, Wu J, Tu W, Young J, Murray MD. Association of medication adherence, knowledge, and skills with emergency department visits by adults 50 years or older with congestive heart failure. *Am J Health Syst Pharm*. 2004;61(19):2043-2049. https://doi.org/10.1093/ajhp/61.19.2043
60. Kambhampati S, Ashvetiya T, Stone NJ, Blumenthal RS, Martin SS. Shared decision-making and patient empowerment in preventive cardiology. *Curr Cardiol Rep*. 2016;18(5):49. https://doi.org/10.1007/s11886-016-0729-6
61. Wai A, Salib M, Aran S, Edwards J, Patanwala AE. Patient completion of self-administered medication history forms in the emergency department. *Australas Emerg Care*. 2019;22(2):103-106. https://doi.org/10.1016/j.auec.2019.03.001
62. Prey JE, Polubriaginof F, Grossman LV, et al. Engaging hospital patients in the medication reconciliation process using tablet computers. *J Am Med Inform Assoc*. 2018;25(11):1460-1469. https://doi.org/10.1093/jamia/ocy115
63. Chegini Z, Arab-Zozani M, Shariful Islam SM, Tobiano G, Abbasgholizadeh Rahimi S. Barriers and facilitators to patient engagement in patient safety from patients and healthcare professionals' perspectives: a systematic review and meta-synthesis. *Nurs Forum*. 2021;56(4):938-949. https://doi.org/10.1111/nuf.12635

Role Delineation of the Code Blue Team: A Quasi-Experimental Study During COVID-19

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Contribution to Emergency Nursing Practice

- Poor communication between nurses can occur during code situations within the emergency department. Clearly delineated roles during codes are encouraged according to Advanced Cardiovascular Life Support guidelines but may not consistently be used in practice.
- Extensive research has been done regarding communication and teamwork in nursing during codes. This study offers evidence regarding nurse perception of teamwork in relation to the use of role delineation badges during codes.
- The use of code blue role delineation badges may be a simple and inexpensive way for emergency departments to improve their communication and teamwork within a code blue.

Abstract

Introduction: The purpose of this study was to assess if implementing a code role delineation intervention in an emergency department would improve the times to defibrillation and medication administration and improve the nurse perception of teamwork.

Methods: A quantitative quasi-experimental study used a retrospective chart review to gather data. A pre- and post-test measured nurse perception of teamwork in a code using the Mayo High Performance Teamwork Scale (MHPTS) after a code role delineation intervention using a paired samples *t*-test. Pearson *r* correlations were used to determine relationships between nurse participant ($N = 30$) demographics and results of the MHPTS scores.

Results: A significant increase in teamwork was noted in 5 of the 16 items on the MHPTS regarding improved communication and identified roles in a code: the team leader assures maintenance of an appropriate balance between command authority and team member participation ($t = -5.607$, $P < .001$), team members demonstrated a clear understanding of roles ($t = -5.415$, $P < .001$), team members repeat back instructions and clarifications to indicate that they heard them correctly ($t = -2.400$, $P = .029$), all members of the team are appropriately involved and participate in the activity ($t = -2.236$, $P = .041$), and conflicts among team members are addressed without a loss of situation awareness ($t = -2.704$, $P = .016$). There was significance between total pre- and post-test scores ($t = -3.938$, $P = .001$).

Discussion: Implementation of code role delineation identifiers is an effective method of improving teamwork in a code in an emergency department setting.

Key words: Code blue; Nurse role delineation; Nurse teamwork; Emergency department

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Introduction

Cardiac arrest is a frequent occurrence in the emergency department, with approximately 200,000 cardiac arrest cases occurring every year in the hospital setting in the United States.[1] Although the American Heart Association has clear recommended guidelines for Advanced Cardiovascular Life Support (ACLS), these guidelines are sometimes difficult to follow due to a myriad of extenuating circumstances. The highly stressful nature of an arrest situation warrants specific well-defined guidelines and protocols related to role

responsibilities, to promote organization and positive outcomes of the code.[2] Optimizing nurse competencies and confidence levels plays a significant role during a code.[3] In a code situation, having clearly defined role delineations may be essential to optimal patient care outcomes by decreasing the time in which patients are able to receive life-saving measures, such as medication administration and defibrillation.[4] This research was aimed at establishing a standard of care for a code blue team related to role delineation.

LITERATURE REVIEW

Studies have shown that having clearly distinguished roles within a code blue can improve patient outcomes by improving communication among the code blue team members and decreasing the time to defibrillation and medication administration.[4] It is shown that clearly delineated responsibilities improved nurse confidence in initiating actions, which improved overall efficiency and speed of their own actions.[3] It was shown that a consistent layout and role definition among code participants showed improvement when ACLS guidelines were followed and roles and responsibilities of the team were clearly defined.[5] The code team also maintained a professional environment, and overall improved effectiveness of the code team was reported. The use of physical role delineation lanyards to clearly state individual roles has shown "improved confidence in their role specific skills, clarity in their role positions, and team leadership, as well as a decrease in the time-to-defibrillation."[4] In addition, the use of clearly delineated team identifiers has shown trends toward improved patient outcomes and speed to defibrillate shockable rhythms.[6]

Roles must work together to form a team in a code situation. Study participants rated their teamwork abilities higher after having a role assigned to them by the facilitator prior to a simulation code blue.[7] Without clear role definitions, "role ambiguity and confusion for code team members often exists, possibly creating poor communication and ineffective teamwork that lead to poor patient outcomes."[8] By clearly delineating roles and having a team leader excuse those without a role from the code, the number of providers in the room decreased and code members had a more positive outlook on the nurse leader.[1]

Methods

This quasi-experimental study took place within a 36-bed emergency department at a 320-bed hospital in Southern California, as complete randomization of data would not be practical in a small sample size. Data collection included a retrospective chart review and a pre- and post-test utilizing a psychometrically tested instrument called the Mayo High Performance Teamwork Scale (MHPTS). The convenience sample was drawn from a target population of emergency department registered nurses (RNs) ($N = 90$) employed at the study location.

Prior to the intervention, the standard flow of the department was to have one nurse designated to specific rooms. If a patient in cardiac arrest or who arrested later was placed in a room assigned to a nurse, that nurse would automatically be assigned as the primary nurse. Beyond the primary nurse, however, there was little guidance on who would assist and in what role. If it was a less busy day in the department, there could be more than the necessary number of nurses present although a busy day may yield too few nurses.

For example, the primary nurse would randomly assume any one of the 3 roles depending on the needs of the patient. The other 2 roles were typically assumed by another staff nurse, the charge nurse, or the rapid response nurse. There was no defined standard regarding who would assume each role. Without definitive roles, crowd control could be difficult to manage.

Within this department, a standard of care related to role delineation in a code utilizing role delineation badges was created to provide optimal care for all patients who arrest. Role delineation badges were placed on each crash cart to be used in every code during the research period. Nurses who participated in code situations during the span of the 6-month intervention period were eligible for inclusion and were invited to participate in the study. Study volunteers were asked to complete a teamwork assessment instrument before and after implementation of the role delineation standard of care.

A Cronbach α was calculated to determine reliability of the study survey items, with a result of 0.88. This is comparable to what was found in the literature, in which the authors of the scale found a Cronbach Alpha of 0.81 to 0.85. This signifies appropriate reliability of the survey instrument. Significance was found in 5 questions; the team leader assures maintenance of an appropriate balance between command authority and team member participation, each team member demonstrates a clear understanding of his or her role, team members repeat back or paraphrase instructions and clarifications to indicate that they heard them correctly, all members of the team are appropriately involved and participate in the activity, and disagreements or conflicts among team members are addressed without a loss of situation awareness.

Select demographics on patients were collected to determine potential influence on code blue data. Items collected included age, outcome, and sex. Nurse demographics collected included age, sex, ethnicity, years of ED employment, certification, shift worked, type of employment, and highest level of education.

STUDY PROCEDURES

After obtaining Institutional Review Board approval (STUDY2020000644 and 2020FA0003), labels were created by printing specific roles on color-coded cards. These labels were placed in plastic card holders and affixed to a badge clip for nurses to wear. The labels included the RN roles of "Defibrillation," "IV/Medications" and "Documentation." These roles were determined by the hospital's code blue protocol and ACLS guidelines.[2]

A participant email was sent to each nurse within the emergency department explaining the study and included a link to the survey pre-test to be completed via Microsoft Forms called the MHPTS. The scale is a 16-question Likert scale, which allows participants to assess different aspects of teamwork, such as leadership, role clarification, and communication, on a scale of 0 to 2. This email list was provided by the education department and included the nurses employed at the time of this intervention launch date. Next, each crash cart was supplied with 3 badges, 1 for each role. After the dispersion of the labels, a notice of the standard of care change was provided in the daily huddle for one week. All RNs were required to sign that they attended huddle at least once each week. Most of the RNs were documented as having heard this update.

To promote intervention fidelity, all rapid response team members were asked to aid in enforcing the use of the labels and in defining the roles during an arrest. In addition, a tracking sheet was created for each crash cart and a patient label was affixed to the sheet after utilizing the badges in the code. After 6 months of utilizing the new standard of care, volunteers who had participated in a code utilizing the intervention were asked to fill out a short instrument using the MHPTS as a post-test to determine if there was a difference in nurses' perception of teamwork in a code blue after the role delineation standard of care implementation. The instrument was dispersed on Microsoft Forms via the same email address list. The initial participants remained anonymous.

A chart review then was conducted utilizing all 47 charts available from patients in the emergency department that were dated in the 6 months before the intervention and after the initiation of COVID-19 isolation precautions (between March and November 2020). The time to defibrillation and time to initial medication administration then was determined. The medication administration time was recorded by the administered time of several different medications including but not limited to EPINEPHrine, Atropine, Amiodarone, Bicarbonate, etc. The same was done utilizing 17 charts after the intervention was initiated, which had documented nurses using the intervention. Although there were more codes during this time frame, only the 17 with documented intervention usage were studied. Each code that is run within this facility is recorded on paper for official documentation. One copy is held with the patient's chart and a carbon copy is submitted to clinical excellence for review. The copies reviewed were requested from the clinical excellence department.

The times to defibrillation and medication administration were determined from when the code button was pressed (or the door time of arrival) to the time of the documented defibrillation. These times were documented in minutes according to the current standard at the facility. Select patient demographics and nurse demographics were collected. After the study implementation was initiated, the investigator waited 5 months to send out an email requesting post-test survey participation.

DATA ANALYSIS

The data were analyzed using IBM SPSS 24. A paired sample *t*-test was performed on the pre- and post-test data from the MHPTS to measure teamwork in emergency nurses before and after a role delineation intervention. This analysis compared the item mean scores and total mean scores from the 16 items from the pre-test to the post-test. The items were paired by using an anonymous participant identifier. Demographic data were analyzed using descriptive statistics. Correlational analysis was run to determine relationships between demographic data and pre-test and post-test Performance Teamwork Scale scores.

NURSE DEMOGRAPHICS

A power analysis showed that 30 nurses should fill out the MHPTS. In a department that employed 90 nurses at the time of investigation, 33.3% of emergency nurses should participate in the scale. As this intervention involved a standard of care change, all nurses in the department would participate in the role delineation intervention. From the sample ($N = 30$), few nurses ($n = 2$, 6.7%) held associate's degrees, most ($n = 20$, 66.7%) held bachelor's degrees, and some ($n = 8$, 26.7%) held a master's degree. Ages ranged

from 24 to 63 years old (37.3 [SD = 9.71]). The majority were female ($n = 25$), with 60% Caucasian, 20% Hispanic or Latino, 16.7% Asian or Pacific Islander, and 3% other. The participants worked in the emergency department for 0.5 years to 24 years. Of the participants, 14 held a Mobile Intensive Care Nurse certification, 8 earned their Certified Emergency Nurse certification, one had a Stroke Certified RN, 1 a Certified Medical-Surgical RN, and 1 was a Public Health Nurse. Nurse demographics can be found on Table 1.

TABLE 1
Descriptive statistics of nurse demographics (Total $N = 30$)

Demographic variable	Mean	SD	*n*	%
Age	37.3	9.71	-	-
Sex				
Male			5	16.7
Female			25	83.3
Ethnicity				
Asian or Pacific Islander			5	16.7
Hispanic or Latino			6	20.0
White or Caucasian			18	60.0
Other			1	3
Years employed in ED	8.2	6.36	-	-
Certifications				
MICN			14	46.6
CEN			8	26.6
SCRN			1	3.3
CMSRN			1	3.3
PHN			1	3.3
Shift worked				
Dayshift			11	36.7
Midshift			10	33.3
Nightshift			9	30.0
Type of employment				
Full-time			27	90
Part-time			3	10
Per diem			0	0
Highest level of education				
Associate degree			2	6.7
Bachelor's degree			20	66.7
Master's degree			8	26.7

CEN, Certified Emergency Nurse; CMSRN, Certified Medical-Surgical Registered Nurse; ED, emergency department; MICN, Mobile Intensive Care Nurse; PHN, Public Health Nurse; SCRN, Stroke Certified Registered Nurse.

Results

Twenty-one post-tests were collected after 5 months of the code intervention implementation. Total mean teamwork performance scores improved from a total score of 24.8 to 28.9, out of a maximum score of 32. Of the 21 posttests, 17 were able to be paired to the pretest utilizing the 4-digit participant identifier.

After analyzing the data of individual items with a paired samples *t*-test, 5 items showed a significant difference from pre-test to post-test at the $P \leq .05$ level. This significance was found in questions 2, 3, 7, 8, and 9 and the total scores. These items read as follows: the team leader assures maintenance of an appropriate balance between command authority and team member participation ($t = -5.607$, $P < .001$), each team member demonstrates a clear understanding of his or her role ($t = -5.415$, $P < .001$), team members repeat back or paraphrase instructions and clarifications to indicate that they heard them correctly ($t = -2.400$, $P = .029$), all members of the team are appropriately involved and participate in the activity ($t = -2.236$, $P = .041$), and disagreements or conflicts among team members are addressed without a loss of situation awareness ($t = -2.704$, $P = .016$). An independent samples *t*-test revealed a significant improvement from pre-test to post-test total scores ($t = -3.938$, $P = .001$). No correlations were found between certification, number of years in the emergency department, or age, and the Perceived Teamwork survey scores. Data on all questions for the MHPTS are shown in Table 2.

Forty-seven code blue charts were collected prior to the intervention, ranging from March 2020 to November 2020. Of these charts, all patients received medications and 5 were defibrillated during the code. An additional 17 patients were documented as nurses utilizing the code role badges during the code blue from November 2020 to May 2021. These physical charts were obtained from the clinical excellence department. One chart was unable to be located by the Principal Investigator or the clinical excellence department, so 16 charts were reviewed for analysis. Of these patients, 15 received medication and 2 were defibrillated.

Select demographics were collected on the patients before and after the intervention. The ages of those in the preintervention group ranged from 27 to 96 years of age. In that group, 72.3% were male and 27.7% female. In addition, 39.1% survived Return of Spontaneous Circulation and 60.9% expired. The ages of those in the post-intervention group ranged from 40 to 82 years. Male patients made

TABLE 2
Paired *t*-test of MHPTS in emergency nurses (Total $N = 17$)

MHPTS question	Pre-test mean	Post-test mean	SD	*t*-test	df	Sig. (2-tailed)
1	1.41	1.70	0.59	−2.063	16	.056
2	1.12	1.88	0.56	−5.607	16	< .001*
3	1.12	1.76	0.49	−5.416	16	< .001*
4	1.59	1.94	0.70	−2.073	16	.055
5	1.47	1.82	0.70	−2.073	16	.055
6	1.53	1.76	0.83	−1.167	16	.260
7	1.53	1.88	0.60	−2.400	16	.029†
8	1.50	1.75	0.44	−2.236	15	.041†
9	1.47	1.94	0.72	−2.704	16	.016†
10	1.88	2.00	0.33	−1.461	16	.163
11	1.65	1.82	0.53	−1.376	16	.188
12	1.75	1.68	0.77	0.324	15	.751
13	1.82	1.64	0.53	1.376	16	.188
14	1.76	1.76	0.50	0.000	16	>.99
15	1.69	1.88	0.54	−1.379	15	.188
16	1.69	1.94	0.58	−1.732	15	.104
Total	24.8	28.9	4.24	−3.938	16	.001*

df, degrees of freedom; MHPTS, Mayo High Performance Teamwork Scale.
* Significance at $P \leq .01$ level.
† Significance at $P \leq .05$ level.

up 62.5% while 37.5% were female. In the post-intervention group, 46.7% survived after the code while 53.3% expired. Long term survival was not investigated. Data on patient demographics can be found on Table 3.

Prior to the intervention, mean time from time of code blue called to medication administration was 1.55 minutes. Post-intervention showed a mean time of 2.08 minutes. An independent samples *t*-test was conducted to compare the time of medication administration between the pre-intervention and post-intervention groups. There was no apparent difference in time to medication administration between groups. In addition, a comparison of patient survival pre-intervention and post-intervention did not show a significant difference. A Pearson *r* correlation analysis showed no significance between select patient demographics and medication administration timing. As only 5 patients pre-intervention and 2 patients post-intervention were defibrillated, there was not adequate data to assess pre-data and post-data.

Although having role delineation badges did not change the time to medication administration or defibrillation, there was a significant difference in the perception of teamwork overall by the nurses after the intervention. The areas showing most improvement were those areas related to the level of involvement of the nurses and their ability to communicate effectively.

Discussion

This study complemented what has been viewed in the literature review, that having a physical means of determining nurse roles in a code blue may help to improve the nurse perception of a code blue. As stated in the study findings, nurses found that teamwork aspects such as communication were improved through the use the code role delineation badges.

After the implementation of this project in the emergency department and seeing the positive outcomes, the Code Blue Committee at the study site moved to implement a code blue role intervention over the entire hospital. It is the hope of the principal investigator that the role delineation standard of care will continue to improve nursing teamwork performance during code situations in various hospital settings, as well as the emergency department. Other hospital populations also may benefit from such an intervention.

RECOMMENDATIONS

Future studies are needed to investigate the effectiveness of a hospital wide role delineation intervention in codes. Role confusion during inpatient codes at the study site has been observed. These codes require the arrival of a code team including a rapid response nurse, an emergency nurse, the House Supervisor RN, and a charge nurse from intensive care unit. Exploring a nurse leader role was not investigated in this study. Having a method of clearly delineated roles for nurses who may not know each other well may potentially be beneficial in improving communication and teamwork.

It is recommended that a similar longitudinal study be performed with a larger sample size. There was not enough data regarding time for medication or defibrillation to determine significance as this project ran for a short period, only 6 months. A power analysis indicated that at least 40 code blue charts would be needed to obtain enough data for an adequate effect size. Although over 40 code blue charts were able to be obtained for the pre-review, there were only 16 charts documented as having used the intervention available post-intervention and therefore not enough data to determine all the differences in pre-intervention group and post-intervention group items due to the smaller post-review size. In addition, the total number of code blues in the intervention period was not recorded, but the data may have offered insight into code blue performance as a whole during the study intervention. Similarly, although 30 nurses filled out the initial surveys, only 17 were able to be paired with post-intervention surveys. Both events may have caused a type II error, as there could have been greater significance if the sample of charts collected post-intervention was larger. If this research study is repeated or continued, it should be introduced to multiple hospital units to gain more participants from a wider variety of specialties and to have a higher incidence of a code blue. It also may be beneficial to create an easier method of tracking whether the role delineation badges were used, as most code blues did not document usage and were unable to be included in the data collection.

Limitations

Initially the nurses were hesitant to participate. There was pushback as nurses did not want to wear role badges or they forgot to wear them. Many of the nurses who wore the badges did not put them back onto the crash cart after using them. In addition, nurses stated they forgot to put patient labels on the tracking forms.

The chart review revealed a need for education for nurses on how to fill out a code documentation form correctly. Occasionally, vital information was lacking from the forms. It is the policy of the facility at the time of the code to have all the information from the code documented on paper alone. No information needs to be converted into the electronic medical record by the RN. It was noted during the chart review that many patients were missing information such as initial cardiac rhythm, pulse checks, and patient outcome.

Limited data and timing of the study contributed to the overall study limitations. This study pre-test was distributed prior to the COVID-19 surge that took place November 2020 to February 2021. During and after the surge, it was noted that many emergency nurses chose to move to a different specialty or quit entirely. As a result, there were fewer nurses who participated in the post-survey than who were working in the department at the time of the pre-survey distribution. In addition, during the post-survey period, the hospital stated a record high number of nurses on leave of absence for various reasons. It is the policy of the hospital to not check emails and respond while on leave of absence. This also impacted the number of nurses who may have filled out the pre-survey but were not available during the post-survey period. Launching the initial intervention during a pandemic created several obstacles. There was some hesitation due to the emergency nurses not having the energy to add to an already draining workload. Crash carts occasionally were not used for codes during the first few months of the intervention, as they occurred so frequently that respiratory trays and a defibrillator were sometimes used in lieu of bringing the crash cart into a room with a COVID-19 positive patient. As the badges were stored on top of the crash cart, any code ran in this method would likely not have been recorded as using the intervention. It would be more conducive to implement the intervention at a time when the emergency department is well staffed with a more consistent patient census and set of resources. This also may serve to eliminate some of the extraneous variables that occurred because of the pandemic such as unusual numbers of codes overall and occurring simultaneously, severe contamination issues, intensified short staffing, and extremely high patient acuity levels.

STRENGTHS

One strength of this research was the willingness of the rapid response nurses to maintain intervention fidelity and ensure the proper labeling of the nurses and the code tracking form. The compliance of the rapid response team is especially

TABLE 3
Descriptive statistics of patient demographics (Total $N = 63$)

Demographic variable	Mean	SD	*n*	%
Pre-intervention				
Age	65.83	14.39	-	-
Outcome				
Survived			18	38.3
Expired			28	59.6
Sex				
Male			34	72.3
Female			13	27.7
Postintervention				
Age	63.38	14.50	-	-
Outcome				
Survived			7	46.7
Expired			8	17.0
Sex				
Male			10	62.5
Female			6	37.5

helpful if this intervention moves to a hospital wide setting, as the rapid response nurse responds to all codes in the hospital. Anecdotally, the PI received positive feedback from the rapid response nurses that they perceived improvement of the organization of the code with the role delineation intervention.

Implications for Emergency Nurses

Overall, this intervention has offered an improved standard of care to help emergency nurses be clearer on their roles in code situations. Role delineation may help to improve the overall performance of nurses in code situations.

Conclusions

Although time to medication administration and defibrillation did not show statistical improvement, nurses stated that their perception of teamwork did improve compared to the original practice of nurses volunteering for a code and helping with several roles within the code blue. This study regarding code role identification for nurses has offered meaningful evidence as to its effectiveness in improving nurse teamwork. The MHPTS showed improvement in the following items after the role delineation intervention: the team leader assures maintenance of an appropriate balance between command authority and team member participation, each team member demonstrates a clear understanding of his or her role, team members repeat back or paraphrase instructions and clarifications to indicate that they heard them correctly, all members of the team are appropriately involved and participate in the activity, and disagreements or conflicts among team members are addressed without a loss of situation awareness. Total mean scores of the MHPTS improved from 24.8 to 28.9 out of 32 points.

It is recommended that this study be repeated involving nurses from a wider variety of specialties. In addition, a longitudinal study could provide more data regarding time to medication administration and defibrillation in a code. This study intervention suggests role delineation is an effective method to improve nursing teamwork in times of patient arrest in the emergency department and may lead to improved overall nursing performance and therefore may improve patient outcomes.

Author Disclosures

Conflicts of interest: none to report.

REFERENCES

1. Leary M, Schweickert W, Neefe S, Tsypenyuk B, Falk SA, Holena DN. Improving providers' role definitions to decrease overcrowding and improve in-hospital cardiac arrest response. *Am J Crit Care*. 2016;25(4):335-339. https://doi.org/10.4037/ajcc2016195
2. American Heart Association. *Advanced Cardiovascular Life Support*. 16th ed. American Heart Association; 2016.
3. Lanfranchi JA. Instituting code blue drills in the OR. *AORN J*. 2013;97(4):428-434. https://doi.org/10.1016/j.aorn.2013.01.017
4. Prince CR, Hines EJ, Chyou PH, Heegeman DJ. Finding the key to a better code: code team restructure to improve performance and outcomes. *Clin Med Res*. 2014;12(1-2):47-57. https://doi.org/10.3121/cmr.2014.1201
5. Dorney P. Code blue: chaos or control, an educational initiative. *J Nurs Staff Dev*. 2011;27(5):242-244. https://doi.org/10.1097/NND.0b013e31822d6ee4
6. Spitzer CR, Evans K, Buehler J, Ali NA, Besecker BY. Code blue pit crew model: a novel approach to in-hospital cardiac arrest resuscitation. *Resuscitation*. 2019;143:158-164. https://doi.org/10.1016/j.resuscitation.2019.06.290
7. Ballangrud R, Persenius M, Hedelin B, Hall-Lord ML. Exploring intensive care nurses' team performance in a simulation-based emergency situation, - expert raters' assessments versus self-assessments: an explorative study. *BMC Nurs*. 2014;13(1):47. https://doi.org/10.1186/s12912-014-0047-5
8. O'Donoghue SC, DeSanto-Madeya S, Fealy N, Saba CR, Smith S, McHugh AT. Nurses' perceptions of role, team performance, and education regarding resuscitation in the adult medical-surgical patient. *Medsurg Nurs*. 2015;24(5):309-317.

"I Was Here First, Why Did They Go Before Me": Examining Patients'Perceptions of Priority in a Psychometric Study of Emergency Department Triage

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Contribution to Emergency Nursing Practice

- What is already known on patient satisfaction is that there is a significant interplay between patient expectations and perceptions, with patients generally expecting faster service than is realistic within the emergency department.
- The main finding of this paper is that the Patient Perception of Priority to Be Seen Survey can reliably measure patient subjective experience, and a verbal explanation of common triage procedures could standardize patient expectations.
- Recommendations for translation of the findings of this paper into emergency clinical practice include using the Patient Perception of Priority to Be Seen Survey in research, quality improvement projects, and interventions to improve patient-nurse communication in the emergency department.

Abstract

Introduction: Unrealistic patient expectations for wait times can lead to poor satisfaction. This study's dual purpose was: (1) to address disparities between patients' perceived priority level and the Emergency Severity Index (ESI) assigned by emergency room triage nurses; and (2) to evaluate validity and reliability of using the Patient Perception of Priority to be Seen Survey (PPPSS) to investigate patient expectations for emergency department urgency.

Methods: A two-group pretest-posttest quasi-experimental approach compared patient urgency opinions to nurse urgency ratings with and without a scripted educational intervention. This tested how closely patient perceptions were related to triage nurse ratings.

Results: Reliability for the PPPSS was acceptable (reliability = 0.75). Patients who were rated lower urgency on the ESI by triage nurses tended to self-report higher urgency (rho = −0.44, $P < .01$). Attitudes were more consistent in the posttest patient group who were exposed to the scripted verbal description of emergency department procedures (χ^2 (1, $N = 352$) = 8.09, $P < .01$). Patients who disagreed with emergency nurse scores tended to be younger on average (eg, < 40 years old; rho = 0.69, $P < .01$). Male identified patients tended to be rated both by nurses and themselves as higher urgency (beta = 0.18, $P = .02$).

Discussion: We recommend the PPPSS for nurses and researchers to quickly assess patient expectations. Additionally, promoting patient understanding through a scripted educational

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strategy about the ESI system may also result in improvements in communication between patients and nurses.

Key words: Emergency department; Triage; Patient perception; Psychometrics; Educational intervention

Introduction

PROBLEM DESCRIPTION

Current best practice policies for triaging patients seeking care in hospital emergency departments are aimed to assure that emergency nurses, in collaboration with medical staff, provide triage assessments with a high level of accuracy for those seeking rapid, emergent treatment.[1] The goal of triaging in the emergency department is to assess each patient in an expedient manner and to prioritize their care. The emergency severity index (ESI) based on joint Emergency Nurses Association/American College of Emergency Physicians standards is often used as a tool for facilitating efficient triage.[2] The 5-level emergency triage algorithm provides clinically relevant prioritization of patients into 5 groups from 1 (requires immediate intervention) to 5 (least urgent). Triage nurses are responsible for this assessment using a rapid, systematic collection of data relevant to the patient's chief complaint, age, allergies, and vital signs to obtain sufficient information to determine the ESI level and to be seen by the emergency provider.[3]

Although ESI triage procedure provides an efficient algorithm for designating patient urgency, it may not always be apparent to patients in the waiting room, which risks patient confusion and dissatisfaction. To inform patient provider communication, in 2013, Toloo et al[4] developed the Patient Perception of Priority to Be Seen Survey (PPPSS), although it has received very little use in research or clinical settings. The full scale includes 11 questions about patient health and demographics, including one question directly asking about how quickly a patient expects to be seen by a provider. This item seems an intuitive way to calibrate how realistic patient expectations are for ED efficiency; however, its lack of use raises concern about its reliability and validity. The original project that developed the scale emphasized the face validity of questions. They also did find positive correlations with pain and seriousness reported by ambulatory patients, supporting validity of the Patient Priority to be Seen Survey as a measure of urgency during a crisis.[4] Reliability was not estimated.

In this report, we review some of the challenges in patient communication and psychometric theory and provide an evaluation of the Patient Priority to be Seen Survey for use in the emergency department to facilitate nurse-patient communication. We accomplished this by comparing patient-reported subjective urgency scores with the ESI scores rated by the triage nurse. In addition, we used a quasi-experimental approach to see whether or not informing patients of ED triage procedures through a scripted educational intervention improves patient-reported expectations for wait times. Finally, we use expert knowledge from more than 35 years' nursing experience to verify that the patients whom we thought would have unrealistic expectations for wait times did demonstrate such discrepancies empirically. This provided a multifaceted validation of the Patient Priority to be Seen Survey and an estimation of reliability. Discussion is provided of how to interpret individual scores, possible clinical applications, and how this could be used in research on patient satisfaction.

AVAILABLE KNOWLEDGE

Emergent patients often perceive their throughput time more favorably than those with less emergent needs.[5] Previous research has found that shorter wait times are positively associated with patient satisfaction.[6-9] Beyond subjective quality of care, prolonged wait times in the emergency department also have been associated with increased morbidity and mortality, especially among critical care patients.[10] Ensuring an efficient emergency department is important for quality patient care. An evidence summary table of the studies we reviewed is provided in Online Supplement 1.

Educational interventions have demonstrated some efficacy in raising triage nurses' understanding regarding priorities to be seen;[11] however, less well-studied is the great misunderstanding in patient's perception about standard triage procedures and how this can be ameliorated. Previous research has shown a discrepancy between patient and practitioner perceptions of priority of need to be seen.[12] In addition, triage communication of expected wait time has demonstrated an association with overall ED satisfaction.[8] At this project location, a recent quality improvement survey indicated only 9% agreement between triage nurses' ratings of urgency and patients' self-reported perceptions of priority to be seen.

The balance between patient expectations and what is realistic was emphasized by Maister[13] who conceptualized what constitutes patient satisfaction. Maister focused on the discrepancy between patient perceptions and expectations. He goes so far as to suggest that improving the

experience while waiting for care may decrease the perceptions of wait times and increase satisfaction without an actual change in the wait time. This is important, because target ED wait times are often not met, likely because of contextual factors that are not easy to change.[14] If better patient-nurse communication can improve patient perceived wait times, this provides a much simpler avenue to improve patient satisfaction.

RATIONALE

We propose the PPPSS to help to facilitate better research and quality improvement projects on subjective patient experiences and nurse-patient communication. In addition, if reliable and valid, this instrument could be used as part of an intervention during the patient triage process to produce higher quality, safe, and expedient care that promotes satisfaction both for patients and nurses.

In particular, we used concurrent validity testing against the validating criterion of urgency scored by trained triage nurses using the ESI. Thus, the PPPSS was compared as the extent to which its scores were similar to the "gold standard" ESI criterion. Previous research has indicated the ESI provides valid estimates of patient urgency and has strong inter-rated reliability when used by triage nurses (reliability estimates ranged from 0.83-0.94),[15-17] although some concerns have been raised that measurement is less reliable in less developed countries.[18] If triage nurse ratings demonstrate concordance with patient-reported urgency, this would support the use of the PPPSS as a measure of subjective patient urgency.

In addition, we examine construct validity through the use of a quasi-experimental design. For the first half of data collection, a pretest group of patients were simply asked to report their opinions on the PPPSS in a nonstandardized way. During the second half of data collection, posttest patients were provided with a brief scripted standardized verbal description of the ESI triage protocol before completing the questionnaire. If the PPPSS validly measures patient expectations for when they will be seen, then directly informing their expectations should result in more standard scoring.

SPECIFIC AIMS

We aim to better understand patient experiences in the emergency department, to validate the PPPSS as a tool for evaluating patient subjective urgency. We hypothesized that patients who perceived their needs as urgent on the PPPSS would tend toward lower urgency scores assigned by triage nurses using the ESI, as has been suggested previously.[4,13] We estimated reliability and validity contextualized by nurse ratings, demographic variables, general health status, and health care usage behavior. To inform how to interpret PPPSS scores in research and clinical settings, we estimated the relationships among observed triage scores, patient health traits, and individual uniqueness. Finally, we hypothesized that there would be greater agreement between nurse and patient urgency and need to be seen when patients were provided a verbal description of ED procedures by the triage nurse.

Methods

SETTING

Data were collected at an emergent care unit situated in a community magnet-designated hospital in New England. At capacity, the hospital can care for 40,000 patients annually, although most years there are closer to 33,000. The ED staff consisted of 43 registered nurses. Of these, 29 (67.44%) were credentialed to perform triage nursing functions using the ESI. This site has used the ESI since 2005 and all triage nurses received updated training following ESI revisions in 2012. All nurses were required to have at least a Bachelor of Science in Nursing, and only those nurses with a year or 2 of emergency nursing experience are trained to be triage nurses. Training to use the ESI includes a 2-hour structured didactic course and on-the-job training. In addition, nurses are encouraged to pursue continuing education opportunities on nursing in general at discounted rates in collaboration with universities in the area, to maintain familiarity with best practices in nursing.

DATA COLLECTION AND QUASI-EXPERIMENTAL DESIGN

To test the validity of using the PPPSS as a measure of subjective patient urgency, we compared scores with the ESI as a test of concurrent validity. In addition, we used a quasi-experimental design, with data collected before and after providing posttest patients with the standardized scripted verbal description of what to expect. If discrepancies between patient and nurse triage ratings are because patients have improper expectations for ED procedures, then simply informing patients of what to expect should standardize scoring. This tests construct validity, using a script written by the principal investigator read to patients. If the PPPSS is a valid measure of patient subjective urgency,

discrepancies between patient- and nurse-reported urgency will be larger in the pretest nonstandardized group of patients.

The principal investigator was responsible for data collection using paper and pencil scoring. Patients were oriented to the study when they entered the emergency department after their initial triage assessment. The purpose of the study was explained and patients verbally consented and were asked to complete a short survey, the 11-question PPPSS (Supplementary Appendix A), read to them by the triage nurse investigator. Patients were not informed as to the triage nurse assessments. Nurses had pre-existing ongoing nurse-initiated protocols, which were added to the list. For the verbal description condition, after more urgent needs were addressed, nurses explained the triage standard of care to patients, script provided in Supplementary Appendix B. All responses were kept confidential and measures were taken to ensure anonymity of the patients by not linking patient demographic variables to patient names or ID numbers. Two independent samples were collected in the same emergency department. This directly evaluated patient expectations for triage procedures, to compare expectations with ESI triaged urgency, with and without the scripted verbal description provided.

PARTICIPANTS

Patients were recruited on a walk-in basis over the course of 4 months broken into 2 groups: 2 months of nonstandardized observation (76 patients recruited) and 2 months with the scripted verbal intervention (100 patients recruited; total sample 176 patients). Samples were independent of each other except for the chance possibility that a patient entered the emergency department twice, with and without the verbal description. Although patients were allowed to participate regardless of the time they entered the emergency department, most patients were enrolled in the morning and afternoon, when most people visit the emergency department. All patients were English-speaking conscious adults, at the age of 18 years and older. Exclusion criteria for this sample were patients with dementia, children, or those unable to answer the short survey. After hearing the study goals, we asked patients in the emergency department to participate with no direct benefit to individual patients provided.

MEASURES

Developed in an earlier study by Toloo et al,[4] the PPPSS full survey includes 11 questions regarding factors that could explain patients' perceived urgency such as demographics (age, sex, ethnicity, socioeconomic status), health beliefs and preferences (perceived health status, urgency, previous ED visits), and perceived acuteness including reasons for seeking care in the emergency department (Supplementary Appendix A). We focused on the question asking about patient expectations for wait time. Patients were asked by the triage nurse to rate the urgency of their needs in time they thought they could wait on a scale from 1 (representing "within 2 hours") to 5 (representing "immediately"). We sought to validate this question on the PPPSS for the purpose of assessing patient expectations for ED procedures and subjective urgency.

Patient ethnic identity was measured only as Hispanic and not Hispanic self-reported by patients owing to this emergency department's patients being primarily white and a lack of ethnic diversity within the community. We had thought Hispanic ethnic identity might be a more cogent single social group than the inclusion of many underrepresented racial categories. No other race or ethnicity questions were asked. Although a sample of more diverse respondents would be preferred, this measurement scheme is consistent with recommendations on how to conceptualize ethnicity.[19]

PSYCHOMETRIC THEORY

More detailed discussion of psychometric theory and statistical estimation are included in Online Supplement 2. We estimated reliability for the PPPSS as internal consistency from intraclass correlation coefficient for individual patient traits within a generalizability theory framework and mixed effects modeling estimation.[20-22] Reliability greater than 0.70 is considered acceptable, although values greater than 0.80 are preferred. Reliability at this level would indicate that repeated use of the PPPSS would tend to produce similar scores for similar patients at least 70% of the time depending on the level of reliability.

Previous work has used the PPPSS measure in research settings; however, its psychometric properties were not the emphasis of the project.[4] This will document the applicability and extend interpretability of this measurement tool to a clinical setting. By performing a validity analysis, the results can inform how to interpret individual PPPSS scores, so far as they relate to nurse-rated urgency and other personal health and demographic information. We focus on concurrent validity relative to the ESI and construct validity contextualized by the quasi-experimental design and patient demographic information.

Finally, we incorporated expert opinion into the analysis to ensure face validity, described in detail in Online Supplement 2. Face validity is the extent to which an

instrument appears to be an adequate measure, and typically not considered critical, we believed it could be important if patients' resistance to being measured reflects their view that the scale is of no significance to their problem. Led by the principal investigator, the research team categorized patients by how likely they were to agree with the triage nurse and by how subjectively stressful their symptoms were. This allowed for consideration within the analysis of those patients for whom there was concern that they may not have appropriate expectations or patients who may have reasons to feel that their needs are urgent. If the PPPSS is valid for understanding subjective patient needs, then patients expected to disagree with the triage nurse or patients with subjectively unpleasant conditions should demonstrate the largest improvements in concordance between nurse- and patient-reported ratings when the verbal description is provided.[20-22] We tested this empirically.

ANALYSIS PLAN

We determined significance as $P < .05$. The sample included 176 individuals (76 nonstandardized pretest and 100 with the scripted verbal description of ED protocol). For each patient, there were 2 scores, 1 ESI rating and 1 PPPSS patient-reported urgency rating, resulting in a total sample of 352 observations. First, we examined the correlation matrix and performed discriminant function analysis.[23] This helps to understand the characteristics of the expert-determined patients who may have unrealistic expectations of ED efficiency, testing concurrent validity.[20,21] Observed discrepancies between patient and nurse triage ratings being categorized by the expert as likely to disagree with the nurse would support the validity of the PPPSS. In addition, subjective discomfort of admitting condition is an intuitive reason patients might disagree with the triage nurse. Finally, based on the observation while collecting data that younger patients seemed more likely to disagree, age also was included in the analysis.

Next we compared PPPSS scores with and without the verbal description of ED procedures, a direct test of construct validity. Out of concern that some patients may have a better intuition for standard triage procedures than others, a specific comparison was made between participants categorized as likely agreeing with nurse ratings and those who would likely disagree. This amounted to a $2 \times 2 \times 2$ repeated measures analysis of variance design with interactions comparing quasi-experimental condition (unstructured pretest or posttest with verbal description of ED procedures provided), rater of urgency (nurse or patient), and patient type (agree or disagree with nurse). If the PPPSS is valid for the purpose of understanding patient experiences, then the interaction between scripted intervention condition and rater would be significant, indicating that patient ratings were more standard with the verbal description but not nurse ratings, which should be consistent regardless.

To further assess concurrent validity, the analysis included a number of covariates, specifically age, gender, ethnicity, enrollment with a primary care physician, reported knowledge of the ED triage system, use of the emergency department in the past 6 months, patient-reported health ratings, and categorized rating of how subjectively stressful the patient's condition may be. Finally, several random effects accounted for the known structure to the data and model sources of variation (eg, heterogeneous variances and correlation between nurse ESI and patient PPPSS ratings), as is consistent with generalizability theory methods.[21] Estimating power indicated that this analytic framework could likely detect at least a moderate effect size demonstrated by the manipulation (see Online Supplement 2).[24-26]

ETHICAL CONSIDERATIONS

The hospital's Human Subjects Safety Committee deemed the study, which followed a quality improvement project, to be exempt from review. As stated earlier, responses were kept confidential and measures were taken to ensure anonymity of the patients by not linking patient demographic variables to patient names or ID numbers.

Results

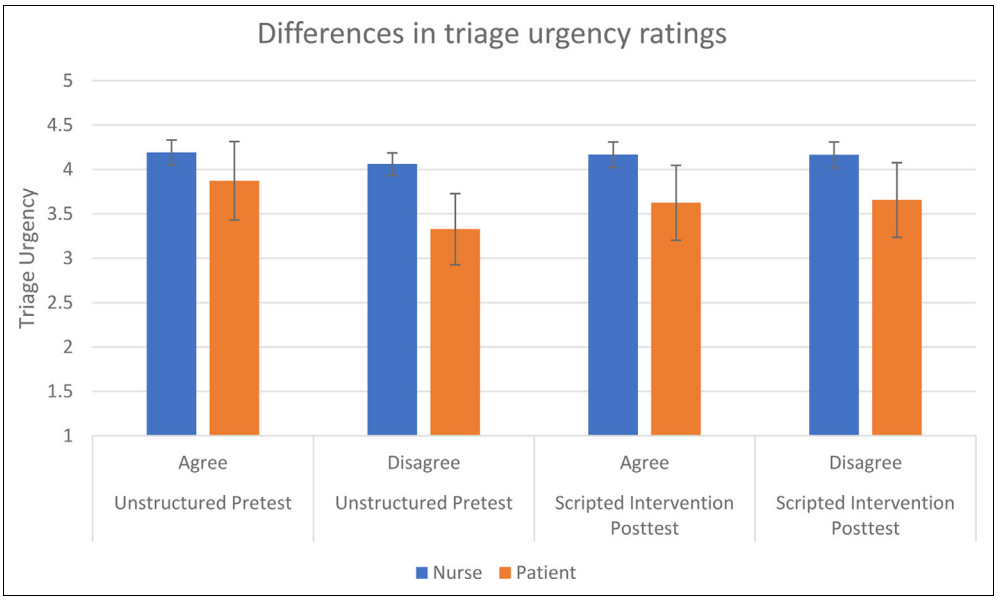
Respondents spanned the age range, most between 18 and 60 years old (see Table). All respondents were patients; none were caregivers. There were similar proportions of male- (48.86%) and female- (51.14%) identifying respondents. The majority did not identify as Hispanic (90.91%). Most respondents indicated that they did have a primary care provider (60.80%) but did not know about the ED triage system (73.30%) and had not been to the emergency department recently (68.18%). Rated from 1 ("poor") to 5 ("excellent"), most respondents indicated good or very good health, with a mean of 3.88 (SD = 0.73).

There were a wide variety of reasons respondents came to the emergency department, from allergic reactions to abnormal laboratory test results. Most patient needs were rated as moderately stressful (M = 2.07 rated from 1 ["low stress"] to 3 ["high stress"], SD = 0.64). Most respondents thought they should be seen within about 20 minutes,

TABLE
Respondent characteristics (N = 176)

Variable	Level	N	%
Demographic variables			
Age	18-29 y	73	41.48
	30-49 y	52	29.55
	50+ y	51	28.98
Sex	Female	90	51.14
	Male	86	48.86
Ethnicity	Not Hispanic	160	90.91
	Hispanic	16	9.09
Health variables			
Do you have a primary care provider?	No	69	39.20
	Yes	107	60.80
Do you know about the ED triage system?	No	129	73.30
	Yes	47	26.70
Have you used the ED in the last 6 mo?	No	120	68.18
	Yes	56	31.82
How is your general health?	Poor	0	0.00
	Fair	3	1.70
	Good	49	27.84
	Very good	90	51.14
	Excellent	34	19.32
Emergency circumstance stress expert rating	Low stress	30	17.05
	Moderate stress	104	59.09
	High stress	42	23.86
Patient ratings: I should be seen	Within 2 h	6	3.41
	Within 60 min	26	14.77
	Within 30 min	35	19.89
	Within 10 min	65	36.93
	Immediately	44	25.00
Nurse triage rating	Nonurgent	0	0.00
	Semiurgent	0	0.00
	Urgent	0	0.00
	Emergent	148	84.09
	Highest priority	28	15.91
Predicted agreement with triage nurse	Agree	81	46.02
	Disagree	95	53.98

ED, emergency department.



FIGURE

Differences in triage urgency ratings. Note: Nurse ESI scores were reversed so a higher number represents higher urgency, as is the scoring on the PPPSS. ESI, Emergency Severity Index; PPPSS, Patient Perception of Priority to Be Seen Survey.

at most an hour (M = 22.61 minutes, SD = 26.97 minutes). Patients were consistently rated as high urgency by nurses (M = 4.16, SD = 0.35; reverse scored so a larger value indicates higher urgency).

The discriminant function analysis indicated observed agreements between nurse and patient urgency ratings tended to be independently classified as likely agreement by the expert (lambda = 0.83), supporting concurrent validity of the measurements (Wilks' lambda = 0.52, $F(5, 170) = 32.01$, $P < .01$). Older patients also tended to agree with the nurse, corroborating the anecdotal observation (lambda = 1.37). Contrary to expectations, subjective discomfort operationalizing patient subjective stress had minimal relationship to agreement or disagreement (lambda = −0.10).

Figure plots the scoring tendencies with and without verbal description of ED procedures, comparing between patients expected to agree with the nurse and patients expected to disagree with the nurse. During the unstructured pretest, ratings were close between nurses and patients for the patients expected to agree with the triage nurse (nurse, M = 4.19, 95% confidence interval [CI] 3.92-4.46; patient, M = 3.87, 95% CI 3.01-4.74). For patients expected to disagree with the triage nurse, there was a discrepancy during the unstructured pretest period (nurse, M = 4.06, 95% CI 3.81-4.31; patient, M = 3.33, 95% CI 2.54-4.11; χ^2 (1, $N = 352$) = 14.61, $P < .01$).

However, during the scripted intervention posttest after rounding, ratings by nurses were identical for agree and disagree classified patients (nurse, M = 4.16, 95% CI 3.88-4.45), and patient-reported ratings also were very close (agree, M = 3.62, 95% CI 2.80-4.43; disagree, M = 3.66, 95% CI 2.83-4.48). This is evidence that ratings were more standard with scripted verbal description of ED procedures, supporting construct validity of the PPPSS as a measure of patient expectations (χ^2 (1, $N = 352$) = 8.09, $P < .01$).

Estimating internal consistency reliability, the ratio of individual variance to total variance for each rater, across nurse ESI ratings (reliability = 0.73) and patient PPPSS ratings (reliability = 0.75), both demonstrated acceptable reliability (reliability > 0.70). Examining the correlations between observed ratings and model implied true patient urgency, both rating systems indicated large and nearly identical correlations (nurses, rho = 0.54; patients, rho = 0.55). That said, the correlation between these 2 rating systems was moderate to large and negative (rho = −0.38). This supports the reliability and concurrent validity of the PPPSS, which demonstrated consistent measurements of patient urgency. That said, when patients rated themselves as more urgent, it was likely a nurse would rate them as less urgent.

Finally, contrary to expectations, only one additional measure of concurrent validity demonstrated significant association at alpha = 0.05. Patients identified as female

tended to be rated as lower urgency ($t(163) = -2.23$, $P = .02$), a small magnitude of difference (beta $= -0.18$).

Discussion

SUMMARY AND INTERPRETATION

We estimated reliability and considered ways to make valid interpretations of the PPPSS as a tool for understanding patient subjective experience.[13] Using a modern analytic framework drawing from generalizability theory, reliability for the measure was acceptable. The quasi-experimental design targeting patient understandings of triage procedures supported validity. When patients were explicitly informed of ED triage procedures, PPPSS scores across patient groups were nearly identical. This suggests that by directly informing patients of what to expect, this may have standardized rating systems. By being aware of standard ESI procedures, all patients received and reported similar ratings of urgency. This supports the validity of the PPPSS and also demonstrates why clear communications of expectations may improve ED efficiency.

The concordance between all of patient ratings, triage nurse ratings, and independent expert ratings supported convergent concurrent validity. When patients and nurses gave similar urgency ratings, the expert also tended to indicate that they would likely have agreed. We originally thought that subjective discomfort may be a primary aspect of why patients disagree with the triage nurse; however, there was little evidence of this. Instead, age grouped patients the most. Younger patients tended toward worse expectations for standard ED procedures.

Another finding that was counter to expectations was that nurses tended to rate patients as higher urgency on average, which is inconsistent from findings by Toloo et al.[4] This highlights the reasons for performing validity analysis: to inform how to interpret a measurement for an intended purpose. There was an inverse relationship between nurse scores and patients scores. As such, no matter how urgent patients are rated in an absolute sense, to understand patient subjective experiences, PPPSS scores should only be interpreted relative to standard urgency within a specific emergency department. For the purpose of triaging patients, ESI scores are determined based on their ordered scaling, but the average may differ between emergency departments or by time of day. An example of this scaling problem is the coronavirus disease 2019 pandemic, wherein intensive care units were overwhelmed with high urgency patients.

The issue of scaling complexity is particularly relevant in the case of the PPPSS, for which discrepancies among patient needs are a likely cause of improper expectations. Scores should be considered relative to the urgency of most other patients at the same emergency department based on what is a typical patient urgency. A low urgency patient could easily feel like somebody cut in line if they are not familiar with ESI standards and see other patients triaged sooner. The severity of this problem may depend on the unique urgency of the emergency department at a given moment. Seeking to communicate with these patients about their likely wait time may improve satisfaction. We recommend the PPPSS for implementing an intervention with this target or as a tool for research and quality improvement projects trying to improve ED communications.

Finally, an important consideration for patient satisfaction is successful social communication, improvements in which may have been facilitated by informing patients regarding what to expect.[13] As previously mentioned, when patients were expected to disagree with the triage nurse, they were much more likely to be young. There may have been a social or generational disconnect between younger patients and triage nurses that prohibited clear communication about ED procedures. In addition, gender identity stood out, with malepresenting patients tending to be rated as higher urgency on average. Although it is possible that men tend to get into more severe accidents, it is also likely in part a social complication. The literature has long identified complaints made by men tending to be taken more seriously, which provides an alternative explanation for this difference.[27-29] Given how subjective pain may be, even the experience of discomfort may be dissimilar between men and women.[30,31] A more nuanced discussion of gender dynamics within the emergency department is beyond the scope of this study; however, this finding demonstrates some of the complexity that should be addressed in future research.

Limitations

A limitation of this study is that the verbal description was administered using a single generic script. If clear interpersonal communication is an important aspect of patient satisfaction,[13] a more individualized approach may be more relevant. The script invited patients to reach out if they had additional questions about the triage procedure; however, there is no assurance that this occurred. Future research interested in intervention development may want to investigate more personal ways to facilitate

better communication between nurses and patients informed by the PPPSS.

The relationship to patient stress was implied but measurement thereof could have been improved upon. The experience of stress is highly subjective and only small relationships were identified between patient behaviors and stressful conditions. That said, patient stress was based on the likely discomfort of symptoms as rated by an expert and not reported by patients. We did this to validate the psychosocial nature of patient experience with a face valid measurement of ED urgency; however, adding a direct measure of subjective stress reported by patients may elucidate some of the findings. For example, with aging, patients may be better at managing stress, resulting in a complex and subjective age dynamic not captured in these data. Helping younger patients reporting greater stress, even if it is not in agreement with the nurse's perception, may help improve efficiency of the emergency department and patient and nurse satisfaction. An intervention informed by these results may seek to be accessible to younger patients and target subjective discomfort.

Another limitation is the convenience sampling and whether or not this can be generalized to other emergency departments. Most respondents identified as not Hispanic, and the hospital location is mostly white. We did not find differences in relation to ethnic identity, but that could have been because of limited diversity at this emergency department, especially given the ample research on social differences based on race and ethnic presentation.[19,29,32,33] In addition, not all emergency departments have the same patient load, so replicating results within multiple emergency departments and comparing results based on the urgency of the patients they serve would be informative. In this sample, all patients were physiologically stable enough to respond to the survey and most data were collected during the morning and afternoon. This may be biased toward patients who are available during these times of the day and do not have pressing emergencies. Research investigating experiences of patients in higher risk or with more severe health conditions should be examined. Qualitative ethnographic research methods also may be valuable, because the subtleties of social dynamics may not be well quantified on standard questionnaires.

Finally, although this approach indicated appropriate reliability, the definition of reliability used relied on extensive analytic methodology. The full PPPSS includes 11 questions, although we focused the psychometric analysis on the single question asking about patient expectations. Internal consistency was the best descriptor of the reliability estimated, because the intraclass correlation coefficient analytically estimates true trait variation relative to total variation, rather than repeated testing using same or parallel forms. However, internal consistency reliability is typically estimated across multiple items of the same scale. We used measures such as expert experience to improve face validity. The criticism remains that this analytic approach may be susceptible to artifacts of the math confounding results. A more intuitive approach to reliability, such as test-retest reliability, would inform how to better interpret this measure.

Implications for Emergency Nurses

It is a common problem that ED wait-time goals are not met; however, reducing wait times may prove challenging.[14] Improving communications between patients and nurses about likely wait times may improve patient satisfaction with reduced complexity of intervention design.[8,12] This analysis has demonstrated that the PPPSS is reliable for use as a brief assessment of subjective patient experience. Patients who are rated by triage nurses as lower urgency relative to other patients in the emergency department may feel that their needs are more urgent than their ESI rating implies, and this is demonstrated on the PPPSS. Although the efficiency of the emergency department may be difficult to change owing to the specific ecological context of each emergency department, understanding how these patients feel could improve communications and by extension patient satisfaction. An intervention as simple as a script describing the ED triage systems could result in better awareness and satisfaction. We recommend the PPPSS for use in an intervention targeting this goal or for research and quality improvement projects investigating patient satisfaction.

Possible interventions could be expanded upon based on identified social dynamics. For example, younger patients inexperienced in using the emergency department may need more help to address their stress levels. Simply being a more visible presence, empathetic communication, and being clear about likely wait times may alleviate the stress of those who think they need to be seen earlier than the triage nurse decides. In addition, the ED interior design has been a focus of intervention that has generated some interest in the literature.[34] Making improvements in terms of lighting, use of more restful colors, and access to music could benefit patients. This needs to be specifically investigated further, including social dynamics related to age, gender, and ethnicity. Regardless, these results have substantiated the disconnect between perceptions and expectations. These results also have provided some

indication that intervention is possible and support use of the PPPSS as a tool for ongoing efforts to improve patient satisfaction.

Conclusions

The PPPSS can be used as a simple assessment of patient expectations for ED procedures, and patients rated by the triage nurse as lower urgency are more likely to think they are high urgency. Fortunately, promoting knowledge and patient understanding through a verbal description of the ESI may improve consistency of patient expectations. Differences between younger-patient and malepatient perceptions of priority relative to the assigned ESI as assessed by triage nurses may complicate successful communication and limit patient satisfaction.

Author Disclosure

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.2022.09.017.

REFERENCES

1. Crane J, Noon C. *The Definitive Guide to Emergency Department Operational Improvement: Employing Lean Principles With Current ED Best Practices to Create the "No Wait" Department*. 2nd ed. Productivity Press; 2019.
2. Gilboy N, Tanabe P, Travers D, Rosenau AM. Implementation handbook 2020 edition emergency severity index: a triage tool for emergency department care version 4. Emergency Nurses Association. Accessed May 2, 2018. https://www.ena.org/docs/default-source/education-document-library/triage/esi-implementation-handbook-2020.pdf?sfvrsn=fdc327df_4
3. Melnyk B, Fineout-overholt E. *Evidence-Based Practice in Nursing & Healthcare*. Williams & Wilkins; 2005.
4. Toloo G, FitzGerald GJ, Aitken PJ, et al. Ambulance use is associated with higher self-rated illness seriousness: user attitudes and perceptions. *Acad Emerg Med*. 2013;20(6):576-583. https://doi.org/10.1111/acem.12149
5. Boudreaux ED, Friedmand J, Chansky ME, Baumann BM. Emergency department patient satisfaction: examining the role of acuity. *Acad Emerg Med*. 2018;11(2):162-168. https://doi.org/10.1197/j.aem.2003.08.018
6. Bleustein C, Rothschild DB, Valen A, Valaitis E, Schweitzer L, Jones R. Wait times, patient satisfaction scores, and the perception of care. *Am J Manag Care*. 2014;20(5):393-400.
7. Shen Y, Lee LH. Improving the wait time to consultation at the emergency department. *BMJ Open Qual*. 2018;7(1):e000131. https://doi.org/10.1136/bmjoq-2017-000131
8. Aaronson EL, Mort E, Sonis JD, Chang Y, White BA. Overall emergency department rating: identifying the factors that matter to patient experience. *J Healthc Qual*. 2018;40(6):367-376. https://doi.org/10.1097/jhq.0000000000000129
9. Reinhardt M. A systematic approach to evaluation of performance deficiencies in ED Triage. *J Emerg Nurs*. 2017;43(4):329-332. https://doi.org/10.1016/j.jen.2017.01.003
10. Shen Y, Lee LH. Improving the wait time for consultation at the emergency department. *BMJ Open Qual*. 2018;7(1):e000131. https://doi.org/10.1136/bmjoq-2017-000131
11. Rahmati H, Azmoon M, Meibodi MK, Zare N. Effects of triage education on knowledge, practice and qualitative index of emergency room staff: a quasi-interventional study. *Bull Emerg Trauma*. 2013;1(2):69-75.
12. Toloo GS, Aitken P, Crilly J, Fitzgerald G. Agreement between triage category and patient's perception of priority in emergency departments. *Scand J Trauma Resusc Emerg Med*. 2016;24(1):126. https://doi.org/10.1186/s13049-016-0316-2
13. Maister D. The psychology of waiting lines. Accessed May 2, 2018. http://davidmaister.com/articles/5/52/
14. Nápoles-Springer AM, Santoyo J, Houston K, Pérez-Stable EJ, Stewart AL. Patients' perceptions of cultural factors affecting the quality of their medical encounters. *Health Expect*. 2005;8(1):4-17. https://doi.org/10.1111/j.1369-7625.2004.00298.x
15. Tanabe P, Gimbel R, Yarnold PR, Kyriacou DN, Adams JG. Reliability and validity of scores on the emergency severity index version 3. *Acad Emerg Med*. 2004;11(1):59-65. https://doi.org/10.1197/j.aem.2003.06.013
16. Esmailian M, Zamani M, Azadi F, Ghasemi F. Inter-rater agreement of emergency nurses and physicians in emergency severity index (ESI) Triage. *Emerg (Tehran)*. 2014;2(4):158-161.
17. 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
18. Mirhaghi A, Kooshiar H, Esmaeili H, Ebrahimi M. Outcomes for emergency severity index triage implementation in the Emergency Department. *J Clin Diagn Res*. 2015;9(4):OC04-OC7. https://doi.org/10.7860/jcdr/2015/11791.5737
19. Flanagin A, Frey T, Christiansen SL. AMA Manual of Style Committee. Updated guidance on the reporting of race and ethnicity in medical and science journals. *JAMA*. 2021;326(7):621-627. https://doi.org/10.1001/jama.2021.13304
20. Furr RM, Bacharach VR. *Psychometrics: an Introduction*. Sage Publications; 2008.
21. Polit DF, Yang F. *Measurement and the Measurement of Change: A Primer for the Health Professions*. Wolters Kluwer; 2016.
22. Fan X, Sun S. Generalizability theory as a unifying framework of measurement reliability in adolescent research. *J Early Adolesc*. 2014;34(1):38-65. https://doi.org/10.1177/0272431613482044
23. Faul F, Erdfelder E, Lang AG, Buchner A. G *Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical

sciences. *Behav Res Methods*. 2007;39(2):175-191. https://doi.org/10.3758/bf03193146

24. Harlow LL. *The Essence of Multivariate Thinking: Basic Themes and Methods*. 2nd ed. Routledge; 2014:130-155.
25. Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. 2nd ed. Lawrence Erlbaum Associates; 1988.
26. Bartlett JE. Introduction to power analysis: a guide to G*Power, jamovi, and superpower. Accessed February 9, 2022. https://osf.io/zqphw/
27. Colameco S, Becker LA, Simpson M. Sex bias in the assessment of patient complaints. *J Fam Pract*. 1983;16(6):1117-1121.
28. Skär L, Söderberg S. Complaints with encounters in healthcare–men's experiences. *Scand J Caring Sci*. 2012;26(2):279-286. https://doi.org/10.1111/j.1471-6712.2011.00930.x
29. FitzGerald C, Hurst S. Implicit bias in healthcare professionals: a systematic review. *BMC Med Ethics*. 2017;18(1):19. https://doi.org/10.1186/s12910-017-0179-8
30. Soetanto AL, Chung JW, Wong TK. Are there gender differences in pain perception? *J Neurosci Nurs*. 2006;38(3):172-176. https://doi.org/10.1097/01376517-200606000-00006
31. Wiesenfeld-Hallin Z. Sex differences in pain perception. *Gend Med*. 2005;2(3):137-145. https://doi.org/10.1016/s1550-8579(05)80042-7
32. Becker G, Newsom E. Socioeconomic status and dissatisfaction with health care among chronically ill African Americans. *Am J Public Health*. 2003;93(5):742-748. https://doi.org/10.2105/ajph.93.5.742
33. Horwitz LI, Green J, Bradley EH. US Emergency Department performance on wait time and length of visit. *Ann Emerg Med*. 2010;55(2):133-141. https://doi.org/10.1016/j.annemergmed.2009.07.023
34. Elmqvist C, Lindahl J, Bergman P, Ekeberg B, Svensson I. Benefits of a slideshow with nature pictures and music in the emergency department waiting room-a pilot study. *Eur J Person Centered Healthc*. 2019;7(2):344-350. https://doi.org/10.5750/ejpch.v7i2.1682

Appendix A

Survey of Patient Perceptions of Priority to be Seen

1. Would you be agreeable to answering 11 questions for a Quality Improvement Project ?
   ○ Yes ○ No
2. What is your age ?
   ○ 18 - 30 years
   ○ 30 - 50 years
   ○ 50 - 75 years and above
3. Are you the patient or caregiver?
   ○ Patient
   ○ Caregiver
4. What is your Gender ?
   ○ Male
   ○ Female
5. What is your Ethnicity?
   ○ Hispanic
   ○ Non- Hispanic
6. Do you have a Primary Care Provider ?
   ○ Yes
   ○ No
7. How would you rate your General Health Status ?
   ○ Poor
   ○ Fair
   ○ Good
   ○ Very Good
   ○ Excellent
8. What is your reason for being here today ?
9. Do you know how we decide who is determined to see the Emergency Department Doctor first ?
   ○ Yes
   ○ No
10. Have you used the Emergency Department in the last 6 months?
    ○ Yes
    ○ No
11. How would you rate your urgency to be seen today ?

1 Immediately	2 Within 10 minutes	3 Within 30 minutes	4 Within 60 minutes	5 Within 2 Hours

If you have any questions about this survey or the research study itself, please feel free to ask the Principal Investigator. If you have any questions about your rights, please feel free to call our Office of Research Administration manager, _____ at _____.

Thank you for your time.

Appendix B

Scripted Verbal Description

"We are so sorry for the time you have to wait to be seen by your ER provider. There are many critical patients in the Emergency Department at this time, and they need to be seen immediately. We will be with you as soon as we possibly can. I will be here for you and if you need anything in the meantime, please let me know."

If patients asked for additional explanation, they were verbally told "standard for triage is that the medically sickest or mentally ill patients are seen first."

Online Supplement 1

Evidence summary table

The following table includes an overview of studies we reviewed while searching for available evidence. Literature was included based on our ongoing investigation into patient satisfaction and triage procedures throughout the duration of the research project.

#	Reference	Study objective	Sample and type	Design / Method	Findings	Strength of evidence[34]
5	[5]	To explore the relationship between patient acuity, perceived and actual throughput times and emergency department patient satisfaction	1865 ED patients during a one month period	Analysis of variance, analysis of covariance (ANCOVA)and correlations were conducted	Emergent patients perceived their throughput time more favorable	VI
6	Bleustein C, Rothschild DB, Valen A, Valaitis E, Schweitzer L (2014)	None provided	11,352 respondents	PressGaney 4 HCAHPS Survey tool using the Likert scale with designations. Univariate, multivariate association test and statistical modeling techniques, chi – square	The perception of wait times are a significant component to patient Satisfaction and quality of care	VI
7	Shen Y, Lee LH (2017)	To determine if the implementation of interventions would help decrease the wait time to consultation for ED Patients within 6 months	Baseline data from January 2015 to May 2016 was collected with analysis of 32,420 P2 patient visits	In depth analysis of baseline data with results corroborated with root cause analysis findings	Implementation of low cost interventions enabling equitable workload and breaking down work silos with a team based care model helped to bring down wait times	VI
8	[8]	To examine the factors that were most predictive of high and low overall patient satisfaction	7,872 patients participated in a telephone interview	A retrospective cohort study at an urban, university – affiliated ED. Relationship between overall satisfaction and patient responses to individual questions was assessed using a chi-square test and multivariable logistic regression model	There are strong predictors of overall ED satisfaction related to communication, wait time, environment, and perception that care was helpful	VI

continued

Continued

#	Reference	Study objective	Sample and type	Design / Method	Findings	Strength of evidence[34]
9	Reinhardt MR (2017)	To determine a systematic approach to evaluation of performance deficiencies in ED Triage	Chart review of 30 random patients charts by 5 ED nurses	PDSA (plan, do study, act improvement) model used to identify problems and develop interventions	Correlation found between ESI levels, wait times and left without being seen during peak hours	VI
11	[11]	To determine effects of triage education based on ESI on promoting knowledge and performance of nurses and qualitative indices of ED	50 ED Staff Members responded to written questionnaire	A quasi-interventional study consisting of a 2-part questionnaire – personal characteristics and knowledge and performance assessment checklist	The level of knowledge in triage after intervention / education was higher than before training	VII
12	Toloo GS, Aitken P Crilly J, Fitzgerald G (2016)	To understand the extent of agreement /disagreement between the patients' perceived priority and actual triage category	Cross Sectional Survey of 417 patients	Descriptive and multinomial logistic regression analysis. Cross-Sectional Survey using Univariate analysis, Chi – Squared and F Tests	Gap in patient-practitioner understanding of the priority of patients attending ED departments, which can have implications for the management of emergency care	VI
17	Mirhaghi A, Kooshiar H, Esmaeili H, Ebrahimi M (2015)	To determine the impact of the ESI Triage Scale in the ED	28 Nurses and 8 physicians paper based scenario questionnaire	A single center study was conducted using workshops field training and questionnaire	ESI is a valid and reliable tool but may not be optimal in developing countries compared to what has been achieved in developed countries	IV

Online Supplement 2

Psychometric Theory and Estimation

Psychometric research seeks to provide insights into the ways that empirical measurements are interpreted. The focus is typically on estimating and comparing sources of variation in individual scores, specifically variation due to true traits versus variation due to random error.[19,20]

Reliability estimates how well 2measurements of the same construct represent the same thing, as a ratio of true score variance to total variance. The focus is a calculated value for reliability based on the mathematical decomposition of the sources of variance within observed scores. The interpretation of reliability is as a percentage of true variation relative to total variation, or as the probability that repeated measurements will provide the same scores.

Validity, on the other hand, elucidates the ways individual scores should be interpreted. Although validity also relies on samples of data, the focus is less on the numeric values and more on concordance between empirical findings and theoretical expectations. This is done by examining relationships between observed scores and relevant contextual traits. If the estimated sample relationships are similar to what is implied by the psychological theory, then it can be said that the theory and measures are validated as a model for real world events.[19,20]

The focus of validity analysis depends on the goals of the measurement, and different aspects of validity can be evaluated for different purposes. For this project, we focus on face validity, concurrent validity, and construct validity. Face validity is the most intuitive approach, evaluating whether or not the measure superficially represents what it claims to represent. Concurrent validity, on the other hand, is more empirical, emphasizing the relationships between the measurement and contextual variables measured at the same point in time. A measure is described as convergent if observed scores correlate with other traits theoretically expected to be related. An example is a measure of depression correlating with a measure of anxiety, because these are highly comorbid conditions. Conversely, a discriminant measure demonstrates minimal correlation to irrelevant traits. In psychology research, there is often interest in ensuring that subscales of longer questionnaires are not excessively cross-correlated, because any association would be a common method bias. Finally, construct validity is a holistic approach to validity, which seeks to evaluate the overall concordance of measurement scheme to psychological trait, integrating across all other forms of validity. Given deductions implied by the construct being measured, the focus is on how well the available evidence are in support of or against these expectations.[19,20]

Methods from generalizability theory also were employed to further parse out the sources of common and heterogeneous variation among scores.[19–21] Where classical psychometric methods have emphasized the difference between true trait variation and error variation, generalizability theory seeks to compare multiple facets of measurement that confound observed scores. This allows for the relative importance of measurement aspects to be directly compared to individual traits based on communalities across all measurements made.[19–21]

For this project, we estimated validity of the PPPSS as a measure of subjective patient urgency to improve research on patient satisfaction and communications between nurses and patients. We accomplished this by comparing patient rated urgency to nurse rated urgency. Specifically, comparisons were made between variations in nurse ratings and patient reported ratings relative to individual unique variation, estimated analytically within the model. Additionally the correlations between observed scores and mathematically implied true trait scores are estimated. If these measurement scales demonstrate high correlations with the implied true trait scores, then it can be said that they are valid indications of patient urgency.

Although this is mathematically analogous to a Pearson cross product correlation coefficient and also can be denoted with the Greek letter rho, the two are distinct estimates. Computation for the correlations with true trait scores is estimated in tandem with the entire regression model, accounting for the sources of common and heterogeneous variation across data analyzed. The Pearson cross product correlation coefficient only accounts for the common variation between the two specified variables, regardless of additional variation across a larger set of data.

These analytics provide comparative estimates of the sources of variation within a measurement tool; however, they rely heavily on computational latent variables that may lack face validity. To address this, we included expert opinion as an additional validating technique. Decision making was led by the principal investigator, a professor of nursing with more than 35 years nursing experience. The research team met as a group to discuss and confirm patient determinations to avoid the bias of one individual while maintaining the emphasis on expert experience. First, we grouped patients based on how likely they would agree with nurse triage ratings (likely agree or disagree). To investigate the types of patients that may have the least realistic expectations for ED triage procedures, we compared the characteristics of these groups. Further, comparisons could be made in the model to identify whether or not patients thought to have less realistic expectations would have a larger discrepancy between nurse ratings and patient ratings.

We also grouped patients by the likely stress level provoked by the emergency admitting diagnosis. The diagnostic groups were low stress (i.e., skin abnormalities, alcohol intoxication, flu like symptoms, abnormal labs, medical clearance needs, or medicine refills), moderate stress (i.e., abdominal pain, facial abnormalities, gastrointestinal abnormalities, genitourinary abnormalities, musculoskeletal abnormalities), or high stress (i.e., allergic reactions, cardiac abnormalities, neurological abnormalities, or respiratory abnormalities). These groupings were based on the subjective discomfort characteristic with these diagnoses. This informed face validity by being a measure of subjective distress while accounting for common admitting diagnoses in the ED. The principal investigator again guided grouping decisions, with the expectation that patients with subjectively more unpleasant conditions would be more likely to

disagree with the triage nurse because of their active discomfort.

The first part of estimation was through discriminant function analysis, to descriptively compare the traits of patients expected to disagree with the triage nurse from those expected to agree.[22] This method uses eigenvalue decomposition to estimate the most likely values for a linear combination representing the multivariate clusters of traits between specified groups.[22] In the case of this analysis, we focused on patient ratings, nurse ratings, and their interaction. If the PPPSS demonstrates concurrent validity for understanding patient subjective urgency, then observed agreements between patients and nurses should correspond to expert determined ratings of likely agreement. This analysis empirically tests this. Further, while categorizing patients, we noted that patients classified as disagree tended to be younger. We also hypothesized that they may have subjectively more stressful conditions that could result in their disagreements. The discriminant function analysis included these two variables, to test these hypotheses directly, that younger patients with subjectively unpleasant needs may have the most unrealistic expectations for the ED.

The second part of estimation was by generalized mixed effects modeling. Group mean differences by expected patient agreement and stress levels were estimated using fixed effects, for the linear association between each trait and score ratings. For estimating sources of variance, random effects were used in alignment with generalization theory.[19-21] A random intercept was estimated by individual, representing true trait variation. Random variances also were estimated for nurse ratings and patient ratings, to compare the relative importance of measurement scheme for the PPPSS and ESI reporting of urgency in comparison to individual variation and residual variation. Reliability is estimated as the ratio of true variation (individual variation) to total variation (individual variation, measurement facet variation, and residual variation).[19–21]

Further, correlations were estimated between measurement facets and individual traits to inform the interpretation of the scales. If the PPPSS demonstrates concurrent validity, then it would show large correlation to the individual intercept. If the PPPSS and ESI are comparable, they also would demonstrate a correlation between each other; the direction of this correlation informing the implication of an individual score. A positive correlation would mean that a nurse who sees a low ESI score for a patient should expect them to also feel like they are low urgency. A negative correlation would mean that a patient with a low ESI score would likely feel high urgency.[19–21]

Lastly, to test construct validity, the quasi-experimental design used presented half the sample with a scripted verbal description of ESI procedures. Although discrepancies between nurse and patient triage ratings during naturalistic observation were expected,[13] setting better expectations with the verbal description should correct this. If scoring is more standard when the verbal description is provided, then the PPPSS would indicate concordance with the psychological trait being measured, supporting construct validity.

To ensure that the sample of PPPSS and ESI ratings was sufficient for this design (176 participants, ratings of each of PPPSS patient self-reported ratings and ESI triage nurse ratings for a total of 352 observations), we performed a brief power analysis using G*power software.[23] For a significant between-within interaction, it would be required that these three effects account for 17.44% of the variance, a moderate effect size.[24] Furthermore, power for the additional covariates was estimated to be sensitive to even a fairly small increase to explained variance, only a 4.24% increase. This together suggests that the analysis may overlook subtle effects, however the sample should be large enough to identify even modest improvements attributable to the quasi-experimental design.

Maximum likelihood estimation of the model was used.[21] The values of the statistical estimates are the most probable values given the data. The ESI was reverse scored so that larger numbers represents higher urgency, for the purpose of presenting results more clearly. To assist in proper model estimation, the two repeated observations of the outcome were standardized as Z scores. This also allowed for the interpretation of the coefficients as effect sizes, representing the number of standard deviations of urgency rating associated with a one point increase in the predictor (small = 0.2, medium = 0.5, large = 0.8; for correlations, small = 0.1, medium = 0.3, large = 0.5, see Cohen[25]). The final model showed fairly normal residuals based on the histogram and a Q-Q plot.

Emergency Nursing Review Questions: March 2023

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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 7-month-old patient is brought to the emergency department in cardiac arrest. An intraosseous device is placed in the proximal tibia by the nurse. Which of the following would be confirmatory for correct placement?
   - **A.** Bright red blood upon aspiration
   - **B.** Movement of the device at the insertion site
   - **C.** Pink frothy aspirate obtained
   - **D.** Moderate resistance with fluid administration
2. A 26-week-pregnant patient complains of dizziness upon standing, vaginal bleeding, severe abdominal pain, and a very tight abdomen. You would suspect?
   - **A.** Placenta previa
   - **B.** Premature labor
   - **C.** Abruptio placenta
   - **D.** Uterine irritability
3. A patient is brought to the emergency department after experiencing an electrical shock from a loose wire. Which of the following assessment findings would cause the most concern?
   - **A.** The entrance wound appears to be on the left hand.
   - **B.** The patient experienced a momentary loss of consciousness.
   - **C.** Sinus rhythm with an isolated premature ventricular contraction.
   - **D.** The urine myoglobin level is 0 ng/mL.
4. A patient is brought to the emergency department by Emergency Medical Service (EMS). The patient has a history of a lung transplant 14 months ago and has been on prednisone (Deltasone) 80 mg daily for rejection prevention. The patient has missed the last 2 doctor visits. The wife describes a change in his alertness and a depressed state. Multiple bruising is noted on both arms and the patient has a swollen abdomen and states his face looks full. Based on this history, you would suspect:
   - **A.** Thyrotoxicosis
   - **B.** Cushing's syndrome
   - **C.** Organ rejection
   - **D.** Addison's syndrome
5. A patient is being discharged from the emergency department after an ankle injury. The patient has a posterior ankle splint in place and prescribed crutches with a 3-point gait. Which of the following actions would demonstrate proper crutch walking technique?
   - **A.** Crutch tops in the axilla during maneuvering crutches
   - **B.** Moves crutches and injured ankle forward simultaneously
   - **C.** Steps forward with the injured ankle and then moves crutches forward
   - **D.** Crutches held close to patient's hips during movement

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ANSWERS

1. Correct answer: C

(C) Pink, frothy aspirate or bone marrow may be obtained with aspiration of a properly placed intraosseous device, but

is not always present. (A) Aspiration of bright blood would indicate a blood vessel penetration as opposed to the intraosseous canal. (B) If the device is properly seated in the bone, it should not move after insertion. (D) After an initial bolus administration, the device should allow for fluid to flow with very little resistance.[1]

2. Correct answer: C

(C) Abruptio placenta is a major life-threatening complication for both the mother and the fetus. The condition occurs when the placenta prematurely separates from the uterine wall. The highest incidence occurs between 24 and 28 weeks of pregnancy. Symptoms include intrauterine bleeding, vaginal bleeding, severe abdominal pain, hemorrhagic shock, and uteroplacental insufficiency. (A) Placenta previa is a displacement of the placenta either covering the uterine os or partially covering the os. Signs include painless vaginal bleeding, usually after 20 weeks of pregnancy. Vaginal examination must be avoided if placenta previa is suspected. (B) Premature labor presents with abdominal pain, regular or frequent, contraction type. In pregnancy, uterine irritability is used to describe nonlabor inducing contractions that occur frequently. (D) These contractions may be painful or painless and may not have any consistency or pattern. An example would be Braxton Hicks contractions.[2]

3. Correct answer: B

(B) Any loss of consciousness after an electrical injury would be considered serious and require further evaluation. (A) Wounds should not be labeled as entrance or exit wounds but contact points. Any contact point should be evaluated for skin injury and any potential underlying tissue injury. Underlying tissue with a hand injury would not take precedence over a loss of consciousness. (C) Cardiac dysrhythmias may be present after an electrical injury, especially atrial fibrillation and ST wave changes. An isolated premature ventricular contraction should not be concerning, but may require further evaluation. (D) A urine myoglobin of 0 ng/mL would be a normal finding. Rhabdomyolysis with myoglobinuria may occur after significant electrical injury.[3]

4. Correct answer: B

(B) Cushing's syndrome may be observed in a patient with prolonged use of a corticosteroid such as prednisone (Deltasone). Signs include hypertension, abdominal swelling, fatty tissue deposits in the face (moon face) and between the shoulders (buffalo hump), altered mood, depression, thinning skin, and bruising. A tapering of the prednisone (Deltasone) must be initiated to avoid further complications such as bone loss and infection. (A) Thyrotoxicosis may be observed in patients with excessive thyroid hormone and appear with a hyperdynamic state such as hypertension, tachycardia, and hyperthermia. (C) A patient with an organ rejection would appear septic or signs of failure of the transplanted organ. Chronic rejection can take place over many years as the body's immune response slowly attacks the transplanted organ. (D) Addison's disease, also called adrenal insufficiency, is an disorder that occurs when the body has a deficiency of certain hormones such as cortisol and aldosterone. Patients with Addison's disease may have slowly developing symptoms, often over several months. Symptoms include extreme fatigue, weight loss, salt craving, hypoglycemia, and hypotension.[4,5]

5. Correct answer: B

(B) Crutches should be used to protect an injured leg or extremity, not cause further damage. When using a 3-point gait, the patient should place their weight on the noninjured leg and move injured leg and crutches forward simultaneously. (A) Crutches should be fitted to allow at least 2 inches or 2 to 3 fingerwidths below the axilla, with no weight in the axilla. (C) Stepping forward with the injured extremity would require weight bearing on the injury, contrary to the non–weight-bearing concept. (D) Crutches should be 6 to 12 inches out from the patient to provide a base for the body to move through the crutches.[6]

REFERENCES

1. American Heart Association. *Pediatric Advanced Life Support Provider Manual*. American Heart Association; 2020.
2. Jordan KS. Obstetric and gynecologic emergencies. In: Sweet V, Foley A, eds. *Sheehy's Emergency Nursing Principles and Practice*. 7th ed. Elsevier; 2020:280-288.

3. Edwards C. Surface and burn trauma. In: *Trauma Nursing Core Course (TNCC) Provider Manual*. 8th ed. Jones and Bartlett Learning; 2020:226-227.
4. Recznik C. Endocrine emergencies. In: Sweet V, Foley A, eds. *Sheehy's Emergency Nursing Principles and Practice*. 7th ed. Elsevier; 2020: 297-299.
5. Perez W. Endocrine emergencies. In: Sweet V, ed. *Emergency Nursing Core Curriculum*. 7th ed. Elsevier; 2018:207-216.
6. Cerepani MJ. Orthopedic and neurovascular trauma. In: Sweet V, Foley A, eds. *Sheehy's Emergency Nursing Principles and Practice*. 7th ed. Elsevier; 2020:477-500.

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