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ELSEVIER

THE COURAGE TO BE VULNERABLE

Ron Kraus, MSN, RN, CEN, TCRN, ACNS-BC

In my first presidential message, I introduced us all to my theme and challenge for 2021—To Elevate. A challenge to improve ourselves, our profession, our colleagues, and our communities around us. The March message discussed burnout and moral injury and the impact they can have on all of us and our profession. This May issue, I am addressing a topic that can help elevate many aspects of our lives as well as help mitigate burnout and moral injury.

In the emergency department, many of us have learned to put up a wall to protect ourselves from the repeated pain we see in our patients and their families. This can lead to our becoming cynical as well as to burnout. The topic I want to address can be very tough for many of us: being vulnerable. Vulnerability is defined as openness to attack or hurt, either physically or in other ways. I encourage all of us to have the conversation about vulnerability because it can transcend many aspects of our lives and can help all of us elevate ourselves, others around us, and our communities. Being vulnerable allows us to be open and honest with our emotions and feelings. The profession of nursing is so rewarding and can be challenging too. The last 12 to 18 months have been especially hard on all of us. Letting ourselves be vulnerable allows us to share with others our thoughts and feelings. It gives us permission and time to reflect. This reflection is valuable in maintaining good mental health for ourselves.

Being vulnerable ourselves can help others around us. Our colleagues, friends, and families will see us taking this sometimes-scary step, and this courageous act will let them know that it is okay and safe for them to open up and be vulnerable as well, creating an avenue for supportive dialogue that will help all of us.

Nurses are very trusted members of our communities, which places us in an excellent position to make an impact. We can increase this impact by being vulnerable and honest with ourselves, especially around diversity, equity, and inclusion. Be vulnerable with others who have differences from us—start the conversation about a religion different from yours, a different race from yours, a different gender or gender identity, different political beliefs. Be honest, be vulnerable, and be respectful. We can together improve the world around us.

We as nurses love to help; it is in our blood. We all too often exhaust our energy caring and providing for others, leaving little to no time for ourselves. If we all take a small step and show vulnerability, it will channel some of our energy to helping ourselves and others around us. How empowering and energy producing, to see all of us become better. In her book, *Daring Greatly: How the Courage to Be Vulnerable Transforms the Way We Live, Love, Parent, and Lead*, the researcher and author Brene Brown writes "Vulnerability is not weakness. And that myth is profoundly dangerous. Vulnerability is the birthplace of innovation, creativity, and change."[1] I challenge each of us to be brave and be vulnerable.

Stay positive, stay focused, and be the good!

ELEVATE

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Postpandemic Psychological Recovery and Emergency Nursing: Creating a Narrative for Change

Taryn Amberson, MPH, RN, CEN

The COVID-19 pandemic has pushed the emergency care sector beyond its breaking point, exacerbating preexisting issues such as ED crowding, boarding, unsafe patient assignments, suboptimal/unacceptable work environments, and psychological distress.[1-3] As this pandemic continues into its second year, the prevalence of psychological distress, moral injury (a phenomenon that often follows moral distress on the continuum of moral harm[4]), and stress-related disorders among nurses and health care workers are higher than ever before.[5,6] Suicide rates, which were higher among nurses and health care workers before the pandemic, are likely to have increased.[7-10] Collective grief, disillusionment, and weariness may remain present in disaster recovery efforts, despite vaccine administration.

As frontline workers, emergency nurses have experienced first-hand the mass occupational trauma that the International Council of Nurses refers to as unprecedented and complex.[5,6] As health care organizations desperately try to conserve resources, many units are attempting to function at minimal staffing levels, further intensifying the physical, mental, and emotional demand on their already depleted workforce.[11] Owing to increasing organizational demands, little (if any) organizational resources have been made available to emergency nurses within the United

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States at a systems level.[2,3,11] The feelings of frustration and exhaustion in the nursing profession are palpable in departments across the nation and in mainstream news and social media channels. The International Council of Nurses predicts a substantial "COVID-19 Effect" on the overall nursing workforce: a mass exodus from the profession.[5] This is a sobering prediction, given that globally we were expected to be 10 million nurses short in 2030...and this was a prepandemic prediction.[5]

Although general activities of disaster response (eg, meeting basic human needs, providing life-saving care) will continue within the emergency department, recovery efforts on a larger scale should focus on "how best to restore, redevelop and revitalize the health, social, economic, natural and environmental fabric of communities."[12] According to the National Disaster Recovery Framework (NDRF), it is not unusual for disaster recovery to begin while response is still occurring. Prioritizing psychological and emotional recovery, a core principle of the NDRF, is necessary to maximize the opportunity for successful disaster recovery.[13] This core principle should be prioritized among emergency nurses and health care workers during COVID-19 recovery efforts. Dr. Karen Foli's Middle Range Theory of Nurses' Psychological Trauma[13-15] provides a mental model for understanding nurse-specific trauma, something that is particularly relevant in disaster recovery efforts given the psychological ramifications of COVID-19 on the nursing workforce. This theory includes individual, professional, and system/organizational factors as influences on the allostatic load (physiological responses from chronic exposure to stress) of the nurse.[14] Individual or humankind trauma refers to trauma outside of the nursing profession and work environment and includes potential traumas from adverse childhood experiences. At the professional level, types of nurse-specific trauma may be unavoidable (eg, vicarious trauma through patient care), but can be exacerbated or alleviated through organization and system factors. Examples of nurse trauma are provided in Table 1, and include workplace violence, system-induced or medically induced trauma, historical or intergenerational trauma, second-victim trauma (ie, medical errors), trauma related to disaster work, and insufficient resource trauma.[14,16] Insufficient resource trauma, the most recent addition to this

TABLE 1

Examples of types of nurse psychological traumas from the middle range theory of nurses' psychological traumas[13]

Types of nurse psychological trauma	Examples
Vicarious/Secondary trauma	Secondary traumatic experiences with patients who are dying without family members physically present; Witnessing the psychological and physical distress of other nurses and staff.
Historical trauma	Embedded institutional racism, evidenced by higher morbidity and mortality rates from COVID-19 among African Americans and ethnic minority groups[21]; Nurses, as an oppressed group, being used by others to interface with patients, thus endangering their lives.
Workplace violence	Organizational dismissal of distress after a traumatic experience; Nurse physically or verbally abused by a family member who is upset when they cannot come into the hospital to see their family member.
System/Medically-induced trauma	A patient who suffers from a medical error or is in distress due to mechanical ventilation, or painful and invasive interventions.
Insufficient resource trauma	Lack of PPE; unmanageable patient assignments due to the number of patients or patient acuity; Non-critical care nurses assigned to care for patients without being adequately oriented and trained.
Second-victim trauma	The guilt a nurse experiences after a medical error or from believing nursing care is not meeting the patients' needs because of insufficient resources (inadequate or ill-prepared staff).
Trauma from disasters	Engaging in crisis standards of care, not providing life-saving care to a patient who would have received resources outside of a disaster context; Having to decide which patients receive life-saving measures; Worrying about transmitting the virus to loved ones at home.

PPE, personal protective equipment.

theory, results from the lack of personnel, supplies, and expertise/knowledge required for nurses to fulfill their organizational, professional, and ethical responsibilities.[14] This particular form of trauma is undeniably salient in the context of this past year. Of note, trauma resulting from the work environment can be prevented through system forces. Foli outlines these major concepts and examples in the Figure.[14] Protective factors such as resiliency, posttraumatic growth, and organizational recognition can buffer the overall allostatic load.[14] Resiliency, although a protective factor, should not be viewed as an individual's responsibility, but rather an organizational and collective one.[2] The first step in creating and conveying the reality of what we as emergency nurses have been experiencing is to name our experiences,[16] and Foli's Middle Range Theory provides an organized framework to do just that.

The Federal Emergency Management Agency's definition of "*resilience,*" as defined in the NDRF, is "*the ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies.*"[12] The very definition of resilience is strikingly similar to what emergency nurses do every day; even outside of the context of disaster response. As disaster response and recovery efforts begin/continue in the context of this pandemic, augmenting psychological and emotional recovery among front line workers should be prioritized by health care organizations, hospital executives/leadership, and policy makers.[3,11,13] In

a scoping review regarding the impact of COVID-19 on health care worker wellness, Shreffler et al[17] recommend strategies to enhance health care worker wellness. Examples of recommendations include immediate/individualized access to mental health resources; quality, accessible personal protective equipment; and individual and organizational strategies to improve nutrition, exercise, sleep quality, and mindfulness, and to reduce burnout.[17] On the basis of recovery efforts from previous disasters, simply creating a space for human connection to occur through sharing experiences can facilitate healing and subvert the stigma that may come with seeking mental health services.[18] Understanding the experience of psychological and nurse-specific trauma during the COVID-19 pandemic is necessary to optimize a healthy recovery process and enhance the future resilience of those in the nursing profession. Restoring and improving the stability and resiliency of the health care system to optimize patient outcomes and enhance community well-being; along with implementing strategies to protect the safety and health of recovery workers from the effects of post-disaster environments are outlined as core capabilities under the Health and Social Services infrastructure system in the NDRF, necessary to achieve the National Preparedness Goal.[12]

In this issue of the *Journal of Emergency Nursing*, Woo and Kim[19] discuss secondary traumatic stress among nurses and emphasize that solutions at the structural level (ie,
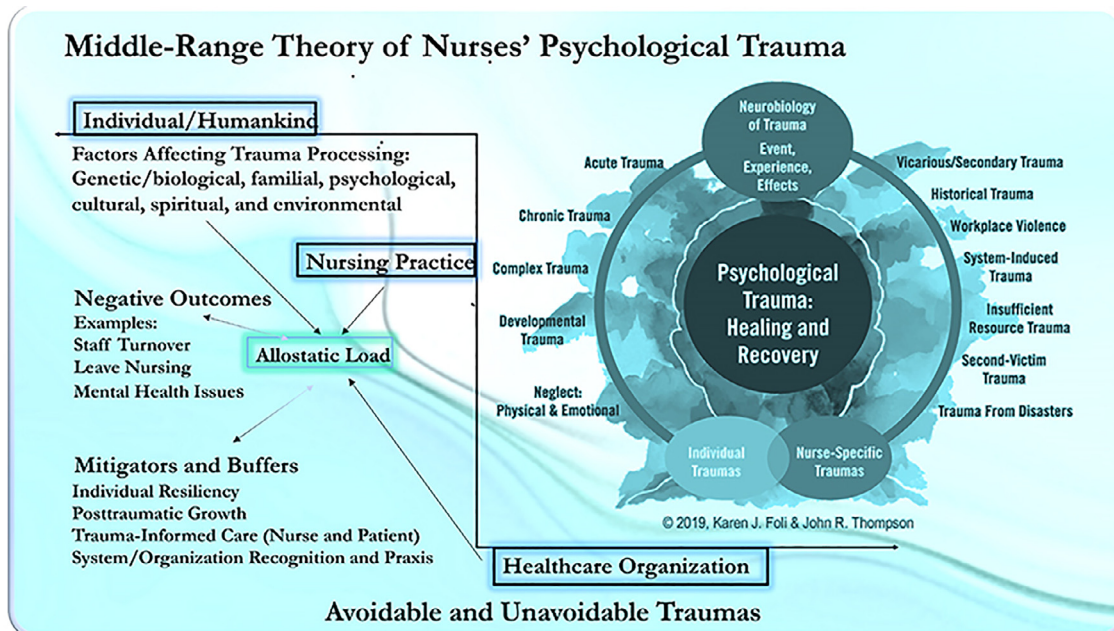
FIGURE

Middle range theory of nurses' psychological trauma. (Reproduced with permission from Dr Karen Foli, PhD, RN, FAAN.)

administrative and leadership support) are needed to mitigate the negative effects of such issues. Emergency nurses within the US and around the world make up a unique community of interest, identity, and circumstance.[18] Now is the time to collectively advocate through health care systems, hospital executives/leadership, nurse unions, federations and professional organizations like Emergency Nurses Association, and other avenues mentioned in Table 2 for tangible support of the nursing workforce as we recover from this pandemic disaster. As a specialty, we can harness the momentum within the context of disaster recovery to build guiding coalitions[20] and advocate for healthier work environments, psychological support, and more equitable health care systems.

Author Disclosures

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TABLE 2

Examples of avenues for emergency nurses to advance the narrative for change

- The Joint Commission's Office of Quality and Patient Safety: Comments may be submitted online, via phone or fax (personal identifying information is not required)[22]
- Join the EN411 Action Network: The Emergency Nurses Association creates sample letters that can be personalized to share your experiences directly with your local legislators regarding specific issues relevant to emergency nursing[23]
- Blogging: Not only does the act of blogging enhance emotional well-being,[24] but it generates discourse to reflect and create reality[16]
- Other discourse including social media, magazines, newspapers and editorials

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COMMENTARY ON "CARE OF THE BEHAVIORAL HEALTH PATIENT IN THE EMERGENCY DEPARTMENT"

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In this issue of the *Journal of Emergency Nursing,* there are 3 excellent articles that discuss various aspects of caring for patients with behavioral health—related presentations in the emergency setting.[1-3] Although a very large number of diagnoses are subsumed under the broad heading "behavioral health," the specific illnesses and their manifestations are quite distinct. The aforementioned 3 articles demonstrate these distinctions well. Patients being treated after self-harm need to be assessed and treated quite differently from patients experiencing a panic attack, and both differ markedly from the assessment and management of the patient who is agitated and has the potential for violence. However, the essentials of care that patients with behavioral health—related presentations need and deserve from emergency caregivers are similar in many ways.

Environment

The aforementioned articles describe the environmental and systemic realities of caring for patients with behavioral health—related presentations in the emergency department.[1-3] Over the years, emergency departments were designed with the care of patients who were physically ill or injured as the focus. Given that circumstance, the physical structure of the emergency department can often present barriers in the care of patients with behavioral health—related presentations.[1] Privacy, for example, can be a difficult issue to manage. Visitation for patients with behavioral health—related presentations in the emergency department can present additional challenges and considerations. The safety of staff and patients is another issue of

concern, especially in the circumstance of agitation, outbursts, and even violence made all the worse in the absence of adequate space and trained support staff. In addition, many departments are not designed adequately for the long length of stay that so many patients with behavioral health—related presentations experience.

True et al[1] describe a lack of resources as an impediment to providing care to patients with behavioral health—related presentations. Included in that impediment is the ready availability of mental health specialists. The authors' recommendations to counteract this inadequacy are to use technology to access mental health specialists, to provide the ED staff more training about emergency patients with behavioral health—related presentations, and to collaborate with behavioral health resources in the community. The allocation of specified areas within the emergency department set aside for the care of patients with behavioral health—related presentations can also be useful to providing quality compassionate care.

Nursing Knowledge

As noted by Valdes et al,[2] there is a timely and important opportunity for emergency nurses to improve their knowledge about the assessment, diagnosis, and treatment of common psychiatric emergencies. According to a study by Wolf et al,[4] approximately 40% of the study's nurse participants indicated little continuing education related to mental health emergencies since their prelicensure nursing curriculum in spite of the fact that patients with behavioral health—related presentations are a significant portion of the ED population. Predictably, lack of current knowledge in the care of emergency patients with behavioral health—related presentations can result in suboptimal patient care. In addition, education gaps lead to nurses' feelings of inadequacy, frustration, potential missteps in patient care, fear, burnout, and many other negative possibilities.[1] Behavioral health care is complex, and emergency nurses need to be just as familiar with the assessment, diagnosis, and treatment of mental illnesses as they are with

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presentations of other kinds of illness seen in the emergency department. The articles in this issue can be a great help in that regard.

The education of emergency nurses in the care of patients with behavioral health—related presentations is essential!

To provide this important knowledge to emergency nurses, the Emergency Nurses Association (ENA) has a number of offerings that can help. These include an ENA Topic Brief, "Care of Behavioral Health Patients in the Emergency Department"[5]; a white paper, "Care of the Psychiatric Patient in the Emergency Department"[6]; clinical practice guidelines[7]; and infographics (Supplementary Appendix). Readers can also access the related courses "Managing Adult Behavioral Health in the Emergency Department" and "Pediatric Behavioral Health Online Course" on the ENA website.[8] In addition, many ENA annual Scientific Assembly offerings and other ENA conferences include behavioral health—related classes.

Patient Care

In this issue of the *Journal of Emergency Nursing,* the use of tools as aids to assessment is discussed.[3] Assessment of patients with behavioral health—related presentations is critical. It must be on target, accurate, and timely. The availability of tools can be a mixed blessing when used with patients with behavioral health—related presentations. Having a brief tool that can yield important patient assessment information in a standardized way can give not only an initial assessment, but over time can also alert staff to changes in the patient's condition as well. Tools, however, can fail to elicit important patient-specific information if not accompanied by a careful patient interview and observation. Tools cannot replace thorough nursing assessments.

One relatively recent strategy in the care of patients with behavioral health—related presentations in the emergency department is accessing mental health professionals through telehealth. This has proven to be a valuable resource in enabling a timely assessment and plan for the care of patients with behavioral health—related presentations.[1]

An interesting topic mentioned by Valdes et al[2] is the notion of cognitive bias in the assessment, diagnosis, and care of patients with behavioral health—related presentations. They describe cognitive bias as being of 3 possible types: confirmation bias, in which the provider looks to confirm existing beliefs and minimizes disconfirming information; anchoring bias, which tends to have an overreliance on the initial information gleaned; and attention bias,

which gives more weight to some information and less weight to other information. All 3 types of bias can result in errors in judgment, leading to inaccurate assessment, diagnosis, and treatment.

Other articles suggest bias in a different way. Legambi et al[3] refer to the potential implications of racial bias in their findings because previous studies have found differences in the use of restraints between white and Black men as an example.[9] True et al[1] note the belief that the ED environment and staff are more suited to physical health emergencies than to mental health emergencies. This notion can lead to a bias that patients with behavioral health—related presentations are inappropriate users of the emergency department. These statements are examples of implicit bias.

Implicit bias is not discussed frequently in the literature related to patients with behavioral health—related presentations in the emergency department, but it exists and should be recognized for the negative effect it has on the care of patients with behavioral health—related presentations. Implicit bias differs from explicit bias in that explicit bias is a conscious belief that one recognizes and may act on, for example, refusing to care for a particular type of patient. Implicit bias is a subconscious or unconscious bias that one holds but might be unaware of; yet, it can affect one's judgment of a person or group of persons.

It is critically important for nurses as well as other health care providers to become mindful of their own implicit biases. Not surprisingly, mental illness—and thus patients with behavioral health—related presentations—is a recognized source of common implicit bias. Other implicit biases that have been shown to influence the care of patients with behavioral health—related presentations include those related to minority populations; gender; elderly persons; lesbian, gay, bisexual, transgender, and queer populations; persons who are obese; non-English—speaking populations; homeless individuals; and others.[10] Provider and patient relationships can be negatively shaped by implicit bias. It can affect how words and actions are interpreted and reacted to by both caregivers and patients.

There are numerous tools available on the internet to explore one's implicit biases. The ENA offers a course entitled "Understanding the Impact of Bias and Stereotypes in Healthcare."[8] Reflection on one's answers might help unmask any subconscious implicit biases.

Implications for Emergency Nurses

Although many ED settings are not ideally conducive to the care of patients with behavioral health—related

Tips for Providing Safe Structure

for Pediatric Behavioral Health Patients

It is well documented that many behavioral health patients in the emergency department (ED) waiting to be admitted have extended lengths of stay, sometimes days or even weeks due to a lack of available beds either within the facility or at an external facility. In such cases, emergency nurses can ensure safety and structure for this patient population by providing these patients with a daily routine. These infographics have been developed to promote conversation between emergency nurses and the ED team as a starting point to help the ED team create and provide a daily routine for ED behavioral health patients that is safe, structured, and adheres to individual institutional policies.

Suggested daily routine:

MORNING

Breakfast

Hygiene

RN assessment/vitals

Hand-off

Reading

AFTERNOON

Lunch

TV

RN assessment / interaction

Structured activity

EVENING

Dinner

Hygiene

RN assessment / communication

Hand-off

Bed time/quiet

Discuss with parents/guardians who will stay with child. Inform that person of what will take place while in the emergency department.

Provide 1:1 observation if the child is at risk for suicide (The Joint Commission, 2016).

Search the child's clothing and belongings and remove anything that is potentially harmful.

Monitor visitors as needed. Ensure the child's communication with visitors is therapeutic.

Monitor the use of personal electronic devices and be prepared to take them away if necessary.

Check the child's room periodically. Remove dangerous items such as cans, glass, sharp objects, plastic bags, harmful liquids, metal/sharp hair accessories, belts, string/ribbon/cords, knives/scissors, lighters/matches, medicines, etc.

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Tips for Providing Safe Structure
for Adult Behavioral Health Patients

It is well documented that many behavioral health patients in the emergency department (ED) waiting to be admitted have extended lengths of stay, sometimes days or even weeks due to a lack of available beds either within the facility or at an external facility. In such cases, emergency nurses can ensure safety and structure for this patient population by providing these patients with a daily routine. These infographics have been developed to promote conversation between emergency nurses and the ED team as a starting point to help the ED team create and provide a daily routine for ED behavioral health patients that is safe, structured, and adheres to individual institutional policies.

Suggested daily routine:

MORNING

Breakfast

RN assessment/vitals

Daily goal

Hygiene

Hand-off

AFTERNOON

Lunch

RN assessment/interaction

Structured activity

Journaling

Counseling

EVENING

Dinner

RN assessment/communication

Bed time/quiet

Daily reflection

Hygiene

Hand-off

Encourage a supportive person to stay with the patient.
Inform that person of what will take place while in the emergency department.

Provide 1:1 observation if the patient is at risk for suicide (The Joint Commission, 2016).

Search the patient's clothing and belongings and remove anything that is potentially harmful.

Monitor visitors as needed. Ensure the patient's communication with visitors is therapeutic.

Monitor the use of personal electronic devices and be prepared to take them away if necessary.

Check the patient's room periodically. Remove dangerous items such as cans, glass, sharp objects, plastic bags, harmful liquids, metal/sharp hair accessories, belts, string/ribbon/cords, knives/scissors, lighters/matches, medicines, etc.

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presentations, emergency nurses must strategize to employ evidence-based practice in the care of patients with behavioral health—related presentations. Strategies include increased education and support for nurses and other staff regarding the care of patients with behavioral health—related presentations. The allocation of specified areas for the care of patients with behavioral health—related presentations can be useful. The presence of mental health specialists in the department is advantageous. Psychiatric mental health nurse practitioners can be invaluable in the ED setting not only in the care of patients with behavioral health—related presentations, but also as support and as role models for staff. The use of technology can assist in the assessment, diagnosis, and management of patients with behavioral health—related presentations. Emergency nurses have a responsibility to be knowledgeable in the care of patients with behavioral health—related presentations just as they would be for any diagnostic group of patients who are frequently treated in emergency departments.

Because implicit bias can lead to a compromised quality of care for marginalized groups, as emergency nurses we owe it to our patients, colleagues, and others to examine ourselves truthfully and honestly for implicit biases that we might hold, particularly for those with a history of mental illness.

Recognizing biases is the first step to eliminating them. Eliminating bias will allow us to give the care that we are capable of giving and that our patients with behavioral health—related presentations deserve. Competent and bias-free emergency nursing care is essential to meeting the obligations set forth in our scope and standards of practice: "The emergency nurse acts with compassion and respect for human dignity and the uniqueness of the individual."[11]

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Commentary on "The Effects of a Novel Mindfulness-Based Intervention on Nurses' State Mindfulness and Patient Satisfaction in the Emergency Department"

Authors: Jennifer Bath, MSN, RN, AGCNS-BC, CEN, TCRN, and Bryan Collier, DO, FACS, FCCM, Roanoke, VA

Patient satisfaction is tied to reimbursement and is publicly reported.[1] With this transparency, patients can now compare hospitals and providers or "shop" for their care needs. Organizations are looking for new and innovative ways to improve patient satisfaction. In this issue of the *Journal of Emergency Nursing*, Saban et al[2] discuss implementing a mindfulness-based timeout intervention (MBTI) and its effect on nurses' state mindfulness and patient satisfaction.

The MBTI is a timed intervention that occurs every 4 hours throughout a shift in an emergency department.[2] The authors hypothesized that an increasing state of mindfulness would increase patient satisfaction with nursing care. The authors designed their own MBTI to help nurses focus on their state mindfulness. The study's mindfulness principles included paying attention to different signs in the moment and resiliency in the face of failure, with the outcome of nurses reevaluating signs and symptoms to identify changes in the patient.[2] Bedside MBTI encourages decision-making at the patient's bedside, improves learning processes, and prevents failures while using a homegrown template in the medical record to facilitate MBTI documentation. The team used text message reminders and a brief at the start of each shift to reinforce the MBTI. Patients who were critical and who had been admitted to the resuscitation bays were excluded from this study.[2] The study found that the MBTI statistically improved nurses' state mindfulness and patient satisfaction.

Saban et al[2] suggest that there are similarities between the Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) huddle and their intervention, the MBTI. Huddles occur as needed, have minimal structure, and include reviewing pertinent patient information and modifying the existing care plan.[3] Huddles help keep all team members informed so that they have a shared mental model. Although TeamSTEPPS focuses on team communication, the huddle is just 1 small component of the TeamSTEPPS toolkit.[3] Having a timed and structured process around a huddle could produce the same results as the intervention studied by the authors.

The authors described using a brief at the start of each shift,[2] another TeamSTEPPS tool.[3] Briefs are timed events at shift start, and they review items such as roles and responsibilities, patients' clinical status, care plans, and any resource issues.[3] Briefs establish clear goals, and the use of a checklist can help facilitate a brief.[3] Although the authors' briefs were to remind staff to complete the MBTI, it helped set a goal of achieving the MBTI for the shift.

The Emergency Nurses Association's Trauma Nurse Core Course teaches nurses, "When you mess, reassess."[4] The quote is related to a patient's reevaluation when you perform an intervention such as dressing a wound or administering pain medication.[4] According to the Emergency Nurses Association's clinical practice guidelines, position statements, white papers, and practice resources, there are no patient reassessment guidelines.[5] McGhee et al[6] recommend reassessment for patients classified as Emergency Severity Index level 1 every 5 to 15 minutes; level 2 every hour; level 3 every 4 hours unless abnormal, then every 2 hours; level 4 every 4 hours; and level 5 at discharge.[6] Their recommendations came after reviewing the

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literature and finding no guidelines or protocols for reevaluating ED patients.[6] Many emergency departments have organizational or unit-based policies that delineate patient reassessment time frames.

The study by De Simone et al[7] demonstrated a positive correlation between nurses' satisfaction and work engagement on patient satisfaction, supporting the authors' finding of this MBTI study.[2] Nurses were more engaged with their team members and their patients, which improved nurse and patient satisfaction. Although they did not use a form of the MBTI or TeamSTEPPS huddle, they did focus on interdisciplinary collaboration, which the MBTI facilitated in the authors' study.

The use of TeamSTEPPS in the outpatient setting led to reduced clinical errors and improved patient satisfaction.[8] Previous studies using TeamSTEPPS in the trauma bay included several TeamSTEPPS tools, not just the huddle.[9-11] Harvey et al[9] found that using a multidisciplinary TeamSTEPPS simulation-based training improved patient outcomes during trauma resuscitation. The program included several TeamSTEPPS tools such as the prebrief, call out, check back, 2-challenge rule, situation monitoring, huddle, and debrief. Other studies on TeamSTEPPS in trauma training discovered significant team communication improvement, leading to improved patient safety and outcomes.[10,11]

The authors chose to exclude patients admitted to the resuscitation bays; yet, they did not delineate if the exclusion included patients with trauma.[2] An MBTI may be too time-consuming because patients typically leave resuscitation bays once they are stabilized or ready for the operating room. For patients with trauma, the goal of the door-to-disposition time is 20 minutes. Dispositions for patients with trauma include computed tomography scan, the operating room, interventional radiology, or an inpatient bed. Patients in the resuscitation bay would triage to an Emergency Severity Index level 1, which requires vital signs monitoring and reassessment every 5 to 15 minutes. There has not been an evaluation of a formal TeamSTEPPS huddle or an MBTI in the trauma bay for feasibility or for any patient or provider outcome.

The literature supports structured communication tools and periods of formal team evaluation.[8-11] Both patient and provider benefit when the team collaborates effectively and has a shared mental model. When a team comes together with clear goals and effective communication, it reduces clinical errors, improves nurse and patient satisfaction, and improves patient outcomes. Further study on using the MBTI[2] or TeamSTEPPS[8-11] huddle is warranted to determine their usefulness in trauma resuscitation as well as their effects on nurse wellness and retention.

Author Disclosures

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Commentary on Underrecognition of Nonfatal Intimate Partner Strangulation Within the Emergency Health Care Setting: Reasons and Opportunities for Change

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The incidence of nonfatal intimate partner strangulation (NF-IPS) is an underrecognized phenomenon within the health care system in North America.[1,2] In their article in this issue, Patch et al[3] undertake a large database population review of coded episodes of strangulation identified from the *International Classification of Diseases* (*ICD*) codes from the Nationwide Emergency Department Sample database. Even using this robust investigation method, the true burden of strangulation episodes is likely underestimated and represents an opportunity for investigation and education at all levels of the emergency services.

The lifetime prevalence of NF-IPS is estimated to be 10% in the United States.[4] Patch et al[3] make use of the Nationwide Emergency Department Sample, a large national sampling, as their data source for NF-IPS, with the inherent limitation that it only captures approximately 20% of the hospital-based ED visits from participating organizations and these on a voluntary basis.[5,6] This may be 1 reason why they find that only 1.2% of the IP violence (IPV) visits are associated with IP-NFS when the prevalence is estimated to be much higher by population data.[1,2]

The *ICD* coding system for the capture of NF-IPS within ED visits also has limitations. Coders review the primarily physician- generated health records and assign specific codes to the information provided about the clinical encounter. Health care practitioners often document more vague terms such as neck pain, neck trauma, choking, and so on, that may not be assigned a strangulation code. *ICD* codes are most often drawn from the charting of physicians, which, in the circumstances of strangulation and in the context of a Sexual Assault Nurse Examiner (SANE) assessment, may be less extensive than that of the detailed examination documented by the SANE.[7] Health care practitioners also may not label this as NF-IPS because they are concerned with the stigma still associated with IPV, as well as potential downstream effects on the patient (employment and insurance issues) if this is disclosed. These inherent biases are present in any work that makes use of *ICD* codes as markers for illness burden.

Strangulation is a significant indicator of heightened violence because this can very rapidly become lethal.[2,4] An incident of nonfatal strangulation increases the risk of homicide by sevenfold.[8] Patients who seek help for strangulation or IPV have a fourfold increased likelihood of future worsening violence.[9] Survivors of NF-IPS may not access emergency health care services because they recognize that any attempt to leave a high-risk situation has been shown to heighten the risk for, and level of, violence perpetuated against them.[8,9] They may not seek care in an emergency department because they fear for their lives or are trapped in the same residence as their assailant. They also may not call first responders because they may be fearful of police intervention at that time for a myriad of reasons. Initial contact points with the health care system, such as 911 dispatch systems, are a potential source of research information to contribute to the body of knowledge, as well as a point of education in the recognition of strangulation in their dispatch deployment decisions.

Another possible reason why a prevalence of NF-IPS was seen to be much less than anticipated by population may be due to incomplete disclosures by survivors. Patients presenting to the emergency department may not disclose NF-IPS for a number of factors, including, but not limited to, memory gaps during the violence episode, lack of privacy during medical interviewing, fear of retaliation or reprisals, fear of not being believed, and distrust of the

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emergency medical system.[10] In addition, in the US, lack of health insurance or funds to cover health care expenses may deter seeking ED care. This disparity in health care access may also affect the rates of NF-IPS being seen.

Patch et al[3] found that increased rates of NF-IPS were seen in metropolitan centers and higher-level trauma centers. One reason why this may be is the availability of specialty SANE programs at these sites. The availability of SANE programs has been shown to increase the recognition and documentation of IPV and NF-IPS.[11] Thus, the increasing trends over time and the geographic variations seen in this study may be associated with the specialty care and knowledge of these SANE programs. This finding suggests that educational activities should be targeted to areas outside of higher-level trauma and metropolitan centers. Opportunities exist for partnerships and education to be delivered by such specialty care programs to other institutions that do not have this service, including virtual care coaching for local practitioners for individual patients.[12-14]

Emergency care practitioners are experts in the breadth of medicine. Because IPV and NF-IPS are not commonly taught within emergency medicine training programs, bedside clinicians may not recognize the subtle signs of NF-IPS.[15,16] Historical descriptions of an NF-IPS event may be subtle, especially in the context of other trauma, loss of consciousness, or intoxication. Physical signs of NF-IPS are often not obvious, difficult to visualize, and can be very subtle on darker skin tones.[17] Continuing professional education regarding the recognition and management of NF-IPS tends to be more niche and not as widely adopted as other topics in emergency care. Given that IPV is extremely common—more common than many other medical diagnoses such as stroke and heart attack[18]—resources should be put into educational efforts to recognize and properly manage this significant health concern.

Public awareness of IPV has increased over the time frame evaluated (2006-2014) in the work by Patch et al.[3] Massive social movements such as #MeToo have shone a light on violence against women[19]; however, there is still significant stigma against IPV, and thus NF-IPS may not be recognized or acknowledged. Educational campaigns targeted at frontline providers, including first responders and hospital-based health care providers, to recognize, evaluate, and document NF-IPS events accurately will lead to providing better care for their patients. Health care providers and first responders having a better understanding of the severity and consequences of NF-IPS will also inform the safety strategy for the survivor postevent. Increased identification of NF-IPS can also work to reduce the overall stigma associated with IPV, much as mental health awareness campaigns have done.[20] These efforts will ultimately result in a better representation of the prevalence of NF-IPS in an ED population. The research by Patch et al[3] is a robust and important contribution to the body of work in this vulnerable and underrepresented population.

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LETTERS 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.

The Coronavirus Disease Pandemic Continues to Challenge Patients in Need of Buprenorphine for Opioid Use Disorder

Dear Editor:

We thank Strout et al[1] for their well-written and comprehensive review "Understanding ED Buprenorphine Initiation for Opioid Use Disorder: A Guide for Emergency Nurses" in this journal. Patients with opioid use disorder (OUD) are vulnerable, and we think their review should be read by all involved in clinical ED care, not just by nurses as mentioned in their title.

We write to highlight one area not mentioned in their well-written review: how the prolonged coronavirus disease 2019 (COVID-19) pandemic has challenged treatment of patients with OUD and their access to buprenorphine. The example at our institution is generalizable to others and important for all to recognize as the pandemic continues.

At Cook County Health, the largest public health hospital serving the Chicago area since 1857, we care for a large diverse population of patients with OUD. We have a busy medication assistance treatment (MAT) clinic and team of recovery coaches who provide rapid linkage to the MAT clinic from the emergency department and our outpatient and inpatient facilities. Unfortunately, access to our MAT clinic and the affiliated continuity clinics has been disrupted by the pandemic; therefore, patients have needed to use the emergency department for care and refills of medication for OUD. We have tracked our prescriptions for buprenorphine-naloxone in our health system pharmacy and have seen a significant change in medication for OUD prescribing since the onset of the pandemic.

The Illinois state "shelter-in-place" order took effect on March 21, 2020. Compared with the 3-month period before that order, in the following 3 months the total number of prescriptions dispensed for buprenorphine-naloxone decreased almost 30%; however, the average quantity of tablets per prescription significantly increased by 60%, and there was a 22% increase in new prescriptions originating from the emergency department. Before the pandemic, patients were referred directly to a clinic or treatment center from the emergency department, but if there were delays to immediate referral eg, night, weekend, or treatment center at capacity) our emergency department provided 3 days of buprenorphine-naloxone with linkage to in-person treatment during that time. Now, during the pandemic, our ED procedure is to prescribe a full 30-day course with the understanding that linkage to an addiction specialist may not happen during that period. We know that medication alone is not sufficient treatment for OUD. In 2020, Cook County set a record for opioid deaths in the midst of a pandemic.[2] We do not know if this occurred primarily because of limited access to addiction specialists, if this was linked to the increased supply of buprenorphine-naloxone available on the streets from larger prescriptions, if this was associated with increased depression as a consequence of the pandemic, or if there were other reasons.

Some experts have labeled the problem of OUD during the pandemic as a "crashing of the crises," and we think it deserves more attention.[3] The pandemic has amplified known risks or unmasked new challenges to the health and well-being of patients with OUD. We need to advocate for multipronged collaboration among health care providers, elected officials, first responders, pharmacy companies, and community leaders. Although we were thrilled to see that more prescriptions originated from the emergency department during this pandemic following the guidelines described by Strout et al,[1] fewer came from the health system's outpatient treatment clinics. Our experience highlights the challenges faced by this cohort of patients, and we worry that there is a direct association with the increased number of overdose deaths reported during this same period when more buprenorphine-naloxone tablets were dispensed per prescription. How telehealth availability, increased ED traffic, and other health access strategies can enhance substance use disorder treatment during a pandemic warrants priority attention in these pages and by policymakers. This is an issue for frontline emergency nurses and all others who care for patients in

any setting during this pandemic.—*Joanne C. Routsolias, RN, PharmD and Mark B. Mycyk, MD, Cook County Health, Chicago, IL; E-mail: jroutsolias@cookcountyhhs.org.*

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The Indispensability of Nurses in Public Health Emergencies: Lessons Learned From the Coronavirus Disease Pandemic in Africa

Dear Editor:

Coronavirus disease (COVID-19) has affected the health of millions of people around the world, thereby straining health care systems. Nurses make up the largest health workforce, playing key roles in promoting health, preventing illness, preserving health, and reducing suffering.[1] Central to all of these roles is the capacity of nurses to preserve human dignity and ensure effective communication. Nurses see and practice health care through a different lens than other health professionals and are often described as the heart of health systems, serving as a direct contact with patients, as team members with other health care professionals, and as ardent advocates of patient care.[2] Being the most ubiquitous members of the health care team, we are tasked with the responsibility of caring for the populace. The coronavirus pandemic came unannounced, and it has emphasized the need for nurses to evaluate and improve their current skills and knowledge as necessary to cope with future public health emergencies.

Previous public health emergencies such as the Ebola outbreak in West Africa have highlighted the unique roles that nurses play as first responders to public health emergencies. Nurses are usually the first point of contact for patients requiring emergency care in hospitals, with the added role of being the closest to individuals who have been infected by helping to meet their immediate needs. The scenario is no different from that seen during the COVID-19 pandemic. Nurses specialized in health policy and information dissemination have played active roles in informing health policies and educating the public on the infection process and precautionary measures needed to curb the spread of the virus. As clinicians, we remain closest to patients and their families and have continually helped to allay their fear and provide psychological support. Triaging is another critical role that emergency nurses have played at this trying time. They actively sort patients who have been infected according to the level of severity of the infection and the need for more critical management. Nurses have continued to overwork because of the high patient load, which has been compounded by the shortage of staff. We witnessed nurses continually being infected with the virus at the University College Hospital, Ibadan, Nigeria, further increasing the staff shortage because of the need for isolation or admission of the nurses who had been infected, thereby increasing the nurse-to-patient ratio to 1 nurse to 10 patients in some units at the hospital. According to the International Council of Nurses in October 2020, 1500 nurses have died from the severe acute respiratory syndrome coronavirus 2 in 44 countries in the world, with the possibility that the cases have been underreported.[3] The COVID-19 vaccines were yet to be supplied to many African countries at the time of writing, in addition to some countries not being able to provide adequate personal protective equipment as reported in Zimbabwe, Nigeria, and Kenya.[4] It seems inevitable that an increasing rate of infection among nurses will continue to be recorded. Nurses have also been exposed to mental health disorders such as depression and posttraumatic stress disorder, partly due to the fear of getting infected with the virus, the trauma of losing patients who had been infected with the virus, and the need for nurses to keep safe distance from their loved ones to protect them from being infected.

COVID-19 has continued to test our ability to think. It has specifically pushed nurses to think and act as a strong workforce battling health emergencies. As we face an uncertain and scary future with the worst pandemic we have ever seen, our success will depend on effective collaboration within teams, communities, and nations globally.[2] The expertise of nurses in infection prevention and control as well as public and community health, including palliative care, will determine to a large extent the level of success or failure of global health systems at this trying time. It is essential that nurses continue to improve their skills and knowledge, inform policy, and conduct research on effective ways to deal with future public health emergencies. Although the world has continued to applaud the immense contribution of nurses in dealing with the pandemic, we recommend that extensive investment

any setting during this pandemic.—*Joanne C. Routsolias, RN, PharmD and Mark B. Mycyk, MD, Cook County Health, Chicago, IL; E-mail: jroutsolias@cookcountyhhs.org.*

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The Indispensability of Nurses in Public Health Emergencies: Lessons Learned From the Coronavirus Disease Pandemic in Africa

Dear Editor:

Coronavirus disease (COVID-19) has affected the health of millions of people around the world, thereby straining health care systems. Nurses make up the largest health workforce, playing key roles in promoting health, preventing illness, preserving health, and reducing suffering.[1] Central to all of these roles is the capacity of nurses to preserve human dignity and ensure effective communication. Nurses see and practice health care through a different lens than other health professionals and are often described as the heart of health systems, serving as a direct contact with patients, as team members with other health care professionals, and as ardent advocates of patient care.[2] Being the most ubiquitous members of the health care team, we are tasked with the responsibility of caring for the populace. The coronavirus pandemic came unannounced, and it has emphasized the need for nurses to evaluate and improve their current skills and knowledge as necessary to cope with future public health emergencies.

Previous public health emergencies such as the Ebola outbreak in West Africa have highlighted the unique roles that nurses play as first responders to public health emergencies. Nurses are usually the first point of contact for patients requiring emergency care in hospitals, with the added role of being the closest to individuals who have been infected by helping to meet their immediate needs. The scenario is no different from that seen during the COVID-19 pandemic. Nurses specialized in health policy and information dissemination have played active roles in informing health policies and educating the public on the infection process and precautionary measures needed to curb the spread of the virus. As clinicians, we remain closest to patients and their families and have continually helped to allay their fear and provide psychological support. Triaging is another critical role that emergency nurses have played at this trying time. They actively sort patients who have been infected according to the level of severity of the infection and the need for more critical management. Nurses have continued to overwork because of the high patient load, which has been compounded by the shortage of staff. We witnessed nurses continually being infected with the virus at the University College Hospital, Ibadan, Nigeria, further increasing the staff shortage because of the need for isolation or admission of the nurses who had been infected, thereby increasing the nurse-to-patient ratio to 1 nurse to 10 patients in some units at the hospital. According to the International Council of Nurses in October 2020, 1500 nurses have died from the severe acute respiratory syndrome coronavirus 2 in 44 countries in the world, with the possibility that the cases have been underreported.[3] The COVID-19 vaccines were yet to be supplied to many African countries at the time of writing, in addition to some countries not being able to provide adequate personal protective equipment as reported in Zimbabwe, Nigeria, and Kenya.[4] It seems inevitable that an increasing rate of infection among nurses will continue to be recorded. Nurses have also been exposed to mental health disorders such as depression and posttraumatic stress disorder, partly due to the fear of getting infected with the virus, the trauma of losing patients who had been infected with the virus, and the need for nurses to keep safe distance from their loved ones to protect them from being infected.

COVID-19 has continued to test our ability to think. It has specifically pushed nurses to think and act as a strong workforce battling health emergencies. As we face an uncertain and scary future with the worst pandemic we have ever seen, our success will depend on effective collaboration within teams, communities, and nations globally.[2] The expertise of nurses in infection prevention and control as well as public and community health, including palliative care, will determine to a large extent the level of success or failure of global health systems at this trying time. It is essential that nurses continue to improve their skills and knowledge, inform policy, and conduct research on effective ways to deal with future public health emergencies. Although the world has continued to applaud the immense contribution of nurses in dealing with the pandemic, we recommend that extensive investment

should be made to empower and support this important group of health care workers who have continued amid the fear of the pandemic to provide adequate and expert care even as the International Year of the Nurse and Midwife has been extended to 2021 by the World Health Organization.—*Rafiat Tolulope Akinokun, BNSc, RN, RM, Faculty of Nursing Science, Ladoke Akintola University of Technology, Ogbomoso, Nigeria, and Federal Medical Centre, Owo, Nigeria; E-mail: akinokunrafiat@gmail.com; Kabirat Adebusola Salau, BNSc, RN, RM, University College Hospital, Ibadan, Nigeria; and Adesina Afeez Sulaiman, BNSc, RN, RM, Faculty of Nursing Science, Ladoke Akintola University of Technology, Ogbomoso, Nigeria.*

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NECROTIC ULCERATION OF THE HAND CASE REVIEW: THINK BEYOND INFECTION

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CE Earn Up to 10.5 Hours. See page 507.

Contribution to Emergency Nursing Practice

- Neutrophilic dermatosis of the dorsal hands is a rare skin condition belonging to a group of related disorders called the neutrophilic dermatoses. It can be associated with inflammatory bowel disease, rheumatoid arthritis, and underlying malignancies.
- Neutrophilic dermatosis of the dorsal hands can mimic infection, leading to misdiagnosis or delayed diagnosis.
- Awareness of this rare diagnosis may prevent unnecessary surgical intervention.

Abstract

Neutrophilic dermatosis of the dorsal hands is a rare neutrophilic dermatosis that can be associated with inflammatory bowel disease, rheumatoid arthritis, and underlying malignancies. The occurrence of trauma as an initiating factor and its early features of pain and inflammation followed by blistering or ulceration mean that it can be mistaken for necrotizing infection. Neutrophilic dermatosis of the dorsal hands should be considered in all patients who present with such features confined to the back of the hands, particularly those with negative microbiological results or lack of response to antibiotic therapy. A case review design was used to analyze the presentation of a woman aged 65 years in the United Kingdom, seeking care for a painful rash on the hand in the emergency department that was subsequently diagnosed as neutrophilic dermatosis of the dorsal hands. Emergency clinician awareness of neutrophilic dermatosis of the dorsal hands as a rare differential diagnosis for patients presenting with necrotic ulceration may prevent unnecessary antibiotic therapy and surgical intervention.

Key words: Necrotic ulceration of the hand; Neutrophilic dermatosis of the dorsal hands; Localized Sweet's syndrome; Pustular vasculitis; Pyoderma gangrenosum

History of Present Illness

A 65-year-old woman was referred by her family doctor to a hospital in the United Kingdom with a painful rash affecting the dorsal aspect of the right hand. She had awoken 1 month earlier with a painful blister on the back of the right index finger. There was no history of preceding trauma, and she suspected that she had been bitten by an insect during the night. There was no improvement despite 7 days of oral flucloxacillin 500 mg 4 times a day for presumed skin infection. Instead, the affected area gradually enlarged, with breakdown of the skin, ulceration, and associated purulent discharge. The patient was previously physically fit and had no relevant medical or surgical history before this episode.

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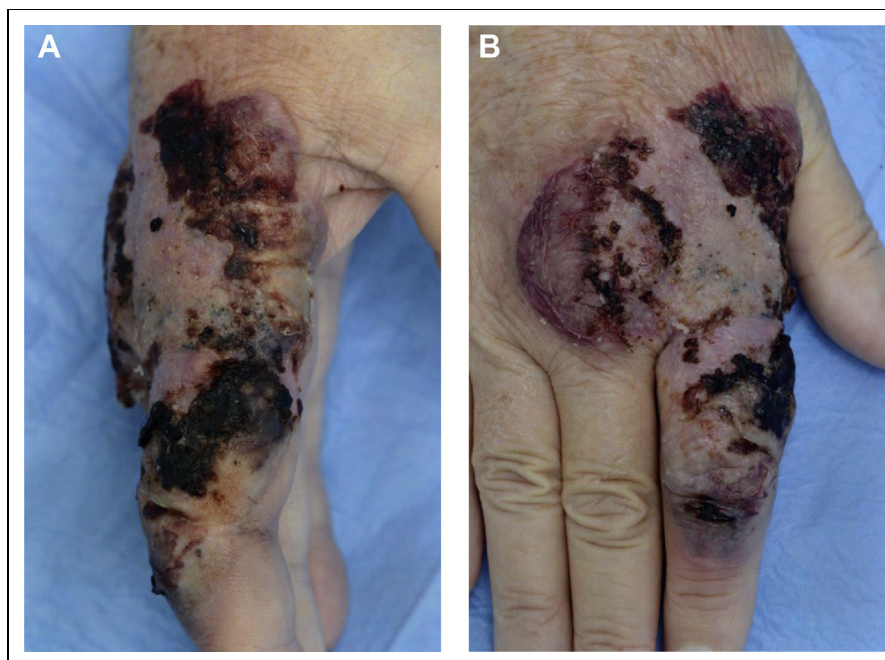
FIGURE 1

(A) Dorsal view of the hand—infiltrative violaceous plaques of the dorsal hand with ulceration and tissue necrosis. (B) Lateral view of the hand.

Emergency Department

On arrival at the emergency department, the patient underwent a medical screening assessment in the minor injuries triage. She was afebrile (temperature 36.8 °C [98.2 °F]) and hemodynamically stable (pulse rate 80 beats per minute and regular, blood pressure 120/68 mm Hg) with normal peripheral pulses. Heart sounds I + II were present without added noises. There were some inspiratory crepitations bilaterally on auscultation of the chest but because vital signs were within normal limits (oxygen saturation 99%, respiratory rate 12 breaths per minute), these were not thought to be clinically significant. On examination of the right hand, there was a well-defined, markedly violaceous (see Definitions Box) eruption with areas of tissue ulceration (Figure 1A and 1B).

The working diagnosis based on the initial assessment was an infected ulcer. Bacterial swabs were taken from the wound, and it was dressed using a nonadherent surgical dressing. Baseline blood laboratory tests comprised full blood count, renal function, liver function, lactate, C-reactive protein, and blood cultures. The initial results of note revealed an elevated C-reactive protein (34 mg/L [normal 0-10 mg/L]) and neutrophil count (8.8 × 10^9/L [normal 2.0-7.5 × 10^9/L]). The patient was empirically commenced on intravenous flucloxacillin 1 g 4 times a day in line with the local antimicrobial protocol, covering common Gram positive organisms, including *Staphylococcus aureus* (the prevalence of methicillin-resistant strains is low in the UK) and *Streptococcus pyogenes*. A referral was made to the plastic surgery department for debridement of the necrotic tissue to assist wound healing.

Hospital Admission

The patient was admitted to the hospital. The plastic surgery team continued antibiotic therapy but were concerned by the lack of improvement in the appearance of the wound, despite the bacterial swab isolating a fully sensitive *Staphylococcus aureus.* Blood cultures yielded no significant growth, and at no time did she become febrile. In view of the possibility of an inflammatory rather than infective problem, a dermatology consultation was sought. A clinical diagnosis of likely neutrophilic dermatosis—either pyoderma gangrenosum (PG) or neutrophilic dermatosis of the dorsal hands (NDDH)—was made. An incisional biopsy revealed pseudo-epitheliomatous hyperplasia, striking edema in the papillary dermis and a dense neutrophilic infiltrate throughout the dermis (Figure 2). Fungal and Ziehl–Neelsen stains were negative. Atypical mycobacterial culture was negative. Given the localized site of the eruption, the diagnosis of NDDH was confirmed.

Screening blood laboratory tests for an underlying autoimmune disease (antinuclear antibody, extractable nuclear
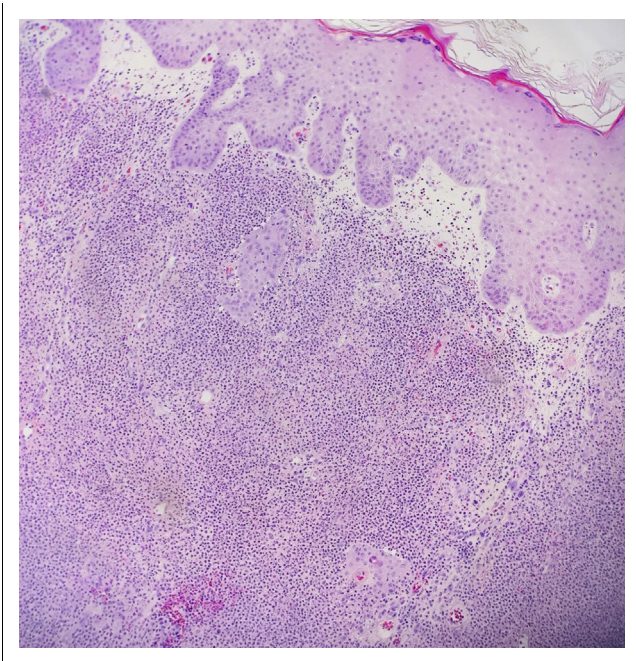
FIGURE 2

Light microscopy ×10 magnification, hematoxylin and eosin staining: pseudo-epitheliomatous hyperplasia, edema in the upper dermis, and dense neutrophilic infiltrate throughout the dermis to diagnose patient with neutrophilic dermatosis of the dorsal hands.

antibody, antineutrophil cytoplasmic antibodies, lupus anticoagulant, anticardiolipin antibodies, and serum electrophoresis) were negative. However, on further inquiry, the patient reported severe lower back pain and lethargy for the preceding 2 months. Noncontrast magnetic resonance imaging of the spine demonstrated malignant infiltration of the pelvis. A computed tomography scan of the chest/abdomen/pelvis confirmed disseminated malignancy involving the liver, bone, and adrenal glands, likely originating from a primary lung malignancy. Her condition subsequently deteriorated and she was transferred to a hospice for end-of-life care 3 weeks after attending the emergency department. She died shortly afterward.

Discussion

This case review of the presentation of NDDH to the emergency department for wounds to the hand adds a new perspective to the published literature on this rare disease. NDDH was first proposed by Mobini et al in 2000 and was considered to be a localized variant of Sweet's syndrome[1] (a neutrophilic rash characterized by fever, peripheral blood neutrophilia, and a characteristic rash). The majority of cases involve the dorsal hands, but there are a number of reports of

similar cases involving the lateral and palmar aspect of the hands.[2] The condition typically presents with painful violaceous papules, nodules, and plaques on the hands that may be accompanied by secondary epidermal changes such as necrosis and ulceration.[3] There may be associated fever.[4] The diagnosis is confirmed with a skin biopsy. Histologically, the features are essentially those of Sweet's syndrome, with prominent papillary dermal edema, along with a superficial and deep diffuse infiltrate of neutrophils, as seen in the present case. There may be leukocytoclasia and extravasated erythrocytes, but these vasculitic features are thought to be a secondary event, similar to that seen in PG or Sweet's syndrome.[1] The main clinical differential diagnosis for NDDH is PG, but the 2 diseases can usually be distinguished clinically and histologically. NDDH tends to present with bullae, whereas PG usually exhibits more purulence and more prominent ulceration. Histologically, there is greater neutrophilic infiltration in NDDH.[3]

A preceding history of trauma has been reported in up to 65% of cases of NDDH[3]; it has been hypothesized that this may reflect a similar phenomenon to the pathergy or Koebnerization recognized in PG, where disease occurs at sites of recent injury.[3] Patients thus often initially seek care in an emergency setting or from plastic or orthopedic surgeons at the onset of NDDH.[5]

NDDH can be associated with neoplasia, inflammatory bowel disease, and rheumatoid arthritis. There have also been case reports describing drug-induced NDDH secondary to lenalidomide, thalidomide, and vaccines and after exposure to fertilizers.[6] Neoplastic disorders coexist in 27% of cases[1] and are commonly hematological in origin. Although the association of lung cancer and NDDH as seen in this case is rare,[7] various solid organ neoplasms have been described in association with NDDH.[1]

NDDH is highly responsive to systemic corticosteroids, which remain first-line treatment. There is also anecdotal evidence for improvement with other anti-inflammatory agents including dapsone and colchicine.[8] Management of NDDH should be directed toward any associated autoimmune or neoplastic disorders, rather than treating skin lesions in isolation from the systemic pathology.

Implications for Emergency Clinical Care

The case presented here serves as an educational exemplar and reminder to include rare diseases such as NDDH in the emergency care differential diagnoses, especially if the clinical response does not align with prognostic expectations. We wish to highlight the condition to nurses, physicians, and other licensed independent providers working in

emergency clinical practice to minimize the possibility of such cases receiving unnecessary antimicrobials or being considered for procedures such as debridement. We recommend referral to dermatology for any patient with suspected or diagnosed NDDH for exclusion of an underlying disorder and medical management.

Conclusion

NDDH is a rare neutrophilic dermatosis that can be associated with inflammatory bowel disease, rheumatoid arthritis, and underlying malignancies. Trauma is often an initiating factor, and its early features of pain and inflammation followed by blistering or ulceration mean that it can mimic necrotizing infection. NDDH should be considered in all patients who present with compatible skin lesions, particularly those with negative microbiological results or in patients with a lack of response to antibiotic therapy, as occurred in this case. Other clues that pointed away from a severe skin and soft tissue infection were the consistent absence of fever and lack of acute systemic symptoms. The C-reactive protein, or CRP, was only modestly raised, although this along with the neutrophilia was somewhat supportive of an infective cause. The presence of inspiratory crepitations in the absence of respiratory symptoms or low oxygen saturations did not appear to be an important finding; however, in hindsight, these may have been related to the occult lung malignancy. Although earlier imaging would have revealed this underlying pathology sooner, it would not have changed the immediate management of the presenting complaint nor would it have altered the eventual outcome. It does, however, underline the importance of clearly communicating all positive findings from the initial assessment to the managing clinicians when handing over.

The diagnosis of NDDH should be confirmed by means of skin biopsy. Early suspicion or diagnosis of NDDH in the emergency care setting may minimize unnecessary antimicrobial therapy or debridement procedures.

Author Disclosures

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Definitions

- **Violaceous**: a term used to describe any rash or lesion that is purple in color.
- **Purpura**: nonblanching, purple discoloration of the skin due to hemorrhage from blood vessels. It can be a sign of clotting disorders or cutaneous vasculitis.
- **Papillary dermis**: this is the upper part of the dermis, immediately below the epidermis. It is composed of collagen and elastic fibers.
- **Koebnerization**: this is a reference to the Koebner phenomenon, an observation that some skin conditions will occur at sites of trauma, eg, psoriasis occurring within scratch marks.
- **Leukocytoclasia**: this histologic term describes a process in which neutrophils break down and release debris. This process occurs in cutaneous vasculitis.
- **Pathergy**: an exaggerated skin injury after minor trauma, eg, venesection. It is a feature of several neutrophilic dermatoses including pyoderma gangrenosum, Sweet's syndrome, and Behçet's disease.
- **Dermatomyositis**: an autoimmune disease characterized by muscle pain/weakness, a violaceous periorbital rash (heliotrope rash), and thickened red plaques on the backs of the hands (Gottron's papules).
- **Ziehl–Neelsen**: a special histologic stain used to highlight the presence of mycobacteria in a specimen. It is used in the diagnosis of *Mycobacterium tuberculosis* and atypical mycobacterial infections.

Author's note.

Purpura or Violaceous? Terminology in Context.

The following exchange between the authors and reviewers was informative on variations in terminology. The exchange is paraphrased here as a note for the readers. Purpura signifies nonblanching, dark or purple lesions due to extravasation of red blood cells, usually in the context of vasculitis. Violaceous is a less specific term to refer to a violet or purple color such as is seen in dermatomyositis or lichen planus. In this case, there was no evidence of red cells outside the vessels in histology, so we retained the descriptor of "violaceous."

Caring for Adults With Autism Spectrum Disorder in the Emergency Department: Lessons Learned From Pediatric Emergency Colleagues

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CE Earn Up to 10.5 Hours. See page 507.

Contribution to Emergency Nursing Practice

- There is a paucity of existing literature on caring for young adults with autism spectrum disorder (ASD) in the emergency department.
- This article provides a brief review of the ways that pediatric emergency departments have incorporated modifications to improve the care of children with ASD, thus delineating the steps that adult emergency departments can take to improve the quality of care for adults with ASD and other developmental disabilities once they transition away from pediatrics.
- Key implications for emergency nursing practice found in this article are effective communication, alteration of sensory perception and environment, and improved education of health care providers on how best to care for children with ASD in the ED setting.

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Key words: Autism spectrum disorder; Developmental disabilities; Emergency medical services; Quality of health care; Emergency nursing

Introduction

Autism spectrum disorder (ASD) is a complex neurodevelopmental disorder presenting in early childhood and extending to adulthood. Currently, an estimated 1 in 54 children in the United States is diagnosed with ASD.[1] As this number continues to grow, so does the number of adults with ASD. The current prevalence of ASD in adults is estimated to be 2.21% (5 437 988) of the US population.[2] Studies have found youth with ASD to be far more likely to use ED services than their typically developing peers.[3-6] Specifically, youth with ASD are 4 times more likely to visit the emergency department due to a psychiatric condition than youth without ASD.[5] This represents a growing trend in psychiatric emergencies because individuals often view the emergency department as a gateway to psychiatric care.

Considering that individuals with ASD use the emergency department at much higher rates than their typically developing peers, it is important to consider how the ASD core symptoms may limit their ability to cope with chaotic and unfamiliar settings such as the emergency department. The core symptoms of ASD include persistent challenges in social interaction, communication, and restricted/repetitive behaviors.[7] In addition, individuals with ASD may have altered sensory perceptions (eg, with regard to light and noise), comorbid medical conditions (eg, gastrointestinal disorders and seizures), and psychiatric conditions (eg, bipolar disorder, anxiety, depression, and attention-deficit/hyperactivity disorder).[8-10] Research shows that more than 95% of the youths diagnosed with ASD have 1 or more medical or psychiatric comorbid conditions, resulting in increased health care needs and the potential for worse

TABLE

Autism spectrum disorder pediatric ED resources that can be adapted to adult emergency departments

Example	Details	Resource
Hospital passport[21]	Concise informational summary outlining the patient's communication preferences, how pain is experienced and expressed, likes/dislikes, and potential triggers	https://www.autism.org.uk/about/health/hospital-passport.aspx
Coping plan[17]	Formalized summary of psychosocial and behavioral health needs. Includes sensory sensitivities, stressors, coping strategies, communication methods, and previous health experiences	https://www.autismspeaks.org/science-blog/atnwork-personalizing-hospital-care-children-autism
Sensory kits, carts, and boxes[6,12,18,22]	Includes items that aim to help the patient cope better and reduce sensory overload. Includes items such as noise-canceling headphones, fidget toys, stress balls, liquid motion relaxation toys, weighted lap pads, and tablet computers.	https://www.arnoldpalmerhospital.com/content-hub/sensory-carts-at-aph
Environmental modifications[6,15,16]	Modify the environment to reduce sensory stimuli and avoid potential triggers. Examples include providing the patient a private room, moving the patient to a room away from busy areas (eg, nurses' station), limiting number of staff involved, moving slowly through procedures, and dimming the lights.	https://www.autismspeaks.org/tool-kit/atnair-p-providers-guide-blood-draws
Team approach	Includes a team approach to the care of the patient that enables all members of the team to be informed. Examples of members of the team include child life specialists, social workers, and staff from the departments of nursing, physical therapy, occupational therapy, and medicine.	https://childrensnational.org/news-and-events/childrens-newsroom/2017/childrens-national-creates-team-dedicated-to-making-hospital-more-autismfriendly https://www.chop.edu/clinical-pathway/autism-spectrum-disorder-developmental-disorders-clinical-pathway
Multidisciplinary team training[13,16,23]	Trainings that include all members of the team that are educational and brief. Trainings can be delivered through various teaching methods (eg, workshops and tutorials) and include case studies or inquiry-based learning.	https://www.cdc.gov/ncbddd/actearly/autism/case-modules/identifying.html https://www.cdc.gov/ncbddd/autism/links.html https://www.autism.org.uk/professionals/training-consultancy/online.aspx
Caregiver involvement[15]	Encourage and use caregiver involvement during medical treatments. Balance caregiver involvement with directly engaging the patient.	https://www.autism.org.uk/what-we-do/professional-development/training-and-conferences/online/autism-supporting-families

TABLE
Continued

Example	Details	Resource
SCRAMBLE[15]	Incorporate sensory management that reduces stimuli; keep communication simple and direct, reduce or limit number of staff involved in care, allow for extra time, medication reconciliation, box of sensory toys, listen, and examination or treatment modifications.	https://www.autism-society.org/wp-content/uploads/2014/04/Paramedics_and_Emergency_Room_Staff.pdf

health outcomes.[3,10,11] In this setting, escalating and triggered behaviors emerge in individuals with ASD that include anxiety, hyperactivity, aggression, and self-injury.[5,12]

Pediatric emergency departments have made considerable progress in supporting children with ASD whose core symptoms pose unique barriers to health care providers and their ability to provide quality care. As individuals with ASD move from pediatric to adult health care services, nurses in the adult emergency department face significant challenges. Sizable gaps exist in the training and education of nurses in the adult emergency department on ASD, psychiatric emergencies, and ways to effectively care for these patients.[13] Therefore, the purpose of this paper was to provide an overview of successful management approaches for children with ASD in the pediatric ED setting and identify ways in which adult ED settings can adapt these methods to improve care for individuals with ASD.

Clinical Overview of the Literature

On the basis of the findings in the literature, it is evident that nurses caring for adult patients with ASD in the emergency department encounter several barriers to delivering quality care. These barriers include difficulties with communication, presence of altered sensory perception, and lack of ASD-specific training. Each of these barriers and unique solutions will be discussed to empower nurses and providers to deliver quality patient-centered care to individuals with ASD. A summary of these unique solutions can be found in the Table.

COMMUNICATION BARRIERS

Individuals with ASD have varying degrees of deficits in nonverbal communicative behaviors and social emotional reciprocity used for social interaction.[7] These communication barriers pose a significant challenge to the delivery of quality care to individuals with ASD.[14,15] Of particular importance is how these communication barriers affect the nurse's ability to adequately assess and manage symptom presentation.[14,16] Additional challenges include delayed communication processing and literal translation of communication. Questions that may seem direct, such as "tell me where it hurts," may be difficult to answer for a patient with ASD. Answering this inquiry would require the patient to first process what is being asked of them, determine where the pain is coming from, and then

communicate the location of their pain. Nurses, therefore, often rely on caregivers or parents to help determine the pain level of the patient with ASD.[17,18] These communication barriers have the potential to affect the ability to accurately assess and manage pain for those with ASD. This has resulted in delayed recognition of emergent conditions (eg, appendicitis) and has the potential for untoward negative sequelae.[19]

ALTERED SENSORY PERCEPTION

Another barrier identified across the literature concerns the differences in environmental and sensory perception in individuals with ASD. ED visits are frightening for most typically developing individuals but even more so for those with ASD who have heightened altered sensory perceptions. These heightened altered sensory perceptions include hyperreactivity to sensory input and environmental stimuli, including adverse responses to sounds or textures.[7] When individuals with ASD visit the emergency department, it can be overwhelming or result in sensory overload, resulting in extreme behavioral difficulties that can impair nursing care.[12] Seemingly small things such as bright lights, beeping monitors, unfamiliar odors, and numerous staff in 1 room during a procedure have been found to be problematic for individuals with ASD in an emergency situation.[6,12] Given their nature of being hyperresponsive to stimuli, individuals with ASD have difficulties regulating their emotions and responding appropriately in critical medical situations.[20] All of these stimuli at once are especially taxing for those with ASD, emphasizing the need to be patient and offer rest periods between procedures or assessments.[15]

INADEQUATE EDUCATION AND TRAINING

Finally, a significant barrier is the paucity of health care providers who have adequate education and training on how to care for individuals with ASD, particularly in the ED setting.[15,16] Inadequate nursing school preparation and lack of follow-up education on entering the nursing profession have been cited as contributing factors.[15] Similarly, significant gaps in psychiatric training in emergency physician residency programs have been noted.[13] This is extremely problematic, given that many individuals with ASD present to the emergency department with psychiatric symptoms. As a result of inadequate training, nurses and providers often fail to recognize the different cues and behavioral patterns of those with ASD, resulting in a more traumatic experience for the patient.[15,16] During acute episodes of psychiatric emergencies, this places both the patient and nurse at risk.[4]

Implications for Emergency Clinical Practice

Several initiatives to overcome barriers and improve the quality of care for children with ASD in the emergency department have been identified. These initiatives may be generalized beyond the pediatric population and extended to adults with intellectual and developmental disabilities and beyond. One initiative that has been successful in pediatric care is the use of a hospital passport, which provides a concise informational summary of the patient's needs when seeking medical treatment. Hospital passports include important information on how best to communicate with the patient, how pain is experienced and communicated, preferred likes and dislikes, and potential triggers. It is designed to be used by individuals to explain their unique needs to health care providers during medical treatment. This tool is helpful to inform health care workers of each person's individual needs to allow for the necessary adjustments for the delivery of patient-centered care.[21] Hospital passports can easily be used across various inpatient settings, including a fast-paced ED setting.

An additional tool to help enhance individualized care is the use of a coping plan. Coping plans are an approach to supporting individuals with ASD who are distressed during medical treatment. They are a formalized summary of the psychosocial and behavioral health needs of the patient with ASD. The individualized plan outlines the needs of the patient and allows for the medical team to make adaptations to lessen the stressors of the health care visit. Coping plans are shared with the medical team, documented, and updated in the electronic medical record for future encounters. The information in the coping plan includes previous health care experiences, sensory sensitivities, communication methods, stressors, and coping suggestions. Coping plans have been found to be effective in reducing maladaptive behavior in patients with ASD. In addition, they have also been found to improve time management and increase the knowledge and comfort of nursing staff.[17]

Other resources that are effective in easing anxiety while waiting for care or during an unfamiliar procedure include sensory carts, kits, and boxes.[6,12,18,22] These resources contain items such as noise-canceling headphones, fidget toys, stress balls, liquid motion relaxation toys, weighted lap pads, and tablet computers. Emergency nurses report sensory resources and modifications to be effective in calming a child with ASD, distracting them during procedures, increasing their willingness to participate in care, and decreasing the overall stress associated with an ED visit.[12,22] Using private rooms, dimming the lights, and moving slowly through procedures and tasks have also been found to be effective in decreasing the distress of a child with ASD during ED visits.[6,15,16]

Other opportunities for improved patient care include trainings on intellectual and developmental disabilities. These trainings should include ways to approach individuals with ASD, the best forms of communication, how to handle potential triggers and stressors, and ways to effectively collaborate with families.[16] These trainings could be delivered through various teaching methods (eg, workshops and tutorials) and include case studies or inquiry-based learning. Such trainings have the ability to develop knowledge, skills, attitude, and confidence in caring for individuals with intellectual and developmental disabilities.[23] Other training considerations include multidisciplinary team training with child life specialists or social workers who can provide specialized guidance and help enhance outcomes during triage and procedures.[16,24] Including child life specialists and social workers early in the care of these individuals is critical to achieving maximum patient benefit. Additional trainings should also emphasize the significant behavioral and mental health comorbidities to better prepare ED providers for psychiatric emergencies for all patients. Trainings, including continuing education on psychiatric emergencies, have the ability to enhance patient care through the standardization of care for patients with psychiatric emergencies.[13]

Caregiver involvement is an additional theme present in the literature and one that is foundational for pediatric patients. Encouraging and using caregiver insight are critical components toward better understanding of the unique needs of individuals with ASD. Caregivers offer insight into ways the patient best communicates, evaluates pain, and perceives sensory stimuli. For adult ED visits, it is important to find the balance between communicating with the caregiver vs communicating directly with the adult with ASD. In these instances, caregivers should be seen as an important part of the team, but they do not replace the need to directly communicate with the adult with ASD.

Another effective way to enhance the care of individuals with ASD is through the use of the acronym SCRAMBLE, which aims to remind providers of the most effective strategies to incorporate in the care of individuals with ASD.[15] SCRAMBLE stands for "Sensory management that reduces stimuli, Communications that are kept simple and direct, Reduced or limited number of staff involved in care, Allowing for extra time, Medication reconciliation, Box of sensory toys, Listening, and Examination and treatment modification." This acronym has been found to be effective in increasing comfort in the patient and enhancing patient cooperation in times of stress or emergencies.

Conclusion

Individuals with ASD have complex health care needs and increased health care use rates. Of particular note is the increased use of emergency departments owing to psychiatric comorbidities. Pediatric emergency departments have identified helpful ways to enhance the care of this population. These interventions implemented in pediatric emergency departments can be further adapted to adult EDs. Such adaptations stand to benefit not only individuals with ASD, but also those with advanced age, dementia, psychosis, and other developmental disorders. Creating an emergency department that is sensitive to the communication challenges, behavioral patterns, and altered sensory input needs of those with ASD has the potential to result in improved patient care and outcomes. This article has provided a brief overview of the literature, summarizing various interventions that nursing leadership should strive to include in their adult ED policies. As the number of children with ASD continues to grow and the need for more emergency care increases, the number of facilities implementing these treatment modifications must grow as well.

Author Disclosures

Conflicts of interest: none to report.

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A QUALITY IMPROVEMENT PROJECT ON AGITATION MANAGEMENT IN THE EMERGENCY DEPARTMENT

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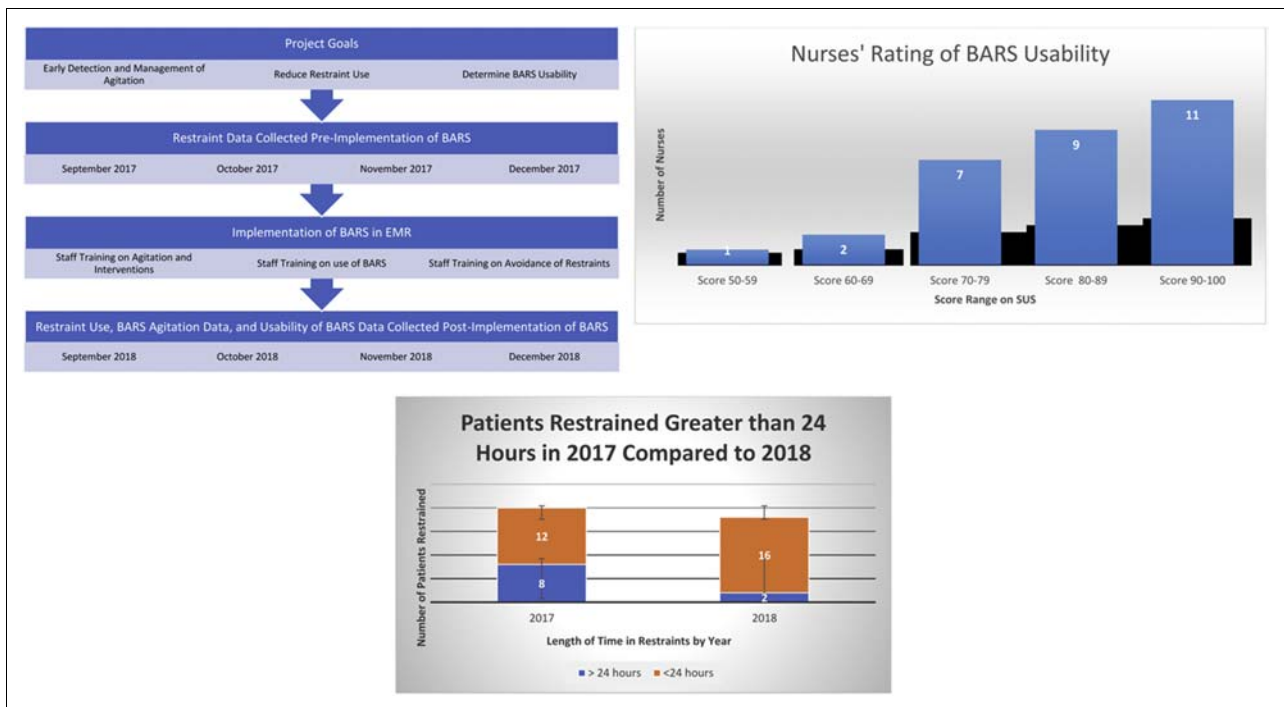
A Quality Improvement Project on Agitation Management in the Emergency Department

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CE Earn Up to 10.5 Hours. See page 507.

Contribution to Emergency Nursing Practice

- The current literature indicates that emergency departments need improved strategies for the care of behavioral health patients and to mitigate agitation and violence.
- This article contributes evidence on integrating an assessment tool, and strategies to manage behavioral health patients who become agitated through early detection of agitation to lead to early interventions.
- Key implications for emergency nursing practice is a shift to frequent assessments for agitation detection was usable by nurses and may facilitate improved management of behavioral health patients.

Abstract

Introduction: Agitation is common in the emergency department. When agitation is not detected early, patients can become aggressive and violent, potentially leading to restraint use and subsequent injury. The goals of the project were early detection and management of patient agitation, reduction of restraint use in the emergency department, and determination of the usability of the Behavioral Activity Rating Scale.

Methods: This quality improvement project was assessed using a pre- and posttest single unit design, comparing 4 months of postimplementation data to historic controls at the same time of year in the previous year. The intervention was implementing the Behavioral Activity Rating Scale in the ED electronic medical record. Data were collected through retrospective chart review and nurse survey. From September through December of both 2017 and 2018, data were collected on restraint use. The 4-month 2018 data collection period included measures of Behavioral Activity Rating Scale documentation and the System Usability Scale survey for nurses to measure ease of usability of the Behavioral Activity Rating Scale.

Results: The Behavioral Activity Rating Scale was documented frequently (n = 4 867 documentations) by emergency nurses to assess patients with behavioral health and medical complaints (n = 780). Nurses identified 18 episodes of violent behavior in behavioral health patients on the Behavioral Activity Rating Scale (2.31%) and applied restraints 18 times. The most common chief complaints for patients who were identified as violent was suicidal ideation (n = 6; 33.33%).
In 2017, there were 20 episodes of restraint use during the same time period, a nonsignificant difference ($\chi^2 = 0.72$; $P = 0.40$). However, only 2 patients were kept in restraints longer than 1 day in 2018 compared with 8 in 2017. Emergency nurses found the Behavioral Activity Rating Scale to be usable in the structured usability assessment ($\mu = 83.46$; SD = 11.73).

Discussion: The Behavioral Activity Rating Scale is a usable tool for emergency nurses to assess for patient agitation. With the incorporation of agitation management interventions, the ED team can potentially manage agitation before violence occurs. Further studies are needed on the use of agitation or aggression assessment tools for managing patient behavioral activity such as aggression in the emergency department.

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Introduction

Behavioral health (BH) patients experience an extended length of stay (LOS) in the emergency department while awaiting medical clearance or disposition of care.[1–5] The extended LOS and busy ED environment can cause exacerbation of agitation in BH patients.[6–9]

Agitated patients are more likely to become violent and require the use of restraints.[5,9–11] When patients are placed in restraints, staff and patients are more likely to be harmed.[12] Staff in the emergency department need tools to objectively assess and manage the care of agitated patients,[7,913-15] because early detection is important for behavioral control. Behavioral control through reducing psychomotor agitation is the most important intervention in the care of agitated patients.[13,16] Using an objective tool for measuring agitation, early warning signs can be identified, and the patient can potentially be managed using medications, -diversional activities, and verbal de-escalation before becoming violent and requiring restraints.[17–21]

The staff in a designated urban Baltimore emergency department reported lack of an objective tool for measuring BH patient agitation. A quality improvement (QI) project was developed to change current practice by implementing the Behavioral Activity Rating Scale (BARS) for measuring agitation in BH patients[15,17,18] in the electronic medical record (EMR) of the adult emergency department.

The goal of this project was to improve the early detection and management of patient agitation, to reduce the use of restraint in the emergency department, and to determine the usability of BARS.

Methods

A 14-week QI project was planned to implement the BARS tool in the EMR (Figure) in an urban Baltimore emergency department. Data were collected from September 2017 through December 2017 to include pre-BARS implementation restraint use to compare with the post-BARS implementation restraint use, documentation of BARS to include frequency and effectiveness of interventions for agitation management using pre- and post BARS scores, and ease of usability of BARS[22-24]. Data were collected retrospectively from the EMR repository and prospectively from emergency nurse surveys.

RELIABILITY AND VALIDITY OF BARS

BARS was chosen by the first author for its simple and straightforward structure in detecting changes in behavioral activity in the busy emergency department, leading to intervention such as medications or de-escalation, and in improving communication between care providers.[14] BARS is a 7-item validated tool designed to detect immediate changes in behavioral activity in BH patients. In randomized control trials where BARS was tested against other agitation detection scales, researchers found statistically significant convergent validity and correlation with the Positive and Negative Syndrome Scale agitation scores and the Clinical Global Impression–Severity of Illness. Researchers concluded that the BARS tool is a psychometrically valid, sensitive, and reliable scale for measuring behavioral activity in agitated patients with psychosis.[25]

IMPLEMENTATION

Staff were educated on use of the BARS tool beginning in August 2018. To prepare the project implementation team, 8 superusers attended a 1-hour training on the use of the BARS tool led by the first author. The superusers discussed the BARS tool and interventions for patient agitation. Superusers applied their learning by completing a worksheet using 3 training scenarios that were designed by the first author. Each scenario detailed a patient presenting to the emergency department with different levels of agitation and violence, requiring the nurses to correctly identify the agitation level on BARS and the appropriate intervention.

An online module was also created to educate unit nurses on use of the BARS tool and use of 10 domains of verbal de-escalation using recommendations from the Project BETA (Best Practices in the Evaluation and Treatment of Agitation) work group.[18] Nurses were assigned to complete the module by September 2018.

Superusers then conducted 4 open 4-hour sessions on the unit where nurses practiced using the BARS tool based on the 4 training scenarios. Nurses were instructed to intervene appropriately when patient scores on the BARS reached 5 to 6 and to restrain patients whose score reached 7 but to remove the restraints as soon as possible. At the beginning of September 2018, shift huddles included reminders of the new BARS tool (Supplementary Material).

Nurses began using the BARS tool to screen for patient agitation on September 17, 2018. BARS was incorporated as an automated prompt in the EMR Meditech system when patients presented with a chief complaint

FIGURE
(A) BARS electronic record version once built in EHR: initial view. (B) BARS agitation management prompts. BARS, Behavioral Activity Rating Scale; EHR, electronic health record.

that was a BH disorder and could also be added by nurses if a patient presented with a non-BH chief complaint but was agitated (Supplementary Table 2). The BARS design included an indicator that turned red to remind nurses to document BARS every 2 hours during patient normal rounding times.

Superusers were used to facilitate and guide the implementation. During each nurse shift huddle, charge nurses briefly discussed the BARS tool, reminded nurses to complete the online education, and reminded nurses to use the tool during the implementation of the BARS tool for the QI project.
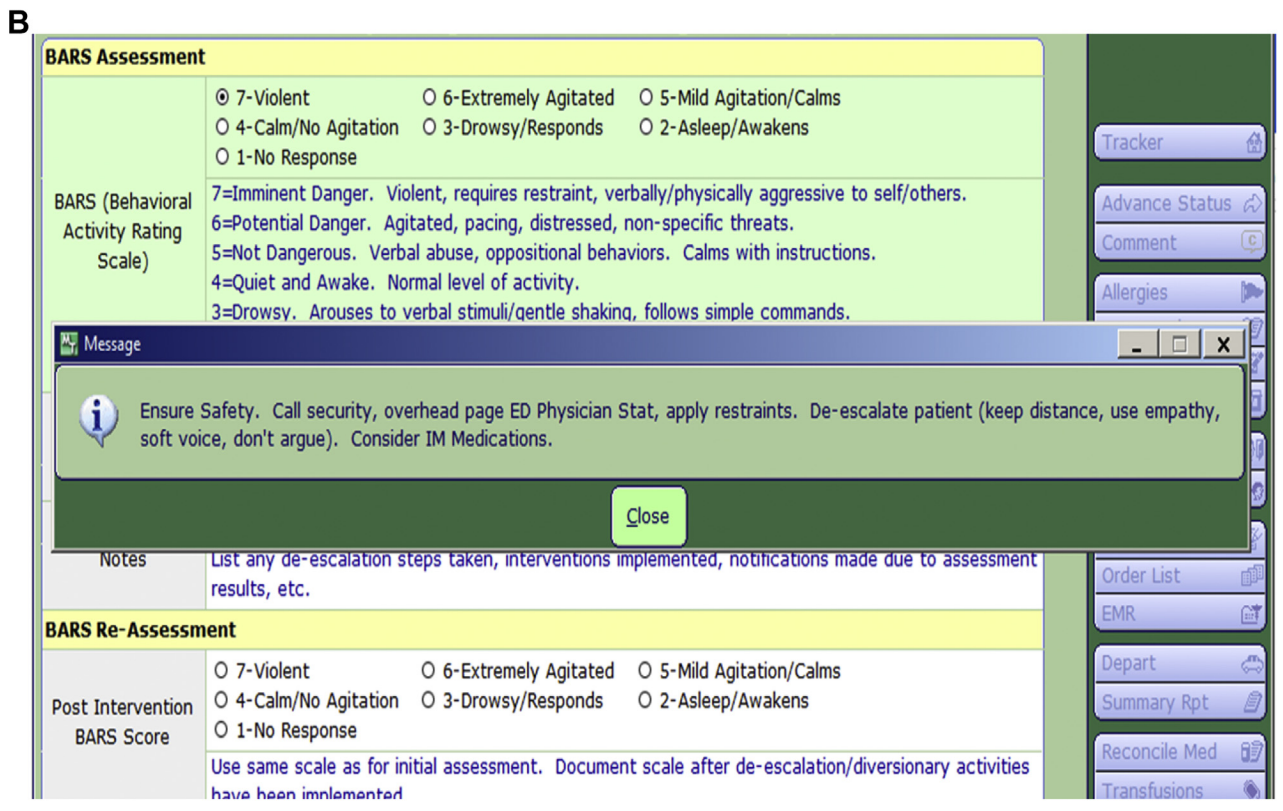
FIGURE

Continued.

DATA COLLECTION

Retrospective chart reviews were conducted weekly during project implementation. Data collected included the nurse's documentation of the BARS tool for BH patients, the chief complaints associated with the BARS assessments, nonrestraint interventions documented on BARS, restraint use, and episodes of agitation and violence indicated on the BARS report. Data from monthly restraint audits were also collected to determine the number of BH patients who were rated as violent on BARS and placed in restraints. This included any patients with non-BH chief complaints (Supplementary Table 2) where the nurse added BARS to the chart because the patient was exhibiting violent behavior and required restraints. Restraint audits were compared with the nurses' BARS reports for accuracy. Chart reviews were conducted to review behavioral indicators for the need for restraints for behavioral patients and verify the accuracy of type of restraint (medical versus behavioral) used.

Additionally, a questionnaire was administered during the last 2 weeks of the implementation phase of the QI project. The questionnaire included the System Usability Scale (SUS) to determine the usability of the BARS tool, 3 items designed by the first author to assess nurses' perception of safety, and demographic questions. SUS is a reliable and valid 10-item Likert-style tool for measuring usability, even with a small sample size.[23]

DATA ANALYSIS

Data from the BARS chart review were entered in an Excel spreadsheet for analysis. Descriptive statistics were used to describe BARS documentation of agitation, nonrestraint interventions, violent rating on BARS, restraints used for violent patients, and time (in days) spent in restraints. To detect a change in restraint use after the implementation of BARS, the implementation phase, September 2018 through December 2018, was compared with the same time frame of September to December in 2017 using a χ^2 test. This allowed for comparisons between the fall months in both years when patient volumes are about the same.

ETHICAL CONSIDERATIONS

The proposal for the QI project was submitted to the hospital's institutional review board and determined to be non–human subjects research. An institutional review board exemption letter was issued before project implementation. There were no associated costs with the project.

Results

DETECTION OF AGITATION

BARS was documented every 2 hours on 513 patient charts for 753 BH visits and 27 non-BH medical visits where nurses manually added BARS to the chart if the patient had a history of violence or suddenly became agitated (Supplementary Table 1). Of these 780 patient charts, agitation was documented 206 times (26.41%), indicating a BARS score of 5 or 6.

NONRESTRAINT INTERVENTIONS TO REDUCE AGITATION

Of the patient charts where nurses rated patients as agitated (n = 206), the majority of patient's agitation levels decreased with a combination of nonrestraint interventions (n = 140, 68%; Table 1). Medications such as haloperidol, LORazepam, and OLANZapine were successfully used in combination with de-escalation and diversional activities. Interventions were not effective in reducing agitation for all patients (n = 6; 2.91%). However, these patients never reached a violence rating of 7 on BARS and subsequently did not require restraints. In 60 charts, it was unclear whether the interventions reduced agitation because of a lack of postintervention documentation. Additionally, there were 84 patients who were rated as 4 (no agitation) on BARS for every assessment where nurses used diversional activities to prevent agitation.

TABLE 1

Nonrestraint interventions used to reduce agitation (N = 206)

Interventions	n	%
De-escalation only	25	16.89%
Diversional activities only	85	57.43%
Medications only	15	10.14%
Combination	149	73.22%

Combination includes 1 or more combination of de-escalation, diversional activity, and/or medications.

TABLE 2

Episodes of restraint use in September through December 2017 and 2018

	2017	2018	χ^2	P
Episodes of restraint use	20	18	0.72	0.40
BH visits	594	701	—	—

BH, behavioral health.

RESTRAINT USE

Between September and December 2018, nurses documented 18 episodes of violent behavior in BH patients on BARS (2.31%) and applied restraints 18 times. The most common chief complaint for patients who were identified as violent was suicidal ideation (n = 6; 33.33%). In 2017, there were 20 episodes of restraints during the same time period, a nonsignificant difference ($\chi^2 = 0.72$, $P = 0.40$; Table 2). However, only 2 patients were kept in restraints longer than 1 day in 2018 compared with 8 in 2017.

SYSTEM USABILITY AND NURSES' PERCEPTIONS

The questionnaires were distributed to emergency department nurses (n = 97) on day, evening, and night shifts. The response rate to the survey was 30.93% (n = 30). Of the nurses who completed the SUS survey, 5 nurses omitted the nurse demographics and unit safety questions and were omitted from this portion of the analysis (Table 3).

TABLE 3

Demographics for emergency nurses completing the questionnaire (N = 25)

Demographic	n	%
Age (years)		
20-35	18	72
36-55	7	28
Level of nursing education		
Associates degree	11	44
Bachelor's or master's degree	14	56
Nursing experience (years)		
<2	6	24
3-5	11	44
6+	7	28

The average score on the SUS was 83.46 (SD = 11.73) with a range of 50 to 100. A SUS score greater than 68 indicates good usability, even with a small sample size.[23] The majority of the nurses' surveys indicated that BARS had good usability (n = 27; 90%). About half of nurses (n = 13; 52%) reported that use of BARS helped them to better detect and manage BH patients. Overall, 44% (n = 11) of nurses felt unsure of whether BARS made them feel as though the unit was safer. Almost all nurses (n = 24; 96%) reported that the BARS indicator turning red helped to remind them to complete the assessment (Table 4).

Discussion

As found in previous studies, the use of BARS l led to frequent assessment and rapid management of agitation in BH patients presenting to the emergency department.[26] Studies have found that when the BARS score was greater than 5, interventions such as medications or restraints were successfully used to manage the patient's agitation.[12] This is similar to our results. Although there was no difference in restraint use in 2018 compared with the same time frame in 2017, patients spent less time in restraints in 2018, an important finding.

Additionally, it is important to note that the overall ED LOS during the implementation phase was higher at the end of November 2018 and in the month of December 2018 than 2017. When the emergency department is crowded, the nurse may prioritize care of medical patients over behavioral patients, resulting in a delay in detection and management of agitation. Nursing staff also reported episodes (n = 3) where patients were placed in restraints by security before attempts to intervene by nursing staff could occur and where the nurses rating on BARS indicated that restraints were not needed at the time, and the patient was removed from restraints. There was a new security team in place during the end of the BARS implementation. A full team approach to include training of security personnel is an important consideration in reducing restraint use. It is important for future researchers to consider racial bias in the use of restraints. Although racial bias was not a variable in this study, it is an important consideration for future research. Using an objective tool to detect agitation and violence is important to aid in prevention of the use of restraints for biased reasons. In some studies, an increase in restraint use was seen in Black men versus white men (relative risk = 1.36, 95% CI = 1.15-1.61, $P < 0.001$).[27] Other studies suggest that staff may view some races as more threatening than others, leading to increased restraint use.[28] Understanding racial disparities in restraint use is important to improve equitable care to all patients.

The amount of time patients spent in restraints may have decreased in the 2018 time frame because nurses detected the need to remove calm patients from restraints sooner when using BARS. The goal of early detection of agitation was met in this study. Although the goal to see a significant reduction in restraint use was not met in the study, patients who were placed in restraints were removed sooner than was seen in the previous year. The reduction in total days in restraints, despite the insignificant difference in restraint use during the implementation phase, suggests that BARS may be useful in the care of restrained BH patients in the emergency department.

TABLE 4

RN survey of unit safety with the BARS assessment (N = 25)

Safety questions	Yes		No		Unsure	
	n	%	n	%	n	%
1. Do you feel as though the BARS helps you to better detect and manage behavioral health patients?	13	52.00	6	24.00	6	24.00
2. Do you feel the unit is safer since implementation of the BARS tool in the emergency department with behavioral health patients?	7	28.00	7	28.00	11	44.00
3. Does having the BARS turn red help to remind you to complete the BARS?	24	96.00	1	4.00	0	0.00

Five surveys did not have the unit safety questions answered.
BARS, Behavioral Activity Rating Scale; RN, registered nurse.

The goal of ease of BARS usability was met in this study. The survey results indicated that the nurses felt that BARS had high usability in the emergency department. Nurses also used the BARS tool with high frequency and chose to add BARS to their patients' charts when there were indications of agitation or risks for violence. This suggests that the nurses found BARS useful and easy to use, which likely led to the frequent use of the tool. These findings are similar to prior studies on the use of BARS where ED staff found the tool to be easy to use[9,11,12] and a reliable predictor of patient behavior.[11,12,16] However, only about half of nurses felt that BARS helped them better detect and manage agitation and violence in BH patients, and they were equivocal on use of BARS in improving unit safety. This indicates that nurses may have already been providing assessment not captured in past documentation and quality care to BH patients by applying restraints judiciously. Frequent use of the BARS documentation may still improve overall documentation on BH patients and help nurses recognize when it is time to remove restraints.

Restraint use was a relatively rare event in this emergency department, with only about 3% of BH patients requiring restraints in 2017 and 2018. The decrease in restraint use between 2017 and the introduction of the restraint tool in 2018 was very slight and nonsignificant. Considering these points, our sample sizes were likely too small to detect a significant difference in restraint use, putting the chi-square analysis at risk for Type II error. Post hoc power analysis conducted using G*Power 3 found that, to achieve power of 80%, each sample should have at least 7 137 individuals.[16] For ED clinicians wishing to test interventions to reduce restraint use, it may be more practical to first determine a reasonable proportionate decrease in restraint use after intervention (eg, reduce restraint use by 30%) and conduct an a priori power analysis to determine adequate sample size.[16]

There are many agitation scales that exist. The Dynamic Appraisal of Situation Aggression (DASA) and the Broset Violence Checklist also measure agitation and violence.[29,30] At the time of the QI project, tools such as DASA had not yet been studied in the emergency department. DASA is a 7-item tool based on the Broset Violence Checklist that requires only the nurse to conduct the assessment. It has been studied in inpatient psychiatric facilities[30] and more recently in the emergency department, where DASA was found to have predictive validity for violence.[29] Use of a different tool may have produced different results in this study. Future research is needed on the use of BARS in the emergency department to improve the care of BH patients compared with other tools for agitation, aggression, and violence

detection. Longitudinal studies are needed to determine the impact of use of BARS over time, because this QI project was conducted over a 4-month period.

LIMITATIONS

BARS explicitly mentions restraints, which may cue nurse behavior to apply restraints when they may not have otherwise or when alternatives were still viable. We were also unable to capture the number of hours that patients spent restrained. There was a low survey response rate, introducing response bias. Interoperator reproducibility of the SUS tool was not measured in this study. Another limitation is the design of the study and a lack of prospective randomization or control group. Additionally, there was no control for potentially confounding patient characteristics. Finally, there was a new security team in place during the BARS implementation that may have influenced the results.

IMPLICATIONS FOR EMERGENCY NURSING AND FUTURE RESEARCH

Successful implementation of protocol to manage care of agitated BH patients in the emergency department must be carefully developed and include multiple resources. Although BARS is usable for emergency nurses, staff also need medication protocols, which require interdisciplinary cooperation, and training on nonrestraint strategies to manage agitated patients. Including a medication management strategy associated with BARS agitation levels has the potential to improve the management of agitated patients while also reducing restraint use. Our results indicated that nurse use of the BARS assessment tool coincided with shorter length of restraint time for patients. Other clinical leaders and organizations may wish to consider adding BARS or other aggression or agitation assessment tools to the EMR for emergency nurse use.

Conclusion

The goals of implementation of BARS were the early detection and management of patient agitation, reduction of restraint use in the emergency department, and determination of the usability of BARS in the EMR. Although there was no difference in restraint use after implementation of the BARS assessment tool, we did find that restraints were utilized for a shorter length of time. Surveyed emergency nurses ranked BARS as highly usable at the study site as indicated in the high SUS score in this

study. Clinical leaders and organizations may wish to consider a change in practice to include embedding an aggression or agitation assessment tool relevant to the ED setting in the EMR with frequent assessments, such as every 2 hours during patient rounding, to detect agitation and aggression at early stages. Future research is still needed on the efficacy and effectiveness of such tools on BH patient outcomes.

Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2021.01.005.

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Supplemental Material

Description: The Behavioral Activity Rating Scale (BARS) Huddle Report was read during each change of shift meeting by the charge nurse to all nurses preparing for their shift. The purpose of the report was to help remind nurses to use BARS and how to correctly use the tool.

BARS Huddle Report

Behavioral Activity Rating Scale (BARS) Go Live is Monday September 17, 2018

Tips:

- Required assessment for all behavioral health patients
- Add in (easy: just type in BARS) for any patient with history of violence or who has medical complaint and develops agitation

- Reassess at least every 2 hours–red indicator after 2 hours to help you remember
- Reassess more frequently with higher levels of agitation
- Communicate with provider to immediately intervene when patients are agitated or becoming oversedated from a medication intervention for agitation
- Documentation is important to improve the communication with the entire department when a patient is agitated: keep you and the patient safe!
- Goals of this tool:
  o Early detection leading to early intervention for patient agitation
  o Reduce/Avoid restraint use; remove earlier when placed and is appropriate/safe
  o Calm, not sedate, our patients
  o Offer PO medications for lower agitation levels/ early intervention before high levels of agitation or violence occurs

SUPPLEMENTARY TABLE 1
Nurse documentation compliance of BARS

Documentation of BARS	n	%
BARS documented Q2 hours	513	65.77
BARS documented frequently Q2 hours with only 1-2 major delays	96	12.31
BARS documented only once	158	20.26
BARS documentation with major delays for each assessment	13	1.67
Totals	780	100

This table represents the frequency that emergency nurses documented in the EHR using BARS.
Delays were defined as >4 hours between documentation.
BARS, Behavioral Activity Rating Scale; Q2, every 2.

SUPPLEMENTARY TABLE 2
Patient chief complaints documented with BARS

Chief complaint	n	%
Automatic chart assessment based on behavioral health chief complaint		
Altered mental status	260	33.33%
Alcohol ingestion	69	8.85%
Alcohol withdrawal	27	3.46%
Suicidal ideation	128	16.41%
Wants detox	25	3.21%
Feels anxious	35	4.49%
Homicidal ideation	8	1.03%
Psychosocial other	20	2.56%
Auditory hallucinations	13	1.67%
Visual hallucinations	1	0.13%
Aggressive behavior	9	1.15%
Overdose	104	13.33%
To be evaluated	27	3.46%
Drug ingestion	15	1.92%
Depressed	11	1.41%
Out of medications	1	0.13%
BARS added in the non–behavioral health patient chart by the nurse		
Motor vehicle crash	1	0.13%
Abscess	1	0.13%
Chest pain	7	0.90%
Headache	1	0.13%
Vaginal bleeding	1	0.13%
Shortness of breath	2	0.26%
Weak	1	0.13%
Cardiac other	1	0.13%
Assault	1	0.13%
Rectal bleeding	1	0.13%
Vomiting	2	0.26%
Back pain	1	0.13%
Unresponsive/ unconscious	2	0.26%
Nausea	1	0.13%

SUPPLEMENTARY TABLE 2
Continued

Chief complaint	n	%
Environmental exposure	1	0.13%
Foot pain	1	0.13%
Extremity swelling	1	0.13%
Abdominal pain	1	0.13%
Total	780	100%

This table represents all patients who had an assessment using BARS and the chief complaint associated with the patient during triage. BARS was added to the non–behavioral health chief complaint charts because of a history of violence or sudden onset of agitation.
BARS, Behavioral Activity Rating Scale.

Factors Associated With Secondary Traumatic Stress Among Nurses in Regional Trauma Centers in South Korea: A Descriptive Correlational Study

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Contribution to Emergency Nursing Practice

- The current literature on secondary traumatic stress indicates moderate to severe levels in nurses, with limited information regarding influencing factors of affected nurses.
- This article identifies 5 key factors associated with secondary traumatic stress; including personality type, coping styles, the desire for job rotation and social support from supervisors. Nurses in this study reported moderate to severe levels of secondary traumatic stress.
- Key implications for emergency nursing practice found in this article are that secondary traumatic stress is not a problem that can be prevented or solved at the individual level. Administrative support, along with development and application of management interventions based on factors associated with secondary traumatic stress are needed to mitigate the negative effects of this issue.

Abstract

Introduction: Trauma is a leading cause of death in South Korea. This study aimed to identify the factors associated with secondary traumatic stress of nurses working at regional trauma centers.

Methods: A survey-based cross-sectional design was utilized. Data were collected through a structured questionnaire consisting of 5 rating scales and demographic data. Data were analyzed via descriptive statistics, t test, analysis of variance, Pearson's correlation, and multiple regression.

Results: One hundred eighty-six nurses participated, and most (84.4%) reported moderate to severe secondary traumatic stress. Exposure to traumatic events averaged 34.33 (SD = 6.25) out of 65 points. Average problem-focused coping was 3.00 (SD = 0.37), emotion-focused coping was 2.57 (SD = 0.26), and dysfunctional coping was 2.17 (SD = 0.41) out of 4 points. Social support from family and friends averaged 5.85 (SD = 0.75), social support from coworkers was 5.78 (SD = 0.83), and social support from supervisors was 4.65 (SD = 1.18) out of 7 points. The factors affecting the respondents' secondary traumatic stress were type D personality (β = 0.39, $P <$ .001), dysfunctional coping (β = 0.28, $P <$ .001), problem-focused coping (β = 0.19, $P <$ .01), desire for job rotation (β = 0.17, $P <$ .01), and social support from supervisors (β = -0.12, $P = <$ .05). This regression model was statistically significant and the explanatory power was 46.7% (F = 33.47, $P <$ .001, Adj R^2 = 0.47).

Discussion: Along with a personal effort to engage in stress management programs, administrators, managers, and supervisors should prioritize developing practical strategies for reducing secondary traumatic stress of nurses.

Key words: Nurse; Social support; Stress; Trauma; Type D personality

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Introduction

The mortality rate from trauma in South Korea was 55.2 in 2016 and 53.0 in 2017 per 0.1 million population; trauma is the fourth leading cause of death after cancer, cardiovascular, and respiratory diseases in South Korea.[1] The Korean government set up regional trauma centers in 2012 to reduce the preventable trauma mortality rate to less than 20% by 2025. As of October 2018, 17 trauma centers have been designated nationwide, and 13 centers have officially opened. Patients visiting the regional trauma centers suffered severe physical trauma such as accidents (including traffic), disasters, assaults, sexual assaults, falls, and trauma patients exposed to violent crimes. More than 30 000 patients were admitted at regional trauma centers annually.[2]

Secondary traumatic stress (STS) is a type of stress experienced by individuals exposed to others who have experienced trauma but were not exposed to the traumatic event themselves. Health care workers and caregivers can experience this STS caused by the continuous care of trauma patients.[3,4] People with STS are similarly affected as those who had directly experienced traumatic events.[3] The criteria for STS symptoms are arousal, avoidance, and intrusion. Nurses often report difficulty sleeping or being easily annoyed, caused by the effects of arousal.[5]

The traumatic events experienced by trauma center nurses are constant and may be considered occupational hazards.[6,7] People suffering from STS experience sadness, depression, insomnia, anxiety, and a reduction in their ability to work as professionals that seriously affect their professional lives.[8] Nurses caring for patients with traumatic injuries such as car accidents, violent crime, and other injuries are likely to be at an increased risk of developing posttraumatic stress-like syndromes.[9] Thus, a study of STS of trauma nurses is necessary.

Studies of STS have been conducted on nurses working in the emergency department,[10-13] an intensive care unit,[14] a mental health unit,[15,16] a cancer ward,[17] and a trauma center.[7,18] These studies reported that 7.0% to 74.5% of nurses were at a high risk of STS. However, there is limited literature identifying factors associated with STS of nurses. Furthermore, to the best of our knowledge, no study has been conducted with nurses working in a regional trauma center in South Korea.

In addition, to mitigate STS in nurses, it is necessary to examine contributory factors. Factors affecting traumatic stress are demographic,[19-22] work-related,[7] distressed personality type (Type D personality),[23,24] frequency of
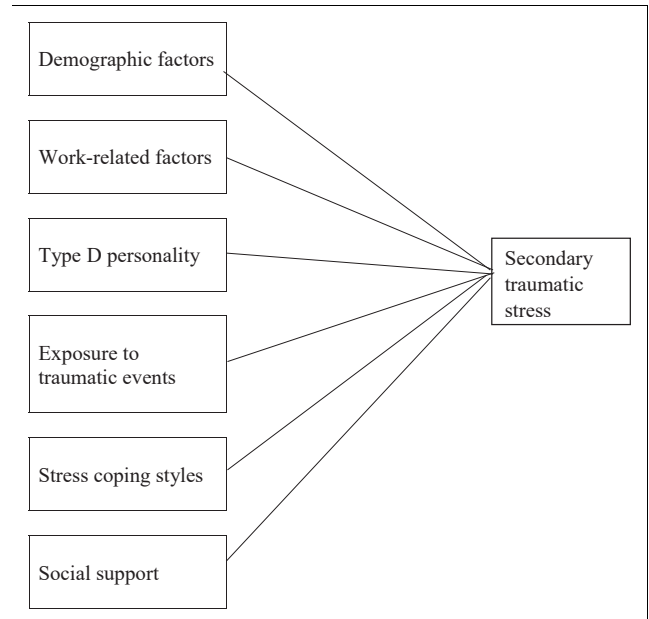
FIGURE
Conceptual analytic framework for factors of secondary traumatic stress among nurses working in regional trauma centers.

exposure to traumatic events,[25] stress-coping styles, and social support.[26] The type D personality reflects a relatively stable psychological characteristic and displays negative affectivity and social inhibition.[27] Subjects with a type D personality are more likely to have chronic stress and STS than those who are not.[27,28] Coping mechanisms can be categorized into problem-focused, emotion-focused, and dysfunctional coping.[29,30] STS can vary not only during the experience but also in coping methods after the event. Moreover, high social support is reportedly a major factor in reducing STS.[10,22]

Most previous studies have focused on personal variables and less on work-related factors or social factors. Moreover, there is no agreement on factors that may influence STS. A recent systematic review of literature showed the need to examine STS in light of its personal, work-related and social context.[31] Nurses working at a regional trauma center are continuously exposed to trauma patients and are at risk of secondary trauma stress. Through examining the degree of STS and the factors that influence such stress, a strategy for stress management can be developed. We aimed to examine the relationship between general and work characteristics, type D personality and exposure to traumatic events, stress-coping methods, social support, and STS (Figure).

Methods

STUDY DESIGN AND ETHICAL CONSIDERATIONS

We used a survey-based cross-sectional study design. This research was approved by the Pusan National University institutional review board (PNU IRB/2019_40_HR) before data collection. Participants provided written informed consent for the offline survey, and taking the survey was considered implied consent for the online survey.

PARTICIPANTS, SAMPLING, AND SAMPLE SIZE CALCULATION

The eligible participants were 227 nurses who worked in the trauma emergency room and trauma intensive care unit of 3 regional trauma centers for more than a month. Convenience sampling was used in this study. The number of participants was calculated using the G*Power 3.1.9.2 software program.[32] For multiple regression analysis, the minimum number of participants was calculated at 171 at a significance level of 0.05, a median effect size of 0.15, power of 0.90, and 15 independent variables. The independent variables of the multiple regression analysis were included as variables reported in previous studies to influence the STS of the nurse. Considering the dropout rate, we aimed to recruit a sample size of 205 nurses.

Setting and Participant Recruitment

The researchers contacted the nursing departments of all regional trauma centers nationwide in South Korea and explained the purpose and method of the research. Among the 13 regional trauma centers open at the time of data collection, only 3 hospitals participated. Recruitment notices with the survey URL were posted on bulletin boards of each regional trauma center for the participants to access.

DATA COLLECTION

Data were collected from June to August 2019 through a structured questionnaire consisting of questions on general characteristics, work-related factors, type D personality, exposure to traumatic events, stress-coping methods, social support, and STS. Data was collected through online and written surveys. For the online survey, SurveyMonkey.com was used. Written or online surveys were provided individually to prevent duplicate responses. Completed written questionnaires were collected by means of a collection box.

INSTRUMENTS

Before utilizing the instruments described below, all content of the translated tools was evaluated by 5 non-participating nurses for possible misunderstandings or errors. This group consisted of one nursing professor and 4 nurses, each with more than 5 years experience at a trauma center, intensive care unit, or emergency department.

Secondary Traumatic Stress

The STS scale developed by Bride et al[33] was translated into Korean, and bilinguals fluent in English and Korean translated it to English. The content of the translated tool was evaluated by a group of non-participating nurses. Based on Lynn's recommendation,[34] all 17 items had a CVI 1.0. The tool consists of 17 questions, including 5 items of intrusion, 7 items of avoidance, and 5 items of arousal. It was scored on a 5-point Likert scale ranging from 1 ("never") to 5 ("very often"). Scores ranged from 17 to 85; a higher score indicated higher levels of STS. Based on the criterion suggested by the tool developer,[35] scores less than 28 indicate little or no STS; 28 to 37 indicate mild STS; 38 to 43 indicate moderate STS; 44 to 48 indicate high STS; and ≥ 49 indicate severe STS. In Bride et al[33] the total Cronbach's α was 0.93, and the subcategories' reliability were 0.80 for intrusion, 0.87 for avoidance, and 0.83 for arousal. In this study, Cronbach's α was 0.92 in total, and for the subcategories were 0.79 for intrusion, 0.79 for avoidance, and 0.81 for arousal.

Distressed Personality Type (Type D Personality)

The type D personality tool (DS14) developed by Denollet[27] was translated into Korean by Lim et al[36] This tool consists of 14 questions: 7 about negative affectivity and 7 about social inhibition. Each item is scored on a 5-point Likert scale ranging from 0 ("false") to 4 ("true"). The negative affectivity and social inhibition scores range from 0 to 28 and are classified as a type D personality when the sum of scores of each domain is at least 10. Cronbach's α was 0.88 for negative affectivity and 0.86 for social inhibition.[27] Lim et al[36] reported that Cronbach's α was 0.87 for negative emotion and 0.77 for social inhibition. In this study, the overall Cronbach's α was 0.92, negative affectivity was 0.85, and social inhibition was 0.90.

Exposure to Traumatic Events

In this study, we used a tool developed by Kim and Choi[37] to measure the nurse's experience of subsequent traumatic events. The tool is composed of 13 questions. It is measured

on a 5-point Likert scale, ranging from 1 ("never") to 5 ("very often"). The score ranges from 13 to 65, with a higher score indicating greater exposure to trauma. In their study, Cronbach's α of the instrument was 0.90, while ours was 0.80.

Stress-coping Styles

We used the brief Coping Orientation to Problems Experienced (the brief-COPE) tool developed by Carver.[38] It was translated into Korean by Joo[39] and a social welfare expert and bilinguals fluent in English and Korean translated it to English, comparing it to the original text. It is composed of 28 items across 3 areas: 6 items for problem-focused, 10 items for emotion-focused, and 12 items for dysfunctional coping styles. This tool measures the degree to which each stress-coping style is used on a 4-point Likert scale ranging from 1 ("I have not been doing this at all") to 4 ("I have been doing this a lot"). The score is calculated by adding the scores of each subcategory, with a higher score indicating which stress-coping method is used more frequently. The overall Cronbach's α was 0.90 in Carver's[38] study and 0.90 in Joo's[39] study. The overall Cronbach's α in this study was 0.73, with problem-focused coping at 0.75, emotional-focused coping at 0.68, and dysfunctional coping at 0.77.

Social Support

The Crisis Support Scale developed by Joseph et al[40] was used to measure social support. The original tool measured social support twice: at the time of the event and at present. However, in Ko's[41] study, there was no statistically significant difference between the 2 measurements. Due to the characteristics of the regional trauma center, exposure to traumatic events was continuous, so the current social support was measured. In addition, based on previous studies,[42,43] this study measured social supporters by dividing them into support from family and friends, coworkers, and supervisors. There are 7 questions for each sub-supporter; thus, in total, 21 questions. Each item was measured using a 7-point Likert scale from 1 ("not at all") to 7 ("always"). The score of each sub-supporter ranges from 7 to 49, with higher scores indicating higher levels of social support. Cronbach's α was reported to range from .67 to .69 in Joseph et al[40] study. In this study, Cronbach's α was 0.90 in total, with "family and friends" at 0.77, "coworkers" at 0.86, and "supervisors" at 0.90.

DATA ANALYSIS

Data were analyzed using SPSS version 22.0 (IBM Co., Armonk, NY, USA). Descriptive statistics analyzed general characteristics, work-related factors, type D personality,

exposure to traumatic events, stress-coping styles, social support, and STS. The difference in the degree of STS according to the general characteristics, work-related factors, and type D characteristics of the participants were analyzed by *t* test or analysis of variance (ANOVA). Pearson's correlation coefficients analyzed correlation among exposure to traumatic events, stress-coping styles, social support, and STS. A multiple regression model was fit with STS as the dependent variable, with independent variables selected from the significant results of the *t* test, ANOVA, or correlational analysis. As there are few studies exploring factors associated with STS, this analysis is justified as exploratory, but should not be interpreted as confirmatory hypothesis testing. Hence, factors affecting STS were analyzed by applying multiple regression. The significance level used for data analysis was $P < .05$.

Results

GENERAL AND WORK-RELATED CHARACTERISTICS OF PARTICIPANTS

Of the 202 nurses that participated in the study, 112 participated through online surveys and 90 completed written questionnaires. One hundred eighty-six participants were included in the final data analysis. Two hundred five nurses were targeted for recruitment, and 202 participated. Among these, 16 questionnaires were excluded due to missing data. Of the total participants, 88.7% were female, and 57.0% were 25 to 30 years old. Approximately 87.1% of participants were unmarried and 79.0% were 4-year college graduates. Regarding clinical characteristics, 44.1% had been working at a regional trauma center for more than 2 years, and the average work experience was 23.30 (SD = 14.77) months. 70.4% of the participants worked at a trauma intensive care unit, 31.7% preferred job rotation and 71.0% were satisfied with working at a trauma center.

STS, TYPE D PERSONALITY, EXPOSURE TO TRAUMATIC EVENTS, STRESS-COPING STYLES, AND SOCIAL SUPPORT

The mean score of the STS was 49.62 (SD = 12.43) points out of 85 points. The mean scores of the subcategories were 3.02 (SD = 0.84) for arousal, 3.00 (SD = 0.74) for avoidance, and 2.70 (SD = 0.82) for intrusion out of 5 points. A cutoff score of 38 or higher was the criterion used as evidence for the presence of STS.[32] In total, 84.4% of participants indicated moderate to severe STS, 46.8% of participants had a type D personality, and exposure to traumatic events averaged 34.33

TABLE 1

Secondary traumatic stress, type D personality, exposure to traumatic events, stress-coping styles, and social support (N = 186)

Characteristics	Mean (Item Mean)	SD	N	%
STS	49.62	12.43		
Arousal	3.02	0.84		
Avoidance	3.00	0.74		
Intrusion	2.70	0.82		
Little or no STS			9	4.8
Mild STS			20	10.8
Moderate STS			37	19.9
High STS			27	14.5
Severe STS			93	50.0
Type D personality				
Yes			87	46.8
No			99	53.2
Exposure to traumatic events	34.33	6.25		
Stress-coping styles	2.48	0.23		
Problem-focused coping	3.00	0.37		
Emotional-focused coping	2.57	0.26		
Dysfunctional coping	2.17	0.41		
Social support	5.42	0.72		
Family and friends	5.85	0.75		
Coworkers	5.78	0.83		
Supervisor/manager	4.63	1.18		

STS, secondary traumatic stress.

(SD = 6.25) points out of 65 points. The stress-coping style averaged 2.48 (SD = 0.23) points out of 4 points. In the subcategories, the problem-focused coping was 3.00 (SD = 0.37), the emotional-focused coping was 2.57 (SD = 0.26), and the dysfunctional coping was 2.17 (SD = 0.41) out of 4 points. Social support averaged 5.42 (SD = 0.72) out of 7 points. Support from family and friends was 5.85 (SD = 0.75), support from coworkers was 5.78 (SD = 0.83), and supervisor support was 4.63 (SD = 1.18) points (Table 1).

STS ACCORDING TO GENERAL AND WORK-RELATED CHARACTERISTICS AND TYPE D PERSONALITY

The degree of STS according to general characteristics, work-related characteristics, desired place of work ($t = -2.65$, $P < .01$), work satisfaction ($t = -4.51$, $P < .001$), desire for job rotation ($t = 6.28$, $P < .001$). Type D personality ($t = 9.19$, $P < .001$) was statistically significant (Table 2).

CORRELATIONS AMONG STS, EXPOSURE TO TRAUMATIC EVENTS, STRESS-COPING STYLES, AND SOCIAL SUPPORT

The STS was associated with frequency of exposure to traumatic events ($r = 0.17$, $P = .02$), problem-focused coping ($r = 0.21$, $P = < .01$), dysfunctional coping ($r = 0.45$, $P < .001$), social support from family and friends ($r = -0.25$, $P = .001$), coworkers ($r = -0.21$, $P = < .01$), and supervisors ($r = -0.24$, $P = < .01$). Correlations among STS, exposure to traumatic events, stress-coping styles, and social support showed weak or moderate strengths (Table 3).

TABLE 2

Secondary traumatic stress score according to general, work-related characteristics, and type D personality (N = 186)

Characteristics	Mean STS Score	SD	t/F	P
Gender				
Male	48.05	12.36	-0.62	.54
Female	49.82	12.46		
Age(y)				
<25	49.28	12.33	0.05	.95
25-29	49.59	12.33		
≥30	50.15	13.19		
Marriage status				
Single	49.77	12.32	0.41	.69
Married	48.70	13.67		
Others	46.00	0.00		
Religion				
Yes	50.88	12.61	0.81	.42
No	49.18	12.38		
Education				
Diploma	49.40	8.33	0.20	.82
Bachelor's	49.39	12.12		
> Master's	51.12	16.25		
Total period of working as a nurse (mo)				
< 36	49.29	12.18	0.06	.94
36-71	49.99	11.61		
≥ 72	49.58	14.72		
Period of working at aregional trauma center (mo)				
< 6	46.50	13.98	0.43	.73
6-11	50.55	15.20		
12-23	49.82	11.55		
≥ 24	49.91	12.17		
Working place				
Emergency department for trauma patients	47.18	12.86	-1.70	.09
Intensive care unit for trauma patients	50.64	12.15		
Desired place of work				
Yes	47.01	12.74	-2.65	< .01
No	51.81	11.78		
Satisfaction with working				
Yes	47.36	12.72	-4.51	< .001
No	55.15	9.75		
Desire for job rotation				
Yes	56.73	9.65	6.28	< .001
No	46.31	12.21		
Type D personality				
Yes	57.01	9.96	9.19	< .001
No	43.12	10.65		

STS, secondary traumatic stress.

TABLE 3
Correlations among secondary traumatic stress, exposure to traumatic events, stress-coping styles, and social support (N = 186)

Characteristics	STS	ETE	Stress-coping styles			Social support		
			PFC	EFC	DC	Family/friends	Coworkers	Supervisors/Boss
	r(P)							
ETE	0.17(.02)							
Stress-coping styles								
PFC	0.21(<.01)	0.14(.06)						
EFC	-0.01(.85)	0.25(<.01)	0.13(.07)					
DC	0.45(<.001)	0.08(.27)	-0.11(.14)	0.26(<.001)				
Social support								
Family & friends	-0.25(<.01)	-0.04(.63)	0.11(.12)	0.12(.12)	-0.22(<.01)			
Coworkers	-0.21(<.01)	-0.06(.38)	0.03(.66)	-0.06(.46)	-0.25(<.01)	0.53(<.01)		
Supervisors/Boss	-0.24(<.01)	-0.14(.06)	0.12(.09)	-0.06(.43)	-0.18(.02)	0.23(<.01)	0.49(< .001)	

STS, secondary traumatic stress; ETE, exposure to traumatic events; PFC, problem-focused coping; EFC, emotional-focused coping; DC, dysfunctional coping.

FACTORS INFLUENCING STS

A multiple regression analysis was conducted. We entered the following data: desired place of work, satisfaction with working, desire for job rotation, type D personality, exposure to traumatic events, problem-focused coping, dysfunctional coping, social support from family and friends, social support from coworkers, and social support from supervisors, chosen from the significant results of the t test, ANOVA, or correlational analysis as independent variables, and STS as the dependent variable. Among these factors, nominal scales of the desired place of work, satisfaction with working, desire for job rotation, and type D personality were converted into dummy variables. The multiple regression analysis confirmed relationships between variables. As a result of finding the standardized residuals, all the values were within 3 SD and the distribution of the error term could be assumed as a normal distribution. The variance inflation factor ranged from 1.098 to 1.230; hence, there was no problem in multicollinearity between independent variables. Cook's distance values for examining individual data points never exceeded 1.0.

The explanatory power of the regression model was 46.7% (F = 33.47, $P < .001$, Adj R^2 = 0.47). To clarify, the model explained 46.7% of the variance in STS. The factors affecting the STS of nurses working at a regional trauma center were type D personality ($\beta = 0.39$, $P < .001$), dysfunctional coping ($\beta = 0.28$, $P < .001$), problem-focused coping ($\beta = 0.19$, $P = <.01$), desire for job rotation ($\beta = 0.17$ $P = <.01$), and social support from supervisors ($\beta = -0.12$, $P = <.05$). The STS was higher in those who had a type D personality, utilized the dysfunctional coping method frequently, utilized the problem-focused coping method frequently, had a desire for job rotation, and had less support from their supervisors (Table 4).

Discussion

This study identified 5 key factors that affect the STS of nurses working at regional trauma centers in South Korea. This study adds uniquely to the published literature by quantifying the levels of STS among nurses working in trauma centers in this country. The STS of the regional trauma center nurses averaged 49.62 points out of 85, with 84.4% in the moderate to severe range. The STS of the nurses in the study was higher than previously reported[13,44] and moderate to severe levels also account for a high percentage. In a previous study by Ratrout and Hamdan-Mansour[13] utilizing the same measurement tool, STS was measured at 46 points.

TABLE 4
Factors influencing secondary traumatic stress (N = 186)

Characteristics	B	SE	β	t	P
Type D personality	0.57	0.09	0.39	6.72	<.001
Dysfunctional coping	0.50	0.10	0.28	4.84	<.001
Problem-focused coping	0.38	0.11	0.19	3.42	<.01
Desire for job rotation	0.27	0.09	0.17	2.88	<.01
Social support from supervisors/boss	-0.07	0.04	-0.12	-2.01	<.05
Adj R^2	0.47				
F	33.47				
P	<.001				

74.5% of nurses working at emergency rooms were in the moderate to severe range. Duffy at al[44] conducted a study with nurses working at the emergency room and reported 45.9 points on average and 70% were in the moderate to severe range. In terms of subcategories, arousal has scored the highest, followed by avoidance and intrusion. The STS of the nurses in the study is higher than previously reported. Moderate to severe groups accounted for a high percentage, indicating the need to develop and apply strategies to care for the STS of trauma center nurses.

This study indicated that type D personality, dysfunctional coping, problem-focused coping, desire for job rotation, and social support from supervisors were the factors influencing the STS of nurses at regional trauma centers. These factors were statistically significant and the most influential factor was the type D personality. This is similar to Cho and Kang's[45] study conducted at intensive care units.

TYPE D PERSONALITY

The percentage of respondents with a type D personality was 46.8%. Although difficult to compare due to the absence of type D personalities at the regional trauma center, there was a relatively high proportion of type D personalities among other clinical nurses. Type D personality ranged from 23% in medical and surgical units up to 36% in pediatric units.[46] People with a type D personality are more vulnerable to chronic stress than people with a non-type D personality.[36] They are less likely to seek help or support from others, which may lead to greater traumatic stress.[47] In this study, nurses with type D personality working at regional trauma centers had higher STS.

Negative affectivity and social inhibition, which are subcategories of the type D personality, are broad and stable personality traits that affect not only everyday life but also life at work.[27,48] Individuals with a type D personality were more likely to experience burnout, have a lower level of personal achievement, and be at higher risk of post-traumatic stress when faced with severe stressors at work than individuals with a non-type D personality.[48] In addition, people with a type D personality may have worse physical and mental health such as less physical activity, inadequate checks, and fewer health activities, than people with a non-type D personality. This was because they were less likely to perform health-related activities. They spent less time outdoors, were less likely to eat healthily, failed to avoid letting things get them down, and were less likely to get regular medical checkups than people with a non-type D personality.[49] Cognitive behavioral therapy, mindfulness-based cognitive therapy, relaxation and interpersonal therapy, self-assertive training, and a healthy lifestyle can help mediate negative affectivity and social inhibition.[50] Therefore, participation in health care intervention programs and supportive resources, such as consultations with specialists and relaxation therapy, should be encouraged.

STRESS-COPING STYLE

Results showed that the dysfunctional and problem-focused stress-coping methods of regional trauma center nurses were significant factors of STS. The higher the use of dysfunctional coping or problem-focused coping, the higher the degree of STS. Our findings were similar to previous studies on the traumatic stress of trauma nurse specialists.[51] However, in our study, dysfunctional coping showed moderate correlation (r = 0.45), and problem-focused coping showed low correlation (r = 0.21) with STS. Each stress-coping style is not entirely independent;

they are complementary[52] and individuals use a variety of coping methods to deal with stress.[53] The nurses attempted to solve the problem using more problem-focused stress-coping in situations where they were constantly exposed to the stress source. However, the higher the use of problem-focused stress-coping, the greater the STS. This means that STS is not a problem that can be prevented or solved solely at the individual level. Individual problem-focused stress-coping may not be adequate because personal decision-making opportunities can be limited caused by the nature of the working environment.[39,54]

DESIRE FOR JOB ROTATION

The STS was higher in those with a need for job rotation than those who did not want to rotate. This is thought to be related to the characteristics of the nursing work, personal characteristics, and adaptation of nursing work in the regional trauma center that cares for trauma patients. It is not easy to create a workplace where every nurse's need is met. However, the nursing administrator should decide the department most suitable for nurses considering individual's aptitude. When selecting a nurse to work in the trauma center, administrators can consider a person with a high acceptance of the trauma center's job characteristics. The supervisor should check periodically whether there is any stress related to the work environment and continue to try to find strategies to decrease it.

SOCIAL SUPPORT FROM SUPERVISOR/MANAGER

STS was theorized to be associated with social support from family and friends, coworkers, and supervisors/managers. Of these, only supervisors' support appeared to be a factor influencing STS in the present study. Unlike family, friends, and colleagues, the supervisor can empathize and support nurses with STS. Administrators, managers, and supervisors should be more engaged in developing practical strategies for reducing STS of nurses. They must engage nurses under stress in discussions on the consequences of such stress and how they cope with it. Management should engage in professional support teams and conduct regular mental health and well-being checkups.

Limitations

This is a cross-sectional study using convenience sampling. Under- or over-representation of the population with a response bias is possible. The results are impacted upon by the limited number of regional trauma centers that participated. Although 13 such centers were officially opened in 2018, they continually bolstered their systems toward effective patient care, with trauma specialists and trauma nurses being recruited. This allowed nurses to focus on training novice nurses in establishing nursing systems. This could have contributed to the low participation in this study. Thus, more cross-sectional studies with random sampling or longitudinal studies are recommended.

Some instruments used in this study reported less than 0.8 of Cronbach's α scores. A low α value could be caused by a low number of questions, poor interrelatedness between items, or various constructs. We believe the reason for the low Cronbach's α scores is related to the number of items in the scales. For example, only 6 items are utilized to measure the problem-focused stress-coping style. In addition, translation may be a problem. Instruments were translated into Korean from English, and despite our controls for cross-cultural research of back-translation, some problems of equivalence in translation may exist, such as vocabulary, idioms, grammar and syntax, varied experience, and conceptual equivalences. Further studies may be required to analyze the reliability of the Korean versions of the instruments. The research tool utilized in this study did not reflect the degree of shock experienced by nurses due to the scoring method that calculates the total score by merely adding the frequency of each traumatic event. Each trauma case also differs in severity. Future measures will need to be developed to reflect the frequency and severity of traumatic events experienced by nurses.

However, this study is meaningful as it is the first study in Korea to investigate STS levels and the factors influencing it in regional trauma center nurses. Further studies considering other possible factors, such as empathy or resilience, are needed to provide a better understanding of STS among nurses working in regional trauma centers.

Implications for Emergency Nursing

This study was conducted among nurses working in the emergency room and the intensive care unit of the regional trauma center. There was no difference in STS according to the workplace. The STS of the nurses in the study was higher than previously reported.[13,43] Moderate to severe levels also account for a high percentage of participants (84.4%) at or above the cutoff score of 38. This indicated that various interventions, including counseling and meditation programs, should be implemented to promote the management of nurses' STS. Along with an individual approach

to engaging in stress management programs, a mutually supporting workplace culture is required. In addition, the nursing administrators should consider regular mental health evaluations of those nurses exposed to traumatic events. As the Korean government is gradually increasing the number of regional trauma centers, it is necessary to continue to understand and mitigate STS of nurses for nursing workforce recruitment, retention, and well-being.

Conclusions

This study showed that type D personality, dysfunctional coping, problem-focused coping, desire to change jobs and social support from supervisors were the factors associated with STS of nurses at regional trauma centers. Consequently, we suggest the development and application of STS management interventions based on the factors of STS. Personality traits of individuals do not easily change. To reduce STS of trauma nurses, personal efforts to participate in consultations with specialists and relaxation therapy are needed to reduce negative affectivity and social inhibition. Along with personal efforts, it will also be necessary to build a workplace culture that encourages and supports participation in these programs. Workplace culture promotion programs may mitigate STS. Additionally, nurses in supervisory or administrative roles should support nurses' requests for transfer to other departments. Enhanced social support from supervisors should also be considered. As trauma center services expand in South Korea, the importance of understanding and mitigating nurse STS is imperative.

Author Disclosures

Acknowledgments

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The Effects of a Novel Mindfulness-based Intervention on Nurses' State Mindfulness and Patient Satisfaction in the Emergency Department

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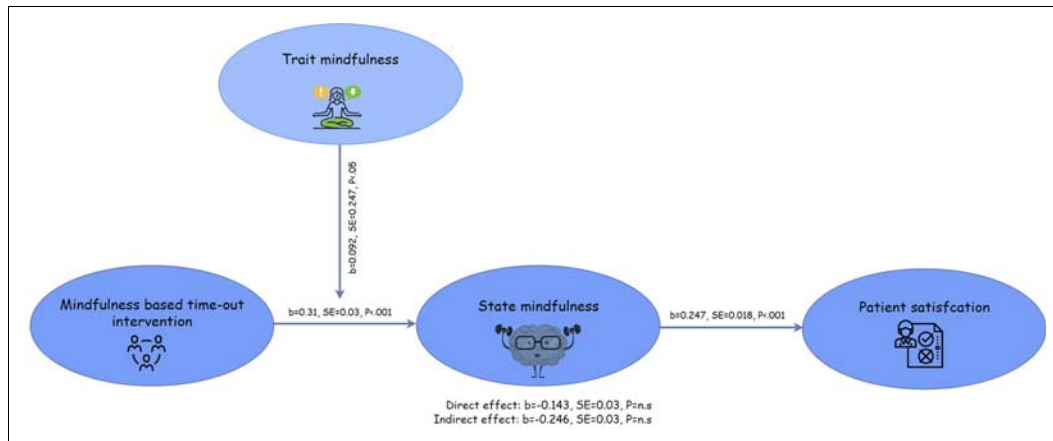
The Effects of a Novel Mindfulness-based Intervention on Nurses' State Mindfulness and Patient Satisfaction in the Emergency Department

Authors: Mor Saban, PhD, Efrat Dagan, PhD, and Anat Drach-Zahavy, PhD, Haifa, Israel

Contribution to Emergency Nursing Practice

- What is already known? Mindfulness is characterized by focusing attention to the present moment and by taking deliberate steps to question assumptions. There is growing evidence related to the beneficial effect of mindfulness on and improving professionals' well-being.
- The main finding of this paper is the positive joint effects of individual mindfulness and a mindfulness intervention on patient satisfaction in the emergency department.
- Recommendations for translating the findings of this paper into emergency clinical practice include a better understanding of the role of both individual mindfulness (trait and state) and a mindfulness intervention addressing the ED patient evaluation process on quality of care within health care organizations.

Abstract

Introduction: The objective of this study was to examine the effect of a novel mindfulness-based time-out intervention on state of mindfulness among emergency nurses and, accordingly, on patient satisfaction.

Methods: A pre-post intervention design among nurses in the emergency department was used with a between-subjects factor of patients who were nested within each nurse. The study was conducted between January 2017 and June 2018 among 48 nurses in the emergency department of a public tertiary academic hospital. For each nurse, a consecutive sample of 20 patients who attended the emergency department was recruited (n = 1920 patients; 960 in each phase). The mindfulness-based time-out intervention was based on theoretical mindfulness principles and carried out every 4 hours with direct communication to the patient at their bedside. Nurses' sociodemographic and professional characteristics and trait mindfulness were collected preintervention. Pre- and postintervention, data was collected on patients' sociodemographic and satisfaction, nurses' state mindfulness, and ED workload.

Results: An increase in nurses' state mindfulness and patients' satisfaction was found after the mindfulness-based time-out intervention compared with before the intervention (4.35 [SD = 0.64] vs 4.03 [0.82], $P < .001$ and 4.03 [0.41] vs 3.16 [0.44], $P < .001$, respectively). A positive correlation was found between patients' satisfaction and nurses' state mindfulness ($r = 0.29$, $P < .001$). The findings also demonstrated that state mindfulness was higher among nurses, characterized by high trait mindfulness, after the mindfulness-based time-out intervention implementation.

Discussion: By adapting mindfulness principles to the dynamic environment of the emergency department, we showed that the mindfulness-based time-out intervention was associated with a significant improvement in state mindfulness and patient satisfaction. The findings elucidate the interrelation among several conceptualizations of mindfulness that are increasingly reported in the literature, namely trait and state mindfulness, and interventions to promote mindfulness.

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Introduction

The effect of mindfulness-based interventions on patient satisfaction, particularly in the dynamic environment of the emergency department, has scarcely been studied. Although most mindfulness-based stress-reduction interventions have demonstrated a potential beneficial effect in reducing psychological distress and improving well-being among patients and health care providers,[1-3] this type of intervention is not applicable in the emergency department's stressful and dynamic environment. Moreover, only a few studies have examined the impact of mindfulness on health care performance,[1,3-5] including in the ED setting.[6,7] These studies have typically explored mindfulness variate types separately, that is, trait, state, and interventions, and thus their interrelations remain somewhat vague.[1,6,7] The present study, therefore, is aimed at narrowing these gaps in the mindfulness literature and in practice.

Mindfulness refers to directing attention to the present moment in a nonjudgmental manner, thereby limiting habitual behavior.[8-10] Traditionally, mindfulness was conceptualized as a state of consciousness, that is, state mindfulness, which is typically achieved by meditation and mindfulness-based stress-reduction interventions.[4] More contemporary research has identified interpersonal differences in mindfulness, suggesting a dispositional tendency toward mindfulness, namely trait mindfulness.[8,11,12] Trait and state mindfulness have consistently been associated with positive physical and mental health; increased life satisfaction; the ability to regulate emotions; and decreased life stress, anxiety, and depression.[11,13] Trait mindfulness has also been associated with a beneficial effect on personal and professional factors at work, such as increased job satisfaction and better interpersonal relations among coworkers.[4,14]

We assume that a mindful treatment approach, tailored to the dynamic environment of the emergency department, might increase nurses' state mindfulness, which in turn will be reflected in patients' satisfaction with their nursing care. Patient satisfaction is a potential significant predictor for a large array of health-related outcomes.[15] Satisfied patients are more likely to adhere to their medical recommendations and therefore have a lower risk of clinical deterioration and an increased prospect of well-being. Moreover, patient satisfaction is the extent to which the patient's evaluation of their care is in accordance with their expectations. Thus, satisfied patients are less likely to seek further opinions and have a reduced incidence of complaints and litigations.[16,17] As the emergency department is the main entry route to a hospital and is a "showcase" for the entire hospital, patients' satisfaction from ED treatment is of foremost importance. Studies that examined the factors associated with patient satisfaction in the emergency department have revealed several predictors. These include good care in terms of nursing and physicians' interpersonal and communication skills, short waiting times for diagnostic tests and decisions, and a comfortable stay.[18]

In this study, we have taken together mindfulness principles and the importance of patient satisfaction in the emergency department and designed a novel mindfulness-based time-out intervention (MBTI) to increase nurses' state mindfulness and patients' satisfaction.[19-21] The research model tests the effect of the MBTI on patient satisfaction by taking into account the inter-relations between nurses' trait and state mindfulness.

DEVELOPMENT OF THE MBTI

The MBTI designing and developing process considered the significant barriers to implementing mindfulness practices in health care, especially in acute clinical settings such as the emergency department.[22,23] Efforts were undertaken to adjust the MBTI to the busy, crowded space and finite resources that characterize the ED setting, as well as to avoid habitual clinical decisions, mainly for unstable patients and those with life-threatening conditions.[24,25] The MBTI was also carefully designed to respect the difficulty in maintaining personal self-care during a nursing shift, the physiological fatigue of standing for long periods of time and walking many kilometers in 1 work day, and the physical and emotional risks of treating patients who might be clinically and behaviorally unpredictable.[26]

To control habitual task performance and routine assessments and treatments that are often carried out in an overloaded ED setting and that may impair quality of care and patient satisfaction if not suitable for the situation, the MBTI is centered on the following mindfulness principles:[6,27] (1) paying attention to different signs in the present moment intentionally and nonjudgmentally and (2) being resilient to failures and near failures and learning from them.[8,28] Taking both these principles into account, the novel MBTI was constructed so that nurses continually pay attention to their patients' clinical status by re-evaluating their signs and symptoms. The MBTI also encourages learning processes and prevents failures by discussing clinical options with team members and making clinical decisions at patients' bedsides.

SPECIFIC OBJECTIVES AND HYPOTHESES

This study aimed to examine the effect of the MBTI on emergency nurses' state mindfulness and, in turn, on patient satisfaction and to determine whether this effect is modified by emergency nurses' trait mindfulness. We hypothesized that state mindfulness mediates the association between MBTI and patient satisfaction and that this effect is dependent on trait mindfulness. Our specific hypotheses were the following:

1. Nurses' state mindfulness is higher after the MBTI implementation.
2. The effect of the MBTI on nurses' state mindfulness is higher among nurses with higher trait mindfulness.
3. The effect of the MBTI on patient satisfaction is higher among nurses with higher trait mindfulness.
4. Nurses' state mindfulness is associated with higher patient satisfaction.
5. The joint effect of nurses' trait mindfulness and the MBTI promotes higher patient satisfaction through nurses' state mindfulness.

Methods

DESIGN AND SETTING

We conducted a pre-post intervention among nurses in the emergency department with a between-subjects factor of patients who were nested within each nurse. This design was chosen owing to the nature of the emergency department, where patients stay only for a short time.

In each phase (ie, pre- and postintervention), the unit of analysis was the emergency nurses (n = 48). For each nurse, a consecutive sample of 20 patients who attended the emergency department was recruited. The study was conducted between January 2017 and June 2018 at a public tertiary emergency department at an academic teaching hospital. The emergency department consists of 100 beds and serves approximately 110 000 adult patients annually from more than 2 million residents. The study was approved by the institutional review boards of Rambam Health Care Campus (approval number: 0305-16-RMB) and The Faculty of Welfare and Health Sciences, University of Haifa (approval number: 197/16). All participants (nurses and patients) provided signed informed consent after receiving an explanation of the research goals and procedures.

PARTICIPANTS

The sample consisted of nurses and patients. All nurses who worked in the emergency department on at least a half-time basis during the study period were asked to participate. A to-tal of 55 emergency nurses were eligible. In each of the pre- and postintervention study phases, 960 different patients participated. Eligible patients were those who were 18 years or older, able to provide signed informed consent, and were admitted to the ED urgent (walking clinic) and emergent areas but not to the resuscitation bay. The exclusion criteria comprised patients with an acute psychotic state or those who were in active labor.

The sample size was calculated by using the R code through the sjstats package (The R Foundation). This is based on population size and the statistical requirements for linear mixed models.[29] To achieve a small effect size of 0.25 or above, a test power of 80%, and a significance of 0.05, we calculated that there was a need for 48 nurses and 20 repetitions for each nurse.

STUDY PROCEDURE

After ethical approval, the study aims and procedure were discussed at an emergency nurses' staff meeting in January 2017. The preintervention phase was conducted between January 2017 and June 2017 and included 2 steps. First, all emergency nurses were asked to complete a sociodemographic and professional questionnaire as well as the individual Mindful Attention Awareness Scale (MAAS)[8] to assess trait mindfulness. This procedure was conducted in line with typical personality research to limit priming biases.[30,31] Second, in each shift, the nurses' state mindfulness was assessed using the State Mindfulness Scale (SMS).[32]

After they had provided signed informed consent, all recruited patients were asked to complete their satisfaction with the nursing treatment immediately after the triage stage (the first encounter between the patient and the nurse) to avoid recall bias. The patients' sociodemographic and clinical characteristics and manner of arrival (independent or by ambulance) were gathered from the patients' medical charts. The data were collected from the ED database and referenced to each shift evaluation.

During the intervention phase, the first author, an experienced emergency nurse, implemented the MBTI. The MBTI instructions directed the emergency nurses to re-evaluate their ED patients' clinical status in light of any newly acquired clinical examinations and laboratory and imaging test results. In addition to mindfulness-based principles (eg, an openness to novelty and an alertness to distinction), the intervention was adjusted to the specific context and followed ED guidelines of care.[33-35] The MBTI consisted of a discussion among the ED teams with regard to a patient's identification, a confirmation of patient signs and symptoms, a review of the severity triage level, an examination of the latest vital

signs and laboratory and imaging tests, a reconsideration of any requests for consultations, and recommendations for future treatment. The wing charge nurse then documented the re-evaluation in the electronic nursing records (ENRs), which was especially designed for the current intervention.

Before the intervention implementation, 2 training sessions, each lasting 4 hours, were conducted by the first author during staff meetings. In the first session, the newly developed electronic form was introduced to the nursing team, followed by the nurses' self-training. In the second session, the nurses discussed scenarios where re-evaluation owing to the MBTI could have improved the patients' diagnosis and care.

The MBTI was enacted 6 times a day, every 4 hours. Before each shift, the nurses were briefed about the intervention, and during the shift a short message service text was sent to the emergency nurses as a reminder. To validate the MBTI, we collected fidelity measures, which are detailed below.

The postintervention phase was conducted between January 2018 and June 2018. It included re-collecting the same kind of data that had been gathered in the preintervention phase but for 960 new patient-nurse encounters (20 patients for each nurse).

MEASURES

Patient Satisfaction

This was assessed with the 12-item caring subscale of the Consumer Emergency Care Satisfaction Scale,[36] which was specifically developed to examine patient satisfaction in the emergency department. The items were scored on a 5-point Likert-type scale ranging from 1 = completely disagree to 5 = completely agree. An example item was "The nurse explained things in terms I could understand" ($\alpha = 0.89$).

SMS

The SMS is a 21-item self-report questionnaire that assesses "state mindfulness of mind" (being mindful of mental events such as thoughts and emotions) and "state mindfulness of body" (being mindful of bodily sensations).[32] The sample items include "I noticed emotions come and go" (state mindfulness of mind) and "I noticed physical sensations come and go" (state mindfulness of body). The participants were asked to rate the degree to which each statement applied to them on a 5-point Likert scale (1 = never or very rarely true, 5 = almost always or always true). Cronbach alpha for the current sample was 0.87.

MBTI

This was defined as a binary variable respective of the study phase: 0 = preintervention and 1 = postintervention.

Intervention Fidelity

This was measured with 2 indicators. First, adherence—the extent to which practitioners conform to the intervention protocol[37]—was calculated as a dichotomous variable, where "1" denoted that all fields in the ENR form were completed and "0" denoted not completed. Second, behavior change after the intervention[38] included re-evaluating and updating 1 of the following: the severity triage level, the laboratory and/or the imaging tests, the consultation orders, the treatments given, or decisions taken. These data were extracted from the patients' medical records. Forty nurses (83.3%) documented the re-evaluation process in the designated ENR, implying high protocol adherence.[39] For 386 (40.2%) patients, changes were made to laboratory test orders, often owing to needing to order missing laboratory tests (in 256, or 26.7% of the patients). Similarly, for 271 (28.2%) patients, missed imaging tests (x-ray, computed tomography, ultrasound) were ordered, and for 123 (12.8%) patients, missing consultations were requested. Conversely, the records showed that 78 (8.1%) patients had redundant consultations, 321 (33.4%) patients had additional unnecessary treatments, and 126 (13.1%) patients had treatment cancelled. During the patient re-evaluation, decisions were made for 656 (68.3%) patients to be either discharged or admitted.

Adverse Events

To the best of our knowledge, the MBTI had no negative consequences for nurses and patients owing to the additional burden on the nurses' routine work.

Trait Mindfulness

This was assessed with the single-factor, 15-item MAAS.[8] The items were rated on a 5-point Likert-type scale (1 = almost never, 5 = almost always). An example item is "The nurse performed his/her duties with skill." Cronbach alpha for the current sample was 0.86.

Control Variables

Patient characteristics included the patients' sociodemographic profile (age, gender, and ethnicity) and clinical status (major complaint, manner of arrival, functional status, and Charlson score index).[40]

Workload was defined using the standard formula of the Israeli Ministry of Health.[41] The formula considers 3 variables: the number of patients admitted to the emergency department, the functional-morbidity condition of the patients, and the type of shift (ie, morning, evening, or night). The product of the formula is a weighted continuous variable ranging from 1 (lowest workload) to 33 (extreme workload).

STATISTICAL ANALYSIS

Associations between state mindfulness and patient satisfaction and each of the study's independent and control variables—namely, sociodemographic, workload, and clinical characteristics; the MBTI; and trait mindfulness—were examined before and after the intervention phase using chi-square tests for categorical variables and t tests or 1-way analysis of variance when appropriate for continuous variables. In addition, Pearson and Spearman coefficients were used to calculate statistical correlations among the variables employed in the study for either ordinal or dummy coded data before and after the intervention phase.

To test our hypotheses, a nested multilevel analysis was performed because the patients were interacting with 48 different nurses. The mixed linear model procedure (SPSS version 25; IBM Corp) was conducted because this is appropriate to control for each patient being under the care of a certain nurse.[42] On the basis of the main correlation[43] and the current literature, we inserted into the nested mixed linear model 4 control variables: nurses' seniority,[44-46] nurses' trait mindfulness,[47,48] patients' age,[6,49] and patients' gender.[49,50] Testing for mediation was performed according to the 4-step approach of Baron and Kenny[51] in which several regression analyses were conducted, and the significance of the coefficients was examined at each step. Finally, a Sobel test was conducted to provide an approximate significance test for the indirect effect of the independent variable on the dependent variable through the mediator.[52] Moreover, to assess the improvement of the models, we calculated the reduction of –2 log likelihood of the final models by using a chi-square analysis.

Results

Of the 55 emergency nurses, 48 (87%) agreed to participate in the study and were recruited. Table 1 describes the sample's characteristics. The study's sample consisted of 48 nurses, including 22 (45.8%) women. On average, the nurses had 10.06 (SD = 6.84) years of seniority and had a mean trait mindfulness (assessed by MAAS) score of

3.31 (0.67). In each of the 2 phases of the study (pre- and post-MBTI), a different set of 960 patients was recruited. No significant differences were found in the age, gender, manner of arrival, and functional status of the patients in the 2 phases. The patients' Charlson comorbidity score was higher in the post-MBTI phase than in the pre-MBTI phase (χ^2 [3, 1810] = 15.1, $P < .001$) as well as in the ED workload (t [1918] = 22.29, $P < .001$).

Analysis of the study mediator and outcome showed an increase in SMS scores and in patient satisfaction in the post-MBTI phase compared with the pre-MBTI phase (t [1810] = 44.07, 4.35 [0.64] vs 4.03 [0.82], $P < .001$ and t [1918] = 9.33, 4.03 [0.41] vs 3.16 [0.44], $P < .001$, respectively), thus providing initial support to hypothesis 1.

Table 2 demonstrates the correlations among the study variables. As can be seen, patient satisfaction was higher after the MBTI ($r = 0.71$, $P < .001$) and was correlated with both nurses' seniority ($r = 0.05$, $P = .032$) and nurses' state mindfulness ($r = 0.29$, $P < .01$), providing initial support for hypothesis 4. Nurses' state mindfulness was higher in the post-MBTI phase ($r = 0.21$, $P < .01$) and was correlated with nurses' seniority ($r = 0.07$, $P = .01$). Furthermore, we found that the older the patient, the lower the nurses' state mindfulness ($r = -0.05$, $P = .03$).

Table 3 presents the findings of the mixed linear regression analyses for supporting our hypotheses. Hypothesis 1 is supported because the intervention had a positive significant effect on state mindfulness above and beyond the control variables of nurses' seniority and patients' age and gender ($b = 0.31$, $P < .001$; "Nurses' state mindfulness model 1" column, Table 3). Hypothesis 2 states that the effect of the MBTI on nurses' state mindfulness will be higher among nurses with higher trait mindfulness. Hypothesis 2 is thus supported because the 2-way interaction effect of the MBTI and trait mindfulness was significant ($b = 0.09$, $P < .05$; "Nurses' state mindfulness model 2" column, Table 3). To understand the nature of the interaction, we plotted the interaction effect (Figure 1) following the recommendations of Dawson,[53] with value of 1 SD serving as low and high trait mindfulness. As shown in Figure 1, the improvement of state mindfulness after the MBTI was higher among nurses characterized with high trait mindfulness than among those characterized with low trait mindfulness.

Hypothesis 3 was not supported because the 2-way interaction effect between the MBTI and the nurses' trait mindfulness on patient satisfaction was not significant ($P > .05$; "Patient satisfaction model 2" column, Table 3). Hypothesis 4 was supported because the nurses' state mindfulness was associated with patient satisfaction above and beyond the study variables ($b = 0.25$, $P < .001$; "Patient satisfaction model 3" column, Table 3).

TABLE 1
Descriptive statistics of the study sample (48 nurses and 1920 patients)

Nurses' characteristics (N = 48)	N/mean			%/SD		
Women, n (%)	22			45.8		
Seniority, mean (SD)	10.06			6.84		
MAAS, mean (SD) (range)	3.31			0.67 (2.07-4.53)		
Patients' characteristics	Sample 1 (N = 960), preintervention phase			Sample 2 (N = 960), postintervention phase		

Sociodemographic data	N/mean	%/SD	N/mean	%/SD	Point estimate	P value
Age, y, mean (SD)	54.94	21.55	53.32	17.28	$t = 1.82$	.07
Women, n, %	484	50.4	480	50.0	$\chi^2 = 0.03$	.86
Clinical characteristics						
Manner of arrival, n, %						
EMS	658	68.5	626	65.2	$\chi^2 = 0.99$	.52
Independent	302	31.5	334	34.8		
Functional status, n, % of independent	869	90.5	846	90.8	$\chi^2 = 0.851$	.85
Charlson score index						
0	7	0.7	—	—	$\chi^2 = 15.14$	< .001
1-2	885	92.2	857	89.3		
3+	68	7.1	103	10.7		
ED characteristics						
Workload, mean (SD)	13.75	7.18	18.82	6.16	$t = 22.94$	< .001
Mediator						
SMS, mean (SD)	4.03	0.82	4.35	0.64	$t = -9.33$	< .001
Outcome						
CECSS: patients' satisfaction, mean (SD)	3.16	0.44	4.03	0.41	$t = -44.07$	< .001

MAAS, Mindfulness Attention Awareness Scale; EMS, emergency medical services; SMS, State Mindfulness Scale; CECSS, Consumer Emergency Care Satisfaction Scale.

Finally, hypothesis 5 pertained to our whole moderating-mediating model. We followed the 3-step procedure recommended by Baron and Kenny[51] and Hayes:[54] (1) the 2-way interaction effect between the MBTI and trait mindfulness on the mediator, namely state mindfulness, was significant as evidenced from hypothesis 2 being supported; (2) the effect of the nurses' state mindfulness (the mediator) on patient satisfaction (the dependent variable) was evidenced from hypothesis 4 being supported; and (3) when the interaction effect of trait mindfulness and the intervention was entered with the mediator of state mindfulness, state mindfulness was significant (b = 0.11, SE = 0.13, P < .001). The same result was found for the interaction between the intervention and trait mindfulness. A Sobel test indicated a partial mediation effect of state mindfulness (1.94, P = .05)[52] (Figure 2).

Discussion

This study developed and tested the role of a novel MBTI in promoting patient satisfaction in the emergency department. The findings demonstrated that the intervention enhanced patient satisfaction through its effect on nurses' state mindfulness. Furthermore, the findings showed that the intervention was more successful for nurses with high trait mindfulness. This study has therefore shed light on the interrelations among several conceptualizations of mindfulness that are starting to become of more interest in the literature, namely trait mindfulness, state mindfulness, and mindfulness-based interventions to promote quality of care. In addition, the fidelity results demonstrated many advantages such as shortened waiting times, better decision-making

TABLE 2

Correlations among the variables employed in the study period

Variables	Mean	SD	1	2	3	4	5	6
1. Seniority (nurse)	10.06	6.84	—					
2. Patients' age, y	54.13	19.55	.02	—				
3. Patients' gender (male)	—	—	−.05*	−.03	—			
4. Nurses' trait mindfulness (MAAS)	3.31	0.67	.02	−.01	−.03	—		
5. MBTI	—	—	<.001	−.04	.004	.01	—	
6. Nurses' state mindfulness	4.19	0.75	.07*	−.05*	.01	.04	.21‡	—
7. Patients' satisfaction	3.60	0.61	.05*	−.03	−.03	.004	.71†	.29‡

MAAS, Mindfulness Attention Awareness Scale; MBTI, mindfulness-based time-out intervention.

* $P < .05$.

† $P < .001$; $P < .05$.

‡ $P<.01$.

processes, appropriate use of hospital resources, and overall outcomes.

The current study used a nested design to investigate the effect of the MBTI on patient satisfaction in the emergency department. The study found that the MBTI contributes to patient satisfaction through a partial mediating effect of state mindfulness. In addition, the effect of the MBTI on state mindfulness was moderated by the nurses' trait mindfulness. That is, nurses characterized with higher dispositional (trait) mindfulness exhibited higher state mindfulness post-MBTI. To the best of our knowledge, this is the first study to examine the associations among trait mindfulness, state mindfulness, a mindfulness-based intervention, and patient satisfaction within the specific dynamic setting of the emergency department.

Although the importance of mindfulness interventions in the emergency department for patients and health care providers has been acknowledged and discussed in several empirical studies, these interventions do not yet align with the dynamic ED environment and culture.[1,55] Our novel MBTI was specifically developed to address the challenges within the ED setting. It was designed to be embedded seamlessly into the routine work of the emergency department and to allow the flow of patients despite the dynamic environment. We suggest that our finding of a significant effect of the MBTI on nurses' state mindfulness and patient satisfaction was based on the principal nature of our mindfulness intervention, namely bringing together the ED teams several times during a shift to perform re-evaluations of a patient's status and reconsider collaboratively and purposefully the most updated clinical information and needs for each patient.[35,56]

This planned activity aimed to raise the awareness for different cues in the present time, to continually re-evaluate patients' signs and symptoms, to discuss clinical options and decisions at the patients' bedside, to promise resilience through learning from failures and near failures, and to manage care accordingly. On the basis of previous studies, we also suggest that the significant effect of the MBTI on patient satisfaction is due to the characteristics of patient-centered care inherent in this mindful-based–approach intervention, namely awareness and responsiveness to patients' preferences and needs and, ultimately, a shared decision-making process.[3,4]

The significant interaction between the MBTI and trait mindfulness on state mindfulness showed the importance of this innate characteristic in emergency nurses. Despite the obvious clinical and medical demands, emergency nurses with high trait mindfulness demonstrated higher state mindfulness post-MBTI, which apparently equipped them to use patient-centered patterns of communication such as positive emotional tone and discussion of psychosocial issues more easily.[6] Moreover, as suggested in a previous study, the clinicians' trait mindfulness was associated with higher satisfaction among patients, specifically for overall satisfaction and patient-provider communication, as well as satisfaction with nurses and therapists.[57]

Although nurses with high levels of trait mindfulness are more likely to increase state mindfulness by our tailored intervention, nurses with low trait mindfulness too showed some improvement in state mindfulness after the MBTI. Empirical evidence demonstrated that the levels of interpersonal needs for effective training intervention depends on the initial individual level of the trainees' skills.[14] To the extent that some individuals are naturally inclined toward mindfulness, organizations may be able to further capitalize on mindfulness interventions by adopting our MBTI to ED teams. Furthermore, by taking into account individual

TABLE 3

Mixed linear model analysis for the mediation effect of nurses' state mindfulness on the association between mindfulness intervention and patient satisfaction

Variable	Nurses' state mindfulness model 1, control variables		Nurses' state mindfulness model 2, intervention effect		Patient satisfaction model 1, control variables		Patient satisfaction model 2, intervention effect		Patient satisfaction model 3 mediator: nurses' state mindfulness		Patient satisfaction model 4l, intervention + mediator effects	
Control variables	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Seniority (nurse)	0.01	0.01	0.01	0.01	0.006	0.003	0.004	0.003	0.004	0.003	0.003	0.003
Patients' age	−0.001	0.001	−0.001	0.001	−0.001	0.001	−0.000	<.001	−0.001	0.001	<−0.001	<.001
Patients' gender (male)	0.01	0.03	−0.01	0.03	−0.027	0.03	−0.03	0.02	−0.03	0.26	−0.03	0.02
Nurses' trait mindfulness (MAAS)	−0.01	0.05	−0.05	0.59			0.01	0.03			0.018	0.03
Intervention	0.31[†]	0.03	0.01	0.16			0.92[†]	0.10			0.914[†]	0.09
Trait mindfulness intervention			0.09[*]	0.05			−0.14	0.03			−0.25	0.03
Nurses state mindfulness									0.25[†]	0.02	0.11[†]	0.13
DF	107.84		92.48		81.02		76.25		62.15		55.35	
−2 Res LL	4256.17		4167.46		2203.07		2146.99		2003.45		1925.32	
Δ−2 Res LL	(15.3, 88.71) = P < .05				(11.37, 1964.39) = P < .001		(4.765, 56.08) = P < .05		(14.1, 143.54) = P < .01		(6.8, 78.13) = P < .05	
Estimate of covariance parameter	Variance 0.058	P value < .001	Variance 0.080	P value < .001	Variance 0.014	P value .004	Variance 0.02	P value < .001	Variance 0.08	P value < .001	Variance 0.02	P value < .001

−2 Res LL estimates the contribution of adding the variables in the model to the explained variance in the dependent variable.

MAAS, Mindful Attention Awareness Scale; DF, degrees of freedom; Res LL, restricted log likelihood.
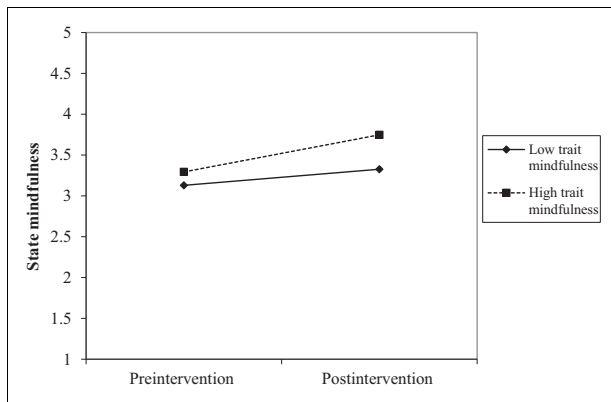
[*] P < .05.

[†] P < .001.

FIGURE 1

The interaction effects between intervention and trait mindfulness on state mindfulness.

differences in trait mindfulness, training programs can be structured for maximum utility.

Additional findings refer to state mindfulness and its association with nurses' seniority and patients' age. In line with a previous study,[45] we also found a positive correlation between state mindfulness and nurse seniority. Previous researchers have argued that novices possess fewer years of experience and clinical attentiveness and therefore may be prone to be less mindful.[35,58] Aligned with this argument, a study conducted by Martins et al[59] demonstrated that patients who were treated by novice nurses seemed to report less satisfaction. Compared with novice nurses, experienced nurses may have better mindfulness competence, which is acquired by developing a heightened sense of awareness.[60,61]

Furthermore, we also found a negative association between state mindfulness and patient age. Previous studies have explained the decreased quality of care in older patients with complicated diagnoses that often take place owing to their atypical signs and symptoms and multiple comorbidities and which consequently may lead to a risk of misdiagnosis.[62] In addition, most emergency nurses have not been trained in specific geriatric approaches, and many report being less comfortable when dealing with older patients.[63] Although a previous study showed that a mindfulness intervention decreased age bias,[64] our findings propose that nurses treat older patients with less state mindfulness. Therefore, more studies are warranted to explore the impact of state mindfulness on age bias. Finally, although a higher ED workload was found in the post-MBTI phase than in the pre-MBTI phase, the nurses' state mindfulness and patients' satisfaction were increased. We suggested and showed in our previous report that the ED workload was leading

emergency nurses to be more attentive and concentrated and therefore enabling a greater focus on care components.[23]

Future research should attempt to replicate these findings in a randomized controlled trial design and in a multi-center setting. For each of the participating centers in the randomized controlled trial study design, a sample size similar to that calculated for the current study should be undertaken.

These future studies can measure mindfulness among clinicians and explore its effects on the quality of patient care in terms of patient-centeredness and patient satisfaction as well as in considering other aspects of quality, such as safety, effectiveness, and efficiency. Such research might also consider exploring potential explanatory mechanisms for such findings in terms of the quality of information gathered by the clinician, clinical decision-making, and patient engagement.

In addition, future research should examine the similarities of the MBTI and Team Strategies and Tools to Enhance Performance and Patient Safety Huddle, an evidence-based teamwork system to improve communication and teamwork skills among health care professionals.[65]

Limitations

Several limitations should be considered. First, the study was conducted at 1 medical center, which might limit the external generalizability of the findings. However, the selected hospital is a large, 1000-bed academic tertiary hospital, serving more than 2 million residents, which enabled us to recruit a large sample of patients. Yet, using only 1 setting may have limited the potential of confounders related to the environmental differences among emergency departments. Second, owing to the highly dynamic environment of the emergency department explored we could not assess our model under conditions of low workload. Third, data on mindfulness and patient satisfaction were gathered through self-report measures, but because the phenomena investigated are by definition implicit, self-report measures seem adequate.[30,66,67] Fourth, we implemented and embedded the MBTI into the ED routine workflow 3 months after the preintervention phase ended. This period is a common strategy in intervention studies.[68,69] However, future studies are needed to address the minuteness of the intervention (duration and intensity) effect. Fifth, because we also collected data through other methods and from different sources, same-source bias might not be a serious concern in our study. Furthermore, no randomization or blinding was performed nor was there
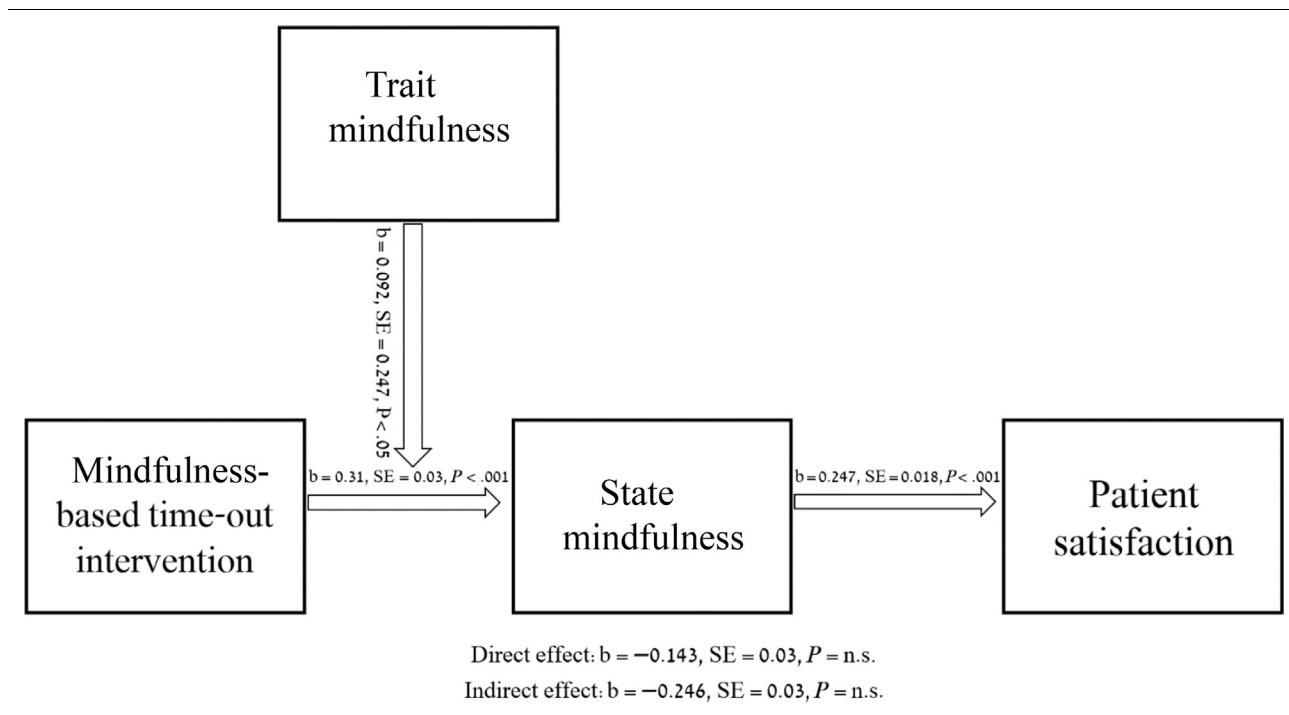
FIGURE 2
The study mediation model for patient satisfaction. n.s, not significant.

Implications for Emergency Clinical Care Nurses

This study contributes to a better understanding of the role of both individual mindfulness (trait and state) and a mindfulness intervention addressing the ED patient evaluation process on quality of care within health care organizations. Specifically, the findings support the positive joint effects of individual mindfulness and a mindfulness intervention on patient satisfaction in the emergency department.

These findings have important implications for health care professionals aiming to achieve enhanced ED work processes, performance, and patient satisfaction. Given the importance of mindfulness, nurse managers should help cultivate it in their health care settings.

The study's findings also provide empirical evidence to substantiate the assumption that increasing state mindfulness using a mindfulness intervention is suitable for the ED dynamic setting and leads to greater patient satisfaction. This finding is notable because it suggests that the trait-like propensity to be mindful in everyday life may be modifiable (for at least some individuals) through the intentional practice of evoking state mindfulness during the mindfulness intervention.

Patient satisfaction might improve when patients perceive accumulating cues about both the re-evaluation process and the mindfulness of the emergency nurses caring for them. This might suggest that following protocols, guidelines, and procedures—a mechanism that was the main focus of previous interventions to improve patient satisfaction in the emergency department—is insufficient.[20]

Conclusion

This study employed a mindfulness intervention, the MBTI, as a novel approach to improve patient satisfaction in the emergency department through increasing nurses' state mindfulness. The MBTI encouraged emergency nurses to monitor their patients' status every 4 hours: reconsider the initial diagnosis and management plan—given updated information and diagnostic test results—and cooperate and share information, all while communicating with patients. Consequently, the MBTI enabled efficient ED management of quality of care and enhanced patient satisfaction.

a control group, which might have introduced bias and limited confidence in the causality of the intervention on the outcomes. Finally, there was no control for time of day (which can influence patient satisfaction).

The study highlights the need for both individual mindfulness and a mindfulness intervention to contribute together to provide the best additive effects on attaining and improving patient satisfaction from ED care.

Author Disclosures

Conflicts of interest: none to report.

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STRATEGIES TO CARE FOR PATIENTS BEING TREATED IN THE EMERGENCY DEPARTMENT AFTER SELF-HARM: PERSPECTIVES OF FRONTLINE STAFF

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CE Earn Up to 10.5 Hours. See page 507.

Contribution to Emergency Nursing Practice

- Emergency departments vary in the implementation of evidence-based practices to support a patient's mental health needs following an episode of self-harm.
- Despite the challenges in meeting patient mental health needs, many ED staff identify opportunities to provide care and leverage community resources to support patients presenting to the emergency department after an episode of self-harm.
- Recommendations for translating the findings of this article into emergency clincal practice include: thoughtfully integrating technology to enhance access to mental health specialists; increasing mental health training to support ED staff; incentivizing academic researchers to collaborate with under-resourced emergency departments; and leveraging community resources to improve access to mental health resources following discharge.

Abstract

Introduction: Every year, approximately 500 000 patients in the United States present to emergency departments for treatment after an episode of self-harm. Evidence-based practices such as designing safer ED environments, safety planning, and discharge planning are effective for improving the care of these patients but are not always implemented with fidelity because of resource constraints. The aim of this study was to provide insight into how ED staff innovate processes of care and services by leveraging what is available on-site or in their communities.

Methods: A total of 34 semi-structured qualitative phone interviews were conducted with 12 nursing directors, 11 medical directors, and 11 social workers from 17 emergency departments. Respondents comprised a purposive stratified sample recruited from a large national survey in the US. Interview transcripts were coded and analyzed using a directed content analysis approach to identify categories of strategies used by ED staff to care for patients being treated after self-harm.

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Results: Although respondents characterized the emergency department as an environment that was not well-suited to meet patient mental health needs, they nevertheless described 4 categories of strategies to improve the care of patients seen in the emergency department after an episode of self-harm. These included: adapting the ED environment, improving efficiencies to provide mental health care, supporting the staff who provide direct care for patients, and leveraging community resources to improve access to mental health resources postdischarge.

Discussion: Despite significant challenges in meeting the mental health needs of patients treated in the emergency department after self-harm, the staff identified opportunities to provide mental health care and services within the emergency department and leverage community resources to support patients after discharge.

Key words: Emergency service; Hospital; Mental health; Self-injurious Behavior; Evidence-based practice

Introduction

In the United States, 12.5% of 150 million annual ED visits are primarily related to a mental health or substance use disorder.[1,2] Robust literature has addressed the challenges faced by ED staff in treating patients with mental health-related presentations.[3-7]

Approximately 500 000 ED visits each year are by patients being treated after an episode of intentional self-harm,[8] defined as self-poisoning or self-injury which may or may not include suicidal intent.[9] These patients are at high risk of repeat self-harm[10] and suicide.[11] Improving the care of patients who are treated in the emergency department after self-harm is a national priority in the US,[12] yet resources to care for these patients in the emergency department or to follow up with them after discharge are limited.

Interventions such as screening and assessment of suicide risk, designing safer ED environments, safety planning, and discharge planning improve the safety of patients being treated after self-harm and reduce repeat visits.[13-16] Recent research suggests that, in many emergency departments, such evidence-based practices are not routinely implemented. One study of 8 US emergency departments found that only 26% of patients were assessed for the indication of self-harm (defined as suicide attempt, suicidal ideation, or nonsuicidal self-injury thoughts or behaviors or both),[17] while a survey of US ED nursing directors found that only 15.3% of emergency departments provided all recommended elements of safety planning to patients being treated after intentional self-harm.[18] Many emergency departments do not have the resources required to implement evidence-based practices, such as streamlining screening processes of patients being treated after self-harm[19] or hiring dedicated and trained staff (ie, social workers, psychiatric nurses, or psychiatrists) to deliver on-site mental health care.[20]

Further, the lack of adequate resources to provide mental health services and support to patients being treated after self-harm contributes to moral distress among staff, which has been linked to high rates of burnout and low rates of retention and job satisfaction among emergency nurses.[17-21] Research has demonstrated how these stressors contribute to negative attitudes toward and erosion of empathy for patients who present to the emergency department after self-harm.[22] However, little is known about what strategies ED staff employ to mitigate burnout and address patient mental health needs.

To inform future priorities for health services planning and improvement, we undertook a national, mixed methods study of US emergency departments to gain a broad understanding of how evidence-based practices are implemented in different emergency departments and staff perspectives on barriers and facilitators to caring for patients who present after self-harm. Specifically, we examined how staff innovate processes of care and services by leveraging resources available on-site and in their communities. Given that ED staff are primarily trained to provide emergency medical rather than mental health care, this study aimed to understand how ED staff try to provide the best care possible to these patients. This article presents findings from qualitative interviews with a national sample of nursing, medical, and social work ED leaders focused on the strategies they use to address the mental health needs of patients being treated after self-harm and the resources that facilitate implementation of these strategies.

Methods

STUDY DESIGN AND SAMPLE

Between May 2017 to January 2018, a national quantitative survey (described elsewhere[18,23,24]) to assess availability of key mental health services for ED patients in the US was sent to a random sample of 665 ED nursing leaders, with 513 (77.1%) responding. For the qualitative follow-up study described here, respondents were selected from the 513 hospitals to achieve a maximum variation sample[25] across the following criteria: specialty (nursing directors, medical directors, and social workers/care

managers); hospital size (<23 000, 23 000-64 000, >64 000 annual ED discharges), mental health staffing availability (high and low); and performance (high and low). High availability of mental health staffing was defined as the emergency department having either: (1) mental health staff (adolescent/adult psychiatrists, psychologists, psychiatric nurses) during and after standard weekday hours and on weekends or (2) a social worker during and after standard weekday hours and on weekends with mental health staff available at any of these times. High performance emergency departments were defined as those routinely conducting all of the following: scheduling outpatient follow-up care for patients before they leave the emergency department; assessing current/past suicidal ideation and access to means; and conducting safety planning processes.[24]

For each site, a research coordinator contacted the nursing director via email with a request to participate in an interview. For those indicating interest, a health services researcher with expertise in qualitative methods conducted the semi-structured interview over the phone. At the conclusion of the interview, the interviewer asked the nursing director to identify the medical director and a social worker involved in discharge planning. The medical directors and social workers were contacted separately by the research coordinator and invited to participate in an interview; those who consented were contacted and interviewed separately by phone. Medical directors were interviewed by an ED physician clinical-researcher and social workers were interviewed by a social work researcher with emergency psychiatry experience. Prior to starting the interview, the interviewer discussed the goals of the study, answered any questions, and obtained verbal informed consent from the study participant. Interviewers were blinded to the ED characteristics when conducting the interview.

Interviews were completed between May 2018 and June 2019 and averaged approximately one hour. At 5 sites, interviews were completed with the nursing director and one other provider—either the medical director or social workers —but not the third provider at that site. In those cases, a medical director or social worker from an emergency department with similar characteristics (size, mental health staffing, performance) was recruited to complete an interview. A total of 34 interviews were conducted with 12 nursing directors, 11 medical directors, and 11 social workers from 17 different emergency departments. Participants were compensated $200 for their time. Study procedures were approved by the University of Pennsylvania Institutional Review Board (Protocol #824563).

DATA COLLECTION AND MANAGEMENT

An interview guide was piloted with 3 participants from each staff category and refined iteratively to arrive at a final guide which covered: (1) how patients being treated after self-harm are triaged and assessed upon arrival at the emergency department; (2) resources available for managing and treating mental health issues in the emergency department; (3) processes for discharging patients treated after self-harm to outpatient or inpatient settings and following-up with them after discharge; and (4) future plans for programs or processes to address mental health needs of patients being treated in the emergency department after self-harm. For each of these topics, interviewers probed for barriers and facilitators. Interview transcripts were reviewed iteratively and interviews continued until theme saturation was reached.[26] All interviews were digitally recorded, transcribed verbatim and entered into Atlas.ti Version 8 (GmbH; Berlin, Germany).

DATA ANALYSIS

We used a directed content analysis approach to extend on prior literature describing the implementation of evidence-based mental health care in emergency departments; specifically, a goal of our analysis was to understand from the perspectives of the ED staff how challenges to meeting mental health needs of patients manifest in real-world settings, and to identify strategies ED staff employ to mitigate these challenges.[27,28] The authors conducted open coding of the first 24 interviews, keeping memos about preliminary patterns and emerging themes. The lead qualitative researcher led the team in generating preliminary codes through an iterative review of memos and transcripts; through this process, 2 authors developed a final codebook (codes, definitions, and examples of coded text). Using the codebook, all transcripts were coded by one coder and then reviewed and audited by a second coder. Using the constant comparative method,[29] 3 team members met weekly and reviewed the coded text to create summaries, including identification of recurrent patterns (ie, themes) as well as outliers and exemplar quotes for each theme. There were minor discrepancies, which were resolved through group review until consensus was reached. Results presented are an analysis of responses to questions about barriers to providing mental health care, innovative approaches and initiatives to provide high quality mental health care, and facilitators in accomplishing these initiatives for patients being treated after self-harm. See Appendix for our Consolidated Criteria for Reporting Qualitative Research checklist.[30]

TABLE 1
Qualitative themes and exemplar quotes

Theme	Brief Definition	Quote(s)
1. Facilitators of strategies to support patient mental health needs	Efforts to meet patient mental health needs in the emergency department were facilitated by the following: collaborations between hospital leadership and frontline staff; collaborations between the emergency department, the health care system and, community partners; 'local champions' (ie, staff who advocate on behalf of patients for their mental health needs); academic or research staff affiliated with the health care system.	"We have an emergency medicine research group who is phenomenal. And they work really well with the clinical setting as well to help us initiate things and implement. I think we're just lucky to have those resources at our fingertips." –Nursing Director 12 (high performance, high availability emergency department)
2. Creating efficiencies in mental health care	Technology-based strategies included: having mental health staff assess patients off-site via telehealth; using video cameras to enable ED staff observe multiple patients from a central location; using analytic software to review patterns of emergency department use and identify times with the highest volume of patients with complex mental health needs to schedule mental health-trained staff. Nontechnology strategies included: grouping patients with mental health needs together in one area of the emergency department; risk-stratifying and color-coding patients based on their mental health needs. Medication management strategies included: providing standardized order sets for psychiatric patients; discharging patients with a 30-day supply of essential medications.	"…telehealth decreases the wait times. For the most part, patients don't care anymore whether you're seeing them in person or seeing them electronically. Very few give pushback." – Medical Director 1 (high performance, low availability emergency department) "Cohorting the patients has been helpful…it's been easier to have [psychiatrists] just see all the patients in one area and have face-to-face discussions with the ED doc about the care plan." –Medical Director 8 (low performance, high availability emergency department) "We do an assessment of the patient's ability to obtain their medications or willingness to obtain their medication and, if they have a history of not following through with the obtaining their medications, we will send them home with a 30-day supply that's been provided by the hospital… that's been very successful." – Nursing Director 11 (high performance, high availability emergency department)

TABLE 1
Continued

Theme	Brief Definition	Quote(s)
3. Addressing challenges in postdischarge follow-up	Very few sites had the capacity to follow up with patients with mental health needs after discharge from the emergency department, with a few exceptions. Some emergency departments that did not have these resources leveraged community resources to provide mental health support for patients after ED discharge; these resources were often intended to serve people with substance use disorder and mental health needs and/or involved a peer specialist. Examples included: linking recovery coaches to patients after discharge; connecting case workers to juveniles with a history of self-harm; and home visits conducted by an interdisciplinary team (eg, nurse, paramedic, peer).	"Our [ED] does not do it, but we have a group of nurses in the hospital who do follow-up calls for the discharged patients…. They encourage the patient to follow up with their physician if they haven't… help them figure out how to get a ride if they need it, things like that." – Social Worker 7 (high performance, high availability emergency department) "We just started a program primarily for overdoses... the police departments are notified if any squad picks up an overdose. Once they've got that patient's name, about a week after discharge a social worker, a past recovering user, and a police officer go to the patient's home, knock on the door and say 'We're just following up. How are you doing? Are you interested in treatment?' … It can be 2 days from the time of discharge; it can be two years from the time of discharge. If they [patient]show up at this specific address in downtown [nearby city] and show that card, they will immediately be entered into a treatment program." –Nursing Director 2 (high performance, high availability emergency department) "The National Alliance for the Mentally Ill [NAMI] has obtained grants and hired three peer support specialists specially trained in acute care with EDs. These are people that themselves have either had a mental health or an addiction issue and have gotten specialized training. We're blessed… They are stationed in the ED during the hours that the ED has deemed high volume hours relative to patients with psychiatric [issues] and substance usage." –Medical Director 9 (low performance, low availability emergency department)

TABLE 1
Continued

Theme	Brief Definition	Quote(s)
4. Supporting ED staff who provide care for patients being treated after self-harm	Support came in the form of management strategies, training, and emotional support. Management strategies included hiring staff with specialized mental health training (eg, psychiatric nurses) and minimizing burnout by allowing staff to work on compressed schedules to have more days off. Training included educating ED staff on mental health-related topics such as nonviolent crisis intervention and assessment and triage of patients being treated after self-harm. Finally, staff who care for patients being treated after self-harm were provided emotional support through debriefing sessions. A partnership with a community program brought in a young person who had previously struggled with opioid addiction and self-harm behaviors to talk with ED staff about his experiences; the program helped staff better understand patients and protected against staff burnout.	"We have a team that will come in and debrief the staff, because that is such a hard time, especially when they are young kids. Unfortunately, within the organization we've had a number of staff kids that belonged to staff members of the organization, that have come in this way [after self-harm], and that's been really tough on the staff. So having the ability to call a team to say, no matter what time it is, they'll come in and they'll debrief you. It has given the team the outlet they need to come to work the next day." -Nursing Director 2 (high performance, high availability emergency department)
5. Creating safe and supportive spaces	Although ED staff described the emergency department as ill-equipped to care for people being treated after self-harm, they shared strategies for modifying emergency rooms to make them safer and programs to bring on-site therapeutic services to patients (eg, yoga, music therapy).	"We have two mental health rooms that we've set up to have very little furniture, we can take the mattress off the bed and put it on the floor and so we've kind of cleared those areas so we have the most minimal things available to them." – Nursing Director 6 (low performance, high availability emergency department) "… 'guests' come in, like activity therapists and the yoga instructor and there's music therapy, [and] there's other employees here who volunteer their time." – Social Worker 3 (low performance, low availability emergency department)

Results

Interviewees across all disciplines and sites characterized the emergency department as an environment better suited to addressing physical health emergencies, rather than patient mental health emergencies and ongoing mental health needs. Most respondents reported challenges with implementing evidence-based practices, such as safety planning or following-up with patients post-ED discharge. ED staff universally endorsed the importance of promoting a safe environment and supporting mental health needs of patients being treated after self-

harm as beneficial to both patients and ED staff. In the absence of sufficient resources in the ED environment, respondents nevertheless identified several facilitators to support mental health programming in the emergency department and reported strategies to adapt existing ED resources or leverage community resources to support the needs of patients being treated after self-harm and of staff who care for these patients. Analyses did not reveal distinct patterns or differences between sites based on provider specialty, hospital size, mental health staffing availability, or performance. Table 1 provides a summary of themes and their definitions with illustrative quotes.

Facilitators of Strategies to Support Patients' Mental Health Needs

ED staff who identified the strategies to care for patients being treated after self-harm said these efforts were facilitated through collaborations between hospital leadership and frontline staff, or between the health care system and community partners. They cited the importance of "local champions," that is, staff who advocated on behalf of patients with mental health needs. Finally, some respondents described the important role of collaboration with academic affiliates to support initiatives to provide mental health care for patients. ED staff described 4 strategies to support the care of patients being treated after self-harm: creating efficiencies in mental health care; addressing challenges to postdischarge follow-up; supporting ED staff who provide direct care for patients; and creating safe and supportive spaces.

Creating Efficiencies in Mental Health Care

Respondents described strategies for creating efficiencies to provide mental health care to patients in the context of limited resources. Various forms of technology were described as key tools in this effort. For example, staff from a high performance, low resource, large health care organization that shared a mental health care team among 3 emergency departments used telehealth to reduce long waits for assessments by eliminating lengthy travel times for mental health staff between sites.

While staff at several sites described challenges in having enough mental health-trained "sitters," (ie, hospital staff trained to observe patients in person for safety monitoring), some described how video-monitoring technology enabled one staff member to observe several patients at a time.

A nursing director at a high performance, low availability facility described how their leadership used analytic software to identify the times of day and days of the week when the emergency department received the highest volume of patients with complex mental health needs and schedule staff with appropriate training during times when they were most needed.

Participants cited strategies to ensure patients had access to medications after discharge to decrease repeat ED visits. Staff at one emergency department described having "a standardized order set" at discharge for patients with mental health needs. In another example, a high performance, high availability emergency department assessed each patient for their ability to obtain medications after discharge; those who faced challenges in obtaining medications were discharged with a 30-day supply covered by the hospital after careful consideration by the treatment team based on perceived risk as determined by clinical assessment.

Respondents also described nontechnology strategies for creating efficiencies, such as grouping all patients with mental health needs in one area of the emergency department or risk-stratifying and color-coding patients based on their mental health needs. A medical director at a low performance, high availability emergency department identified benefits of "cohorting" patients with mental health needs, including patients being treated after self-harm, which made it easier for an attending psychiatrist to see and discuss patients in one area of the emergency department.

Addressing Challenges to Postdischarge Follow-up

Very few sites reported having the capacity to follow up with patients after discharge. One high performance, high availability facility had a group of nurses who called every patient discharged from the facility to encourage recommended follow-up care.

Staff at emergency departments that did not have these resources talked about how they leveraged community resources to provide mental health support for patients postdischarge. Respondents frequently drew parallels between patients being treated in the emergency department after intentional self-harm with patients being treated in the emergency department after accidental substance use overdose, noting that these patients were often dealing with the same issues leading up to their ED visit, were in need of non-medical care (ie, mental and behavioral health services) while they were in the emergency department, and could similarly benefit from postdischarge follow-up. Thus, many of the follow-up service needs and services mentioned by the ED staff focused on patients who were seen in the emergency department for repeat visits related to intentional self-harm or substance use disorders. One example described by a nursing director at a high performance, high availability site involved a collaboration between the hospital, a community-based organization, and local law enforcement; the program served both patients discharged after being treated for overdose and those being treated after intentional self-harm.

Participants talked about the value of peer-support specialists who facilitated postdischarge follow-up and helped decrease subsequent hospitalizations. These interventions included linking recovery coaches to patients post-ED discharge; connecting case workers to youth with a history of self-harm behaviors; and home visits conducted by a nurse and a paramedic. A medical director from a low performance, low availability site said their emergency department benefited from a partnership with a local chapter of the

National Alliance for the Mentally Ill which had grant-funded positions for peer-support specialists with training in emergency medicine and mental health stationed in the emergency department during times of high volume for patients with co-morbid psychiatric and substance use concerns.

Supporting ED Staff Who Provide Care for Patients Being Treated After Self-harm

Respondents talked about how support for ED staff who care for patients with mental health needs and protection of staff from burnout was vital to providing high quality care for patients being treated after self-harm. A nursing director at a low performance, high availability emergency department said the organization hired staff with specialized mental health training (eg, psychiatric nurses) to minimize the burden on other ED staff. A social worker at a high performance, low availability emergency department outlined how social work staff were allowed to work on a compressed schedule to have several days off in a row. ED staff also cited training to support staff, including nonviolent crisis intervention and assessment and triage of patients being treated after self-harm. At one high performance, high availability emergency department, a nursing director described a program that brought in a mental health team to debrief and provide emotional support to staff after challenging incidences involving patients being treated after self-harm, noting that the program helped ED staff process difficult situations.

Another nursing director at a high performance, low availability site described a partnership with a community program that brought in a young person who had previously struggled with opioid addiction and self-harm to talk with ED staff about his experiences, helping mitigate staff burnout and increase understanding and compassion for patients.

Creating Safe and Supportive Spaces

Respondents universally described the emergency department as ill-equipped to care for people experiencing mental health crises and detailed the importance of creating safe, quiet spaces in the emergency department for patients being treated after self-harm, often referred to as "safe rooms" or "ligature-limited" spaces. One nursing director from a low performing, high availability site described how they created 2 make-shift safe rooms in the emergency department by removing most of the furniture and placing the mattress on the floor of the room. A social worker at a low performance, low availability emergency department noted how several rooms had been retrofitted with metal screens that

rolled down from the ceiling to cover exposed pipes and sinks to make the room safer for patients.

Respondents at a few sites talked about efforts to provide access to on-site therapeutic services for patients being treated after self-harm, allowing therapeutic treatment to begin in the emergency department. Examples mentioned included psychotherapy, yoga, and music therapy. A nursing director from a low performing, low availability emergency department elaborated on a program that brought in 'guest' yoga instructors or music therapists who volunteered their time with patients.

Discussion

Most respondents said they lacked the resources to fully implement evidence-based practices in an environment designed to address acute general medical emergencies. Despite these challenges, respondents provided examples of strategies and facilitators to support quality care for patients treated for intentional self-harm in the emergency department.

The first strategy involved efficiencies in care using technology. Specifically, respondents suggested the use of telehealth, virtual sitters, risk stratification, and medication management technologies to improve care and address organizational barriers to providing mental health care in the emergency department, including lack of timely access to mental health specialists.[23,31] However, these strategies should be cautiously pursued as research has demonstrated that reliance on technology instead of live staff can contribute to moral distress and burnout among emergency nurses.[21] Therefore, strategies using technology should augment rather than substitute for sufficient on-site mental health providers, particularly as the number of patients being treated after an episode of self-harm continues to increase.[32]

Second, providers identified postdischarge strategies that prevent patients from falling unnoticed in follow up or unintentionally neglected once they leave the emergency department, including partnerships with community-based supports, peer mentorship and follow-up – all with the same goal of reducing subsequent ED visits and hospitalizations. When asked about postdischarge follow-up for patients being treated after self-harm, ED staff responded by sharing examples of programs focused on patients who arrive at the emergency department after an unintentional overdose. Respondents viewed patients being treated in the emergency department after intentional self-harm and patients being treated after an unintentional overdose as having similar mental health needs and being at similar risk for repeat

ED visits, as well as increased morbidity and mortality. Furthermore, they clearly viewed the postdischarge intervention needs of patients treated after self-harm and patients treated after an unintentional overdose as similar. This thinking is consistent with recent research demonstrating that ED patients with nonfatal overdose are at high risk of death from suicide in the year following discharge, calling for more widespread implementation of interventions such as warm handoffs to mental health care and postdischarge follow-up to reduce risk of subsequent overdose or suicide.[33]

The third strategy identified supporting staff through use of alternative (ie, compressed/flexible) schedules, training, and debriefing. These strategies align with studies highlighting ED nursing leaders' desire for additional training, resources, and policies to more effectively and comprehensively assess and treat patients with mental health needs, including patients being treated after self-harm.[34,35] Providing staff with the tools to effectively care for these patients along with the opportunity to debrief can serve the dual purpose of improving patient care and mitigating staff burnout.

The fourth strategy suggested by participants was finding creative ways to manage space and include on-site therapeutic treatment to ensure that the emergency department is a safe environment. Few emergency departments in our sample had the capacity to build dedicated spaces or provide therapeutic programming to meet patient mental health needs. More commonly, respondents described low-cost initiatives for make existing spaces safer, such as removing furniture, or providing mental health programming through volunteer staff or community organizations. Although recent work has focused on redesigning the ED environment to improve patient experience[36] and mitigate the risk of adverse events,[37] our findings indicate that ED environments should also focus on ways to meet the needs of an increasing number of patients with mental health needs, including patients treated after self-harm.

ED staff identified several facilitators that supported mental health care and services, including efforts of local champions within the emergency department and partnerships with local nonprofit and governmental organizations. Respondents who worked in an emergency department affiliated with an academic institution shared that these services were only possible through collaborations with colleagues in research and quality improvement, confirming previous research that emergency departments associated with teaching hospitals are more likely to provide evidence-based safety planning.[18] Finding ways to incentivize teaching hospital teams to consult with and provide

resources to emergency departments that are without an affiliation could help bridge this gap in care.

Limitations

Although we interviewed ED staff from across the country, respondents were from sites that had responded to our initial survey. In addition, some ED staff declined to participate or could not be interviewed because of busy schedules, which may have introduced unknown bias into our sample. Respondents were diverse in terms of their role in the emergency department (ie, nursing directors, medical directors, social workers), hospital size, availability of mental health staffing, and performance; still, the small number of participants may limit the generalizability of the study results. Although this article reports findings from the ED sites from our sample that had innovations and facilitators to share, some sites solely discussed challenges and barriers, indicating that there are disparities across emergency departments. In a future study, we plan to report findings about the multiple barriers that many emergency departments face when trying to meet patient mental health needs.

Implications for Emergency Clinical Care Nurses

Although study respondents described many challenges in caring for patients being treated after self-harm, they also identified the key role that local champions within the emergency department and partnerships with community-based organizations can play in addressing existing shortcomings. Emergency nursing leadership should consider developing dialogues with hospital leadership and local organizations to identify ways to establish relationships with potential mental health champions and community-based partners. These types of partnerships not only establish a link between the emergency department and outpatient care, but also provide a stronger safety net for patients through connected and comprehensive care. Finally, these linkages address the needs of patients being treated after self-harm and patients being treated after an unintentional overdose, both of whom are at heightened risk of subsequent self-harm or suicide attempts. Further, emergency departments should consider the thoughtful integration of technology and ongoing clinical education and training in mental health care skills for emergency nurses and nursing leaders. The fact that our findings align with existing research, as well as across hospital types within our study, suggests that many of these suggestions may be applicable in a wide range of ED settings.

Conclusions

Our interview participants from a national sample of ED staff confirmed that, because of lack of resources, many nurses and other staff are unable to fully implement evidence-based practices such as safety planning and postdischarge follow-up that have been found to reduce suicidal behaviors and increase engagement in treatment after discharge.[38] Some emergency departments sought out partnerships with community organizations to bring services to the emergency department as well as to provide aftercare connections to mental health resources for patients. Although ED providers often feel ill-equipped to meet the mental health needs of patients, they also identified programs and policies with the potential to improve the care of patients being treated after self-harm. emergency departments should consider programs that encourage the thoughtful use of technology and training to promote evidence-based care for patients being treated after self-harm. Finally, policies at the local and state level should leverage resources to promote community-based partners, as ED staff seem willing to provide their expertise and a warm contact to enhance the care that patients who have experienced an episode of self-harm receive in all settings.

Author Disclosures

Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2020.12.016.

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Supplementary Appendix

CONSOLIDATED CRITERIA FOR REPORTING QUALITATIVE RESEARCH CHECKLIST

Study Reference Number: **Participant Number:**
Hospital Name: **Date/Time:**
Contact Name: **Interviewer:**
Contact Title: **Phone Number:**
Emergency Department Management of Self-Harm Key Stakeholder Interview Guide

Script for Telephone Administration of the Semi-Structured Interview

Thank you for agreeing to participate in our study on management of patients who present to the emergency room following a deliberate self-harm event.

The goal of this research interview is to learn about the range of emergency services provided in the assessment and management of patients who present to emergency departments following deliberate self-harm events. We are also interested in learning about factors that constrain or facilitate the effectiveness of this assessment and management. None of the questions that I will ask concern individual patients. You are being asked to participate because of your work within an emergency department. Your participation in this interview is voluntary. Your decision to participate will not impact benefits otherwise entitled to you or your standing with your institution of employment. Neither individual participants nor their institutions will be identified in any reports or manuscripts derived from this research.

Participating in this survey poses only a minimal risk to you. Possible risks are to confidentiality and potentially lost data. You may choose not to answer any questions or to stop at any time. All study information and material will be kept confidential in a safe place. To facilitate our understanding of your responses, the interview will be audiotaped and transcribed. Only members of the research team will have access to the interview data. The identity of the hospital where you work will also be kept confidential.

You will receive a $200 pre-paid cash card for completing the interview, which is expected to last about 60 minutes.

If you have any questions about your rights as a research participant, you may contact the University of Pennsylvania's Institutional Review Board. Please let me know if you would like this contact information.

[if they request IRB contact information: The Institutional Review Board, University of Pennsylvania, telephone: 215-573-2540, irb@pobox.upenn.edu, 3624 Market Street, Suite 301 S., Philadelphia, PA 19104-6006]

I have a series of topics to cover, but these are all open-ended questions so the style of the interview will be much more like a conversation than like a survey or questionnaire. Throughout the interview, please feel free to raise any issues you think are important that I haven't already brought up.

Do you have any questions for me before we begin? *(Answer any questions.)*

Okay, I'm going to start the recorder and state the date of the interview and ask for your permission to record. **[Turn on recorder, State today's date and interviewer's name]** Do you give your consent to participate in the interview and have the interview recorded?

ROLE AND EXPERIENCE
I'd like to start by asking you about your role in the Emergency Department at _____ [name of hospital]. Can you tell me your job title and a little about your work in the ED?

What is your role in providing care or services to patients who come to the ED after self-harm or overseeing staff who provide care or services to these patients? By self-harm, I mean self-poisoning or self-injury, which may or may not include suicidal intent.

OVERVIEW/GRAND TOUR QUESTIONS:
When a patient comes into the ED, how do you determine if they have committed self-harm and are in need of mental health services?

What helps with making that determination?

What hinders or impedes ability to make that determination?

Are there times when you aren't sure about whether a patient committed self-harm and is in need of mental health services? If so, what happens with those patients?

Thinking about a typical patient who presents to the ED after deliberate self-harm, can you please describe for me how that patient would navigate through the ED at _____ [name of hospital]? (follow up, if needed)

What mental health services are provided to a patient who presents to the ED after deliberate self-harm?

What has worked well in providing mental health services to patients who present to the ED after deliberate self-harm?

What challenges do you encounter in proving mental health services to patients who present to the ED after deliberate self-harm?

How is this process impacted by the patient's arrival in the ED in terms of time of day or day of the week?

Domain 1: Research team and reflexivity

Personal Characteristics

1. Interviewer/facilitator	Gala True, PhD (GT), Abigail Ross, PhD, MSW, MPH (AR), Jeffery Caterino, MD, MPH (JC)
2. Credentials	Miranda Pollock, MPH; Gala True, PhD; Cadence F. Bowden, MSW, MPH; Sara Wiesel Cullen, PhD, MSW; Abigail M. Ross, PhD, MSW, MPH; Stephanie K. Doupnik, MD, MSHP; Jeffrey M. Caterino MD, MPH; Mark Olfson MD, MPH; Steven C. Marcus, PhD
3. Occupation	All authors comprised of: 2 emergency department physicians with over 25 years of experience (M.O., J.C.), 1 hospitalist and general pediatrician (S.D.), 1 social work researcher (A.R.), Masters and PhD prepared health services researchers (G.T., S.M., S.C., M.P.) and an epidemiologist (S.M.).
4. Gender	All authors comprised of men and women
5. Experience and Training	Collective team of authors has quantitative and qualitative research expertise and training, emergency medicine clinical and research experience and training, and training and expertise in mental health, suicide and self-harm
Relationship with participants	
6. Relationship Established	Potential Nurse Director interviewees were identified from the larger sample of Nurse Directors who had responded to a mailed quantitative study; that mailed survey was sent out by a member of the research team (S.C.)
7. Participant knowledge of the interviewer	Participants did not know the background of the interviewers, only the reasons for doing the research.
8. Interviewer Characteristics	Nurse Directors (NDs) were interviewed by an anthropologist health services researcher who has more than 20 years of experience (G.T). Most Medical Directors (MDs) were interviewed by an emergency department physician clinician-researcher with over 25 years of experience (J.C.); two MDs were interviewed by G.T. when J.C. was unavailable. Most Social workers/care managers (SWs) were interviewed by a social work researcher with over 10 years of experience practicing in hospital emergency settings (A.R.); one SW was interviewed by G.T. when A.R. was unavailable.

SERVICES AND RESOURCES

Now I'd like to ask you some questions to learn a little more about processes of care and mental health services available for patients who present to your ED after self-harm. By mental health services, I am including assessment, availability of on-site services, and mental health discharge planning and follow-up.

ASSESSMENT

Can you tell me about how patients who present to your ED after self-harm are assessed?

Are patients assessed for current or past suicidal intent or plans? If so, how is this done? For example, is a standardized assessment tool or template used?

Are they assessed for access to means (such as firearms or medication)? If so, how is this done? For example, is a standardized template used? Or, is a risk stratification scoring system used?

How are family members and others involved in the assessment?

What are some things that make it easier or more difficult to assess patients who self-harm?

ACCESS TO MH SERVICES ON-SITE

Can you tell me about any on-site MH services or unit features that are available to help facilitate mental health care for patients who present to the ED after self-harm?

For example, is there a separate area where staff can treat MH patients?

What types of mental health providers are available to help evaluate MH patients while they are in your ED, and when are they typically available to you?

What are some factors that make it easier or more difficult for your facility to have these resources on hand?

Domain 2: Study Design

Theoretical Framework

9. Methodological Orientation & Theory	A directed content analysis approach was used to extend on prior literature describing implementation of evidence-based mental health care in EDs; specifically, a goal of our analysis was to understand from the perspectives of ED staff how challenges to meeting mental health needs of patients manifest in real-world settings, and to identify strategies ED staff employ to mitigate these challenges.
Participant Selection	
10. Sampling	Respondents were selected to achieve a maximum variation sample across the following criteria: specialty (nursing directors [NDs], medical directors [MDs], and social workers/care managers [SWs]); hospital size (<23,000, 23,000-64,000, >64,000 annual ED discharges), availability of mental health (MH) staffing (high and low); and performance (high and low). High availability of MH staffing was defined as an ED that had either: a) mental health staff (adolescent and adult psychiatrists, psychologists, and psychiatric nurses) during and after standard weekday hours and on weekends or b) a social worker during and after standard weekday hours and on weekends with a mental health staff member available at any of these times. High performing EDs were defined as sites that routinely conducted all three of the following practices: scheduling follow-up outpatient assessments for DSH patients before they leave the ED; assessing current/past SI and access to means and conducting safety planning processes. A purpose of maximum variation sampling was to allow for a more comprehensive view of care pathways for patients in the ED who present after DSH, and to increase generalizability.
11. Method of Approach	A member of the research team (S.C.) randomly identified potential sites from those who provided responses to a mailed quantitative survey as part of our parent study and contacted the ND via email invitation to participate in a qualitative phone interview. NDs who agreed to participate were interviewed by G.T. At the conclusion of the interview, each ND was asked to help us identify the site MD, and the site SW involved in discharge planning for patients after DSH. A member of the research team then emailed or called the MD and/or SW to invite them to participate in a phone interview and, if interested, to schedule the interview.
12. Sample size	34 individual phone interviews were conducted with 12 NDs, 11 MDs, and 11 SWs.
13. Non-participation	Five individuals refused to participate due to time constraints, three did not respond to our initial email, and two did not participate due to scheduling conflicts.
Setting	
14. Setting of data collection	Phone interview
15. Presence of non-participants	None
16. Description of sample	A random sample of parent survey respondent sites' NDs, MDs, and SWs who completed our qualitative interview between May 2018-June 2019.
Data collection	
17. Interview guide	An interview guide was developed by the authors, then piloted with 3 participants each from the 3 categories of staff and refined iteratively until a final interview guide was developed.
18. Repeat interviews	None
19. Audio/visual recording	Interviews were audio recorded.
20. Field notes	No field notes were collected.
21. Duration	Interviews lasted approximately 1 hour.

Continued

Theoretical Framework	
22. Data saturation	Data saturation was reached.
23. Transcripts returned	Transcripts were not returned to participants.

Domain 3: Analysis & Findings

Data analysis

24. Number of coders	All authors conducted review and open coding of the first 24 completed interviews, keeping memos to capture thoughts about preliminary patterns and emerging themes. G.T. led the team in reviewing memos and initially coded transcripts, and generation of preliminary codes. Two of the authors (G.T., M.P.) used the author memos and discussion notes to create a codebook that included codes, definitions, and examples of text. The remaining authors reviewed the codebook and provided feedback until finalized. Using the codebook, all transcripts were coded in Atlas.ti by a primary coder (M.P.), and then reviewed and audited by a secondary coder (G.T.).
25. Description of the coding tree	Codebook consisted of 2 main categories: cross-cutting codes and section codes. Cross-cutting codes included 3 codes (barriers, facilitators, and innovations) and the section codes included 12 codes (e.g., access, patient, assessment, etc.). Codebook is available as an appendix.
26. Derivation of themes	Using the constant comparative method, three authors (G.T., M.P., C.B.) met weekly and reviewed coded text to create summaries for each code including identification of recurrent patterns (i.e., themes), as well as outliers and exemplar quotes for each theme. For the purpose of developing this manuscript, the authors conducted close examination of coded text regarding best practices, innovating programs, facilitators to implementing programs despite resource constraints, lessons learned, and views on quality of care.
27. Software	Atlas.ti Version 8
28. Participant checking	None

Reporting

29. Quotations represented	Participant exemplary quotations are represented in the manuscript, and each quotation is identified by each participant and site characteristics.
30. Data of findings consistent	There is consistency between the data presented and the findings.
31. Clarity of major themes	Major themes are clearly presented in the findings.
32. Clarity of minor themes	There are no minor themes to present in the findings.

DISCHARGE PLANNING AND FOLLOW-UP

For patients who present to your ED after self-harm and who will be discharged to outpatient mental health care, what processes or steps are used to help connect them to outpatient care?

Are there ED staff who are dedicated to discharge planning?

What are some factors that facilitate your ability to help patients receive follow-up outpatient mental health care?

What are some factors that impede your ability to help patients receive follow-up outpatient mental health care?

What services or processes are in place, if any, to help these patients follow-up with outpatient after they are discharged from your ED?

Before they are discharged from the ED, what kinds of services or processes are available to work with self-harm patients around developing a safety plan or plans for self-care?

Does someone in your ED engage in safety planning with patients, and do patients leave the ED with a safety plan?

If yes, can you tell me a little more about that?

If no, why not—what gets in the way of having that process in place?

Now for patients who present to the ED after self-harm and need to be admitted or transferred for inpatient mental health care, can you tell me about some factors that facilitate your ability to make these referrals?

What are some factors that impede your ability make referrals for inpatient mental health care?

PROGRAM PLANNING-PAST AND FUTURE

Are there any services or programs under development for patients who present to the ED after self-harm? If so, please describe how and why the program came about, and what it involves.

Have you tried any services or programs for patients who present to the ED after self-harm that did not work out? If so, please describe what was tried and why it didn't work out.

Views on patients who self-harm

How would you characterize patients who present to the ED after self-harm (or what does a 'typical' patient who presents to the ED after self-harm look like)?

What would you say is the single most important thing ED providers and staff can do for patients who present to the ED after self-harm?

IMPROVEMENT/MAGIC WAND/BEST PRACTICES

What do you think your facility/department should do to improve the care of patients who present to the ED after self-harm? What resources would be needed to make that happen?

Do you have any "best practices" for treating patients who present to the ED after self-harm? And if so, what do you think it would take to implement these best practices at another ED?

Are there limitations or lessons learned you would want to share with other EDs looking to implement a similar program or process?

VIEWS ON QUALITY OF CARE

Overall, what do you think is the quality of mental health services your department provides to patients who present to the ED after deliberate self-harm?

What are some things that make it easier or more challenging for your ED to provide high-quality mental health services to patient who present to the ED after deliberate self-harm?

[if it didn't come up already] Are there local or national policies or other factors at play (such as availability of psychiatric care or inpatient mental health beds) that impact the ability of your ED to provide high-quality mental health services to patients who present after self-harm? If so, what are they?

WRAP-UP AND THANK YOU

We're at the end of my questions for you. Is there anything I didn't ask about that you'd like to share with me about how your ED provides assessment and treatment to patients who self-harm?

Thank you so much for your time—it has been very helpful to talk with you and hear about your experiences and perspectives. We truly appreciate your time.

[Questions for Nursing Director only] We'd like to interview two additional people from your ED—the Medical Director and a social worker or other staff member who is most involved in discharge planning for patients who present to the ED after self-harm. would you be able to help me identify those two people so I can reach out and see if they are interested in being interviewed?

Medical Director Name: email/phone:
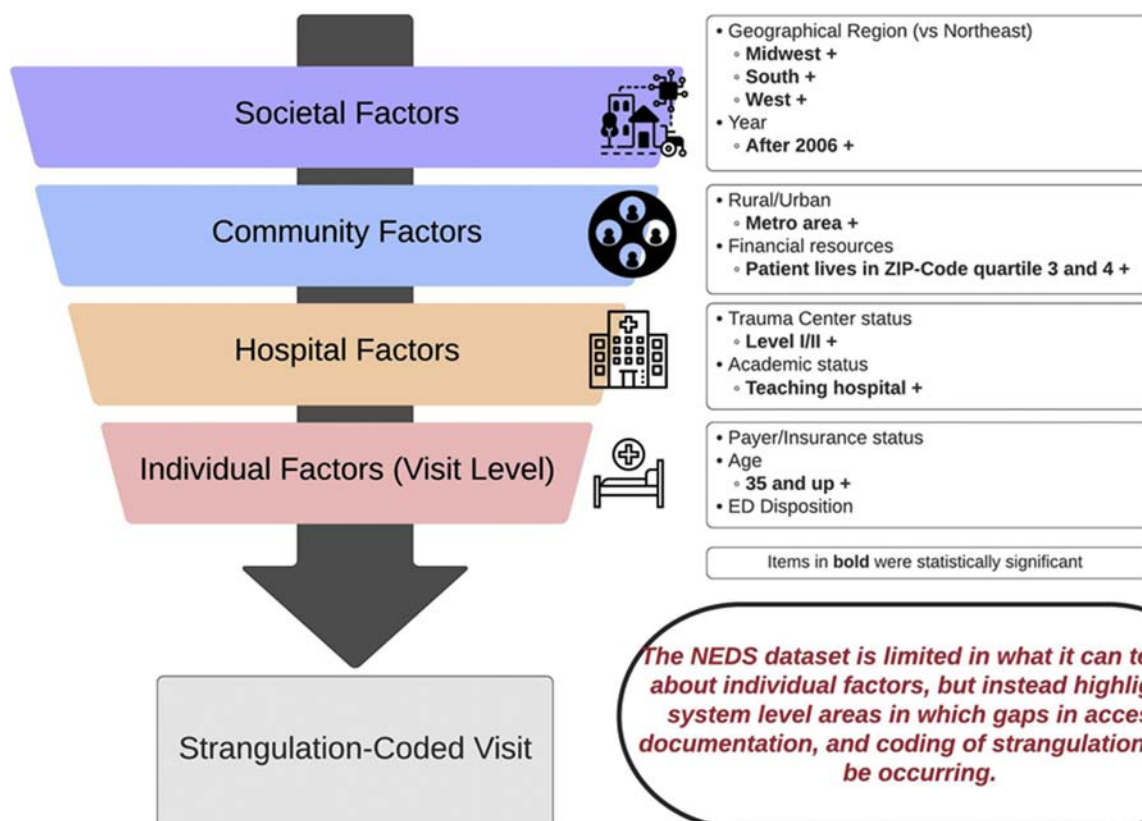Social worker Name: email/phone:

United States ED Visits by Adult Women for Nonfatal Intimate Partner Strangulation, 2006 to 2014: Prevalence and Associated Characteristics

Authors: Michelle Patch, PhD, MSN, APRN-CNS, ACNS-BC, Youssef M.K. Farag, MD, PhD, MPH, Jocelyn C. Anderson, PHD, RN, FNE-A, SANE-A, CNRN, Nancy Perrin, PhD, MA, Gabor Kelen, MD, FRCP(C), FACEP, FAAEM, and Jacquelyn C. Campbell, PhD, MSN, RN, FAAN, Baltimore, MD, and University Park, PA

Findings from NEDS 2006-2014 Data Elements Associated with Strangulation-Coded Emergency Department Intimate Partner Violence Visits

Societal Factors
- Geographical Region (vs Northeast)
  - **Midwest +**
  - **South +**
  - **West +**
- Year
  - **After 2006 +**

Community Factors
- Rural/Urban
  - **Metro area +**
- Financial resources
  - **Patient lives in ZIP-Code quartile 3 and 4 +**

Hospital Factors
- Trauma Center status
  - **Level I/II +**
- Academic status
  - **Teaching hospital +**

Individual Factors (Visit Level)
- Payer/Insurance status
- Age
  - **35 and up +**
- ED Disposition

Items in **bold** were statistically significant

Strangulation-Coded Visit

The NEDS dataset is limited in what it can tell us about individual factors, but instead highlights system level areas in which gaps in access, documentation, and coding of strangulation may be occurring.

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CE Earn Up to 10.5 Hours. See page 507.

Contribution to Emergency Nursing Practice

- This study's main finding is that prevalence of strangulation codes among ED intimate partner violence visits by women was estimated at 1.2%. Statistically, higher odds of strangulation coding were observed in younger women, metropolitan hospitals, level I/II trauma centers, and non-Northeast regions.
- The prevalence of strangulation-coded ED visits in this study was lower than expected, given an existing United States general population survey estimate of 900 000 women experiencing nonfatal intimate partner strangulation in the past 12 months.
- A key emergency nursing practice implication from this research is that recognition and documentation of strangulation in women visiting the emergency department are critical to both immediate and long-term health. Emergency nurses are well positioned to lead poststrangulation identification and treatment efforts.

Abstract

Introduction: Nonfatal intimate partner strangulation poses significant acute and long-term morbidity risks and also heightens women's risk for future femicide. The lifetime prevalence of nonfatal intimate partner strangulation has been estimated to be approximately 10%, or 11 million women, in the general United States population. Given the potential for significant health risks and serious consequences of strangulation, this study adds to the limited literature by estimating prevalence and describing the associated characteristics of strangulation-related visits among United States ED visits by adult women after intimate partner violence.

Methods: Prevalence estimation as well as simple and multivariable logistic regression analyses were completed using data from the Nationwide Emergency Department Sample spanning the years 2006 to 2014.

Results: The prevalence of strangulation codes was estimated at 1.2% of all intimate partner violence visits. Adjusting for visits, hospital characteristics, and visit year, higher odds of

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strangulation were noted in younger women, metropolitan hospitals, level I/II trauma centers, and non-Northeast regions. Increases in strangulation events among intimate partner violence–related visits in recent years were also observed.

Discussion: A relatively low prevalence may reflect an underestimate of true nonfatal intimate partner strangulation visits owing to coding or a very low rate of ED visits for this issue. Higher odds of strangulation among intimate partner violence visits by women in more recent years may be due to increased recognition and documentation by frontline clinicians and coding teams. Continued research is needed to further inform clinical, postcare, and social policy efforts.

Key words: Strangulation; Intimate partner; Violence; Women's health; Prevalence

Introduction

Nonfatal intimate partner strangulation (NF-IPS) poses significant acute and long-term health threats[1,2] and heightens women's risk for future femicide.[3,4] Defined as external pressure to the neck that occludes the air passages and/or blood vessels, strangulation can dangerously limit oxygenation and result in acute and long-term injuries to physical structures,[5-8] psychological terror,[9,10] brain trauma,[11-13] and possibly death.[14-16] The lifetime prevalence of NF-IPS has been estimated in the general United States population to be approximately 10%, or 11 million women.[17] Strangulation has also been found to be higher in subpopulations of women such as those enduring intimate partner violence (IPV), seeking criminal justice services,[18] and presenting to domestic violence shelters.[1,16,17] Data further suggest that strangulation in the US is a gendered phenomenon,[17,19] with more than 10 times more women reporting NF-IPS than men.[17]

The literature on NF-IPS is limited, albeit growing, with the estimated proportion of women seeking emergency health care subsequent to NF-IPS varying widely from 5% (sample of 300 women whose cases were submitted for prosecution)[20] to 69% (sample of 102 women presenting for clinical forensic evaluation).[21] A myriad of factors may influence care-seeking after strangulation, including individual-level symptom severity and perceived risk,[20-22] provider-level (eg, health, law enforcement, and advocacy) communication and response, and community- and societal-level access to services. Women also report lack of recognition regarding the potential negative health consequences of NF-IPS and minimization of poststrangulation symptoms as reasons for why they do not seek health care.[23]

Recent studies have allowed initial insights into the pervasive nature of NF-IPS.[24-29] Given the significant health risks and serious consequences of NF-IPS, there is an urgent need for a broad-scale analysis of ED visits to support emergency clinicians' response to this vulnerable and high-risk population. Examining national-level, multiyear data can contribute important insights to inform ED practice protocols and policy efforts. Thus, the aim of this study was to estimate the prevalence and identify the associated characteristics of ED visits in the US by women with a diagnosis and external cause-of-injury codes for an IPV event that included strangulation.

Methods

A cross-sectional analysis of 2006 to 2014 Nationwide Emergency Department Sample (NEDS) data was conducted, accessed from the Healthcare Cost and Utilization Project (HCUP) of the Agency for Healthcare Research and Quality.[30] NEDS is the largest publicly available all-payer ED database in the US.[30] Stratified by geographic region, location (urban/rural), teaching status (ie, hospital with residency program), ownership, and trauma-level designation, NEDS includes a representative sample of approximately 20% of the hospital-based ED visits taken from the participating organizations. Data are entered into the NEDS database voluntarily by partner agencies. For complete details on this dataset, please refer to the NEDS Database Documentation website.[30,31] Its large sample size allows data analysis across various hospital types and for relatively uncommon conditions.[30] Providing deidentified information, researchers have used this to estimate ED visit prevalence for various illnesses and injuries, including IPV[32,33] and other abuse.[34,35] This study was determined by the Johns Hopkins Medicine Institutional Review Board to be exempt research.

INCLUSION AND EXCLUSION CRITERIA

Visits by women aged 18 years or older with an *International Classification of Diseases, Ninth Revision, Clinical Modification* code (*ICD-9-CM*; henceforth "code")[36] of E967.3 ("battering by spouse or partner")[32,33] were included in this analysis. Because this study focused on NF strangulation cases that were not self-inflicted, visits in which the patient died (either in the emergency department or during the concurrent inpatient visit) or that included a concurrent

code for "suicide and self-inflicted injury" (E950-E959) were excluded from this analysis.

MEASURES

The outcome measures included the proportion of IPV visits with an NF strangulation code as well as demographics and characteristics related to NF-IPS. NF-IPS was defined by the following codes: 994.7 ("asphyxiation and strangulation"), E963 ("assault by hanging and strangulation"), E983.8 ("strangulation or suffocation by other specified means undetermined whether accidentally or purposely inflicted"), or E983.9 ("strangulation or suffocation by unspecified means undetermined whether accidentally or purposely inflicted"). The independent variables (Figure) included visit and hospital characteristics, HCUP Clinical Classification Software categories, and visit year. For this analysis, the following variables were maintained in their original NEDS categories: income quartile for patient's zip code,[33] hospital region,[33,35] and hospital teaching status.[35] On the basis of prior IPV literature, ages were combined into 4 categories: 18 to 24, 25 to 34, 35 to 44, and ≥45,[33] and ED disposition was collapsed into 2 categories: treated/released or admitted.[17] Trauma centers were collapsed into level I/II and level III/nontrauma. In addition, 3% of the visits fell into another category, "Trauma Center Level I, II, or III, collapsed category in the 2006-2010 NEDS," and were subsequently combined into the level I/II category.

STATISTICAL ANALYSIS

Power calculation was conducted a priori using NCSS PASS version 14.0 (NCSS Statistical Software, LLC, Kaysville, UT) to determine detectable odds ratios (ORs), given an expected sample size of 26 284 IPV visits by women per year[33] or 236 554 visits over the 9-year period. Given the large sample size and multiple analyses, we set a conservative α level of 0.01 and statistical power at 80%. On the basis of prior literature, we estimated strangulation among IPV-related visits by women from 5%[20] to 35%.[37] Because the distributions of the independent variables were unknown, the prevalence of each independent variable varied from 10% to 30%. With these estimates and sample size, we determined that the minimal detectable ORs would vary from 1.03 to 1.11.

Statistical analyses were completed using Stata/SE version 14.2 (StataCorp, LLC).[38] To account for the complex survey design of the NEDS dataset, we used discharge-level survey weights provided by HCUP in all analyses. Independent variables were summarized using means and 99% CIs or by frequency distributions and percentages. Four logistic regression models were constructed to
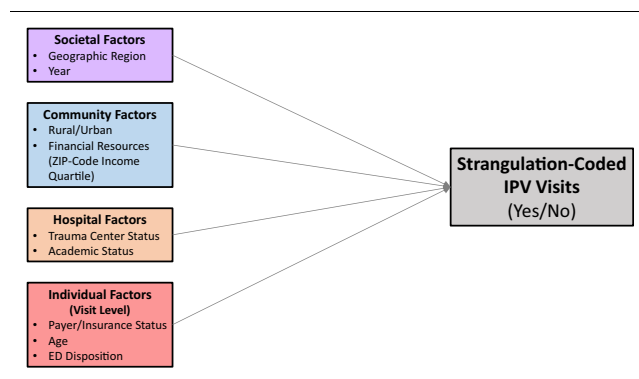
FIGURE

Study analysis framework.* IPV, intimate partner violence. *ED visit and hospital characteristics from the Nationwide Emergency Department Sample were categorized according to the Socioecological Model in keeping with violence prevention and response guidance from the Centers for Disease Control and Prevention: https://www.cdc.gov/violenceprevention/publichealthissue/social-ecologicalmodel.html.

progressively examine the relationship between visit characteristics and strangulation coding. Hospital teaching status was found to be collinear with hospital urban/rural status and subsequently removed from the models. For all statistical tests, a 2-tailed $P < .01$ was considered significant. After applying the inclusion and exclusion criteria, the final analytic dataset consisted of 49 675 visits.

NEDS has a well-documented approach to data-cleaning before making data available to investigators.[31] No variables had missing values in the final dataset except patient zip code income quartiles, which had a very small percentage missing (2.88% for IPV-only visits and 1.99% of the strangulation-coded visits). Given the distribution of missing observations in both nonstrangulation- and strangulation-coded visit groups, similar key characteristics in both groups were assumed, and imputation was not performed.

Results

Prevalence and baseline characteristics are presented in Table 1. The weighted prevalence of visits with co-occurring strangulation codes among those with IPV codes was estimated at 1.2% (99% CI, 1.00%-1.47%). Strangulation-coded visits reflected younger mean ages than those without strangulation codes (32.94% [99% CI, 31.82%-34.06%] vs 35.37% [99% CI, 35.14%-35.61%]), and a higher percentage of strangulation-coded visits in younger age groups (18-24 years and 25-34 years). IPV visits with strangulation codes were more likely to be reported by hospitals in the Midwest and Western regions of the US, in level I/II trauma centers, and metropolitan hospitals with teaching roles compared with IPV visits without strangulation

TABLE 1

Prevalence and baseline characteristics, IPV-coded ED visits by women aged ≥18 years

Variable	Total IPV visits	IPV visits, no strangulation codes	IPV visits with strangulation code(s)	χ^2 (*P*-value)
N, unweighted	49 675	49 073	602	
N, weighted	225 727	222 991	2736	
Weighted prevalence (99% CI)		98.79% (98.53-99.00)	1.21% (1.00-1.47)	
	Column %	Column %	Column %	
Age categories, y				35.61 (< .01)[†]
18-24	19.36	19.30	23.62	
25-34	34.47	34.39	41.14	
35-44	24.90	24.95	20.88	
≥45	21.27	21.36	14.37	
Income quartile for patient's zip code*				13.05 (.10)
Quartile 1	35.83	35.90	30.16	
Quartile 2	28.13	28.13	27.83	
Quartile 3	21.67	21.62	25.65	
Quartile 4	14.37	14.35	16.36	
ED disposition				1.46 (.28)
Treat/release	95.28	95.26	96.25	
Admit	4.72	4.74	3.75	
Payer				14.21 (.12)
Medicare	7.19	7.19	6.74	
Medicaid	34.35	34.31	37.28	
Private, including HMO	25.36	25.41	21.27	
Self-pay	27.16	27.18	26.23	
No charge/other	5.94	5.91	8.48	
Hospital region				82.63 (< .01)[†]
Northeast	18.48	18.59	9.74	
Midwest	26.55	26.40	38.62	
South	33.18	33.27	25.97	
West	21.79	21.75	25.66	
Trauma center indicator				54.28 (< .01)[†]
Level III/nontrauma	70.21	70.37	57.44	
Level I/II or collapsed	29.79	29.63	42.56	
Urban–rural hospital location				38.00 (< .01)[†]
Metropolitan	80.89	80.78	89.59	
Nonmetropolitan	18.12	18.23	9.14	
Collapsed NOS	0.99	0.99	1.27	
Teaching status				39.83 (< .01)[†]

TABLE 1
Continued

Variable	Total IPV visits	IPV visits, no strangulation codes	IPV visits with strangulation code(s)	χ^2 (*P*-value)
Metropolitan, nonteaching	39.57	39.55	41.47	
Metropolitan, teaching	42.31	42.23	49.40	
Nonmetropolitan	18.12	18.23	9.14	
Survey year				114.26 (< .01)[†]
2006	12.00	12.06	7.08	
2007	11.07	11.12	7.16	
2008	11.63	11.67	8.06	
2009	11.15	11.17	9.28	
2010	12.06	12.06	11.78	
2011	10.70	10.72	9.35	
2012	11.03	10.98	15.11	
2013	9.82	9.80	11.55	
2014	10.55	10.42	20.63	

IPV, intimate partner violence; HMO, health maintenance organization; NOS, not otherwise specified.

 * Estimated median household income for residents in patient's zip code, values 1 (poorest) to 4 (wealthiest) populations. These values are updated annually; for specific values, see https://www.hcup-us.ahrq.gov/db/vars/zipinc_qrtl/nedsnote.jsp.

 † 2-sided statistical significance, *P* < .01 for chi-square tests comparing IPV visits with strangulation codes and IPV visits without strangulation codes.

codes. The annual distribution of total IPV visits coded over the total 9 years of NEDS data studied reflected relatively stable year-to-year percentages, ranging from a low of 9.82% (in 2013) to a high of 12.06% (in 2010). However, a nearly 3-fold increase in strangulation-coded visit distribution was observed from 2006 (7.08%) to 2014 (20.63% of the total 9 years of visits). No differences were observed in the percentage of strangulation-coded visits by patients' zip code–specific income quartile, ED disposition, or payer information.

In the fully adjusted model (Table 2), visits by younger women (age group 18-24 years) and to metropolitan hospitals were associated with higher odds of co-occurring strangulation codes than visits by older women (age group 35-44 years: OR = 0.69; 99% CI, 0.49-0.96; age group ≥45 years: OR = 0.49; 99% CI, 0.33-0.73) or to nonmetropolitan hospitals (OR = 0.59; 99% CI, 0.35-0.97). Characteristics significantly associated with higher odds of a concurrent strangulation code compared with the references included visits from the third quartile (OR = 1.51; 99% CI, 1.04-2.20) and fourth quartile (OR = 1.55; 99% CI, 1.01-2.39) of patient zip code–specific income level, level I/II/collapsed trauma center (OR = 1.64; 99% CI, 1.10-2.46), hospitals from non-Northeast regions (Midwest: OR = 3.01; 99% CI, 1.67-5.43; South: OR = 1.92; 99% CI, 1.11-3.32; and West: OR = 2.42; 99% CI,

1.47-4.01), and visits from the years 2012 (OR = 2.29; 99% CI, 1.17-4.48) and 2014 (OR = 3.21; 99% CI, 1.68-6.13). The year 2013 also demonstrated an increase in odds of NF-IPS visit codes compared with 2006 (OR = 1.97; 99% CI, 1.00-3.88).

Discussion

A main finding of this study is the relatively low percentage of strangulation-related visits (1.2%) on the basis of coding among US ED IPV-coded visits of women from 2006 to 2014, equating to an approximate aggregate of 2700 visits over 9 years. General population survey estimates demonstrate almost 900 000 US women reporting partner-inflicted "choking or suffocation" in the preceding 12 months,[17] suggesting that strangulation is either underreported during ED visits, not specifically coded in ED datasets, or does not result in a high proportion of ED visits. The lack of applied strangulation codes may be influenced by women's reluctance to disclose the abuse[23] or by loss of memory from physical and psychological trauma, challenges in recognizing strangulation by the ED team, documentation shortfalls influencing subsequent coding/billing, and/or practice variations of the coders or

TABLE 2

Odds ratios and 99% CIs of strangulation-coded ED visits and covariates

Variable	Bivariate relationships, OR (99% CI)	P-value	Fully adjusted model,* OR (99% CI)	P-value
Age categories, y				
18-24	1.00 (ref)		1.00 (ref)	
25-34	0.98 (0.74-1.29)	.84	0.94 (0.70-1.26)	.61
35-44	0.68 (0.49-0.95)[†]	< .01[†]	0.69 (0.49-0.96)[†]	< .01[†]
≥45	0.55 (0.39-0.78)[†]	< .01[†]	0.49 (0.33-0.73)[†]	< .01[†]
Income quartile for patient's zip code				
Quartile 1	1.00 (ref)		1.00 (ref)	
Quartile 2	1.18 (0.77-1.81)	.33	1.25 (0.83-1.88)	.17
Quartile 3	1.41 (0.96-2.08)	.02	1.51 (1.04-2.20)[†]	< .01[†]
Quartile 4	1.36 (0.87-2.13)	.08	1.55 (1.01-2.39)[†]	< .01[†]
ED disposition status				
Treat and release	1.00 (ref)		1.00 (ref)	
Admit	0.78 (0.44-1.41)	.28	0.83 (0.45-1.52)	.42
Primary payer				
Medicare	1.00 (ref)		1.00 (ref)	
Medicaid	1.16 (0.72-1.86)	.42	0.81 (0.47-1.39)	.31
Private/HMO	0.89 (0.54-1.49)	.57	0.72 (0.42-1.24)	.12
Self-pay	1.03 (0.63-1.68)	.88	0.81 (0.48-1.37)	.31
No charge/other	1.53 (0.67-3.50)	.18	1.10 (0.52-2.34)	.75
Trauma center status				
Level III/nontrauma	1.00 (ref)		1.00 (ref)	
Level I/II or collapsed	1.76 (1.15-2.69)[†]	< .01[†]	1.64 (1.10-2.46)[†]	< .01[†]
Hospital urban/rural status				
Metropolitan	1.00 (ref)		1.00 (ref)	
Nonmetropolitan	0.45 (0.27-0.75)[†]	< .01[†]	0.59 (0.35-0.97)[†]	< .01[†]
Collapsed NOS	1.16 (0.53-2.55)	.63	0.81 (0.34-1.97)	.55
Hospital region				
Northeast	1.00 (ref)		1.00 (ref)	
Midwest	2.79 (1.52-5.14)[†]	< .01[†]	3.01 (1.67-5.43)[†]	< .01[†]
South	1.49 (0.88-2.53)	.05	1.92 (1.11-3.32)[†]	< .01[†]
West	2.25 (1.34, 3.77)[†]	< .01[†]	2.42 (1.47, 4.01)[†]	< .01[†]
Year				
2006	1.00 (ref)		1.00 (ref)	
2007	1.10 (0.58-2.06)	.71	1.09 (0.60-2.01)	.71
2008	1.18 (0.70-1.96)	.41	1.17 (0.69-1.99)	.44
2009	1.41 (0.70-2.86)	.21	1.36 (0.68-2.70)	.26
2010	1.66 (0.83-3.32)	.06	1.53 (0.76-3.05)	.11
2011	1.48 (0.75-2.96)	.14	1.44 (0.72-2.85)	.17
2012	2.34 (1.18-4.64)[†]	< .01[†]	2.29 (1.17-4.48)[†]	< .01[†]
2013	2.01 (1.01-3.98)[†]	< .01[†]	1.97 (1.00-3.88)	.01
2014	3.37 (1.72-6.59)[†]	< .01[†]	3.21 (1.68-6.13)[†]	< .01[†]

OR, odds ratio; ref, reference; HMO, health maintenance organization; NOS, not otherwise specified.

 * Model is adjusted for visit variables (age categories, income quartiles per zip code, ED disposition status, and primary payer), hospital variables (teaching status, trauma center status, urban/rural status, and region), and visit year (2006-2014).
 † 2-sided statistical significance, P < .01.

billing teams. If this prevalence finding underestimates the true ED visit frequency of women after NF-IPS, it becomes challenging to quantify the need for appropriate resource prioritization supporting strangulation-specific injury prevention and reduction efforts. Aligning incentives to encourage appropriate strangulation documentation and coding could strengthen confidence in these estimates.[39] Transition to upgraded visit coding through *ICD-10-CM* in October 2015[40] may also offer new analytic opportunities.

We observed an increasing trend of co-occurring IPV-/strangulation-related visits within the study period from 2006 to 2014. Given that the total IPV-related visits for women were relatively stable from year to year, this increase likely was not due to greater visit volume. Coordinated efforts and leadership by many organizations in recent years[41-43] are driving improvements in strangulation-specific legal penalties and multidisciplinary training for health care, law enforcement, and advocacy staff. These temporal changes may be influencing this increased trend through heightened recognition of strangulations by ED clinicians; availability of ED staff trained in forensic assessment, including strangulation; more accurate *ICD* code assignment owing to improved documentation, and increasing public awareness of strangulation as a high-risk form of violence. It is also possible that the findings reflect the increasing violence by strangulation. However, the exact role played by these factors requires additional data and further study.

Although limited, the literature suggests that multiple factors may affect the identification of strangulation among patients seeking care. It can be more difficult to identify bruising in darker skin tones.[1] The ability to visualize a bruise on the outer layers of skin can vary, depending on several additional factors both inherent in the assaulted individual (eg, thinning skin and coagulability) and the mechanisms associated with the assault (eg, pressure exerted and body surface area affected). Superficial bruising may be seen earlier than deeper bruises, which can take hours to days to appear.[44] Fatal and near-fatal strangulation injuries without any overt external findings have also been reported.[14] Without this "clue" to guide clinicians and in the absence of other supporting evidence, strangulation could be inadvertently missed. Further study of emerging technologies to enhance latent injury identification, such as alternative light sources, may prove helpful.[25,45] In addition to skin tone, clinician- and hospital-level factors such as IPV and strangulation screening protocols and partnerships with forensic nursing and community-based advocacy or criminal justice organizations can also affect patient disclosures.

Other findings highlight the need for continued research regarding NF-IPS as well. It was observed that visits made by women from younger age groups, non-Northeast hospitals, and level I/II trauma centers had a higher percentage of strangulation codes. The IPV-related ED visits by women in the study sample had a mean age of 35.4 years, consistent with the studies that focused on ED visits coded for IPV but not specific to strangulation.[33,46] In addition, similar to findings in female IPV populations with most of the women reporting strangulation,[18] the mean age for strangulation-coded visits was 32.9 years. This study also replicates the age difference patterns seen in the study by Glass et al[3] between women with and without strangulation across 3 abuse groups. These observations suggest a possible increased strangulation risk in younger women experiencing IPV or potentially a decreased suspicion and recognition in older age groups, necessitating additional study.

Visits related to NF-IPS were more frequently reported from trauma centers, which may receive more severely injured patients, possibly increasing the likelihood of recognition, documentation, and subsequent coding of this unique mechanism. Curiously, both income quartiles 3 and 4 (highest income) had higher odds of having a concurrent strangulation code than quartile 1. Of note, dataset limitations precluded further sociodemographic examination of these results, but this finding reinforces that NF-IPS permeates all aspects of society. Further analyses of other national- and state-level datasets, which capture variables not available in NEDS, may provide additional insights.

Limitations

This study has limitations owing to the inherent design of the NEDS dataset. NEDS includes individual ED discharge records of visits not by unique patients. Owing to deidentification of the dataset, we were unable to determine whether individual patients had multiple visits, which could overestimate the proportions of women seeking care but not NF-IPS from the ED perspective. The study design prohibited direct access to additional patient-level information. NEDS does not collect narratives provided by patients that may be available in the medical records and could provide context to the analysis. Because NEDS was originally designed to evaluate ED health care costs and use through administrative/billing data, it was not possible to examine the impact of additional factors that were not collected (eg, patient income level, education, and employment) on the likelihood of reporting strangulation codes. In addition,

if medical record documentation did not clearly link strangulation as a contributor to injury diagnoses, the opportunity to administratively apply a strangulation-specific code may have been missed. Given the nature of these dataset limitations, the findings of this study should act as a catalyst for future hypothesis-guided research regarding the diagnosis and documentation of NF-IPS.

To maximize identification specificity, our study defined IPV-related visits using *ICD-9-CM* code E967.3 ("battering by spouse or partner") as found in previous NEDS-based IPV studies.[32,33] This code captures IPV-specific visits and filters out other abuse-related visit codes included in other studies.[46] Davidov et al[33] estimated closer to 26 284 IPV-related visits by women per year, which is consistent in general but slightly greater than the estimate of 25 081 IPV-related visits per year found in our study. Our conservative approach may have excluded IPV-related visits that were lacking associated coding.

Multiple patient or provider factors not captured by NEDS may affect identification, documentation, and coding of strangulation. Women may experience memory loss related to hypoxia or other injuries related to the physical assault as well as from the psychological trauma of the event, limiting their ability to recall and share this important mechanism with their health care team.[1] In addition, if identification and subsequent documentation and coding of strangulation are reliant on the clinicians' ability to visualize injuries, these findings may be woefully underestimating the prevalence of strangulation in IPV-related ED visits. Despite use of standard coding manuals and trainings,[47] studies of *ICD-9-CM* coding used to identify other illnesses/injuries have reported that variable accuracy and miscoding of visits exist.[48-52] In other IPV subpopulations, patients and clinicians have voiced safety and privacy concerns with adding abuse diagnoses to their medical records. These valid concerns—ranging from issues with disclosing abuse to a provider one might see regularly to concerns with obtaining insurance related to preexisting conditions to fear of the records being disclosed to an abuser—are unexplored factors that may further affect strangulation disclosure, documentation, and coding even after a patient seeks care.[53-55]

Finally, many barriers exist that prevent women from seeking care after strangulation, such as not realizing the potential seriousness of the consequences, being prevented from seeking care by their partner, or worrying about the cost of ED care. NEDS does not include visits by women who decline or are unable to seek ED care, which could contribute to variation between medical coding and other data sources. Women experiencing multiple strangulations have been reported to seek care at greater frequencies than those with fewer strangulations[37]; therefore, those coded as such in this sample may also indicate increasing abuse severity.

Implications for Emergency Clinical Care

Recognition of strangulation in women visiting the emergency department is critical to both their immediate and long-term health. Emergency nurses on the front lines of care are well positioned to lead poststrangulation identification and treatment efforts. We recommend having a heightened index of suspicion for women visiting for IPV and encouraging clinical colleagues to consider this high-risk violence mechanism in their assessments, differential diagnoses, and decision-making.

Accurate documentation of strangulation and detailed notes describing symptoms and injuries can support an individual woman's needs for acute and long-term care follow-up and future legal recourse in addition to larger epidemiologic studies. Complete and thorough documentation can support the work of colleagues coding medical records. To our knowledge, no agreed upon standards exist for medical coding of NF-IPS. National organizations may consider developing specific guidance on this issue. Meticulous data privacy protections are also critical to the safety of this population.

Routine IPV inquiry and counseling for all patients is generally recommended for women of childbearing age. We strongly advise using validated measures that include strangulation (eg, Abuse Assessment Screen[56] and Danger Assessment–5[57,58]) and behavior-specific questions related to strangulation for those endorsing IPV histories. For example, emergency nurses can ask about any pressure applied to the neck vs "strangled" or "choked," which has been found to be more confusing to patients. Past and multiple strangulation events should also be assessed because NF-IPS places women at greater risk for long-term neurologic symptoms and IP homicide.

Subtle findings during both clinical history-gathering and physical assessment can give clues to recent strangulation. Significant risk to life can exist with limited to no external injuries. In addition, we recommend considering the potential for brain injury in this population during assessments, care, and discharge planning.

We also recommend looking to organizations such as the Training Institute on Strangulation Prevention, the International Association of Forensic Nurses, the Academy of Forensic Nursing, and the Emergency Nurses Association

for guidance on developing institution- and community-specific training and protocols.[41-43,59,60] Further exploration of how best to provide emergency departments as a welcoming environment with enhanced postvisit safety is warranted.

Conclusions

Strangulation can result in significant and potentially lethal injuries. This study provides an initial exploration into this unique violence mechanism by examining 9 years of ED NF-IPS coding trends among visits by women seeking care for IPV. A lower prevalence than that reported in earlier studies may either reflect an underestimate owing to the lack of documentation or breakdown between documentation and coding, or it may suggest a very low rate of ED care-seeking for this vulnerable population. The increased reporting of concurrent strangulation codes among IPV visits by women in more recent years may reflect greater recognition and documentation of strangulation by patients, frontline clinicians, and coding teams. Further study is needed to better understand care-seeking and analyze documentation of injuries and interventions for NF-IPS ED visits.

Author Disclosures

Data Availability

Patch M, Anderson J. Nonfatal Intimate Partner Strangulation, 2006-2014: Prevalence and Associated Characteristics, Analysis Code. 2020. DOI 10.17605/OSF.IO/HY6NT.

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Perceived Care Quality Among Women Receiving Sexual Assault Nurse Examiner Care: Results From a 1-Week Postexamination Survey in a Large Multisite Prospective Study

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Contribution to Emergency Nursing Practice

- Few studies have examined female patients' perspectives of the care provided by sexual assault nurse examiners (SANEs), and none have examined whether the perspectives differ according to the demographic characteristics of the patients who had been sexually assaulted or their preassault health status.
- Nearly 700 female patients who had been sexually assaulted and who were evaluated at 13 widely geographically distributed SANE programs reported receiving high-quality SANE care, including taking their needs/concerns seriously, not acting as though the assault was their fault, showing care/compassion, explaining the sexual assault examination, and providing follow-up information. There were no significant differences in the perceptions of care according to demographic or preassault health characteristics.
- SANEs provide critical services greatly valued by female patients who have been sexually assaulted. SANEs should be used whenever possible in emergency nursing settings to treat women who have been sexually assaulted.

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Abstract

Introduction: This study examined the perspectives of female patients who had been sexually assaulted regarding the quality of care provided by sexual assault nurse examiners, including whether the patients' perspectives varied by their demographic characteristics and health status before the assault.

Methods: A total of 695 female patients who received care from sexual assault nurse examiners at 13 United States emergency care centers and community-based programs completed standardized surveys 1 week after receiving sexual assault nurse examiners' care for sexual assault.

Results: Most patients strongly agreed that the sexual assault nurse examiners provided high-quality care, including taking patients' needs/concerns seriously, not acting as though the

assault was the patient's fault, showing care/compassion, explaining the sexual assault examination, and providing follow-up information. The perceptions did not vary by the patients' demographic characteristics or preassault health status.

Discussion: Female patients who had been sexually assaulted and who were evaluated at 13 widely geographically distributed sexual assault nurse examiners' programs consistently reported that the sexual assault nurse examiners provided high-quality, compassionate care.

Introduction

Sexual assault is a major public health problem for United States women and is common across sociodemographic groups.[1,2] Women who present for emergency care after sexual assault commonly experience high levels of pain and distress, and multiple negative health sequelae after sexual assault are common.[3,4] The sensitive provision of emergency nursing services is essential to appropriately address the needs of this diverse group of patients.[5]

The first sexual assault nurse examiner (SANE) programs developed in the 1970s, with programs becoming more widely available in the 1990s.[6,7] SANEs are specially trained nursing specialists who offer patients who have been sexually assaulted comprehensive acute care and collect evidence that can be used in assailant prosecutions.[8,9] SANEs are trained to prioritize addressing patients' needs and concerns, create a nonjudgmental atmosphere, demonstrate care/compassion, provide clear explanations of the sexual assault examination, and provide important follow-up information.[6] SANEs have been shown to effectively collect forensic evidence, provide needed clinical care, and foster collaborative relationships among the professionals involved in sexual assault cases.[10-14]

In contrast, little research has gathered patients' perspectives of the quality of their SANE care. Moreover, to our knowledge, no studies have examined whether the perspectives of SANE care differ according to the female patients' demographic characteristics and health status before the assault, important questions given the diversity of the population consisting of patients who had been provided SANE care. One of the few investigations that examined patients' views of SANE care was a Canadian qualitative study

of 8 patients who had been provided SANE care. The patients felt that the SANEs cared about them, made them feel safe, were not pushy, believed them, were emotionally supportive, and provided clear information.[15] Another study found that 85% of the 70 patients who had been provided SANE care in Minneapolis felt that the SANEs listened to them.[16] Another investigation of 52 patients from a Midwestern SANE program found that virtually all patients perceived that the SANEs provided clear explanations about the sexual assault examination, took the patients' needs/concerns seriously, listened to the patients, showed care/compassion, and provided clear medication instructions.[17] A qualitative investigation of 20 primarily white female patients who had been raped and were evaluated at a Midwestern SANE program found that the patients appreciated receiving the SANEs' explanations of the examination process, being given choices during the examination, and being treated with care/compassion.[18]

This past pioneering research on patients' perceptions of SANE care offers important insights. However, the generalizability of these studies is limited by small samples, single SANE programs evaluated, and limited racial/ethnic diversity. To extend this research, in this study we investigated the perceptions of a large, diverse group of female patients who had been sexually assaulted and who received care from SANEs working at 13 geographically distributed emergency care and community-based programs in the US. We addressed 2 questions: (1) to what extent did patients perceive that the SANEs provided high-quality care, including taking the patients' needs/concerns seriously, not acting as
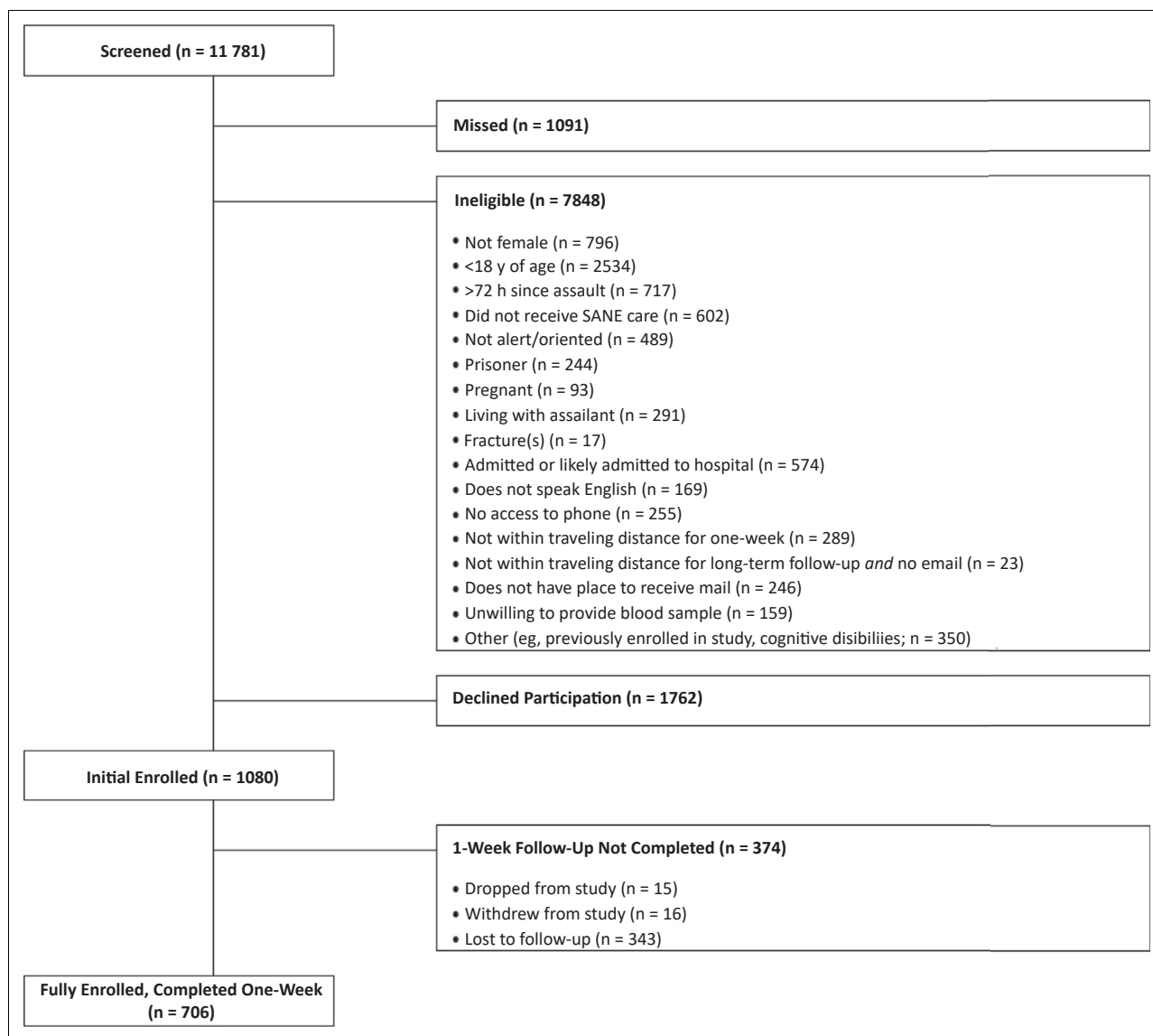
FIGURE

Participant enrollment and study flow. SANE, sexual assault nurse examiner.

though the assault was the patient's fault, showing care/compassion, explaining the sexual assault examination, and providing follow-up information? (2) Did the patients' perceptions of SANE care differ by the patients' demographic characteristics (including age, race, ethnicity, education level, employment status, income level, and marital status) and health status before the assault (including symptoms of anxiety, depression, and posttraumatic stress, as well as somatic and pain symptoms)?

Materials and Methods

SETTINGS AND SAMPLES

This research is part of the Women's Health Study, the first large-scale, emergency care–based, multisite longitudinal cohort study of adult female patients who have been sexually assaulted.[19] The main purpose of the overall study was to better understand acute, persistent, and chronic pain development among female survivors of sexual assault, and the

current subanalyses were designed to address how patients perceive SANE services. The current results have not been reported elsewhere. From 2015 through 2019, 706 study participants (Figure) were fully consented and enrolled for a 1-week postexamination survey from 13 geographically distributed US emergency care and community-based SANE programs: Albuquerque SANE Collaborative (Albuquerque, NM), UCHealth Memorial Hospital (Colorado Springs, CO), Tulsa Forensic Nursing Services (Tulsa, OK), Austin SAFE (Austin, TX), Denver Health (Denver, CO), Crisis Center of Birmingham (Birmingham, AL), Hennepin Healthcare (Minneapolis, MN), Christiana Care (Newark, DE), University of Louisville SANE Hospital (Louisville, KY), Philadelphia Sexual Assault Response Center (Philadelphia, PA), Cone Health (Greensboro, NC), Wayne State University Hospital and Wayne County SAFE (Detroit, MC), and DC SANE (Washington, DC).[20] The full description of exclusion rates and reasons is available elsewhere. A power analysis for the sample size was based on the proposed main outcomes for the overall study.[19] Women who were aged at least 18 years and presented for SANE care within 72 hours of sexual assault were eligible to participate. Patients were not eligible if they could not provide informed consent, were pregnant, were living with the assailant, had an assault-related fracture or required hospital admission, did not speak English, did not have a telephone/mailing address, were unwilling to provide blood samples, or were incarcerated. Research staff provided the patients with informed consent information.[19]

ASSESSMENT

The participants completed self-administered survey assessments 1 week after receiving SANE care at a follow-up visit. These surveys were completed on laptop computers in private rooms. The surveys asked about the patients' perceptions of SANE care, demographic characteristics, and health status before the assault. The perceptions of SANE care were evaluated using 5 survey questions that assessed whether the SANE took the patient's needs/concerns seriously, did not act as though the assault was the patient's fault, showed care/compassion, explained the sexual assault examination, and provided follow-up information. The patients responded to each survey question using a scale from 1 (strongly disagree) to 4 (strongly agree), with higher scores indicating a higher quality of care. In addition, for each patient, an overall care quality score was created by computing the mean of the responses on the 5 survey items. The care quality score could range from 1 to 4, with higher scores indicating a higher overall quality of care.

The survey also asked about the patients' demographic characteristics. The characteristics assessed included age, race (white, black/African American, American Indian/Alaskan Native, or other), Hispanic/Latina ethnicity (yes or no), education level (more than high school graduate, high school graduate, or less than high school graduate), employment status (working full-time, working part-time, unemployed, student, or receiving disability benefits), annual income level (more than $100 000, $60 000-$99 999, $20 000-$59 000, less than $20 000, or did not know), and marital status (never married, married, or separated/divorced/widowed).

The survey also asked the patients specific questions about their health before the assault. Anxiety symptoms during the week before the assault were assessed by the Patient-Reported Outcomes Measurement Information System Short Form 8a.[21] Scores of 60 or higher indicated clinically relevant levels of anxiety symptoms. Depression symptoms during the week before the assault were assessed by the Patient-Reported Outcomes Measurement Information System Short Form 8b,[21] with scores of 60 or higher indicating clinically relevant levels of depression symptoms. Posttraumatic stress symptoms (PTSS) during the month before the assault were assessed using 10 items adapted from the Posttraumatic Stress Disorder Checklist.[22] The endorsement of reexperiencing, avoidance, and hyperarousal symptoms at least 2 times a week along with distress or impairment at least 2 times a week were considered clinically relevant symptoms. Somatic symptoms during the week before the assault were assessed using 21 items,[23] with scores of 19 or higher suggestive of clinically relevant symptoms. Overall pain severity 1 week before the assault was assessed using an item from the Pain Severity Numeric Rating Scale,[24] with scores of 4 or higher indicating moderate or severe pain.

DATA ANALYSES

The analysis data set included 695 of the 706 enrolled patients (98% of the enrolled sample) who had completed the survey information available on the survey questions examining SANE care. Participants who did not complete any SANE care items (n = 11) were excluded; otherwise, participants with missing data were dropped pairwise. Descriptive statistics examined patients' demographic characteristics, health status before the assault, and perceptions of care provided by SANEs. Bivariate analyses and Kruskal-Wallis nonparametric 1-way analysis of variance tests[25] investigated whether the patients' overall care quality scores varied by their demographic characteristics and health status before the assault.

INSTITUTIONAL REVIEW BOARD APPROVAL

The study protocol was approved by the institutional review boards at the University of North Carolina at Chapel Hill and at each study site.

TABLE 1

Patients' demographic characteristics (n = 695)

Demographic characteristics	Range	Mean	SD
Age	18-68	28.30	9.58

	n	%
Age category (n = 692)		
18-20	165	23.7
21-30	328	47.2
31-40	125	18.0
41-50	39	5.6
≥51	35	5.0
Race (n = 682)		
White	450	64.7
Black/African American	87	12.5
American Indian/Alaskan Native	40	5.8
Other	105	15.1
Hispanic/Latina ethnicity (n = 679)		
Yes	168	25.6
No	501	72.1
Education level (n = 689)		
More than high school graduate	465	66.9
High school graduate	168	24.2
Less than high school graduate	56	8.1
Employment status (n = 681)		
Work full-time	262	37.7
Work part-time	149	21.4
Unemployed	135	19.4
Student	74	10.6
Disability benefits	61	8.8
Annual income (n = 645)		
≥$100 000	53	7.6
$60 000-$99 999	80	11.5
$20 000-$59 999	264	38.0
<$20 000	248	35.7
Did not know	42	6.0
Marital status (n = 688)		
Never married	542	78.0
Married	45	6.5
Separated/divorced/ widowed	101	14.5

Results

Table 1 presents information on the patients' demographic characteristics. The patients ranged in age from 18 years to 68 years, with a mean age of 28 years. Sixty-five percent were white, 13% were black/African American, 6% were American Indian/Alaskan Native, and 15% were another racial group. Twenty-six percent were Hispanic/Latina. Most (67%) had more than a high school education, 24% were high school graduates, and 8% had not completed high school. Thirty-eight percent worked full-time, 21% worked part-time, 19% were unemployed, 11% were students, and 9% received disability benefits. Incomes ranged from more than $100 000 (8%) to less than $20 000 (36%). Seventy-nine percent of the patients had never married, 7% were married, and 15% were separated, divorced, or widowed.

Table 2 presents information on the patients' reported health before the sexual assault. Anxiety scores ranged from 37.10 to 83.10 (mean = 52.66), with 27% of the patients reporting clinically relevant anxiety symptoms. Depression scores ranged from 37.10 to 81.10 (mean = 51.69), with 23% of the patients reporting clinically relevant depressive symptoms. Posttraumatic stress scores ranged from 0 to 36 (mean = 13.89), with 37% of the patients reporting clinically relevant PTSS. Somatic scores ranged from 0 to 199 (mean = 15.47), with 26% of the patients reporting clinically relevant somatic symptoms. Pain severity scores ranged from 0 to 10 (mean = 1.82), with 19% of the patients reporting moderate or severe pain.

Most of the female patients who had been sexually assaulted and who participated in this survey reported receiving a high quality of care by the SANEs (Table 3). Most patients "strongly agreed" that the SANEs took their needs/concerns seriously (90%), did not act as though the assault was their fault (89%), cared and showed compassion (88%), explained the sexual assault examination (86%), and gave follow-up information (75%). The mean scores for each of the 5 survey items ranged from 3.67 to 3.85, showing that most patients reported that the SANEs provided high-quality care on each of the 5 domains assessed. Moreover, the mean overall care quality score (3.79) indicated that the patients reported receiving an overall high quality of care from the SANEs.

Table 4 shows that overall care quality scores did not differ significantly by patients' demographic characteristics or health status before the assault. For each category of age, race, ethnicity, education, employment status, income, and marital status, the mean overall care quality score was extremely high, ranging from 3.66 to 3.87. In addition, the overall care quality scores

TABLE 2
Patients' health symptoms before the sexual assault

Symptom domain	Symptom scores before sexual assault	Mean	SD	Clinically high symptom levels before sexual assault	%
	Range			n	
Anxiety symptoms (n = 686)	37.10-83.10	52.66	11.34	185	26.6
Depression symptoms (n = 687)	37.10-81.10	51.69	10.69	157	22.6
PTSS symptoms (n = 686)	0-36.00	13.89	11.17	260	37.4
Somatic symptoms (n = 691)	0-198.00	15.47	26.91	179	25.8
Pain severity (n = 681)	0-10.00	1.82	2.41	133	19.1

PTSS, posttraumatic stress symptoms.

did not differ significantly between the patients who had clinically high levels of depression, anxiety, PTSS, or somatic and/or pain symptoms before the assault and those who did not have clinically high levels of these symptoms before the assault. For each category within these groups, the mean overall care quality score was extremely high, ranging from 3.70 to 3.82.

Discussion

To our knowledge, this study is the first to examine assessments of SANE care by a large group of female patients who had been sexually assaulted and who presented to diverse SANE programs in the US. Our results are consistent with smaller studies in showing that most of the patients who participated view the SANEs as providing high-quality care.[15-18] Our results extend this past research by showing that this is true for each of the 5 care domains examined in this study, including taking patients' needs/concerns seriously, not acting as though the assault was the fault of

the patient, showing care and compassion, explaining the sexual assault examination, and providing follow-up information. In addition, our results also extend previous findings by demonstrating that most female patients who had been sexually assaulted and were willing to participate in research view their SANE care as high quality across geographically, demographically, and administratively (ie, emergency care–based and community-based) diverse SANE programs, diverse demographic groups consisting of patients who had been sexually assaulted, and female patients who had been sexually assaulted with diverse mental and physical health statuses.

These quantitative findings are consistent with the participants' qualitative reports. For example, 1 female patient who had been sexually assaulted wrote, "The SANE nurse that I experienced was PHENOMENAL…her general attitude and humor greatly affected me in positive ways after the assault." Another patient who had been sexually assaulted wrote, "Everything was really good…I didn't even know they had that SANE organization…You guys are doing everything right."

TABLE 3
Number and percentage of patients with various perceptions of the quality of sexual assault nurse examiners' care in 5 domains and the overall care quality score (n = 695)

Survey items	Strongly agree (coded 4)		Agree (coded 3)		Disagree (coded 2)		Strongly disagree (coded 1)		Score	
	n	%	n	%	n	%	n	%	Mean	SD
Took needs/concerns seriously	623	89.6	56	8.1	2	0.3	14	2.0	3.85	0.50
Did not act like it was my fault	621	89.4	40	5.8	8	1.2	26	3.7	3.81	0.64
Cared and showed compassion	608	87.5	68	9.5	4	0.6	15	2.2	3.83	0.53
Explained the exam	598	86.0	76	10.9	8	1.2	13	1.9	3.81	0.54
Gave follow-up information	519	74.7	141	20.3	16	2.3	19	2.7	3.67	0.66
Overall care quality score	—	—	—	—	—	—	—	—	3.79	0.44

TABLE 4

Patients' overall care quality scores, stratified by patients' demographic characteristics and clinically relevant health symptoms before sexual assault (n = 695)

Demographic characteristic	Mean	SD	Kruskal-Wallis nonparametric 1-way ANOVA P value
Age, y			.14
18-20	3.73	0.54	
21-30	3.82	0.41	
31-40	3.83	0.36	
41-50	3.79	0.37	
≥51	3.66	0.58	
Race			.62
White	3.82	0.37	
American Indian/ Alaskan Native	3.67	0.64	
Black/African American	3.81	0.30	
Other	3.75	0.58	
Hispanic/Latina ethnicity			.35
No	3.76	0.51	
Yes	3.81	0.41	
Education level			.10
More than high school graduate	3.82	0.41	
High school graduate	3.72	0.51	
Less than high school graduate	3.87	0.24	
Employment status			.14
Full-time employment	3.84	0.35	
Student	3.83	0.36	
Part-time employment	3.73	0.58	
Disability benefits	3.74	0.41	
Unemployed	3.76	0.50	
Annual income			.40
>$100 000	3.85	0.27	
$60 000-$99 999	3.85	0.39	
$20 000-$59 999	3.80	0.43	
<$20 000	3.76	0.49	

continued

TABLE 4

Continued

Demographic characteristic	Mean	SD	Kruskal-Wallis nonparametric 1-way ANOVA P value
Marital status			.51
Married	3.85	0.30	
Never married	3.79	0.45	
Separated/divorced/ widowed	3.75	0.47	

Clinically relevant levels of health symptoms before sexual assault	Mean	SD	Kruskal-Wallis nonparametric 1-way ANOVA P value
Depression symptoms			.51
No	3.82	0.40	
Yes	3.70	0.61	
Anxiety symptoms			.84
No	3.81	0.37	
Yes	3.74	0.58	
Posttraumatic stress symptoms			.67
No	3.81	0.43	
Yes	3.77	0.47	
Somatic symptoms			.92
No	3.79	0.44	
Yes	3.79	0.45	
Pain severity			.90
No	3.82	0.41	
Yes	3.79	0.44	

ANOVA, analysis of variance.

This research also has clinical and policy implications. Of note, SANE programs are not available in all locations across the US. Indeed, 1 report noted a shortage of SANE programs in every US state evaluated.[26] Specifically, it may be particularly difficult for women in rural areas to access SANE care.[27] The lack of availability of SANE programs in all areas may be in part attributable to difficulties with funding. SANE programs are typically funded through a combination of governmental funds, hospital donations, fundraising, and money from nongovernment agencies and other grants, as well as funding from the Violence Against Women Act and Victims of Crime Act. However, SANE programs often face budget cuts[13] and operate at a

loss, given that SANE programs (including equipment and training) can be expensive to maintain.[28] Indeed, empirical studies have indicated that lack of funding is a "major problem" for more than half of the SANE programs.[29] When SANE care is not available, other resources (eg, nonclinical forensic evaluations or other interdisciplinary clinician teams) may provide services. Such teams may not have the advanced multidisciplinary training and breadth of experiences that SANEs have in providing health care, collecting forensic evidence, and fulfilling these needs in a trauma-informed and compassionate manner.

The SANEs' training and experience in cultural competency may play a role in the high ratings for SANEs across various demographic groups. Although it is critical to strive for continuous improvement in cultural competency, SANE training emphasizes the need to be aware of, and respect, cultural differences.[30] Nationally representative surveys have found conflicting results regarding whether demographic characteristics play a role in who seeks SANE care. Resnick et al[31] found that women who did not identify as white were more likely to receive postassault care, whereas the more recent findings by Amstadter[32] indicated that white race and income less than $20 000 predicted being more likely to seek postassault care (not specific to SANE care). Thus, more research is needed to determine whether there are health disparities in access to SANE care, but our research indicates that when women do receive such care, they are typically satisfied, regardless of their demographic characteristics.

Limitations

As with all research, this study has strengths and limitations. The strengths include the large sample of patients seen by SANEs in diverse SANE programs and the use of standardized assessment procedures. However, the emergency centers/programs participating in the study were not specifically selected to be nationally representative of all SANE programs; thus, our results cannot be viewed as providing specific estimates of experiences with SANEs at all programs across the US. In addition, only female patients aged 18 years or older were studied; therefore, the findings may not be generalizable to male or teen patients. The results are also not generalizable to patients who were ineligible to participate in our study, including those who presented for care more than 72 hours after the assault, not alert/oriented, incarcerated, pregnant, living with the assailant, admitted for acute care, fracture(s), and other reasons listed in the Figure. Future research should include children and men as well as lesbian, gay, bisexual, and transgender patients who have

been sexually assaulted because they may face unique challenges and have different perspectives on SANE services. Moreover, the preassault health concerns examined were limited to emotional health and pain symptoms; therefore, these findings may not be generalizable to patients who have been sexually assaulted and who present with other types of preassault health conditions. Most of our sites were in urban/suburban areas; therefore, future research should examine SANE care satisfaction among patients living in rural areas. Finally, considering that most of the patients' responses were at the upper end of our scale, it is possible that ceiling effects existed in our measurement of the perceptions of SANE care or that a social desirability bias affected the results. Future research should consider more nuanced measures such as using Likert scales with 7 to 10 possible response options.

Implications for Emergency Clinical Care Nurses

The results of this research strongly reinforce the importance of including SANEs whenever possible in treating female patients who have been sexually assaulted. SANEs provide an emotionally supportive and respectful environment for patients while performing evidence collection and/or providing health-related services in the immediate aftermath of assault, and these services are critical in helping to begin the emotional and physical healing process. Leaders of hospitals and community health centers should develop and support their SANE programs to ensure that patients who have been sexually assaulted can receive the high quality of care that they deserve.

Conclusions

Most adult female patients who had been sexually assaulted and were seen by SANEs at 13 geographically and demographically diverse emergency care– and community-based SANE programs in the US, and who were willing to participate in our follow-up study, reported that SANEs provide a high quality of care. Adult female patients who had been sexually assaulted consistently reported that the SANEs took their needs/concerns seriously, did not act as though the assault was their fault, showed care and compassion, explained the sexual assault examination, and provided follow-up information. These perceptions were consistent among patients with varied demographic characteristics and preassault health status. We encourage all health services and facilities that treat patients who have been sexually assaulted to include SANE care as part of their routine response to these patients with trauma.

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Author Disclosures

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Recognition and Treatment of Psychiatric Emergencies for Health Care Providers in the Emergency Department: Panic Attack, Panic Disorder, and Adverse Drug Reactions

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CE Earn Up to 10.5 Hours. See page 507.

Abstract

Mental health disorders are common in the United States and may cause significant disturbances in all aspects of a person's life. Individuals with mental health disorders often present to emergency departments for health care. Recognizing and managing common psychiatric emergencies may be challenging for non–mental health providers. The Diagnostic Statistical Manual-5 diagnostic criteria will be discussed and reviewed for panic attack and panic disorder. Both pharmacologic and nonpharmacologic treatment strategies will also be addressed. Adverse drug reactions associated with antipsychotics and selective serotonin reuptake inhibitors are another common psychiatric emergency that will be examined, offering potential management strategies. The objective of this clinical manuscript is to educate emergency health care providers about specific psychiatric emergencies, including panic attack, panic disorder, and adverse drug reactions associated with mental health treatment medications.

Key Words: Adverse drug reactions; Psychiatric emergencies; Panic attack; Panic disorder

Health insurance coverage has been an historic issue in the United States, with recent estimates reporting that 8.5% of Americans (27.5 million) are uninsured.[1] As a response to economic pressures, emergency department services have evolved from treating and stabilizing acute care issues to including behavioral health services in many communities. Having accessibility to consult psychiatrists, psychiatric mental health nurse practitioners (PMHNPs), psychologists, social workers, and mental health technicians will assist in providing quality behavioral health services to those with mental health disorders. As a high-cost setting that often serves as the primary source of health care for many uninsured patients, emergency departments are burdened with the inefficiencies of health care delivery in the US.[2]

Mental health disorders are common; in 2017, an estimated 46.6 million adults in the US, which is about 1 in 5 adults, were diagnosed with a mental health disorder.[3] There are many different types of mental health disorders, some mild to moderate and others more severe. Mental health disorders often cause significant disturbances in a person's life, including distress or impairment in important areas of functioning, such as interpersonal relationships, self-care, education, or employment.[4]

Policymakers have struggled with numerous complexities in coordinating care in behavioral health care settings for individuals who have mental health disorders.[5] Even

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though health care policy changes have been made to increase access for individuals with mental health disorders, it is necessary to evaluate ED utilization of individuals with mental health needs to establish quality and cost-effective mental health care. Emergency departments may be the only medical alternative for uninsured individuals with mental health disorders who may not adhere to medication management or properly manage their condition during acute psychiatric events.[2] In addition, patients may present with signs and symptoms that require medical evaluations to rule out any physical ailment before addressing any underlying mental health disorder. For example, patients who have intentionally harmed themselves require an involuntary admission to properly assess, treat, and reevaluate if they are still a threat to themselves or others.

US trends in ED visit volume have increased substantially from 2006 to 2013. It is estimated that 1 in 8 ED patient admissions are related to mental health issues and substance use disorders.[6] The most common mental health disorder diagnoses for ED visits in 2013 were depression, anxiety, or stress reactions. These account for 3 945 per 100 000 of the US population, which is a 55% increase from 2006.[6] Approximately 80% of individuals who are diagnosed with a mental health disorder seek health care in medical venues as opposed to behavioral care settings; furthermore, 50% of these individuals are associated with frequent ED use and incurring avoidable high health care costs.[5]

New Information for Readers

Several behavioral health manuscripts have been previously published in *Journal of Emergency Nursing (JEN)*. Here, we convey information about adverse drug reactions (ADRs), such as serotonin syndrome, neuroleptic malignant syndrome (NMS), extrapyramidal symptoms (EPSs), and tardive dyskinesia (TD). Previous publications related to mental health disorders' evaluation and treatment by emergency health care providers in *JEN* have included case studies addressing specific drug interactions (eg, St. John's Wort) with selective serotonin reuptake inhibitors (SSRIs) and presenting symptomotology;[7] however, no treatment was discussed and emphasis was made on medication reconciliation to include herbal supplements. Here, we address serotonin syndrome management. Older publications in *JEN* discussed the list of potential SSRIs that can cause discontinuation syndrome, drug half-life, and how the patient may present to the emergency department. Unlike this manuscript, Knies and Keen[8] did not emphasize treatment or safety, and emphasis was made to wean patients off medications. Whyte and Rosini[9] presented a case study addressing

a patient who presented with a cardiac arrest and had a medication history of using haloperidol and OLANZapine, which resulted in neuroleptic NMS. Supplementing Whyte and Rosini's[9] case study, this manuscript expands on the diagnostic clinical criteria and treatment options for NMS. Lamkin and Buhl[10] presented 2 case studies with EPSs, that is, acute dystonia associated with atypical antipsychotics and discussed risk factors, pharmacologic mechanisms, treatment, and outcomes. Here, we elaborate on EPSs and the usage of an evidence-based screening tool. Somes and Donatelli[11] presented a case study focusing on an older adult who arrived at the emergency department with aggression. The authors thoroughly discussed potential treatment options and cautionary measures for treating older adults, which include potential ADRs. This manuscript emphasizes treatment for ADRs across the lifespan.

This manuscript extends the 2014 Emergency Nurses Association's Behavioral Health Committee's white paper on "Care of Behavioral Health Patients in the Emergency Department" to educate emergency health care providers on how to recognize and manage common psychiatric emergencies, including panic attack, panic disorder (PD), and ADRs associated with the usage of antipsychotic agents and SSRIs.[12]

Panic Attacks and Panic Disorder

Patients who experience panic attacks are frequently seen in emergency departments. However, panic attacks do not constitute a mental health disorder. Panic attacks are often associated with other mental health disorders, such as major depressive disorder, anxiety disorders, posttraumatic stress disorder, and bipolar disorder.[4] In addition, panic attacks are often listed as a specifier to another diagnosis, such as PD. Panic attacks may be diagnosed in the ED setting once a more comprehensive history and physical is performed and all other medical causes have been ruled out. A PMHNP or a mental health provider in the emergency department often diagnoses a panic attack after performing a mental health assessment and mental status exam. The mental health provider often indicates if a panic attack is suspected or the patient has preexisting PD based on the assessment findings.

As mentioned previously, a panic attack is not a mental health disorder; however, the Diagnostic Statistical Manual-5 (DSM-5)[4] provides panic attack specifiers, which include both physical and cognitive symptoms the individual may experience. Physical symptoms may include an unexpected sudden onset of intense fear or discomfort that peaks within minutes and is associated with 4 or more of the following symptoms: palpitations; increased heart rate; sweating;

trembling or shaking; feelings of shortness of breath or smothering; sensations of choking; chest pain or discomfort; nausea or abdominal distress; feeling dizzy, unsteady, light-headed, or faint; numbness or tingling sensation; and chills or heat sensations. Cognitive symptoms may include perceptions of unreality or being detached from oneself, fear of losing control, "going crazy," or dying.[4] There are 2 types of panic attacks, expected and unexpected. An expected panic attack is associated with a known trigger; for example, a situation or predicament in which the panic attack occurred. In contrast, an unexpected panic attack is not associated with a known situational trigger and may occur at any time.[4]

PD is characterized by recurrent unexpected panic attacks. PD is among the most common mental health disorders in the US, and yearly prevalence rates are estimated at 2.7%. PD is twice as common in women than in men, and 4.7% of the population will likely experience a panic attack in their lifetime.[13] Highest prevalence rates for panic attacks and PD are among individuals aged 30 to 49 years.[14] The only social determinant associated with influencing the occurrence of PD is a recent divorce or separation from a significant other.[15]

According to the DSM-5, the diagnostic criteria for PD include recurrent unexpected panic attacks. During the panic attack, 4 or more of the following symptoms must be present: increased heart rate, diaphoresis, shortness of breath, choking sensation, nausea or abdominal discomfort, feeling dizzy, chills or heat sensation, numbness or tingling sensation, derealization (feelings of unreality), depersonalization (feeling detached from one's body), and fears of going crazy or dying.[4] The diagnostic criteria for PD must also include recurrent panic attacks, persistent concern for a month or greater about future panic attacks or consequences of future panic attacks (eg, losing control, "going crazy"), or maladaptive behavior change (eg, avoidance of exercise) related to the panic attack; in addition, the disturbance cannot be attributed to another mental health disorder or the physiological effects of a substance or a medical condition.[4] Approximately 90% of individuals with PD have 1 other psychiatric disorder, and about 33% have major depressive disorder before occurrence of PD.[15]

Even though all presenting symptoms of panic attack or PD require proper assessment and treatment, among the most common symptoms are increased heart rate, palpitations, dizziness, shortness of breath, sweating, chest pain, trembling, and choking.[16] Panic attack is a presentation that may have a biological and nonpsychiatric cause and is not a mental health disorder. Panic attack or PD symptoms can be a sign of certain undiagnosed or unrecognized physical disorders. According to Craske and Stein,[17] establishing a differential diagnosis from other underlying medical conditions, including cardiovascular (arrythmias, supraventricular tachycardia, angina), pulmonary (asthma, pulmonary embolism), neurological (cerebrovascular attack, migraine, epilepsy), and endocrine disorders (hyperthyroidism, hyperparathyroidism, pheochromocytoma, Addison disease) and substance intoxication and withdrawal, is essential. Less than 10% of individuals arriving to the emergency department with panic attacks are correctly diagnosed, and 98% of those experiencing panic attacks who present to the emergency department with chest pain symptoms go undiagnosed for panic attacks.[18] Therefore, repeated medical assessments may occur, creating a huge barrier for properly intervening and treating individuals experiencing panic attacks.

ED personnel are responsible for medically stabilizing patients before transferring to a behavioral care setting or safely discharging individuals who present with mental health disorders. Health care providers in the emergency department should incorporate the use of a behavioral diagnostic tool discussed in further detail below to evaluate mental health disorders and provide a thorough hand-off report if transfer to a behavioral care setting is warranted.

A no-cost, readily available PD clinician screening tool is the Panic Disorder Severity Scale. Specifically, it rates severity and treatment progress in patients with a known diagnosis of PD.[19] This 7-item tool is a well-validated instrument with an internal consistency (Cronbach's alpha) of 0.65 that measures symptoms of PD from the following 7 dimensions and symptomatology: (1) incidence of panic attacks, (2) distress during panic attacks, (3) anxiety about future attacks, (4) agoraphobic fear and avoidance, (5) internal fear and avoidance, (6) dysfunction in work functioning, and (7) dysfunction in social functioning. Recalling the events over the last month, mental health professionals can rate the severity of each dimension on a 4-point Likert-scale ranging from 0 (no panic or limited symptom episodes) to 4 (extreme distress, full panic), and the final score is the average of all 7 items (higher scores indicate more severe panic symptoms).[19]

Acute management of PD in the emergency department may include the use of a short acting benzodiazepine such as ALPRAZolam (Xanax), which is Federal Drug Administration (FDA) approved to reduce severe anxiety symptoms.[20] Long-term treatment must be tailored to the individual and may include a combination of modalities, such as medications, psychotherapy, education, and complementary and alternative therapies. SSRIs are first-line therapy medications used to treat PD. Examples of SSRIs approved by the FDA to treat PD include PARoxetine

(Paxil), sertraline (Zoloft), and FLUoxetine (Prozac); however, these medications must be titrated slowly and take several weeks to be effective.[20] The use of a brief course of ALPRAZolam (Xanax) may be prescribed in conjunction with an SSRI for short-term management of PD and should be slowly titrated when the therapeutic actions of the SSRI become apparent (2-4 weeks). Caution must be taken with the use of long-term benzodiazepines because of the drugs' habit-forming potential, which may cause dependency. In addition, it is important to educate patient and family members about the potential risks versus benefits before initiation, tapering process, and alternative treatment options. Psychotherapy such as cognitive behavioral therapy and mindfulness-based stress reduction techniques can be used to treat PD, but also take effect after several weeks. Therefore, health care providers in the emergency department should properly refer and educate on general lifestyle recommendations to reduce and identify any anxiety-related symptoms, such as eliminate caffeine/stimulants/nicotine, obtain adequate sleep, and exercise daily.[20] In addition, relaxation techniques can easily be administered in ED settings and have the potential to reduce anxiety. An example of a nonpharmacologic anxiety-reducing strategy is deep breathing exercises, which involve consciously slowing respirations and focusing on taking regular slow deep breaths. Another strategy may include guided imagery, where the ED provider encourages the patient to imagine a serene location free of stress. Both of these methods may have a profound effect on the anxiety of patients who present with a panic attack or known PD.

Individuals with PD are often prescribed SSRIs as long-term treatment to assist in reducing their anxiety and future panic attacks.[21] Common side effects of SSRIs include nausea, diarrhea, constipation, headache, tremors, agitation, dizziness, sweating, and sexual dysfunction. It is also important that the emergency nurse consider possible sleep disturbance, memory loss, and cognitive function changes as SSRI side effects that may impact patient safety and self-management.[22,23] Side effects are secondary effects to drug therapy that are known to occur and can be desirable or undesirable; in contrast, ADRs are usually rare, unintended, and tend to be more serious, even life threatening.[24] Even though most side effects occur immediately, they often dissipate with time.[21] More serious complications from SSRI medication interactions may occur, especially if patients are on more than 1 drug. Individuals with PD often have other underlying mental health disorders, such as depression, anxiety, posttraumatic stress disorder, and bipolar disorder, and are often prescribed psychotropic medications including SSRIs and antipsychotics (typical and atypical), which may result in side effects or potential ADRs. Common side effects of first-generation (typical) antipsychotics include stiffness, akathisia, TD, tremors, sleepiness, weight gain, sexual dysfunction, constipation, dry mouth, and blurred vision.[21] Second-generation (atypical) antipsychotics' side effects include metabolic syndrome, weight gain, decreased sex drive, sun sensitivity, seizures, and drowsiness.[21] Potentially life-threatening ADRs described below associated with antipsychotics include NMS and TD; serotonin syndrome is associated with SSRIs. Emergency health care providers must be able to recognize an individual experiencing a side effect versus an ADR to effectively treat this potentially life-threatening reaction.

Adverse Drug Reactions

Schatz and Weber define an ADR as "an unwanted, undesirable effect of a medication that occurs during usual clinical use."[25(p5)] ADRs related to psychotropic medications often present to the emergency department from a life-disruptive to a life-threatening situation. Two life-threatening ADRs, NMS and serotonin syndrome, although not common, can be lethal if not recognized and treated. The lethality of NMS and serotonin syndrome requires emergency health care providers to reflect on and minimize their cognitive biases to ensure accurate decision making.

NEUROLEPTIC MALIGNANT SYNDROME

NMS is recognized as a life-threatening ADR. The cause of NMS remains unknown but is often associated with antipsychotics, which block dopamine receptors (specifically D_2). In addition, abrupt withdrawal of antipsychotic and antiemetic drugs have been known to trigger NMS (Table 1). Dopamine neurons originate in the mesencephalon, substantia nigra, and ventral tegmental area of the brain. The dopamine pathways (nigrostriatal, mesocorticolimbic, and tuberohypophyseal) are associated with motor control and movement, thermoregulation, reward, emotions, thoughts, memory, and attention. Because blockade of dopamine receptors does not fully explain NMS presentation, other theories have been postulated. Musculoskeletal rigidity has been associated with muscle mitochondrial alterations, whereas disruption in the sympathetic nervous system has been associated with autonomic instability.[26]

The reported incidence of NMS for persons taking antipsychotic medications ranges from 0.02% to 3.23%.[26,27] NMS occurs at all ages, but men experience NMS more often. A mortality as high as 20% has been reported.[26] A study by Modi et al[28] identified the following

TABLE 1

Medications associated with extrapyramidal symptoms, tardive dyskinesia, and neuroleptic malignant syndrome

Antipsychotics*	Antiemetics*	Dopamine agents* (withdrawal of drug)
First generation/typical	Domperidone	Amantadine
ChlorproMAZINE	Droperidol	Bromocriptine
FluPHENAZine	MetoCLOPRAmide	Entacapone
Haloperidol	Ondansetron	Levodopa
Loxapine	Prochlorperazine	Tolcapone
Thioridazine	Promethazine	
Second generation/atypical		
ARIPiprazole		
OLANZapine		
QUEtiapine		
RisperiDONE		
Ziprasidone		

* List is not inclusive of all medications.

factors associated with NMS mortality: acute respiratory failure, advanced age, sepsis, acute kidney injury, and congestive heart failure.

Key findings associated with NMS are hyperthermia, "lead-pipe" muscle rigidity, altered mental status, autonomic instability, and elevated creatine phosphokinase (CPK) related to muscle breakdown.[29] Other findings include akinesia, tremors, diaphoresis, dysphagia, incontinence, and hypersalivation. Development of symptoms typically occurs within 24 to 72 hours after consuming the offending agent and can last up to 30 days or can occur any time over the course of treatment.[30] Laboratory findings may include leukocytosis, elevated liver enzymes, and metabolic acidosis.[15] The American Psychiatric Association has developed diagnostic criteria for NMS, which include: (1) symptoms developed within 72 hours after exposure to a dopamine antagonist or withdrawal of a dopamine agonist; (2) two episodes of hyperthermia with diaphoresis; (3) generalized rigidity; (4) changes in mental status (delirium, stupor to coma); (5) elevated CPK levels (up to 4 times the upper limit of normal); (6) tachycardia, diaphoresis, blood pressure elevation, urinary incontinence, and pallor; (7) respiratory distress and shortness of breath; and (8) absence of infectious, toxic, metabolic, and neurological etiologies.[4]

Treatment focuses on early recognition of NMS and rapid response, discontinuing any dopamine agonist agents and providing aggressive supportive care; rehydration, reduction of fever, and electrolyte balance are critical, as well as stabilization of the autonomic system. Monitoring for cardiopulmonary complications, renal failure, and aspiration pneumonia are also essential.[31] According to Widjicks,[26] medications used to treat NMS include (1) benzodiazepines; (2) dantrolene (Dantrium), to reduce muscle rigidity; and (3) bromocriptine (Parlodel) or amantadine hydrochloride (Symmetrel), to reduce Parkinsonism symptoms. NMS is a life-threatening crisis that requires astute assessment skills and accurate assessment of patient medications. Knowledge of symptoms associated with NMS and antipsychotic medications are vital to a successful outcome for the patient.

SEROTONIN SYNDROME

Serotonin (5-hydroxytryptamine), derived from tryptophan, is a monoamine neurotransmitter located in the central nervous system, peripheral nervous system, mast cells, and platelets. Serotonin is produced in the raphe nuclei located in the brain, and approximately 80% is localized in the gastrointestinal system. Neurons producing serotonin in the brain have an extensive modulatory role in "motor activity, pain control, and regulation of autonomic processes…mood, anxiety, aggression, cognition, feeding, the sleep-wake cycle, and sexual behavior."[15(p68)] Serotonin is broken down by monoamine oxidase and excreted in the urine.

An excess of serotonin in the central nervous system causes serotonin syndrome, also referred to as serotonin toxicity, which can be potentially life threatening. Serotonin syndrome occurs with use of serotonergic medications, such as SSRIs, often following an increase in dosage; addition of a second serotonergic medication, drug, or supplement;

TABLE 2
Medications/drugs associated with serotonin syndrome

SSRIs*	Tricyclics*	Other serotonergic agents*
Citalopram	Amitriptyline	Cyclobenzaprine
Escitalopram	Amoxapine	Meperidine
FLUoxetine	ClomiPRAMINE	Methadone
FluvoxaMINE	Desipramine	Pentazocine
PARoxetine	Doxepin	TraMADol
Sertraline	Imipramine	Triptans
Vilazodone	Nortriptyline	

SNRIs*	Over-the-counter agents*	Illicit drugs*
Desvenlafaxine	Chlorpheniramine	Ayahuasca
DULoxetine	Dextromethorphan	LSD
Levomilnacipran	L-tryptophan	MDMA (Ecstasy)
Milnacipran	S-Adenosyl-L Methionine (SAMe)	
Venlafaxine	St. John's Wort	

MAOIs*		Opioids*
Isocarboxazid		Codeine
Phenelzine		FentaNYL
Selegiline		
Tranylcypromine		

SSRI, selective serotonin reuptake inhibitor; SNRI, serotonin-norepinephrine reuptake inhibitor; MAOI, monoamine oxidase inhibitor; LSD, lysergic acid diethylamide; MDMA, methylenedioxyme-thamphetamine.

* List is not inclusive of all drugs.

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or addition of drugs that inhibit cytochrome P450 2D6 and/or 3A4 (Table 2). The incidence of serotonin syndrome has been difficult to determine, mainly because of lack of recognition and presentation of symptoms associated with many other disorders. However, with increased use of serotonergic medications, such as SSRIs, the incidence is expected to rise.[32-34]

A triad of symptomatology that includes neuromuscular hyperactivity (tremors, muscle rigidity, myoclonus, hyperreflexia, and/or bilateral Babinski), autonomic hyperactivity (hyperthermia, diaphoresis, tachycardia, hypertension, vomiting, and/or diarrhea), and mental status alterations (anxiety, agitation, disorientation, delirium, and/or restlessness) is associated with serotonin syndrome. These symptoms occur abruptly and may also include ocular clonus. Hyperthermia is often cited as a key symptom of serotonin syndrome, yet in a study by Werneke et al,[35] 59.7% of 266 cases reviewed had a documented fever, and 9.2% experienced hyperthermia.

Serotonin syndrome is a diagnosis of exclusion. Performing a detailed health history, physical exam, neurological assessment, and laboratory values assessment aid in establishing the diagnosis. It is imperative to obtain a comprehensive medication history, including prescribed and over-the-counter medications and illicit drugs, to establish serotonergic properties. Medication assessments must include dosage, formulation, schedule, and any recent changes. Physical exam findings of hyperthermia, fluctuating blood pressure, hyperreflexia, muscle rigidity, agitation, and ocular clonus are often associated with serotonin syndrome. Laboratory findings do not confirm serotonin syndrome; however, an elevated white blood cell count, elevated CPK, and decreased serum bicarbonate concentration can be indicative of serotonin syndrome.[36]

According to Boyer,[36] there are 5 key principles to management of serotonin syndrome. Most important are the discontinuation of all serotonergic agents; provision of supportive care and hydration and stabilization of vital signs (antipyretics should be avoided as hyperthermia is a result of muscular activity); and sedation with benzodiazepines to manage agitation (avoid physical restraints as resistance can lead to increased hyperthermia).[36] The fourth principle

relates to antidotal therapy for treatment of continued agitation and autonomic hyperactivity using cyprohepta-dine (Periactin), a serotonin and histamine antagonist. Finally, the fifth key principle is to assess the need to restart the causative serotonergic agent once symptoms have been resolved.

Often, serotonin syndrome symptoms abate after 24 hours of discontinuing the serotonergic agent. However, medications with a long half-life, such as FLUoxetine (Pro-zac), can extend the presence of symptoms. Serotonin syndrome requires skilled nursing assessment, including knowledge of medications associated with serotonin syn-drome and quick intervention to stabilize the autonomic system. Knowledge of the unique symptoms of serotonin syndrome, specifically bilateral clonus of the lower extrem-ities and hyperreflexia, can yield early recognition, thereby producing a successful outcome.

TARDIVE DYSKINESIA

An ADR that is life disruptive but non–life threatening is TD. TD is a movement disorder associated with use of dopamine receptor–blocking agents, specifically first- and second-generation antipsychotic medication and antiemetic agents, such as metoclopramide (Reglan; Table 1). The etiology of TD is not fully understood, but TD is often associated with dopamine sensitivity as a result of chronic use of D2 receptor antagonists. Another theory relates to the dysregulation of the gamma-aminobutyric acid neurons resulting in degeneration of striatal cholinergic interneu-rons. A final theory links neuronal degeneration to dopamine D2 antagonists.[37]

The incidence of TD in patients receiving antipsychotic medications in 2016 was estimated at 10.6 per 100 000, or 26 000 adults.[38] Tarsy and Diek[39] reported the annual incidence of TD among older adults taking first-generation antipsychotics at 10% to 25% and only 5% to 7% with second-generation antipsychotics. As of 2019, Robert[40] reports that the annual incidence of TD for persons older than 45 years was 15% to 30% after 1 year of treatment with dopamine receptor–blocking agents.

Symptoms of TD are frequently associated with oral facial movements (chewing, grimacing, lip smacking, and tongue protrusions) but can also include dyskinesia (rocking and swaying movements), athetosis, dystonia, chorea, and tics.[39] Relief from the movements occurs during sleep. Onset can be insidious but develops 1 to 6 months after initiation of dopamine antagonist medication.

When caring for individuals with suspected TD, a medication evaluation is imperative, along with a neurological assessment. The Abnormal Involuntary Movement Scale (AIMS) is a clinician-rated tool commonly used to assess severity of dyskinesias.[41] AIMS has been shown to have interrater and test-retest reliability in adult psychiatric populations. AIMS measures the following aspects: facial and oral movements, extremity movements, trunk movements, global judgments, and dental status. The tool consists of 12 items, with a rating scale from 0 to 4 (none, minimal, mild, moderate, and severe), and is avail-able in the public domain. Higher scores indicate more severity of dyskinesias.[41]

Initiation of routine screening and documentation using a validated abnormal movement scale may prevent or limit the effects of TD, which can be a very stigmatizing condition. Early recognition is imperative, as potential for remission decreases the longer the patient is exposed to the offending agent. Tapering off the offending agent, tran-sitioning from typical to atypical antipsychotics with lower risk for TD, and discontinuing any anticholinergic medica-tion are first steps.[35] Currently, there are 2 FDA-approved medications for the treatment of TD: valbenazine (Ingrezza) and deutetrabenazine (Austedo), which are in the medica-tion class of vesicular monoamine transporter 2 inhibitors.[34] Assessment and early recognition are critical to prevention of TD.

EXTRAPYRAMIDAL SYMPTOMS

EPSs are the most common of ADRs and typically are non–life threatening but disturbing to the patient. EPS is defined as a drug-induced movement disorder associated with use of any dopamine receptor–blocking agents. EPSs are often associated with first- and second-generation antipsychotic medication but can also be associated with antiemetics, SSRIs, tricyclic agents, lithium, and stimu-lants.[42] The EPS spectrum includes acute movement dis-orders, such as dystonia, akathisia, and Parkinsonism. Because the incidence of EPSs correlates to the dopamine receptor–blocking agent, first-generation antipsychotics account for 61.6% of EPS cases, whereas there is a reduced incidence of EPSs associated with second-generation antipsychotics. Novick et al[43] conducted a 3-year study of patients participating in the Schizophrenia Outpatient Health Outcomes and found an incidence of EPSs ranging from 7.7% to 32.8% with long-term injectables.

Akathisia occurs frequently and is defined as the inability to sit still, often displayed as shifting weight from foot to foot and an inability to keep feet still, as if there is a compelling need to move. The most frightening acute EPS is acute dystonia, intermittent to continual muscle

spasms of the head and neck that can occur within hours of initial administration of the offending agent. Dystonia can also cause involuntary movement of the muscles of the back and extremities, jaw, eyes, and pelvis. Parkinsonism symptoms, which are also drug-induced, include shuffling gait, stooped posture, rigidity, tremors, mask-like facial expression, and bradykinesia.[15]

A detailed history, physical exam including administration of AIMS, and presenting clinical picture aid in early recognition and diagnosis of EPSs. Early recognition of EPSs is critical. Management of EPSs often begins by decreasing the dose of the agent or changing to another agent. If no relief is obtained, oral anticholinergic medications are administered to manage the symptoms. Dystonia requires immediate treatment and discontinuance of offending agent and intramuscular administration of anticholinergic medication.[15] Patient and family education of EPS symptomatology and consistent use of the AIMS test by health care providers can often mitigate EPS symptomatology.

Cognitive Bias and Communication

Another component of patient safety is the recognition of cognitive bias by ED health care providers in caring for persons with mental disorders. Cognitive bias is defined as "systematic errors in our thinking that can affect our judgments and decisions making."[44(p14)] Three common types of cognitive bias are: confirmation bias, which is "favoring information that conforms to our beliefs and disregarding or devaluing evidence that does not"; anchoring bias, which recognizes "a heavy reliance on the first piece of information we learn"; and attention bias, which is "paying attention to some things while ignoring others."[44(p14)] Awareness of one's cognitive bias, particularly related to mental disorders, can impact clinical decision making and patient outcomes.[45]

Emphasis on establishing clear, nonjudgmental, and honest communication that is respectful will assist in building a therapeutic relationship that is patient-centered. Communication strategies that can be useful in any health care setting are active listening, limiting distractions, and being empathetic and patient. In addition, the health care provider may need to set limits with the individual to ensure safety. Limit setting can involve providing choices that are clear and explained as "either/or" choices, because too many options may be confusing and can potentially increase the patient's anxiety level or exacerbate aggressive behaviors. Emergency health care providers must be specific when addressing inappropriate behaviors and discuss exactly which behaviors demonstrated are inappropriate, for example,

vulgar language, removing clothing, and aggressive remarks. Emergency health care providers who can effectively use these communication strategies are in a better position to enhance the experience for individuals with mental health disorders being cared for in the emergency department.

Implications for Emergency Clinical Practice

Providing care to individuals with mental health disorders can be challenging to even the most experienced health care providers. Individuals who have mental health disorders (eg, schizophrenia, bipolar I disorder) are prescribed medications such as antipsychotics, which produce an array of ADRs. These ADRs are both physically and emotionally debilitating.

Despite advances in treatments, including medications for mental illness, ADRs continue. Clinically, the ambiguities associated with the pathophysiology of some ADRs (eg, TD) make management and treatment a challenge for health care providers.[46] Even when discontinuing the antipsychotic medications seems to be the appropriate treatment, this may not be feasible because of the individual's mental health disorder. Therefore, prevention (initiating antipsychotics at a lower dose and titrating accordingly), early recognition (utilizing standardized screening tools), and treatment (dependent on cause) are paramount for ADRs.[35,46] The emergency health care provider who is knowledgeable in the recognition and care of ADRs related to antipsychotics and SSRIs is vital to a patient's outcome.

In the emergency department, cardiac and respiratory complaints may be the predominant presenting symptomatology for individuals with panic-related anxiety, whereby establishing a mental disorder diagnosis may be unlikely. Individuals presenting with aggression or exhibiting hostile behaviors may have underlying anxiety as well. It is imperative that health care providers view the individual holistically and include both medical and psychiatric diagnoses in their differential. Psychiatric emergencies tend to have functional impairments and may affect social and interpersonal domains (personal, occupational, financial, academic). A combined pharmacologic and nonpharmacologic (eg, exercise, relaxation techniques, mindfulness) approach has been found to be the most successful.[15]

Conclusion

Individuals with mental health disorders are seen frequently in emergency departments; therefore, it is necessary for all health care providers to be knowledgeable, therapeutic, and cognizant of their own bias to properly care for this

population. The objective of this clinical manuscript is to educate ED health care providers about specific psychiatric emergencies, including panic attack, PD, and ADRs associated with mental health treatment medications. This manuscript can serve as an information and education resource for emergency clinicians about these psychiatric emergencies. Recommendation for consultation with a Psychiatric Mental Health Nurse Practitioner (PMHNP) is frequently suggested to assist emergency health care providers in establishing a mental health disorder diagnosis and to guide care. In addition, ED interventions of relaxation techniques and limit setting are in alignment with the Emergency Nurses Association's 2014 Behavioral Health Committee's vision to promote de-escalation and overall safety for patients and staff in the emergency department.

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THE LONELINESS OF AGING

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CE Earn Up to 10.5 Hours. See page 507.

Abstract

Isolation and loneliness have become buzz words when discussing older adults during the coronavirus disease pandemic; yet, these are age-old problems. Both have been studied extensively, yet there currently is no rapid or succinct tool that can be used in the emergency department to screen for either, or a consensus of evidence-based ways to correct these issues. This is of concern because both loneliness and social isolation have been linked to poor health. Poor health, in turn, can lead to worse isolation and loneliness. These health problems may lead to the older adult seeking care in the emergency department where screening and initial treatment could be initiated. Suggestions for questions that emergency nurses can ask to identify an older adult who is lonely or suffers from social isolation, as well as steps to consider when encountering the older adult with complaints of loneliness and/or social isolation, are provided, with the realization that these are only the first steps of many that would need to be taken. The purpose of this article is to bring forward updated information that discusses loneliness and social isolation in older adults, a timely priority during the coronavirus disease pandemic and often listed as a factor in older adult deaths. A review of relevant screening tools for use in the emergency department are provided.

Key words: Aged; Social isolation; Loneliness; Surveys and questionnaires; Emergency nursing; COVID-19

"Isolation a Factor in 3 Senior Deaths"[1] The story accompanying this front-page headline in the *St. Paul Pioneer Press* newspaper on June 21, 2020, described how 3 older adults—all aged above 90 years—had "social isolation" listed as the "cause of death or contributing factor" on their death certificates. The reporter noted that only one of the seniors had tested positive for coronavirus disease (COVID-19), but all lived in long-term Alzheimer disease care facilities that had taken steps to decrease the risk of exposure to the virus. Each patient had been confined to their room; their interactive activities were canceled; and they were not allowed visitors, including family. The staff continued to interact with, and provide care to, these seniors, but their routines had been disrupted. The facility staff shared with the reporter that during the 3 months of confinement, the patients showed a "decreased interest in eating, spent more time sleeping, seemed to lose interest in living, and developed 'failure to thrive.'"[1]

Isolation and loneliness have been written about and studied for centuries and are not new problems.[2-5] However, the COVID-19 pandemic has led to renewed concerns about social isolation and loneliness and how to deal with them. It seems appropriate to take a look at both, including some of the causes, the effects they have on health, and some options that emergency nurses could consider when providing care for the older adult who is at risk of social isolation and loneliness, now and even after COVID-19 is not the causative factor.

Although social isolation may lead to loneliness, these terms are not interchangeable.[2-5] Loneliness is described as the subjective feeling of distress related to the patient's perception of a lack of companions or social connections/network.[3,4] Isolation is the objective description of a lack of social connections.[3-5] Previous studies have discussed older adults (typically aged above 65 years) who identified as socially isolated but were not suffering a sense of feeling lonely and others who complained of feeling lonely although they were not socially isolated.[3-8] The studies also noted that life events that accompany aging increase the risk of an older adult becoming disconnected from society and vulnerable to developing social isolation and/or feelings of loneliness.[3,7-11] It is important for emergency care providers to recognize the older adult who is at risk of being lonely or socially isolated because both have been

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linked to poor health outcomes.[8-12] More importantly, there are actions that can be taken to mitigate these issues.[8-12]

Risk Factors for Social Isolation and Loneliness

The most commonly identified risk factor leading to isolation and loneliness is the death of a spouse, significant other, or friend(s)—especially when the loss involves a support person or means of transportation.[3-15] Other easily recognized risk factors involving loss include loss of family involvement when children grow up, leave home, and become busy with their own lives, or a loss of the neighborhood network of friends that occurs during the process of downsizing or relocating to a smaller home, condominium, assisted care, or nursing home.[10,12] Retirement can also lead to loss of daily interaction with coworkers and friends, leading to loneliness.[9,10,15] Becoming a primary caregiver can lead to loss of time to socialize, to isolation, and to a sense of loneliness in the caregiver, especially if the ailing person in the partnership was the one who did the driving before becoming ill.[8,15]

Other losses related to aging may or may not immediately be recognized as the causative factor in the loneliness or isolation experienced by an older adult. Loss of the ability to drive owing to physical or cognitive changes, as well as worries about safety when driving or the lack of alternative transportation can lead to decreased opportunities for socialization.[9,10,15] Extreme weather causing snowy/icy roads and sidewalks, excessive heat, humidity, or air pollution, as well as fears of falling, increased crime, and personal safety (especially related to infections—influenza as well as COVID-19) have been listed as reasons to remain homebound and thus at risk of isolation and loneliness.[10,15] Increased frailty, mobility issues, and lack of funds to cover the cost of socializing (eg, eating out with friends, going to movies, playing bingo) as well as concerns about being embarrassed or becoming an embarrassment in public have led to older adults staying isolated in their home to avoid these situations.[9,10] The need to rely on durable medical equipment (oxygen tanks, walkers, wheelchairs, and so on)[15] and inability to hear what others are saying or see what others are seeing can also lead to older adults staying home.[16,17]

Ageism and stereotyped thinking or comments such as "They are old, so …they won't want to, …they can't keep up, …they'd rather be in bed, …they need frequent restroom stops, …they can't hear, …they can't see, …they won't understand the situation" are attitudes that have led to older adults not being invited to attend social events or to their own reluctance to attend, thus leading them to be socially isolated.[9,10,12,15] Worse yet is when the older adult is brought to an event but ignored by the rest of the people in attendance owing to these attitudes.[10] Vulnerable older adults who are also first-generation immigrants have identified increased isolation owing to language barriers, and the lesbian, gay, bisexual, transgender population has reported loneliness more than other groups.[7,12]

It is easy to recognize the "common" reasons for an older adult to feel disconnected, socially isolated, and lonely (loss of spouse or friends). When obtaining a history to identify the older adult who is lonely or isolated, it is important to consider other aspects of the older adult's life that allow or disallow the ability to interact with others. It is not only the physical loss of significant others or friends that puts one at risk; it may be a change within the older adult's self-image or the way they are being treated that leads to loneliness and isolation.[3-17] Even after the fears of exposing our older adults to COVID-19 has gone away, these other reasons will remain and may even be perpetuated in our emergency departments.

The Risks of Isolation and Loneliness

The multiple health risks associated with social isolation and loneliness make it important for health care providers to identify older adults who are isolated or lonely and attempt to intervene. Singer notes that most people are "physiologically and biologically 'programmed' to need social networks."[8] Loss of the ability to network can lead to stress build-up and release of cortisol, which leads to an inflammatory response in the body and associated consequences.[8-10] Studies have shown increased platelet aggregation, instability of the autonomic nervous system, hypertension, arthritis, anxiety, depression, and suicidal ideation in persons reporting feelings of being isolated or lonely.[7,8] The risk of cardiovascular death increases by 90%, the risk of death from an accident or suicide attempt has been shown to double, the risk of having a nonfatal coronary event in the lonely or isolated older adult increases by 29%, the risk of having a stroke by 32%, and the risk of developing dementia by 50%.[7,8,14] One study equated the effects of loneliness and isolation on the body to the equivalent of smoking 15 cigarettes a day.[14] Patients with heart failure and loneliness had a 4-times-greater risk of death, 68% more hospitalizations, and presented to the emergency department on a more frequent basis (57%).[7] The ability to fight off infections is reduced owing to decreased immune system activity, and declines in renal function have also been associated with isolation and loneliness.[8] Poor sleep patterns, signs of accelerated cognitive decline, and a diminished ability to carry out activities of daily living have been seen in those who are isolated and lonely.[7,8,12] Living alone may contribute to poor eating, increased use of alcohol, and

increased risk of elder abuse (scams and fraudulent financial schemes).[7,8,12] Premature death risk overall doubles in the patient who is lonely and isolated.[13]

Approximately one-fourth of adults aged above 65 years are considered to be lonely or socially isolated. Living alone, loss of friends and family, chronic illness, and hearing/vision loss are identified as the most common factors causing this.[7,13] It is interesting to note that although isolation and loneliness can contribute to poor health, poor health can also contribute to social isolation and loneliness.[3-5,11,18,19] Identifying the older adult who is lonely or socially isolated and intervening may help to break this cycle.

Screening Tools Looking for Social Isolation and Loneliness

When looking at the number of adults aged above 60 years who admit to being lonely (25%-50%)[3,5,7,9] and/or socially isolated (24%-30%),[3,5,7,13] combined with the risks of the serious medical consequences attributed to loneliness and social isolation, it would seem appropriate to identify a quick and simple screening tool that emergency nurses could use to identify those older adults who are at risk. ED staff could then work to incorporate some sort of "fix" into these patients' plan of care to improve health outcomes.

In a meta-analysis comparing tools to measure loneliness and social isolation, Valtorta et al identified 54 instruments.[4] The number and variety of questions found in the various screens were numerous, wide-ranging, and not standardized. Ultimately, Valtorta et al[4] concluded that the questions found in the various screens could be simplified and classified as either the "function and structure of a social relationship" or the "degree of subjectivity related to the relationship," but none of the tools screened for both. Their recommendation was to use a screen that was specific to the problem being studied: social isolation or loneliness.[4] It was also noted by Valtorta et al[4], as well as other authors during their literature reviews, that the studies looking at loneliness and social isolation frequently lacked standardization of terminology, often did not include all the interdependent variables (isolation, loneliness, and underlying health status), and that the subjective nature of the answers related to loneliness questions compared with the objectively measured answers to social isolation questions led to challenges identifying/creating 1 tool to use.[3-5,11,18,19] In addition, many studies' screening questions did not ask about health, whereas others focused entirely on the concept that social isolation and loneliness led to poor health and that poor health contributed to isolation and a sense of loneliness.[3-5,11,18,19] Valtorta et al[4] also specifically noted that

most screening tools went into such depth that they took significant time to complete. Currently, there is no standardized, succinct, meaningful, and evidence-based tool that screens for both loneliness and social isolation to identify the older adult suffering from, or at risk for, these conditions in the emergency department. However, there are programs that may be helpful in identifying the potential risk of, and dealing with, social isolation and loneliness.

The Campaign to End Loneliness, started in the United Kingdom in 2011, provides a potential solution to screening.[18] The program has since expanded to several countries across Europe and to some degree in the United States.[18] The goal of the campaign was to decrease loneliness and social isolation in the "elderly population" in the United Kingdom.[18] In 2013, the project leaders determined that a simple screening tool was needed to measure the successes related to the interactions that had been implemented. A variety of measurement tools, including the De Jong Gierveld loneliness scale, the revised UCLA loneliness scale, and the single-item "scale" were evaluated.[18] The campaign leaders concluded that each of these 3 tools had their benefits, but each also had a downside (2 were more appropriate for researchers; the other was better designed to determine if services were needed by the older adult or if the services being provided were sufficient).[18] The Campaign to End Loneliness leaders then decided to create their own tool that synthesized and incorporated the concepts of the many screens found in the literature.[18] Care providers were instructed to review information about each of the loneliness scales to determine which was most appropriate for their clientele and use the tool that best served their project.[18] (See Table 1 for components of the scales.)

When distilled down, most of the tools ask participants about feelings related to (1) having enough friends and relationships, (2) being able to trust/rely on people for help at any time, and (3) whether their relationships were as satisfying/inclusive as they would like.[18] Each screen calculated a score, but the leaders of the campaign reminded caregivers that the scores were a "snapshot" of the moment and only compared how the person is changing in their loneliness, not how lonely they are compared with someone else. They also noted that "someone with a score of '4' may not be half as lonely as the person with a score of '8.' "[18]

A search to see if the United States had a version of the Campaign to End Loneliness program led to the Health Resources and Services Administration website, which provided data about loneliness in older adults and a link to the Campaign to End Loneliness in the United Kingdom.[14,18]

Emergency nurses who would like to quickly screen for loneliness in their ED patient could use the De Jong Gierveld loneliness scale, revised UCLA loneliness scale, single-

TABLE 1

Examples of screening topics found in commonly used loneliness and isolation screening tools

Campaign to End Loneliness Measurement Tool[18]	Asks 3 questions about contentment with friendships, relationships, having enough people the older adult felt comfortable asking for help and if relationships were as satisfying as they would want them to be.
The De Jong Gierveld 6-item Loneliness Scale[18]	Asks 6 questions about feeling empty, missing people, feeling rejected, having adequate people to call upon for help and feel close to and trust completely.
The UCLA Loneliness Scale[18]	Asks how often the older adult felt they lacked companionship, felt left out or isolated.
Single-Item Questions[18]	Asks about frequency and current status of sense of loneliness.
Lubben Social Network Scale (abbreviated)[20]	Asks about frequency and number of contacts with relatives, ease of talking with them, and comfort the older adult feels with calling for help. The same questions are repeated substituting friend for relative.
Indicators from NSHAP study[21]	A tool with an extensive scoring system that asks about social network characteristics, living arrangements, number of friends and family, and social support.

item "scale," the Campaign to End Loneliness Measurement Tool,[18] or simply ask the patient if they are feeling lonely. It should be noted that none of these tools measures the risk of social isolation, and not all have been validated or universally used, but the answers would give emergency nurses a general sense of how the patient feels that they are doing in regard to feeling lonely.[18]

Social isolation is distinctly different from loneliness.[3-13,18,19] Living alone was the most common factor associated with social isolation, and almost 50% of the older adults lived alone.[9,11,12,19] It is important to note that although someone who is socially isolated may have a high loneliness score, there are just as many who meet the definition of "socially isolated," yet are able to develop and maintain a network of contacts and connections and thus say that they do not feel lonely.[11,19]

The Lubben Social Networking Scale was most frequently mentioned when searching for tools that screened for isolation.[20] The National Social Life, Health, and Aging Project provides a list of indicators identified as potentially helpful in determining the risk of social isolation, although it is not specifically identified as a screening tool.[21] The American Association of Retired Persons (AARP) Foundation's "Framework for Isolation in Adults Over 50" provided a meta-analysis of tools used to measure isolation and loneliness, noting that tools related to measuring isolation were limited.[19] The AARP provided a list of individual measures useful in gauging isolation, with the notation that "isolation in adults age ≥50 years occurs due to a complex set of circumstances and factors at the individual, social network, community, and societal levels."[19] Living alone, mobility or sensory impairments, major life

transitions, limited resources, language barriers, location, and low income were identified as some of the factors that affect the ability to connect with other people.[19-21] (See Table 1 for a list of indicators.) The AARP authors also noted that health status can have an impact on the ability to connect with others and that all factors contributing to social isolation can also contribute to loneliness.[19] Finally, the AARP authors noted that variations in how researchers described, defined, and measured work on isolation demonstrated that "additional research would be helpful in standardizing tools and interventions."[19]

As noted, there are currently no simple screening tools that can be used in the emergency department to identify the older adult suffering from, or at risk for, both loneliness and social isolation. However, asking basic questions about living alone; the number of social or family contacts; and the patient's satisfaction with quantity, quality, reliability, and trust of these contacts, as well as asking the older adult if they feel isolated or lonely may provide enough information to lead emergency nurses to take action.

Actions To Take When a Patient Is Lonely or Socially Isolated

Interestingly, no specific interventions related to loneliness or social isolation have been proven to be effective in the long term, especially related to improving health.[3-6,18,19] In the words of 1 study's author, there is a "dearth" and "paucity" of studies that are well constructed, evidence-based, or replicated that describe the actions to

TABLE 2

Examples of ways to increase connections, decrease loneliness, or isolation

1. Spend quality time and connect with the older adult when they are in the department as a patient. (Remember that difficulty hearing can cause additional disconnection.) [3,16,18]

2. If your department does patient call backs - take the time a make that call to an older adult and re-connect with them. These call backs were shown to be decrease sense of loneliness and isolation. [3,16,18,22]

3. Work with the provider to obtain a referral for a home visit to check on the patient. Provide documentation that validates the ICD-10-CM codes application. [3,16,18]

4. Talk with family about safe ways to do face-to-face visits through windows or patio doors. Once a week is recommended. [3,16,18]

5. Provide resources listing agencies in the area that can help with transportation, respite care, meals on wheels, volunteer activities, other social activities or ways to connect with other seniors. [3,16,18]

6. Promote positive thinking, meditation, appropriate physical exercise, and breathing exercises. [3,16,18]

7. Ask if they have considered getting a pet if appropriate. [3,16,18]

8. Provide education to staff and family that addresses attitudes and stereotypes about older adults with a goal to decrease ageism and shunning while increasing connecting with the older adult. [3,16,18]

9. Provide and demonstrate how to use new technology – video apps, etc. so the older adult can connect with others via on-line video systems. [3,16,18]

take when a patient is lonely or socially isolated.[5] The Agency for Healthcare Research and Quality released a study in 2019 that looked at interventions targeting social isolation and loneliness, as well as their impact on health in those aged above 60 years.[11] Their key messages noted a lack of consistency in terminology, screens and measurements being used, effects of interventions, adverse events as a result of interventions, and follow-through by investigators in their reports.[11] These sentiments were echoed in other meta-analyses reviewing this critical issue of loneliness and social isolation. Despite being in the forefront during the COVID-19 pandemic, concern regarding dealing with loneliness and isolation in the older adult is not a new concept, and evidence-based solutions to the problem are still being sought.[3-6,18,19] It is also important to recognize

and remember that loneliness and social isolation will continue long after COVID-19 has been conquered. As 1 author put it, loneliness and social isolation are just "different epidemics to fight."[6]

What Can Emergency Nurses Do?

Despite a lack of standardized screens and proven methods of approaching loneliness and isolation in the older adult, emergency nurses can ask questions of the patient about feelings of loneliness or being socially isolated and take actions to help mitigate risk to an older adult's health caused by these issues. It should be recalled that social isolation and loneliness are multifactorial; therefore, a variety of solutions should be considered when attempting to assist the older adult to reengage with others, overcome the risks of isolation and loneliness, and decrease the risks placed on their health.[11,18,19] Emergency nurses can make a difference by simply asking the older adult, "How are you doing? Do you live alone? Do you feel lonely or isolated? Do you feel you have the help you need and trust? Do you get to visit with someone you like?" Then, the emergency nurse can take some steps to help reconnect the older adult.

The Campaign to End Loneliness document, as well as the AARP "Framework for Isolation in Adults Over 50" and the 2019 Agency for Healthcare Research and Quality document, all provided ideas that could be employed to combat loneliness and social isolation.[11,18,19] Many of

TABLE 3

Apps for Mobile, Tablet or Desktop Video Chat

Apps for Mobile, Tablet or Desktop Video Chat[25]
Zoom
Skype
Facetime
Google Hangouts
Google Duo
WhatsApp
Facebook Messenger

these, as well as other options gleaned from the literature that emergency nurses could consider when attempting to increase connections, decrease loneliness, and lessen social isolation in the older adult, are listed in Table 2.

During an ED visit, the nurses can help keep the older adult who complains of feeling lonely or socially isolated "connected" by spending some extra time talking with the patient and connecting the patient with family using technology (eg, video chatting applications Table 3). When it is again safe to do so, nurses can create a cadre of volunteers who can sit and visit with a lonely or isolated older adult during their ED visit. Emergency nurses can also maintain lists of senior events, ride-share programs, and other volunteer opportunities that can be shared with older adults. The nurses can also connect the lonely/isolated older adult with meals-on-wheels programs, senior centers, local churches, or other senior activities in their community that may help to keep them from feeling isolated or lonely. Some emergency departments make follow-up calls to check on patients seen in the department. This is an excellent opportunity to reconnect with the older adult and decrease that sense of loneliness or isolation. It is also recommended in the American College of Emergency Physicians' Geriatric Emergency Department Accreditation Criteria as a way to improve geriatric care.[22]

Emergency nurses should work with the ED provider to obtain a follow-up referral for the older adult who is at risk of being isolated or complains of being lonely. Emergency nurses should document information that validates the need for referrals and additional care on discharge. The *International Classification of Diseases, Tenth Revision, Clinical Modification* (ICD-10-CM) Z codes include categories that capture social determinants of health and things that affect patient health but are not necessarily a specific disease or injury.[23,24] "Problems related to living alone" (*ICD-10-CM* Z60.2) has been used to obtain additional services for the older adult who is lonely or isolated.[23,24] *ICD-10-CM* codes Z55 to Z65 identify additional socioeconomic or psychosocial circumstances (living alone, feeling lonely, mobility/communication issues, and so on) that may influence patient health status and provide validation for additional contact with other health services that can be helpful for the older adult who is lonely or socially isolated.[23,24]

Although there are currently no rapid screening tools or long-term "fixes" for loneliness and social isolation in the emergency department, it is important for emergency nurses to ask a few pointed questions and identify the older adult patient with minimal social contacts or connections,

physical limitations, and living situation that places them at risk of loneliness or social isolation. If seeing a risk, set into motion actions that will help the older adult be more connected, less isolated, less lonely, and ultimately healthier. These actions may not be the final "fix," but they can be the first steps to correcting social isolation and the loneliness of aging.

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Moral Dilemmas of Nurses and Paramedics During In-Flight Medical Emergencies on Commercial Airlines

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Abstract

During commercial flights, in-flight medical emergencies may lead the cabin crew to request assistance from qualified health care professionals among the passengers. Although a physician's function and role are well known and virtually universal globally, the role, education, and scope of practice of nurses and paramedics varies significantly. This article analyzes the possible dilemmas that medical professionals other than physicians who assist during in-flight medical emergencies may face and presents recommendations for aviation authorities. There is an identified need for universal cross-border regulations and an awareness of legal and ethical boundaries for medical responders other than physicians on board commercial international aircraft.

Key words: Ethics; Moral dilemma; Paramedic; In-Flight medical emergency; Airline; Flight crew

Introduction

In-flight medical emergencies on commercial airline flights are not rare events and occur in approximately 1 in 604 commercial flights.[1] When an in-flight medical emergency occurs, the cabin crew will usually be the first to respond, assess the situation, and provide first aid. However, in most cases of uncertainty or apparent urgency, the cabin crew will seek medical assistance by making an announcement requesting the help of any medical professionals on board.[2] Historically, the terminology used in such announcements included the word doctor,[3] which effectively left out all other health care professionals who may also be suited to handle the emergency. This is ironic, given that nurses were employed as flight attendants[4] to provide professional care in case of a medical emergency in the early years of commercial passenger aviation. On the basis of personal observations and experiences, airlines have recently begun to change the terminology in their announcements from "medical doctor" to "medical professional,"[2] likely because of improved understanding of changes in medical qualifications and the roles of different professionals in the modern medical world.

In-flight medical emergencies can be broadly divided into 2 categories: injury-related and health-related. Today, most injury-related medical emergencies occur as a result of "rough-air" or turbulence. However, burns (especially by hot water or ovens) and falls (typically involving elderly passengers) are also common.[5] Health-related emergencies range from issues related to atmospheric pressure changes (eg, dizziness; nausea; vomiting; vasovagal syncope; gastrointestinal issues; and ear, nose, and throat issues), respiratory difficulties (usually because of pre-existing medical conditions) and may even include complex cardiovascular emergencies, which can lead to fatal arrhythmias and possibly death.[6]

A passenger who experiences an urgent medical condition during a flight may prefer to have an emergency medicine physician, preferably with aeromedical training, on board.[5] However, encountering such a physician on commercial flights may not be particularly common. Experienced nurse practitioners, emergency nurses, or paramedics may be available. These professionals may be more adept to handle medical emergencies than physicians with a nonemergency background. However, the many health professions, other than physicians, mentioned previously are unique to the North American education and licensing model and are not recognized globally.

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Currently, there are no unified, international standards relating to the medical assistance during in-flight medical emergencies nor regulations regarding who is authorized or to what extent health care professionals are authorized to assist a passenger in distress. Therefore, in-flight medical emergencies may create moral dilemmas for responding volunteers.

Scope of Practice, Legal Status, and "Duty to Help"

In contrast to physicians, who hold the title of doctor and are universally accepted as medical authorities, the education, scope of practice, and regulation of nurses and paramedics are highly diverse worldwide.[7] Therefore, nurses and paramedics from different countries vary significantly in their knowledge, abilities, public perception, and protection from liability. During an in-flight medical emergency, a nurse or a paramedic must not only gain the trust of the patient but also the flight crew, who are the gatekeepers to the onboard medical kit and other aircraft resources.[5]

It is logical to assume that the crew's trust and perception of the responding medical provider will be based on their mental model, which is framed by their experiences with their home country's medical system. Although the professional title may be nurse, the skill set behind the title might be different depending on the country of origin. In more conservative, entirely physician-based medical systems, nursing roles are mostly instrumental, assisting, and "order dependant."[8] It is likely that airline crews from such countries may not feel comfortable entrusting nurses to solely manage an in-flight medical emergency, particularly if it may cause flight diversion.[9] In other situations, airline crews may have unrealistically high expectations of a nurse, based on a nurse's role in their home country's medical system. However, the nurse on board may not be capable nor legally permitted to perform diagnostic or treatment procedures on the basis of their country of licensure. For example, an aircrew from the United States or Canada may expect a relatively high level of skill and independence from a nurse on the basis of their personal experiences in their home countries. However, an individual presenting as a nurse from a country where nurses have mainly assisting duties would not live up to the flight crew's expectations.

This same situation also applies to paramedics. Many countries do not have the paramedic role, but rather they have physician-based prehospital emergency medical systems. Even the word paramedic has a different meaning in different countries. In some countries, such as the US, Canada, or Israel, a paramedic is an independent advanced emergency medical professional. In other countries, such as

former Soviet Union countries, a paramedic is a first responder with basic first aid training. Additionally, certain medical roles exist only in several former Soviet Union countries. For example, "the feldsher" is a medical professional who has extensive autonomy, especially in the prehospital setting and is capable of managing a wide range of emergencies and chronic conditions.[10] The role of a feldsher is somewhat similar to the nurse practitioner in the US but more focused on the prehospital emergency setting. As a result of these differences and the lack of universal regulations across the global airline industry, legal aspects of medical treatment by health professionals other than physicians on board an aircraft are not well defined and may become complicated. Such uncertainty, coupled with unclear regulations, may lead to skilled and qualified professionals not volunteering in cases of onboard medical emergencies.[11]

Good Samaritan Laws

There are 2 fundamental versions of Good Samaritan laws. The first is common in the US (in 47 states), Canada, and the United Kingdom and protects bystanders from legal prosecution in the case of assisting another person in distress. The second exists in several countries and territories (including 3 US states), most commonly in continental Europe, and declares a mandatory duty to assist a person in distress (sometimes also called a "Duty to Help" law) (Table).[12] The legal and ethical differences between these 2 versions are significant. The first version provides a safety net for the health care professional to volunteer, whereas the second version theoretically mandates the health care professional to step forward, with the potential for sanctions if they do not. Variations in a nurse's scope of practice and differences in autonomy, decision-making ability, and legal

TABLE

A partial list of countries by type of legal protection for health care professionals as bystanders based on the Good Samaritan law

Protection only	Protection with a duty to help
Australia, Canada (except Quebec), India (not in all states), Ireland, Romania, United States (47 states and DC)	Argentina, Belgium, Brazil, Canada (Quebec), Denmark, France, Finland, Germany, Greece, Israel, Russia, Serbia, Spain, United States (Minnesota, Vermont, Rhode Island)

requirement to act, based on their country (or state) of practice, may lead medical professionals who are not physicians into a morally distressful decision between their duty to care for an ill or injured passenger and the potential legal consequences of applying their knowledge and skills on board an aircraft.

The fundamental ethical principle of duty to care may be perceived as universal and independent from the situation's setting and legal variables.[11,13-15] Therefore, the responding health professional may feel it is ethically required of them to offer their skills if requested, especially if they normally practice in a setting that mandates them to do so under a duty to help law. In most cases of in-flight medical emergencies, medical professionals volunteered and assisted.[16,17] This may be because of the strong moral compass of the health professionals, coupled with the perceived duty to care and the ethical principles of beneficence and nonmaleficence, leading them to step up. However, it is also possible that nurses and paramedics from countries with the mandatory version of the Good Samaritan law would more frequently step forward and offer help than those from countries where the law only provides legal protection. However, there is no literature to date investigating this.

Good Samaritan laws (in all variations) do not apply in cases of gross negligence and "legal bonds"—if the person is on official duty (and is being paid, in some states), he or she must provide medical or nursing care within their scope of practice.

Overview of the Authority on Board

A review of the current international aviation regulations and legislation suggests that there is no organized or universal methodology for involving passengers with medical qualifications during an in-flight medical emergency. Moreover, there is no unified methodology for handling in-flight medical emergencies, and generally speaking, the airline industry has not made an effort to address the problem. Statistically, owing to increased air traffic, the chances of having a health care professional on board decline each year. Airlines have been advised by several international aviation organizations (eg, International Civil Aviation Organization [ICAO] and International Air Transport Association [IATA]) to build protocols under the guidance of their company medical advisor.[18,19] Many airlines have also established a relationship with medical facilities and medical consulting companies to have physicians on call to assist during emergencies by satellite phone, which is available to the flight crew in most modern aircraft.

According to international aviation law, decisions on board ultimately remain in the pilot-in-command's (PIC's) (or captain's) hands. The origins of the captain's authority are deeply rooted in maritime law and tradition. At sea, operations in an unnatural environment required a single responsible authority. A ship's captain had absolute authority and was the unquestioned commander responsible for the ship, cargo, and crew.[20] Depending on the country's flag being flown, the captain could order someone to be restrained or locked up, remove any staff member, refuse to carry passengers or cargo, and perform a marriage legally.[21] The modern aviation law differs slightly between countries, but the same concept of the PIC's almost absolute power is present. Federal Aviation Regulation 91.3 states, "The PIC of an aircraft is directly responsible for and is the final authority as to the operation of that aircraft." The regulation further notes that in the event of "an in-flight emergency requiring immediate action, the PIC may deviate from any rule to the extent required to meet the emergency."[22] During an in-flight medical emergency, the captain's authority is an essential factor for responding health professionals to consider. It may also create a distressing situation for the responding clinician because the captain's decisions may conflict with what they think is best for the patient on the basis of their view of the situation.[1]

Possible Conflicts Between Health Professionals and the PIC

An ethical and legal dilemma may arise from the fundamental difference in the responsibility between responding health professionals and the aircraft captain. Health care professionals are typically expected to be fully dedicated to the patient's health. However, the captain of the aircraft is responsible for all of the passengers and crew on board while also subject to company and governmental regulations. If a conflict occurs between the health care professional and the aircraft captain, the health care professional must remember that the captain's authority is superior, despite their responsibility to the patient's health. Although it is highly unlikely, the captain may ignore not only the onboard responder's opinion but also the opinions of the on-call consultant physician. This may be because of flight safety issues, security, or even political reasons, of which health care professionals may not be aware. The PIC may refuse to land because of technical issues (eg, aircraft being too heavy to perform an immediate landing or lack of suitable runway) or because of the

inability to land in an enemy state of the home country of the airline. The additional but no less important factor that the PIC should consider is the presence (or absence) of suitable medical facilities in the vicinity of the possible airport of the diversion. All these factors may lead the PIC to decide differently from the medical volunteer and/or airline consulting physician. In such cases, the captain's decision must be respected by the volunteering health professional. However, it should be documented in the airline medical incident form (an airline form that medical volunteers may be required to fill out and is generally similar to a standard ED chart page). However, the health professionals are ethically expected to continue to provide the best possible treatment for the patient.

Challenges Among Onboard Responder, Patient, and Medical Authorities

REMOTE PHONE CONSULTANT

Thanks to satellite technology, direct contact with medical advisors on the ground have become an available and reliable tool for both the aircrew and the volunteer responders who assist. When an airline consulting physician is contacted and the onboard volunteer is a nurse or a paramedic, the traditional chain-of-command is expected to be followed with the physician providing medical direction to the on-board responders. However, the challenge is that the volunteer responder on board the aircraft is the only individual who can visualize and interact with the patient. Being an independently licensed health care professional, nurses and paramedics must be able to make clinical judgments that are best for the patient, even if they differ from the medical consultant. Such a unique environment and unique dilemmas demand specifically tailored regulatory solutions for the airline industry. For example, a health care provider from an airline's home country may need to provide pre-scribed treatments and recommendations to a nurse from another country about treating a patient from a third country. The ground consultant may follow protocols and clinical approaches, which may be considered wrong, outdated, inappropriate, or insufficient by the nurse or the paramedic on board. Guided by patient advocacy, which is an essential value of the nursing profession, the nurse may face a dilemma in whether to follow the medical consultant's treatment plan.[23] Such a complicated ethical and legal matrix should have a regulatory basis in international aviation regulations and offer clear protections for responding health care professionals.

INFORMED CONSENT

Another dilemma that may be faced by responding professionals involves informed consent of the patient to receive treatment. Patients may be reluctant to receive care from a health professional with whom they are unfamiliar. The patient's interaction with their home country's health care system may lead them to refuse treatment from a nurse or a paramedic because they may have a different set of preferences or understanding based on their experiences. Health care professionals are expected to respect patient autonomy and do their best to protect patient health and life as much as possible in coordination with the patient, the family, and the crew.[9] Refusal of treatment by the patient on the basis of a mistaken perception of the volunteer health care professional's qualifications may cause further damage and deteriorate a situation. Global licensing management and international regulation regarding the scope of practice may assist a crew in reassuring the patient of the qualifications of a specific volunteer health care provider, based on the country of origin and license, and ultimately help the patient to have "truly" informed consent.

HANDING OFF CRITICAL OR DECEASED PATIENT

Additional challenges may arise in extreme situations (eg, resuscitation efforts or other critical conditions) in the context of decision-making about landing. It is important to recall that local laws may apply to the volunteer health care professionals and may not be in favor of "non-doctor" treatment in the case of diversion and emergency landing in different countries.[24] Ethical and legal considerations of providing medical treatment and then "handing off" the patient to local health care providers may create problematic situations in countries where Good Samaritan laws do not exist. For example, a critically ill patient may be declared dead on landing, and onboard volunteers may be held accountable if neither variant of the Good Samaritan law is established in the country. The PIC should be aware of the diversion's circumstances and the potential complications of landing with a critically ill or even deceased person on board. Preferably, the concerns should be discussed with the volunteer health care professionals before making the decision.[17] Landing with a deceased person on board (even if the physician on the ground does the declaration of death after landing) may lead to a local investigation (in some places a criminal investigation) and may involve the health care volunteers who assisted during the flight. The volunteer health care provider may not be held accountable for the outcome, but it may cause other challenges for the volunteer. For example, they may be removed from the flight until a more complete

investigation is conducted. Flight crew, ground staff, and health professional volunteers must be aware of these potential complications and be prepared to handle such situations. Comprehensive, international regulations are needed to help ensure an equitable process in place for such situations.

MULTIPLE RESPONDERS

When more than 1 health care provider volunteers to assist during an in-flight emergency, it may create a distressing situation and regulatory challenge. When health care volunteers come from different countries and health systems, issues of hierarchy and work relations may be encountered. Cabin crews, especially in-flight service managers (pursers), should be aware of the potential tensions and work toward preventing the complex situation from escalating. Adding to the complex nature of the interaction is that most volunteer health care providers are accustomed to practicing in institutional environments, not in the confined space of an aircraft with limited medical supplies. Even paramedics, who are familiar with out-of-hospital environments, might be under increased stress being in an aluminum tube 10 miles above the ground.[25]

The common assumption is that a physician should step forward to assist, on the basis of the Hippocratic oath requiring them to do so ethically.[24] This ethical duty, which many health care professionals may have, combined with the supposed protection (or requirement) provided by a Good Samaritan law, may propel health care professionals to volunteer. The volunteering health care professionals may quickly find themselves in a stressful, unknown situation in an unfamiliar environment. Stress has negative effects not only on personal and professional performance but also on interpersonal relationships between health care professionals. All of these stressors combined can quickly lead to poor decision-making capacity, poor outcomes, and additional challenges and dilemmas. The aircrew, which is familiar with the environment, should continuously supervise and manage the situation and must be involved in all stages of the response, even if the care being provided is out of their scope.

Current Situation and Recommendations for the Airline Industry

Standardization and universality are cornerstones of modern air transport. As a critical element of flight safety and efficient air space management, pilots and dispatchers worldwide must use the same terminology, maps, navigational aids, radio frequency ranges, and more. The ICAO

and the IATA manage de-facto the global airline and airport industry by publishing guidance materials, which are nearly universally accepted by local aviation authorities as mandatory regulation papers. In 1998, the US House of Representatives legislated the Aviation Medical Assistance Act, which includes a section about release from the personal liability for the person assisting in the case of an in-flight medical emergency.[26] However, to date, there is no similar international regulation.

ONBOARD EQUIPMENT AND REGULATIONS

Medical manuals by ICAO and IATA focus almost exclusively on the medical aspects of crew certification and occupational hazards (eg, fatigue issues), but little on passengers' health in general and in-flight medical emergencies in particular.[18,19] Manuals include a suggested content list for the onboard medical kit (sometimes called a doctor's kit), but this list is not mandatory. Therefore, every airline creates an inventory for their medical kits that may be quite different.[27] A typical onboard medical kit includes oral non-narcotic analgesics, antihistamines, antinausea agents, and bronchodilators. Most kits worldwide will include intravenous access cannulas, at least 1 type of intravenous crystalloid fluid, and cardioresuscitation drugs. A kit usually includes equipment to measure blood pressure (automatic or manual), a stethoscope, airway management and ventilation equipment such as laryngoscope, airway, and bag valve masks. The kit also typically includes hemorrhage control equipment such as tourniquets and bandages. Nasogastric tubes and urinary catheters may be included but are not common. However, the variety among different kit supplies, especially medications, is significant and is another cause of added stress for the responding health care professional. Therefore, onboard volunteer health care professionals will not know what they will find inside the kit and what other medical equipment is available (eg, an automatic external defibrillator or a pulse oximeter). Unfortunately, there are no standard, unified cross-industry guidelines on how to respond to an in-flight medical emergency or even how to identify which personnel are qualified to use the equipment.

PERSONNEL IDENTIFICATION AND DEFINITION OF THE SCOPE OF PRACTICE

Some airlines have made attempts to map medical personnel beforehand on a voluntary basis and have created special frequent flyer programs for licensed medical personnel in their home country. This entices them to fly with their airline and gives the airline the ability to locate health care

professionals in the case of a medical emergency.[28] However-er, these few programs are limited to individual airlines and cannot resolve the global problem of authorizing or identifying onboard volunteer health care professionals. The growth in air traffic has increased the availability of flights and, as a result, has led to the growth in the incidence of in-flight medical emergencies.[16]

This increase in in-flight medical emergencies demonstrated the need for an organized global effort to map health care personnel flying as passengers. This would allow aircrews to contact willing health care volunteers directly, should the need arise. This should be supported by universal regulations, outlined by ICAO and IATA advisory documents, which could further lead to the creation of universal policies and procedures of managing in-flight medical emergencies. The involvement of both organizations is vital to ensure sufficient support from member states in ICAO and member airlines in IATA because many modern airlines operate and have bases in more than 1 country. In coordination with local aviation authorities, airlines can provide an option for passengers to provide their medical qualifications during the ticketing process, and licensing can be verified by passengers' country medical authority, thereby enabling them to be called on to assist.

Universal regulation of the response methodology to in-flight medical emergencies, responsibilities of passengers who assist as health care professionals, and even more critical, universal and global application of Good Samaritan laws on all commercial flights are also necessary and may save lives and promote flight and passengers' safety. Promoting nursing and paramedic assistance during in-flight medical emergencies requires involvement of not only aviation regulators, but also medical and nursing professional organizations, such as the American Medical Association, American Nurses Association, Emergency Nurses Association, National Registry of Emergency Medical Technicians, International Association of EMT's and Paramedics, European Society for Emergency Nursing, Asia-Pacific Emergency Nursing network, and others. In addition to professional organizations, which are reliable and efficient at evaluating and defining the scope of practice and ethical boundaries for their members, cooperation between local nursing and paramedic authorities (eg, Ministry of Health, schools of nursing, and emergency medical services agencies) of the ICAO member countries and local aviation authorities is vital. These groups can contribute to the identification of differences in education and scope of practice for nurses and paramedics from different countries and help build a unified response plan for in-flight emergencies that can be adopted globally.

Conclusion

The current response to in-flight medical emergencies is fraught with challenges and dilemmas for the responding volunteer health care professional. The current system is a patchwork of policies, processes, and regulations that is highlighted by the global airline industries' disarray, lack of universality, and limited standardization in managing in-flight emergencies. This creates moral, legal, and ethical dilemmas, especially for medical personnel who are not physicians. The formation of easily translatable, universal policies is long overdue but requires close cooperation between aviation authorities and professional medical and nursing organizations for harmonization between aviation realities and the abilities and values of nurses and paramedics. The United Nations–based ICAO can and should coordinate between member states, and IATA can facilitate the dissemination and adoption of the regulations for commercial airlines. Additional research and legal analysis are necessary to establish the compatibility of universal laws and regulation with aircraft legal status issues mentioned in the Tokyo Convention[29] and liability limitation mentioned in the Montreal Convention.[30] Clear and transparent definitions of what can be done, by whom, and what should be avoided will help nurses and paramedics step forward during an in-flight medical emergency and will help aircrews understand their abilities and set realistic expectations for these health care professionals.

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Cannabinoid Hyperemesis Syndrome: A Review of the Presentation and Treatment

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CE Earn Up to 10.5 Hours. See page 507.

Abstract

After the increasing legalization of cannabis, there has been a rising trend in cannabis consumption, especially among heavy users. Cannabinoid hyperemesis syndrome is a syndrome of cyclic vomiting related to chronic cannabis use. The difficulty of diagnosis and treatment of this syndrome has led to a disproportionately high use of health care resources. Although the exact mechanism of cannabinoid hyperemesis syndrome is still unknown, patients typically progress through prodromal, hyperemetic, and recovery phases. Persistent vomiting in a patient who reports relief with hot showers should trigger the consideration of cannabinoid hyperemesis syndrome as a possible diagnosis. For treatment, antipsychotics such as haloperidol or droperidol have been shown to be more effective than conventional antiemetics for symptom control. Capsaicin should also be considered, given its positive efficacy and low adverse-effect profile. Providers must be aware of cannabinoid hyperemesis syndrome, its diagnosis, and treatment, given the increasing prevalence. Further research is required to elicit the exact mechanism and additional therapies for this syndrome.

Key words: Cannabinoid hyperemesis syndrome; Cannabis; Cyclic vomiting; Treatment; Emergency department; Haloperidol; Droperidol; Capsaicin; Drug abuse

Cannabinoid Hyperemesis Syndrome

Cannabinoid use in the United States continues to increase, as does the number of patients with cannabinoid hyperemesis syndrome (CHS). Data previously published in the *Journal of Emergency Nursing* identify the challenges that CHS causes for ED staff and frontline nurses.[1] CHS is of increasing concern because of the proliferation of nontraditional cannabis products such as those in electronic cigarettes. In a 2020 *Morbidity and Mortality Weekly Report*, up to 20% of the e-cigarette users have admitted to using cannabis in their e-cigarettes.[2] In addition, the coronavirus

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disease pandemic may also be a contributor to the increasing number of cases of CHS because marijuana sales have skyrocketed in states where it has become legal.[3] This may be a result of state lockdowns or the belief that cannabis consumption may help to ease the stress and anxiety of the pandemic.[3]

Cannabis is the most widely consumed drug worldwide, with an estimated 188 million users (approximately 3.8% of the global population) between the ages of 15 years and 64 years.[4,5]

As of 2020, recreational cannabis in the US has been legalized in 11 states and decriminalized in another 15.[6] This represents a significant change in cannabis access, use, and public acceptance since Pizarro-Osilla[1] published her article on CHS in 2018. The continued increase in legalization, coupled with the reported increase in cannabis use as well as an increase in flower and concentrate potency and cannabis use disorder diagnoses, highlights the need for this updated paper.[4,5,7] We will review the incidence, pathophysiology, clinical manifestations, and treatment of CHS because emergency nurses must be aware of this debilitating disorder because the likelihood of their managing a patient presenting with CHS is only increasing.

With the increasing prevalence of heavy marijuana use, it is important for health care providers to be aware of a major adverse effect of this drug associated with chronic use: CHS. CHS is defined as a syndrome of cyclic nausea

and vomiting in the setting of regular cannabis use that resolves after abstention from cannabis.[8] It was first described in 2004 by Allen et al[9] and has since been found to be particularly difficult to diagnose and treat in the emergency department. A study by Perrotta et al[10] that looked at the health care costs of CHS patients during a 2-year period found an average cost of $76 920, with an average of 5.3 computed tomography scans, 17.3 ED visits, and 6.8 hospital admissions per patient. Patients averaged 17.9 ED visits before a diagnosis was made.[10] It is important for emergency nurses to understand and recognize CHS to prevent patients from experiencing inappropriate diagnoses, costly testing, and unnecessary suffering.

There have been many proposed mechanisms for CHS, the leading of which suggests a dysregulation of the endocannabinoid system. It has been proposed that with chronic cannabis intake, there is desensitization of the peripheral cannabinoid receptors in the enteric nerves, causing slowing of gastric motility.[11,12] In addition, a review paper by Sorensen et al[11] described 7 major, commonly cited diagnostic characteristics with their respective incidence: history of regular cannabis for any duration of time (100%), cyclic nausea and vomiting (100%), resolution of symptoms after stopping cannabis (96.8%), at least weekly cannabis use (97.4%), compulsive hot baths with symptom relief (92.3%), abdominal pain (85.1%), and male predominance (72.9%). Seventy-five percent of the CHS patients met 4 criteria, and 92% met at least 3 criteria. Other characteristics that were associated with CHS included reliable return of symptoms within weeks of resuming cannabis use, normal bowel habits, negative medical workup, and weight loss less than 5 kg. Notably, the ED visits were mainly attributable to inhaled cannabis, with no reports of CHS in patients only using cannabis-infused edibles.[8] There is a significant overlap between CHS and cyclic vomiting syndrome, a functional gastrointestinal disorder. Studies suggest that many patients currently diagnosed with cyclic vomiting syndrome may in fact have CHS.[13] Ultimately, CHS is a diagnosis of exclusion, and therefore further workup is needed during initial presentation.

Clinical Manifestation of CHS

There are 3 main phases of CHS: prodromal, hyperemetic, and recovery.[14]

The prodromal phase is characterized by mild nausea and abdominal discomfort, typically in the mornings. Patients may start taking hot showers or increase their cannabis use to self-treat their symptoms.[14] The hyperemetic phase is when patients often present to the emergency department.

Their chief complaints may be nausea, vomiting, or abdominal pain and often with episodes of retching 5 times per hour.[15,16] This phase typically lasts 1 day to 2 days but may last from 1 day to 10 days and often presents with dehydration, acute kidney injury, electrolyte derangements, or weight loss.[9,10,15] Patients may stand in the shower for hours, during which they describe a temperature-dependent relief, with the relief being directly correlated to the temperature of the water.[12] Such severe symptoms have led to reports of patients presenting with burns from prolonged hot water exposure or pneumomediastinum from repetitive vomiting.[17,18] Finally, patients eventually transition to the recovery phase, during which they slowly improve their nutritional intake, regain their weight, and normalize bathing patterns. Of note, many will relapse in their use of cannabis, with eventual reentry into the prodromal phase.[14,16]

Treatment of CHS in the Emergency Department

Management of symptoms has been historically difficult because conventionally used antiemetics such as serotonin antagonist (eg, ondansetron), antihistamines (eg, diphenhydrAMINE), dopamine antagonists (eg, metoclopramide and prochlorperazine), and benzodiazepines have demonstrated limited success.[10,11,19] It is the failure of these conventionally used antiemetics that results in increased health care use such as laboratory testing, imaging studies, and hospital admissions.

Antidopaminergic antipsychotics such as haloperidol and droperidol have been found to be moderately successful in controlling symptoms during the hyperemetic phase.[20,21] A recent retrospective review by Lee et al[22] found that CHS patients treated with droperidol had less than half the length of stay compared with those treated with conventional therapies. It has been shown that delta-9-tetrahydrocannabinol increases dopamine synthesis, turnover, efflux, and cell firing, which may explain the mechanism of the success of this class of medications.[23] Typical dosing has been suggested to be 5 mg intravenous or intramuscular of haloperidol and 0.625 mg to 2.5 mg intravenous droperidol.[10,22] A potential adverse drug effect includes QT prolongation, which has been reported in both agents.[24] The risk for QT prolongation typically occurs with intravenous administration and with quantities exceeding that of the recommended dose.[24] Other adverse effects include sedation, extrapyramidal symptoms, neuroleptic malignant syndrome, and hypotension.[24]

Capsaicin has also been described as an inexpensive, readily available, and safe treatment for CHS with

reasonable efficacy.[25-27] Capsaicin is theorized to activate the TRPV1 G-protein–coupled receptor, which interacts with the endocannabinoid system.[25-27] The suggested regimen described is topical application of 0.075% concentration capsaicin cream to the patient's abdomen or back of arms 3 times daily, keeping caution to avoid sensitive areas of the face, eyes, nipples, and perineum. The applicator should wear nitrile gloves when applying the cream and wash their hands afterward.[10,28] The patient may experience initial discomfort, and the adverse effects may include local burning, itching, redness, and swelling, especially if higher doses are used.[28] If there is excessive irritation, washing the skin with soap or alcohol is more effective at removing the capsaicin than plain water.[28] Many hospitals carry this product on formulary, and it can be either found in the automated dispensing machines in the emergency department or be obtained from the inpatient pharmacy.

In addition, supportive therapies may include intravenous fluids for dehydration or electrolyte repletion for any derangements to prevent end-organ damage or arrhythmias, respectively.[29] Opioids should be avoided because an association with bowel dysfunction and worsening gastrointestinal adverse effects has been reported.[11]

Monitoring in the Emergency Department

In the emergency department, the patients should be monitored for adverse drug effects related to the selected treatment medications and resolution of cyclic vomiting. In addition, they should be provided education on cannabis cessation because abstinence is the only known cure. Once a patient stops cannabis use, it may take up to 10 days for full resolution.[10,11] Referrals should be made to recovery coaches, social workers, or other professionals trained in addiction medicine to prevent propagation of this cycle experienced by patients with CHS.

Implications for Emergency Nursing Practice

With legalization of cannabis and increasing prevalence of heavy cannabis use, nurses need to be familiar with the adverse effects of this drug, especially CHS. Emergency nursing can be crucial in the prompt recognition of CHS, and screening should be performed on all patients for marijuana use. Furthermore, nurses should be aware of the novel treatments because they are atypical compared with the treatments used to care for the usual vomiting patient.

Conclusion

CHS is a syndrome of cyclic vomiting in the setting of heavy cannabis use that can be difficult to diagnose and treat. Relief with hot baths or showers is virtually diagnostic. Opioids should be avoided, whereas conventional antiemetics may be attempted. However, priority needs to be given to antipsychotics and capsaicin over other treatment modalities in the emergency department.

Author Disclosures

Conflicts of interest: none to report.

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PLANNING FOR CHAOS: DEVELOPING THE CONCEPT OF EMERGENCY PREPAREDNESS THROUGH THE EXPERIENCE OF THE PARAMEDIC

Check for updates

Authors: Alison Day PhD, PGCE, RN, FAEN, Sophie Staniszewska DPhil (Oxon), BSc (Hons), and Ian Bullock PhD, PGCert, BA (Hons), RGN, FERC, Coventry, Warwick, and London, United Kingdom

DiEP Model: Dimensions of Individual Emergency Preparedness
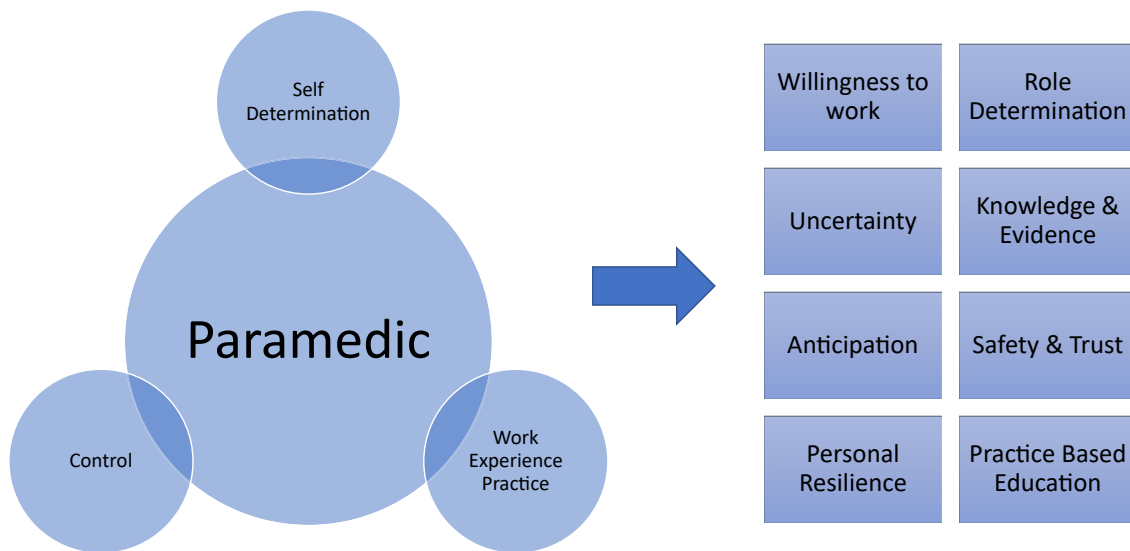
Self Determination

Paramedic

Control

Work Experience Practice

Willingness to work	Role Determination
Uncertainty	Knowledge & Evidence
Anticipation	Safety & Trust
Personal Resilience	Practice Based Education

PLANNING FOR CHAOS: DEVELOPING THE CONCEPT OF EMERGENCY PREPAREDNESS THROUGH THE EXPERIENCE OF THE PARAMEDIC

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Section Editor: Steve Weinman, MSc, BSN, RN, CEN, TCRN, NHDP-BC, TR-C, EMT

Contribution to Emergency Nursing Practice

- The evidence base examining how practitioners prepare for mass casualty incidents is limited. The published literature offers a retrospective view of experience, with few studies examining and understanding the individual lived experience prospectively.
- The main finding of this research is that the individual experience of emergency preparedness is complex, multidimensional, and individualistic. Consideration of experience is important when evaluating how practitioners prepare and train for this aspect of their role.
- Key implications for clinical practice are that standard emergency preparedness, with focus at the organizational level, is not sufficient for the individual practitioner. A significant change in preincident education is required to make preparation more effective and to ensure that emergency preparedness is fit for purpose.

Abstract

Objective: Emergency preparedness is a developing specialty with a limited evidence base. Published literature primarily offers a retrospective view of experience, with few studies examining and understanding the individual lived experience of practitioners prospectively. This study explores paramedics' lived experience of emergency preparedness and applies that learning.

Methods: Thirteen paramedics were recruited through purposive sampling. Face-to-face semi-structured interviews explored their individual experiences of emergency preparedness, in line with the idiographic focus of Interpretative Phenomenological Analysis.

Results: Through data analysis, the following superordinate themes were identified for further discussion: self-determination, control, and experience-based practice. Participants appeared to value their role and the unpredictable environment in which they worked. Personal resilience, an area that they suggested is not covered effectively within individual preparation, was viewed as important. The participants articulated that risk, threat, uncertainty, safety, trust, and control were important concepts within individual preparedness. These paramedics valued practice-based knowledge and education as credible and transferrable to their clinical work.

Conclusion: Evidence from this study suggests that standard emergency preparedness, with the focus at organizational level, is not sufficient for the individual workers or for an overall effective response. Dimensions of individual preparedness are presented, with the paramedic central to the experience within a conceptual model (the DiEP model), creating a new form of emergency preparedness that reflects the individual paramedic's experience.

Key words: Emergency preparedness; Education; Major incident; EMS; Paramedic

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Introduction

Emergency preparedness is a complex and broad concept that encompasses health care fields including medicine, nursing, and prehospital care and is 1 phase (stage) of the "disaster continuum"[1-3]. Emergency preparedness can include training and exercises, drills, and simulations and is focused on preparation, rather than actively dealing with a clinical incident.[1,2,4,5] There have been few attempts to define emergency preparedness,[5-8] and these definitions lack a clear link to the individual worker. While acknowledging the diversity and multidimensional aspects of the concept of emergency preparedness, a proposed weakness is the limited understanding of how theory impacts clinical practice and how the individual working in this area experiences this concept.

The multidimensional aspects of emergency preparedness as described in editorials and opinion pieces are poorly defined and described.[5-9] In academic literature, there is some attempt to classify emergency preparedness into the following categories: political, strategic, managerial, clinical, and educational.[2,8,10] The political, strategic, and managerial literature incorporates risk and threat levels, role and responsibilities, intra-agency response, organization hierarchy, and resource implications.[10-12] The clinical and educational categories include clinical response planning, the management and treatment of casualties, the use of specialist clinical equipment, knowledge retention, and health care professionals' competency and clinical skill base.[1-9]

Unscheduled incidents include natural, transportation, and industrial disasters, mass gathering, and terrorist attacks. The threat is changing, with an increased risk of "home-grown" attacks as well as known international terrorist groups,[13,14] as demonstrated in the lifetime of this research. In addition, the perceived risk of a "lone-wolf" or "Mumbai" style of attack has also increased, adding a new emergency preparedness dimension for health care workers.[14-16] These unscheduled catastrophic events create enormous challenges for emergency personnel and their role in preparing for unscheduled episodes. Historically, major incident training was the primary domain for the emergency services. Currently, owing to heightened risk of terror threat, it is a raised priority for all health care personnel.

At a strategic level, guidelines have been put into place, and there is an increased allocation of funding for the purchase of equipment, but there are expressed concerns about training and knowledge levels.[1,2,11,17]

Preparedness often focuses on organizational and community planning required for an unexpected clinical incident.[1,2,12] The consequences of not planning and preparing for a major incident include impact on human life (death, risk of disease, long-term disability), impact on local community (grief, business continuity, financial impact), and the risk of fear within the community.[2,9,12] In addition, as resources are directed toward the major incident, routine medical care must continue so that adverse impact on care quality is minimized.

The participation, experience, and engagement of the paramedic within emergency preparedness plans remains unclear. Research within other areas such as the military[18,19] and aviation[19,20] suggests that an understanding of individual experience is vital for an effective response. The perspective of the paramedic is important to consider, because working as first responders, they are actively engaged in preparedness and response. Studies that explore aspects of individual experience, perceptions, or attitudes focus on training needs, knowledge retention, and access to training and protocols.[1-10] These studies offer an insight into the practicalities of training but do not appear to capture the personal element involved in this role. For an adequate clinical response to occur, health care personnel must be willing to undertake their role and work within this environment.[21,22]

Paramedics' current engagement with emergency preparedness is practical and clinically orientated rather than drawing on relevant albeit partial evidence or underpinning insights about experience.[2,18] A key limitation is the significant lack of conceptualization into their practice of emergency preparedness and the varying definitions. It is unclear what knowledge or evidence the paramedic draws on to inform their emergency preparedness clinical practice and whether this includes evidence of experience. Until these experiences are understood, preparation cannot be developed in a reflexive way. The currently adopted standardized approach does not acknowledge the individual workers' context, perceptions, attitudes, or requirements, resulting in a standardized model that may remain inflexible and partial. The overall result is skills-based training with minimal theoretical input.[2,18] New conceptual knowledge, acknowledging the individual practitioner's experience, will further develop and refine effectiveness of future clinical practice.

Consideration of how the individual paramedic experiences an emergency/disaster is key in preparing an effective response, because of the likelihood that they will be the first health care personnel at an incident. The context of individual experience needs to inform training and the transition from normal work to emergency preparedness work. The purpose of this qualitative study is to explore and understand the concept of emergency preparedness through the

Interview
Focus on the individual's experience of emergency planning.

- What is it like for you to work in an emergency environment?
- How does that feel, what were your thoughts when that happened, tell me more about that, how does that work with what you said earlier in relation to….
- What do you do to prepare?
- Tell me about how you get ready for an emergency?
- What is it like to be constantly prepared for a major emergency?
- What are your experiences of emergency preparedness?
- What does the term 'emergency preparedness' mean to you?
- What do you feel are the most important components of emergency preparedness?
- What are the important factors that need to be in place for people to engage in emergency preparedness?
- Describe the equipment that you have prepared for a mass casualty incident (and what that equipment means to you)?
- Is there anything else you would like to add about your experience of emergency preparedness training?
- How do you feel this area needs to be developed?
- What should the evidence-base look like?
- What is your vision for the future of emergency preparedness?
- What feels comfortable for you to engage in?
- How do you feel about preparing?
- What motivates you to engage in emergency preparedness?

FIGURE 1
Interview schedule

experience of paramedics and determine some of the motivations, barriers, and enablers when engaging in emergency preparedness.

Method

An Interpretative Phenomenological Analysis (IPA) methodology was chosen for this study, enabling comprehension of the individualistic perspective of experience.[23-26] Listening and understanding of the human experience is the key to this research and underpins methodological choice.

Data were collected using semi-structured interviews, exploring paramedics' experience of the concept of emergency preparedness. Ethical approval was obtained from both the academic institution and the ambulance service. Before the interview, a Participant Information Sheet, which included information on an employee counseling service, was supplied to all subjects via email. Participants had the opportunity to ask questions before completing the consent form. Confidentiality and anonymity were maintained throughout.

SETTING AND SAMPLE

Paramedics who served in an emergency response role were recruited via in-house weekly email briefings and printed signs on their staff noticeboards. The specific attributes sampled were that the participants were registered clinical

paramedics, employed by a regional ambulance service, who were likely to have experience of emergency preparedness. Thirteen paramedics consented to participate in this study. This sample size reflects the idiographic component of IPA and enables the subtle analysis of words and phrases that are required for this in-depth review of the chosen experience,[27–29] allowing the participants to "think, talk and be heard"[28] and ensuring that their individual experience remains central to the study.

DATA COLLECTION

The semi-structured interviews were exploratory and interpretative, with appropriate prompts to ensure that experiences could be explored in-depth.[24-27,30-32] They were carried out at the participant's workplace in a quiet area, away from colleagues to minimize disruption, ensure quality audio recording, and allow a confidential dialogue to occur. The schedule (Figure 1) commenced with a broad question about their experience in the ambulance service and how it feels to work in an emergency environment. The average interview length was approximately 1 hour, 14 minutes. The total interview time was 16 hours, 10 minutes, and 51 seconds.

DATA ANALYSIS

An interpretative phenomenological methodology, exploring the views of the participants, requires a data analysis method that, in addition to describing a situation, also interprets the data to increase comprehension and provide clarity, yet allows the participant to remain central to the process through the use of direct quotations.[23-27,30-32] This detailed, first-person account is a distinctive characteristic of this approach.

The recorded interviews were transcribed verbatim by the Principal Investigator, with symbols used to note laughter, significant pauses, and hesitations. The act of self-transcribing allowed deeper familiarity with the data and allowed "hearing" of the participants' voice. This was the first stage of data analysis.[30,31,33] Notes regarding the setting, the respondents' body language, and other nonverbal communication were documented to capture the atmosphere and data in its entire context. The interpretative component of IPA requires that these additional interactions be included when reviewing the exchange between the researcher and the participant,[31] and these were added to the transcriptions for the data analysis phase.

Each transcript was read thoroughly, multiple times, to enable familiarity with the text and provide an immersive view into each interview.[30,31] In addition, a research diary, with the initial notes regarding the interview and the interaction between the researcher and the participant, was reviewed alongside the transcript, enabling active engagement with the data.[25,31] Notes were then made at an exploratory level, and initial manual coding commenced on a line-by-line basis, alongside descriptive, linguistic, and conceptual highlights.[25,31] This phenomenological approach focused on key features of their individual experience. Interpretative analysis then occurred, resulting in theme generation across the transcripts.

FINDINGS

Three identified superordinate themes of self-determination, control, and experience-based practice reflected the paramedics lived experiences of emergency preparedness. Within IPA, these themes allocate a descriptive label detailing the conceptual essence of the themes contained within it.[25,34] Subthemes were then identified, reflecting dimensions of lived experience that have not previously been recognized in the emergency preparedness literature and offering further insight and connection to the overarching superordinate theme.

This paper reports on each theme by using key quotes from the participants to illustrate the findings. Pseudonyms are used to protect participant confidentiality.

SUPERORDINATE THEME: SELF-DETERMINATION

Self-determination emerged, particularly in relation to role determination and personal resilience. Self-determination theory provides an insight into individual characteristics that impact on self-motivation and psychological resilience.[34-36] In this study, self-determination details the importance and impact of the individual's role perception and working culture on their motivation to work in this unpredictable environment. Moreover, the concept of personal resilience acknowledges the psychological aspect of functioning, at a personal level, within unexpected, potentially overwhelming incidents.

Subtheme: Personal Resilience

This discussion focused on how an individual copes when anticipating their experience of an incident, responds to an incident, and potentially recovers psychologically after the experience of an incident.

I imagine, if the day comes and you deal with something like that, and you are one of the crews that

turns up… even the most cold-hearted clinical person in the world, it would be likely that they would have some kind of feeling towards that, emotion towards that so it is going to be difficult. People aren't going to be robots in doing it. (James)

The participants discussed the need to distinguish between the physical and psychological aspects of the role when actively engaging in a mass casualty incident.

"You almost have to dehumanize the patients to deal with 20, which some people don't like either." (Sally)

The participants also noted the separation of psychological and practical domains in preparation and suggested varying approaches to decoupling emotions from the physical reality.

How would I cope with that? Mentally? Can I remember the protocols? Practically? That's another thing. If it is not endorsed with protocols, if it continuously reminded to you in weekly bulletins or through training and it is not active then it tends to be put in the back of your head really until you may need it. I suppose psychologically you think it could never happen but it will happen one day. (David)

It is assumed that psychological preparation is part of each stage of emergency preparedness and response. This contrasts to Harry's viewpoint, who has worked in the ambulance service for 25 years.

It is going to happen you know and we have just got to deal with it whereas perhaps it will affect me later on, it wouldn't affect me…. or I feel that it wouldn't affect me too much at the that time and as I say I have not dealt with it, I don't know what it is going to be like in the future or anything like that so I would be hopeful that there would be a back-up sort of plan for us, if you know what I mean, to sort us out after. (Harry)

All the paramedics suggested that if a disaster situation unveils, the provider must acknowledge the incident and hope that a back-up plan is in place.

If I'm honest, I don't think the ambulance service considers your mental status at all….I honestly think that it is part and parcel of the job as well. I came into the job knowing that I am going to see and deal with things, that the normal everyday jobs would never see. So I think you just learn to accept things better but again that only comes with time, doesn't it? (Edward)

These quotes highlight some of the challenges of training for the psychological aspect of the role. Key issues include the difficulty in simulating clinical incidents, ensuring training needs are individualized, and evaluating training effectiveness.

Subtheme: Role Determination

Self-identity refers to "how people define themselves in relation to others"[37] and includes factors such as impact of identity on personal functioning, group interaction, and self-motivation. Powerful dialogue noted specific differences in their paramedics' role when compared with a more "routine job."

"I've never really wanted an office job, that doesn't suit me at all." (Jessica)

Participants noted the diversity and unpredictability of their workload and the requirement of shift work.

There is just something nice about the fact that you don't come to work 9 – 5 and sit down at a desk all day for eight hours and then you have to sit in rush hour to get home. It's just nice having that unpredictability, and variety and difference. (Jessica)

These paramedics appear to perceive their role as exhilarating in contrast to a "regular" job. The unpredictability, diversity, outside environment, and unknown element of their work appear as a motivator, rather than a barrier to engagement and offer a wider context of their experience. The working environment appeared significant to all 13 participants, with individuals valuing the personal mental and physical demands of this setting.

Participants identified their role as being action-packed and adventurous, which often complemented their personal passion for outdoor pursuits:

I wanted to treat a casualty in a dangerous, challenging environment. I think you need to be up for that challenge and physically fit as well, as it is a physically demanding job so you need to keep your fitness up. (Mary)

Paramedics identified themselves through an "action hero" and "rescuer" lens, and this appeared to be a self-motivator and influence their attitude to their role and expectations of the type of incidents they were expected to respond to.

"The excitement. Excitement. The adrenaline rush, the knowledge that you can be involved in this world and you could make that little difference." (Sally)

The "action hero" concept was evident from the majority of paramedics interviewed. Two divergent and conflicting accounts emerged, offering a more measured view on the day-to-day role.

"My Mum imagines that I am running into terrorism, like the London bombings every day. I don't think she quite gets what we do [laughs]." (Sally)

The language used by the participants offers an insight into the "culture" of the paramedics' experience, which is often from a military or operational background, as well as the use of humor as a coping mechanism for dealing with the anticipatory response and actual response to incidents.

"I think that understanding the ambulance service as a whole is quite a mickey-taking atmosphere and I think that's how people get through the day-to-day in this job." (Sally)

Together, these results provide an important insight into how paramedics work in the culture of the ambulance service. The use of functional and military language is present in all transcripts.

SUPERORDINATE THEME: CONTROL

Control as a theme emerged when exploring paramedics' preparation and training, how they deal with uncertainty and the changing nature of an incident, and their relationship with both their clinical equipment and their training program.

Subtheme: Uncertainty

All 13 paramedics suggested that they felt a lack of control in their anticipatory planning for a terrorist incident.

There's a paradigm that we've got the watches, but the terrorists have got the time, so we don't know when it is going to happen, we don't know what it is going to consist of, where it is going to happen or how it is going to happen but every time that the terrorists come out with a different methodology then we have to change our preparedness. (Philip)

This perhaps reflects the focus on response and offers an insight into the lack of control that these responders feel when dealing with this area.

"Terrorists and that kind of world is becoming very prominent, they are thinking differently and however much work we put in to it, these people are always going to be a step ahead." (Sally)

This could be viewed as a defeatist attitude, implying that the emergency services are engaged in a losing battle. It may reflect the paramedics' natural reactionary response to a situation and shows some frustration of the lack of control that these health care workers have of this uncertain threat. No paramedic suggested how they could address the changing threat in the context of emergency preparation and feel more in control; rather, they acknowledged that the terrorists and their threat are evolving and that it was challenging to engage with these changes, even for experts in this specialty.

At the start of any incident, there is going to be… utter chaos, so if you encompass that into your plan, it then becomes part of your plan and then you can work on from that because it will be chaos for the first hour, it will be total and utter chaos with masses and masses of casualties. (Harry)

Flexibility, adaptability, and the acknowledgment of uncertainty and chaos appeared important to these participants, both in their preparation and response to an incident. This concept is not currently recognized within the education provision;[38] rather, training content appears static and does not acknowledge the complexities in this area. Acknowledging the uncertainty may offer some control and reassurance to these individuals as they engage in preparedness activities.

Subtheme: Safety and Trust

Paramedics described how, through their training and their specialist clinical equipment, they perceive an increase in safety in the context of an incident. The symbolism of equipment and the response to training appears to offer the paramedics an element of control in an area with multiple uncertainties. All the participants discussed the use of specialist emergency preparedness equipment in their interviews. It emerged from the data analysis that their clinical equipment appeared to offer the paramedic a perceived element of safety and that they placed trust onto this equipment that enabled them to function within their role.

Within a more challenging environment, like the hot zones… I found it is about trusting your equipment and trusting what you have been told and if you can get that into your head that the ropes are going to hold you whether you are 50 foot off the ground or 150 feet off the ground. That is the key thing to me. (Edward)

Jessica implied that the only option is to trust your equipment and that this is not a conscious decision; rather, as a professional, she needs to function in her role:

"It is going to work, you can only rely on what's there, like, trust in the equipment that they've given you whatever research they've done with it behind you know, you're just going to have to cope." (Jessica)

She appears to suggest an additional trust relationship, and that is to the manufacturers who she perceives as accountable because they have researched and marketed this equipment.

Isla's trust in the equipment reduces her concerns about her personal safety.

[Safety], no not really, we don't really discuss it [laughs], it is not something that we ever discuss [laughs]. Yeah, but not, I don't worry because we are probably safer doing what we do than members of the public are cos' we have the equipment, all the PPE, we need to keep us safe, whereas they don't have anything to keep them safe apart from us helping them. I emphasize we should be the ones that are safe. (Isla)

This perceived increase in safety appears to occur in response to the symbolic nature of the equipment rather than its measurable effectiveness.

Sally suggests that this feeling of trust and safety can result in individuals feeling invincible.

I think also, in some particular jobs specifically, I also think the PPE make some people feel invincible and that is the bit that I was made very aware of the other day, that people feel invincible once they put it on and I think there is still that element that you need to be slightly safe about it. (Sally)

There is also the image of a Russian roulette type game when discussing equipment choice. She suggests that one of the pieces of equipment often fails, which suggests that the feeling of safety is perhaps a false perception. This false perception may enable practitioners to feel in control at a time of personal stress to them.

Subtheme: Anticipation

This section focuses on the challenge of training for an incident that is a rarity for emergency service responders. Long periods of time with no exposure to an incident may result in practitioners suffering from exercise fatigue through constant training or a decrease in clinical skills through nonutilization. Participants reported that they value hands-on time with their clinical equipment, in contrast to classroom-based learning.

Tony uses a metaphor of having a toolbox containing implements that need to be "sharp" and ready for action.

He acknowledges that being ready to respond, almost like a sprinter in their starting blocks, is their primary aim but implies that their role is like being constantly on the starting line and waiting for that starting gun to go off.

We are very lucky here as we get protected training time, which is unlike the rest of the NHS where it is so busy. Training is seen as more of a secondary need than the primary response, whereas our primary response here thankfully doesn't happen every day so a lot of what we do is train, for it is almost like a tool ready to get out of the tool box, you have to keep your tools sharp. (Tony)

All participants acknowledged that they were in a constant anticipatory mode with regard to a mass casualty event, resulting in concern about their clinical skills. These practical skills need to be up to date and usable with little notice and with minimal real-life application.

From the participants' accounts, it was evident that there is a sensitive balance between too little training and too frequent training. Rob highlights this issue in this extract.

We have engaged in a lot of training. We sometimes get exercisitis where you do too many, and people get sort of lethargic about it, but for me, until something happens that is what we are using and it is there and we are very proactive in doing that. (Rob)

Participants experience anticipation through constantly waiting and preparing for an incident, which has an impact on training, education, and responsiveness. A key focus in this time is training and education, ensuring that they are ready to respond with no notice. The long-term impact of anticipation on these individuals is not known, and it appears that individual consideration for their practical and psychological needs is required during this time.

SUPERORDINATE THEME: EXPERIENCE-BASED PRACTICE

According to the paramedics interviewed, research evidence does not appear directly related to clinical practice and protocols. These paramedics appeared to value knowledge gained from past events and then transferred and applied at a local level. There seems to be some hesitancy to determine what credible evidence is within this specialty and how this could be applied to such an unpredictable and multidimensional area. The paramedics viewed academic knowledge with some suspicion and seemed unaware regarding how to interpret and apply this at local level.

They determined that practice is often a "best guess" and "made up" as one goes along.

Subtheme: Knowledge and Evidence

The participants were asked how emergency preparedness evidence informs clinical practice. They indicated that their protocols are built on academic evidence, but it became clear, as they began to speak, that they questioned if this was accurate. Standard operating procedures appeared to be significantly valued because they directly influence clinical practice. From the transcripts, it appears that there is a separation between academic evidence and these clinical processes, an unawareness of anything beyond their own local protocols, with the resultant attitude that the academic evidence does not influence their practice.

> *I'm only aware of our own standard operating procedures. It is the bigger picture of it, I am not entirely aware of to be honest. I don't know if the SOPs are developed from an evidence base. I would like to think that they are based on evidence-based practice but yeah [laughs], I would like to think that they are. (Edward)*

Participants reflected that the ambulance service operates in isolation, resulting in paramedics who are not willing to share evidence or clinical guidelines from other professions. This is evidenced from the quote from Rob, in which he appears to take ownership of the ambulance service policy and sees no function of additional credible knowledge:

> *"I mean we have our own set of policies. We have a big policy and everything. The evidence base [sighs], I'm not overly convinced where it all comes from." (Rob)*

All participants noted the challenge of developing an evidence base in a specialty with limited real-world incidents:

> *"What does the evidence base look like in this field? Poor. Because there are very few times when anything can actually happen and that you can gain evidence on." (Colin)*

It is evident that the unpredictability and unknowns of this specialty cause concern.

> *"How can we ever be prepared? How can an evidence base prepare us when we don't know what is going to happen?" (Sally)*

As we were talking, it was evident that Sally had a light-bulb moment, with a realization that she had always presumed that her policies were evidence based, but in reality, she was unsure if they were. This was a pattern that occurred with 11 of 13 interviews and suggests a presumption that evidence base is something that is passively put into practice and questioned.

The limited evidence in this area appears to be dismissed as irrelevant by each paramedic that was interviewed. A reason for this may be a lack of education on research as part of their undergraduate education program, with Isla noting that paramedics did not know how to access, interpret, and implement research evidence.

> *Generally we can't [use research], we can read research, we can get information from it to put forward, I've read this, this and that. What do you think? And then a lot of the time it tends to get dismissed which is unfortunate. I think if they can get more paramedics then they're the ones that get listened to. General run-of-the-mill people on the road don't have the credibility for someone to actually listen to you. So this isn't right, so why don't we try doing it this way, shall we change it a little bit? (Isla)*

This suggests that perhaps research about their own perspectives and experiences needs to be put into a context that is accessible for these practitioners, in terms of both comprehension and application to their local work context. Another potential issue with paramedics using evidence is that they view academics as noncredible because they do not work in a prehospital setting. The suggestion from Isla is that prehospital paramedics should be involved with the research side of their work because other practitioners are more likely to listen to them.

Isla set forth an almost fatalistic approach to the use of evidence in practice, stating that all policies and procedures are set in place and therefore there may be no benefit to evaluating or challenging them.

> *To be honest, I don't really know. I've never had much to do with the evidence-base side of practice of things and I haven't been given any information to say read this, go through this and that type of thing. The procedures are all set in place, aren't they? (Isla)*

These accounts demonstrate that these paramedics appear to value experience. There is an assumption that their local protocols are evidence based, but these individuals have not explored this further. It appears that academic practice has minimal value and application in the area of emergency preparedness.

The paramedics perceive that the published evidence base appears to have limited application in clinical prehospital practice. Practitioners are unable to interpret and apply

academic studies at a local level and prefer to rely on clinical policy and guidelines, which they are unsure of in regard to how they are derived. Response and decision making is often "best guess," and practice is "made up" as they go along, with minimal thought on credible research.

SUBTHEME: PRACTICE-BASED PREPARATION

Training and education are a key part of emergency preparedness.[1,2,4,6,7] Practitioners noted that there is little exposure to real-life incidents and training, and both theoretical and practical preparation are integral to confidence and competence. An area to be examined is the frequency and methods of training, with comments of feeling underskilled and also lethargic about their performance because of excessive training. On reflection, as a result of the practical nature of this role, practitioners were clear that they valued hands-on time with equipment, as opposed to reviewing theoretical guidelines.

All 13 participants noted the requirement for hands-on, practical emergency preparedness education, reflecting the experiential and practical nature of their role. Although each individual appeared to be aware of the relevant guidelines and algorithms, there appeared a limited opportunity to get hands-on with clinical equipment during the preparedness phase.

David appeared anxious that practical training is limited:

> "The ambulance service have given us guidelines and flow charts of what we should do if we go to accidents or the procedures to follow but we don't have the practical side, the rehearsals where we could get hands on." (David)

New emergency preparedness knowledge appears to have been derived from past experiences of actual events. Edward highlights this, suggesting that knowledge generation occurs through paramedics reflecting on the past, resulting in planning adaptation and improvements for future incidents.

> "From what I understand from it, it all develops from major incidents from the past, and people have reflected over different incidents on how things could be changed for the better." (Edward)

Reflective practice is an important component of health care workers' development.[37-40] Little is known, in an emergency preparedness context, how this reflection occurs and whether this is from an individual or organizational level. The participants imply that there is no standardized tool for reflection, suggesting that this process is ad hoc and that lessons learned are applied locally, rather than nationally.

> "We can learn from it [Boston bombings]. We always try and look at the last incident to improve our practice here." (Tony)

The majority of those interviewed reported that they receive information from ambulance crews at the scene and also through interpretation of media reports, which forms a type of nonacademic evidence that may impact future clinical practice.

Numerous paramedics questioned the term "evidence base" when used in the interviews. Ben suggests a practical rather than theoretical evidence base, constructed from real-life learning, with new knowledge translated back into future practice.

> Well I suppose it depends what you mean by an evidence base? Certainly, I don't think that there are any randomized controlled trials and I don't even think, unless you count exercises as being the equivalent of an observational study to learn and practice from, the evidence base is basically [pauses] we had an event and I suppose it is the aftermath of analyzing that event, that generates a little bit of evidence and a little bit of learning. (Ben)

There was a sense among participants that evidence was solely academic quantitative studies, a category of research that they found difficult to relate to this area. Experience, among these paramedics, appeared to be valued as a form of evidence more than traditional academic research.

A learning circle where the response is reviewed, reflected on, and changed for a future event is suggested as a method for improving clinical practice. Again, this demonstrates how these paramedics appear to place importance on practical learning and real-life experience in the form of anecdotal and narrative-based evidence, rather than the use of academic literature (which was not suggested by any of the respondents).

> So I would say that the evidence base that we have for emergency preparedness, really comes from looking at the large-scale incidents, in terms of the big bang stuff we try to, it's a learning circle, more so than an actual thing. So we know it is a problem, how can we actually change it, we implement a new change then we have to wait for the next incident to see if those changes have actually had any effect. (Ben)

Emergency preparedness knowledge collation appears to occur in a subjective and nonstandardized manner, resulting in changes at a local level, with no uniform structure.

Although some transferable lessons will occur, no 2 incidents are the same. As a result, not all lessons learned will be directly applicable to future incidents.

According to the interviewed paramedics, research evidence does not appear directly related to clinical practice and protocols. These paramedics appeared to value knowledge gained from past events and then transferred and applied at a local level. There seems to be some hesitancy to determine what credible evidence is within this specialty and how this could be applied to such an unpredictable and multidimensional area. The paramedics viewed academic knowledge with some suspicion and seemed unaware regarding how to interpret and apply this at a local level. They determined that practice is often a "best guess" and "made up" as you go along.

Discussion

The findings of this study emphasize that emergency preparedness, through the lived experience of a paramedic, is a complex and multidimensional area. Data analysis occurred at an idiographic level, exploring the individual lived experience. All accounts appeared to suggest that within emergency preparedness, the individual context is not considered, with a primary focus on organizational preparation and limited acknowledgment of the involvement of each individual health care personnel's personal context and characteristics. All participants discussed the aims of planning and preparation, role, and impact at organizational level; however, what appears to be absent is how this creates an individual frame of reference.

The findings indicate that emergency preparedness is more complex than the literature suggests and that an individual's experience is subjective and related to personal context. This subjective context does not appear to be acknowledged and reflected in the current practitioner preparation,[1-11] which is currently standardized in content and delivery. Although the risk of terrorism is perceived as uncontrollable and catastrophic,[14,16] these practitioners appear to actively identify and explore areas where they can gain control within their clinical preparation. Exploration of how the general public lives with this risk and deals with a constant threat has been specifically explored[40,41]; however, an important finding of this study is that these health care personnel, as individuals, also experience an unrecognized lack of control and uncertainty working within the recognized national threat. It is unclear to what extent their current education and preparation help them to navigate through these concerns to function in their professional role in the most optimal way, although their current education appears static and unresponsive to their individual experience, not reflecting the fast-changing and evolving nature of this threat, and does not appear to address the individual needs of the practitioner within its delivery.

The acknowledgment of chaos within the participants' planning appears informal, rather than formalized within the systems approach, and reflects one method of gaining control within a chaotic environment. This acknowledgment of chaos within the preparedness plans was unexpected, in contrast to the literature that suggested a degree of certainty through planning. Recognizing and identifying the concept of chaos as a distinct part of the process appears a form of coping for the individual worker. The literature recognizes the concept of chaos within numerous areas of health care.[42,43] However, chaos as a concept is not formally recognized within emergency preparedness conceptual and theoretical models; instead, these aim to negate disruption and promote order and certainty by suggesting a response process. The suggestions of adaptability within a structure, in addition to a core plan, appear to be necessary within emergency preparedness. Education and response need to evolve and update to reflect the diverse and ever-changing threat, offering individual workers the feeling of control over their preparation and clinical practice.

An additional significant theme that emerged in relation to control and safety was the trust that practitioners placed in both their clinical equipment and their training. These findings are consistent with other studies that have highlighted that trust in personal protective equipment increases willingness to work and enhances the perception of personal safety.[1,8] The findings that the trust relationship with clinical equipment is symbolic of control and invincibility adds new insight to an important dimension of individual experience.

The participants noted that education and training are 2 key areas of preparedness, particularly in a specialty where there is a minimal exposure to real-life experience in contrast to other clinical specialties. During the waiting state of an incident, there is a constant anticipation and requirement for readiness; however, this quiet time offers an opportunity for structured training and education to occur,[44] enhancing their preparedness if and when they are called to such an incident. In contrast to the predictable emergency with standard preparation, education, and training components, emergency preparedness by its very nature therefore creates challenges in preparation because the paramedic is not usually in a position to predict the type and nature of an incident. This unknown dimension creates training challenges. These include the diversity of possible incidents, the involvement of multiple departments and agencies, the

demands of simulating this type of overwhelming event, and the constantly evolving threat.[1,4,14] Currently, training is focused on organizational preparation and response, with each individual responder viewed as a component of the team preparations, as opposed to considering the experiences and needs of the individual within the process of preparation, which has emerged as an important but often unacknowledged aspect of emergency preparedness. In addition to preparing for possible incidents by ensuring that the correct equipment and protocols are in place, individuals need to prepare themselves for the experience and how they will interact with an unpredictable and potentially dangerous, if not life-threatening, incident. The way an individual prepares through education and training during this anticipatory period emerged as a key finding in contrast to much of the literature where the focus is primarily on organizational response. These findings suggest that emergency preparedness training needs to recognize, develop, and reflect substantially the individual worker's context, rather than the one-size-fits-all approach that is currently being used, to enable individual preparation with the aim of developing the most effective response to a clinical incident.

Evidence-based practice is a fundamental component of health care, with established frameworks in medicine and nursing.[45,46] Traditionally, this evidence would be derived from research[45-47]; however, this is problematic in an area such as emergency preparedness, where there is a lack of standardized definitions and concepts and the majority of published literature is retrospective event reporting. First, peer-reviewed publications that underpin emergency preparedness are sparse, with evidence appearing to be obtained ad hoc rather than through systematic research, and this knowledge is rarely formalized. Second, individual clinical expertise in emergency preparedness is challenging to obtain because of the rarity of real incidents. This finding has important implications when examining the current limited formal evidence base, which does not appear to consider the individual experience, resulting in clinical practice built on a best guess and personal intuition. This study suggests that participants appear to value experience and clinical protocols more than traditional forms of evidence. This lack of connection between protocol and evidence demonstrates a sense among participants that academic research has minimal value and impact on their clinical practice. This perception may be due to the noted challenges of conducting research in this area.

In contrast to valuing or considering traditional evidence, these paramedics appeared to develop their own evidence base through personal experience or experience of their professional colleagues, reflecting concepts such as tacit knowledge in nursing.[48,49] The theme of practice-generated knowledge was consistent in all accounts. There was a sense among participants that clinical practice evolves through individual paramedics' reflective experience and that practice-based knowledge is credible. This reflective and practice-based knowledge is recognized as 1 type of evidence base for clinical practitioners. Professional craft knowledge reflects the practice context and the intuitive knowledge that these individuals use[50]; however, current training and emergency preparedness do not appear to recognize this.

The interviews highlighted how these individual paramedics perceive and value evidence differently to academics and those from the scientific community. From the interviews, it was concluded that they valued real-life experience and practice-based knowledge, compared with academic research studies, and they found minimal value and application of more traditional research studies, feeling that these were "out of touch" with the day-to-day work in which they were engaged. Despite this, they often felt that practice was a best guess and made up in response to the incident that they encountered. These findings have important implications for developing a respected evidence base, capturing experience both formally and informally in a format that paramedics perceive as credible, usable, and transferrable to practice.

RECOMMENDATIONS

This study found that the individual workers' experience of emergency preparedness needs to be considered in future planning. Personal context and experience need to be accounted for within preparedness, in addition to the core clinical skills and physical response plans already in place.[1] In addition, preparedness needs to be adaptable and updateable to reflect the diverse and ever-changing current threat, with teaching and learning methods being adapted to optimally meet the learning styles of this group.

SUMMARY

Through consideration of the emergency themes and discussion, the following dimensions of the individual paramedics' experience of emergency preparedness have been identified (Figure 2). Although some areas such as practice-based preparation have previously been acknowledged as important, this is the first study that has attempted to deconstruct and then reconstruct the individual paramedics' emergency preparedness experience as a whole to understand how the individual experiences emergency preparedness.
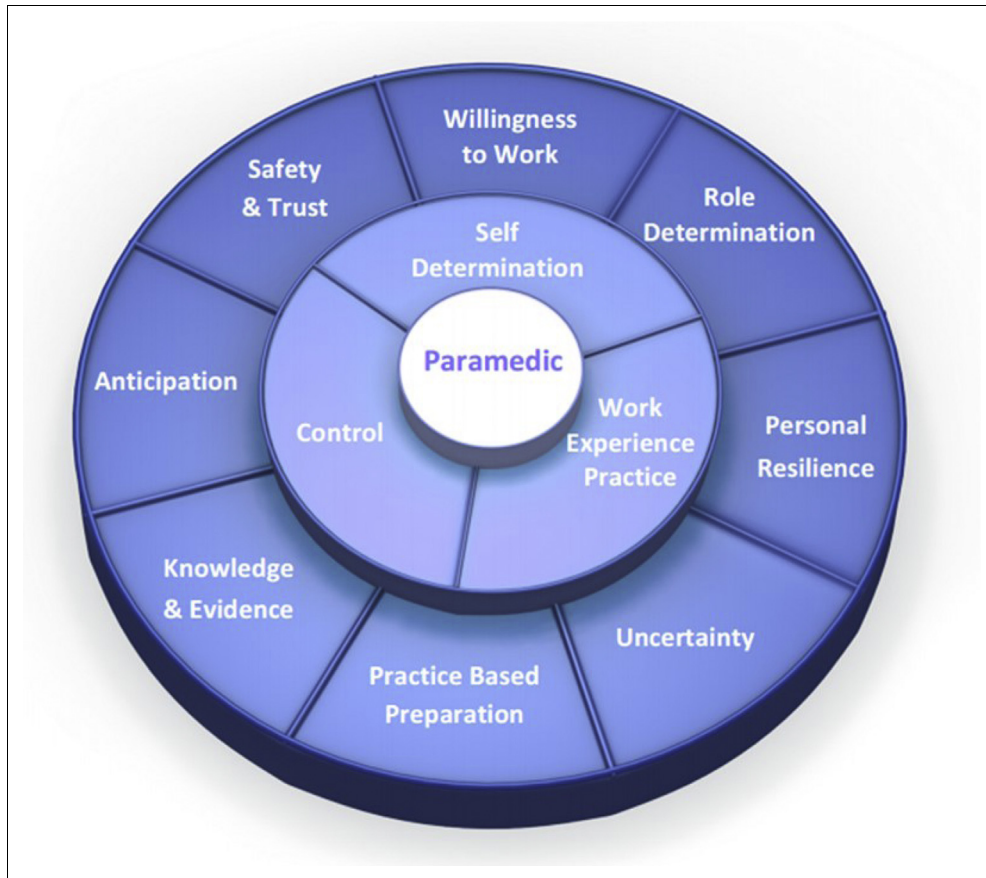
FIGURE 2

The dimensions of individual emergency preparedness (the DiEP model)—the paramedics' experience.

LIMITATIONS

The idiographic nature of IPA results in findings that are theoretically generalizable, promoting connections between research results, the literature, and the reader's experience.[26-31] This results in a detailed understanding of an experience within a given context.[30,31] The reality faced by this group of workers will differ depending on their clinical experience, training, and region of work, and the results are viewed within this context. However, these findings can contribute to an evolving understanding of this individual dimension. It is anticipated that other health care workers and education leads can anticipate how these findings enhance the individual workers' motivation to engage in this area. This offers benefits for both the individual and the wider health care sector.

A considered limitation of this study is recall bias from the participants.[51] Many of the paramedics interviewed have worked for the ambulance service for many years and were recalling experiences, events, and training from their past. Although the accuracy of their recall was considered when reviewing the interview transcripts, it was determined that the opinion they offered at the time of the interview was their individual experience, determined by multiple factors, including the passage of time. This recall of past experience is advantageous because it offers a breadth to their experience, as opposed to recalling just 1 recent training event.

Implications for Emergency Clinical Practice

Emergency care professionals require preparation at an individual level, in additional to an organizational level, when preparing for mass casualty events. Personal resilience needs to be individualistic in nature, reflecting personal contextual life experience, and should be delivered in addition to the generic content currently offered. This personal context

should be incorporated into their preparation program, alongside the standardized core skill and knowledge already delivered as part of emergency preparedness. Simulation and hands-on practical training are vital because of the lack of exposure to real-life incidents. This type of training appeared to offer them control and confidence within their role, incuding formal recognition of the anticipatory state that these health care workers experience when waiting for an incident. Acknowledgment of the potential impact of this phase on the individuals' physical, psychological, and education response is required. The focus in preparedness is on education and training while waiting to respond to an incident. The current focus within preparedness is on active preparation, with little recognition of the impact of continuously waiting and anticipating an event. Reflecting this anticipatory response, consideration of the individual is required in how they respond to frequency of training, the physical and psychological demands of training, and the feeling of constantly "being on the starters blocks" and the impact of this on the individual. Formal recognition and acknowledgment of practice-generated knowledge needs to be communicated and utilized in a form that practitioners can relate to and find applicable to their role and clinical practice. Because of the lack of exposure to these large incidents in real life, these paramedics viewed storytelling as a credible and valid form of obtaining real-life information that has a clear practical-based application. This method of conveying this information needs recognition within emergency preparedness to ensure that the information is transmitted in an optimal way to meet the needs of these individuals, possibly through a central repository, containing key facts about past incidents, which should be accessible to prehospital personnel. In addition, a standardized reporting template should be developed to allow the development of a practice-based evidence base to develop. Although central, retrospective repositories are available in other health care fields, such as resuscitation and trauma,[51-53] no formalized database exists in the area of emergency preparedness. Because the participants value real-life experience, and research is challenging to undertake in this area, a central repository with a collation of real-life experiences and lessons learned would be a valuable learning tool for health care workers. A standardized reporting template detailing real-life incidents, similar to the Utstein templates in the specialty of resuscitation,[52,53] containing uniform definitions, terminology, and data sets would enable a new form of knowledge in the field of emergency preparedness. This reporting mechanism could be used to develop evidence in this field, enhancing future training and response.

Conclusion

Evidence from this study suggests that standard emergency preparedness, with the focus at organizational level, is not sufficient for the individual workers or for an overall effective response. There is a need for a new form of emergency preparedness that works on an individual context, recognizing the numerous personal factors, including those that have impact on preparation and response. A conceptual model has been devised, detailing some of the areas that should be considered at the individual level to enhance preparedness and the preparation of the paramedic to these unknown incidents. Standard, generic emergency preparedness serves as a preparation foundation, but a new form of preparedness needs to be developed, recognizing the individual workers' motivations, barriers, and enablers in this area. In recognizing these individualistic elements, some stability and control may be created in an area that is unpredictable and is often viewed as chaotic. This new knowledge should be used to generate new forms of clinical practice, making emergency preparedness more effective, appropriate, and resilient.

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UNDERSTANDING EXCEPTION FROM INFORMED CONSENT IN PLANNED EMERGENCY RESEARCH

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Abstract

Many of the current accepted treatment practices provided to patients in the first critical hour after a traumatic injury, stroke, or cardiac arrest have not been rigorously tested in clinical research trials. The inability to obtain informed consent is often a barrier to research in emergency, time-sensitive situations in which the patient is not able to provide informed consent nor is their family member immediately available to provide consent on behalf of the patient. Planned emergency research, often with exception from informed consent, is a type of research study that involves a patient with a life-threatening medical condition that requires urgent interventions, wherein the current treatments may be unproven or suboptimal, and who, because of their current condition, is unable to provide informed consent. This article summarizes the necessary components for using exception from informed consent in planned emergency research. Understanding the research design, particularly research processes specific to time-critical emergency situations, will ensure that the care provided by stretcher-side emergency nurses will result in optimal patient outcomes and is an integral aspect of emergency nursing practice.

Key words: Informed consent; Exception from informed consent; Emergency research; Consent

M any of the current accepted treatment practices provided to patients in the first critical hour after a traumatic injury, stroke, or cardiac arrest have not been rigorously tested in clinical research trials. The Institute of Medicine's report of emergency medical services in the United States highlighted that half of prehospital interventions lacked an adequate evidence base or had no evidentiary support at all compared with only 5% of prehospital interventions supported by high-quality evidence.[1] The inability to obtain informed consent is often a barrier to research in emergency, time-sensitive situations in which the patient is not able to provide informed consent nor is their family member immediately available to provide consent on behalf of the patient. To encourage research in new or better resuscitative treatment options, the US Food and Drug Administration (FDA) issued specific regulations for conducting research in planned emergency settings in which informed consent cannot be immediately obtained.[2]

Planned emergency research is different and separate from research focused on emergency use of an investigational drug or device. Planned emergency research is a type of research study that involves a patient with a life-threatening medical condition that requires urgent interventions, wherein the current treatments may be unproven or suboptimal and who, because of their current condition, is unable to provide informed consent.[3] Emergency use of an investigational drug or device in a human participant in a life-threatening situation, by contrast, may occur when there is no standard acceptable treatment and there is insufficient time to obtain institutional review board (IRB) approval.[3]

A key component of the study design of planned emergency research is exception from informed consent (EFIC), sometimes called a "waiver of consent" provision. Informed consent is one of the foundational principles of research ethics and a key element in the protection of human subjects. The intent of informed consent is that the participant, or legally authorized representative, may freely choose to prospectively enter into a research study with full knowledge and understanding of the purpose, procedure, risk, and

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benefits of a treatment option, fully respecting their autonomy as a human being. There are many situations in which informed consent may not be feasibly obtained before the initiation of a research study. This may occur when (1) the research participant's mental capacity is limited by their current medical condition, (2) the research intervention must be administered before the consent of the research participant's legally authorized representative is feasible, and (3) there is no reasonable way to prospectively identify individuals who are likely be become eligible to participate in the research study.[4] Certain protected populations, including pregnant women, fetuses, human in-vitro fertilization, and prisoners are explicitly excluded from EFIC.[2] However, children, despite being a vulnerable population, can be included in the research protocol.[2]

Ensuring the protection of human subjects is a fundamental principle in any research study design. Emergency research with EFIC should always be the exception; informed consent should remain the standard in research. Planned emergency research with EFIC must be approved through regulatory bodies including the IRB in all instances and FDA should investigational medications, biologics, or devices be used.[3] In planned emergency research, the research intervention must demonstrate reasonable evidence that it has the potential to provide real and direct benefit to the patient either in animal or other preclinical studies. IRBs and the FDA require additional patient safeguards because of the inability to obtain informed consent before the research intervention. These safeguards include community consultations, public disclosures, and an independent data monitoring committee. These additional safeguards must satisfactorily meet the requirements of the IRB before final review and approval of the research study.[4]

The intent of community consultations as an added safeguard is to demonstrate respect both to the community where the study will occur and the community from which participants for the study will be drawn.[3] Community consultations need to focus on both the geographic area from where study participants will be drawn and the group of patients who share a specific characteristic that increases the likelihood that they will be enrolled in the study.[3] During these consultations, communities should be informed of the need for this research and why the process of consent is not feasible.[3] Discussion should also include all relevant aspects of the proposed research, specifically including the potential risks and benefits.[3] Community consultation is frequently multifaceted including activities such as standing civic meetings, local radio and/or television talk shows, interactive websites, focus groups, or public community meetings specifically organized to discuss the

research study.[3] Every effort should be made to reach out to limited-English proficient individuals or minorities who may be susceptible to becoming research subjects in the study in which they might not otherwise participate. Researchers involved in the community consultation should respond to concerns of the community and provide a means, if possible, to indicate that they would not want to be included in the study.[3] An example of this may be a wristband or necklace provided by the research team.

Before a planned emergency research protocol begins, public disclosure through dissemination of information in the communities in which the study will occur must be sufficient enough to allow a reasonable assumption that the communities are aware that the study will be conducted and of its risks and benefits.[3] This disclosure should include a summary of the research study design and a description of the procedures to be followed, expected duration of the person's involvement in the study and the overall duration of the research study, a rationale as to why the study must be conducted using an exception to informed consent, and, if appropriate and feasible, the opt-out mechanisms.[3] Information about the study can be provided to the public through flyers, advertisements, mailings, or signs posted in the hospital and/or community. In addition, after the completion of the research study, the public must be informed of the demographic characteristics of the research population and the results.[2]

The IRB safeguard of an independent data monitoring committee is responsible for oversight of the clinical investigation. A data monitoring committee is a "group of individuals with pertinent expertise that reviews on a regular basis accumulating data" of a research study advising the research team about the continuing safety of current research participants and those yet to be recruited in the trial.[5] Specific responsibilities include monitoring for effectiveness of the research intervention, monitoring for safety, and monitoring for study conduct.[5] In some instances, data monitoring committees may recommend changes or terminate the research study protocol on the basis of their findings.

Surviving patients and/or their legal authorized representative must be informed about the research study enrollment as soon as feasible. This must include discussion of the patient's inclusion in the research study, details of the research, and the right to discontinue participation at any time without penalty or a loss of entitled benefits.[2] Should the patient or their legally authorized representative be able to provide informed consent within a window of time before initiation of the research intervention, that informed consent should be obtained rather than proceeding without consent.

TABLE

Examples of selected exception from informed consent studies

Trial	Description
RAMPART (Rapid Anticonvulsant Medication Prior to Arrival Trial)[7]	This research study compared the method (intravenous versus intramuscular) in which benzodiazepine anticonvulsants were administered by prehospital providers during status epilepticus in adult and pediatric patients.
ProTECT III (Progesterone for the Treatment of Traumatic Brain Injury)[8]	This research study was to determine if early treatment of moderate-to-severe traumatic brain injury with intravenous progesterone improved outcomes. This study was terminated early when the data safety and monitoring board determined progesterone showed no benefit in improving outcomes.
PolyHeme study: Safety and efficacy of PolyHeme in hemorrhagic shock following traumatic injuries in the prehospital setting[9]	This research study evaluated a blood substitute versus saline as resuscitation fluid when treating severely injured trauma patients in a prehospital setting when blood products were not available.
PACT (Prehospital Airway Control Trial)[10]	This research study aimed to compare endotracheal tube with supraglottic airway as first choice airways adjuncts in the prehospital setting.
PAD (Public Access Defibrillation) Trial[11]	This research study evaluated community-based trial of training in CPR versus training in CPR and use of an automated external defibrillator.

CPR, cardiopulmonary resuscitation.

Despite the ongoing need to contribute to the body of evidence supporting resuscitation treatment options and establishment of the EFIC process as an ethical means to study emergent, time-sensitive hypotheses, few studies have been completed using this research method. Table provides examples of selected exception from informed consent studies. In a 20-year review, fewer than 45 studies were identified.[6] The most common pathologies include cardiac arrest, hemorrhagic shock, and traumatic brain injury.[6] Of the body of literature that does exist specific to the use of EFIC, most focus on the regulatory requirements and their interpretation and the logistics of community consultations.[6] Ultimately, EFIC planned emergency research is a relatively rare occurrence.

Emergency departments can support their frontline hospital staff by establishing an education and communication plan regarding any planned emergency research studies conducted within the community. This should include a summary of the research study, what types of patients might be included, their role in meeting study obligations, and clear instructions on to whom staff should direct patients or family members for additional information. Understanding the research design, particularly research processes specific to time-critical emergency situations, will ensure that the care provided by stretcher-side emergency nurses will result in optimal patient outcomes and is an integral aspect of emergency nursing practice.

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