Burnout or Exploitation? Resiliency is Not the Solution

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The "Future of Nursing 2020-2030: Charting a Path to Health Equity"[1] report discussed nurses' physical, mental, social, and moral well-being as a priority for nursing practice this decade. Of note, the report points out that the physical health of nurses is often worse than that of the public, particularly in the areas of sleep, nutrition, and physical activity.[1] Nurse well-being can be impacted by several factors including, but not limited to, chronic workplace stress, exposure to infectious agents, needle sticks, workplace violence, musculoskeletal injuries, and the impact of long work hours and shift work.[1] The Future of Nursing report also discusses that mental health issues, including depression, stress, and burnout, are common among nurses.[1] Evidence demonstrates that burnout is a serious issue affecting the well-being of nurses[2,3] and that nurses who practice in an emergency setting have significantly higher rates of post-traumatic stress disorder[3] and burnout than nurses in inpatient specialties.[4]

Burnout syndrome is characterized by emotional exhaustion, depersonalization, and decreased personal accomplishments.[2] Evidence indicates that nurse burnout results from constant and chronic workplace stress and often presents as nurse apathy, cynicism, and absenteeism.[2,3] More than half of the 4 million registered nurses in the United States and 1 in 10 nurses globally have reported experiencing burnout.[2] Burnout affects nurses physically, emotionally, and psychologically. Experiencing burnout can lead to health problems such as heart disease, chronic pain, gastrointestinal symptoms, depression, and death.[2] Additionally, nurse burnout contributes to adverse patient experiences, safety, and outcomes, lost productivity, and increased costs within the health care system.[2,3]

For many years, evidence has demonstrated that emergency nurses experience high levels of compassion fatigue and burnout, which adversely affects nurses' well-being and health.[3,4] There are several reported root causes of emergency nurse burnout, including unhealthy work environments, inadequate staffing, workplace aggression and violence, toxic stress, moral distress, and the impact of critical incidents.[1,2,5] Turnbach et al[4] conducted a cross-sectional study comparing the reported well-being outcomes and work-environment quality of emergency nurses and nurses who work in inpatient settings within Magnet hospitals. The researchers found that emergency nurses are more likely to report high burnout levels, job dissatisfaction, and intent to leave than nurses who work in inpatient roles.[4] Further, emergency nurses were significantly more likely to report organizational issues like insufficient staffing, unfavorable work environments, and lack of confidence in managers to resolve patient care concerns.[4] Research on nurse burnout has consistently found that organizational-level factors, including constant and chronic occupational stress, inadequate staffing, and lack of resources, are fundamental causes of nurse burnout.[2] Yet, despite evidence that emergency nurses are at high risk for experiencing burnout and all the physical, psychological, and emotional sequelae that follow, little progress has been made to improve emergency nurse wellness because organizational and systemic factors are not being addressed.

Several approaches have been suggested to address the critical issue of nurse burnout and its impact on nurse wellness. Unfortunately, most of the approaches that are recommended are focused on individual-level interventions. For example, focusing on "self-care" strategies such as getting more sleep, eating better, mindfulness, and building resilience dominates nurse wellness and burnout discourse.[1] This nurse-focused approach places the blame and responsibility of fixing burnout on nurses rather than addressing the organizational and systemic factors that research

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demonstrates lead to burnout. In essence, this approach sends a message that it is the individual nurse's fault that they are suffering from physical and mental health issues and experiencing burnout, rather than the organizational factors clearly identified in the research. This is a form of gaslighting that contributes to ongoing harm to nurses.

Resilience has been identified as a critical strategy for mitigating burnout in nursing[1] and has been defined by Fletcher and Sarkar as "a trait, a process, and an outcome"[6] (cited in Cooper et al, p.553). Personal resilience has been defined as "the ability to cope successfully despite adverse circumstances"[5] (p. 3597). When applying personal resilience in nursing, the inference is that some individuals are better suited to overcoming adversity, which implies that some nurses just do not have what it takes to be a nurse. I believe that resilience is essential for nurses and that being resilient helps to mitigate the harm nurses experience, particularly from critical incidents; however, I do not think that resilience is the solution to addressing the moral, physical, and psychological injury that leads to nurse burnout and ultimately drives nurses away from clinical care roles. Focusing solely on individual-level interventions will not address the ongoing high rates of burnout and ill-being in nursing.

Moral distress and moral injury significantly predict nurse burnout and the decision to leave employers and the nursing profession.[5] Moral distress occurs when nurses cannot practice in alignment with their professional values and expected standards of care. Moral distress directly results from inadequate staffing and resources and unhealthy work settings.[5] Nurses who cannot provide safe, quality care due to organizational issues outside their control experience moral distress. Focusing on resilience allows organizations and the health care system to continue to exploit nurses and their sense of altruism by failing to address the root causes of moral injury, such as inadequate staffing, under-resourced departments, and workplace violence.

Resilience can play an essential role in preventing injury and PTSD caused by bearing witness to crisis and human suffering. Still, it is not a comprehensive solution to addressing the serious issues that negatively impact nurse wellness. Preventing the harm experienced by nurses and promoting nurse wellness requires organizational and system-level change to ensure that nurses practice in safe, appropriately staffed, and healthy environments. The causes of burnout and moral injury in nursing are clear. There are decades of research demonstrating that unhealthy work environments, including those with insufficient staffing to provide safe care, cause moral injury and burnout in nurses.[2] To improve nurse wellness and health, the people who make organizational decisions impacting nursing practice must stop telling nurses to fix themselves and stop blaming them for not being strong enough to thrive in a constant state of toxic stress and moral injury. It is time to start fixing the real problem; building resiliency alone is not the solution. Please see the Emergency Nurses Association position statement on Supporting a Healthy Work Environment and Just Culture in the Emergency Care Setting that is published in this issue for examples of how nurse leaders can improve the work environments of emergency nurses globally.

The *Journal of Emergency Nursing* has a call out for our special issue on Nurse Wellness and Healthy Work Environments. The deadline for manuscript submissions is May 1, 2024. We welcome papers addressing nurse-centered, organizational, and systemic strategies for improving nurse wellness and practice settings. Papers may be submitted at: jenonline.org/content/authorinfo.

Author Disclosures

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Good Leaders Don't Just Lead—They Also Connect and Engage Others

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

When you think of a leader, what comes to mind? Probably an image of a strong person who's mapped out what a group needs to accomplish. A captain who commands troops, sets the course, and decides what to do and when. A company president who charts the best path for everyone.

That's a "classic" Leader in Front—and there's a drawback. A visionary leader who points the way is only half a leader. She must also look back to be sure others follow. He must communicate. She must engage others—making it a collective vision. He must lead but also be a part of the group and the vision.

I think good Leaders in Front lead by example, setting a foundation for what success looks like to them AND including followers who help create direction and purpose in work. As a leader, I'm seldom afraid to take risks. And as a Leader in Front, I try to do three things: set good goals, do what it takes to reach them, and engage others in the vision. There can be obstacles, of course, but clear direction, commitment, and engagement are keys to reaching those goals.

I believe the biggest obstacle for leaders has to do with active engagement. The best Leaders in Front are those who actively engage followers and are checking in, ensuring they are in the loop, communicating, encouraging, and actively seeking input they actually use to adjust trajectory.

When such a leader involves his or her team for a common, agreed-upon goal, everyone feels far more compelled and comfortable with risks and making changes. Why? Because they were consulted and involved, and actively contributed to a vision.

That is the key to what makes the Leader in Front successful.

In their book *Co-Active Leadership: Five Ways to Lead*, Henry and Karen Kimsey-House write, "The 'Co' in Coactive is about connection, engagement, and inclusion."[1] And Patrick Lencioni agrees. In his book, *The Advantage*, he writes, "if people don't weigh in, they can't buy in."[2]

Think about it. Isn't this true in our work as ED professionals? Those actively doing the work must be part of the solution, especially when trying something new or implementing a new concept. It's no longer "how we've always done it."

It's up to us to create conversations that produce workable solutions. In a way, we all become Leaders in Front, each of us in a different way but with a common goal of taking the best care possible of patients.

As that Leader in Front, our job is to engage others who look to us in conversation, discussion, and, yes, vision that we can then incorporate into a common goal. The word TEAM describes Together Everyone Achieves More, and it's fitting in the emergency department. Leaders need active collaboration from above, below, and around them to successfully generate the best patient outcomes.

Norman Vincent Peale, in *The Power of Positive Thinking*, says, "Throw your heart over the fence, and the rest will follow."[3] I think that means a leader needs to pour passion and perseverance into what they are doing—regardless of fear—and encourage those who follow to do the same.

Success is not just a flawless path forward. It's also about missteps along the way because those missteps make us strive harder to achieve. Being transparent with the journey truly inspires those who follow.

Imagine if we all channeled the Leader in Front concept, sharing our vision, working together to develop it, and enrolling others in the journey. How much passion, engagement, and accountability we could generate for the emergency nursing community!

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Letters to the Editor

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Comment on "Implementation of a Behavioral Emergency Response Team in the Emergency Department" J EmergNurs 2023;49:395-402

Dear Editor:

I t was with great interest that we read "Implementation of a Behavioral Response Team in the Emergency Department by Angela Bruccoli.[1] The author reports on an excellent reduction in workplace violence incidents following the implementation of a behavioral emergency response team (BERT). While many look at the number of incidents of workplace violence pre- and post-team implementation, we sought to investigate a frequently overlooked importance of the program, the cost savings. In 2021, we established a hospital-wide multi-disciplinary BERT response. In order to additionally assess the cost savings of the program, we looked at workplace violence claims 1 year prior to team implementation and 1 year post-implementation. In the 1 year prior, 78 claims of workplace violence were filed, with 47 (60.3%) requiring medical treatment at an expense of $59,185. Twelve cases (15.4%) required medical treatment and days lost of work at a cost of $287,230. The total costs incurred from workplace violence incidents in the year prior was $346,388. In the year post-implementation, the number of workplace violence claims almost doubled to 156, but only 52 (34.9%) claims required medical treatment at a cost of $105,709. Sixteen cases (10.7%) required treatment and days lost of work at a cost of $132,854. Total cost for the year post-implementation was $238,563, a decrease of 31.1%. Another institutional expense many forget to consider is the cost of replacing the person who was scheduled to work with another employee. Using a simple model of filling a 12-hour nursing shift at an overtime rate of $40 per hour, the lost shifts due to injury cost $216,480 in 2021 and only $51,840 in 2022. Adding the initial costs from injury, the total cost savings of BERT was $272,465, a 31% decrease in workplace violence-related expenditures. These cost savings are significant and show not only the importance in decreased work injury claims but also the decrease of replacement labor costs.—*Monica Miner, BSN, MSN, MU Healthcare, Columbia, MO; E-mail: minermd@health.missouri.edu; and Christopher Sampson, MD, FACEP, Department of Emergency Medicine, University of Missouri School of Medicine, Columbia, MO; E-mail: sampsoncs@health.missouri.edu.*

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Are Nurses Prepared for What's Next?

Dear Editor:

According to the United Nations High Commissioner for Refugees there are over 110 million forcibly displaced people worldwide.[1] The United States currently hosts a substantial number of refugees and asylum seekers, with over 363,000 refugees and nearly 1.8 million asylum seekers, and these numbers have been on the rise, with more than half being children under the age of 18.[1,2]

The wars in Ukraine and Gaza have highlighted significant challenges to health care. When hospitals, first responders, and medical staff are targeted, access to care is jeopardized.[2,3] The results can be detrimental because those injured may not have access to care, which can lead to life-changing and debilitating injuries. Many of these individuals become refugees, reliant on medical care from host countries. This becomes a challenge when host countries are not prepared for the influx of patients or the extensive medical needs they require.[2] This also causes biased attitudes among health care providers.

The COVID-19 pandemic highlighted the stress on the health care system, especially its effect on nurses who were on the frontline.[4] Nurses are resilient; however, are we prepared for what's next? As disasters loom in our periphery, we can no longer ignore the signs and hope for the best. The challenges of caring for children and refugee families from war-torn countries, with language barriers and cultural differences as well as invisible wounds, are not something for which we, as nurses, are prepared.

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What can Emergency Nurses Do?

ADVOCATE

Advocate for the needs of children and refugees by identifying disaster preparedness barriers and supporting initiatives that are more inclusive and culturally informed. Federal Emergency Management Agency, in partnership with the Administration for Children and Families as well as the Office of Refugee Resettlement (ORR), provides booklets related to disaster preparedness that can be downloaded in different languages.

EDUCATE

Educate yourself by enrolling in classes that are specific to disaster education. Many organizations, such as Federal Emergency Management Agency and United States Agency for International Development, provide training that is free or low cost. Disasterready.org in conjunction with organizations including the United Nations Office for Disaster Risk Reduction, has free online courses to understand displacement and support resiliency better.

ENGAGING

Engaging local non-profits supporting refugees and volunteering with basic health screenings is a great place to immerse. Nurses can mitigate and help prepare communities for the next disaster by earning trust.

Conclusion

Caring for refugees is a complex and nuanced task, but an important one. We as nurses need to be aware of our limitations in providing care to these individuals but also recognize that we don't have to wait until we are faced with a challenge; we can start preparing for it now.

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Implementation of Tenecteplase for Acute Ischemic Stroke Treatment

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Contribution to Emergency Nursing Practice

- Acute ischemic stroke is a neurologic emergency, requiring rapid recognition and treatment with intravenous thrombolysis. Since the publication of the 2019 American Heart Association/American Stroke Association Guidelines that recommend tenecteplase as an alternative agent, several centers across the United States are transitioning from alteplase to tenecteplase as the agent of choice for thrombolysis in Acute ischemic stroke.
- Although several institutions have transitioned to tenecteplase for stroke, there is little published guidance on how to make this transition safely. This paper outlines our experiences and gives guidance for other institutions to implement this change.
- Emergency nurses are vital to the care of patients with Acute ischemic stroke. There are several pharmacologic and logistical differences between alteplase and tenecteplase for this indication. This paper outlines these key differences.

Abstract

Introduction: Acute ischemic stroke is a neurologic emergency, requiring rapid recognition and treatment with intravenous thrombolysis. Since the publication of the 2019 American Heart Association/American Stroke Association Guidelines that recommend tenecteplase as an alternative agent, several centers across the United States are transitioning from alteplase to tenecteplase as the agent of choice for thrombolysis in acute ischemic stroke.

Methods: Our health system transitioned to tenecteplase for the treatment of acute ischemic stroke in 2021 due to increasing evidence for efficacy and potential for improved door-to-needle time. Herein we describe our experience and provide guidance for other institutions to implement this change.

Conclusion: Emergency nurses are vital to the care of acute ischemic stroke patients. There are several pharmacologic and logistical differences between alteplase and tenecteplase for this indication. This paper outlines these key differences.

Key words: Stroke; Neurology; Thrombolysis; Medication safety; Tissue plasminogen activator; Ischemic stroke

The standard of care for the treatment of acute ischemic stroke (AIS) within 4.5 hours of presentation is rapid administration of chemical thrombolysis via intravenous (IV) tissue plasminogen activator (tPA), with or without mechanical thrombectomy.[1,2] Previous guidelines recommend the use of alteplase 0.9 mg/kg IV infusion for this indication.[1,2] Adoption of tenecteplase for AIS treatment has been increasing across

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United States stroke centers since the publication of the 2019 update to the American Heart Association/American Stroke Association (AHA/ASA) Guidelines for Management of Acute Ischemic Stroke, wherein tenecteplase is recommended as an alternative agent.[3]

Our health system is made up of 3 large academic medical centers and 15 community health system sites, with certifications ranging from comprehensive stroke centers to primary stroke centers and acute stroke ready hospitals. A single comprehensive stroke center, located in Rochester, MN, receives patients from the entire health system when they require thrombectomy or other urgent neurosurgical procedures. Three hospitals are designated primary stroke centers and may directly admit stroke patients, whereas all others in the health system must transfer patients to higher levels of care after administration of IV thrombolytic.[1] Here we describe our experience in implementing a transition from alteplase to tenecteplase for thrombolysis in patients with AIS across a large health system enterprise. This required collaboration across specialties, key stakeholder engagement and training of stroke nurses, emergency nurses, and pharmacists.

Stakeholder Engagement

The decision to transition acute stroke management from IV alteplase to tenecteplase came after the 2019 guidelines for the management of AIS were published.[3] It was at that time that tenecteplase received a class II-b recommendation for the treatment of AIS. This was based on the findings of the Tenecteplase versus Alteplase before Endovascular Therapy for Ischemic Stroke trial in which utilization of tenecteplase before thrombectomy resulted in improved reperfusion and functional outcomes compared with alteplase for AIS.[4] Understanding the differences between thrombolytic agents was key to establishing the initial conversation with stakeholders.[5] IV tenecteplase offers many pharmacokinetic advantages allowing for easier preparation and administration by IV push, rather than a bolus and infusion with alteplase (Table 1).[2,6] Additional pharmacologic benefits include increased specificity for clot-bound fibrin and increased resistance to plasminogen activator inhibitor-1. Both medications are dosed as mg per kg with a dose cap at 100 kg. Another advantage to tenecteplase over alteplase is pricing. The average wholesale price for a 50 mg vial of tenecteplase is approximately $8000, whereas a 100 mg vial of alteplase is approximately $11,000.[7]

Tenecteplase was added to hospital formulary for the treatment of AIS, which required buy-in from key stakeholders in neurocritical care, interventional radiology, emergency medicine (EM), and the department of pharmacy. This conversation was driven by a neurocritical care physician who thoroughly reviewed available literature to determine safety and efficacy of tenecteplase. Concerns with tenecteplase were discussed, including off-label use for AIS, drug cost, lack of reimbursement for unused drug, and optimal drug dosing.[8] Various doses of tenecteplase for AIS have been evaluated from 0.1 to 0.4 mg/kg IV bolus; however, a dose of 0.25 mg/kg seems to be the safest and most effective dose of tenecteplase for the treatment of AIS.[4,9-11] In a 2020 commentary, Warach et al[12] acknowledge the off-label use of tenecteplase for AIS and identify that alteplase administration 3 to 4.5 hours from last known normal is also a common off-label use of the drug, both supported by guideline recommendations and primary literature.[3,8] Cost-effectiveness of tenecteplase compared with alteplase has been demonstrated in patients receiving thrombolysis followed by endovascular intervention.[5] Thus, tenecteplase at the 0.25 mg/kg dose (maximum 25 mg,

TABLE 1
Alteplase vs tenecteplase[2,5,6]

	Alteplase	Tenecteplase
Mechanism of action	2nd-generation tissue plasminogen activator	3rd-generation tissue plasminogen activator
Fibrin specificity	Relatively specific	15× specificity of alteplase
Half-life	4-5 min	115 min
Dosing	0.9 mg/kg (10% as bolus) Maximum 90 mg (100 kg)	0.25 mg/kg Maximum 25 mg (100 kg)
Administration	IV bolus over 10 s + infusion over 60 min	IV bolus over 5 s
FDA-approved indications	Acute ischemic stroke, acute myocardial infarction, pulmonary embolism	Acute myocardial infarction

FDA, Food and Drug Administration; IV, intravenous.

100 kg) was added to our hospital formulary based on best cumulative evidence as the preferred agent for AIS, showing improved rates of reperfusion and decreased bleeding compared with other doses studied.[4,8,13]

The transition to tenecteplase as the sole agent for AIS required approval from all the primary and comprehensive stroke centers in our health system. A small number of sites preferred to have alteplase available for use in AIS at the discretion of the managing neurology provider owing to differences in stroke type, severity, and treatments, as well as a higher level of comfort and experience with alteplase. Order sets were built in the electronic health record for both emergency department and inpatient use with the appropriate thrombolytic agents available. It should be noted that the availability of 2 thrombolytics on hospital formulary, allowing for provider selection, may increase the risk of dosing errors.[14] With both thrombolytics stocked in the ED medication dispensing cabinet for different indications, care should be taken to select the correct agent. Within 18 months of implementation, we have seen the convergence of all sites to use tenecteplase preferentially.

Stroke Pathway

COMPREHENSIVE STROKE CENTER

A stroke team and protocol are in place for patients presenting to the emergency department with a suspected stroke. This may be initiated prehospital, in triage, or once a patient is already roomed. Emergency medical services may request a prehospital alert for a neurologic deficit to the ED team based on the Cincinnati criteria.[15,16] Otherwise, when patients present directly to the emergency department, emergency nurses are responsible for triaging neurologic deficits as highest priority for rooming or resuscitation. From there, emergency physician or nurse practitioner or physician assistant assesses for acute neurologic deficits. This allows for prompt evaluation by the emergency provider and activation of the stroke pager, if applicable.[15] The stroke page alerts multiple members of the team including emergency nurse, emergency pharmacist, emergency attending physician, senior neurology resident, neurology attending, Neuroscience Intensive Care Unit (ICU) nurse (stroke nurse), radiology technician, phlebotomy team, and electrocardiogram technician.

Once a potential stroke patient has been identified, the emergency nurse begins by establishing IV access in conjunction with blood pressure monitoring. The emergency pharmacist comes to bedside to assist in the screening for thrombolytic contraindications and obtaining a medication history as able. The neurology senior resident completes a history and National Institutes of Health Stroke Scale (NIHSS).[17] A computed tomography (CT) scanner is held open for all stroke alert pages to allow for rapid assessment and treatment. The patient is transferred emergently to the CT scanner. Blood pressure and blood glucose measurement are required before thrombolysis but CT is not delayed to obtain these. The emergency nurse, neurology resident, and emergency pharmacist accompany the patient to the CT scanner where the Neuroscience ICU trained stroke nurse meets the team in the CT scanner. CT scans are obtained while the team determines whether the patient is a candidate for thrombolytic therapy. Simultaneously, the radiology physician interprets the imaging. If they are deemed a candidate and consent, the thrombolytic is administered in the CT scanner room. The patient is taken directly to the Neuroscience ICU or interventional radiology, if indicated. Initiation of antihypertensives for urgent blood pressure control before thrombolysis may occur in the CT scanner per an institutional protocol. Patients who present to primary stroke centers follow this same protocol but may be transferred to the comprehensive stroke center for thrombectomy via interventional radiology if deemed a candidate; otherwise, they are admitted to the ICU at that site.

Community Sites

Although there are fewer resources at the community emergency departments than the comprehensive stroke center, we have established several ways to support these centers through neurologic emergencies including acute stroke alerts. Tele-emergency medicine (tele-EM) services were established for our health system in 2017, through which EM physicians, nurse practitioners, and physician assistants can conference in with an EM physician at the tertiary medical center to coordinate transfers and facilitate care when there are several critically ill patients to care for at once. EM tele-pharmacist services are available 24/7 to assist in assessing patient suitability for thrombolysis and dosing of tenecteplase.[18] Although tele-stroke and tele-EM are 2 different services within our health system, they can be conferenced together to coordinate ED-to-ED transfer of patients to a primary stroke center for admission and monitoring or to the comprehensive stroke center for further interventions including thrombectomy via interventional radiology and the required repeated images before intervention.

In the community ED sites that do not have a neurologist available for in-person consultation, a tele-stroke protocol is in place 24 hours per day, 7 days per week. Per the protocol, any EM provider can activate the tele-stroke by calling the

admission and transfer center, who activates the tele-stroke provider. The tele-stroke provider is an on-call neurology attending within our health system. They use telecommunications technology including video and audio capabilities to remotely video into the community site. They, in coordination with the on-site EM provider, review the patient history, perform an NIHSS, review CT imaging, and determine a plan of care. Emergency nurses at these sites are responsible for obtaining a detailed history from the patient and family, including last known well and pertinent medical history such as bleeding and use of anticoagulants. If thrombolytics are an option, the neurologist discusses risks, benefits, and process of thrombolysis and then obtains verbal consent from the patient or their caregiver over video. The EM provider caring for the patient then orders tenecteplase for administration by the emergency nurse, along with NIHSS and blood pressure monitoring per AHA/ASA guidelines.[3] Patients can be transported to a comprehensive stroke center for postlytic care or thrombectomy without a continuous infusion running given that tenecteplase is administered via IV push.

Patients from community sites who receive IV thrombolysis with tenecteplase are immediately transferred to the nearest stroke center, based on bed availability and need for further intervention or monitoring. If they are deemed a candidate for mechanical thrombectomy based on imaging and assessment by the tele-stroke physician, they are transferred to the comprehensive stroke center. Otherwise, there are 2 other stroke capable facilities within the health system which may admit patients post stroke. Clinical status, plans for intervention, time to transport, and bed availability are all considered when determining which center a patient may be transferred to, and this decision is made in conjunction with the tele-stroke physician. Patients may be transferred via ground or air ambulance, with a goal transfer time of less than 90 minutes to improve patient outcomes.[1] Emergency medical services are trained to monitor serial neurologic examinations and maintain blood pressure less than 185/110 mm Hg for the duration of transport. If there is a neurologic deterioration during transport, they can discuss with the admission transfer center and be connected to the tele-EM physician and the tele-stroke physician within minutes.

EM Pharmacist Training

Emergency pharmacists are integral members of ED resuscitations including acute stroke activations. As part of the institutional acute stroke team, they are responsible for ensuring that administration of thrombolytic therapy is safe and timely.[19] It is well established that active involvement by pharmacists reduces door-to-needle time and increases the proportion of patients receiving thrombolytics within 60 minutes from arrival.[20,21] Emergency pharmacists can expedite procurement and bedside preparation of thrombolytic therapy, reduce dosing errors, clarify contraindications, facilitate the administration of antihypertensives to rapidly achieve guideline-concordant blood pressure goals, and evaluate anticoagulation for reversal in anticoagulation associated intracranial hemorrhage. Pharmacists are expected to maintain competency through the annual completion of education outlining the most up-to-date policies and stroke pathways and 2 hours of stroke-related continuing education.

The emergency pharmacists at our institution were integral in the decision to transition to the use of tenecteplase as the preferred thrombolytic for AIS and changes to the existing stroke pathways. Pharmacists prepared education specific to the transition including didactic materials that summarize the evidence supporting the use of tenecteplase. They were also key stakeholders in reviewing and implementing changes to the institutional stroke pathway, electronic health record order set, and staff education. Pharmacists practicing in the emergency department should be able to proficiently manage AIS, emergent disease states that have similar clinical presentations (eg, hemorrhagic stroke), and complications of thrombolytic therapy (eg, bleeding, angioedema).[22] For practicing pharmacists not specialized in EM, training should include the pharmacist role in the acute stroke team, pertinent knowledge of thrombolytic therapy and antidotes, institution-specific practices for expedited medication procurement, and, if applicable, skills in bedside medication procurement and preparation.

Neurosciences ICU Nurse Training

The decision to transition to the use of tenecteplase as a first-line thrombolytic for acute stroke presented the need to develop an education plan for the stroke nurses who will be administering the tenecteplase at the comprehensive stroke center. The stroke nurses are Neuroscience ICU trained nurses. When a potential stroke patient arrives in the emergency department, the stroke page is initiated. The stroke nurse responds to the page by going to the CT area where they will administer tenecteplase if prescribed.

The education plan described tenecteplase's mechanism of action, administration, exclusion and inclusion criteria, and the rationale for changing from alteplase to tenecteplase. A key component of the education was emphasizing dosing differences between cardiac and stroke indications and pointing out the dosing in the package is not for stroke. This is

further emphasized with the use of order sets specific to stroke and acute myocardial infarction that have prepopulated dosing. Pharmacists are responsible for assessing the indication for tenecteplase upon order verification.

Reconstitution is done by either the stroke nurse or pharmacist at the comprehensive stroke and primary stroke centers. Emergency nurses reconstitute tenecteplase at acute stroke ready centers (community sites). A procedural guideline was created with step-by-step reconstitution instructions for utilization when a pharmacist is not available at bedside. Given that tenecteplase is a much smaller volume than alteplase, dose calculation and preparation should be precise and doses are calculated and rounded to the nearest 0.2 mL (1.0 mg).[23] Stroke nurses also received a tenecteplase pocket dosing card for ischemic stroke that is also available on the institutional stroke website and carried with all stroke nurses to each stroke activation (Table 2). This has been particularly useful to double check the dose and volume of tenecteplase for the patient's weight and reduce the number of calculations that present an opportunity for error with a high-risk medication and is highly important at institutions that do not have access to 24/7 EM pharmacist services.[24]

Implications for Emergency Nurses

Emergency nurses are an integral part of the efficient triage and management of patients with AIS.[25] Their responsibilities largely remained unchanged when the institution transitioned from alteplase to tenecteplase for stroke. Emergency nurses are responsible for executing and facilitating the "8 D's of stroke care," which oftentimes must be completed rapidly and simultaneously (Table 3).[26] The prompt assessment and triage of patients is the first step in the chain of survival for patients presenting with a neurologic deficit, which is of particular importance when patients are not presenting as a prehospital stroke alert from the community.[27,28] Emergency nurses are responsible for rapid communication of symptoms and prompt assessment by another health care provider to initiate a stroke page to engage neurology or tele-stroke consultation. Documentation of the key time points is also the responsibility of the emergency nurse, including time of arrival, timing of neurologist assessment, and CT scan and interpretation. Finally, emergency nurses gather data including vital signs, placement of a large bore IV for contrast administration, and gathering of the pertinent medical history. The most important vitals and labs in this instance are blood pressure, wherein the blood pressure goal is <185/110 mm Hg to administer tenecteplase.[1] Within the variety of health system sites, the comprehensive stroke center uses stroke nurses to administer tenecteplase and document NIHSS. At all other sites, emergency nurses are responsible for drug administration, assessment, and documentation of NIHSS and monitoring for adverse effects. During the transition from alteplase to tenecteplase for AIS, emergency nurses completed updated annual stroke training that outlines the processes of stroke recognition, alert, and treatment. This education emphasized tenecteplase dosing and pharmacokinetic differences between alteplase and tenecteplase (Table 1).

TABLE 2
Tenecteplase dosing card for acute ischemic stroke

Patient weight (kg)	Tenecteplase dose (mg)	Reconstitute volume of tenecteplase (mL)
40-44.9	10	2.0
45-49.9	11	2.2
50-54.9	12	2.4
55-59.9	13	2.6
60-64.9	15	3.0
65-69.9	16	3.2
70-74.9	17	3.4
75-79.9	19	3.8
80-84.9	20	4.0
85-89.9	21	4.2
90-94.9	23	4.6
95-99.9	24	4.8
≥100	25	5.0

TABLE 3
D's of stroke care

Detection	Recognition of stroke symptoms
Door	Appropriate triage upon presentation
Dispatch	Activation of stroke pager
Delivery	Transport of patient to CT and/or IR
Data	Collection of past medical history, time of symptom onset, last known well, accurate weight
Decision	Stroke expertise and therapy selection
Drug	Fibrinolytic therapy or thrombectomy
Disposition	Admission to stroke unit

CT, computed tomography; IR, interventional radiology.
Adapted from Ashcraft et al.[26]

Limitations

We have encountered a few unique challenges in transitioning from alteplase to tenecteplase for AIS. Tenecteplase is primarily prepared by the clinical pharmacist responding to the stroke alerts at our institution, which may not be feasible with every stroke patient. If clinical pharmacists are unavailable due to other obligations or beyond staffing hours, our nurses are trained to prepare thrombolytics. It should be noted that the dosing of tenecteplase provided in the package insert and drug packaging is the weight-based dosing for other indications and may cause confusion during bedside preparation. A second check by an additional colleague to confirm correct dosing is recommended as good clinical practice. We have additionally created a dosing card (Table 2) for tenecteplase for AIS that is included in the stroke assessment packet that is brought to bedside for all stroke alerts (includes NIHSS, pictures and words for assessing speech and language), carried by all stroke nurses and included in the stroke order set when ordering tenecteplase. An additional challenge has been shifting from the use of "tPA" as the verbal nomenclature when discussing thrombolysis for AIS instead of using drug names, given that the Institute for Safe Medication Practices recommends against the use of the abbreviation "tPA" or "TNK" to refer to thrombolytics owing to risk of dosing errors associated with confusing the 2 drugs.[29] Finally, ensuring proper documentation when patients arrive on an alteplase infusion from outside hospitals is a Joint Commission stroke accreditation requirement that may be overlooked given that alteplase is no longer administered at our institution. Engaging educators from key stakeholder groups is necessary to ensure a smooth transition to using tenecteplase as the drug of choice for AIS. Finally, alteplase has a product return policy, wherein if a vial is reconstituted for administration but the patient is no longer a candidate for thrombolysis, it can be returned for credit or replacement.[30] However, due to tenecteplase being used off label for stroke, there is no program for return. This barrier is mitigated by the faster time to reconstitute and prepare for administration versus alteplase and a lower overall cost of tenecteplase.[31]

Conclusion

Tenecteplase is being implemented for AIS across the United States. There are several considerations to take when adopting its use. Buy-in from key stakeholders, education for multiple disciplines, and safety are just a few. Measures should be taken to ensure a smooth and safe transition from alteplase to tenecteplase for AIS. Further evaluations of provider satisfaction, patient outcomes, and door-to-needle time since transition are ongoing.

Author Disclosures

Conflicts of interest: none to report.

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Improving New Graduate Nurse Retention With a Transition to Emergency Nursing Practice Program

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Contributions to Emergency Nursing Practice

- The current literature on emergency nurse turnover indicates that emergency nurses continue to be at high risk for turnover, especially within the first 2 years.
- This manuscript contributes evidence of the importance of implementing a transition to emergency nurse practice program for new graduate nurses.
- Key implications for emergency nursing practice are recognizing the need for a standardized orientation with ongoing mentoring and professional growth opportunities. Supporting new graduate ED nurses transitioning from pre-licensure nursing education into a specialty practice should be a priority for emergency nurse leaders.

Abstract

Introduction: Emergency department turnover rates increased at Sentara Northern Virginia Medical Center. Most applicants were new graduate registered nurses. A strength, weakness, opportunity, threat analysis revealed 3 weaknesses regarding new graduate registered nurses in emergency departments. Transition to practice program was necessary, new graduate registered nurse competency needed to progress rapidly, and retention rates needed improvement.

Methods: The emergency department registered nurse transition to practice pathway was created to address these challenges. Retention statistics were garnered through new graduate registered nurses length of employment. Improving retention rates at Sentara Northern Virginia Medical Center led to expansion of the program to the other 11 hospitals in the system. Self-report surveys were created later to evaluate the new graduate registered nursess' satisfaction with the program and perception of clinical confidence.

Results: Using the emergency department registered nurse transition to practice pathway, turnover rates at Sentara Northern Virginia Medical Center dropped from 46% to 5.1%. Post expansion, the overall program retention rates were 96% at 6 months, and 86% at 1 year. The 2-year retention rate prior to COVID-19 was 82%, afterward, it dropped to 65%. Most surveyed new graduate registered nurses had a confidence level of 25% or less on the first day. After their 17-week orientation, 54% reported confidence levels had risen to 75%. Within 6 months, 81% reported 75% confidence, at 1 year, 87% reported levels between 75% and 100%, and at 2 years, 100% reported a confidence level between 75% and 100%.

Discussion: This development of the emergency department registered nurse transition to practice pathway resulted in improved emergency department registered nurse retention and confidence. Savings from reduced turnover and reduced temporary labor staffing were achieved with this program. Implementation takes careful resource management, ongoing analysis, and research to validate return on investment.

Key words: Emergency department; New graduate registered nurse; Transition to practice program; Orientation; Retention; Turnover

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Introduction

There is a global shortage of 6 million nurses.[1] National US hospital turnover rates within the first year of employment are at 31%, with 1-year rates being 27.7%, and at the

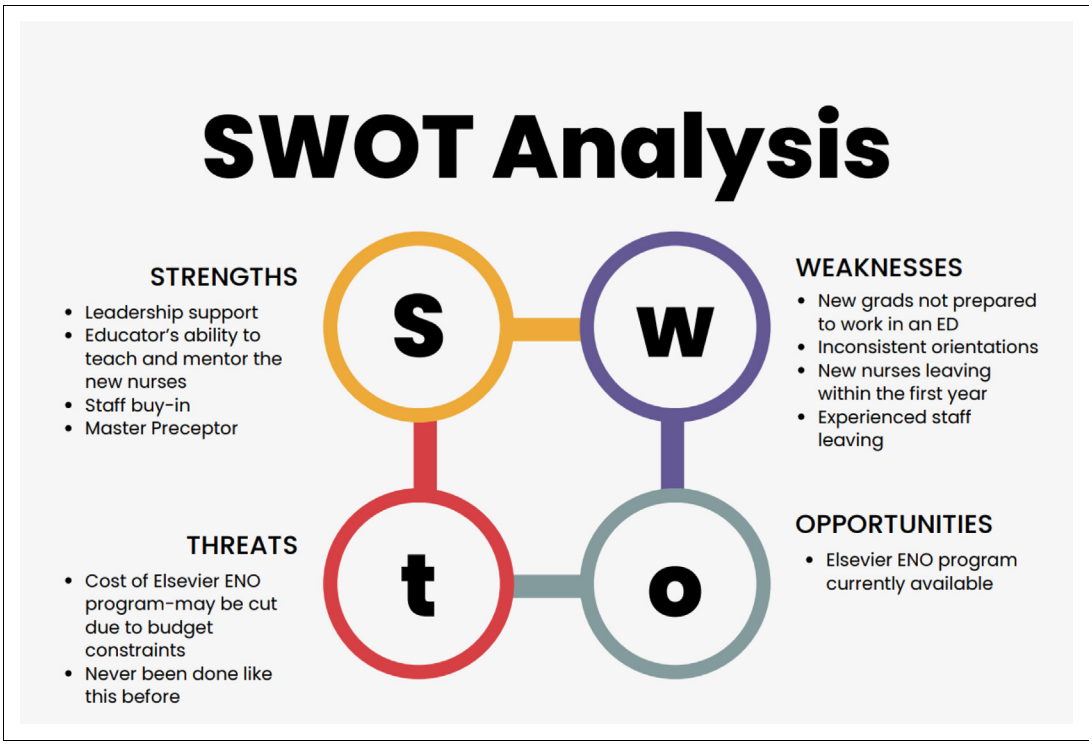

FIGURE 1
SWOT analysis

2-year mark, less at 19.2%.[2] Included in these numbers are emergency nurses whose turnover rate continues to be a significant problem, jumping from 20% in 2020 to an alarming rate of 29.7% in 2021, exceeding the national rate of 27.1%.[2] On average, emergency nursing staff fully turns over about every 5 years.[2] The average cost to replace a bedside nurse is $46,100[2] and is higher for an emergency nurse. Continually losing new nurses is costly for organizations, which has prompted leaders to seek interventions for turnover and new retention strategies.[3]

Several factors have been listed as reasons for turnover, including burnout, high patient-to-nurse ratios, workplace violence, work-life balance, lack of education and support, and stress related to transition into practice.[4] Lack of nurse orientation and training have been linked to feelings of incompetence and lack of support.[5] The current rate of turnover often results in the need to hire contract nurses. Currently, it is estimated that hospitals can save an average of $4,203,000 by eliminating 20 contract RN positions.[2] With these costs, reducing the number of contract nurses and retaining nurses should be an organizational priority.

With health care becoming more complex, and new nurses lacking confidence to practice, organizations are finding an increasing need for transition to practice (TTP) programs.[6] A TTP can be described as a formal program for new graduate registered nurses (NGRNs), that utilizes active learning to support progression from pre-licensure nursing education into licensed practice.[7] More hospitals are recognizing the importance of TTP programs on the clinical skill development, practice readiness, and socialization of their NGRNs.[8] Rush et al[9] found that providing NGRNs with evidence-based, standardized, TTP programs had decreased turnover and increased retention. TTP programs that incorporate targeted classroom education, computer-based learning, clinical precepted time, and mentoring offer NGRNs optimal learning experiences.[10,11]

According to the ED Director, in 2014, the ED turnover rate at Sentara Northern Virginia Medical Center (SNVMC) had reached 46%. With fewer experienced nurses applying, coupled with experienced nurses leaving, there was a greater need to hire NGRNs in the emergency department. This led the ED leadership team, which included this author as the ED Educator, to complete a strength, weakness, opportunity, threat (SWOT) analysis to guide the strategic planning process for the development of a sustainable program.[12] The SWOT analysis (Figure 1) exposed several weaknesses that

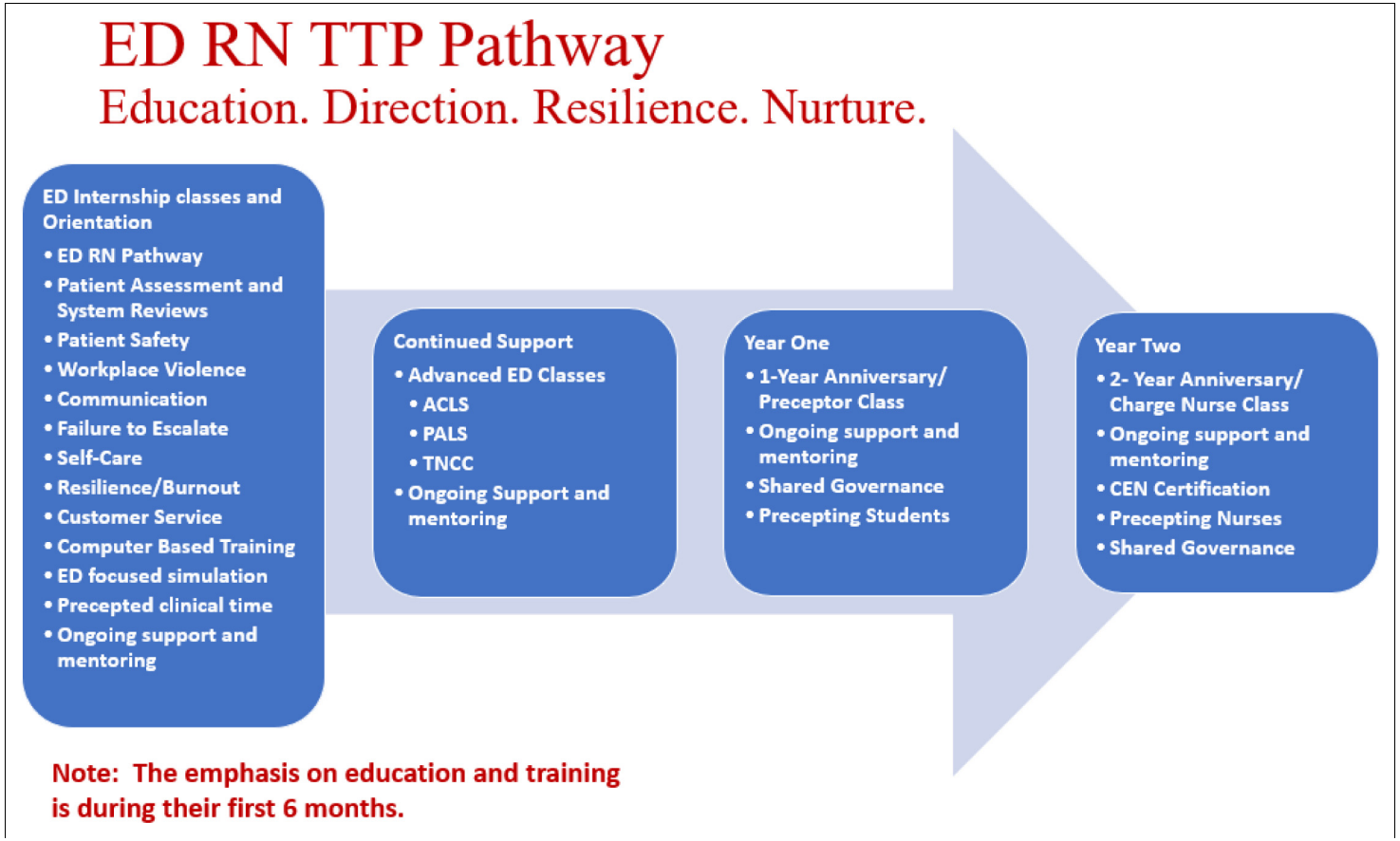

FIGURE 2
ED RN TTP Pathway

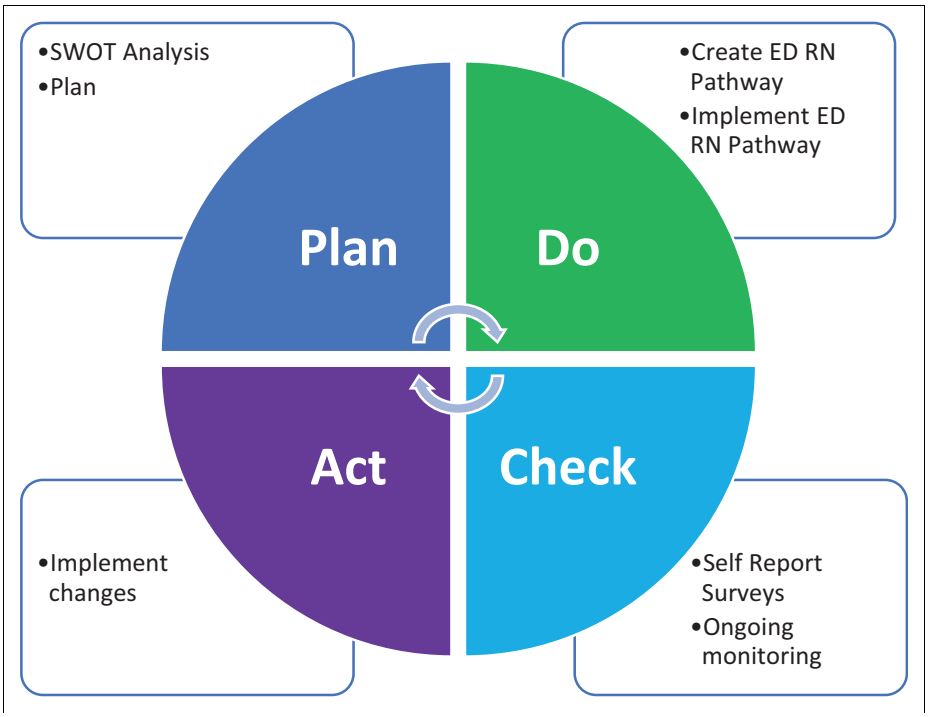

FIGURE 3
Plan-Do-Check-Act cycle

needed to be explored: NGRNs were not prepared from school for this environment, NGRNs were not getting a good orientation, NGRNs were leaving within the first year, and the experienced staff were leaving. With 3 of the weaknesses being related to the NGRNs, a TTP program needed to be developed to improve these areas.

The Education Direction Resilience Nurture (ED RN) TTP Pathway (Figure 2) was developed as a method for improving retention. It is a TTP that was specifically designed for emergency nurses. The ED RN TTP, which is called the "internship" for ease, is comprised of 3 components: orientation, coaching, and mentoring, and encompasses the new graduate's first 2 years. The NGRNs (called Interns) come together in hybrid settings, either in person or in a synchronous virtual setting, receiving education and mentoring over the course of 2 years. The emphasis is on the first 6 months as they are learning rapidly and need additional support and socialization to have a successful transition.[8]

The orientation period, which is up to 6 months, includes the Elsevier© ENO 3.0[13] program for the didactic information, simulation, and precepting, as well as mandatory training in Advanced Cardiac Life Support and Pediatric Advanced Life Support. The internship begins with 4 weeks of concentrated, standardized, didactic education that focuses on the specialized information that is unique to caring for patients in the emergency department.[14] The Vizient/AACN Nurse Residency Program content[15] is infused into the didactic classes as well as into the periodic check-in/mentoring sessions. This allows the NGRNs to receive this valuable information at the beginning of their orientation when it is needed most, instead of over the course of their first year. This is followed by 13 weeks of precepted clinical time, that is managed by the individual hospital's educators. Together, these elements form the base on which to build emergency nurse competencies. At this point, the intern has completed the standard 17-week orientation and is able to work on their own. Those working in trauma centers receive additional precepted clinical time.

The remaining 20 months of the internship utilizes coaching[16,17] through a continuation of education with a preceptor class at the 1-year anniversary and a charge nurse class at the 2-year anniversary. It may seem premature to have these classes this early in their education. However, many are being placed in these roles at these intervals. Mentoring[18-20] is ongoing, but is scheduled periodically during the first 2 years.

The aim of this quality imrpovement project was to reduce turnover and improve retention of new emergency nurses. Over the course of 3 years, the ED RN TTP Pathway was continually evaluated using the Plan-Do-Check-Act

Knowledge Survey at 1-Year
Please enter your Cohort number
Please rate how often you feel confident with your knowledge and understanding of the different medical conditions/types of the patients you care for in your Emergency Department.
Please rate your agreement with this statement: The ED Internship, with its initial classes and ongoing mentorship, have helped increase my knowledge and preparation, which has enhanced my emergency nursing practice.
Please rate your knowledge level: Patient Assessment
Please rate your knowledge level: Airway/Respiratory emergencies
Please rate your knowledge level: Cardiovascular emergencies
Please rate your knowledge level: Neurological emergencies
Please rate your knowledge level: Head and Spinal Trauma
Please rate your knowledge level: Chest and Thoracic Trauma
Please rate your knowledge level: Shock emergencies
Please rate your knowledge level: Abdominal and Gastrointestinal emergencies
Please rate your knowledge level: Renal and Genitourinary emergencies
Please rate your knowledge level: Musculoskeletal and Neurovascular Trauma
Please rate your knowledge level: Ocular emergencies
Please rate your knowledge level: Maxillofacial Trauma and Dental, ENT and Facial emergencies
Please rate your knowledge level: Burn emergencies
Please rate your knowledge level: Pediatric emergencies
Please rate your knowledge level: Gynecologic and Obstetric emergencies
Please rate your knowledge level: Disaster Preparedness
Please rate your knowledge level: Forensic Nursing
Please rate your knowledge level: Stroke Management
Please rate your knowledge level: Sepsis Management
Please rate your knowledge level: Cardiac Arrest Management
Please rate your knowledge level: Pain Management
Please rate your knowledge level: End of Life and Organ/Tissue Donation
Please rate your knowledge level: Failure to Rescue/Escalate
Please rate your knowledge level: Evidence-Based Practice
Please rate your knowledge level: Burnout
Please rate your knowledge level: Self-care
Please rate your knowledge level: Professional growth
Comments
Internship Program Survey at 1-Year
Standard demographic questions
Do you think adding the Nurse Residency Program Content to the ED Internship was valuable, or would you have preferred to complete it with other new graduate nurses from other units in your hospital?
Has the ED Internship been beneficial to you as you have transitioned from a nursing student into an ED nurse?
Do you think receiving the Preceptor class at the end of your first year is beneficial for your ongoing professional growth?
Which one aspect of your work environment is most satisfying?
What one action could be done to help you feel more supported or integrated into the Emergency Department?
Other questions regarding comfortability in the ED

FIGURE 4

Sample of survey questions.

Cycle (Figure 3), and improvements were made as needed.[21] Using this structured program, the SNVMC ED turnover rates greatly decreased. Based on their success, in 2018, the ED RN TTP program was expanded to the other 11 hospitals within the Sentara Health (SH) system.

Methods

The EDRN TTP Pathway was developed to have a structured, consistent orientation for the many NGRNs being hired into the emergency department. It was based on experience from the perspective of a NGRN in the emergency department and an ED Educator managing multiple orientations simultaneously. Retention statistics were garnered through the length of employment of the NGRN. Unfortunately, the first tangible data related to NGRN competency and confidence was not collected until July 2021. After that, it was measured via internally developed self-report questionnaires (Figure 4) using program-specific Survey Monkey® surveys. The surveys are completed on the first day of the program, at the end of the 17-week orientation period, at 6 months, at 1 year, and at 2 years. The surveys collect the NGRNs thoughts on the program and perceptions of professional and clinical growth.

TABLE 1
Retention rates for SH cohorts 1-14

	6-Month retention rates*	1-Year retention rates*	2-Year retention rates*
Cohorts: N			
July 2018 33	100%	100%	82%
Oct. 2018 12	100%	92%	58%†
March 2019 7	100%	100%	71%†
July 2019 29	97%	93%	62%†
Oct. 2019 6	83%	67%	67%†
March 2020 17	100%	82%	53%†
July 2020 19	100%	100%	68%†
Oct. 2020 4	75%	50%	50%†
March 2021 12	100%	75%	67%†
July 2021 38	97%	87%	68%†
Oct. 2021 24	100%	88%	N/A
Feb. 2022 30	97%	93%	N/A
July 2022 55	98%	85%	N/A
Oct. 2022 24	100%	N/A	N/A
Overall 310	96%	86%	65%†

N/A Cohorts have not reached that term.
* Cohort sizes were not consistent from year to year and are continually changing per the rolling calendar dates.
† COVID Related

Ethical Statement

The development and implementation of the ED RN Pathway TTP program was not interventional nursing research, as such institutional review board (IRB) approval was not required. However, the self-reported electronic surveys protected participant anonymity by inhibiting internet protocol address collection, and no demographic data was collected, and results were reported in aggregate.

Results

The initial turnover rate for the SNVMC emergency department was 46% and dropped to 5.1% following the 3-year implementation of the ED RN TTP Pathway. Since the SH program expansion, there have been 14 cohorts (Table 1) monitored. The overall 6-month program retention rate of 96% was 27% higher than the national average.[2] The 1-year program retention rate of 86% was 13.7% higher than the national average.[2] The initial 2-year retention rate in July 2020 was 82%, which was 1.2% higher than the nation average.[2] Unfortunately, once the coronavirus disease-2019 Pandemic (COVID-19) struck, the 2-year retention rates dropped to an overall average of 65%, as many left to take travel assignments or left emergency nursing for another specialty.

The self-report surveys (Table 2) revealed that the majority, 60%, had a confidence level of 25% or less on their first day of the program. After attending the initial 17 weeks of classes and clinical orientation, most of the NGRNs, 54%, reported a rise in confidence levels to 75%. At the 6-month check-in, cohort participants reported confidence levels increased to 81%. At the 1-year mark, 87% felt confident in caring for all types of ED patients between 75% and 100% of the time. By the 2-year anniversary, 100% felt confident to care for all types of ED patients between 75% and 100% of the time.

Discussion

Most emergency departments have some type of orientation program in place. With concern for NGRNs turnover rates continuing to climb, ED nursing leaders need to understand factors related to turnover and explore ways to improve NGRN preparation and support transition to practice.[22] Research indicates that providing a strong orientation and training program is required to improve the knowledge and skills of the new graduate emergency nurse.[4] However, knowledge and education were not enough to institute practice changes; the support of nursing leadership was essential to ensure this program's successful implementation.[23,24] Organizations that offer TTP programs, formal teaching, preceptorships, and support are demonstrating an improvement in competency and retention.[25] Lee et al[26] suggested a structured, purposeful orientation program could help decrease burnout and subsequently, turnover.

The ED RN TTP Pathway is a structured plan that gives new emergency nurses a pathway to achieve competence, and subsequently confidence, in a methodical and consistent manner, while still feeling supported and nurtured. Health care organizations must not only focus on the adequate preparation of the NGRNs, but must also be receptive and supportive of them.[27] These emergency nurses are set on a trajectory to excel in their practice environment, which subsequently may increase feelings of personal accomplishment. The ED RN TTP Pathway was successfully implemented in a single hospital, with turnover rates decreasing from 46% to 5.1%. It was later expanded to

TABLE 2
Self-report confidence level of competency

	0% Confident	25% Confident	50% Confident	75% Confident	100% Confident
Confidence interval					
Initial confidence level*	8%	52%	23%	15%	2%
End of orientation confidence level*			38%	54%	8%
6-Months confidence level*			5%	81%	14%
1-Year confidence level*			12%	81%	6%
2-Year confidence level*				75%	25%

* Due to the anonymity of the surveys, unable to determine if all intervals of the surveys were completed by each NGRN, as there were varying numbers of responses.

an additional 11 hospitals with retention rates of 96% at 6 months, 86% at 1 year, and 82% prior to COVID-19. Without the full support of the SH ED leadership, educators, charge nurses, preceptors, and staff, this program implementation could not have been accomplished on a large scale.

Limitations

This quality improvement project was conducted in 1 multi-hospital health care system within the US, which limits the generalizability to other settings.

As the number of cohorts increased, the number of NGRNs per cohort varied. To improve efficiency and satisfaction within the ED RN TTP program, electronic Survey Monkey® surveys were added to the program later. Some survey questions were modified to address the new information gathered from previous cohorts. With anonymous surveys and varying cohort sizes, there was no process in place to determine which, if any, of the NGRNs completed all the surveys. Using unique confidential identifiers to allow for collated survey results at specific program intervals would have strengthened the program results. Not being started as a research project, a validated research tool was not used, nor were initial surveys completed for process improvement. Future studies should consider utilizing a valid and reliable research tool, such as the Casey-Fink© Graduate Nurse Experience Survey[28] or the Nurse Professional Competence Scale-Short Form (NPCS-SF).[29]

Implications for Emergency Nurses

This work adds to the body of evidence that supports the importance of having a TTP specifically designed for emergency nurses. The Emergency Nurses Association Emergency Nurse Orientation Position Statement notes that a successful orientation program is comprehensive and includes a standardized framework.[14] The ED RN TTP Pathway is a framework that can be utilized for the foundational education of all new emergency nurses. Having the ED RN TTP pathway replicated across a health care system demonstrates that it has the potential to be adapted or expanded to other health care systems. Costs to implement an ED RN TTP program will vary depending upon the manager's salary, the number of NGRNs, the costs associated with the Elsevier ENO 3.0 program, and the Survey Monkey subscription©, as well as any additional classes, teaching materials, or travel. However, these costs should not sway hospitals from implementing TTP programs as the savings associated with decreased turnover and increased retention can be significant.[30]

Conclusion

The ED RN TTP Pathway offers a layered approach that capitalizes on the NGRNs initial learning capacity and continues to build on their advancing critical thinking skills. It provides support beyond the traditional orientation time, giving nurses strategies to increase resilience and extend nurturing and mentoring time, which may prevent some

aspects of burnout. The pathway program includes didactic education, clinical training, mentorship, and continuing professional growth. It was created based on need, as the emergency department was losing large numbers of experienced nurses, and only NGRNs were applying to fill the positions. Having a leadership team that recognized the value of supporting and implementing a TTP program was paramount to the program's success. The self-reported survey data reflected improved confidence and satisfaction of the new emergency nurses. Improved retention rates support increased experience levels in the emergency department and decreased orientation costs.

Author Disclosures

Conflicts of interest: none to report.

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Do Experienced Nurses Benefit From Training on Bleeding Control in the Community Setting?

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Contribution to Emergency Nursing Practice

- Nurses remain a highly trusted profession in the community. Although all nurses receive foundational training in hemorrhage control, they may not routinely provide bleeding control aid in their professional role or in the community setting.
- Despite their professional background or current role, experienced nurses benefit from participation in bleeding control training for the community setting.
- Opportunity exists for emergency nurses to affect bleeding control training in the community setting, specifically in advocating for, teaching, and researching best practices for hemorrhage control among experienced nurses.

Abstract

Introduction: Nurses' preparedness to provide hemorrhage control aid outside of the patient care setting has not been thoroughly evaluated. We evaluated nurses' preparedness to provide hemorrhage control in the prehospital setting after a proof-of-concept training event.

Methods: We performed a secondary analysis of evaluations from a voluntary hemorrhage control training offered to a group of experienced nurses. Education was provided by a nurse certified in Stop the Bleed training and using the Basic Bleeding Control 2.0 materials. The training lasted approximately 1 hour and included a didactic portion followed by hands-on practice with task trainer legs. Participants were surveyed after training to assess their preparedness to provide hemorrhage control aid using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree); comments and feedback were also requested. Mean (SD) was used to analyze Likert scale data. Content analysis was performed to identify common themes in qualitative data.

Results: Forty-five experienced nurses participated in the voluntary training. Nursing experience included obstetrics, pediatrics, critical care, acute care, community health, and psychiatric/mental health. Only 39% of participants reported having previously completed a similar course. After training completion, participants reported an increase in their preparedness to provide hemorrhage control aid (mean 3.47 [SD = 1.40] vs mean 4.8 SD [.04], $P < .01$). Major themes identified included wanting to feel prepared to help others, refreshing skills, and knowing how to respond in an emergency.

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Discussion: Regardless of background and experience, nurses may benefit from more advanced hemorrhage control education to prepare them to provide aid in prehospital emergency settings.

Key words: Hemorrhage; Trauma; Bleeding control; Nursing; Emergency preparedness

Introduction

Unintentional injury is the fourth leading cause of death among people of all ages in the United States and the leading cause of death among people aged 1 to 44 years, totaling more than 200,000 deaths and more than 24 million ED visits per year.[1] Among those injured, uncontrolled traumatic hemorrhage remains the primary preventable cause of death given that patients can lose their entire circulating blood volume in as little as 5 minutes.[2] In fact, uncontrolled hemorrhage leads to death in more than a third of patients with traumatic injury.[3] Standard of care for controlling traumatic hemorrhage in the prehospital setting includes use of tourniquets, manual pressure, and/or wound packing with gauze. Although simple, these methods of hemorrhage control can provide enough time for emergency personnel to arrive or patients to reach definitive care for surgical intervention or additional treatments.

The Stop the Bleed (STB) initiative was released through the United States Department of Homeland Security in 2015 in response to the need for early intervention in mass casualty and other hemorrhage control events, such as unintentional injury.[4] The program was created by the American College of Surgeons and is disseminated through trauma outreach programs housed in level I trauma centers.[5] Like the American Heart Association's Basic Life Support course,[6] STB is specifically designed to empower community responders to perform potentially lifesaving measures for those in need before receipt of definitive care.

Despite its origin in preventing death during mass casualty events, STB has gained widespread acceptance as an additional form of first aid along with basic life support and cardiopulmonary resuscitation. The STB training involves didactic instruction on identifying life-threatening hemorrhage, tourniquet application, wound packing, and application of manual pressure. To complete the course and obtain certification, trainees must demonstrate competency in deploying hemorrhage control measures using low-fidelity task trainer legs with simulated wounds.

Foundational nursing education includes basic hemorrhage control training focused on cleanliness (eg, use of sterile dressings) and infection prevention within the context of a controlled clinical environment where additional personnel and resources are available. Although essential to their basic clinical education, nurses increasingly respond to patients with active bleeding outside of their clinical roles and in community settings. However, nurses' preparedness to provide hemorrhage control outside of the traditional patient care setting has not been thoroughly evaluated. Thus, we sought to evaluate experienced nurses' preparedness and willingness to provide hemorrhage control in the prehospital setting. Here, we present findings from evaluation data collected after a proof-of-concept training event.

Methods

We performed a secondary analysis of evaluations from a bleeding control training provided to both undergraduate nursing students (required for community health course completion) and nursing faculty (voluntary participation). This initial proof-of-concept training included hands-only cardiopulmonary resuscitation, STB, an overview of the building's emergency exits and emergency response protocols, and locations of emergency equipment throughout the building. Our Associate Dean for Innovation and Technology and Simulation Coordinator oversaw the planning and implementation of the training. Participating nursing faculty held roles across undergraduate and graduate programs in a major southeastern university affiliated with an academic medical center.

A peer faculty member with emergency nursing background who was certified as an STB instructor delivered the training using the Basic Bleeding Control 2.0 materials.[7] The training was conducted in a large classroom in the School of Nursing and lasted approximately 1 hour. Activities included a didactic portion using slides provided in the STB Instructor Resources followed by hands-on practice with task trainer legs, gauze (both hemostatic training gauze and regular), and military-grade tourniquets in accordance with published STB course guidelines. To facilitate large group instruction, a variety of low-fidelity task trainers, such as arms for placement of intravenous catheters, pelvic models including anatomy from the umbilicus to above the knee, and thigh models featuring 3 wound types (gunshot, stab, other traumatic open wound), were also available for participants.

Participants reported their preparedness to provide hemorrhage control aid using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree); open response questions about nursing experience and their rationale for participation in the

training were also collected. Frequency and percentage were used to characterize the sample. Mean (SD) was used to analyze Likert scale data. Qualitative responses were analyzed for thematic content and summarized. Participants completed evaluations before leaving the training; no missing data were noted. Statistical analysis was conducted using IBM SPSS Statistics version 21 (IBM Corp., Armonk, NY). Our findings are reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology guidelines (see Supplementary Material).[8] This protocol was determined to be exempt by our institutional review board (protocol #300002407).

Results

Forty-five experienced nurses participated in the voluntary training. Given that the training was conducted to evaluate proof of concept, participant characteristics were not collected. However, based on the authors' knowledge of fellow faculty expertise, previous nursing experience among participants included obstetrics, pediatrics, critical care, acute care, community health, and psychiatric/mental health. Only 39% of participants reported having previously completed a similar course. Reasons nurses gave for participating in the training included wanting to feel prepared to help others, refreshing their skills, and knowing how to respond in an emergency. After training completion, participants reported an increase in their preparedness to handle an emergency in their workplace (3.47 ± 1.40 vs $4.80 \pm .04$, $P < .01$). Participants also reported an increase in their knowledge of locations of emergency equipment including STB kits throughout the workplace (3.27 ± 1.40 vs $4.82 \pm .39$, $P < .01$). All participants either agreed or strongly agreed that they would recommend the course to their colleagues.

Discussion

Among those who participated in our voluntary, proof-of-concept training, we found that despite having foundational training in bleeding control, experienced nurses from a variety of professional backgrounds benefited from participating in bleeding control education for the prehospital setting. Surprisingly, roughly one-third of nurses had participated in a course like STB. After the course, nurses felt more prepared to administer aid to those injured, were more aware of available resources in their workplace, and felt they would recommend the course to colleagues.

Nurses are an integral part of many communities. They are community members, volunteers, visitors, bystanders, and school nurses, and serve in other professional occupational roles. Nurses are academically prepared to assess patients, determine nursing diagnoses, develop plans of care, implement planned care, and reassess and evaluate outcomes of care provided adjusting as appropriate to improve the quality of patient outcomes. Importantly, this foundational academic preparation of nurses lends knowledge, skills, and critical thinking applicable beyond traditional health care facility settings.

Terrorist attacks occurring in the United States on September 11, 2001, resulted in enhanced focus toward disaster preparedness and response.[9] In the past decade, mass casualty incidents have become more common in the United States.[10] Although external hemorrhage control in the prehospital setting has not traditionally been a standard clinical skill taught across established nursing curricula, it is fast becoming a staple of preparation for disaster response by nurses. After STB was launched in 2015, schools of nursing incorporated the STB training curriculum in undergraduate disaster preparedness training[11] and in a large community service–learning project.[12] Given that nurses represent the largest professional group of health care providers worldwide, it is essential that they be able to recognize external hemorrhage early, are skilled in bleeding control techniques, and are active in educating others in the community to effectively control hemorrhage.[13]

These principles are reflected in the most recent version of nursing education guidance material. The 2021 publication of the American Association of Colleges of Nursing Essentials: Core Competencies for Professional Nursing Education has opened the door for much more widespread dissemination of STB training in academic nursing programs.[14] Specific domains and competencies for both entry-level and advanced practice education that align with the inclusion of STB training curriculum include:[14]

- Domain 1: knowledge for nursing practice; subdomain 1.3, demonstrate clinical judgment founded on a broad knowledge base
- Domain 2: person-centered care; subdomains 2.3, integrate assessment skills in practice; 2.4, diagnose actual or potential health problems and needs; 2.5, develop a plan of care; 2.7, evaluate outcomes of care
- Domain 3: population health; subdomain 3.6, advance preparedness to protect population health during disasters and public health emergencies

Given the extensive potential utility of STB training to achieve these multiple competencies outlined in the essentials document, we anticipate that inclusion of the training in both entry-level and advanced practice nursing programs will likely grow.

Limitations

Several limitations exist that influence the context of our findings. First, this was a secondary analysis of survey responses from 45 experienced nurses in an academic setting. Therefore, our analyses were limited to the data collected by the team who conducted the training and did not include basic demographics of age and sex, years of nursing experience, details on previous emergency training or bleeding control knowledge, or questions on current clinical practice as part of their professional role (eg, work as a nurse practitioner or clinical instructor). Second, our findings are likely biased given that participation in the training was voluntary and attendance was dependent on faculty schedules. For both reasons, the generalizability of our findings is greatly limited. Third, although we assessed participants' feelings about the training, this was an initial training with no scheduled follow-up. As such, we did not assess skill accuracy or retention.

Implications for Emergency Nurses

The Emergency Nurses Association's 2019 position paper titled "Hemorrhage Control" clearly states that external hemorrhage control using techniques included in STB training is within the scope of practice of nurses.[13] Furthermore, this position statement endorses emergency nurses' participation in advocating for, teaching, and researching the impact of the hemorrhage control techniques. Given that current STB training guidelines do not include suggestions for refresher courses, long-term retention of skills related to identification of life-threatening bleeding, tourniquet application, and wound packing remains unknown. Therefore, emergency nurses have a place as members of teams who provide STB training and as members of interdisciplinary research teams to evaluate barriers to training, and skill accuracy and retention among nurses from all disciplines. Findings from these studies will drive the development and implementation of policies and procedures for follow-up refresher training and the time interval that promotes optimum skill retention between initial and follow-up training.

Conclusions

Experienced nurses may benefit from STB education regardless of their specialty or professional background. Inclusion of STB education in foundational nursing curriculum and continuing education activities should be considered.

Data, Code, and Research Materials Availability

Data were collected as part of an internal proof-of-concept training and are not publicly available.

Author Disclosures

Conflicts of interest: none to report.

Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2023.10.007.

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Seizure Considerations in Older Adults and Geriatric Patients

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Contribution to Emergency Nursing Practice

- Emergency nurses have knowledge about seizures in general, but may not know how seizures can present differently in older adults than in younger patients.
- Information presented will describe how and why seizures may present differently in older adults.
- Emergency nurses upon recognizing seizure activity in adults can advocate for diagnostic testing, treatment, follow through, including patient education.

Abstract

Older adults account for 25% of first-time seizures, with many of these seizures caused by accumulated injuries and insults to the brain and comorbidities associated with aging or as a result of a life-threatening comorbidity, yet seizures in older adults are often so subtle that they are not recognized or treated. Once an older adult has 1 seizure, they are at higher risk of more seizures and ultimately a diagnosis of epilepsy. Epilepsy affects quality of life and safety and may jeopardize life itself in the older adult; thus, it is important to be able to recognize seizures in older adults and know what to do.

Key words: Seizures; Epilepsy; Older adults; Provoked and unprovoked seizures in older adults; Geriatrics

Twenty-five percent of patients having a seizure for the first time are aged 65 years or older.[1,2] This number is most likely even higher, given that seizure activity in older adults is frequently misinterpreted or mislabeled or missed completely.[1,2] It is important for emergency nurses to know that seizures in older adults do not always present with classic, generalized tonic-clonic motor activity and decreased level of alertness.[1-5] Seizure activity in older adults may only occur 1 time, may be caused by a life-threatening medical condition, or may be caused by the development of epilepsy.[1-6] Understanding what to look for and actions to take can help the emergency nurse provide knowledgeable care and pertinent information to the older adult and their family.[1-5]

Seizures

Seizures occur when irritable brain cells start firing as many as 500 times a second.[4] This creates a surge of excessive electrical impulses in the brain leading to seizure activity.[4] Acute and "old" injuries and insults to brain tissue can cause local irritability.[4,5,7,8] In some patients, only a small portion or lobe of the brain is irritable. If electrical impulses and activity remain localized, the seizure will present as a focal seizure with only a portion of the body involved[4,7] (Tables 1 and 2). In other patients, the electrical impulses caused by a localized irritation may start in 1 area (focal) of the brain, but then spread across the entire brain transitioning from a focal seizure to a generalized total body seizure activity.[4,5,7,8] In some patients, the neurons across the *entire* brain are irritated, which can lead to firing of impulses across the entire brain and total body involvement from the onset of the seizure[4-8] (Tables 1 and 2). Seizure mimics and seizure activity involving metabolic reasons typically involve the entire brain from the onset causing generalized seizure activity

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TABLE 1
Classification of seizure types

1. Focal onset
2. Awareness
   a) maintained?
   b) impaired?
3. Motor behavior seen at onset?
   - Automatisms
   - Atonic
   - Clonic
   - Epileptic spasms
   - Hyperkinetic
   - Myoclonic
   - Tonic
4. Non-motor behaviors at onset
   - Automatic
   - Behavior arrest
   - Cognitive
   - Emotional
   - Sensory

Some patients only have focal seizure activity. Other patients may transition from focal seizure activity to bilateral tonic-clonic (generalized) behaviors

1. Generalized onset
2. Awareness generally impaired
3. Motor behaviors seen at onset
   - Tonic-clonic
   - Clonic
   - Tonic
   - Myoclonic
   - Myoclonic-tonic-clonic
   - Myoclonic-atonic
   - Atonic
   - Epileptic spasms
4. Nonmotor behaviors at onset (also known as absence)
   - Typical
   - Atypical
   - Myoclonic
   - Eyelid myoclonia

continued

TABLE 1
Continued

1. Unknown onset

Onset not witnessed, so unknown if seizure started as a focal seizure and progressed to generalized seizure; or if the seizure started as a generalized seizure and following behaviors were all that were witnessed.

2. Awareness generally will be impaired
3. Motor behaviors seen
   - Tonic-clonic
   - Epileptic spasms
4. Nonmotor behaviors seen (also known as absence)
   - Behavior arrest

In 2017, the International League Against Epilepsy (ILEA) categorized and subcategorized seizures based on behaviors that are observed. Seizures can be focal onset or generalized onset or can progress from focal to generalized. If seizure onset was not witnessed, it is labeled an unwitnessed onset seizure. Seizures are also broken into altered awareness, as well as motor versus nonmotor. If no one saw the start of the seizure, then the seizure is labeled "unknown onset."[7,8].

involving the entire body from the onset of the seizure[2,4,5,7,9] (more on this to come). Seizures may be motor or nonmotor in nature; thus, older adults having seizures may not always present with generalized total body tonic-clonic activity and a loss of consciousness.[1-9] Instead, they may just stop and stare or act confused or simply develop atonia and drop to the ground.[1-9] See Tables 1 and 2 for more descriptions of how seizure activity may present in the older adult.[1-9]

Recognizing Seizures

It is important for emergency nurses to recognize that seizures in older adults often present in a more subtle manner and for reasons other than epilepsy.[1-7] Simple repetitive movements of the face or a digit (misinterpreted as "tics"), intermittent episodes of confusion (often attributed to dementia), and being found unresponsive on the floor after an assumed "fall" are all ways seizures may present in the older adult.[1-6] Automatisms, a repetitive, natural-looking behavior lasting for only a few minutes, are a

TABLE 2
Helpful terminology when dealing with seizures[4,7,8]

- **Focal seizures** – affect small portion of the brain
- **Generalized seizures** – affect entire brain
- **Aware** – able to respond/remember versus **impaired awareness** – not able to respond/remember – may lose consciousness
- **Motor** (movement) vs **nonmotor** (no movement)
- **Absence** – nonmotor generalized seizure (may have eyelid myoclonia)
- **Clonic** – rhythmic jerking of part of the body
- **Myoclonic** – single jerking motion of body part
- **Tonic** – sudden stiffening – usually fall backward
- **Tonic/clonic** – stiffen, followed by rhythmic jerking of body – this may be bilateral (generalized seizure) or focal seizure
- **Atonic** – sudden relaxation – often fall forward onto face
- **Automatism** – rubbing, fumbling, playing with something, walking in a circle, chewing, repeatedly for a minute or so. Looks like a natural behavior, until the repetitiveness is noted.
- **Hyperkinetic** – agitated thrashing or leg pedaling
- **Epileptic spasms** – flexion/extension of muscles – longer than a myoclonic jerk, not as long as a tonic seizure
- **Eyelid myoclonia** – eyelid twitching
- **Autonomic** – changes in autonomic system at seizure onset cardiac rhythm changes, alteration in respirations, skin changes, gastrointestinal issues, urge to urinate/defecate/tear
- **Cognitive** – experience aphasic, apraxia or neglect
- **Sensory** – experience sensory effect déjà vu
- **Emotional** – experience strong emotion – joy or fear
- **Behavior arrest** – sudden stoppage of what patient was doing
- **Todd's paralysis** – weakness on 1 side of the body or inability to speak after a seizure

frequent type of seizure activity seen in older adults and yet are often not recognized as seizure activity.[3] Other tic-like activities or automatisms include brief repetitive jerking movements or shaking of an extremity, lip-smacking or chewing motions, kneading or rubbing of the hands or extremity, opening and closing a purse or door, fiddling with a collar or button, twitching of the face or eyelid, repeating a word over and over, or even walking in circles.[3,4,6,7] Motor activity seizures can also include tonic stiffening of muscles, clonic rhythmic spasm of muscles, thrashing or leg pedaling, or sudden loss of muscle tone (atonia)[3,4,6,7] (Tables 1 and 2).

Some seizures are nonmotor in nature. The patient may just stare or have an episode of confusion, trouble finding words, change in behavior, or unresponsiveness without losing consciousness.[1,4,7,8] The patient having a seizure may share they are experiencing a sense of déjà vu, an unusual smell or taste, a strong emotion, a sense of numbness or tingling, visual disturbances, or a strong sense of joy or fear.[1,4,7,8] Patients experiencing a focal seizure may even be able to tell someone they are currently having a seizure.[1-8] An older adult's seizure may lead them to be found in an altered mental state on the ground after loss of muscle control (atonia) that is often assumed to have simply been a fall or trip and fall.[1-8] Some may remember these being called "drop attacks."[8]

Older adults have a higher frequency of altered level of responsiveness or confusion (post-ictal period) after nonconvulsive and convulsive seizure activity.[1-8] Post-ictal periods in older adults after nonconvulsive seizures often lead to the patient's confusion being misinterpreted as something other than post-ictal behavior.[1-8] Older adults also tend to have longer post-ictal periods marked by confusion or memory loss that may last several hours to days.[1-3] One source noted that patients with automatism seizures followed by a prolonged post-ictal period (up to 2 weeks) and then a return to baseline functioning were often misdiagnosed as having abnormal dementia.[3] It is recommended that patients with waxing and waning dementia, especially if automatisms have been noted, should be worked up for epilepsy so that appropriate antiseizure medication therapy can be considered.[3] Impaired alertness (post-ictal period) in older adults after focal seizures is often misinterpreted as a transient ischemic attack (TIA), dementia, or a

loss of balance and fall because of aging.[1-8] Recognition of need to investigate seizure activity in an older adult is often missed because the onset behaviors of the seizure activity may not have been witnessed.[1-8] The patient, who presents with postseizure confusion or with an altered level of consciousness, is unaware they had a seizure or is unable to verbalize they are having a seizure.[1-6] If there is a suspicion that a seizure may have led up to the older adult being found confused or on the floor, the nurse can ask pertinent questions and obtain useful information.[1-11] An accurate description of behaviors at the onset of the seizure activity (focal vs generalized, motor vs nonmotor) or just before the patient falling, becoming confused, or being unresponsive will help the neurologist determine the best treatment plan for the patient.[1-11]

Underlying Causes of Seizures

There are 3 main underlying causes of seizures and epilepsy. (Not all seizures are caused by epilepsy, which has specific diagnostic criteria.)[1-11] Seizures caused by genetic conditions typically initially present during childhood or young adulthood and continue throughout life.[1-11] Seizures that occur later in life—especially a first-time seizure—are either provoked or unprovoked.[1-11] Seizures that can be attributed to a metabolic or structural abnormality are considered provoked seizures and many may be life-threatening.[1-11] If no underlying cause can be found, the seizure is considered unprovoked and typically is related to the development of epilepsy.[1-11] Older adults are more vulnerable to seizures and epilepsy caused by metabolic and structural abnormities.[1-13]

Epilepsy

Epilepsy is a neurologic disorder where clusters of nerve cells or neurons in the brain signal abnormally causing seizure activity.[4] These seizures can present as abnormal involuntary movements, emotions, behaviors, and/or sometimes loss of awareness.[4,7,8] The National Institute of Neurological Disorders and Stroke notes that before a diagnosis of epilepsy can be considered, the *patient needs to have 2 or more unprovoked seizures separated by at least 24 hours and provocative reasons need to be ruled out.*[4] Older adults are at increased risk to have causative factors that lead to provoked seizures and causative factors for unprovoked seizures related to epilepsy.[1-6,9-13] Not every older adult who has a seizure will go on to be diagnosed as having epilepsy.[1-6,9-13]

Provoked Seizures

Seizure activity that is the result of an identifiable cause is usually considered to be an acute symptomatic, provoked seizure.[1,2,4-6,9-13] Older adults are prone to conditions that can lead to seizures, with the seizure actually a symptom of the condition.[1,2,4-6,9-13] Metabolic abnormalities, especially hypomagnesemia, hypocalcemia, hypo- and hypernatremia, and hyper- and hypoglycemia, central nervous system infections, and liver failure can cause generalized seizure activity.[2,5,6,9,10,12-14] To treat these provoked seizures, the underlying cause will need to be corrected.[2,5,6,9,10,12-14] Other causes of provoked seizures include side effects of medications (especially certain antipsychotic and antidepressant medications, antibiotics, tramadol, isoniazid, metronidazole, bupropion, and theophylline), withdrawal from drugs or alcohol, exposure to toxins, and during dose adjustment of or forgetting to take antiseizure medications.[2,5,6,9,10,12,13] Sudden changes in intracranial and intracerebral pressure caused by aneurysm rupture, bleeding into the brain caused by trauma, ischemic stroke transformation to hemmorrhagic stroke, or infection can lead to seizures.[2,5,6,9,10,12,13] Brain tumors were noted to account for 10% to 30% of seizures and epilepsy in older adults.[1,2] Seizures related to medical conditions can often be life-threatening. The provocative cause needs to be recognized, identified, and treated appropriately[2,5,6,9,10,12,13] (Table 3).

Recent brain insults (within the previous 2 weeks) including traumatic brain injury, ischemic stroke (especially those that develop transformational hemorrhage), hemorrhagic stroke, and TIAs can lead to localized insult to the brain making the area irritable.[1-5,9-13] Seizures associated with these newly developed irritable portions of the brain may present only as a focal seizure.[1-5,9-13] However, in some patients, the focal seizure may transition into generalized seizure activity.[1-5,9-13] These seizures are considered provoked seizures and may not lead to future seizures if managed quickly.[1-5,9-13] The neurologist will typically monitor the older adult for several years to watch for signs of seizures developing.[1-5,9-13]

Seizure mimics are when patients exhibit seizure-like activity (jerking motions, decreased level of awareness/consciousness, confusion, etc).[1,2,4-6,9-13] Examples of seizure mimics include cardiac dysrhythmias leading to syncope, fainting caused by orthostatic hypotension, and hypoxia leading to confusion or altered level of consciousness.[2,5,6,9,10,12-14] Treating the underlying cause of the seizure mimic is all that needs to happen, as well as an explanation to the patient and family that this behavior was not a seizure.[2,5,6,9,10,12-14] TIAs, transient global

TABLE 3
Differential diagnoses and seizure mimics

- Hypoglycemia, extreme hyperglycemia
- Syncopal episode
- Cardiac dysrhythmias – sick sinus syndrome and bradycardic rhythms
- Postural hypotension
- Hyponatremia, hypomagnesemia, hypocalcemia
- Transient ischemic attack
- Recent stroke (ischemic or hemorrhagic), head trauma
- Side effects of medications (some antibiotics, endocrine drugs, local anesthetics/antiarrhythmia agents, psychotropic drugs, stimulants, general anesthetics)
- Changing dose/type of antiepileptic medications
- Withdrawal from drugs/alcohol
- Tumor
- Fever, central nervous system infection

CT, computed tomography; MRI, magnetic resonance imaging.
Differential diagnoses that can lead to a seizure mimic or a provoked seizure. Older adults with seizures due to these factors need the underlying cause identified. Suggested testing includes a finger stick glucose, toxicology, and antiseizure drug levels; laboratory tests to check for infection, sodium, magnesium, and calcium levels, dehydration, and water intoxication; and a CT or MRI looking for brain swelling/insult. By treating these often life-threatening conditions, the patient will improve and hopefully further ischemia/insult to the brain that puts the patient at risk of future seizures will be prevented.[4,5,11]

amnesia, metabolic encephalopathy, rapid-eye-movement sleep behavior disorder, and psychogenic conditions are other conditions that can lead to behaviors misinterpreted as nonmotor seizure activity.[2] A neurologist will be helpful distinguishing these behaviors from seizure activity.[2]

Aging places older adults at higher risk of conditions or situations that can provoke a first-time or repeat seizure.[1-5,9-13] Seizures with an identified provocative cause will need to be controlled with antiseizure medications in the acute phase, but may not require continued medication once the irritation resolves.[1-5,9-13] A thorough workup by a neurologist can help identify provocative causes.[1-5,9-13]

Older adults presenting while or after having a provoked seizure may never have another seizure or be diagnosed as having epilepsy.[1-5,9-13] However, repeated provoked seizures may lead to enough scarring of the brain tissue that the patient will go on to experience unprovoked seizures and a diagnosis of epilepsy.[1-5,9-13] Incidence of first-time seizure leading to epilepsy in 50-year-olds is 25 of 100,000, but by age 70 years the incidence increases to 139 of 100,000 and to 159 of 100,000 by age 80 years.[9] After an older adult has a first seizure, they have a 79% to 83% increased risk of another seizure in the next 1 to 3 years, doubling their risk of developing epilepsy.[5] Eight to ten percent of the population will have a seizure during their lifetime, but only approximately 2% to 3% goes on to develop epilepsy.[12] The risk of adults aged 50 years or older developing epilepsy is 2 to 6 times that of a child being diagnosed as having the condition.[13] Approximately 1 million adults aged 55 years and older in the United States have been diagnosed as having epilepsy.[15] The actual cause of one-third to one-half of seizures in older adults remains undetermined.[9]

Unprovoked Seizures

Aging leads to an accumulation of insults and injuries that can affect the structural integrity of brain tissue resulting in abnormal neuron firing and unprovoked seizures.[5,9] The top 3 reasons older adults develop unprovoked, recurrent seizures and a diagnosis of epilepsy include a history of cerebrovascular disease, especially several weeks after stroke (ischemic and/or hemorrhagic); history of neurodegenerative disorders, especially Alzheimer's disease; and previous traumatic brain injuries or hemorrhage in the brain.[5,9] Notably, 30% to 50% of new-onset epilepsy in older adults has been linked to brain hemorrhage and ischemic strokes that occurred at least 2 weeks before the seizure activity.[5,6,9] Development of hemorrhagic transformation during an ischemic stroke put the patient at a higher risk of seizures.[5,6,9] An even higher risk of developing seizures was seen in stroke patients that also had risk factors of smoking, alcohol use, metabolic disturbances, diabetes, hyperlipidemia, and renal failure.[4,9] Older adults with Alzheimer's

and other neurodegenerative disorders have up to an 87% increased risk of developing epilepsy, but it is suspected this number may be higher, given that many seizure behaviors are misinterpreted as symptoms of dementia.[4,5,9] Older adults who sustained head trauma as a result of a fall or blow to the head in the past have a 10% to 20% chance of developing recurrent seizures.[9] Their highest risk was in the first year, but patients remained at risk to develop seizures up to 10 years after a head injury, which the patient may not even remember.[9] Bleeding at the time of injury, contusion to the frontal or temporal lobe, loss of consciousness for 24 hours, or prolonged amnesia were associated with a higher risk of developing epilepsy.[9] Seizures associated with these conditions are considered unprovoked and more commonly associated with the aging brain.[2,4,5,9] If no identifiable cause for the seizure was elicited while obtaining the history, during the examination, or during testing, the seizure is considered unprovoked and the patient at risk of developing epilepsy.[4,5,9]

Assessment and Treatment

Rapid assessment of a seizing or postseizure patient's airway, ventilation, and circulation and level of alertness will be a priority.[14,16] Determining whether there was, or continues to be, a change in level of alertness as altered level of consciousness and/or seizure activity may lead to airway management and ventilation issues requiring action to ensure patency and adequate oxygenation.[14,16] If the patient has not returned to full alertness, carefully look to see whether seizure activity continues or has reoccurred or whether there is 1-sided weakness—Todd's paralysis[4] (Box). Seizure activity, including nonmotor seizure activity (absence seizure), that continues for more than 5 minutes, or that reoccurs before the patient becoming completely alert, is considered status epilepticus.[1,2,4,9] Adults aged 60 years and older have an incidence of status epilepticus 2 to 5 times that of younger patients.[1,2,5] Older adult's mortality risk is as high as 50% due to status epilepticus.[1,2] First-time seizures in older adults present as status epilepticus in up to 30% of the cases.[1,2] Terminating continued seizure activity according to department protocol will be important, given that prolonged seizure activity can lead to hypoxia, brain tissue insult, and risk of future seizures.[1,2,4,9] A National Institute of Neurological Disorders and Stroke–funded study recently found that intramuscular midazolam was often more effective than intravenous lorazepam, given that it could be administered more rapidly (due to the time required/difficulty initiating an intravenous in a seizing patient) and seizures terminated sooner.[4] Studies also noted that intranasal midazolam was effective in terminating seizures in adults.[17]

BOX

In Todd's paralysis, the patient is weak or is unable to follow commands/move 1 side of the body after a generalized seizure and appears as though they have had a stroke.[4] It is believed that the portion of the brain where the seizure originated is simply taking longer to recover and motor activity will return as the brain recovers.[4] It also helps determine the portion of the brain that initiated the seizure.[4] (Keep in mind, patients may also have a seizure during a stroke due to the brain injury and irritation causing the stroke.[4])

As noted earlier, it is important to remember that seizures in older adults may be provoked by life-threatening medical conditions that require identification and correction.[1-5,9-13] Differential diagnoses include extreme hyperglycemia or hypoglycemia, syncope due to a cardiac dysrhythmia, postural hypotension, withdrawal from drugs or alcohol, electrolyte imbalance, infection, metabolic disturbances, or recent insult and bleeding into the brain[1-5,9-13] (Table 3). Treatment may include correcting blood sugar or electrolyte imbalances, ensuring adequate oxygenation, managing the blood pressure and heart rate, discontinuing or reversing medications causing the seizure, treating central nervous system infection, administering seizure control medication per department policy, administering medications to prevent further seizures, and providing for patient safety[1-5,9-14,16] to prevent further harm from the condition causing the seizure or the seizure activity itself.[3,14,16] Prompt recognition and treatment of the underlying cause that provoked the seizure will decrease risk of future seizures and potentially save the patient's life by correcting the underlying condition.[3,14,16] One provoked seizure does not automatically mean the patient has or will develop epilepsy, but each time the patient has a provoked seizure there is an insult to brain tissue that increases the risk of future unprovoked seizures.[1,4,5,16]

Sudden Unexpected Death in Epilepsy

Emergency nurses should be aware of a phenomenon that has been linked to seizures. Sudden unexpected death in epilepsy (SUDEP) affects approximately 1 in 26 patients

with seizure.[4,18,19] Although more common in people between ages 20 and 48 years, older adults can also experience SUDEP.[18,19] Although the exact cause is not exactly known, it is suggested the patient develops postseizure apnea (as opposed to an obstructed airway) and hypoxia that leads to bradycardia and asystole.[18,19] Before SUDEP being listed as cause of death, all usual causes of trauma, drowning, status epilepticus, or other typical known causes must be ruled out and evidence needs to suggests the patient had a seizure just before death.[18,19] Prevention of seizures and seizure-monitoring devices/alarms have been the most useful approach in preventing SUDEP-related deaths because these devices can alert others that a seizure has occurred.[18,19] Friends and family members can be instructed to respond to the alarm, to recognize apnea, and on how to assist ventilations if needed.[18,19] Older adults who seize in the emergency department should be monitored for apnea and bradycardia related to SUDEP even if the airway is intact.[18,19]

History and Observations

Experts in geriatric seizures note that obtaining a detailed history and asking the right questions will be key to determining why the patient seized, especially in a first-time seizure situation.[1,2,4,5,10] Answers to questions regarding previous seizures, medications, and events leading up to the seizure will be important to identify possible reasons for the seizure. These could include a syncopal episode, brain irritation due to blood accumulation after recent head trauma, an electrolyte abnormality, withdrawal from drugs or alcohol, or medication toxicity (all considered provoked reasons).[1,2,4-6,9-11,13,16] "Old" insults to the brain, such as head injuries that happened over a month previously or brain tissue irritation that develops several weeks after a cerebral vascular accident, are considered to be the common cause of unprovoked seizures in older adults.[1,2,4-6,9-11,13,16] Older adults are at a higher risk of bumps to the head and small areas of focal irritation caused by the aging process, thus putting them at higher risk of unprovoked seizures.[1,2,4-6,9-11,13,16] Thus, asking about past head trauma or stroke symptoms will be important.[1,2,4-6,9-11,13,16] One source noted that 10% to 15% of provoked seizures were caused by internal medicine issues.[9] If a medical condition is provoking the seizure activity, it will be important to identify and correct the cause.[1,2,4-6,9-11,13,16] Obtaining answers to questions related to history and what occurred during and before the seizure may help determine the cause of the seizure and next steps[14] (Table 4).

The nurse often obtains key pieces of information while talking with the patient and/or family. These data, plus the

TABLE 4
Obtaining answers to these questions may help determine next steps in evaluating the older adult who has had a seizure[14]

- Was this a first-time seizure?
- Does the patient remember the seizure activity?
- Can the patient describe it?
- Did the patient feel, taste, see, smell, or sense anything before the seizure activity (an aura)?
- Were there witnesses to the seizure?
- Can witnesses describe the seizure activity, which part of the body it started in, and how long the seizure lasted?
- If the patient has a history of seizures, do they take medications to prevent seizures?
- Has there been a change in medications? (Includes adding/subtracting nonantiseizure drugs or other medications)
- Does the patient have a diagnosis of epilepsy?
- Did the patient lose consciousness and fall as part of the seizure? Are there any injuries?
- What events led up to the seizure?
- Does/did the patient have a headache, fever, vomiting, stiff neck, or other medical symptoms?
- Has the patient recently stopped drinking alcohol or using drugs?
- Has the patient been sleeping, eating, and hydrating adequately? (These are 3 common things that precipitate seizures in those with unprovoked seizures.)[14]
- Were there visual overstimuli such as moving patterns or lights flashing off and on just before the seizure? (thought to be precipitating factors)[14]
- Does the patient have a recent (within last 2 weeks) or previous history of stroke, bleeding in the brain, head trauma, or dementia?

TABLE 5
Medications commonly used to treat seizures*

Carbamazepine
Clobazam
Clonazepam
Diazepam
Divalproex Sodium
Eslicarbazepine Acetate
Ezogabine
Felbamate
Gabapentin
Lacosimide
Lamotrigine
Levetiracetam
Lorazepam
Phenobarbital
Phenytoin
Pregabalin
Primidone
Rufinamide
Tiagabine Hydrochloride
Iramate
Valproic Acid
Vigabatrin
Cannabidiol
Cenobamate

There are over 20 medications that can be used to treat seizures. Each has its advantages and risks based on patient age, medication conditions, ability to detoxify drugs, and what drugs they currently take. Consultation with a pharmacist experienced with these drugs is recommended by NINDS.[1,4,5,10]

* Compiled from references 1, 4, 5, & 10, list complete as possible, but not exhaustive.

nurse's findings and observations of the patient's motor and cognitive behaviors, may help determine whether the patient experienced a provoked seizure, an unprovoked seizure, or a seizure mimic.[14] Further testing and therapy may be based on information shared with the provider and neurologist.[14]

Diagnostics

Determining the underlying cause of a seizure in an older adult will require a variety of diagnostic testing due to a wide range of reasons that can lead to seizure activity.[1,2,4-6,9-14,16] Blood testing should include searching for provocative causes such as water intoxication, dehydration, electrolyte abnormalities (especially magnesium, sodium, and calcium), abnormal liver enzymes (checking for hepatic encephalopathy), and glucose abnormalities (hypoglycemia vs diabetic ketoacidosis or hyperglycemic hyperosmolar nonketotic syndrome).[1,2,4-6,9-14,16] Brain imagining—computed tomography/magnetic resonance imaging—looking for signs of a stroke, tumor, or bleeding in or around the brain should be performed.[1,2,4-6,9-14,16] Several studies noted a magnetic resonance imaging may provide more useful data, but a rapid head computed tomography helps to rule out acute hemorrhage in the brain.[1,2,4-6,9-14,16] A 12-lead electrocardiogram and dynamic cardiac monitoring looking for rhythm disturbances that led to syncope or other seizure-like behaviors should be carried out.[1,2,4-6,9-14,16] A lumbar puncture and laboratory testing looking for brain or other neurological infections (meningitis, encephalitis) should be considered.[6] Electroencephalography is the gold standard and often recommended, but has been found to be less useful in older adults, as electroencephalography abnormalities are often nonspecific.[1] A sleep study and neuropsychological testing are also recommended for optimal care of this patient.[1,2,4-6,9-14,16] A thorough medication review conducted by a pharmacist and an epileptologist needs to be part of this workup.[1,2,4-6,9-14,16] With all these considerations, it is important that the diagnostic workup be coordinated by a team familiar with seizures in the older adult.[1,2,4-6,9-14,16] Identifying the cause of a seizure in the older adult will help determine appropriate treatment. It will also help to determine whether prophylactic antiseizure medication will be needed.[1,2,4-6,9-14,16]

DETERMINING THE CAUSE OF A SEIZURE IS IMPORTANT

Initial treatment and follow-up care of the older adult who had a seizure will often depend on why the patient seized or is seizing. Older adults having a seizure provoked by an identifiable cause (metabolic abnormalities, bleeding in the brain, infection, toxicities) often require immediate and lifesaving interventions to correct the underlying cause and stop the seizure.[1,2,4-6,9-14,16] Antiseizure medications may or may not be effective until the underlying cause is addressed.[1,2,4-6,9-14,16] Once the abnormality is identified and corrected, the patient may not need additional or prophylactic antiseizure medications.[1,2,4-6,9-14,16] It is important to note that repeated, frequent, or prolonged seizures (even though they are provoked by repeated head trauma, lifestyle, or poor health) can lead to enough brain tissue damage that unprovoked seizures may develop.[1,2,4-6,9-14,16] The provider may choose to prescribe prophylactic

antiseizure medications for patients with frequent provocative seizures.[1,2,4-6,9-14,16]

Unprovoked seizure activity may initially require antiseizure medication to stop the seizure, especially if the seizure activity puts the patient at risk of harm.[3,4,10-15] (Remember, not all older adults having a seizure will have motor activity, but may be having a nonconvulsive seizure. This patient still needs to be kept safe.) Older adults with a risk of recurrent unprovoked seizures are often prescribed prophylactic antiseizure medication based on the type of seizure activity and safety risks.[3,4,10-15] If a patient is taking antiseizure medication and a seizure still occurs, it will be important to figure out why this happened. (Did the patient not take their medication, was there a medication change that altered absorption or metabolism, or was there some other triggering event?)[1,2,4-6,9-14,16] It will be important for the emergency nurse to advocate for the older adult to ensure they have been thoroughly evaluated for correctable underlying medical conditions that could cause a seizure and not just assume the seizure was unprovoked.[1,2,4-6,9-14,16]

Medicating to Prevent Seizures

Expert opinion varies regarding use of prophylactic antiseizure medication in older adults, especially if there has been only 1 seizure.[1,2,4,5,10,11,14,16] However, studies suggest that seizure activity in older adults is often not recognized as a seizure that should be treated (Tables 1 and 2). These same studies also suggest that if the patient is not adequately evaluated and treated appropriately there is a greater risk of repeated seizures and the development of epilepsy.[1,2,4-6,9-14,16] Recurrence of seizures was seen in 79% of older adults within the following year after their first seizure.[5] This number increases to 83% of seniors having a second seizure within 2 years of the first seizure[5] (compared with a rate of 25%-52% in the general population).[5] Determining whether the seizure was provoked versus unprovoked helps with the decision whether or not an older adult should be placed on long-term antiseizure medication.[1,2,4,5,10,11,14,16] Provoked seizures are generally treated by correcting the underlying cause and use of antiseizure medications in the acute phase.[1,2,4-6,9-14,16] Patients with unprovoked or more than 1 seizure are often prescribed prophylactic antiseizure medications to decrease the risk of additional seizures and harm.[1,2,4-6,9-14,16] However, taking antiseizure medications is not without risk.[1,2,4-6,9-14,16,20]

There are more than 20 antiseizure medications used to prevent seizures, each with risks and benefits (Table 5). Prophylactic antiseizure medication has been shown to be effective in older adults, with approximately 80% of seizures responding to the medications. However, the senior's ability to tolerate side effects must be considered. Drowsiness, altered mental status, confusion, and falls are concerns associated with taking antiseizure medications.[2,4,5,10,11,16,20] This is especially of concern in the older adult who already has some of these risks as a result of the aging process.[2,4,5,10,11,16,20] Tasks that require older adults to be alert and with intact coordination may be difficult when the patient is taking antiseizure medications.[4,10,20]

The ability to hold a valid driver's license often influences the decision to take, or not take, prophylactic antiseizure medication. Loss of independence due to driving restrictions is a major challenge for many older adults.[20] Most states require providers to report to the Department of Vehicular Services any patient who has experienced a seizure.[20] Driving restrictions related to seizures and use of seizure medication vary from state to state, but most states restrict driving until a patient has been seizure-free for a specified period of time.[20] (Check your state statutes.) Antiseizure medications can be used to develop a seizure-free status, but their use must be balanced with the decrease in alertness, coordination, and reaction time caused by the drug.[20]

Renal and liver function changes that accompany aging are also an important consideration.[1,4,10,20] Competition for drug metabolism and elimination sites in the liver and renal system can lead to drug interactions and toxicities when antiseizure medications are added to drugs the patient is already taking.[1,4,10,20] At the highest risk of interaction and toxicities is the older adult taking antihypertensive, anticoagulant, antidiabetic, or cardiac medications.[4,10,20] It is important to note breakthrough seizures may occur if the patient alters any of their medication doses (especially when increasing or decreasing doses or forgetting to take their medication).[4,10,20] Addition of new medication that competes at sites that metabolize antiseizure drugs can lead to toxic effects or breakthrough seizures. Adjusting or starting a new antiseizure drug may lead to breakthrough seizures.[4,10,20] Patients taking antiseizure medications are at a higher risk of osteoporosis and those taking hormone replacement therapy at an increased risk of developing seizures[19] (Table 5).

The decision about to prescribe prophylactic antiseizure medications often depends upon the type of seizure behavior and risk of harm to the patient.[2,4,5,10,11,16,20] Some seizures are barely noticeable, placing the patient and others at minimal risk.[1-9] Other seizures can lead to loss of consciousness and injury caused by falls, vehicle crashes, or mishaps with tools or machinery.[4,10,20] Frequent uncontrolled seizures may lead to brain hypoxia, further seizures, and a diagnosis of epilepsy.[4,10,20] The nurse or other

reliable witnesses being able to provide an accurate description of the seizure activity will provide useful input to the provider regarding the decision to prophylactically treat for seizures.[4,10,19,20] Fear of future seizures may cause the patient to request prophylactic antiseizure medication, limit activities to prevent harm, or avoid going out in public due to concern of embarrassment should they have another seizure.[1,2,4,5,10,11,14,16] A discussion about the pros versus cons of starting antiseizure medications and how seizures and antiseizure medication will affect the quality of life needs to take place among the patient, family members, and provider.[1,2,4-6,9-14,16] The nurse may need to facilitate that conversation and encourage asking questions.

The choice to not take prophylactic antiseizure medication to avoid mediation-associated effects is ultimately the patient's. However, this choice does place the older adult at an increased risk of further seizures, injury, insults to the brain due to hypoxia, or head trauma when another seizure occurs.[1,2,4,5,10,11,14,16] Some providers may recommend a "wait and see" approach if the patient has had only 1 seizure with a provocative cause, but risks related to taking antiseizure medication compared with risks of having a seizure and the sequelae as a result of not taking antiseizure medications make this decision challenging.[1,2,4,5,10,11,14,16,20] Patients hesitant to take antiseizure medications may benefit from information related to studies looking at special diets, surgery, and electronic brain stimulation devices that are being used to reduce seizures.[4,15]

IMPLICATIONS FOR EMERGENCY NURSES

An understanding of why some patients require antiseizure medications and others do not may help the nurse answer questions from the patient and family. Patients who had a seizure caused by an identifiable and correctable medical condition had a provoked seizure.[1,2,4-6,9-14,16] Patients with provoked seizures will most likely need antiseizure medications only during the acute episode and not the rest of their life.[1,2,4-6,9-14,16] In some cases, the patient's seizure "activity" was actually a seizure mimic (eg, when the patient has jerking motions at the start of a syncopal episode). This patient will not need antiseizure medication.[1,2,4-6,9-14,16] However, patients who seize because of no acute identifiable cause (unprovoked seizure) will most likely need prophylactic antiseizure medication.[1,2,4-6,9-14,16]

It is important for the nurse to advocate for and answer questions from the older adult. Ensure the patient has been thoroughly evaluated by a team knowledgeable about seizures in older adults to determine whether the patient experienced a provoked or unprovoked seizure. Ensure that medical conditions that can cause a seizure are being evaluated and managed appropriately. Should another seizure occur, take actions to ensure that the patient remains safe by following hospital protocols regarding seizures. Be ready to correct airway and breathing issues if the patient should seize, and monitor ventilatory status if antiseizure medications are administered to control the seizure.[1,2,4,9] Make sure the patient understands the choices being offered. Assist the patient and family to create a plan of care that will keep the older adult active, yet safe.[5]

INSTRUCTING THE PATIENT AND FAMILY

An older adult being discharged from the emergency department after a seizure needs to be made aware of the following precautions. After a seizure, the older adult should limit or avoid the use of power tools, climbing ladders, cooking or using fire, driving a vehicle, riding a bicycle, and use of heavy equipment to avoid injury.[1,2,4,5,10,11,14,16] The patient may not be receptive to these recommendations because these may limit the older adult's work or recreational life.[1,2,4,5,10,11,14,16] Swimming and bathing need to be carefully supervised or eliminated, as drowning in patients with a history of seizures is noted to be 15% to 19% greater than in the general population.[21] Other helpful points to share with the patient include a list of things found to trigger seizures. Increased stress, sleep deprivation, inadequate fluids and nutrition, visual stimulation (such as moving patterns or flashing lights), certain medications (antipsychotic, antidepressant, antibiotics, tramadol, isoniazid, metronidazole, bupropion, and theophylline), use of alcohol, and jet lag have been found to precipitate, or trigger, seizures.[1,4,9,14] The patient should be advised that when playing sports or engaging in activities that involve physical activity, they should avoid overexertion or becoming dehydrated or hypoglycemic because these conditions increase risk of a seizure.[10,14] If possible, the senior should replace removable dental appliances, such as partial dentures or a bridge, with permanently affixed devices to prevent risk of aspiration of the appliance during a seizure.[14] Encourage the senior to get plenty of rest, eat a balanced diet, drink plenty of fluids, and try to avoid things that can trigger a seizure. Suggest the senior get a medic alert bracelet that identifies they have a history of seizures.[1,4,9,14] Warn the patient that it is not unusual to be depressed after receiving a diagnosis of epilepsy.[14,20] They may even notice that people treat them poorly or are standoffish due to the stigma and myths associated with the condition.[14,20] Provide contact information for the AmericanEpilepsy Foundation (https://www.epilepsy.com/

) in your area because this group has a wealth of information and a way to connect with a support group in the area.

It is important for the emergency nurse to provide education about seizures to the older adult's family and caregivers. Describe actions the family should take if the patient has a seizure.[14,16] The depth of this information will depend on the type of seizure behavior the patient experiences. Focal seizures may not require much action, other than to note the type of seizure behavior the patient exhibited and how long it lasted and to monitor the patient for further seizure activity.[14,16] The family should be warned the seizure may become a generalized body seizure and what to do should this happen.[14,16] Teach the family to note if the patient remains confused or with an altered level of consciousness (prolonged post-ictal state) after the seizure activity.[14,16] Family members should be educated on how to prevent further injury to the patient who has a loss of muscle control, falls, or has a generalized total body tonic-clonic seizure.[4,14,16] Remind family members to stay with the seizing patient and move objects out of harm's way, but not restrain the patient.[4,14,16] Teach the family that it is no longer appropriate to try to wedge something between the teeth and that the patient will not swallow their tongue. Explain that once the patient is done seizing, they should roll the patient onto their side to allow secretions to drool from the mouth.[4,14,16] The family should also be taught how to ensure the airway is open, that the patient continues breathing, and what to do if breathing has not resumed.[4,14,16] The nurse may want to warn the family that the patient's facial color will become bluish caused by venous congestion but should return to normal once the seizure stops.[14,16] Warn the family that the patient may be incontinent, but that this does not happen in all seizures.[14,16] Talk about when it is appropriate to call 911, but reinforce the concept that if the seizure lasts longer than 5 minutes, family members should call for help.[14,16] If the provider prescribed emergent antiseizure medications (rectal diazepam, intranasal or injectable midazolam), show the family how to use them.[14,16,17] Educate about causes, management, keeping the patient safe during a seizure, and provide information about counseling/epilepsy services in your area.[14,20]

Conclusions

Aging places older adults at risk of new onset of seizures. Comorbidities associated with aging, stroke, metabolic abnormalities, brain injuries, and neurogenerative disorders such as Alzheimer's, as well as brain infections, tumors, and medication reactions are examples of brain insults that may cause seizures.[1,2,4-6,9,13] Seizures in the older adult are often missed because the older adult may not present with classic generalized total body tonic-clonic seizure activity.[1,2,4,5,11] Some seizures have an identifiable, correctable cause (provoked).[1,2,4-6,9,13] Seizures may also be the result of an underlying life-threatening medical condition.[1,2,4-6,9,13] Old damage in the brain can lead to irritable brain tissue causing unprovoked seizure activity.[1,4,11,13] Having 1 seizure does not automatically mean that the patient has or will develop epilepsy, but does increase the risk of future unprovoked seizures.[1,4,11,13] One in 25 older adults will go on to have additional unprovoked seizures.[11] Reaching the sixth decade in life increases the risk of having more than 1 unprovoked seizure simply because of the lumps, bumps, and metabolic insults an aging brain endures.[1,2,4-6,9,11,13]

The emergency nurse with an increased knowledge, awareness, and suspicion that abnormal behavior may be seizure related in an older adult can ask the right questions. The emergency nurse can assist with data gathering, advocate for the cause of the seizure to be investigated, and assist with correction of life-threatening conditions. By educating the patient and family about safety measures, providing information about the condition and resources, and encouraging the patient to follow through with the seizure workup, the emergency nurse can help create the best plan of care for this patient. The patient's quality of life and ability to be active and independent depend on the emergency nurses' understanding, advocacy, and knowledge.

Author Disclosures

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Protecting the Physical and Psychological Safety of the Research Team

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Research is a subversive act given that it challenges our belief systems, and yet neither scholarly journals nor academic settings address generally or specifically the threats and traumas of conducting research. Although research methodologies are taught in both clinical and academic environments, sometimes the research setting can be psychologically and physically risky.[1,2] The benefits of engaging in research as an investigator or team member are substantial, yet there are risks ranging from the physical and emotional to the reputational that exist on multiple levels and are present before, during, and after the conduct of research.[3] Descriptions from field work in the social sciences demonstrate that the conventional ethical frameworks that protect participants do not necessarily address the safety of researchers involved in the difficult process of collecting and analyzing data or disseminating findings in the research environment.[1,4,5] There is no information in the nursing literature that discusses these risks and thus no discussion of strategies to mitigate these threats or address consequences of harm.

This paper aims to provide a discussion of risks emergency nursing researchers may face in conducting a study and suggestions for addressing those risks before, during, and after data collection and analysis. In particular, the experiences of 2 novice researchers participating in the newly established Emergency Nursing Diverse Voices Research (ENDVR) Fellowship at the Emergency Nurses Association brought our attention to this phenomenon; their concerns were the impetus for this paper. As ENDVR fellows, emergency nurses who are new to research are paired with established nurse scientists for a mentored experience designed to introduce them to the process of conducting emergency nursing research in a supported manner. In reflecting on the process of mentoring new researchers, we asked these novice researchers to describe their challenges in designing and conducting studies investigating the care of transgender patients in the emergency department and the experiences of lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual, and more (LGBTQIA+) staff in the emergency department. Both novice researchers were engaged in social science research that explored topics that potentially provoked strong responses.

Although statistics regarding risk to researchers are not available in current literature, some more obvious examples where researchers may be at identified risk are conducting interviews in remote, high-risk locations or delivering and collecting questionnaires from homes and apartments in high-risk areas. Researchers engaged in socially divisive subject matter may also be at risk during data collection or during the dissemination phase when their findings are published and presented.[5] Using a contemporary example, consider researchers studying the origins and clinical course of vaccines and treatments for COVID-19. Nogrady[6] reported that these researchers were subject to both physical (at their homes) harassment

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and also harassment via social media impacting their emotional well-being; in a survey of 321 scientists, 15% reported death threats, 22% reported threats of physical or sexual violence, and more than 66% reported negative experiences directly owing to media appearances or comments. Other areas that may provoke harassment are research on firearms, LGBTQIA+ issues, work with transgender persons, and abortion care. The Social Research Association based in the United Kingdom developed a code of practice for the safety of social researchers[7] that focuses on ensuring the physical and psychological safety of social science researchers. It includes the following risks:

- physical threat or abuse
- psychological trauma as a result of actual or threatened violence or the nature of what is disclosed during the interaction
- involvement in a compromising situation in which there might be accusations of improper behavior
- increased exposure to everyday life and social interaction, such as road accidents and infectious illness
- causing psychological or physical harm to others

In social sciences research, the emic ("insider") perspective is critical. In general, researchers are drawn to topics that are personally interesting to them, either directly or peripherally, but when the *researcher themselves* provides an emic perspective, considerations must be taken. In particular, in qualitative research, the nature of qualitative methods means that researchers have little control over the topics that arise, and the conversation may go to places the researcher is not prepared for.[5] One ENDVR fellow was working on a study about the experiences of LGBTQIA+ nurses in the emergency department and states as they prepared for the study, they were:

> …excited to hear perspectives of LGBTQIA+ emergency department nurses about what they experience at work. I was curious to find out if their experiences matched mine or if they were much better or possibly much worse than what I've personally experienced as an emergency department nurse. The whole reason for doing this study is because there is hardly any prior research about what LGBTQIA+ nurses experience at work, whether that's positive or negative. Before beginning the study, I did not expect any negative implications to my psychological or physical safety.

This researcher chose a topic that expanded directly on their own experience. Given that the process of human protections focuses on participants, it was a missed opportunity for us to identify the potential for challenges to psychological or physical safety in the same way that we would when considering risks to participants. However, the researcher clearly recognized some challenges as the project progressed:

> I did not go out of my way to discuss this project with my coworkers…[for] fear of judgment about the project itself. From past experiences, while the people I've worked with have been generally accepting of my LGBTQIA+ status, they have not gone out of their way to celebrate or recognize diversity of any type. For the coworkers who knew about the project and asked about my research topic, I did not receive any negative comments. My management team even got me a congratulatory gift for being part of this fellowship.

> While conducting the focus groups I think that I experienced both positive and negative psychological effects. Since I'm in the LGBTQIA+ community myself, when participants would share their experiences, I found myself thinking about personal things that have happened to me in the workplace that were similar. Some of those experiences are memories I am not fond of and I try not to think about. There were also some answers from participants that surprised me and broke my heart as a fellow LGBTQIA+ community member, mostly from those who felt the need to hide at work, that they couldn't be out as LGBTQIA+ without fear of judgment or retaliation.

When researchers write their "protection of human subjects" sections for institutional review board review, they provide processes to address any negative impacts from social, financial, physical, or emotional harm, shame, triggers of trauma, and other mental health sequelae participants could potentially experience by being a research participant. They make sure we put a crisis number to call if the participant becomes upset or needs therapeutic intervention. It seems reasonable, especially in qualitative research, if we (nurse researchers) are part of the community we are researching, those types of dangers apply to us as well.[4,8] In data collection for a study we conducted on secondary traumatic stress,[9] we experienced some retraumatization ourselves. Experiences such as this indicate we must identify and plan for this type of experience for ourselves and the researchers we are training and that ethics committees may want to include researcher safety plans in their protection of human

subjects section. Academic institutions are becoming more aware of this problem, and some have toolkits on their websites[10] for faculty researchers that may be transferable to the process of nursing research.

Although there is literature in the social sciences on these risks, the nursing literature on this phenomenon is minimal, and yet in our collaborative work we have experienced the disruptive emotions that qualitative research can trigger, as well as experienced concerns associated with specific research topics. At a minimum during the planning process, we can consider any potential threats to physical or psychological safety and put protections in place similar to those we would provide for participants. In particular, it is suggested that nurses preparing to engage in research activities:

- Devise a formal safety plan for both participants and researchers that includes threat identification and mitigation strategies during data collection and dissemination of findings as appropriate
- Consider the positionalities (ie, identification with a racialized, oppressed, or minoritized group, or a position of privilege) of the research team and how that might inform impact of any harassment or threat
- Provide pre- and poststudy availability of therapeutic access[5]
- Pay attention to the "temperature" of the focus group or interview and provide breaks as needed to relieve high emotions for participants and researchers
- Establish a debriefing process where researchers and teams can safely discuss their experiences with supportive team members[5]

This paper described an area of the research process that is underappreciated. Using our own experiences to prompt a search of the literature, we found no discussion in the nursing literature of the potential risk to researchers. We suggest further exploration among emergency nursing researchers to understand their experiences related to this phenomenon. We also suggest future work to determine the prevalence and impact of this type of risk as well as potential interventions to mitigate risk among nurse researchers and nurses engaging in research activities in emergency environments.

Author Disclosures

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Triage Accuracy in Pediatrics Using the Emergency Severity Index

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Contribution to Emergency Nursing Practice

- The Emergency Severity Index (ESI) is the most widely use tool for triage in the United States. Although previous studies have identified inaccuracies in the ESI, there is a scarcity of pediatric validation studies.
- The use of resource utilization to prioritize pediatrics may have significant limitations when using the ESI. Identifying resources in provider notes may be addressed using natural language processing techniques.
- Nurses must carefully consider resource utilization that is unique to pediatrics. Conscious/unconscious bias plays a key role when evaluating all children during triage.

Abstract

Introduction: Although the Emergency Severity Index is the most widely used tool in the United States to prioritize care for patients who seek emergency care, including children, there are significant deficiencies in the tool's performance. Inaccurate triage has been associated with delayed treatment, unnecessary diagnostic testing, and bias in clinical care. We evaluated the accuracy of the Emergency Severity Index to stratify patient priority based on predicted resource utilization in pediatric emergency department patients and identified covariates influencing performance.

Methods: This cross-sectional, retrospective study used a data platform that links clinical and research data sets from a single freestanding pediatric hospital in the United States. Chi-square analysis was used to describes rates of over- and undertriage. Mixed effects ordinal logistic regression identified associations between Emergency Severity Index categories assigned at triage and key emergency department resources using discrete data elements and natural language processing of text notes.

Results: We analyzed 304,422 emergency department visits by 153,984 unique individuals in the final analysis; 80% of visits were triaged as lower acuity Emergency Severity Index levels 3 to 5, with the most common level being Emergency Severity Index 4 (43%). Emergency department visits scored Emergency Severity Index levels 3 and 4 were triaged accurately 46% and 38%, respectively. We noted racial differences in overall triage accuracy.

Discussion: Although the plurality of patients was scored as Emergency Severity Index 4, 50% were mistriaged, and there were disparities based on race indicating Emergency Severity Index mistriages pediatric patients. Further study is needed to elucidate the application of the Emergency Severity Indices in pediatrics using a multicenter emergency department population with diverse clinical and demographic characteristics.

Key words: Triage; Pediatrics; Emergency Severity Index

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Introduction

Effective pediatric triage is fundamental in providing high-quality and appropriately resourced medical care to children treated in emergency departments. When triage assignments are inaccurate, the effects are associated with risks to patient safety and poor outcomes, including delayed treatment, missed diagnoses, and decreased patient satisfaction.[1,2] Therefore, improving triage accuracy is critical and will likely have far-reaching effects given that the number of United States pediatric ED visits during the previous decade (2010-2019) reached an annual average of more than 27 million.[3] The most frequently used triage tool informing nurse-driven decisions surrounding clinical acuity and prioritization of care for children and adults in United States emergency departments is the Emergency Severity Index (ESI).[4] ESI is a triage algorithm initially developed with the support of the Agency for Healthcare Research and Quality and has since been acquired by the Emergency Nurses Association. Guided by ESI algorithms, nurses use their clinical judgment to categorize patients into 5 acuity levels based on risk of deterioration (ESI 1 and 2) and predicted number of resources required for care (ESI 3-5).

Although ESI is widely used in the United States, a body of evidence has identified significant deficiencies in its performance.[5-7] The initial ESI validation study identified a 27% rate of discordance between triage acuity and review of subsequent care in the medical record.[8] Since this landmark validation study, few improvements have been made. Subsequent studies have identified that children as a group are at a greater risk of inaccurate triage, especially undertriage, in which higher resources are used than predicted by ESI level.[9-11] There is also a growing body of evidence that suggests initial biases at triage can lead to racial disparities in pain management and other outcomes, and this concern merits further study.[12-14] Yet another item addressed in the literature is the finding that most pediatric patients are triaged to level 3, indicating that a wide variety of patients have been clustered into a single category.[15] Moreover, an ESI assignment of 3 is based on a prediction of the number of resources a patient will require rather than an assessment of clinical status. Assignments for ESI 4 and 5 also are decided through resource estimation, and this has been problematic for ESI validation.

When validating how well ESI performs, it is often difficult to identify all of the resources a child received during their ED visit. Resources, such as bedside procedures and consultations, are often documented in the electronic health record (EHR) within narrative notes, which makes them difficult to measure in validation research. Fortunately, natural language processing, a growing field within data science, can now be used to measure resources and other outcomes recorded through narrative documentation because it analyzes human language through computational processes.[16] Therefore, the primary aim of our study was to evaluate the ability of ESI to stratify patient priority based on predicted resource utilization in a pediatric emergency department using a newly developed existing data tool at our institution. Our secondary aims were to (1) evaluate the use of natural language processing to identify resources in provider notes and (2) evaluate covariates, such as patient age and race, that may be associated with inaccurate triage.

Methods

STUDY SETTING AND POPULATION

We performed a retrospective analysis of all patients who presented to our pediatric emergency department between July 1, 2017, and October 31, 2020. The study included 304,422 ED visits by 153,984 unique individuals. We excluded from the analysis patients that lacked a disposition (admit/transfer) and age outside of 0 to 18. We also excluded from our sample patients who were never assigned an ESI level during their visit or whose EHR was missing documentation of sex, race, and ethnicity. This accounted for 1% exclusion in the final analysis. We followed the National Institutes of Health's guidance on reporting race and origin and what was available in our EHR. We used our internal EHR data science platform (Arcus) to conduct our analysis. The Arcus platform provides a secure computational environment for researchers to link and analyze data across multiple sources, with access to more than 2 million patients.[17] This single-center study was conducted at a free-standing children's hospital, which is a level 1 trauma center that serves a large urban region. Our study was deemed exempt from oversite by our institutional review board.

STUDY VARIABLES

ESI categories range from 1 (critical) to 5 (nonurgent). ESI 1 and 2 are determined by the need for care that is lifesaving (ESI 1) or immediate/high risk (ESI 2). In contrast, ESI categories 3 to 5 are assigned based on the number of resources the triage nurse predicts the patient will use during the ED visit; 2 or more resources generate an ESI of 3, 1 produces an ESI of 4, and 0 yields an ESI of 5.[18] Resources include diagnostic tests, procedures, intravenous or inhaled medications, and consults that are administered/ordered to determine

patient disposition (hospital admission or discharge to home). For ESI 3 to 5 assignments, resources are a proxy to determine the order of access to treatment. The study site developed a triage manual that provides specific guidance for high-risk patients and expected resources for lower acuity patients. Our in-house triage manual was informed by the ESI handbook and provides pediatric-specific guidance.[19]

STATISTICAL ANALYSIS

We categorized inaccurate triage as expected resource utilization that was greater (overtriage) or less (undertriage) than what was subsequently documented in the EHR. Mixed effects ordinal logistic regression was used to determine associations between ESI categories assigned at triage and actual resources used during the ED visit. This was also performed when adjusting for patient characteristics (eg, age, sex) associated with resource utilization. The binary outcome of whether an individual was correctly triaged was analyzed with mixed effects logistic regression against ESI category and patient race. Finally, we used multinomial logistic regression to determine the visit-level association of race and patient age on triage accuracy.

To answer our second aim, we deployed Regular Expression (RegEx), a data tool used by programmers to find patterns in unstructured narrative text and on EHR structured notes to identify consults and procedures performed during ED visits. Structured notes are based on templates built into the medical record that both follow clinician workflow and support data completion.[20] RegEx enables the identification of patterns in text, referred to as strings, using string-searching algorithms. Strings can include numbers, letters, and special characters.[21] To build in-text pattern matching for this computer-assisted approach, we first established and compiled a list of the most common procedures performed in the emergency department along with pediatric specialties that routinely provide consultative services. Two study team members (W.F. and D.B.) reviewed a random set of 100 charts to validate the presence/absence of procedures or consults that RegEx identified to determine the accuracy of the search algorithm. We included 50 charts where RegEx identified procedures or consults and the remaining charts where RegEx did not detect any ED procedures or consults. Our purpose in chart selection for review was to validate that the search algorithm identified the correct procedure and also did not miss procedures in the note. We used SQL pad and R programming provided by Arcus for data query, validation, and analysis.[22]

TABLE 1
Description of study population demographics

Category	Subcategory	Frequency (%)
Sex	Male	81,062 (53)
	Female	72,922 (47)
Age	<1	27,591 (17)
	1	14,285 (9)
	2-5	35,612 (23)
	6-11	39,540 (25)
	12-18	35,468 (23)
	19+	1488 (1)
Race Ethnicity	Asian	6600 (4.2)
	Black or African American	73,615 (47.8)
	White	49,682 (32.2)
	Other	24,087 (15.6)
	Hispanic or Latino	16,285 (10.5)
	Not Hispanic or Latino	137,699 (89.4)

Results

Subjects had a mean age of 7.1 years at their first visit and were majority male (53%) and Black or African American (47%) (Table 1). The plurality of visits had been assigned an ESI score of 4 (nonurgent), which indicates 1 expected resource utilization (Table 2).

RegEx identified standard procedures (eg, laceration repairs, sedation) and specialty consults within structured and unstructured notes. Random chart audits indicated 95% accuracy of identifying the presence or absence of procedures/consults in the provider notes. The procedures and consults found during audits were added as resources to the final analysis.

ESI correctly identified resource utilization 49% of the time, whereas 45% of patients were overtriaged and 6% undertriaged (Table 2). The most overtriaged category was ESI 3 (53%), whereas the most undertriaged category was ESI 5 (14%). Univariate analyses of the study variables (sex, age, race, ethnicity, and ESI level) were all associated with resource utilization ($P<.001$). Adjusting for patient sex, age, race, ethnicity, and ESI level, predicted resource using mixed effects ordinal regression showed the following positive predictive values for the number of actual resources predicted during ED visit: 0 resources (ESI 5) = 69%, 1 resource (ESI 4) = 51%, 2 or more resources (ESI 3) = 72%. Within the same model, all patient demographics that were associated with resource utilization are shown in Table 3. Females were more likely than males to use more

TABLE 2
Overall accuracy of triage and resource utilization

Characteristic	ESI 1 n = (%)	ESI 2 n = (%)	ESI 3 n = (%)	ESI 4 n = (%)	ESI 5 N = (%)
Percent visits	1846 (1)	59,892 (20)	94,196 (30)	130,007 (43)	18,481 (6)
Overall accuracy	1705 (92)	38,315 (64)	44,062 (46)	49,302 (37)	15,899 (86)
Overtriage	141 (7)	21,577 (36)	50,134 (53)	66,003 (50)	N/A
Undertriage	N/A	N/A	N/A	14,702 (11)	2582 (14)
0 resources	14 (<1)	6457 (11)	21,517 (23)	66,003 (51)	15,899 (86)
1 resource	127 (7)	15,120 (25)	28,618 (30)	49,302 (38)	2276 (12)
2 or more	1705 (92)	38,315 (64)	44,061 (47)	14,702 (11)	306 (1)

ESI, Emergency Severity Index; N/A, not available.

resources (odds ratio [OR] 1.14, 95% CI 1.13-1.16). A 1-year increase in age had an 11% increase in odds of resource utilization (OR 1.11, 95% CI 1.11-1.11). Hispanic or Latino individuals were less likely to use more resources (OR 0.95, 95% CI 0.92-0.98), and non-white individuals (Black or African American, Asian, other) were also less likely to use more resources (OR 0.54, 95% CI 0.53-0.54, OR 0.71, 95% CI 0.68-0.74, OR 0.74, 95% CI 0.72-0.76, respectively).

Multinomial logistic regression models demonstrated the relationships between patient characteristics and granular triage accuracy (Table 4). When controlling for race, ethnicity, and age, older patients were less likely to be overtriaged (OR 0.92, 95% CI 0.92-0.92). Non-white individuals had higher odds of being both over- and undertriaged. Compared with whites, the observed ORs for overtriage for Black or African American, Asian, and other subgroups were 1.54 (95% CI 1.51-1.56), 1.33 (1.28-1.39), and 1.29 (1.26-1.32), respectively. The observed odds of undertriage for those groups were 2.35 (2.25-2.45), 1.99 (1.82-2.17), and 1.88 (1.78-1.99), respectively.

TABLE 3
Mixed effects ordinal logistic regression: patient characteristics and resource utilization

Characteristic	Odds ratios (95% CI)
Age at visit (y)*	1.11 (1.11-1.11)
Sex	
Male	(Reference)
Female	1.14 (1.13-1.16)
Race	
White	(Reference)
Hispanic	0.95 (0.92-0.98)
Asian	0.71 (0.68-0.74)
Black or African American	0.54 (0.53-0.54)
Other	0.74 (0.72-0.76)
Ethnicity	
Not Hispanic or Latino	(Reference)
Hispanic	0.95 (0.92-0.98)

* 1-year increase in age.

Discussion

The purpose of this study was to evaluate the ability of ESI to stratify patient priority using predicted resource utilization in a pediatric ED population. Triage that ensures safe and equitable prioritization of care for children who seek emergency services is a critical component of emergency medicine and has downstream implications for subsequent care during the ED visit. Our study provides further evidence for the need for improvement in pediatric triage and the application of ESI in pediatric patients.

To fully evaluate how well nurses stratified patient priority by anticipated resource utilization, we successfully identified resources within the provider notes. Our use of natural language processing identified resources that may not have been included in past validation studies, potentially contributing to a more complete assessment of triage accuracy. Procedures and specialty consults are often embedded in notes and are more difficult to query from the EHR. To date, previous studies that validated ESI for pediatrics in terms of resources have collapsed ESI 3 and 4 in their analysis,[8] used patient scenarios,[23] or did not report percentages of over- and undertriage.[24] Specialty consults and procedures not readily found in the EMR were added to our analysis.

TABLE 4
Multinominal logistic regression: patient characteristics and triage accuracy

Patient characteristic	Odd ratio (95% CI)	
	Undertriage	Overtriage
Age at visit (y)	0.99 (0.99-0.99)	0.91 (0.91-0.91)
Race		
White	(Reference)	(Reference)
Black or African American	2.35 (2.25-2.45)	1.54 (1.51-1.56)
Asian	1.99 (1.82-2.17)	1.33 (1.28-1.39)
Other	1.88 (1.78-1.99)	1.29 (1.26-1.32)
Ethnicity		
Not Hispanic or Latino	(Reference)	(Reference)
Hispanic or Latino	1.09 (1.04-1.15)	0.98 (0.95-1.00)
Sex		
Male	(Reference)	(Reference)
Female	1.14 (1.11-1.18)	0.90 (0.88-0.91)

High rates of mistriage continue to be identified in adult studies, yet poorly described in pediatrics.[25] The overall triage accuracy was low in our sample (49%), yielding a higher-than-expected inaccurate triage rate, as previous studies have documented inaccurate rates between 27% and 40%.[5,8,26] Eleven percent of ESI 4 subjects and 14% of ESI 5 subjects in our sample were undertriaged (Table 2), indicating more resources were used than predicated at triage. Undertriage delays care and places patients at risk of further deterioration and potential harm.[1,25]

Our findings also demonstrated a high rate of overtriage, indicating that patients required fewer resources than initially predicted. Overtriage can contribute to overcrowding by diverting lower acuity patients away from "fast track" areas where they may be better served.[25] Furthermore, these patients may be perceived as "sicker" than they are and potentially receive unnecessary care. Current ambiguities in the ESI algorithm may lead to variability in practice and a potential to introduce framing bias.[27-29] Framing bias introduces preconceived judgments about patients by presenting information in a way that "frames" how others respond. This bias is a risk that is inherent in decisions during triage and can have downstream consequences by presenting an individual as a particular level of acuity.[30] Overtriage can lead to unnecessary or costly testing when patients are perceived as urgent or requiring more care than necessary.[31] Although hospital resources continue to dwindle, both over- and undertriage delay treatment to the most urgent patients.[25]

Pediatric patient characteristics have the potential to influence the accuracy of triage decisions. Despite previous studies calling attention to the need to examine these characteristics, detailed evidence is limited.[23,24] Children who present to the emergency department for emergency care are diverse in terms of age range (birth to adolescence) and developmental levels, which results in additional challenges for accurate triage assessment of injuries and illness. Vital signs, pain assessments, and behavior are all affected by age and developmental level; this must be taken into consideration when evaluating children who present for emergency care. Thus, emergency nurses caring for children are required to assess, predict care, and treat a widely diverse and highly complex patient population. We found several characteristics that were related to triage accuracy. Compared with older patients, younger patients were more likely to be overtriaged. It is possible that conservative management of infants may influence nurse decision making during triage; however, this warrants further investigation. This finding also supports the assumption that children are challenging to assess, especially in the ED environment.[18] Parents often bring in children who are very young out of concern and the need for reassurance that their child is not seriously ill.[32,33] These factors can influence the triage process, and greater guidance for younger children in the ESI algorithm is needed.

Previous studies identify racial and ethnic disparities in both pediatric and adult triage. Black or African American, Hispanic, and American Indian patients received lower acuity triage scores than whites when adjusting for clinical

covariates.[13,34,35] We also found disparities based on race and ethnicity. In our sample, Black or African American patients were more than twice as likely to be undertriaged than white patients. These patients required more resources than predicted when first assessed by a triage nurse. Undertriage has the potential to delay care and place patients at harm.[9] These delays can exacerbate an existing problem when long wait times cause patients and families to depart the emergency department before receiving definitive care. Long wait times have further shown to increase disparities in marginalized populations whereby patients with the same or higher acuity were seen sooner even though they arrived after others.[36] It was beyond the scope of this study to examine other possible confounders that may have contributed to this finding. Regardless, our results support the literature in exposing a potential bias based on race and ethnicity, substantiating the need for evidence-based strategies to mitigate disparities in care. This is especially important given that the demographics from our study align with previous data that identify underrepresented children as high utilizers of emergency departments.[37] Focused efforts by nursing to reduce disparities in emergency care are warranted and require continued effort.

Limitations

The following limitations should be taken into consideration when interpreting our results. This was a single-center study that may limit the generalizability of our results; our center uses a triage manual based on the ESI algorithm that may have further influenced the triage process. Although the sample size was robust, there is a continued need for multicenter studies that consider patient characteristics that influence triage accuracy, especially in pediatrics. We did not take into consideration other covariates, such as initial presentation, nursing characteristics (competency, experience), or provider preferences and variation and their impact on application of the ESI algorithm, which could be explored in future research. We were also limited on the availability of the EHR data. There are a number of variables that are not easily captured in the electronic medical record, including pain, distress, and/or clinical deterioration after triage. These can have an impact on the application of the ESI algorithm.

Implications for Emergency Nurses

Pediatric assessment and anticipation of resource utilization continue to be a challenge for even the experienced emergency nurse. Furthermore, most pediatric patients are seen outside of children's hospitals, creating an even bigger emphasis on safe and effective triage for children. Triage of children requires a focus on developmental differences and a standardized and comprehensive approach to assessment, especially the assessment of younger children. Finally, it is important to note that conscious and unconscious biases are prevalent in health care, including the triage process.[38] Conscious biases are biased attitudes influenced by prejudices or stereotypes that are within an individual's awareness, whereby unconscious biases are outside one's conscious awareness. Nurses must directly address their own conscious and unconscious bias when assessing children who are minoritized and marginalized.

Conclusions

Rates of mistriage continue to be significant in the adult population and are poorly described in the pediatric population. Our study was a first step in that direction. Our results demonstrated that the accuracy of triage in stratifying priority in a pediatric emergency department using resource utilization was poor across most visits. Although provider preference is a factor in resource usage, further improvements in pediatric triage, including greater guidance when applying the ESI algorithm to determine priority to children, are needed. Study findings also highlighted racial and ethnic disparities, which supports continued inquiry to decrease practice variability in pediatric triage and further address actual and potential bias. Given that both over- and undertriage can negatively affect a child's ability to receive appropriate and timely care, robust multicenter studies on pediatric patient triage are warranted. In particular, nurse-driven research surrounding nurse-led triage decision making will likely provide substantial opportunities for significant improvements in processes and outcomes for children seeking care in the emergency department.

Author Disclosures

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A Cross-Sectional Comparative Study of Nurses' and Family Members' Perceptions on Priority and Satisfaction in Meeting the Needs of Family Members at the Emergency Department

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Contribution to Emergency Nursing Practice

- The findings of this study indicate that there is a gap between the expectations and experiences of family members and nurses in the emergency department, which may affect the quality of care and the outcomes of patients and families.
- It is recommended based on the findings of this study that ED staff should communicate with family members more frequently and effectively, involve them in the care process according to their preferences, provide them with comfort and support, and obtain regular feedback from them to evaluate and improve their performance.
- It is also suggested that future research should explore the perception of family members and nurses in more depth and detail and identify the factors that influence their perceptions and satisfaction in different contexts.

Abstract

Introduction: Family members experience considerable physiological, psychological, and emotional pressure when accompanying a critically ill relative in the emergency department. The culture and context of care influence the needs of the family, and a thorough understanding of these needs by health care professionals is essential to providing patient- and family-centered care. This study aimed to compare nurses' and family members' perceptions of the priorities of family member needs and their satisfaction with meeting those needs in the emergency department.

Methods: A comparative, cross-sectional descriptive study was conducted. Participants were 140 family members of patients receiving care and 122 nurses working in the emergency department in hospitals of Tabriz University of Medical Science, in Iran. The data were collected through Critical Care Family

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Needs Inventory-ED and analyzed with SPSS Statistics software.

Results: Family members rated their care needs as significantly greater than did nurses (129.45 [31.5] vs 124.45 [24.8], $P = .003$). Families rated their needs as having been met significantly less than the nurses estimated (103.6 [17.6] vs 110.8 [19.61], $P < .05$).

Discussion: The perceived importance of the patient's family's needs differed from the viewpoints of the patient's family members and the nurses. In addition, emergency nurses overestimated the extent to which family members' needs were met compared with family members. To more adequately gauge and meet the needs of family members, nurses need to acquire more knowledge about patient family needs in the emergency department.

Key words: Families; Needs; Nurse; Patient; Emergency department; Critical illnesses

Introduction

Patient care is not only about meeting the needs of the patient but also those of their family.[1] The family is a system in which the illness of 1 member affects all others.[2] Family members provide social support to the patient during a period of illness and hospitalization, influence their healing process, and contribute to clinical decision making. However, family members' ability to contribute may be compromised through the experience stress, anxiety, and conflict in this setting.[3]

Family-oriented care is an innovative approach that involves collaboration among caregivers, patients, and patients' families. Nurses play a key role in assessing the family's needs and providing information to support their decision making.[4] However, nurses' attention to the family's needs may vary depending on factors such as the clinical setting, the culture, and their own knowledge and experience.[5] There is evidence that nurses may not perceive meeting the emotional needs of the family as part of their role.[6] In addition, they are perceived by family members to focus less on explaining equipment and the patient's prognosis than they expect them to.[7] Moreover, there may be differences between nurses' and families' perceptions of the family's needs, which may affect the quality of care.[8]

Family collaboration in the emergency department is complicated by the unique challenges of this setting, such as the life-threatening nature of illnesses and injuries, the time pressure to make decisions, the lack of privacy and space, and the emotional stress for both patients and families.[9] Nurses have limited time in the emergency department, which makes it difficult to build rapport with the nurses and establish trust and communication. This makes it challenging to establish rapport and trust with patients and their families quickly.[10] During their relative's ED treatment, family members experience intense emotions such as anxiety, denial, depression, fatigue, powerlessness, and fear of losing their loved one.[11] These stressors stem from unfamiliarity with the environment, changes in family roles, loss of control, financial issues, and fear of death.[12] Addressing these needs can reduce stress and increase the family's capacity to support the patient and participate in decision making.

Accompanying a critically ill relative in the emergency department puts considerable physiological, psychological, and emotional pressure on family members.[13] The culture and context of care influence family needs, highlighting that health care professionals must have a thorough understanding of these needs to provide patient- and family-centered care.[14] Research showed that health professionals' perceptions and preferences often differed from those of family members. Moreover, family perceptions of high-priority needs varied across cultures and ethnic subgroups.[14-18] Therefore, studies in different countries and cultures are needed to better understand the needs of patients' families.

Nurses have frequent contact with patients and their families in the emergency department, giving them a unique opportunity to meet the family's important needs.[19] The needs of family members of critically ill patients may vary depending on the setting and the country. Some studies explored these needs in different contexts.[13,14] However, there is limited evidence on the specific needs of patient family members in the emergency department in Iran during recent years.[20] Cultural factors may influence how family members expect and experience the emergency care of their loved ones in different context. This study aimed to explore and compare the perceptions of the family members and the nurses in our country's emergency department. To the best of our knowledge, this is the first study to compare the satisfaction of nurses and patients' families with meeting their needs in the emergency department by providing insights into the needs of family members of critically ill patients in a different cultural setting. In highlighting potential areas of improvement for enhancing family-centered care in the emergency department, this study can have significant implications for improving patient outcomes and advancing global efforts toward family-oriented care.

Methods

STUDY DESIGN

We used a descriptive, cross-sectional study design to address the study aim.

SETTING AND PARTICIPANTS

This study was conducted in the emergency departments of 4 educational and medical hospitals of Tabriz University of Medical Sciences. We selected these hospitals because they are the primary emergency departments in our city and have a high influx of critically ill patients in their emergency departments. The nurses involved in the study were bedside nurses who worked in the emergency department and had direct contact with patients and their families. The inclusion criteria for the nurses were having a bachelor's or higher degree and having experience working in the emergency department for at least 6 months. The inclusion criteria for the family members were being older than 18 years of age, being a first-degree relative of the patient, and accompanying the patient who was receiving care in the emergency department for at least half an hour. Eligible family members included fathers, mothers, children, siblings, grandchildren, grandparents, daughters-in-law, and sons-in-law; family members other than those mentioned above were not eligible.

The sample size was estimated based on means and SDs presented in a study in Taiwan[13] with a 95% level of statistical confidence and 5% margin of error. It was determined that 140 family members and 122 nurses would be required after adjusting for a 10% nonresponse rate.

Nurses were randomly sampled from the 4 participating emergency departments in proportion to the percentage of patient visits in each. In relation to the family of the patients, because the number of family members of patients at each hospital is not the same and some hospitals are more crowded than others, we collected the data according to the statistics recorded in the emergency center, and then we estimated the sample size of each emergency department based on the percentage of patient visits in each hospital. This ensured that the sample was representative and proportional to the population of each hospital.

We collected the data based on the statistics of the average daily census of patients recorded in the emergency center for 1 week. Then we estimated the sample size of each emergency department based on the percentage of patient visits in each hospital, considering that almost every patient comes with a family member.

The data for this study were collected by the first author, who was not employed in any of the study settings, from May 2020 to October 2020. The study objectives were explained and questionnaires distributed to nurses during their shifts, and they were asked to complete them at their convenience, such as during breaks or at their preferred time. It is important to note that nurses that we recruited were not necessarily the nurses caring for the patients who were related to family members.

To recruit the patient's family members, we approached them in the family waiting room next to the emergency department after the patient's condition had stabilized. We explained the study objectives and obtained an informed consent before providing the questionnaire to those who agreed to participate.

We implemented several safeguards during data collection to protect the privacy and confidentiality of the patient's family members. First, we waited until the patient's condition had stabilized before approaching family members. Second, we ensured that personal information of family members was not shared with anyone outside the research team and that their responses were anonymized. Finally, we addressed any concerns that family members may have had about confidentiality or privacy and allowed them to withdraw from the study at any time without consequences.

MEASURES

The data collection instruments consisted of 2 parts: a demographic questionnaire and the Critical Care Family Needs Inventory-ED (CCFNI-ED).

DEMOGRAPHIC QUESTIONNAIRE

The demographic questionnaire included items on age, sex, marital status, education, and, for nurses, working hours per month, experience, and their working shifts.

CCFNI-ED

The CCFNI-ED (Redley and Beanland, 2004)[13] is a modified ED-specific version of the original CCFNI designed by Molter and Leske.[21] The scale has been psychometrically evaluated in different countries. In the current study, a 40-item version that was psychometrically evaluated in Turkey in 2017[22] was used. In the Turkish version, the original scale was modified based on exploratory factor analysis and the best possible fitting model was obtained for the Turkish family members.[22] The Cronbach's alpha on the modified scale

was 0.91 and those for the subscales ranged from 0.68 to 0.87. Items are rated on a Likert scale comprising the scores of 1 (not important), 2 (a little important), 3 (important), and 4 (very important). The questionnaire items cover subscales related to family members' communication (10 items), "the involvement of the family members in the care process" (14 items), support process of the family members (6 items), and family members' comfort (10 items). Higher scores in each subscale domain and across the scale as a whole represent a greater degree of importance.[22]

The scale was translated from English to Farsi using a forward-backward translation method by 2 translators who were fluent in both languages. The translators had master's degrees in English language and literature and had experience in translating health-related instruments. The face and content validity of the scale were assessed by 15 experts in emergency nursing who had at least 5 years of clinical and academic experience in this field. They evaluated the clarity and cultural adaptation of the items and provided corrections and suggestions for improvement. The proposed revisions were implemented and used in this study. The main changes made to the instrument were related to the wording of some items to make them more suitable for the Iranian context.

In addition, a second rating was added to each item to allow respondents (family members and nurses) to indicate the extent to which family members' needs were met. This Needs Met Inventory was also scored on a 4-point scale (1 = not met at all, 4 = highly met). We measured the internal consistency of the scale questions using Cronbach's alpha coefficient, which was 0.9 for family members and 0.83 for nurses.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Ethics Committee of Tabriz University of Medical Sciences (ethics code IR.TBZMED.REC.1398.363). The study followed accepted ethical standards, as outlined in the Declaration of Helsinki; the purpose of the study was explained to the participants and a written informed consent was obtained.

DATA ANALYSIS

Descriptive statistics were generated for demographic and survey items using appropriate measures of central tendency and dispersion. Mean and SD scores were calculated separately for every subscale and for the whole scale. Data were examined for normality of distribution (Kolmogorov-Smirnov), and comparisons were made between nurses and family members using independent sample t tests using $SPSS_{16}$. The significance level for all inferential tests was set at $P < .05$. Standardized mean effect sizes for significant differences Cohen's d was calculated to facilitate interpretation of the results. Cohen's term d is an example of this type of effect size index. Cohen classified effect sizes as small (d = 0.2), medium (d = 0.5), and large (d ≥ 0.8).[23]

Results

DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS

This study involved 122 emergency nurses (mean age = 31.8 ± 7.39 years; mean experience = 5.21 ± 4.93 years) and 140 patient family members (mean age = 36.65 ± 12.84 years). Most nurses were female (68.3%), were married (59.8%), and had a bachelor's degree (95.5%). Most family members were male (55.1%) and married (61.6%). Demographic characteristics of the participants are presented in Tables 1 and 2.

PRIORITY OF IMPORTANCE OF THE FAMILY MEMBERS' NEEDS

The mean overall scores of the priority of importance of the family members' needs were 129.45 (SD = 31.5) and 124.45 (SD = 24.8) for family members and nurses, respectively. These numbers are within the "important" to "very important" range. Furthermore, the independent t test indicated a statistically significant difference in the overall scores given to the need importance by the family members and those given by the nurses ($P = .003$). The standardized mean difference was in the small range (d = 0.2). Family members rated the importance of their needs around communication and involvement as significantly more important than did nurses; the effect size in both cases was small (d = 0.3). Family members gave the highest scores to the subscale of "the need for communication with the family members" (82.25%), whereas the nurses gave the highest score to "the family members' needs for support" (79.70%) (Table 3).

SATISFACTION WITH MEETING THE PATIENTS' FAMILIES' NEEDS

As presented in Table 4, the mean overall scores of whether needs had been met were 103.6 (SD = 17.6) and 110.8 (SD = 19.60) from the family members' and nurses'

TABLE 1
Personal/social characteristics of nurses participating in the study

Variable	Response option	Frequency	%
Sex	Female	84	68.3
	Male	38	31.7
Marital status	Married	73	59.8
	Single	49	40.2
Education level	BSc	117	95.9
	MSc	5	4.1
Employment status	Permanent	48	40
	Temporary to permanent	26	21.7
	Employed under contract	7	5.9
	Temporary employment	39	32.5
Education course to identify patients' and their families' needs	Yes	94	79
	No	25	21
Experience of working in the emergency department	Yes	73	61.3
	No	46	38.7
Level of job satisfaction	Low	22	18
	Medium	56	45.9
	High	38	31.1
	Very high	6	4.9

perspectives, respectively. The difference between their viewpoints was significant ($P = .001$; d = 0.4). The results of independent t tests also showed statistically significant differences between the viewpoints of patients' family members and nurses regarding the satisfaction of needs in the subscales of "the need for communication" and "the need for the involvement of the family members in the care process" ($P < .05$). Both groups assigned the highest and the lowest scores to the subscales of "the families' need for comfort" and "the family members' needs for support," respectively (Table 4).

Discussion

The purpose of this study was to compare emergency nurses' and patients' family members' perceptions of the priorities of family member needs and family members' and nurses' satisfaction that the identified needs had been met. This comparison is important when evaluating the quality of care and support provided to family members because any significant incongruence between the parties on either comparison could indicate an opportunity for learning and, potentially, an opportunity to improve care. Determining the levels of satisfaction is also an important precursor to exploration of the possible factors that influence them.

In the abovementioned context, we found that, although nurses rated family members' needs as important overall, they significantly underestimated that importance relative to the family members themselves. This was because of significant differences in ratings between family members and nurses on the importance of communication and involvement. Nurses judged that family members' need for support was their greatest priority but this was not reflected in the ratings of family members themselves. In addition, family members were also significantly less satisfied overall with the extent to which their needs were met than nurses estimated. This was also caused by significant overestimates in nurses' ratings about the extent to which communication and involvement needs of family members had been satisfied.

Taken together, these results demonstrate that the nurses may not fully appreciate how important communication and involvement needs are for families and are consistent with previous research.[13,17-19] Added to this, nurses' overestimation of the extent to which the same needs have actually been met potentially compounds this problem given that it could contribute to a belief that there is no problem.

TABLE 2
Personal/ social characteristics of patients' family members participating in the study

Variable	Response option	Frequency	%
Sex	Male	76	55.1
	Female	64	44.9
Marital status	Married	86	61.64
	Single	54	38.6
Education level	Illiterate	16	11.7
	Lower than high-school diploma	28	20.4
	High school diploma	34	24.8
	BSc and higher	59	43
Relationship with the patient	Spouse	28	20
	Child	50	35.7
	Father	17	12.1
	Mother	6	4.3
	Sister	17	12.1
	Brother	16	11.4
	Other	6	4.3
History of being admitted to the emergency department	Yes	75	54.3
	No	63	45.7
Triage level*	1	4	3.1
	2	7	5.4
	3	76	58.5
	4	36	27.7
	5	7	5.4

* The triage consists of 5 levels, with level 1, resuscitation (immediate lifesaving intervention); level 2, emergency; level 3, urgent; level 4, semiurgent; and level 5, nonurgent.

In terms of communication needs of family members, we recommend that, as far as it is possible, ED staff should talk to patients' families as soon as they arrive at the emergency department and use active listening skills to communicate effectively. Moreover, they should set aside time to explain the patient's condition to the family and answer their questions about the health care procedure.[14] Although this ideal may be compromised by high workload, time pressures, and uncertainty about the patient's condition,[11] communication training courses can improve nurses' confidence to interact effectively with patients and their families[14] and we suggest greater emphasis on such training both at pre- and postregistration level.

Another important need expressed by family members in our study was comfort. Family members' comfort refers to their physical and psychological well-being while visiting the emergency department.[14] This finding differs from other studies that found this need to be the less important than other needs in emergency[13] or critical care[24] departments. Physical comfort includes having access to facilities such as chairs, toilets, water, food, and telephones. Psychological comfort includes feeling safe, respected, valued, and cared for by the staff. Family members' comfort can affect their ability to cope with stress and support the patient during their stay in the emergency department.[13] Therefore, it is essential to provide a comfortable environment for family members and address their basic needs.

When considering the involvement of the family members in the care process, our study findings differed from previous studies that found this need to be more important than other needs in critical care departments,[25] but is consistent with some other studies in emergency departments.[13] The involvement of family members in the care process refers to their participation in decision making, information sharing, and care delivery.[26] Family members may have valuable information about the patient's medical history, preferences, and needs. They may also want to assist with some aspects of care such as feeding, bathing, or comforting

TABLE 3
Priority of importance of patients' families' needs: comparison of families and nurses

Aspect	Range	Patient's family mean (SD)	Average ranges from 0 to 100	Rank	Nurses' mean (SD)	Average ranges from 0 to 100	Rank	*t* test	*d*
Communication	10-40	32.9 ± 3.6	82.25	1	31.6 ± 4.5	79	2	$t = 2.38$, $P = .018$	0.3
Comfort	10-40	32.6 ± 3.9	81.5	2	31.3 ± 4.42	78.25	3	$t = 1.76$, $P = .079$	-
Involvement of the family members in the care process	16-64	44.94 ± 4.58	80.25	3	42.97 ± 6.87	76.73	4	$t = 2.55$, $P = .012$	0.3
Support	6-24	18.64 ± 3.1	76.91	4	19.13 ± 3.48	79.70	1	$t = 1.57$, $P = .117$	-
Overall score	40-160	129.6 ± 31.5			124.5 ± 28.4			$t = 2.97$, $P = .003$	0.2

TABLE 4
Satisfying of meeting the patients' families' needs: comparison of families and nurse

Aspect	Range	Patients' family members mean (SD)	Average ranges from 0 to 100	Rank	Nurses' mean (SD)	Average ranges from 0 to 100	Rank	*t* test	*d*
Communication	10-40	25.5 ± 5.3	63.75	3	5.14 ± 27.8	69.5	3	$t = -3.3$, $P = .001$	0.4
Comfort	10-40	26.9 ± 5.4	67.25	1	2.29 ± 28.17	70.42	1	$t = -1.78$, $P = .076$	-
Involvement of the family members in the care process	16-64	36.4 ± 7.5	65	2	7.9 ± 39.68	70.85	2	$t = -3.15$, $P = .002$	0.5
Support	6-24	15.01 ± 3.84	62.54	4	3.97 ± 15.94	16.41	4	$t = -1.82$, $P = .07$	-
Overall score	40-160	103.6 ± 17.6			19.6 ± 110.8			$t = 3.07$, $P = .001$	0.4

the patient. Involving family members in the care process can enhance their sense of control, empowerment, and partnership with the staff.[27] It can also improve the patient's outcomes and satisfaction.[14] Therefore, it is important to respect the family's wishes and preferences regarding their involvement in the care process and provide them with guidance and support.

The least important need expressed by family members in our study was "providing support for the family members." This finding is similar to other studies that found this need to be less important than other needs.[13,24] In contrast, it was ranked most important by nurses, an incongruency also consistent with some previous studies that assessed nurses' views on family needs in critical care settings.[28,29] Providing support for the family members refers to offering emotional, informational, instrumental, or spiritual assistance to help them cope with stress and uncertainty.[30] Family members may experience anxiety, fear, anger, sadness, or guilt when visiting a loved one in the emergency department.[11] They may also have questions or concerns about the patient's diagnosis, prognosis, treatment options, or discharge plan. Providing support for family members can reduce their psychological distress and increase their trust and confidence in the staff.[31] It can also facilitate their adjustment and adaptation to the situation.[16] Nurses are constantly in contact with patients and their family members, and they can play a crucial role in emotional and physical support.[32] However, providing support for family members may be challenging for nurses due to lack of time, resources, skills, or organizational support.[29] Therefore, nurses need to be trained and empowered to provide effective and compassionate support for family members in the emergency department.

Nurses are considered to be the most important agents to meet patients' families' needs. As a result, to be more effective, they need to better understand the patient's family members' needs. The findings of this study can be a great starting point for conducting future research and using other methods, which can help enhance the health condition of the patients and their families, meet their needs, improve the quality of the provided care, and identify the factors that can improve this quality. Qualitative studies could explore the perception of family members and nurses in more depth and detail and identify the barriers and facilitators to meeting family needs in different contexts. The authors hope that the present study's findings can provide a foundation for future experimental studies on identifying the needs of patients and their families, improving health care quality, and satisfying the needs of patients and their families.

Limitations

This study has several strengths that make it a valuable contribution to the literature. First, it used a cross-sectional survey design with a validated scale to collect data from nurses and patient families in emergency departments. This method allowed us to compare how nurses and patient families perceive the priority and satisfaction of meeting the family's needs in the emergency department. Second, it explored the specific needs of patient families in our country, where cultural factors such as religion, family structure, and social norms may influence their expectations and experiences. Therefore, this study can help nurses and other health care professionals to provide better care for patients and their families. It can also influence patient outcomes and global efforts toward family-oriented care. Our research findings have the potential to benefit Persian populations worldwide. Third, we met the sampling requirements of nurses and family members, which ensured sufficient statistical power and reliability for the analysis. Furthermore, we achieved a high response rate and avoided missing data and selection bias, because we did not have any dropouts or incomplete surveys.

This study also has some limitations that should be considered when interpreting the results. One limitation is that this study was done in Tabriz, a city in Iran. To increase the external validity of the results, future studies should use more diverse samples from different parts of Iran or other countries. This way, we can better understand the needs and experiences of family members in the emergency department across different contexts. Another limitation is that the mental/emotional state of the family members when they filled out the forms might have affected their responses, given that they were highly stressed due to the emergency situation. We could not control for this factor, but we tried to minimize this risk by approaching the families only after their relative's condition had stabilized. A third limitation is that the nurse and family members are not dyads—in effect, the nurses are answering questions about family members in general, whereas the family members are talking about their experience specifically. It may be wise to conduct further research of specific nurse-family dyads so that both are being asked about a specific care incident.

Implications for Emergency Nurses

The findings of this study have several implications for emergency nursing practice. First, the results can help nurses to better understand and meet the needs of patient families

in the emergency department, which can improve their satisfaction, trust, and well-being. Second, the results suggest to emergency nurses that it is necessary for them to especially enhance their skills in communication to support family members in the care process in the emergency department. Third, the results can help health care organizations to create and implement policies and culture that support family-centered care in the emergency department, which can benefit both patients and families. Therefore, based on these findings, this study contributes to the advancement of knowledge and practice in emergency nursing.

Conclusion

The study results showed that family members and nurses rated the importance of their needs differently. Family members rated the need for communication as more important than nurses did, but they were less satisfied with how this need was met. Nurses rated the need for support as more important than family members did, but they also faced challenges and barriers in providing effective support. These findings suggest that there is a gap between the expectations and experiences of family members and nurses in the emergency department, which may affect the quality of care and the outcomes of patients and families. Therefore, it is recommended that ED staff should communicate with family members more frequently and effectively, involve them in the care process according to their preferences, provide them with comfort and support, and obtain regular feedback from them to evaluate and improve their performance. It is also suggested that future research should explore the perception of family members and nurses in more depth and detail and identify the factors that influence their perceptions and satisfaction in different contexts.

Author Disclosures

Conflicts of interest: none to report.

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Emergency Nurses' Perceived Barriers and Solutions to Engaging Patients With Life-Limiting Illnesses in Serious Illness Conversations: A United States Multicenter Mixed-Method Analysis

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Contribution to Emergency Nursing Practice

- Acquiring competencies in serious illness conversations is an ongoing priority of the American Association of Colleges of Nursing, yet integration in a fast-paced environment can be challenging.
- Approximately two-thirds of emergency nurses across 33 emergency departments reported that they experience barriers in engaging in serious illness conversations such as, human factors, time constraints, and challenges specific to the ED environment like privacy.
- Key implications are (1) there is a continued need for emergency nurses to engage in end-of-life training (2) ED administrators must commit to creating a palliative-friendly work environment without additional burdens on the workforce (3) each emergency department should assess the volume of seriously ill patients seen and tailor staffing infrastructure and workflow accordingly.

Abstract

Introduction: This study aimed to assess emergency nurses' perceived barriers toward engaging patients in serious illness conversations.

Methods: Using a mixed-method (quant + QUAL) convergent design, we pooled data on the emergency nurses who underwent the End-of-Life Nursing Education Consortium training across 33 emergency departments. Data were extracted from the End-of-Life Nursing Education Consortium post-training questionnaire, comprising a 5-item survey and 1 open-ended question. Our quantitative analysis employed a cross-sectional design to assess the proportion of emergency nurses who report that they will encounter barriers in engaging seriously ill patients in serious illness conversations in the emergency department. Our qualitative analysis used conceptual content analysis to generate themes and meaning units of the perceived barriers and possible solutions toward having serious illness conversations in the emergency department.

Results: A total of 2176 emergency nurses responded to the survey. Results from the quantitative analysis showed that 1473 (67.7%) emergency nurses reported that they will encounter barriers while engaging in serious illness conversations. Three thematic barriers—human factors, time constraints, and challenges in the emergency department work environment—emerged from the content analysis. Some of the subthemes included the perceived difficulty of serious illness conversations, delay in daily throughput, and lack of privacy in the emergency department. The potential solutions extracted included the need for continued training, the provision of dedicated emergency nurses to handle serious illness conversations, and the creation of dedicated spaces for serious illness conversations.

Discussion: Emergency nurses may encounter barriers while engaging in serious illness conversations. Institutional-level policies may be required in creating a palliative care-friendly emergency department work environment.

Key words: Serious illness conversation; Emergency nurses; Mixed-methods; End-of-Life Nursing Education Consortium; Palliative care

Introduction

Serious illnesses are high mortality risk conditions that negatively affect the quality of life, function, or caregiving capacity.[1] The emergency department, primarily designed to provide emergent and critical care, is also a key health care access point for patients with serious illnesses.[1-3] Approximately 75% of patients with serious illnesses visit the emergency department in the last 6 months of their lives.[4,5] Engaging seriously ill patients in serious illness conversations in the emergency department creates the opportunity to provide care consistent with patients' wishes.

Serious illness conversations are clinician-facilitated discussions aimed at improving the quality of care for patients with life-limiting illnesses.[6,7] The wide-ranging conversations include, and are not limited to, end-of-life discussions, advance directives, and goals of care.[8] During these conversations, clinicians assess the patient's understanding of their illness, their fears and concerns, and their decisions on specific medical interventions or treatments.[9] These conversations provide a platform where patients can express their end-of-life care preference, the role of their family in their care, and their faith and/or acceptance of their diagnosis.[10] Emergency nurses are well positioned to engage seriously ill patients in serious illness conversations as they play a primary role in coordinating and delivering care plans to the patients,[11,12] can spend more time with the patients than physicians,[13] and can demonstrate adequate general patient communication skills.[13,14] In addition, emergency nurses can advocate and broker information on patients' readiness for hospice care referral to the managing physicians and coordinate care.[15]

Central to successful serious illness conversations are verbal and nonverbal communication skills. Acquiring

such skills had been an ongoing 2-decade-long priority of the American Association of Colleges of Nursing.[16] The End-of-Life Nursing Education Consortium (ELNEC) project is an international education initiative focused on providing palliative care training to nurses across all specialties,[16] and this training has recently become a core competency for both pre-licensure and graduate nursing education.[17] The ELNEC curriculum includes modules on pain management, symptom management, nursing care at the end of life, ethical and legal issues, loss, grief, and bereavement, and cultural and spiritual considerations.[9,18] Nurses, including emergency nurses, are expected to develop knowledge and skill in specialized care for patients with life-limiting illnesses and exhibit competencies in initiating and engaging these individuals and their families in serious illness conversations.

Emergency nurses may face barriers in engaging in serious illness conversations in the emergency department, as recent studies have reported that emergency nurses are less willing to engage patients in serious illness conversations despite understanding that serious illness conversations are important.[13,19,20] Understanding these barriers may provide information on potential solutions. Therefore, this study aimed to assess emergency nurses' perceived barriers toward engaging patients in serious illness conversations.

Methods

STUDY DESIGN

A mixed-method (quant + QUAL) convergent design[21] was used to assess the perceived barriers and solutions to emergency nurses engaging qualifying patients in serious illness conversations. Consistent with this methodology, the quantitative design was a cross-sectional study of data collected from emergency nurses across 33 emergency departments between May 2019 and December 2021. The unit of analysis was at the individual level. The qualitative design used a conceptual content analytical approach, with implicit and explicit meaning generated from open responses to create themes, subthemes, meaning units, and coding categories. The unit of analysis was phrases and sentences from the open-ended responses. This study followed the Consolidated Criteria for Reporting Qualitative Studies and Strengthening the Reporting of Observational Studies in Epidemiology reporting guidelines.[22,23]

STUDY POPULATION

The study population was emergency nurses across the 33 emergency departments involved in the Primary Palliative Care for Emergency Medicine (PRIM-ER) study. The PRIM-ER study is a pragmatic cluster-randomized stepped-wedge clinical trial aimed at studying the effects of a primary palliative intervention in the emergency departments on health care utilization, and end-of-life care among seriously ill older adults.[24] The PRIM-ER intervention is a tripartite intervention involving an educational arm (comprising ELNEC training for emergency nurses and EM-Talk training for emergency medicine physicians and advanced practice providers), a simulation workshop for hands-on training in serious illness conversations, and a clinical decision support tool for identifying patients with serious illnesses.[24-26] The current study focuses on the the post-ELNEC training survey responses among emergency nurses.

INTERVENTION: ELNEC TRAINING

The ELNEC training administered was a 4-module online training adapted from the original 8-module ELNEC curriculum. We shortened the course to focus on the core needs of emergency nurses.[18] These modules covered (1) pain management, (2) symptom management, (3) communication, and (4) loss, grief, and bereavement. After the training, emergency nurses completed an online course evaluation survey. Emergency nurses who completed the course and the post-training survey received a 1-unit continuing nursing education credit and a $50 gift card for their time.

STUDY DATA

Consistent with the qualitative-driven mixed-method convergent design, we collected quantitative and qualitative data concurrently on a self-administered survey. The quantitative data were from the post-ELNEC training survey—a 5-item survey, drawn from the learning objectives and modified from the standard continuing education format of the American Nurses Credentialing Center. Three of the items used a 5-point Likert scale to (1) identify barriers to end-of-life care, (2) identify interventions that will prevent or diminish symptoms of end-of-life care, and (3) assess imminently dying patients. The remaining 2 questions, measured on a dichotomous scale, assessed whether the course will enable practice change and whether the emergency nurses will encounter barriers in applying the information gained from the training.

The qualitative data were from a single unstructured open-ended question that required an optional reporting of comments post-ELNEC training. The statement that elicited the response was an open-ended question (stated as "please provide comments on any aspect of the course")

to 2 leading questions: "Will you encounter barriers in your work environment to apply the information gained from this program in your practice?" and "Did this course provide information that will enable you to change your practice?" There were no additional prompts, and respondents were free to give any comment or leave the item unanswered.

INCLUSION AND EXCLUSION CRITERIA

Of the 2781 emergency nurses in the 33 emergency departments, a total of 2265 (81%) participated in the ELNEC training (Appendix 1). A total of 2176 emergency nurses completed the post-ELNEC training survey. The participants who completed the post-ELNEC training survey were assigned a comment ID ranging from A1 to A2176. This comment ID included respondents who gave no response to the optional comment section. Among those who completed the survey, 959 emergency nurses responded in the optional comment section. After excluding comments related to opinions about how the course was organized (n = 548), a total of 411 comments were analyzed. Hence, the sample size for the quantitative and qualitative analyses were 2176 survey respondents and 411 comments.

DATA ANALYSIS

We performed parallel analyses of the quantitative and qualitative data. We reported the results using a staged narrative approach. Using quantitative measures, we reported the proportion of emergency nurses who expressed that they will encounter barriers in engaging in serious illness conversations. Using qualitative measures, we reported the barrier types and suggested solutions.

Quantitative Data Analysis

We reported the reach of the intervention across each site by computing the proportion of respondents who received the training across each site. Next, we reported the frequency distributions and percentages of the responses to the post-training survey. We assessed differences in the self-reported knowledge of end-of-life care and across emergency departments among respondents who reported that they will or will not encounter barriers in engaging in serious illness conversations in the emergency department. Data were analyzed with STATA version 17 (StataCorp LLC, College Station, TX).[27]

Qualitative Data Analysis

Using conceptual content analysis, 3 coders, hereafter referred to as the coding team, implemented an inductive and deductive approach to identify emergent themes and subthemes. The coding team developed a coding scheme and a codebook and conducted thematic searches. The coding team also identified phrases and sentence examples of emergent codes after an initial textual immersion.[28,29] The coding team defined meaning units through the use of in-vivo, structural, and process coding techniques.[30] Counts of the subthemes under each theme were quantified.[28,29] The coders had regular coding meetings where the themes and subthemes were discussed. Discrepancies in the coding category were settled by votes.

In the absence of any predefined codes, a codebook was generated after coding the first 80 comments through an iterative coding process, and the codebook was consistently revised as the coding process continued.[31] After the initial round of coding, the coding team did focused coding, during which codes were merged and recategorized.[31] The lead coder defined the final themes and subthemes using quotes from the comments. In particular, the lead coder stratified the subthemes as either potential barriers or solutions. Coding and analysis were performed in Microsoft Excel (Microsoft Corporation, Redmond, WA).[32]

Rigor

Several processes were used to enhance methodological and interpretative rigor and reproducibility. To ensure credibility, we reported the final version of the codebook that guided the generation of the themes (Appendix 2).[29] In addition, the coding team had regular peer debriefing meetings to discuss the themes and subthemes while updating the codebook.[33] To ensure auditability, the coding team captured the coding processes in multiple Microsoft Excel formats. However, the transferability of this study relied on the descriptions of the study sites, the data generation process, and the analytical steps.[29] By providing the details of the survey, the format of the open-ended questions, and the coding process, we aimed to achieve dependability.[29] We portrayed confirmability by reporting the counts of the themes and subthemes while using quotes to explain each subtheme.[34]

HUMAN SUBJECT CONCERN

We obtained ethical approval from the institutional review board of the parent site. The study is registered on ClinicalTrials.gov (NCT03424109).[35]

Results

QUANTITATIVE ANALYSIS

Across the 33 emergency departments enrolled in the PRIM-ER study, a total of 2176 emergency nurses completed the ELNEC training (Table 1). The proportion of emergency nurses trained across each emergency department ranged widely from 59% to 99%. After the ELNEC training, 91% reported they agreed or strongly agreed with being able to describe symptom assessment and interventions that prevent or diminish symptoms at end-of-life (Table 2). Similarly, 90% of respondents agreed or strongly agreed that they were able to identify the barriers to adequate pain assessment and treatment among imminently dying patients, and 90% agreed or strongly agreed that they were able to identify signs and symptoms of imminently dying patients. In addition, 94% stated that the ELNEC training provided information that will change their practice. However, 68% stated that they will encounter barriers to applying the information gained from the training.

The ability to describe symptoms at end-of-life care, identify barriers to pain treatment, and assess imminently dying patients did not differ whether the emergency nurses stated they will or will not encounter barriers in providing end-of-life care (Table 3). The proportion of emergency nurses who stated they will encounter work environment-related barriers in providing end-of-life care was significantly different across the sites, with the proportion ranging from 48.7% to 82.5%.

QUALITATIVE ANALYSIS

A total of 411 open-ended statements were analyzed to assess the barriers and potential solutions to engaging qualifying patients in serious illness conversations. Three main interrelated themes emerged as perceived barriers to serious illness conversations in the emergency department. These barriers included human factors (n = 140), time constraints (n = 23), and challenges in the ED environment (n = 61) (Table 4).

BARRIER 1: HUMAN FACTORS

Four subthemes emerged under the human-related barriers to serious illness conversations in the emergency department (Table 4). "Need for education" was the most common subtheme that emerged (n = 94). The other subthemes included "lack of skill in serious illness conversation" (n = 41), "perceived difficulty of serious illness conversations" (n = 18), and "caregiver's understanding of illness" (n = 9).

Need for Education

Emergency nurses reported the need for education in engaging in serious illness conversations. One respondent stated that the serious illness conversation "is a topic that we, as an ED, definitely needed more education on. I found the education to be extremely helpful for future palliative care patients in my practice" [A70]. Another respondent [A309] stated that "palliative care is not something we often talk about or learn about in emergency care and it is great to learn more about how to manage end-of-life care."

Perceived Difficulty of Serious Illness Conversations

Perceiving that serious illness conversations can be difficult may be a barrier to engaging in such activity in the emergency department in the presence of other competing tasks. An emergency nurse expressed this concern by stating that "speaking with the family about what is going to happen is hard" [A250]. Another emergency nurse stated that "I still feel uncomfortable dealing with end-of-life issues or how to comfort family members" [A973].

Need for Communication Skills

A lack of communication skills may serve as a barrier to emergency nurses in effectively navigating serious illness conversations. This barrier emerged as a subtheme with 1 emergency nurse stating that "I feel like we struggle with what and how to communicate around end-of-life" [A1543], yet another emergency nurse linked a lack of communication skills with inexperience by stating that "a lot of times as the nurse we become disconnected to patients in these situations due to lack of experience or maybe just honestly not knowing what to say" [A1431].

TABLE 1
Proportion of emergency nurses who had the End-of-Life Nursing Education Consortium (ELNEC) training across the PRIM-ER sites

PRIM-ER sites	Number of emergency nurses Trained	Total number of emergency nurses	Percent trained
Allegheny General Hospital	64	65	98.5
Baystate Medical Center	22	23	95.7
Baystate Franklin	116	144	80.6
Beaumont Royal Oak	76	100	76.0
Beaumont Troy	96	110	87.3
Bellevue Hospital Center	64	73	87.7
Brigham and Women's Hospital	25	29	86.2
Brigham and Women's Faulkner	71	88	80.7
Christiana Care	125	151	82.8
Henry Ford Fairlane	38	44	86.4
Henry Ford Hospital	90	105	85.7
Henry Ford West Bloomfield	36	47	76.6
Hospital of the University of Pennsylvania	84	110	76.4
Mayo Clinic Austin-Albert Lea	30	33	90.9
Mayo Clinic Mankato	38	46	82.6
Mayo Clinic Saint Marys	127	160	79.4
MD Anderson	67	73	91.8
Mount Sinai Beth Israel	48	77	62.3
Mount Sinai Hospital	98	122	80.3
Mount Sinai West	117	144	81.3
NYULH-Brooklyn	91	110	82.7
NYULH- Long Island	90	108	83.3
Ochsner Medical Center	82	88	93.2
Penn Presbyterian Medical Center	52	67	77.6
Pennsylvania Hospital	62	65	95.4
UCSF Medical Center	71	90	78.9
UF Health Shands Hospital	69	89	77.5
UF Kanapaha	21	28	75.0
UF Springhill	26	30	86.7
University of Utah Hospital	87	97	89.7
OSU- Wexner Medical Center	99	136	72.8
Yale New Haven Hospital	26	32	81.3
Zuckerberg San Francisco General	57	97	58.8
Total	2265	2781	81.4

PRIM-ER, Primary Palliative Care for Emergency Medicine; UCSF, University of California San Francisco; UF, University of Florida; NYULH, NYU Langone Hospital; OSU, The Ohio State University

Caregiver's Understanding of Illness

When emergency nurses perceive that caregivers have poor knowledge of the illness trajectory, they may be less inclined to engage such caregivers in serious illness conversations. An emergency nurse stated that some caregivers' understanding when they engage them in serious illness conversations is that "we 'are trying to kill' their loved ones" [A756]. Therefore, emergency nurses may believe that it is "extremely important for family members to know what situation they are in and what their options are when we are discussing an ill patient" [A1781].

TABLE 2
Post-training assessment showing the summary of responses to the End-of-Life Nursing Education Consortium (ELNEC) among emergency nurses

Survey items	Strongly agree, n (%)	Agree, n (%)	Neutral, n (%)	Disagree, n (%)	Strongly disagree, n (%)	No response, n (%)
Able to describe symptom assessment and interventions that prevent or diminish symptoms at end of life	815 (37.4)	1166 (53.6)	110 (5.1)	1 (0.1)	81 (3.7)	3 (0.1)
Able to identify barriers to adequate pain relief, pain assessment, and treatment of pain at the end of life	865 (39.8)	1102 (50.6)	101 (4.6)	5 (0.2)	102 (4.7)	1 (0.1)
Able to assess an imminently dying patient and list 5 physical signs and symptoms of the dying process	791 (36.3)	1168 (53.7)	129 (5.9)	8 (0.4)	76 (3.5)	4 (0.2)

	Yes, n (%)	No, n (%)	No response, n (%)
Will you encounter barriers in your work environment to apply the information gained from this program in your practice?	1473 (67.7)	700 (32.2)	3 (0.1)
Did this course provide information that will enable you to change your practice?	2054 (94.4)	119 (5.5)	3 (0.1)

Total sample size (N) = 2716.

BARRIER 2: TIME CONSTRAINTS

Three subthemes emerged under the time-related barriers to serious illness conversations in the emergency department (Table 4). Although the subtheme "never enough time" emerged as the most common subtheme (n = 15), other subthemes providing additional insights into the reason for the time constraints also emerged. These additional subthemes were "large patient load" (n = 6) and "delay in throughput" associated with serious illness conversations (n = 2).

Never Enough Time

Although emergency nurses understand the value of serious illness conversations, some express the limitation of not having enough time:

> "In the ED there is never enough time so we can't plan our schedules around what's best for the patients most of the time" [A1565].

> "My only concern is for the time available to give these patients and family the needed time to address concerns" [A1763].

Time Constraints Due to Large Patient Load

In addition, some emergency nurses attributed time constraints to the large patient load in the emergency department:

> "Time would be a barrier in this ED because there is such a patient load it would be hard to make have the extra time" [A153].

> "I think that in a busy ED it is very hard to give the time to the dying or terminally ill patients and we try but being 1 nurse to 15 -20 patients is very unrealistic" [A304].

TABLE 3
Distribution of study participants who will and will not encounter barriers in delivering end-of-life care in their work environment

Variables	Will encounter barriers		*P* value*
	Yes (n = 1473)	No (n = 700)	
Able to describe symptom assessment and interventions			
Agree and strongly agree	1337 (90.8)	644 (92.0)	.517
Neutral/NA	80 (5.4)	30 (4.3)	
Disagree and strongly disagree	56 (3.8)	26 (3.7)	
Able to identify barriers to palliative care service delivery			
Agree and strongly agree	1328 (90.1)	639 (91.3)	.431
Neutral/NA	73 (5.0)	26 (3.7)	
Disagree and strongly disagree	72 (4.9)	35 (5.0)	
Able to assess an imminently dying patient			
Agree and strongly agree	1320 (89.6)	639 (91.3)	.150
Neutral/NA	98 (6.7)	32 (4.6)	
Disagree and strongly disagree	55 (3.7)	29 (4.1)	
Emergency departments (EDs) enrolled in the study†			
ED 1	51.4	48.7	< .001
ED 2	50.0	50.0	
ED 3	47.7	52.3	
ED 4	46.2	53.9	
ED 5	45.2	54.8	
ED 6	44.2	55.8	
ED 7	42.9	57.1	
ED 8	41.7	58.3	
ED 9	40.3	59.7	
ED 10	40.0	60.0	
ED 11	38.9	61.1	
ED 12	36.4	63.6	
ED 13	35.1	64.9	
ED 14	33.3	66.7	
ED 15	33.0	67.0	
ED 16	32.2	67.8	
ED 17	31.8	68.3	

continued

TABLE 3
Continued

Variables	Will encounter barriers		*P* value*
	Yes (n = 1473)	No (n = 700)	
ED 18	30.8	69.2	
ED 19	29.7	70.3	
ED 20	28.7	71.3	
ED 21	28.6	71.4	
ED 22	27.1	72.9	
ED 23	25.9	74.1	
ED 24	25.7	74.3	
ED 25	25.0	75.0	
ED 26	24.1	75.9	
ED 27	23.4	76.6	
ED 28	23.2	76.8	
ED 29	22.5	77.5	
ED 30	21.9	78.1	
ED 31	21.1	78.9	
ED 32	20.0	80.0	
ED 33	17.5	82.5	

NA, not applicable.

* Chi-square test performed.

† ED names and counts excluded for anonymity; list rearranged.

TABLE 4
Summary of themes and subthemes of perceived barriers to engaging in end-of-life-care discussions among emergency nurses

Theme	Code counts	Subtheme	Code label	Meaning units
Human factors* (n = 140)	94	Need for education	"Need for education"	"This is a topic that we, as an ED, definitely needed more education on. I found the education to be extremely helpful for future palliative care patients in my practice."
	18	Perceived difficulty of serious illness conversations	"Difficult and uncomfortable for me"	"Speaking with the family about what is going to happen is hard."
	41	Need for communication skills	"Communication skill"	"I feel like we struggle with what and how to communicate around end of life."
	9	Caregiver's understanding of serious illness conversations	"Family members need to understand"	"I find it extremely important for family members to know what situation they are in and what their options are, when we are discussing an ill patient."
Time constraint (n = 23)	15	Never enough time in the ED	"No time"	"In the ED there is never enough time so we can't plan our schedules around what's best for the patients most of the time."
	6	Time constraints due to large patients load	"Patient load"	"Time would be a barrier in this ED because there is such a patient load it would be hard to make have the extra time."
	2	Serious illness conversations leading to delays in daily throughput	"Delay in throughput"	"…While I do support this as a busy nurse I would imagine this would be yet another delay to throughput."

continued

TABLE 4
Continued

Theme	Code counts	Subtheme	Code label	Meaning units
Challenges in the emergency department work environment (n = 61)	14	Difficult to implement serious illness conversations in the emergency department	"Difficult in the ED"	"I believe it will be difficult to apply these principles in the emergency setting."
	18	Busy emergency department work environment	"Busy ED"	"My work environment – an extremely busy... emergency center – will not always allow me to implement these ideas."
	16	Lack of privacy	"No privacy"	"It's hard to provide good end-of-life care... in a loud department that can't always accommodate the need for a private, quiet room."
	3	Serious illness conversations are low priority	"Low priority"	"I can't justify being late on hanging antibiotics on a sepsis patient in order to hold the hand of a distraught family member of a dying patient. It's unfortunate, but reality."

ED, emergency department.
* Multiple coding accounts for percentages exceeding 100.

Serious Illness Conversations Leading to Delays in Daily Throughput

Some emergency nurses believe engaging in serious illness conversations adds to the burden of work and causes an additional delay in daily throughput:

> "(*It is)* too long to integrate into a work schedule" [A2218].

> "…while I do support this, as a busy nurse I would imagine this would be yet another delay to throughput" [A110].

BARRIER 3: CHALLENGES IN THE ED WORK ENVIRONMENT

Four subthemes emerged under the work environment-related barriers to serious illness conversations in the emergency department (Table 4). These subthemes include the perception that such conversations will be difficult in the emergency department, the busy work environment, the lack of privacy, and the low priority of such conversations.

Difficult to Implement Serious Illness Conversations in the Emergency Department

Some emergency nurses perceive that it is difficult to engage in serious illness conversations in the emergency department. The perceived difficulty may relate to implementing the principles of end-of-life care in the emergency department or scheduling family conferences:

> "I believe it will be difficult to apply these principles in the emergency setting" [A362].

> "Scheduled family conferences can be difficult to coordinate in the ED" [A176].

Busy ED Work Environment

Busy work environment, short staffing, and large workload were reported by some emergency nurses as a perceived difficulty in achieving serious illness conversations in the emergency department:

> "My work environment–an extremely busy...emergency center–will not always allow me to implement these ideas" [A471].

> "Our short staffing is a major factor. We cannot appropriately communicate, spend time with patients, and provide direct 1-on-1 care as needed for patients approaching end of life" [A480].

> "It's hard to provide good end-of-life care when you have multiple patients" [A304].

Lack of Privacy

Privacy concern is another factor emergency nurses raised as a workplace barrier to engaging in serious illness conversations:

> "Finding an area to provide comfort for the patient and [also] deal with the other [patient] populations that are disruptive, would not make this [serious illness conversation] an ideal situation" [A1637].

> "[Our] ED has no area for family members to discuss privately with providers about patients who are imminently dying about the plan of care" [A510].

Serious Illness Conversations Are Low Priority

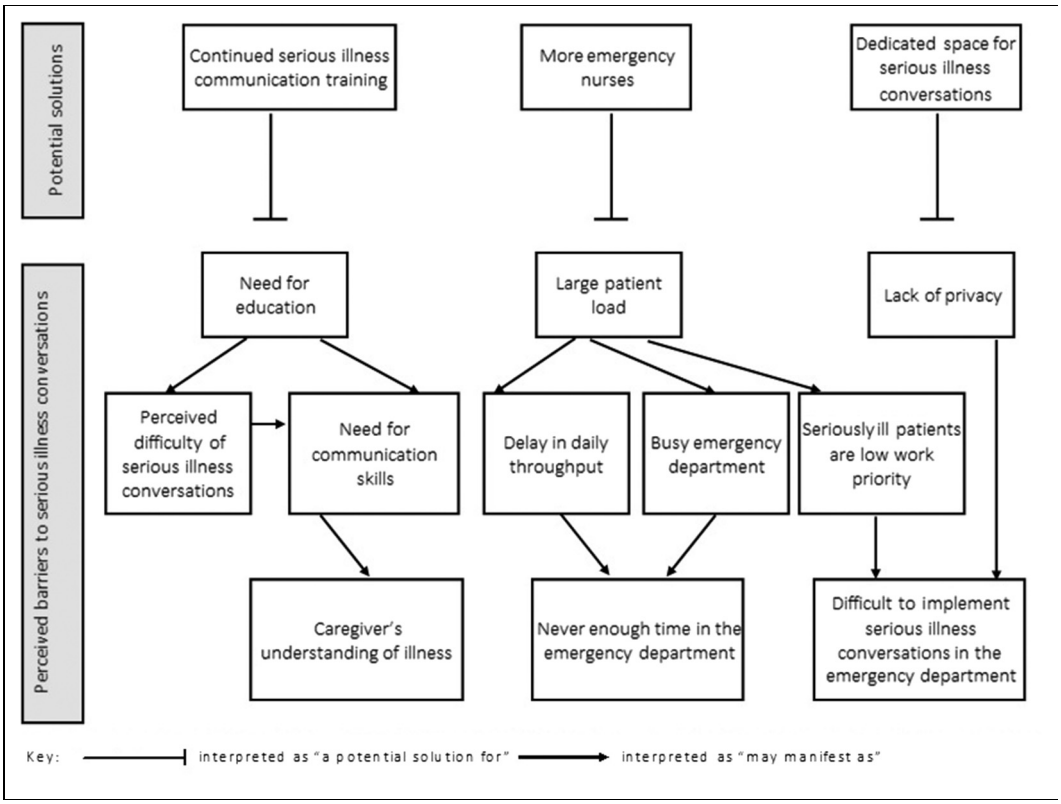
Serious illness conversations are perceived as low priorities compared with typical emergent care for high-acuity patients. This barrier was stated bluntly by A1243: "I can't justify being late on hanging antibiotics on a sepsis patient to hold the hand of a distraught family member of a dying patient. It's unfortunate, but reality." However, another emergency nurse explained the low priority she gives serious illness conversations by stating that: "[The] constant influx of critical patients often lends to palliative care patients receiving low priority" [A138].

POTENTIAL SOLUTIONS

From the qualitative comments, we identified 3 potential solutions for reducing barriers to serious illness conversations in the emergency department (Figure).

Solution 1: Continued Serious Illness Communication Training

Addressing emergency nurses' need for education by ensuring continued training in serious illness communication through didactic and hands-on (eg, simulation) training and mentorship may improve emergency nurses'



FIGURE

Conceptual linkage of emergency nurses' perceived barriers to serious ill conversations in the emergency department and the implicit/explicit solutions.

knowledge and confidence in performing serious illness conversations. In addition, this continued training may provide emergency nurses with the necessary communication skills to navigate serious illness conversations. The value of the continued training was voiced by a few emergency nurses:

> "I think this is a subject that needs to be reinforced in nursing. A lot of times as nurses we become disconnected from patients in these situations due to lack of experience or maybe just honestly not knowing what to say. This was a great reinforcement" [A151].

> "Feel an excellent topic for nurses to learn about... Feel education is important to help and remind nurses to step back and listen" [A121].

Solution 2: More Emergency Nurses

Increasing the number of emergency nurses in the emergency department with the intent of providing focused care for seriously ill patients admitted to the emergency department may address some of the work environment-related barriers. Having a dedicated staff per shift may ease the burden of large patient loads. As stated by an emergency nurse:

> "It would be ideal to have a nurse be dedicated to 1-on-1 care with their patient if they are actively dying in the ED (or 1 or 2 max)" [A713].

In addition, having a dedicated staff to engage in serious illness conversations will prevent delays in daily throughput and such a dedicated staff will provide some increased prioritization for seriously ill patients (Figure).

Solution 3: Dedicated Space for Serious Illness Conversations

Having a dedicated space within the emergency department to discuss serious illness conversations provides the needed privacy and may make such conversations less difficult to initiate (Figure). As stated by 1 of the emergency nurses:

> "Patients and their families need to be moved to a quieter, slower environment where more comforting and hand holding can be implemented" [A374].

One of the emergency nurses was even more specific, as this form of space had been removed from their emergency department, stating:

> "Please bring back our bereavement room" [A1658].

Discussion

In this study, approximately two-thirds of emergency nurses across 33 emergency departments reported that they will experience barriers in engaging seriously ill patients in serious illness conversations in the emergency department. We grouped these barriers into 3 categories, namely human factors, time constraints, and challenges in the work environment. The human factors that emerged from the comments included the need for education, perceived difficulty in holding serious illness conversations, the need for serious illness communication skills, and the caregiver's understanding of serious illness conversations. The time constraint subthemes that emerged included the fact that there is never enough time in the emergency room due to the large patient loads, and serious illness conversations may result in a delay in daily throughput. The ED work environmental barriers included the fact that serious illness conversations are difficult to implement in the emergency department because of the busy work environment, lack of privacy, and low perceived priority of serious illness conversations compared with providing typical emergent care for high-acuity patients. From the comments of the emergency nurses, some potential solutions emerged, which included the need for continued serious illness communication training and mentoring, the need for dedicated emergency nurses caring for seriously ill patients or greater staffing to allow all emergency nurses to perform this function, and a dedicated private space for serious illness conversations within the emergency department.

Earlier studies have reported the role of the ELNEC in improving end-of-life care.[36] Ghaemizade et al[37] reported that intensive care nurses who underwent the ELNEC training had significantly higher performance scores on providing palliative care, ability to communicate with dying patients and relatives, and the knowledge and skills of palliative care than those who did not undergo the training. In addition, Bodine[38] reported that emergency nurses had significantly improved scores in the domains of nursing end-of-life care, pain, and symptom management and handling grief, loss, and bereavement in the post-ELNEC training compared with pre-ELNEC training. In our study, approximately 90% of emergency nurses who underwent the ELNEC training reported that they were able to describe symptoms at end of life, identify barriers to adequate pain management at end of life, and assess imminently dying patients. Despite this high proportion of self-reported measures of serious illness conversational skills, some emergency nurses expressed the need for continued training and their perceived challenge in translating their knowledge into practice within the ED work environment. Therefore, there is a need for continued training for emergency nurses in engaging in serious illness conversations, consistent with the Emergency Nurses Association's position statement on the topic.[39] Furthermore, continued training and mentorship may address the perception and attitude toward the difficulty associated with engaging in serious illness conversations, serve as a constant reminder of palliative care skills, provide up-to-date communication skills in engaging patients and their caregivers in serious illness conversations, and advance both primary and specialist palliative care service delivery as the emergency department experiences an increased influx of seriously ill patients.[40-42]

Although continued training and mentorship have their benefits, other work-related factors exist that may serve as barriers to emergency nurses in engaging in serious illness communication in the emergency department. Our study reports that time constraint is a barrier to engaging in serious illness conversations, consistent with previous studies.[43-45] A prominent reason accounting for the time constraints was the large patient load. Although emergency nurses in our study advocated for more emergency nurses overall, a more realistic solution may require each emergency department to create a palliative care-friendly work culture based on their staff size and the type of patients they serve. Our study showed that, across the emergency departments, there were significant differences in the proportions of emergency nurses who reported that they will encounter barriers in engaging in serious illness conversations. Addressing these emergency department–based differences may require some emergency departments to create dedicated spaces for serious illness conversations and/or reassess their staffing needs.

We report that a lack of private locations to hold serious illness conversations is a barrier to emergency nurses engaging in serious illness conversations. Serious illness conversations are often challenging and emotional conversations and should be held in a private space where the solemnity consistent with such conversations would not be lost due to chaos, noise, or distractions from the emergency work environment. These concerns were voiced by emergency nurses in our study and the plausible solution to this challenge may be the creation of a

room dedicated to holding serious illness conversations. Indeed, the emergency department is not an ideal environment to hold extensive goals of care conversations.[46] Widera et al,[47] while discussing the steps in holding a successful family meeting for serious illness conversations, emphasized the importance of planning where serious illness conversations are held, which ideally should be by the patient's bedside or in a quiet private space away from the patient's room if the patient is unable to participate. However, in most emergency departments, the patient's bedside does not afford the privacy required for the occasion, thus requiring a separate space.

Several options exist for creating a palliative care–friendly ED work culture, 1 of which is employing dedicated palliative care resource nurses and/or specialists to perform serious illness conversations and other primary palliative care assessments and interventions within the emergency department. This is especially important in the emergency departments that care for large proportions of seriously ill older adults with limited specialist palliative care service. Emergency departments that are unable to employ dedicated palliative care specialists may employ emergency nurses and train such nurses in the art of engaging in serious illness conversations. Another method for increasing the priority of serious illness conversations and primary palliative care has been presented by Garner et al,[48] who suggested integrating nurse executives as champions for serious illness conversations given that they have the knowledge, experience, and authority to promote changes. A third option proposed by Grudzen et al[2] is the creation of an interdisciplinary palliative care team that would be available for immediate consultation at all times of the day. For emergency departments that do not have the resources to create an interdisciplinary palliative care team, an option is for such emergency departments to have trained medical social workers who will provide palliative care service in the absence of specialist palliative care service. Finally, moving serious illness conversations to the outpatient setting may be another option, but this may require allocating extra minutes for such conversations above the 10- or 15-minute standard appointment durations in primary care settings.[49,50] Although outpatient palliative care service has its benefits, the emergency department should be equally prepared to address the logistics associated with implementing serious illness conversations given that outpatient referrals for serious illness conversations will result in missed opportunities in delivering serious illness care in the emergency department.

Limitations

This study has several limitations. Although emergency nurses across 33 emergency departments discussed the common challenges they might face while engaging qualifying patients in serious illness conversations, the work environment, population served, and patient characteristics of each emergency department are different. Hence, solutions aimed at creating a nursing workforce and environment favorable for holding serious illness conversations should be tailored to each emergency department. Although the 5-item post-ELNEC training survey was face validated by 4 members of the research team, the psychometric properties (ie, item analysis, reliability, other measures of validity, and factor analysis) of the survey have not been assessed. Furthermore, the written questionnaire format did not allow for a more in-depth exploration of emergency nurses' experiences in performing serious illness conversations. In addition, in the qualitative section, we did not directly ask the survey respondents what are the barriers they will experience while engaging in serious illness conversation in the emergency department. Rather, we relied on the spontaneous reporting of the barriers to engaging in serious illness conversation in the emergency department. This lack of intentionality might have resulted in the loss of some important barriers to serious illness conversations in the emergency department. We analyzed our qualitative and quantitative survey data after completing data collection across all sites. Therefore, we did not assess data saturation. Hence, some salient barriers might have been missed. Our intention was to explore the barriers to engaging in serious illness conversation. However, a number of the respondents provided potential solutions that further enriched our findings. Additionally, the potential solutions were unexpected and should not be construed as a holistic solution. Furthermore, the possibility of emergency nurses providing socially appropriate responses to the quantitative survey cannot be excluded. Finally, some insightful comments on the barriers to serious illness conversations might not have been mentioned by some participants because we did not provide prompts that might have influenced their responses. Despite these limitations, this study represents 1 of the few studies that used a mixed-method approach to assess emergency nurses' perceived barriers and solutions to engaging in serious illness conversations. The study is further strengthened by the reach of the ELNEC training, the large sample size, and the high rate of emergency nurses' participation in the survey.

Implications for Emergency Nurses

Emergency nurses may face barriers to engaging in serious illness conversations while working in the emergency department. Although some of these barriers may relate to knowledge and skill in engaging in serious illness conversations, barriers from time constraints and busy ED work environments also exist. To improve the care of seriously ill patients, we recommend that emergency nurses engage in continued end-of-life training and serious illness conversations with qualifying patients. In addition, we recommend that ED administrators must commit to creating a palliative-friendly work environment without additional burdens to nurses, patients, and their caregivers.

Conclusion

Emergency nurses may face barriers to engaging in serious illness conversations while working in the emergency department. Although some of these barriers may relate to their knowledge and skill, barriers from time constraints and unfavorable ED work environments also exist. Addressing these barriers likely requires continued training, workforce, and cultural and environmental changes in emergency departments, some of which may be easier to implement than others. Future studies should explore how organizational work policies within the emergency department improve or suppress serious illness conversations among emergency nurses.

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Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2023.09.010.

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An Evaluation on the Attitude Toward Using Patient Rights and Satisfaction Levels in Emergency Department Patients

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Contribution to Emergency Nursing Practice

- Patient satisfaction is 1 of the most important indicators of service quality in emergency services where the number of patients increases every year.
- This article demonstrated that there is a relationship between ED patients' attitudes toward the use of patient rights and their satisfaction levels.
- Interventions aimed at increasing the level of knowledge and improving the attitudes of patients presenting to emergency services regarding patient rights may positively affect patient satisfaction.

Abstract

Introduction: In emergency health care services, patient satisfaction is one of the fundamental indicators of quality emergency care, making it essential to identify factors that can impact this component of care. This study aimed to determine emergency service patients' attitudes toward using patient rights, their satisfaction levels with emergency service, and related factors.

Methods: The cross-sectional study was conducted with 382 patients who presented to the emergency department between November 2022 and March 2023. Data were collected using the Patient Description Form, the Emergency Department Patient Satisfaction Scale, and the Scale of Patient Rights Using Attitude. The study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for reporting.

Results: The mean score of the Emergency Department Patient Satisfaction Scale was 53.88 ± 6.88 (minimum score, 30; maximum score, 68), and the mean score of the Scale of Patient Rights Using Attitude was 108.89 ± 11.90 (minimum score, 73; maximum score, 135). As a result of the regression analysis, it was found that the Scale of Patient Rights Using Attitude scores and frequency of ED visits significantly contributed to the Emergency Department Patient Satisfaction Scale scores. Younger patients who had higher educational status presented to the emergency department more frequently and had chronic diseases were associated with positive attitudes about using patient rights and had higher levels of ED patient satisfaction ($P < .001$).

Discussion: The study has provided valuable information for assessing the attitudes of ED patients toward exercising their patient rights and their satisfaction levels. Respect for patient rights and their effective utilization by patients can enhance the quality of ED services and increase patient satisfaction.

Key words: Emergency service; Patient; Patient satisfaction; Patient rights; Nursing

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Introduction

Emergency departments are often recognized as the most critical unit in health institutions, where all categories of traumatic and nontraumatic patients are cared for and where uninterrupted service is provided 24 hours a day.[1] The reasons that have been cited for the high occupancy rate in the emergency department are namely the admission of patients to hospitals through the emergency department, the ability

to conduct diagnostic imaging and laboratory tests, and the availability of specialist consultations.[2] Overcrowding in these departments is a worldwide phenomenon[3] and is being reported as a growing problem.[4] Patients may be compelled to wait hours to receive service in emergency departments as a result of inadequate staffing and physical facilities.[5] This state of affairs negatively affects patient satisfaction, where requests and expectations are unmet and, as a result, patients may occasionally commit violence toward the health personnel.[6]

Patient satisfaction is recognized as an essential tool in health care institutions for planning strategies to improve the quality of care, making decisions, and monitoring outcomes,[7,8] and for these reasons, these metrics have become all the more valuable presently.[9] The patient satisfaction level compares the individual's expectations regarding the services to be received from health institutions with the actual care experience received.[7] Reasonable satisfaction may be difficult to achieve as a result of overcrowding, lack of human resources, and inadequate physical infrastructure.[10] The number of patients admitted to emergency departments is increasing yearly, and the demands and expectations from emergency departments are also growing; therefore, patient satisfaction has become 1 of the primary goals of these care units so that quality-of-care indicators are not affected.[11] In a systematic review, Bittencourt et al[12] reported that interventions to reduce crowding in emergency departments, such as strengthening the triage service, increasing the ED team, and creating new care zones, all increased patient satisfaction. In a separate cross-sectional study examining the relationship between a quality measurement tool and patient satisfaction, it was determined that the components that increase patient satisfaction are tangibles, assurance, reliability, responsiveness, and empathy, respectively.[13]

It is predicted that patient satisfaction is closely tied to patient rights. For this reason, health institutions aiming for high patient satisfaction should present a management style that increases the use of patient rights and is communicated effectively.[14] Patient rights are defined as the fundamental rights and expectations of patients in relation to health, which aim to enable patients to take an active part in medical decisions and to improve the quality of health services. Examples of patient rights, which reflect human rights, date back to ancient times. The oldest known medical code is contained in the Hippocratic Corpus, also known as the Hippocratic Oath, devised more than 2500 years ago. In 1914, autonomy was brought to the forefront with a decision of the New York Court of Appeals: "Every human being of adult years and sound mind has a right to determine what shall be done with his own body." In recent decades, patient rights have become even more significant as a reflection of our current era's characteristics, and most countries have developed a statute that protects these in health care services. Generally, they include quality care, informed consent, information, choice, confidentiality, human dignity, and respect.[13-15]

It is necessary to comprehend the attitude toward patient rights and apply it to practice to increase the quality of service in health institutions,[16] and it should be well adopted not only by health staff but also by patients.[17] A high level of positive attitudes toward the use of patient rights is accepted as an indicator of development among societies.[18] Patients' high expectations regarding their rights may lead to increased service quality, a decrease in incidents of violence, and improvements in patient attitudes toward health care personnel.[19] It is predicted that by determining patients' attitudes toward the use of patient rights, opportunities to receive health care services may improve. Concurrently, it may serve as a guide for health institutions in determining new strategies for improvement.[16]

Nurses have more responsibility in this regard than other health personnel because they spend the longest amount of time with patients and comprise the largest group of health sector members.[20] Patients' knowledge, awareness, and consciousness levels about health and the health system may affect their satisfaction levels. We hypothesize that patient satisfaction can be increased if patient rights are well known and used by patients in emergency services. To the best of our knowledge, there exist no studies on the relationship between patient satisfaction and patient rights in emergency departments. Therefore, this study was conducted to determine the attitudes of patients in the emergency department, in the application of their patient rights, their satisfaction levels with the ED service, and related factors.

RESEARCH AIMS

- To explore patients' satisfaction and attitude toward using patient rights among patients presenting to the emergency department
- To study the associations between patients' satisfaction and patients' attitude toward using their rights in the emergency department and their sociodemographic and clinical characteristics
- To study the association between attitudes toward using patient rights and satisfaction levels with ED services among ED patients

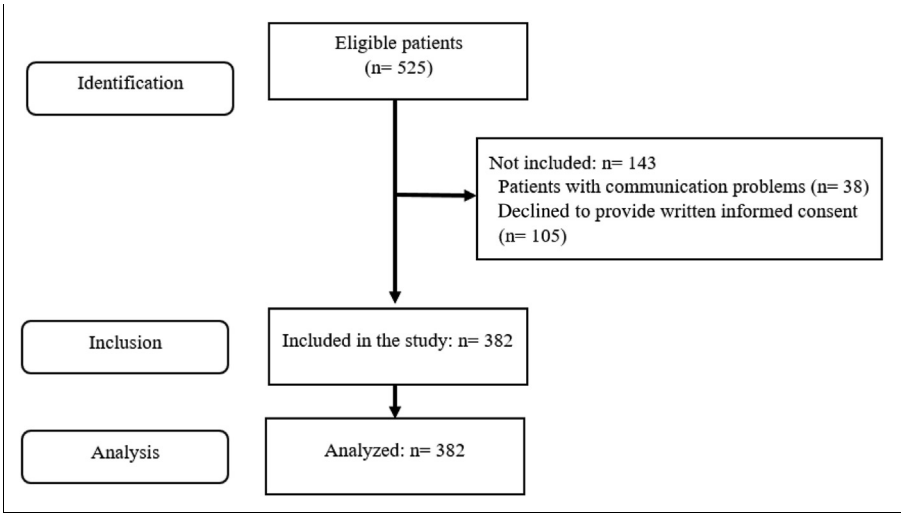

FIGURE
Flow diagram of the research.

Methods

STUDY DESIGN

A cross-sectional study design was used in the research.

PARTICIPANTS

This study was conducted in the emergency department of a training and research hospital in a province in Turkey. Patients who presented to the emergency department due to any health problems, were 18 years of age or older, were in the "green area," and agreed to participate in the research were included in the study. Patients with communication barriers resulting from a condition disorder, loss of consciousness, or an impaired ability to cooperate were not included in the study. During the data collection period, 525 patients were approached, and ultimately, 382 individuals (72.76%) were included in the study. The flow diagram of the study is presented in Figure.

Post hoc power analysis was performed in the study using the G*Power program, wherein the mean score of the Emergency Department Patient Satisfaction Scale was used. As a result of the calculation, the effect size was determined as 1.33 and, accordingly, n = 382 and alpha = 0.05, and the study power was determined as 99%. Given that the sample size of the study was sufficient, the data collection process was finalized.

PROCEDURE AND DATA COLLECTION

The data were collected from the emergency department of the largest hospital (tertiary care) in 1 of the major cities in the Central Anatolia region between November 2022 and March 2023. Given that patients in the "green area" of the emergency department had fewer potential life threats, they would be less likely to be transferred to clinics after treatment, potentially stressed to a lesser extent, and would therefore more easily participate in the data collection process; thus, only patients in this area were included in the study. Patients in the green area are those who in principle should have been able to be safely seen in other outpatient clinics: they are ambulatory, they have stable general conditions, their health problems are not life-threatening within 1 to 4 hours of waiting, and they are determined to have simple health problems. One of the researchers involved in the study, employed by the emergency department where the data were collected, performed a 24-hour shift during which time the data were collected. The data collection form, which took on average 10 minutes to complete, was presented in face-to-face interviews with the patients after the treatment process of each patient was finalized. All patients participating in the study were informed about the study and asked to sign a written informed consent form. In the data collection for the study, the Patient Description Form, Emergency Department Patient Satisfaction Scale, and the Scale of Patient Rights Using Attitude were used.

TABLE 1
Descriptive characteristics of patients (n = 382)

Characteristics	n	%	Characteristics	n	%
Reason for admission to the emergency department			Marital status		
Hypertension	41	10.7	Married	293	76.7
High fever	55	14.4	Single	89	23.3
Pain (headache, stomachache, toothache, etc)	40	10.5	Educational level		
Respiratory system diseases	61	16.0	Primary education	50	13.1
Upper respiratory tract infection	152	39.8	High school	130	34.0
Diabetes	33	8.6	Bachelor's degree or higher	202	52.9
Age			Economic status		
≤30	120	31.4	Income less than expenditure	7	1.8
31-45	121	31.7	Income matches expenditure	338	88.5
46-60	81	21.2	Income more than expenditure	37	9.7
≥61	60	15.7	Frequency of ED admission		
Gender			Rarely	132	34.6
Female	162	42.4	Frequent	135	35.3
Male	220	57.6	Very often	115	30.1
Working status			Chronic disease		
Working	242	63.4	Yes	132	34.6
Not working	140	36.6	No	250	65.4
Job			Chronic disease type*		
Worker	100	26.2	Hypertension	49	37.1
Public servants	147	38.5	Chronic obstructive pulmonary disease	36	27.3
Retired	57	14.9	Diabetes	32	24.2
Not working	78	20.4	Asthma	15	11.4

* Not all individuals included in the study had chronic diseases.

MEASURES

Patient Description Form

The form consisted of 11 questions about the reason for ED visits, frequency of ED visits, chronic diseases, and sociodemographic information.

Emergency Department Patient Satisfaction Scale

The scale was developed by Atari and Atari[21] in 2015 to measure individuals' ED patient satisfaction. The adaptation of the scale into Turkish was performed by Konateke and Yılmaz in 2022, and it has proven to be a valid and reliable measurement tool (Cronbach alpha value, 0.94). The scale consists of 18 items and 5 subdimensions ("nurse satisfaction," "patient admission staff satisfaction," "ED environment," "physician treatment satisfaction," "general patient satisfaction"). The statements in the scale are scored as "totally disagree (1)," "partially disagree (2)," "partially agree (3)," and "totally agree (4)." The highest score that can be obtained from the scale is 72, the lowest score is 18, and the total score indicates the level of satisfaction. As the total score increases, the satisfaction level increases.[22] In this study, the Cronbach alpha value of the scale was determined as 0.88.

Scale of Patient Rights Using Attitude

The scale was developed by Erbil in 2009 to evaluate the attitudes of individuals receiving health care services toward the use of patient rights. The scale consists of 29 items

and 7 subdimensions ("right to receive information and respectful service," "right to choose and change personnel, right to examine records," "right to visitors, companions, security and complaints," "right to receive service in accordance with medical requirements and to ask personnel to comply with prohibitions," "right to consent in medical-pharmaceutical practices," "right to consent in organ-tissue transplantation, family planning and termination of pregnancy," "right to consent and refuse treatment"). The scale is a 5-point Likert-type scale and consists of "I always use (5)," "I usually use (4)," "I sometimes use (3)," "I usually do not use (2)," and "I never use (1)." The highest score that can be obtained from the scale is 145 and the lowest score is 29. As the total score obtained from the scale increases, individuals' attitudes toward the use of patient rights improve positively. In the validity and reliability study of the scale, the internal consistency coefficient Cronbach alpha value was found to be 0.88.[23] In this study, the Cronbach alpha value of the scale was determined as 0.88.

DATA ANALYSIS

The IBM SPSS Statistics Ver.23.0 (IBM Corp, Armonk, NY) statistical package program was used for data analysis. Descriptive data were given as number, percentage, mean, and standard deviation. The normal distribution of the data of numerical variables was evaluated using the Shapiro-Wilk normality test and Q-Q graphs. In the comparison of 2 independent groups, the independent sample *t* test or Mann-Whitney U test was used, according to the normality of the data. In the comparison of 3 or more independent groups, the one-way analysis of variance or Kruskal-Wallis test was used according to the normality of the data. The post hoc test or Dunn's test was applied to the significant data as a multiple comparison test. Regression analysis was conducted to determine the factors affecting the Emergency Department Patient Satisfaction Scale. In the comparisons made with the Emergency Department Patient Satisfaction Scale or the Scale of Patient Rights Using Attitude, the variables with $P < .20$ values were included in the multiple linear regression model together with the Scale of Patient Rights Using Attitude. The regression model was constructed using the entered method. Categorical variables were included in the analysis as "dummy variables." In this study, $P<.05$ was accepted as statistical significance.

ETHICAL CONSIDERATIONS

Before commencing data collection, the ethics committee's approval was obtained from the local ethics committee with the date March 24, 2022, and number 15 (ethics committee application number). In addition, approval of the academic board and written institutional permission from the institution where the study was conducted were obtained. The purpose of the study was explained to all patients participating in the study before data collection, and they were informed that the data obtained from the study would be kept confidential and used solely for scientific purposes. All patients who agreed to participate in the study were asked to sign a written informed consent form. Great care was taken to comply with the principles of the Declaration of Helsinki at every stage of the study.

Results

Descriptive characteristics of the patients included in the study are presented in Table 1. In the study, 39.8% of the patients were admitted to the emergency department as the result of an upper respiratory tract infection, 31.7% were aged 31 to 45 years, 57.6% were male, 63.4% were employed, and 38.5% of these were from the public service. In addition, 76.7% of the patients were married, 52.9% had a bachelor's degree or higher, 88.5% had an income equivalent to their expenses, 35.3% were frequently admitted to the emergency department, 34.6% had chronic diseases, and 37.1% of those with chronic diseases had hypertension.

The mean scores and alpha values of the Emergency Department Patient Satisfaction Scale and the Scale of Patient Rights Using Attitude are presented in Table 2. The mean score of the Emergency Department Patient Satisfaction Scale was 53.88 ± 6.88 (minimum score, 30; maximum score, 68), and the mean score of the Scale of Patient Rights Using Attitude was 108.89 ± 11.90 (minimum score, 73; maximum score, 135).

The relationship between the descriptive characteristics of the patients included in the study and the scales is presented in Table 3. It was determined that there was a statistically significant relationship among the patients' age, education status, frequency of admission to the emergency department, and the total scores of the Emergency Department Patient Satisfaction Scale ($P < .05$). In addition, a statistically significant relationship was determined between the total score of the Scale of Patient Rights Using Attitude and the age, educational status, frequency of ED visits, and presence of chronic diseases of the patients included in the study ($P < .05$).

The regression model obtained with the entered method is presented in Table 4. In the model, along with Scale of Patient Rights Using Attitude, age, educational status, income status, frequency of ED visits, and chronic disease variables with $P < .20$ in the comparisons in Table 3

TABLE 2
The scale scores of the patients (n = 382)

Scales	Number of items	Min	Max	X	SD	Alpha
Emergency Department Patient Satisfaction Scale	18	30	68	53.88	6.88	0.88
Scale of Patient Rights Using Attitude	29	73	135	108.89	11.90	0.88

were included. According to Table 4, Scale of Patient Rights Using Attitude variable was found to be effective on Emergency Department Patient Satisfaction Scale. When the Scale of Patient Rights Using Attitude score of the patients increased by 1 unit, the Emergency Department Patient Satisfaction Scale score increased by 0.261 points. The regression model is statistically significant ($F = 13.755$; $P < .001$; $R^2 = 0.290$; *adjusted* $R^2 = 0.269$). According to the model statistics, the model established meets the assumptions of linear regression analysis.

Discussion

The mean score of the patients included in the study was 53.88 ± 6.88 (min-max, 30-68) on the Emergency Department Patient Satisfaction Scale and 108.89 ± 11.90 (min-max, 73-135) on the Scale of Patient Rights Using Attitude. There is no cutoff point for the scales, and when the minimum maximum scores of the scales are evaluated, it is possible to say that the total scores of the patients in both scales are above average. These results are similar to those found in the literature.[22,24,25]

In the comparison of age and scale scores, it was determined that patients aged ≥61 years had lower scores scale of patient' rights using attitude and patient satisfaction, compared to patients in other age groups. In previous studies, it was determined that patients with the highest scores knowledge and attitudes about patient rights were similarly determined to be individuals under the age of 60.[26,27] In a cross-sectional study to evaluate patients' knowledge and awareness of patient rights, Mohammed et al[27] found that age was a significant predictor of the patient's knowledge level of patient rights and inversely associated with the knowledge score. In addition, there are studies demonstrated that age is among the factors affecting patient satisfaction.[28,29] The studies show that patient satisfaction exhibits a complex relationship with age, and although patient satisfaction increases as age increases, it was also determined that patient satisfaction increases as age decreases. The decrease in cognitive and functional capacity in elderly individuals creates a basis for the elderly to experience adaptation problems.[30] This may be the reason why their attitudes towards using patient rights are less positive. In addition, chronic diseases and the need for care increase with advancing age.[31] This may have increased patients' expectations from health care institutions and negatively affected their satisfaction levels. Older individuals may have more limited access to digital technology and information than younger generations, and this may negatively affect the process of learning about patient rights and exercising their own rights. Older patients may also face physical challenges such as lack of communication or hearing and vision problems. Such barriers may make information exchange and communication on patient rights more challenging.

The level of health literacy is lower in segments of the population with lower education levels.[32] Based on this information, it is assumed that the level of education of people is related to accessing information and knowledge of patient rights.[33] In addition, education is one of the important factors affecting patient satisfaction.[28] In the present study, it was determined that as the education level of ED patients increased, their satisfaction and attitudes toward using patient rights also increased. Similarly, it has been confirmed in the literature that patients with higher education levels have higher attitudes toward using patient rights and patient satisfaction.[25,28,33] There are different results in the literature regarding the relationship between education and patient satisfaction. In other studies, it has been determined that as the education level decreases, patient satisfaction and attitudes toward using patient rights inversely increase.[26,30] With the increase in education level, personality traits such as self-knowledge and self-efficacy and social communication skills increase.[34] Patients with higher levels of education may experience higher levels of satisfaction due to an increased awareness of the importance of health care services and their own rights. In addition, these patients can communicate more effectively with health care professionals and express their expectations more comfortably. Individuals with higher education levels have easier access to health care education

TABLE 3
Relationship between descriptive characteristics of patients and scales (n = 382)

Characteristics	Emergency Department Patient Satisfaction Scale		Scale of Patient Rights Using Attitude	
	Mean ± SD	Test	Mean ± SD	Test
Age				
≤30	54.63 ± 6.23[a]		111.87 ± 10.74[a]	
31-45	55.31 ± 6.02[a]	KW = 22.780	111.69 ± 9.01[a]	KW = 65.666
46-60	54.03 ± 6.64[a]	$P < .001$	109.87 ± 10.17[a]	$P < .001$
≥61	49.28 ± 8.18[b]		95.96 ± 13.09[b]	
Gender				
Female	54.35 ± 6.97	t = 1.145	108.65 ± 11.77	U = -0.591
Male	53.53 ± 6.81	$P = .253$	109.07 ± 12.02	$P = .555$
Marital status				
Married	53.74 ± 6.69	U = -0.774	109.20 ± 11.93	t = 1.106
Single	54.34 ± 7.50	$P = .439$	107.86 ± 11.83	$P = .269$
Working status				
Working	53.84 ± 6.62	t = -0.085	108.47 ± 12.79	t = -0.520
Not working	53.90 ± 7.04	$P = .932$	109.13 ± 11.37	$P = .603$
Job				
Worker	54.58 ± 7.67	F = 0.602	109.45 ± 11.87	KW = 0.604
Clerk	53.64 ± 6.62	$P = .614$	109.39 ± 11.18	$P = .896$
Retired	54.07 ± 6.21		106.63 ± 11.71	
Not working	53.29 ± 6.81		108.89 ± 13.36	
Educational level				
Primary education	50.10 ± 8.05[a]	F = 12.837	94.20 ± 12.00[a]	KW = 94.087
High school	53.22 ± 6.50[b]	$P < .001$	107.00 ± 11.61[b]	$P < .001$
Bachelor's degree or higher	55.24 ± 6.41[c]		113.74 ± 8.20[c]	
Economic status				
Income less than expenditure	55.85 ± 6.06	F = 0.299	114.85 ± 6.41	KW = 5.079
Income matches expenditure	53.83 ± 6.94	$P = .741$	108.47 ± 12.01	$P = .079$
Income more than expenditure	53.97 ± 6.53		111.62 ± 11.17	
Frequency of ED admission				
Rarely	50.77 ± 6.53[a]	F = 23.431	101.90 ± 11.20[a]	KW = 133.306
Frequent	55.17 ± 6.80[b]	$P < .001$	108.49 ± 10.29[b]	$P < .001$
Very often	55.93 ± 6.11[b]		117.38 ± 8.69[c]	
Chronic disease				
Yes	54.76 ± 6.70	t = 1.827	110.78 ± 12.38	U = 2.510
No	53.41 ± 6.94	$P = .068$	107.89 ± 11.54	$P = .012$

F, one-way analysis of variance; KW, Kruskal-Wallis test; t, independent sample *t* test; U, Mann-Whitney U test.
The superscripts a, b, c indicate a difference within a group, and the same letters indicate that there is not an in-group difference, and different letters indicate an in-group difference.

programs and information. Furthermore, these patients may possess more knowledge about their own health conditions and treatments, which may facilitate their becoming more informed about their patient rights.

In this study, it was determined that patients who were admitted to the emergency department more frequently and had chronic diseases had better attitudes toward using patient rights. Similarly, studies have reported that the

TABLE 4
Evaluation of factors affecting Emergency Department Patient Satisfaction Scale scores with multiple univariate linear regression analysis (n = 382)

Characteristics	Regression coefficients					
	β	*SE*	*t*	*P* value	95% CI for *β*	
					Lower bound	Upper bound
Constant	22.363	4.287	5.216	< .001	13.933	30.794
Scale of Patient Rights Using Attitude	0.261	0.037	7.012	< .001	0.188	0.335
Age						
≤30	1.487	1.075	1.384	.167	−0.626	3.601
31-45	2.324	1.095	2.121	.035	0.17	4.478
46-60	0.997	1.103	0.904	.367	−1.172	3.166
≥61	Ref					
Educational level						
Primary education	0.931	1.177	0.791	.429	−1.383	3.245
High school	0.367	0.769	0.477	.634	−1.145	1.879
Bachelor's degree or higher	Ref					
Economic status						
Income less than expenditure	1.403	2.533	0.554	.580	−3.578	6.385
Income matches expenditure	1.12	1.075	1.042	.298	−0.994	3.233
Income more than expenditure	Ref					
Frequency of ED admission						
Rarely	−1.098	0.893	−1.23	.219	−2.854	0.657
Frequent	1.529	0.801	1.909	.057	−0.046	3.105
Very often	Ref					
Chronic disease						
Yes	0.605	0.715	0.846	.398	−0.801	2.012
No	Ref					

SE, standard error.
Dependent variable: Emergency Department Patient Satisfaction Scores. Independent variable: Scale of Patient Rights Using Attitude. Confounding factors: age, educational level, economic status, frequency of ED admission, chronic disease. Model: entered. Model summary: $F = 13.755$; $P < .001$; $R^2 = 0.290$; *adjusted* $R^2 = 0.269$, power = 0.999.

number of hospitalizations increases patients' awareness of patient rights, and patients with chronic diseases have better attitudes toward using patient rights.[27,35] In individuals with chronic diseases, visits to emergency health services increase as a result of severe symptoms and acute exacerbations. Patients who frequently visit the emergency department may tend to have a better understanding of the health care system and grasp the importance of patient rights. Therefore, individuals with frequent health care visits have more observations and experiences, and it was thought that patients who were admitted to the emergency room more frequently increased their level of knowledge about patient rights and developed attitudes. In addition, individuals with chronic diseases tend to follow their health conditions more closely and understand the treatment processes better. These patients are more likely to be provided with patient education, which may have increased their awareness of patient rights and may have contributed to effective use.[36]

In this study, it was found that patients who were frequently admitted to the emergency department had higher patient satisfaction levels than those who were rarely admitted. In the literature, it has been reported that there is a relationship between the frequency of ED visits and the level of satisfaction with nursing service.[37] Failure to meet the services that patients seek or want to see in health service providers may increase their dissatisfaction. Therefore, the fact that individuals applying to emergency health

services for the first time or on rare occasions tending to have high expectations may also affect their satisfaction levels negatively.[7] Patients who frequently visit emergency services may have more experience in understanding how health care services operate and what level of expectations to have. These experiences may result in lower stress levels and higher satisfaction. These patients may also have a better grasp of the seriousness of health issues, leading to increased participation in treatment and care processes, which can positively affect satisfaction levels. In addition, patients who frequently seek care at emergency services may establish stronger and more continuous relationships with health care professionals, and this may foster improved communication and personalized care, potentially enhancing satisfaction levels.

The importance of emergency health services is progressively increasing due to the increasing demand and expectations of society on health institutions. As in all sectors, quality comes to the forefront in health service delivery.[38] Patient satisfaction is 1 of the main indicators of quality care in emergency health services.[11] Therefore, determining the factors affecting patient satisfaction is critical for planning in the health system. One of the most important aims of this study was to determine the relation of level of the attitude toward using patient rights on patient satisfaction. As a result of the analysis, it was found that the association of the Scale of Patient Rights Using Attitude scores was significant on Emergency Department Patient Satisfaction scores. For each 1-unit increase in the Scale of Patient Rights Using Attitude scores, the Emergency Department Patient Satisfaction scores increased by 0.261 points (Table 4). Notably, no study was found in the literature to support or reject this finding. Patients' expectations regarding patient rights, such as evaluating the treatment alternatives planned for them, taking an active role in the decision-making process, respecting their values and preferences, and receiving quality care, are increasing steadily.[39] Patient satisfaction is closely related to individuals' expectations regarding health services.[7] The satisfaction levels of patients whose expectations were limited within the framework of patient rights and who used these rights may have been higher for this reason. In addition, the use of patient rights may encourage health care staff to provide a more respectful and patient-oriented service. It may encourage health care personnel to pay more attention to the emotional and psychological needs of patients, and this may result in more empathy and sensitivity on their part. Therefore, it is recommended to promote interventions to increase emergency department patients' level of knowledge regarding patient rights and to encourage them to exercise these rights.

Limitations

There are a few known limitations of this study. Patients in the yellow and red areas were excluded from the study due to their long treatment process and hospitalization in the ward; thus, only patients in the green area were included. In addition, it is not possible to generalize the obtained results given that the study was conducted in a single center and at single period of time. The number and types of independent variables examined may be limited, and the questionnaires were completed with the support of the researchers: examining more independent variables may contribute to a more comprehensive evaluation of the results. The study's focus on a specific period may ignore changes over time; therefore, future research should cover a wider time span to monitor long-term changes. In addition, studies can be conducted with larger and more diverse sample groups and in emergency departments in different geographical regions and hospital types.

Implications for Emergency Nurses

This study demonstrated that the Scale of Patient Rights Using Attitude was significantly associated with patient satisfaction. Supporting patient rights in the emergency setting may increase patients' satisfaction with care outcomes. These results may provide very important contributions to improve the quality of emergency services. Nurses have the role of patient advocate, and nurses have great responsibilities in informing patients about patient rights. In addition, the data obtained can guide health care institutions, health care professionals, and policy makers in providing more effective and patient-centered emergency health care services.

Conclusion

Participants' attitudes toward exercising patient rights and ED satisfaction levels are above average. It was concluded that patients who were younger, had higher educational status, were admitted to the emergency department more frequently, and had chronic diseases developed attitudes toward using patient rights more frequently and had higher levels of ED patient satisfaction. In addition, the level of attitude toward using patient rights is an important factor affecting the level of patient satisfaction in the emergency department. The study provided important information to evaluate ED patients' attitudes and satisfaction levels in using patient rights: protecting and promoting patient rights

in health care can help patients have more positive experiences. The study findings indicated that health care institutions should develop training programs for patient rights and that patients should be given more information about understanding and exercising their rights. Health care professionals should also be better educated about patient rights; it can be recommended that health care personnel develop positive strategies for the factors affecting the satisfaction levels of patients admitted to the emergency department and their attitudes toward exercising patient rights.

Author Disclosures

Conflicts of interest: none to report.

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Emergency Nurses' Recognition of and Perception of Sex Differences in Acute Coronary Syndrome Symptoms

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Contribution to Emergency Nursing Practice

- Early detection and diagnosis of acute coronary syndrome (ACS) are critical because of time-sensitive interventions that can salvage myocardium and optimize patient outcomes. ED triage nurses are often the first medical contact for patients presenting with ACS and recognize chest symptoms are the most common symptoms of ACS.
- Emergency nurses are well informed of the usual symptoms associated with ACS and believe there are some symptoms that vary by sex.
- Emergency nurses need to accurately recognize ACS symptoms in women and men because symptoms are the trigger for clinical decision making, including electrocardiogram acquisition within 10 minutes of ED arrival. It is important to remember that women and men experience a list of potential ACS symptoms that are more similar than different.

Abstract

Introduction: Emergency nurses must quickly identify patients with potential acute coronary syndrome. However, no recent nationwide research has explored nurses' knowledge of acute coronary syndrome symptoms. The purpose of this study was to explore emergency nurses' recognition of acute coronary syndrome symptoms, including whether nurses attribute different symptoms to women and men.

Methods: We used a cross-sectional, descriptive design using an online survey. Emergency nurses from across the United States were recruited using postcards and a posting on the Emergency Nurses Association website. Demographic data and participants' recognition of acute coronary syndrome symptoms, using the Acute Coronary Syndrome Symptom Checklist, were collected. Descriptive statistics and ordinal regression were used to analyze the data.

Results: The final sample included 448 emergency nurses with a median 7.0 years of emergency nursing experience. Participants were overwhelmingly able to recognize common acute coronary syndrome symptoms, although some symptoms were more often associated with women or with men. Most participants believed that women and men's symptoms were either "slightly different" (41.1%) or "fairly different" (42.6%). Nurses who completed training for the triage role were significantly less likely to believe that men and women have substantially different symptoms (odds ratio 0.47; 95% CI 0.25-0.87).

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Discussion: Emergency nurses were able to recognize common acute coronary syndrome symptoms, but some reported believing that the symptom experience of men and women is more divergent than what is reported in the literature.

Key words: Acute coronary syndrome; Chest pain; Signs and symptoms; Emergency nursing; Myocardial infarction; Sex

Introduction

Acute coronary syndrome (ACS), comprising unstable angina, non-ST-elevation myocardial infarction, and ST-elevation myocardial infarction, is experienced by more than 800,000 people each year in the United States.[1] According to data from the National Center for Health Statistics, approximately 307,000 patients are seen in a United States emergency department each year for myocardial infarction, representing approximately 1 in 50 patients presenting to the emergency department.[2] Guidelines emphasize the prompt recognition of ACS for timely intervention, such as anticoagulation and percutaneous coronary intervention.[3,4]

Patients presenting with symptoms suspicious for ACS require rapid triage and risk assessment because of time-dependent therapies. Patient-reported symptoms trigger clinical decision making such as the acquisition of a 12-lead electrocardiogram (ECG).[5] Therefore, patient symptoms provide a critical cue for emergency nurses to recognize potential ACS.[6] A chest symptom is the most common symptom of ACS, and chest pain is the second most common principal visit reason across United States emergency departments, representing approximately 5.6% of patients presenting to the emergency department.[2] Triage is a critically important role in the emergency department because it is often the first point of medical contact. Triage nurses must be able to recognize the array of symptoms that can occur in the setting of acute ischemia/infarction, distinguishing between acute and nonacute conditions and leveraging their knowledge, skill, and experience.[6-8]

Patients who rule out for ACS have a clinical presentation similar to those who rule in for ACS, presenting a problem-solving conundrum for triage nurses.[9] Clinical presentation, cardiac history, and ECG alone are insufficient to make an accurate diagnosis of ACS.[9,10] In addition, chest pain symptoms are associated with noncardiac conditions including respiratory, gastrointestinal, musculoskeletal, or anxiety, and only approximately 5% of patients evaluated for chest pain in the emergency department actually have ACS.[10] There have also been some reports of sex differences in symptoms of ACS, which may influence how triage nurses evaluate women and men. Most studies have shown few differences between women and men in the type of symptoms during ACS but have reported minor differences in the frequency of symptom report.[8,11,12] Although women are slightly less likely to report chest pain and diaphoresis and slightly more likely to experience shortness of breath, dizziness, fatigue, upper back pain, palpitations, and jaw pain,[11] there was significant overlap in symptoms in a large meta-analysis of studies examining sex differences in symptoms of ACS.

PURPOSE AND RESEARCH QUESTIONS

The purpose of this study was to explore emergency nurses' recognition of ACS symptoms. Specific research questions included:

1. What symptoms do emergency nurses recognize as potential symptoms of ACS?
2. To what extent do emergency nurses think ACS symptoms differ between men and women?

Methods

DESIGN

A cross-sectional, descriptive design was used. We addressed our research questions using an electronic Qualtrics survey. This research was determined exempt by the Illinois State University Institutional Review Board (IRB-2021-177).

SAMPLE AND SETTING

A convenience sample of participants was recruited using a multimethod recruitment strategy. In mid-March 2022, 18,000 recruitment postcards were sent via the United States Postal Service to a proportionate stratified random sample of emergency nurses who were members of the Emergency Nurses Association (ENA). We stratified the sample based on ENA geographic region to ensure proportionate representation of every ENA region. Postcards included a web link to the informed consent and online Qualtrics survey. We also leveraged snowball sampling; participants were encouraged to share the study opportunity with other emergency nurses. Participants were offered the opportunity to enter a chance to win a $20 electronic gift card for participating. An a priori power analysis for ordinal regression was conducted using R

version 4.2.3 (R Foundation for Statistical Computing, Vienna, Austria) to determine the minimum sample size required. Results indicated that the required sample size to achieve 80% power for detecting a moderate effect (odds ratio 1.80) was 305.

To be included in this study, participants had to meet the following criteria: (1) be a registered nurse, (2) work at least part-time in the emergency department, (3) have the ability to complete an online survey, and (4) speak, read, and write in English. Those not meeting inclusion criteria were excluded.

MEASURES

Demographic Variables

Several relevant demographic and nursing experience–related questions were included to characterize the sample. We chose demographic variables that could theoretically affect nurses' recognition of ACS symptoms and potential differences between men and women.

Recognition of ACS Symptoms

To measure emergency nurses' recognition of ACS symptoms, we used symptoms (Table 1) included on the ACS Symptom Checklist.[8] The ACS Symptom Checklist is a 13-item empirically derived instrument that measures the symptoms of ACS.[8,13] The ACS Symptom Checklist has demonstrated reliability and validity in previous studies.[8]

TABLE 1
Symptoms from the ACS Symptom Checklist[8]

- Chest pressure
- Shoulder pain
- Sweating
- Palpitations
- Chest discomfort
- Upper back pain
- Shortness of breath
- Arm pain
- Unusual fatigue
- Nausea
- Lightheaded
- Chest pain
- Indigestion

ACS, acute coronary syndrome.

Participants are asked to indicate whether they experienced any of the symptoms. Other symptoms are recorded in a blank space marked "other." Each symptom is analyzed individually, and there is no summary score.

For the present study, we used the symptoms from this checklist, and participants were presented with 9 multiple choice items to determine emergency nurses' recognition of ACS symptoms. For each item, participants were provided 3 ACS symptoms from the ACS Symptom Checklist and 1 non-ACS symptom (eg, productive cough). These non-ACS symptoms were agreed upon based on the expert consensus of the study authors who have extensive expertise in cardiovascular disease symptoms. Participants were asked to select the response option that was least likely to be a symptom of ACS.

Association of ACS Symptoms With Men and Women

To determine whether participants associated certain symptoms with a particular sex, we provided a list of the 13 symptoms included on the ACS Symptom Checklist (Table 1) and asked them to indicate in a categorical fashion whether they associated the symptom with the ACS symptom experience of women, of men, or of both men and women. In addition, participants were asked a Likert-type question, "Men and women usually experience ACS symptoms that are "_____," with response options ranging from "the same" (1) to "totally different" (5).

DATA ANALYSIS

We analyzed data using IBM SPSS 28.0 (IBM Corp, Armonk, NY). We first inspected and cleaned the data. The demographic and experiential variables were characterized using standard descriptive statistics, including mean, median, and proportions where appropriate. Descriptive statistics regarding ACS symptom recognition and ACS symptoms attribution to men, to women, and to men and women were also generated. Ordinal logistic regression was used to investigate which variables were associated with the extent to which participants thought ACS symptoms differ between men and women. Selected independent variables included age, years as a registered nurse, years as a registered nurse in the emergency department, gender, highest level of nursing education, certification status in emergency nursing, whether participants received education for the triage role, ED location, whether the emergency department in which participants worked was a certified chest pain center, and the number of beds in the emergency department in which participants worked. A check for

multicollinearity, including variance inflation factors, revealed a high correlation between years as a registered nurse and years as a registered nurse in the emergency department; therefore, we eliminated years as a registered nurse from the model, in favor of years as a registered nurse in the emergency department. A P value $<.05$ was considered statistically significant.

Results

PARTICIPANT CHARACTERISTICS

A total of 449 responses were submitted. One participant was omitted from the analysis due to >50% missing data. Four participants had 5% to 30% randomly missing data, but these responses were handled in a pairwise fashion during analysis. The survey took participants a median of 9.7 minutes (interquartile range 5.9) to complete. Participants were a mean 41.6 years of age (±12.3) with a median 7.0 years (range <1 year to 41 years) of experience in the emergency department (Table 2). Most participants (362, 80.6%) were women and held a baccalaureate degree (270, 60.1%). Just more than half of participants (53.2%) reported being a staff nurse, and 30.3% reported being a charge nurse at least some of the time. Most participants (67.5%) were certified in at least 1 nursing specialty (eg, Certified Emergency Nurse). A preponderance of participants (42.8%) were located in the Midwest, working in emergency departments of varying sizes, 55.4% of which were certified chest pain centers.

RECOGNITION OF ACS SYMPTOMS

Participants were asked to select the least likely ACS symptom out of 4, in a series of 9 questions. As shown in Table 3, participants overwhelmingly selected the symptom least consistent with ACS in each item. The only distractor options that less than 90% of the sample selected were toothache (83.5%) and low back pain (88.4%).

PERCEIVED SEX DIFFERENCES IN ACS SYMPTOMS

Each of the 13 symptoms on the ACS Symptom Checklist and the number of participants that associated each symptom with women, with men, or with both women and men are presented in Table 4. Symptoms most often associated with both men and women included shortness of breath (90.2%), chest discomfort (85.7%), chest pressure (82.2%), and chest pain (80.1%). However, chest pain (19.0% vs 0.9%), chest pressure (17.0% vs 0.7%), and chest discomfort (12.3% vs 2.0%) were more often associated with men than women. Other symptoms more often associated with women than with men included lightheaded (29.3% vs 2.9%), nausea (37.8% vs 2.0%), indigestion (31.8% vs 12.8%), upper back pain (43.0% vs 10.8%), and unusual fatigue (53.7% vs 3.8%).

Participants also indicated the degree to which they believed that women and men experience different ACS symptoms. A plurality of participants believed that women and men's symptoms were either "slightly different" (41.1%) or "fairly different" (42.6%). A small proportion of participants (12.7%) reported that men and women's ACS symptoms are "very different," and 3 participants indicated that these symptoms are "totally different." Results of ordinal regression indicated that nurses who completed training for the triage role were significantly less likely to believe that men and women have substantially different ACS symptoms (odds ratio 0.47; 95% CI 0.25-0.87). Nurses who completed any training on triage roles had a 53% decrease in the odds of believing that men and women had substantially different ACS symptoms, given that other variables were held constant in the model. All other independent variables did not substantially predict the degree to which participants thought ACS symptoms differ between men and women (Table 5).

Discussion

Because of the small amount of literature exploring emergency nurses' knowledge of ACS symptoms and association of symptoms with men and women, it is somewhat difficult to situate the present findings in the literature. This study provides contemporary insights into emergency nurses' knowledge of ACS symptoms and their association of certain symptoms with women and with men. Emergency nurses in this study were overwhelmingly able to recognize symptoms consistent with ACS. Participants most often associated ACS symptoms with both men and women; however, emergency nurses in this study did associate some ACS symptoms more commonly with women or with men.

PARTICIPANT CHARACTERISTICS

The demographic characteristics of our sample were quite similar to those found in national emergency nursing workforce data.[14] In the present study, 80.6% of participants were women, and the mean age was 41.6 years. Schumaker et al[14] similarly reported a mean age of 41.6 years and a 5:1

TABLE 2
Individual participant characteristics

Variables	Total (n = 448)
Recruitment method, n (%)	
Postcard	330 (73.5)
Friend or colleague shared	111 (24.7)
ENA website	7 (1.6)
Age, mean (SD) in y	41.6 (12.3)
Years as registered nurse, median (IQR)	10.0 (16.0)
Years as emergency nurse, median (IQR)	7.0 (11.0)
Gender, n (%)	
Woman	362 (80.6)
Man	85 (18.9)
Prefer not to respond	1 (0.2)
Highest level of nursing education, n (%)	
Associate degree or diploma	71 (15.8)
Baccalaureate degree	270 (60.1)
Master's degree	99 (22.0)
Doctorate of nursing practice degree	6 (1.3)
PhD or equivalent degree	2 (0.4)
Role in the emergency department, n (%)	
Staff nurse	239 (53.2)
Charge nurse	136 (30.3)
Manager, assistant manager, or supervisor	28 (6.2)
Director	7 (1.6)
Other	35 (7.8)
Certification(s) held, n (%)	
CEN	214 (47.7)
CCRN or CCRN-K	33 (7.3)
PCCN or PCCN-K	3 (0.7)
PCEN	17 (3.8)
TCRN	60 (13.4)
TNS	65 (14.5)
Other cardiovascular-related nursing certification	33 (7.3)
None of these	146 (32.5)
Emergency department location, n (%)	
ENA Region 1 (AK, CA, HI, ID, MT, NV, OR, UT, WY, WA)	80 (18.0)
ENA Region 2 (AZ, CO, KS, LA, NE, NM, OK, TX)	56 (12.6)
ENA Region 3 (IL, IN, IA, KY, MI, MN, MO, ND, SD, WI)	190 (42.8)
ENA Region 4 (International, DE, MD, OH, PA, VA, WV, D.C.)	35 (7.9)
ENA Region 5 (CT, ME, MA, NH, NJ, NY, RI, VT)	35 (7.9)
ENA Region 6 (AL, AR, FL, GA, MS, NC, SC, TN)	35 (7.9)
Travel nurse (variable location)	13 (2.9)
Emergency department is certified chest pain center, n (%)	
Yes	248 (55.4)
No	123 (27.5)
Unsure	77 (17.2)
Number of beds in emergency department, n (%)	
10 or fewer	41 (9.2)
11-20	65 (14.5)
21-30	98 (21.9)
31-40	82 (18.3)
41-50	43 (9.6)
51 or more	115 (25.7)
Unsure	4 (0.9)

continued

TABLE 2
Continued

CEN, Certified Emergency Nurse; CCRN, Critical Care Registered Nurse; CCRN-K, Acute/Critical Care Knowledge Professional; ENA, Emergency Nurses Association; IQR, interquartile range; PCCN, Progressive Care Certified Nurse; PCCN-K, Progressive Care Knowledge Professional; PCEN, Certified Pediatric Emergency Nurse; TCRN, Trauma Certified Registered Nurse; TNS, Trauma Nurse Specialist.
Missing data are not reported in the table. Median was used for representing central tendency of non-normally distributed data, whereas mean was used for normally distributed data.

ratio of women to men in the emergency nursing workforce. Moreover, most participants were bachelor's prepared and held at least 1 nursing certification, similar to findings from Schumaker and colleagues.[14]

RECOGNITION OF ACS SYMPTOMS

The participants in our study had a high level of knowledge of common symptoms associated with ACS and easily identified distractor symptoms. ACS is a complex condition. Recognition of ACS begins with triage in the emergency department, and it is crucial that triage nurses are aware of the predictors of an ACS diagnosis to expedite diagnostic testing and treatment, and to improve outcomes. Fekonja et al[15] conducted a systematic review of symptoms that emergency nurses should know. The authors found that

TABLE 3
ACS symptom recognition by emergency nurses (n = 448)

Item	Answer choice 1	Answer choice 2	Answer choice 3	Answer choice 4	*P* value
1	Chest pressure (3, 0.7%)	Headache (419, 93.3%)*	Sweating (7, 1.6%)	Upper back pain (17, 3.8%)	<.001
2	Productive cough (432, 96.2%)*	Shoulder pain (2, 0.4%)	Lightheaded (11, 2.4%)	Nausea (3, 0.7%)	<.001
3	Indigestion (10, 2.2%)	Chest pain (3, 0.7%)	Palpitations (56, 12.5%)	Toothache (375, 83.5%)*	<.001
4	Shortness of breath (4, 0.9%)	Arm pain (10, 2.2%)	Low back pain (397, 88.4%)*	Unusual fatigue (34, 7.6%)	<.001
5	Leg cramps (436, 97.1%)*	Sweating (5, 1.1%)	Chest discomfort (4, 0.9%)	Shoulder pain (3, 0.7%)	<.001
6	Upper back pain (7, 1.6%)	Tinnitus (438, 97.6%)*	Shortness of breath (1, 0.2%)	Chest pain (1, 0.2%)	<.001
7	Unusual fatigue (5, 1.1%)	Indigestion (12, 2.7%)	Chest discomfort (2, 0.4%)	Chills (428, 95.3%)*	<.001
8	Nausea (1, 0.2%)	Chest pressure (0, 0.0%)	Earache (426, 94.9%)*	Palpitations (19, 4.2%)	<.001
9	Abdominal cramps (424, 94.4%)*	Lightheaded (11, 2.4%)	Arm pain (7, 1.6%)	Shortness of breath (3, 0.7%)	<.001

ACS, acute coronary syndrome.
Missing data are not reported in the table. For each of the items, participants were provided with 4 symptoms; 3 of the symptoms were "correct," possible ACS symptoms (based on ACS Symptom Checklist[8]). A fourth item was an "incorrect" symptom or distractor, not considered a common ACS symptom. The number and percent of participants who selected each answer choice for the items are displayed in parenthesis after each answer choice. Items and answer choices are displayed in the table in the order presented to participants.
* An incorrect symptom option.

chest pain is the most common symptom but that epigastric pain and cold sweating are also important symptoms.[15] Frisch and colleagues[16] evaluated 750 patients admitted to an academic medical center in the United States to identify key patient factors that are available to triage nurses during assessment that predict ACS. Older age, non-Caucasian race, and a faster respiratory rate were independent predictors of ACS. Symptoms were not predictive of an ACS diagnosis. Indeed, symptoms alone are insufficient predictors of ACS and demonstrate the importance of knowledge of all clinical presentation factors for triage nurses.[17]

PERCEIVED SEX DIFFERENCES IN ACS SYMPTOMS

Our findings can be considered in the context of other work on triage and ACS symptom presentation. In a literature review describing factors affecting nurses' triage decisions for patients with symptoms suggestive of ACS, Kuhn et al[18] found that older age and female sex were sometimes associated with delayed assessment and management in the emergency department. However, findings were not consistent. Arslanian-Engoren[6] found that triage nurses were knowledgeable about age and sex differences in the presentation of myocardial infarction. In a retrospective cohort analysis of 102 emergency departments in Canada, Atzema et al[19] found that approximately 50% of acute myocardial infarction patients were given low acuity scores, and factors associated with delayed ECG for these patients included: male sex, chest pain, cardiac arrest, history of coronary heart disease, arrival by ambulance, and arrival to the emergency department between midnight and 4 AM. Male sex and chest pain has been previously associated with expedited care for ACS in the emergency department.[20] In a recently published study of consecutive patients with acute undifferentiated chest pain in Victoria, Australia, investigators found that women were more likely to experience delayed ED clinician review, emergency medical services off-load, ECG, intravenous insertion, and percutaneous coronary intervention, and experience more diverse symptoms than men.[21]

Our sample was aware that women often experience a larger number of diverse symptoms (beyond chest pain), and many recognized that sex differences in symptoms are relatively minor. However, 42.6% of the sample felt that men and women have "fairly different" ACS symptoms, and 12.7% reported believing that men and women have "very different" ACS symptoms. The contemporary literature suggests that men and women experience symptoms that are more similar than different.[11] Women often experience a greater number of symptoms, but the list of potential

TABLE 4
Symptoms associated with females, with males, and with males and females by emergency nurses (n = 448)

Symptom*	Associated with women, n (%)	Associated with men, n (%)	Associated with women and men, n (%)	*P* value
Shortness of breath	18 (4.0)	26 (5.8)	403 (90.2)	<.001
Chest discomfort	9 (2.0)	55 (12.3)	382 (85.7)	<.001
Chest pressure	3 (0.7)	76 (17.0)	369 (82.2)	<.001
Chest pain	4 (0.9)	85 (19.0)	358 (80.1)	<.001
Palpitations	70 (15.7)	25 (5.6)	352 (78.7)	<.001
Lightheaded	131 (29.3)	13 (2.9)	303 (67.8)	<.001
Arm pain	67 (15.0)	104 (23.3)	276 (61.7)	<.001
Sweating	12 (2.7)	165 (36.8)	271 (60.5)	<.001
Shoulder pain	98 (21.9)	80 (17.9)	270 (60.3)	<.001
Nausea	169 (37.8)	9 (2.0)	269 (60.2)	<.001
Indigestion	142 (31.8)	57 (12.8)	248 (55.5)	<.001
Upper back pain	192 (43.0)	48 (10.8)	206 (46.2)	<.001
Unusual fatigue	240 (53.7)	17 (3.8)	190 (42.5)	<.001

Missing data are not reported in the table. For each symptom, participants were asked, in a categorical fashion, to indicate whether they most often associate that symptom with the acute coronary syndrome symptom experience of women, of both men and women, or of men.

* Symptoms are those listed on the Acute Coronary Syndrome Symptom Checklist.[8]

ACS symptoms is quite similar for men and women. Symptoms such as chest pain, shortness of breath, diaphoresis, nausea and vomiting, left arm or shoulder pain, and fatigue remain common, regardless of patient gender.[11]

Limitations

The sample included a heterogeneous group of ED triage nurses from around the country. This study fills a knowledge gap, given the limited contemporary information available on this topic. We relied on self-report survey data, which is subject to response biases. However, the survey was anonymous, so there was less chance of social desirability or obsequiousness bias. Although nurses in this study had a median 7 years of experience, 13.8% had 2 or fewer years of experience, indicating that there was representation from nurses with limited ED experience. A sizable proportion of responses (42.8%) came from ENA Region 3 (midwestern United States). This larger proportion of responses from Region 3 than other regions is likely explained because the university listed on the recruitment postcard is located in Region 3 and staff located in this area may have been more familiar with the study investigators and university. Given this familiarity, participants may also have been more likely to share this study with friends and colleagues, presenting the potential for sampling bias. Although we were able to capture ED bed size, location, and whether a hospital was a certified chest pain center, we were unable to compare data based on other hospital characteristics, such as academic versus nonacademic. Some differences in responses may exist based on these characteristics.

Implications for Emergency Nurses

A key finding of this study was that ACS symptoms for women and men are accurately viewed as more similar than different by triage nurses. Women have reported more ACS symptoms than men, and some qualitative differences may exist in how women and men describe the ACS symptoms that they experience[22,23]; however, the type of symptoms experienced by women and men is similar overall.[11,23] An important consideration for triage nurses is the clinical/practical significance of these statistical differences. For example, a meta-analysis from van Oosterhout et al[11] found that 79% of men experience chest pain with ACS compared with 74% of women. A difference of 5% is statistically significant, but is likely not clinically relevant. Chest pain is a critically important symptom for both women and men. Symptoms are a cue to action for patients but are often unrelated to pathology,

TABLE 5
Factors associated with the extent to which emergency nurses think ACS symptoms differ between women and men

Factor	Ordered log-odds (estimate)	SE	t	*P* value	OR	95% CI	
						Lower	Upper
Age	0.02	0.01	1.63	.104	1.02	1.00	1.05
Gender							
Woman	Ref						
Man	−0.09	0.28	−0.33	.744	0.91	0.53	1.57
ED experience	−0.01	0.02	−0.45	.656	0.99	0.96	1.03
Education							
Associate	Ref						
Baccalaureate	0.12	0.31	0.39	.699	1.13	0.62	2.05
Master's or higher	0.38	0.34	1.10	.271	1.46	0.75	2.84
Certification							
No	Ref						
Yes	0.01	0.23	0.03	.977	1.01	0.64	1.59
Triage training							
No	Ref						
Yes	−0.76	0.32	−2.39	.017	0.47	0.25	0.87
Location							
West	Ref						
Southwest	0.06	0.38	0.16	.87	1.06	0.50	2.24
Midwest	−0.36	0.30	−1.20	.23	0.70	0.39	1.26
International-East	−0.01	0.44	−0.01	.99	1.00	0.42	2.38
Northeast	0.41	0.47	0.86	.39	1.50	0.59	3.80
Southeast	0.15	0.44	0.33	.74	1.16	0.49	2.75
Agency nurse	0.50	0.59	0.85	.40	1.65	0.52	5.20
ED bed size							
10 or fewer	Ref						
11-20	−0.09	0.46	−0.21	.84	0.91	0.37	2.22
21-30	0.45	0.45	0.99	.32	1.56	0.68	3.76
31-40	0.35	0.47	0.74	.46	1.42	0.56	3.58
41-50	−0.03	0.53	−0.05	.96	0.97	0.35	2.73
51 or more	0.67	0.45	1.48	.14	1.96	0.81	4.78
Certified chest pain center							
No	Ref						
Yes	−0.06	0.26	−0.25	.81	0.94	0.56	1.56

ACS, acute coronary syndrome; OR, odds ratio; Ref, reference; SE, standard error.

and patients ruled out for ACS experience symptoms similar to those who rule in.[24] A complete diagnostic workup is required to rule in or rule out ACS. Symptoms such as chest pain (including pressure, tightness, heaviness), shortness of breath, diaphoresis, arm/shoulder discomfort, fatigue, nausea and vomiting, jaw pain, pain between the shoulder blades, dizziness, and syncope could all represent ACS, especially when more than 1 of these symptoms is experienced at the same time.[11] Symptoms, history, and risk factor stratification will assist emergency nurses in identifying patients who require a diagnostic evaluation for ACS.

Conclusions

Emergency nurses were able to recognize common ACS symptoms, but some reported that the symptom experience of men and women is more divergent than what has been reported in the literature. Accurate recognition of ACS symptoms is an important first step in the triage process but is insufficient given that the symptoms experienced by patients who are evaluated for ACS and go on to be ruled out are similar. In their triage and assessment role, emergency nurses are in a position to recognize patients with potential ACS and to implement appropriate, timely interventions. Future research could focus on interventions to optimize nurse knowledge of ACS symptoms (especially regarding differences between women and men) and application of that knowledge to clinical scenarios and clinical practice.

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Author Disclosures

Conflicts of interest: none to report.

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The Impact of Cold Spray and Ice Application During Intravenous Access on Pain and Fear in Children Aged 7-15 Years in the Pediatric Emergency Unit: A Randomized Controlled Trial

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Contribution to Emergency Nursing Practice

- Peripheral intravenous catheters are frequently used in the pediatric emergency unit and cause fear and pain in children. Reducing pain and fear in these units improves patient compliance and comfort.
- The use of peripheral pain management techniques such as spray and cold application in emergency units is beneficial in terms of being practical, cost-effective, noninvasive, side effect free, and especially low cost.
- Cold spray application during peripheral intravenous catheterization is a method that reduces pain and fear in children.

Abstract

Introduction: Many strategies have been developed to prevent procedural pain in pediatric emergency units, where nurses play a vital role in ensuring patient comfort. Easy-to-use and inexpensive nonpharmacologic analgesic methods are important in emergency units. This study was conducted to determine the effect of cold spray and ice applied during venipuncture on the level of fear and pain in children aged 7 to 15 years.

Methods: This was a randomized controlled experimental study of 96 children between the ages of 7 and 15 years (cold spray group, ice group, and control group) who were scheduled to have venous access in the pediatric emergency clinic and met the sampling criteria.

Results: Evaluations of the children, parents, and observers in the groups found a statistically significant difference between the pain and fear scores after the intervention compared with the preintervention ($P < .001$). The pain and fear scores of the children in the control group were higher than the scores of those in the spray and ice groups ($P < .001$); the pain and fear scores of the children in the spray group were lower than the scores of the children in the ice group and statistically significant ($P < .001$).

Discussion: In conclusion, cold spray applied during intravenous access in children aged 7 to 15 effectively reduces pain and fear and should be used in the emergency unit.

Key words: Cold spray; Pain; Fear; Ice; Child; Intravenous

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Introduction

Children remember many painful experiences from infancy. Therefore, reducing pain during uncomfortable procedures will lower their anxiety about such procedures later in life.[1] One study reported that 30% of individuals developed "needle phobia" due to insufficient practices to reduce pain during intravenous (IV) insertation.[2]

Emergency departments are units where many painful procedures, such as IV insertion, vaccine administration, and injections, are performed. These interventions performed by nurses often cause pain in children and lead to fear and anxiety.[3,4]

The procedure of venipuncture is the most common painful intervention in emergency units. However, pain reduction methods are not sufficiently used in this very common practice.[5,6] Previous studies reported that when pain was reduced during the procedure, patient compliance increased and the workload of the nurses decreased.[7] The American Academy of Pediatrics recommends minimizing pain and stress during invasive procedures such as venipuncture. The use of easily applicable, reliable, and side effect–free nonpharmacologic pain reduction methods in interventional painful procedures such as venipuncture is effective.[5,8]

Nonpharmacologic methods for treating pain in children are classified as supportive, cognitive-behavioral, and physical.[9] Studies have shown that physical methods such as skin stimulation, hot and cold application, touch, massage, and cold spray are rapid and effective in pain intervention.[10-14] Ice application has been used for centuries to reduce pain. It plays an important role in decreasing pain sensation by reducing peripheral nerve conduction. Ice, frequently preferred because it is cheap and easily accessible, has a wide range of uses.[15] It was widely used in the past to reduce subcutaneous and intramuscular pain.[15] Numerous studies using the Buzzy device have found it highly effective in blood collection, intramuscular injections, and venipuncture.[12,16-18]

In addition to ice application, cold spray can be used for IV access. Cold spray is preferred over other methods because it is easy to access, is cheap, and gives fast results.[10,11] A study conducted by Farion et al[19] to investigate the effect of cold spray on the pain level of children reported that cold spray reduced pain in IV interventions. A study conducted by Akdemir (2019) in adult patients similarly found cold spray highly effective during blood collection.[10] Studies on the use of cold spray and ice application, especially in children, are limited.[19,20]

In light of this information, reducing pain and fear during painful procedures performed on anxious children admitted to the pediatric emergency unit contributes to increased comfort of the child and family and improves the quality of nursing care. This study aimed to determine the effect of cold spray and ice applied during venipuncture procedures on pain and fear in children aged 7 to 15 years admitted to the pediatric emergency unit.

Methods

SETTING

This randomized controlled experimental study (clinical trial number: NCT06109298) was conducted in the Pediatric Emergency Clinic of Istanbul Gaziosmanpaşa Training and Research Hospital between November 2021 and April 2022. The pediatric emergency clinic consists of 10 beds. Patients with complaints such as fever, vomiting, diarrhea, and seizures comprise most of those admitted to the clinic. In the pediatric emergency clinic, IV interventions were performed in the injection room.

SAMPLE

The study's population comprised children aged 7 to 15 years treated in the Pediatric Emergency Department of Gaziosmanpaşa Training and Research Hospital. The sample consisted of children undergoing IV access in line with the inclusion criteria. According to the power analysis for the sample size in line with the literature,[11,19] the power of the sample was calculated with the G*Power 3.1 program. G-Power is a statistical program that measures whether the sample size is sufficient according to the analysis technique applied. With a type I error of 0.05 and a test power of 0.80 ($\alpha = 0.05$, $1\text{-}\beta = 0.80$), the minimum sample size was calculated as 90 children (30 children in each group). The study was completed with 96 children, including 32 children in the study and control groups, taking into account the losses that might occur from the sample for any reason during the study period.

ALLOCATION

In the study, 96 children in the sample were randomly assigned to the control (n = 32), ice (n = 32), and spray groups (n = 32). Random assignment was ensured by using a computer program to determine the group of children (https://www.randomlists.com/team-generator).

INCLUSION CRITERIA

Children included in the study were 7 to 15 years old and could speak Turkish, volunteered to participate, and had no chronic diseases, mental or neurological disabilities, neurodevelopmental impairments, or life-threatening conditions (sepsis, shock, respiratory/cardiogenic arrest, etc).

EXCLUSION CRITERIA

Children who had taken any analgesic medication before presentation to the emergency department or had undergone multiple attempts for vascular access were excluded.

DATA COLLECTION TOOLS

Data were collected using the data collection form, Children's Fear Scale, and visual analog scale (VAS).

Data Collection Form

The data collection form was prepared by reviewing the literature[10,11] on the subject. It consisted of a total of 15 questions, including questions about the child's and family's descriptive characteristics (such as age and gender), the reason for going to the emergency room, and complaints, such as previous emergency room visits.

Children's Fear Scale

The Children's Fear Scale is used to assess the anxiety levels of children with 5 face shapes scored between 0 and 4: 0 = no anxiety and 4 = severe anxiety. The scale can be evaluated by both the child and the researcher before, during, and after the intervention.[21] The content validity index value for the Children's Fear Scale was found to be 0.89. Test-retest reliability was found to be quite high.

VAS

The VAS is the most frequently used scale in pain studies. In children older than 7 years, it is frequently used because it is common and easy. The VAS is a pain scale with numbers from 1 to 10, equally spaced on a 10 cm horizontal ruler. Children being assessed are asked to choose a pain value between 1 and 10 on this ruler.[22] Regarding the indices of relative reliability, the test-retest reliability is 0.79 and is reported to be at a good level.

DATA COLLECTION

Before starting the study, the families of the children were informed of the purpose, plan, duration, and how the data would be used. A written consent was obtained in light of the principle of willingness and voluntariness through the Voluntary Information and Consent Form. Pediatric patients included in the study were divided into 3 groups: cold spray, ice, and control. Environmental conditions were organized the same way in all 3 groups, and at least 1 parent was ensured to stay with each child. The study was conducted with a nurse performing IV intervention and a nurse researcher.

IV CATHETER PLACEMENT

IV placement was performed using 24-gauge catheters appropriate in size for the age of the children and took an average of 3 minutes. The observer nurse evaluated the children in all groups before and after the procedure by filling out the data collection form and measuring the child's pain and fear assessment scales. The pain and fear scales were also evaluated by the child and parent. In all groups, IV insertion was performed by the same nurse following the procedure steps.

- First study group: Before performing IV intervention, cold spray was applied for 5 seconds at a distance of 15 cm to an area of approximately 5 cm^2 at the site of the procedure. After tourniquet fixation and subsequent skin disinfection for 60 seconds, the nurse researcher performed IV administration.
- Second study group: Before the IV intervention, refrigerated gel ice was applied for 5 minutes at 2 cm above the area to be treated. After that, the nurse removed the gel ice from the procedure area, a tourniquet was applied, and skin disinfection was performed for 60 seconds. The nurse researcher performed IV administration.
- Control group: No pharmacologic or nonpharmacologic application was performed. The researcher performed IV access after skin disinfection by the nurse.

Cold Spray

Cold spray causes a sudden decrease in skin surface temperature by rapidly evaporating from the skin surface where it is applied. The spray usually provides rapid cooling of the nerve endings in the area where it is sprayed. This method is used to numb the skin before or during IV intervention. This sudden drop in temperature reduces the sensation of pain by desensitizing pain receptors or inhibiting pain transmission activation of ion channels.[23]

Gel Ice

Ice gels are bags filled with silica gel and designed in different sizes and shapes that adapt to the area to be applied. They can be cooled down to 0. They cannot quickly lower the body temperature in the area where they are applied. They are easy to use. They should be kept in the freezer for at least 2 hours before use.[24]

ETHICAL CONSIDERATION

A written permission was obtained from the ethics committee of Gaziosmanpaşa Training and Research Hospital to collect the data before the study (no: 347; date, October 20, 2021).

The rules of the Declaration of Helsinki were followed throughout the study. A verbal and written informed consent was obtained from the patients and families of pediatric patients who agreed to participate in the study. After patients entered the pediatric emergency clinic, in accordance with the sample selection criteria, the purpose of the research was explained to the parents. It was also explained to them that their personal information would remain confidential and that their privacy would be respected.

STATISTICAL ANALYSIS

Statistical analyses were performed using R vers. 2.15.3 program (R Core Team, 2013). Minimum, maximum, mean, standard deviation, median, first quartile, third quartile, frequency, and percentage were used to report the study data. The Shapiro-Wilk test and graphical analysis were used to evaluate the compliance of quantitative data with normal distribution. A dependent groups *t* test was used to compare the values before and after the intervention. An independent groups *t* test was used to evaluate normally distributed variables between 2 groups. One-way analysis of variance was used in the evaluations of variables with normal distribution between more than 2 groups. The Mann-Whitney U test evaluated variables that did not show normal distribution between the 2 groups. The Kruskal-Wallis test was used in the evaluations of variables that did not show normal distribution between more than 2 groups. Pearson correlation analysis was used to determine the relationship between quantitative variables. The Pearson chi-square test, Fisher-Freeman-Halton exact test, and Fisher exact test were used to compare qualitative variables. Statistical significance was accepted as $P < .05$.

Results

SAMPLE CHARACTERISTICS

The demographic characteristics and experiences of the children and the comparison between the groups are presented in Table 1. No statistically significant difference was found between the groups in terms of demographic characteristics ($P > .05$) (Table 1).

COMPARISON OF PAIN LEVEL BETWEEN GROUPS

In the pain assessment made by the children, it was found that the preintervention pain scores in the control group were lower than the scores in the spray and ice groups ($P = .031$, $P = .031$, respectively). Parent and observer scores were homogeneous in terms of preintervention pain scores between the groups ($P > .05$) (Table 2).

After the intervention, the level of pain experienced by the children according to the groups and the level of pain estimated by the parent and the observer were evaluated. According to the evaluations made by children, parents, and observers, there was a statistically significant difference between the groups in terms of postintervention pain scores ($P < .001$). The spray group had the lowest pain level among all groups according to self-report (SD = 2.63), parent report (SD = 3.5), and observer report (SD = 2.84) (Table 2).

There was a statistically significant difference between the groups in postintervention pain scores compared with preintervention ($P < .001$). The evaluations made to determine the difference found that the change observed in the control group subjects was different from the spray and ice groups (child and observer, $P < .001$, $P < .001$; parent, $P < .001$, $P = .003$, respectively). The change observed in the spray group was different from that observed in the ice group ($P < .001$) (Table 2).

COMPARISON OF FEAR LEVEL BETWEEN GROUPS

According to the evaluations of the children's parents and the observer, there was a statistically significant difference between the groups in terms of preintervention fear scores ($P < .001$). The evaluations found that the fear scores of the control group subjects were lower than the scores of the spray and ice group subjects (children, $P < .001$, $P = .001$; parents, $P < .001$, $P = .015$; and observer, $P < .001$, $P < .001$) (Table 3).

According to the evaluations of the children's parents and the observer, there was a statistically significant difference between the groups in terms of postintervention fear scores ($P < .001$). The fear scores of the control group subjects were higher than those of the spray and ice group subjects ($P < .001$, $P = .023$ in children, $P < .001$, $P = .023$ in parents, $P < .001$, $P = .007$ in observers, $P < .001$, $P < .001$), and the fear scores of the spray group subjects were lower than those of the ice group subjects ($P < .001$) (Table 3).

A statistically significant difference was found in postintervention fear scores between the groups compared with preintervention in terms of all evaluators ($P < .001$). The evaluations determined that the changes observed in the control group subjects were different from the spray and ice group subjects ($P < .001$, $P < .001$). The change observed in the spray group differed from the change observed in the ice group ($P < .001$) (Table 3).

TABLE 1
Demographic characteristics and experiences of the children and the comparison between the groups

Characteristics	Control	Cold spray	Ice	Test (F)*	*P* value
	Mean ± SD	Mean ± SD	Mean ± SD		
Children's age	11.22 ± 2.74	10.72 ± 2.8	10.06 ± 2.99	1.328	.270
Number of previous vascular accesses	8.5 ± 2.58	9.38 ± 3.06	9.97 ± 3.34	1.933	.150
	n (%)	n (%)	n (%)	Test	*P* value
Children's gender				3.263†	.196
Girls	18 (56.3)	16 (50)	11 (34.4)		
Boys	14 (43.8)	16 (50)	21 (65.6)		
Diagnosis					
Fever	3 (12.5)	3 (12.5)	4 (16.6)	6.133†	.086
Respiratory disease	13 (40.6)	15 (46.9)	12 (37.5)	0.341†	.843
Gastrointestinal disease	11 (34.4)	11 (34.4)	10 (31.3)	0.267†	.875
Neurologic disease	3 (9.3)	1 (3.1)	2 (6.3)	1.958‡	.494
Others§	2 (6.3)	2 (6.3)	3 (15.6)	1.952‡	.500
Previous emergency application				4.453‡	.120
Yes	28 (87.5)	32 (100)	31 (96.9)		
No	4 (12.5)	0 (0)	1 (3.1)		
Child's reaction to IV access				1.463†	.481
Calm	5 (15.6)	9 (28.1)	7 (21.9)		
Agitated/anxious	27 (84.4)	23 (71.9)	25 (78.1)		

IV = intravenous.
* One-way analysis of variance.
† Pearson chi-square test.
‡ Fisher-Freeman-Halton exact test.
§ Infectious, endocrine, genetic diseases.

Discussion

Pain sensation during routine medical procedures such as blood sampling, IV intervention, and vaccination can cause fear, anxiety, and stress in children.[1]

This study found that the pain scores of the children in the spray group were lower than the other group after the intervention ($P < .001$). The literature reports that cold spray has positive effects on pain in hospital interventional procedures.[10,19,25,26] Similar to our study result, Ghasemi et al[27] found that cold spray had a significant effect on pain relief compared with music during venous access in children aged 6 to 12 years. Dalvandi et al[26] compared cold spray and EMLA cream (lidocaine and prilocaine combination cream) in reducing pain during venous access in children of the same age group. They found that the pain and anxiety levels of the group using cold spray were lower than the control group.[26,27]

Farion et al[19] reported that cold spray reduced pain and anxiety in children aged 6 to 12 years who underwent IV intervention in the emergency department. In another study, Davies and Molloy[28] compared the effect of cold spray and topical local anesthetic cream on pain levels during IV access in children aged 5 to 13 years and found that cold spray decreased the pain score.

Fear is a complex set of emotions in which the body reacts abnormally to an external threat, producing symptoms such as muscle contraction and increased heart rate and respiration.[29,30] Fear is also an important factor in the feeling of pain. An increase in the level of fear may lead to an increase in the likelihood of children feeling pain. Some studies have reported that blood collection and IV medical procedures are the biggest sources of fear in children.[10-32]

Nonpharmacologic methods are used to reduce the pain and fear caused by these medical interventions in children. In particular, cold spray is advantageous compared with pharmacologic methods because it is low cost and fast acting.[10] This study determined that the fear score of the cold spray group was lower than that of the ice and control groups ($P < .001$). The study by Akdemir,[10] in which cold spray, Buzzy, and EMLA cream were used in venous

TABLE 2
Comparison of pain level between groups

Pain	Before IV insertion Mean ± SD	After IV insertion Mean ± SD	Difference (BI-AI) Mean ± SD	Test (t)*	*P* value
Children					
Control	5.97 ± 1.77	7.59 ± 1.1	1.63 ± 1.68	−5.471	< .001†
Cold spray	7.19 ± 2.74	2.63 ± 1.43	−4.56 ± 1.95	13.236	< .001†
Cold	7.19 ± 2.04	6.75 ± 2.29	−0.44 ± 2.12	1.165	.253
Test (F)‡	3.212	79.927	85.559		
P value	.045†	< .001†	< .001†		
Parents					
Control	5.69 ± 1.65	6.78 ± 1.16	1.09 ± 1.59	−3.883	.001†
Cold spray	7 ± 2.53	3.5 ± 1.7	−3.5 ± 1.81	10.915	< .001†
Cold	6.16 ± 2.19	5.97 ± 2.19	−0.19 ± 1.53	0.692	.494
Test (F)‡	3.054	30.990	65.946		
P value	.052	< .001†	< .001†		
Observer					
Control	5.97 ± 1.77	7.63 ± 1.36	1.66 ± 1.75	−5.346	< .001†
Cold spray	6.88 ± 2.81	2.84 ± 1.51	−4.03 ± 1.67	13.615	< .001†
Cold	6.81 ± 2.01	6.66 ± 2.42	−0.16 ± 1.37	0.645	.524
Test (F)‡	1.631	61.545	104.497		
P value	.201	< .001†	< .001†		

BI-AI = before intervention-after intervention; IV = intravenous.
* Dependent groups *t* test.
† $P < .05$.
‡ One-way analysis of variance.

blood sampling procedure in children aged 7 to 12 years, reported that cold spray and EMLA cream were more effective at reducing fear and anxiety than the Buzzy method. A study by Semerci et al[1] of children aged 5 to 12 years admitted to the pediatric emergency department reported that cold spray decreased fear and anxiety during IV intervention. A similar study by Şermet[11] reported that ice application during drug infusion in children aged 6 to 18 years reduced the fear of pain that may occur. As a result, it facilitated the treatment process between the nurse and the child and had positive effects on patient satisfaction.[11]

Our study results determined that the use of cold spray has a positive effect on the levels of pain and fear.

Limitations

Our research had several limitations. The study was conducted only with patients in the pediatric emergency unit of a hospital who met the sample selection criteria and accepted the study. Therefore, the results of the study are limited to the cases within this scope. The single-blind method was used in the study. The fact that the practicing nurse knew the groups increases the risk of bias. Due to the small number of studies comparing cold spray and ice application, the discussion was written with a limited number of sources.

Implications for Emergency Nurses

Nurses have an ethical responsibility to reduce pain and fear experienced during peripheral catheterization in pediatric emergency units. The use of peripheral techniques such as spray and cold application in emergency units is beneficial in terms of being practical, cost-effective, noninvasive, side effect free, and especially low cost.

Cold spray application during peripheral catheterization is a method that reduces pain and fear in children. For this reason, nurses can use cold spray during peripheral catheterization, especially in emergency units where

TABLE 3
Comparison of fear level between groups

Fear	Before IV insertion Mean ± SD	After IV insertion Mean ± SD	Difference (BI-AI) Mean ± SD	Test (t)*	*P* value
Children					
Control	2.91 ± 1.06	3.81 ± 0.69	0.91 ± 1	−5.150	< .001†
Cold spray	4.09 ± 0.86	1.78 ± 0.55	−2.31 ± 0.74	17.730	< .001†
Cold	3.72 ± 0.85	3.31 ± 1.2	−0.41 ± 1.27	1.815	.079
Test (F)‡	13.724	48.158	80.108		
P value	< .001†	< .001†	< .001†		
Parents					
Control	2.66 ± 1.15	3.69 ± 1.09	1.03 ± 1.6	−3.655	.001†
Cold spray	4.06 ± 0.95	2 ± 0.67	−2.06 ± 0.98	11.885	< .001†
Cold	3.28 ± 0.92	3.03 ± 1.03	−0.25 ± 1.19	1.187	.244
Test (F)‡	15.459	25.685	47.048		
P value	< .001†	< .001†	< .001†		
Observer					
Control	2.97 ± 1.06	3.88 ± 0.87	0.91 ± 1.38	−3.725	.001†
Cold spray	4 ± 0.92	1.72 ± 0.68	−2.28 ± 0.89	14.525	< .001†
Cold	3.94 ± 1.16	3.56 ± 1.22	−0.38 ± 1.29	1.646	.110
Test (F)‡	9.674	48.193	56.843		
P value	< .001†	< .001†	< .001†		

BI-AI = before intervention-after intervention; IV = intravenous.
* Dependent groups *t* test.
† $P < .05$.
‡ One-way analysis of variance.

interventions must be performed quickly, given that cold spray is fast acting and gives effective results.

To implement this method, pediatric nurses should be encouraged to include cold spray applications in their nursing care plans for invasive interventions such as peripheral catheters. In-service training should be provided regarding nonpharmacologic methods for the management of pain caused by invasive interventions. Cold spray application should be made widespread to reduce pain during peripheral catheter insertion and ensure the comfort of the child and parents. Research on different nonpharmacologic methods to reduce pain during peripheral catheter insertion should be increased.

Conclusion

Peripheral catheters are frequently used in the pediatric emergency unit and cause fear and pain in children. Reducing pain and fear in these units improves patient compliance and comfort. In this study, we compared the effect of cold spray and ice applied during venipuncture procedures on pain and fear in children aged 7 to 15 years admitted to the pediatric emergency unit.

This study determined that, of the 2 methods, cold spray was more effective at reducing pain and fear than ice application. To reduce pain and fear during IV insertion, using a fast-acting, easy-to-use, and low-cost cold spray application is recommended before the procedure. In addition, further studies should be conducted to investigate the effect of cold spray on different ages and larger sample groups.

Data, Code, and Research Materials Availability

This research was conducted as a master degree thesis at the Istanbul Okan University Institute of Health Sciences, Nursing Department.

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Author Disclosures

Conflicts of interest: none to report.

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"I Don't Really Wanna Go Back. I Know What I've Got in Front of Me." Lived Experiences of Emergency Nurses 2 Years Into the Global COVID-19 Pandemic

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Contribution to Emergency Nursing Practice

- The current literature on emergency nursing during the coronavirus disease 2019 (COVID-19) pandemic indicates that nurses are experiencing ongoing negative impacts to their overall well-being, with increasing levels of burnout, emotional and physical exhaustion, and the effects of "living with loss."
- This article contributes knowledge to the Australian emergency nursing experience 2 years into the COVID-19 pandemic and after global vaccine development.
- Key implications for emergency nursing practice found in this article include highlighting the negative compounding effect of the COVID-19 pandemic on the emergency nursing workforce, which may be attributed to staff attrition and ultimately poorer outcomes for patients accessing acute care services.

Abstract

Introduction: As the coronavirus disease 2019 pandemic continued into 2021 and beyond, unrelenting work pressures continued to mount on the emergency nursing workforce. In the second year of this longitudinal study on emergency nurse lived experiences, staff outlined the continued strain of the profession, highlighting their increasing levels of burnout and identifying early stages of trauma response.

Methods: This research aimed to continue to explore lived experiences of Australian emergency nurses working on the frontline 2 years into the coronavirus disease 2019 pandemic. A qualitative research design was used, guided by an interpretive hermeneutic phenomenological approach. A total of 9 Victorian emergency nurses from both regional and metropolitan hospitals were interviewed between October and November 2021. Analysis was undertaken using a thematic analysis method.

Results: A total of 3 major themes and 12 subthemes were extracted from the data. The 3 overarching themes included "On the floor each day," "Can I keep going?" and "What's around the corner?" Increasing levels of emotional exhaustion and burnout were evident, with emergency nurses stating their intentions to leave the profession.

Discussion: Deep engagement with participant emergency nurses across 2 years of the coronavirus disease 2019 pandemic has revealed a need for greater emphasis on staff well-being for

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future maintenance of a resilient and healthy workforce. Without this, lack of support for subsequent nursing cohorts may affect the quality and reliability of care being provided in acute care centers.

Key words: Emergency department; Coronavirus disease 2019; Pandemic; Vaccine; Lived experience; Qualitative; Nursing; Australia

Introduction

After emergence in 2020, coronavirus disease 2019 (COVID-19) continued to cause widespread devastation in subsequent years, with mass loss of life, increased morbidity within global populations, and continued strain on health care workers.[1-3] By December 2021, the World Health Organization had recorded more than 290 million cases and more than 5 million deaths globally within the general population and increasing deaths among health care workers.[4]

Some renewed hope for managing the virus was realized in 2021, with the race to develop a global vaccination now well advanced. In early 2021, the COVID-19 vaccination begun its rollout in countries including the United Kingdom, United States, and Australia.[5,6] In the Australian COVID-19 landscape, the second year of the pandemic saw 18 separate lockdown events across all states and territories, with Victorians spending 262 days in lockdown since the pandemic began.[7,8] The impact of extended lockdowns was felt within communities, with Australians experiencing lower levels of overall well-being and life satisfaction and higher levels of psychological distress with feelings of loneliness and isolation.[9] Increasing COVID-19 caseloads and a steady growing demand on health care services led to the mental, physical, and emotional health impacts of the pandemic becoming more apparent in the health care worker population.[10] Despite the development of health care worker well-being initiatives by the Victorian State Government, levels of burnout among health care staff were becoming a chronic concern.[10,11] These concerns were not only becoming evident within Australia, but global increases in psychological distress were becoming apparent in nursing populations. Nurses were dealing with ongoing physical and psychological changes as a result of the pandemic.[12] They were "living with loss," loss of physical health, relationships, and routine, and needed more psychological support than what was being offered.[13]

Within Australia, there remains limited literature on the longitudinal impacts of the COVID-19 pandemic on health care workers, specifically those in ED environments. Furthermore, there is limited global literature on what impact each subsequent year of the pandemic had on the overall well-being of emergency nurses and how the compounding nature of COVID-19 may have contributed to increased attrition rates in the nursing workforce. Findings from stage 1 of this study demonstrated the experiences emergency nurses had during the first year of the pandemic. Lived experiences described by the emergency nurses at this time included managing the changes to clinical practice, impacts of the media, dealing with personal protective equipment (PPE) challenges, managing personal and professional ethical challenges with lack of COVID-19 treatments, and the fear of being infected with the virus.[14]

This longitudinal study aimed to explore the lived experience of emergency nurses throughout the COVID-19 pandemic, with this paper focused primarily on the second year of the pandemic within Australia.

Methods

AIM

This research aimed to continue to explore lived experiences of Australian emergency nurses working on the frontline 2 years into the COVID-19 pandemic.

Research questions that were addressed included:

1. What were the lived experiences (eg, feelings, attitudes, and perceptions) of 10 Victorian nurses working in the emergency department during the second year of the COVID-19 pandemic?
2. What perceived impact does working in the emergency department during a global pandemic have on nurses?

DESIGN

The study used a qualitative research design, informed by an interpretive hermeneutic phenomenological approach.[15] By incorporating an emergent design in this study, it allowed for study evolution during an unprecedented global pandemic.[16] This paper will explore the second of 3 stages of data collection, which was undertaken in 2020, 2021, and 2022. Findings from 2020 have previously been reported.[14] The second stage of this longitudinal study was to capture how the lived experiences of 9 emergency nurses

TABLE
Participant characteristics

Participant characteristics	n or mean
Sex	
Male	2
Female	7
Age (y)	40.3
Country of birth	
Australia	7
Kenya	1
New Zealand	1
Education level	
Undergraduate degree	3
Postgraduate qualification	2
Master's degree	2
Doctoral degree	2
Working history (y)	18.8
Employment region (Victoria)	
Metropolitan	6
Regional	3
Employment status	
Casual or temporary	1
Part-time	6
Full-time	2
Marital status	
Single	3
Married	6
Children or caring responsibilities	
Yes	6
No	3

evolved over the COVID-19 pandemic, highlighting the key moments that affected their feelings, attitudes, and perceptions toward work in the emergency department at this time in history.

POPULATION

The study population comprised 9 Australian emergency nurses residing in Victoria, 3 from regional hospitals and 6 from metropolitan hospitals (Table). All participants were the original sample of registered nurses recruited in phase 1 of this research project in 2020, as outlined by Jackson et al.[14] One participant from the original sample of 10 chose not to participate in the second phase of interviews due to time constraints. Participants ranged from 23 to 58 years of age and varied from graduate to nurse unit manager, having 2 to 38 years of clinical experience. Participants completed a consent form and were provided with a plain language information statement before their scheduled interview, where verbal consent was also attained. The relevant university human research ethics committees granted ethical approval for this project.

DATA COLLECTION PROCEDURE

The original sample of 10 emergency nurses were contacted by email by the lead author to inquire whether they would like to participate in a further interview regarding their COVID-19 experience. Of the 9 participants who agreed to participate for a second interview, additional signed consent was obtained. Data collection was undertaken using a semistructured interview approach, allowing robust discussion of thoughts, feelings, and attitudes from participants. Participants were asked open-ended questions similar to the first phase of data collection in 2020, with the addition of a reflective element. Participants reflected on the key discussion points raised in 2020 to gain an understanding of the changes that occurred or identify similarities in their experiences 1 year on. Data were collected in line with COVID-19 restrictions, with all interviews conducted via Microsoft Teams (Microsoft Corp., Redmond, WA) and Zoom Video Communications, Inc. (San Jose, CA). Data collection was undertaken in October to November 2021, with interviews ranging from 48 to 100 minutes in duration. Data saturation was reached by the 8th interview, with 1 additional interview conducted to confirm this theory. Saturation was achieved when no new themes were recognized within interview sessions, and it was determined that there were sufficient data for the study to be replicated.[17]

Interviews began with an open-ended question in the hope of generating a genuine dialogue. Questions asked of participants included:

- Tell me about some of the COVID-19 experiences and observations you made at work during the last 12 months.
- How does your clinical environment look and function 12 months since we last spoke? What are your feelings and attitudes toward this clinical environment?
- What are your feelings toward coming to work now during the pandemic?
- When I interviewed you 12 months ago, there were a number of key points that you made regarding your

2020 COVID-19 experience; can you describe how you feel about these now?
- What do you think the next 12 months will look like for you?

DATA ANALYSIS

Data were transcribed verbatim and underwent thematic analysis using the Braun and Clarke[18] 6-step approach to thematic analysis. Data analysis was undertaken by all members of the research team to avoid bias and promote unanimous decision-making on research themes. First, researchers distributed the transcripts randomly among the team and then drew out codes individually. Second, the researchers combined initial codes, refining and generating initial themes. Finally, robust discussion on inclusion and exclusion of codes and the formation of major and minor themes was undertaken to ensure participant experiences were represented appropriately.

RIGOR

To highlight the reliability, validity, and rigor of data achieved in this qualitative study, trustworthiness has been addressed with the exploration of credibility, dependability, confirmability, transferability, and authenticity of the project and the chosen methods.[16,19-21] To achieve credibility, a peer debriefing method was used within the research team during data collection. Furthermore, given that this was the second phase of data collection with the same sample of emergency nurses, prolonged engagement achieved deeper understanding of individual nuances of participants from first interviews. Dependability and confirmability were achieved in the rigorous process logs, such as researcher COVID-19 journals, notes from participant interviews, and documentation of engagement with participants shared in meetings among the research team. These shared logs were designed to confirm outcomes, with methods experts ensuring all processes were in line with research frameworks. Although specific findings may not be generalizable to other populations within qualitative research, ensuring robust documentation of data collected, with rigorous research process logs, transferability was achieved. Finally, authenticity of the project was demonstrated in appropriately representing participants' experiences through quote excerpts. By ensuring a broad sample of emergency nurses from varied ethnicities, ages, and experiences, an appropriate representation of the population was achieved.

Results

Data analysis resulted in a total of 3 major themes and 12 minor themes being extracted from the data. These themes embody the experiences of the 9 emergency nurses 2 years into the COVID-19 pandemic and after the development of COVID-19 treatments and vaccines. The 3 overarching themes included the following: On the floor each day, Can I keep going? and What's around the corner? (Figure).

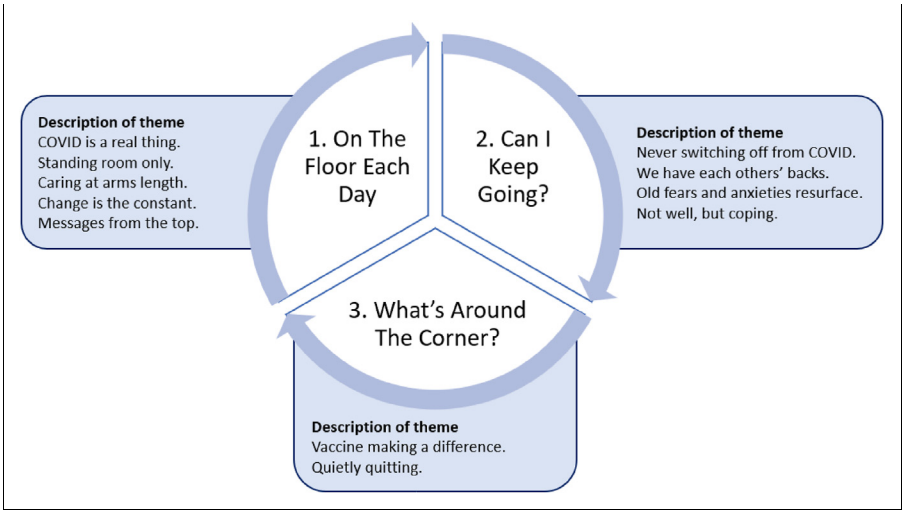

FIGURE
Major theme model. COVID, coronavirus disease.

ON THE FLOOR EACH DAY

In the first major theme, the emergency nurses discussed what it was like to work clinically now 2 years into the COVID-19 pandemic. Here they described the difficulties in treating patients who did not believe COVID-19 was real. The emergency nurses described how their departments now looked and discussed the moral challenges in witnessing substandard care and the inability to provide personal touches to their care with the ongoing use of PPE. The emergency nurses reflected on the changes that were now constant within their departments, and how they were now learning to live with the virus. They identified a lack of transparency from executive departments, with failing communication exacerbating concerns within nursing daily practice.

COVID Is a Real Thing

The emergency nurses described the daily issues they faced surrounding patients who refused to believe COVID-19 was real, despite testing positive and presenting to the emergency department for medical assistance. The emergency nurses "had people [who] refused to get swabbed" (P5), "saying they're unvaccinated and they want to be treated" (P9):

> I feel the frustration because 9 times out of 10 they [the patients] haven't been vaccinated. They haven't been following the lockdown orders, and so it really makes me quite angry and like they've put themselves in this situation. (P5)

The emergency nurses described feeling "annoyed" (P6) with the behavior of these patients who were noncompliant with lockdown orders, because this behavior "affects how I have to work" (P6).

Staff highlighted that "low health literacy and low level of understanding and ability to critically analyze the information" (P6) may have contributed to this behavior:

> We had a woman who came in, she tested positive to COVID, and she just said no, I don't have COVID, COVID's not a real thing. Then she refused to leave the hospital because we haven't treated her pain. And it's like, you've got pain because you've got COVID, and she's like no, it's not a real thing. (P9)

Can't Come in Here, Standing Room Only

The emergency nurses described the increase in presentations they were managing on a daily basis, with the growth of COVID-19 cases in addition to their general acute presentations. They outlined that "wait times for these patients are blown out exponentially and I feel that then the care is substandard" (P8). The emergency nurses described how "you can't keep an eye on what's happening… I can see how the waiting rooms are becoming diabolical" (P9). One emergency nurse described how the waiting room had a makeshift "buddy system" to help with the backlog of COVID-19 patients:

> If anyone's deteriorating, it was whoever the patient's sitting next to is your buddy. One patient would be looking after another patient and alerting each other. There was no way that we can oversee everyone. (P5)

The emergency nurses described how there was "not enough staff to cover the number of patients coming in" (P9); "we all felt very unsafe working out in triage. Quite often it was a ratio of 1:60 and a line 10 to 15 people deep" (P5). Despite these conditions, the emergency nurses were "still very privileged and honored to be there for them [the patients] during one of the scariest times in their life" (P4). With ongoing restrictions preventing family members attending their loved ones in hospital to reduce transmission of the virus, "the [patients] are on their own, so we have people who are very, very sick, very vulnerable without any loved ones beside them. And that is very difficult to see" (P8).

Caring at Arm's Length

The emergency nurses described what it was like having their patients and colleagues unable to see their faces for the last 2 years due to PPE. For patients who were "scared and vulnerable" (P8), the emergency nurses described how "very difficult" (P8) it was that they could not provide more personal care in times of need; "they've got a stranger who is in full PPE as their only support person" (P8):

> The patient hasn't seen my face in 18 months, we've always been behind a mask. Trying to communicate with your patients and sit there, I miss sitting there and holding their hand… You just don't get that rapport, and contact with your patients has changed so much. I do feel like another robot, another PPE face walking into a patient's room. (P4)

Losing this personal touch was "difficult" (P4), how "you don't get to enjoy each other's smile and voice and personality" (P4). This loss was something "I miss a lot in nursing" (P4):

> Communicating with patients, I think wearing masks and goggles and now PPE, a huge amount is lost in what patients see and the emotions that's exhibited and how you convey a message to someone. It's just massive amounts of what we do as nursing staff I think is lost in that. (P10)

With ongoing restrictions on how the emergency nurses could provide their normal care, they were concerned that this would be "the new norm, and nurses now will start accepting the practice as the norm. That worries me and I don't think I want to work in a place like that" (P8). Challenges in "substandard care" and delayed care for patients "goes against all my values of triage and what we do" (P8). These sentiments were shared with senior emergency nurse educators, who were concerned with how the future of nursing care might look:

> My concern was that we were starting to miss things, or not provide the education that we should have around other things that would create big safety concerns later on by not having that information known by nurses. That was my big challenge. (P6)

Despite the challenges emergency nurses were facing, many could still see why they remained in the profession, that it was "special" (P7 and P4). When seeing patients who had recovered from COVID-19, "you go home just feeling like your cup's full" (P4):

> I still really enjoy the job that I do. And I think too, you know it's a shame, to have a love like that, you don't want to lose that. It's a very special place to be. I think you're very privileged being in that position looking after people. (P7)

Change Is the Constant

When reflecting on changes that had occurred within the last 18 months of the COVID-19 pandemic, the emergency nurses recognized that change was now constant. Senior staff described being "expected to read our emails on days off and get across new flow charts, new flow sheets, new workflows, and just as you get a handle on those, it'll change again" (P9):

> I think with the constant changes with COVID, although it's been a massive change with lots of constant little changes. We're still not at a period of acceptance and getting on with things. (P10)

Emergency nurses recognized that being in this profession, they could be "moved around as required" (P6), if things changed "you'll move with it" (P6); however, this change had been "so ongoing" (P6). Some senior staff highlighted that "structure-wise, things are coming to place, and it looks like the focus is managing this for the long run" (P2). However, this structure was beginning to lose its foundations, with the loss of senior staff:

> We started writing a list of all the names of staff members that have left since the beginning of COVID and we stopped counting at 60 in the last 18 months or so. We've lost over 60 staff and that is both trained and just grade 2's [2nd year registered emergency nurses]. (P5)

Many of the emergency nurses felt that the future was beginning to look uncertain, both for their profession and what was happening beyond the walls of the hospital; they "didn't know what was ahead of us" (P7). When discussing "Freedom Day," a day when lockdown restrictions were lifted in Victoria, Australia, and the public could resume daily life, some felt that "it's a Band-Aid that needs to be ripped off. The time is going to come" (P10) and "just rip it off, let's see what happens. Shit's hit the fan, so let's just let the fan spin" (P9). For others, they felt "nervous" (P5) and "anxious" (P7) about what was to come:

> We still haven't hit the end yet, and I don't know if there will be an end for us. There might be an easy, but I don't think there will ever be an end. So I think that's something we all need to learn to live with. (P3)

Change remained constant in clinical care and how the clinical environment looked and functioned. When managing these changes and the need for more staff, the emergency nurses felt that their organizations were "not bringing them [staff] in quick enough to train them up" (P6). Although the "panic" (P2) may have "subsided" (P2), there was still a long way to go:

> It just feels like the system is broken and it's never going to get any better. And then you add some COVID surge on top of that, and the governments out there, and the news is saying "we're prepared, we've had 18 months, we're all over this," and we're not in any way shape or form "all over it." (P9)

Messages From the Top

As the pandemic continued, emergency nursing staff continued to feel that the "transparency" and "communication" (P6) from the executive level of the hospital were "quite poor" (P6). At times, staff found that if they had "problems," their managers "can't be part of the solution"

(P6) if they were nonclinical. The lack of being "listened to" (P5) was taking a larger toll on the workforce:

> No one was listening much to the nursing staff and how unsafe we were feeling. That was probably one of the main things that we were frustrated about, that we weren't being listened to. (P5)

From a senior management perspective, emergency nurses recognized that it was "open communication" that "really motivates the staff" (P2). For some emergency departments that were able to maintain open communication within their departments and when communication was "considered" (P6), the rewards were realized:

> Effective communication and closing the loop is just the easiest thing we can do, or the cheapest thing we can do, or the most effective thing we can do to keep the team on track and keep people safe. It's been an absolute godsend. (P10)

However, not all communication was beneficial, with the nurses now outlining that their organizations would send "text messages, perhaps 10 times a day" regarding the "short staff" issues (P8). These messages were making the emergency nurses feel "obliged to go in" (P8):

> Everyone is being pushed, most of the time we are being asked to do doubles. So over the past 2 weeks, I've done 2 doubles, so I've done and AM [shift] and a PM [shift] and then did a PM [shift] and a night shift with one day off and then back on an AM [shift]. (P3)

CAN I KEEP GOING?

Within the second major theme, the emergency nurses described the increasing pressure, loneliness, and lack of support that were occurring. There was no reprieve from COVID-19 discussions, with home and social life now mirroring the same conversations as in the workplace. The emergency nurses discussed the positive impact of strong collegial connections, while also highlighting the trauma and anxiety that would resurface with each new wave of the virus. Maladaptive coping strategies were mentioned, with some newer healthy habits implemented to protect well-being.

Never Switching Off From COVID

With the pandemic now a common point of discussion in both the professional and personal lives for the emergency nurses, COVID-19 was "the same topic repeated, you just get sick and tired of it" (P2). They described "not being able to switch everything off from COVID" (P10):

> It's never gone, COVID is a big thing at work, it's in your social life…it also means that the family unit functions differently. (P6)

When discussing the impact on their families, the emergency nurses were more "worried" (P4) of passing it on to others than contracting it themselves. For some who had "2 small kids at home," they were "very, very aware of what I take home and knowing that they're not vaccinated, it's always in the back of my head" (P10):

> I think I'm not too scared of contracting it myself, I'm double vaccinated now. I take all the precautions, I wear my PPE properly. I think I'm more worried of now that things are opening up, of contracting it, being asymptomatic and passing it on to someone. (P4)

Some emergency nurses described how they would not stay with family and that "it wasn't until everyone in the household was double vaxxed that I felt a little bit more comfortable going there" (P5). For others, it was family and friends who were "hesitant" (P4) to see them due to their high-risk work. Emergency nurses outlined how extended family would "minimize their risk of coming and helping us" (P6) and how "that really isolated us as a family" (P6).

We Have Each Other's Backs

Although the emergency nurses continued to be isolated from family and friends, they formed stronger collegial bonds; "the nurses are trying to support each other and I think they're only doing it for each other, not necessarily for the organization" (P8). The nurses described that the hospital environment was "one of the rare places whereby you could still work with people face to face" (P2) rather than online or remotely. It was encouraging that although there was suffering, there was also support; "I always feel so supported" (P4):

> The team I've got I think are a good one and are in it for the long haul, and I'm more invested in them than the role to be honest. It's not necessarily the role that keeps me here, it's the team. (P10)

When discussing formal debriefing opportunities from an organizational level, the emergency nurses described "that there has been still minimal change in the opportunities to debrief" (P4), which was caused by social distancing requirements, and "it just hasn't been a priority"

(P4) and "there's no opportunity" (P8). The nurses found this "really heart breaking" (P4) and "lonely" (P6), having to "go into the tearoom and you're only allowed to go to the tearoom by yourself" (P6). This lack of opportunity to debrief compounded by the heavy workloads, where senior ED management was torn between looking after their staff well-being or covering all positions within the department:

> Encouraging staff to take a break when they can, or to not pick up the extra shift if they don't feel they can, but at the same time begging them to pick up their shifts. (P10)

For some, there was still light at the end of the tunnel during their "harder days" (P10). At times it was "reinvigorating" (P10); "even all the pressures we've had over the last 2 years, I still want to be there" (P5). For others who had been in the profession for many years, they wanted to see it survive and thrive in future:

> We're not going to live forever, but it would be good for me to know that there's some dedicated staff that will stay on and continue to support that department. (P7)

Old Fears and Anxieties Resurface

The emergency nurses began to describe their mixed feelings toward coming into work, now almost 2 years into the pandemic. For some of the nurses, they described how they would "get more anxious as the day goes by… A bit anxious not knowing who I'm working with, what I'm going to face" (P4):

> People are left with, I hate to say it, but a bit of trauma; it just brings back a memory of how uncomfortable you felt last year and that fear, and they're almost back there again. (P6)

Not knowing what they would face on any given shift, the emergency nurses described it feeling like "a tidal wave, we're waiting to see if the tidal wave is going to hit us and it didn't really" (P7). Within Australia, COVID-19 cases became severe toward the end of 2021, with emergency nurses perpetually waiting for what was to come:

> People are all excited about Christmas, but that's when they're saying we're going to get 6000 cases a day or something. I don't think the general population is ready for that. I think they are very ignorant to what happens within the emergency department. (P3)

At this time, regular "disconcerting" (P9) antilockdown protests were common within the streets of Australia, causing ED staff to be "highly anxious" knowing that "there was going to be a surge" (P3) in COVID-19 cases due to increased likelihood of community transmission.

Not Well, but Coping

During times of high stress and pressure for emergency nurses during the COVID-19 pandemic, they outlined beginning to notice maladaptive coping strategies; "I started drinking far too much alcohol" and "I put on a few kilos" (P6). The nurses had also "not been afraid to call in sick if I just can't hack another shift for the week, just out of pure exhaustion" (P4). The nurses could see that "staying in the hospital is going to be hard for a couple more years to come" (P6) and that "I'm actually not enjoying nursing as much in the hospital environment. I didn't think I'd get to that, but I have" (P6):

> I feel quite guilty at the thought of leaving, but I'm also excited at the thought of leaving and not being a part of it anymore I think, I am that fatigued now. (P6)

Conversely, there were some healthier habits that had been implemented by the emergency nurses since the beginning of the pandemic. Habits such as "journaling" (P3), "mindfulness" (P7), "counseling," and "exercise" (P4) were becoming part of their routine:

> I go and see a psychologist and a counselor and everything because there have been a lot of moments, and a lot of patient cases and a lot of family members that have really, I wouldn't say it's caused PTSD, but just caused a lot of anxiety and sadness and it's been definitely a very hard time to nurse through. (P4)

For some, "having a better morning routine, so morning stretches, sitting out in the sun, grounding work" (P3) was helpful, alongside "a lot of meditation and fasting and increasing my exercise, which, it's sort of fallen by the wayside with all of the shift work" (P4).

WHAT'S AROUND THE CORNER?

Within the final major theme, emergency nurses discussed the positive impact the vaccine was having on their patient's morbidity and mortality; however, it had ethical concerns around mandating the vaccine. They discussed the emergence of burnout and how it was beginning to manifest in their work and personal lives. For some, who had begun implementing plans to leave, it meant no longer working in the profession. Others were unsure of what the future

may hold for their careers within the emergency department.

Vaccine Making a Difference

In 2021, treatments and vaccines were becoming available for health care workers and vulnerable populations. The emergency nurses could see that the vaccine was making a difference to patient outcomes:

> Through our own observations I can tell you, the people who are vaccinated are less likely to be as sick as someone who is unvaccinated, so it's those unvaccinated people who we are most fearful for because they are the ones becoming so unwell and so fast. (P3)

The emergency nurses experienced "a lot of sick patients and patients that are younger and deteriorate so quickly…they've all been unvaccinated" (P4). For those severely unwell patients, the nurses spoke about the patient's family "begging" for the vaccine, "explaining to family members that we can't give the vaccination to your family members right now" (P4). The efficacy of the vaccine was 1 factor that made the emergency nurses feel safer both at work and at home; "as soon as the vaccination came on board, I felt better immediately… I just felt so much safer" (P6).

The emergency nurses highlighted that not all elements of the vaccine rollout were positive for them, particularly the vaccine mandates for health care workers; "I don't agree with holding a gun to people's head metaphorically and saying, you must be vaccinated to keep your job" (P6). The nurses saw "quite a few nurses who have resigned because of the mandated vaccination requirements" (P8):

> This is where my values and my ethical dilemma is, as a nurse, I believe that people should not be coerced or be mandated for vaccinations, that no one should be made to put a substance into their body that they don't choose to. In saying that, there's a pandemic, and I want the majority of populations, especially vulnerable populations to be protected, so I'm torn their ethically. (P8)

Quietly Quitting

Discussion of being "burned out" (P3, P5) was a key feature within interviews, where emergency nurses described the factors that had led to their feelings of losing "compassion" (P7). From having "moments of frustration that I never thought I would have" (P10) to having no "attention span" (P7), "I wasn't letting people finish their sentences…no patience at all, nothing, not even for my family" (P7):

> My feelings are, aw f**k, I don't care. I haven't got the capacity to care. Especially now with so many people coming in who are not vaccinated who have got COVID and who just seem like they haven't seen the news for the last 2 years. (P7)

When looking toward the next 12 months, some emergency nurses had made "the decision to leave" (P9). For others who remained in the profession, "some days I go, I don't really wanna go back. I know what I've got in front of me" (P10). For some, the future was uncertain. They could see that "there will be people who will be changed by this" (P3), which may mean "they reconsider their career in nursing" (P3):

> It's day to day. It's different. There are some days that you feel really refreshed and excited to come into work and then there are other days you're like, I just don't want to be here anymore. (P5)

Discussion

This research aimed to continue to explore lived experiences of Australian emergency nurses working on the frontline in the COVID-19 pandemic. These findings present a snapshot in time of the second year of the COVID-19 pandemic within Victoria, Australia, and how this affected emergency nurses physically and psychologically. The second stage of this longitudinal study was to capture how the lived experiences of 9 emergency nurses evolved over the COVID-19 pandemic, highlighting the key moments that affected their feelings, attitudes, and perceptions toward work in the emergency department at this time in history.

Findings from this study demonstrate the ongoing mental and physical impacts of the COVID-19 pandemic on emergency nurse populations. These findings from 2021 in the second year of the pandemic within Australia showed marked differences to experiences in 2020. In stage 1 of this study, the emergency nurses outlined that they experienced a great sense of unknown, fear, and concern surrounding the effects of the COVID-19 pandemic.[14] In this study, the emergency nurses sighted less fear toward the clinical impacts of COVID-19 with the introduction of vaccinations and available treatments. The prominent experience emergency nurses were now outlining was the ongoing relentless nature of their work, with no respite to be realized in the immediate future.

Similar to findings demonstrated by Armstrong et al,[10] despite fluctuating lockdowns, and overall lower caseloads and death rates of COVID-19 in Australia, increasing levels of burnout were realized within the sample of emergency nurses. Although lockdowns were becoming less common and more freedoms were granted for the overall population, the emergency nurses highlighted their levels of overall well-being were decreasing. This may be attributed to evidence of a "compounding effect" of stress on the population. Exposure to greater numbers of stressful events over a long period of time is associated with poorer health outcomes.[22] The effects of chronic stress on the brain become evident when an individual experiences prolonged anticipation and reactivity to events, with a lack of habituation.[23] With repeated exposure to the unknown and a lack of familiarity in the working environment, the emergency nurses were exposed to a chronic stress environment. The emergency nurses in this study were required to shift thinking, practice, and behavior on short notice, with little time to adjust to a new norm. It is not yet known how this chronic state of stress will affect the nursing workforce; however, greater numbers of nurses globally are leaving the workforce.[24] Research reveals that COVID-19 has affected emergency nurses' intentions to leave the profession in the imminent future.[25] Further findings from Armstrong et al[10] demonstrated that with increased age came increased resilience of health care workers. In this study, both newly graduated nurses and nurses in senior leadership roles expressed an intent to leave the profession due to the unrelenting pressure of the role, suggesting that age and experience level may not have affected the outcome. Greater insight and reflective practice discussion was evident in the senior nurses of this study; however, emergency nurses of all experience levels expressed emotional exhaustion, and they desired more support from their workplaces. These findings aligned with global frontline nurse experiences, with staff wanting better working conditions, more regulation of hours, and their workplaces to better understand and acknowledge their work.[12,13]

A key protective factor for emergency nurses' well-being in this study was support from colleagues and comradery. The nurses outlined how it was their colleagues' and their desire to support and protect their colleagues that kept them returning to work. They highlighted that, during lockdowns, their workplace was somewhere they could interact with others, discuss concerns, and share ideas. This sentiment was shared within global COVID-19 literature, with nurses stating a sense of gratitude they felt from their workplace team connections.[26] With comradery comes mutual trust, a sense of family, and pride and passion in work being performed.[27] Globally, comradery, culture, and rituals within nursing and other workplaces are a strong protective factor for staff well-being, requiring more investigation into how this tool can be used in the peri-COVID-19 era.[26,28] This finding offers an opportunity for future research that might take a focused look at the role of comradery and those activities that help create, maintain, and strengthen this untapped human resource.

Limitations

Although this study had many strengths such as the richly deep and longitudinal nature of the responses gained from each participant, it was not without limitations. One of the original 10 participants could no longer continue in the study due to time constraints and personal demands. Due to the timing of second interviews just weeks before the introduction of the Code Brown emergency response in Victoria, Australia, participants voiced their lack of availability in time and capacity for interview. Due to this increased strain placed on health care workers during the subsequent waves of COVID-19 cases in Victoria, nurses may have been reluctant to engage in any further activity such as research outside of working hours. In addition, although an appropriate cross-section of emergency nurses was achieved in this project, findings may not be generalizable to other Australian states or countries.

Implications for Emergency Nurses

Findings from this study highlight the ongoing negative impacts on the personal and professional well-being of emergency nurses. The impact of staff well-being continues to affect the attrition of nurses from the workforce on a global scale.[24] Increasing staff attrition, particularly the loss of senior staff within the emergency department, has the potential to affect the quality and availability of appropriate acute care in the department. By understanding the negative compounding nature of the COVID-19 pandemic on emergency nurses, this may provide insight into specific moments or trigger points where low levels of well-being were irreparable, ultimately leading to their leaving the profession. Understanding how and why these moments occur may allow for a more proactive method of well-being protocol implementation, which may assist in improving worker well-being, improving levels of job satisfaction, and improving comradery among all levels of the emergency nursing workforce. Exploring the power of comradery within the emergency department may provide

insight into the creation of resilient teams. More research is required on the compounding effects of disasters and events that affect well-being and the livelihoods of nursing workforces, exploring mental and physical impacts not in isolation, but collaboratively.

This study presents findings from the second of 3 stages of data collection for the broader longitudinal project, undertaken from 2020 to 2022. Subsequent findings will be made available after analysis.

Conclusion

As the COVID-19 pandemic continued into 2021 and beyond, unrelenting work pressures continued to mount on the emergency nursing workforce. In the second year of this longitudinal study on emergency nurse lived experiences, staff outlined the continued strain of the profession, highlighting their increasing levels of burnout and identifying early stages of trauma response. Unsure whether they could remain in the profession due to the impacts on physical, mental, and social well-being, the emergency nurses were uncertain of what their future may hold. Greater emphasis on staff well-being within the emergency department is required for future maintenance of a resilient and healthy workforce. Without this, lack of support for subsequent nursing cohorts may affect the quality and reliability of care being provided in acute care centers.

Data, Code, and Research Materials Availability

Ethical approval for this project was granted by the Federation University Human Research Ethics Committee, approval number: A20-095.

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Author Disclosures

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Defining Research Funding Priorities: Emergency Nurses Association Foundation

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Contribution to Emergency Nursing Practice

- Establishing research priorities is a widespread practice among local, national, and international organizations. The Delphi survey method has been used by others to determine consensus of research priorities among emergency personnel organizations.
- This article identifies 8 research priorities set by the Emergency Nurses Association Foundation. The research priorities are ED overcrowding, workplace violence, nurse well-being, appropriate use of the emergency department, new graduate training, mental health care, disaster preparedness, and diversity, equity, and inclusion.
- Focused research priorities can enable emergency nurse researchers to make a meaningful impact to leading problems in emergency care.

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Abstract

Introduction: Establishing research priorities provides focus and direction for limited resources among organizations and increasing impact in a focused area. The Emergency Nurses Association (ENA) Foundation sought to identify research priorities to guide funding decisions in its extramural grants program.

Methods: A modified Delphi research strategy was used to build consensus among ENA members and key leaders to determine research focus areas. Two Delphi rounds were conducted. In the first round, 81 emergency nurses participated in providing a list of potential research foci. In the second round, 221 emergency nurse leaders recommended which research topics should be prioritized. Descriptive statistics (frequencies, percentages) were calculated for each research topic. The topics were clustered together and rank ordered by frequency/percentage.

Results: Eight research priorities were identified: emergency department overcrowding, workplace violence, nurse well-being, appropriate use of the emergency department, new graduate training, mental health care, disaster training, and diversity, equity, and inclusion research.

Discussion: These identified research priorities offer direction for determining ENA Foundation funding priorities. In addition, the research priorities provide strategic direction to emergency nurse researchers to promote a rich depth of research that can make a meaningful impact to science and emergency nursing practice.

Key words: Emergency nurse; Trauma nursing; Delphi method; Nurse; Emergency nursing research

Introduction

Setting research priorities within an organization establishes a united focus for where limited resources are allocated. This united focus allows funds to be funneled to specific research topics so a greater depth of work can be completed in these core areas.[1] An essential part of developing the National Institutes of Health's (NIH) strategic plan is setting research

priorities. NIH's strategic plan is re-established every 5 years.[2] When the NIH is setting their overarching research priorities, they consider the institutes' and centers' specific priorities based on their research focus area.[2] The National Institute of Nursing Research sets a leading example for the importance of selecting research priorities for nursing specific organizations. They created a framework to holistically target and prioritize research that will address practice, policy, and key health challenges to improve health and quality of life in all settings where nurses work.[3] To be most effective, collaborative efforts between members, leadership, community partners, and public health needs must routinely be assessed for the strategic allocation of funding.[4] The National Institute for Nursing Research recognized that research needs must be flexible and adaptive to meet urgent health care challenges to fully support public health.[4] When organizations set research priorities, they are enhancing the overall impact of the research conducted, as well as promoting the research funding availability and possibilities for future endeavors.[5]

Establishing research priorities is essential to directing the future of an organization. Determining research priorities provides a unified focus and direction for the organization,[6] while also enabling appropriate allocation of limited funding to the agreed upon important areas of research.[7] Fellow emergency personnel organizations have recently published their research priorities.[8,9] The Emergency Nurses Association (ENA) Foundation, affiliate of the ENA, was founded in 1995 to provide scholarships and research grants aimed to improve the future of emergency nursing.[10] The ENA Foundation has awarded more than $586,000 through a diverse funding portfolio. Previously funded research topics include trauma informed care, workplace violence, triage, human trafficking, and rapid identification of non–ST-elevation myocardial infarctions. However, over the last 27 years, the ENA Foundation had not established research priorities. To maximize a lasting impact, the ENA Foundation recognized the need for prioritizing research areas. Thus, the purpose of this study is to clearly identify research priorities to direct future ENA Foundation funding.

Methods

DESIGN

A modified Delphi survey technique was used to gain consensus from ENA members and leadership to determine research priorities. The Delphi survey method is an iterative process consisting of "a series of structured questionnaires (commonly referred to as rounds)."[11] The surveys are distributed to a panel of experts (respondents) determined by the research team. The aim of the Delphi method is to collect a wide range of responses at first and gradually condense the responses with additional rounds of surveys.[11] Responses from previous rounds inform each successive round. This process is continued until consensus is achieved.[11] For this study, 2 rounds of questionnaires were deployed. The reporting guideline for priority setting of health research was used for the reporting of the current project.[12]

The Delphi method allows for flexibility and variability when determining who to include in the study and how many rounds to conduct. To identify as many research topics as possible, the first round of surveys included inviting a random sample of 5000 ENA members and 156 state and chapter leaders of ENA affiliates to participate (Table 1). Purposeful sampling was used in the second round of surveys to include only 719 members in leadership positions within ENA. Leaders were chosen for this stage of the study given that they were more likely to be in strategic positions to be aware of the issues and problems facing the specialty. Typically, the same respondents are involved in all rounds of a Delphi method study.[11] While considering the organization's limits on the number of communications to its members but aiming to diversify the responses and maximize the number of people who could respond, we were purposeful in who was invited to participate in each stage of recruitment. Because our study had 2 different panels of experts completing each round of questions, we have used the term "modified" Delphi method to describe our methodology. Retired members and ENA Board of Directors were excluded from the random sample to prevent bias.

DATA COLLECTION AND ANALYSIS

Before the start of this study, the University of Cincinnati Institutional Review Board determined this study to be not human subjects research. Data collection took place from November 2022 to March 2023. In the first round of recruitment, members of ENA were contacted via email with a letter informing them of the study and requesting them to complete 1 survey question asking: "What should be the research funding priorities for the ENA Foundation? (Please list as many or as few research areas as you wish below and the reasons why you believe they should be a priority for the ENA Foundation.)" Responses to this question were entered in a blank comment box. Because the survey question was narrative in nature, each response was read and coded. A team consisting of a market researcher, an experienced emergency nurse clinician, and a nurse scientist

TABLE 1
Recruitment rounds, sample, and response rates

Round of recruitment	ENA members selected for phase of recruitment	Total recruited	Total responses	Response rate
Round 1	• ENA members • State leaders • Chapter leaders	5156	81	1.6%
Round 2	• State leaders • Chapter leaders • ENA Board of Directors • The Academy of Emergency Nursing (AEN) • Institute of Emergency Nursing Research (IENR) members	719	221	31%

ENA, Emergency Nurses Association.

conducted a content analysis to qualitatively analyze the open-ended responses by considering the meaning and relationship of the text responses to remove duplicates, consolidate constructs, and organize a comprehensive list of suggested research funding priorities. Duplicates were removed and a list of 82 research ideas was constructed.

During round 2, the alphabetized list was emailed to a purposeful sample of potential respondents. This group was asked to read through the comprehensive list, choose their top 5 research priority topics, and then explain the rationale behind their top 5. The survey read, "The 82 research areas are presented in alphabetical order. Please read the list in its entirety and then select up to 5 areas you believe should be a priority for the ENA Foundation to fund research." The frequency and percentage for each research topic were determined.

Common research areas were grouped into categories known as nets, a common term used in market research when gathering related open-ended answers into a solitary group.[13] The nets (ie, if a respondent selected multiple constructs from a single net, the respondent was counted once for that net) were created to prevent constructs within the same category from being counted more than once. Descriptive statistics (frequencies, percentages) were calculated for each research topic. The market researcher created the initial list of nets, and then the project team met to discuss and agree upon the categorization of the nets; consensus was achieved through collegial discussion. The nets were examined in relationship to the ENA's 5-year strategic plan. The ENA, founded in 1970, has a mission to support excellence in emergency nursing throughout the global community.[14] In 2019, ENA released its 5-year strategic plan to accomplish this mission through 4 goals focused on practice environment, education, community, and culture. The project team determined the final 8 nets were aligned with the strategic plan. Because the nets covered a large portion of the respondents' recommended priorities and were aligned to ENA's 5-year strategic plan, additional Delphi rounds were not warranted.

Results

In the first round of surveys, 5156 emails were distributed with 81 respondents (1.6%) (Table 1). The alphabetized list generated from round 1 is presented in Table 2. In the second round, 716 emails were distributed with 221 (31%) respondents. Round 2 asked leaders to identify 5 top research areas and provide a narrative explanation of why they selected their top choices. The following are 2 exemplars of the narrative responses:

> "Boarded patients are not calculated in ED [emergency department] daily stats, and this doesn't appropriately allocate for inpatients to have the care they should receive. Guidelines would help determine appropriate care."

> "Natural disasters and [human]-made disasters are increasing in frequency. Knowing how to prepare, what your role is, when to evacuate and how to develop a plan are important for every facility. People

TABLE 2
Alphabetical list of 82 research constructs proposed with round 1 of Delphi survey

1. Abdominal aortic aneurysm care
2. Appropriate/inappropriate use of the emergency department/public education on when to use the emergency department
3. Artificial intelligence
4. ATV education
5. Better methods of patient care
6. Blood culture management
7. Boarding
8. Boarded patient care guidelines
9. Burnout
10. Car seat proper usage/installation
11. Certification benefits
12. Charting
13. Costs of health care related to health care outcomes
14. COVID-19
15. Diversity, equity, and inclusion (DEI)/bias and discrimination
16. Delayed care
17. Disaster training
18. Discharge planning
19. Distracted care
20. ED crowding/overcrowding
21. ED environmental design
22. ENA membership engagement
23. Emergency Severity Index (ESI)
24. Firearm safety
25. Frequent users of the emergency department (recidivism)
26. Health equity
27. Healthy work environment
28. Homelessness care
29. Human trafficking
30. Injury prevention
31. Injury prevention nurse extern program
32. Length of nurse orientation
33. Maternal hemorrhage care
34. Medication safety
35. Mental health care/behavioral health – Adult
36. Mental health care/behavioral health – Pediatric
37. Mental stability of emergency nurses
38. Military/civilian care
39. New graduates hired for emergency department/training newly graduated nurses
40. Noise-induced hearing loss
41. Non-STEMI treatment
42. Nontraditional modalities for treatment of chronic diseases
43. Nurse addiction (substance use)
44. Nurse bullying
45. Nurse empowerment
46. Nurse led interventions
47. Nurse/staff retention
48. Nurse role with out-of-hospital care
49. Nurse well-being
50. Nursing leadership
51. Online training efficacy
52. Pain management
53. Pain management for trauma patients
54. Patient complaints
55. Patient experience with hallway treatment area
56. Patient satisfaction vs. hospital metrics
57. Patient safety
58. Pediatric care
59. Quality of care outcomes for lobby treatments
60. Resilience/resiliency training
61. Respiratory failure in pediatric patients
62. Return to work after substance abuse
63. Rural nursing
64. Safe staffing
65. Seatbelt use and injuries/injury prevention
66. Sepsis care
67. Staffing ratios/staffing guidelines
68. Stroke care
69. Stroke prevention
70. Support nurses
71. Sustainable operations
72. Telemedicine
73. Throughput in the emergency department
74. Timing of NPO before surgery
75. Training emergency nurse on ICU skills
76. Trauma care
77. Trauma informed care
78. Triage/triage screening/providers at triage
79. Use of the emergency department by private practitioners
80. Use of videos to educate patients to prevent complaints
81. Vaping effects
82. Workplace violence prevention/intervention strategies

ATV, all terrain vehicle; COVID-19, coronavirus disease 2019; ENA, Emergency Nurses Association; ICU, intensive care unit; NPO, nothing by mouth; STEMI, ST-elevation myocardial infarction.

keep getting caught by natural disasters completely unprepared because they believe it can't happen to them."

The overall top research areas included workplace violence prevention/intervention strategies, boarded patient care guidelines, ED crowding/overcrowding, appropriate

use of the emergency department/public education on when to use the emergency department, boarding, staffing ratios/staffing guidelines, safe staffing, new graduates hired for the emergency department/training newly graduated nurses, and burnout. Research areas were clustered based on similarity in constructs into nets. Eight major nets emerged: ED overcrowding (62%), workplace violence (27%), nurse well-being (27%), appropriate use of the emergency department (23%), new graduate training (23%), mental health care (15%), disaster training (12%), and diversity, equity, and inclusion (DEI) (10%) research. Although both ENA membership engagement (10%) and artificial intelligence (10%) received a moderate percentage of selection by respondents, DEI was included because it aligned closely to the ENA's and ENA Foundation's core values and commitment to ongoing equity and inclusion. A description of nets, constructs included in each net, and illustrative quotes are presented in Table 3.

Discussion

This study used a modified Delphi survey method to identify key research priorities for the ENA Foundation. Through consensus, 8 research priorities were determined. Many of the topics are interrelated and potential solutions are multifaceted. With this deliberate shift to provide focused funding, new research could be focused on developing interventions to improve several of these priorities.

ED OVERCROWDING

The most common response from the surveys mentioned ED overcrowding (62%). It is multifaceted and included subconstructs of boarding, boarded patient care guidelines, throughput, and department overcrowding. The regular occurrence of having patients stay and board in the emergency department has ripple effects on the level of patient care provided, nurse well-being, and clinical outcomes.[15] This is an uncomfortable and inconvenient solution for all involved. Patients feel abandoned and lack privacy.[16] Because this happens regularly, emergency nurses want better boarded patient care guidelines. In fact, a "Crowding, Boarding, and Patient Throughput" position statement was approved by ENA's Board of Directors in 2020.[17] Current literature offers potential solutions including interventions addressing how inpatient nurses can provide care for boarded patients to reduce the length of stay and promote earlier discharges.[18,19] However, more research is needed to test interventions in a variety of ED settings. Further validation of interventions can help emergency care providers to provide the best care possible even when situations are not ideal.

WORKPLACE VIOLENCE

Nurses in the survey shared quotes stating the experience of workplace violence was getting worse. They asked for evidence to support best practice guidelines on how to mitigate violence against health care workers. Long wait times, due to overcrowding, amplify the heightened emotional state and stress that patients and families are already experiencing when they arrive in the emergency department.[20] It can be challenging for nurses to provide excellent care when they have concerns of how the situation could escalate or if they will be protected from harm. Workplace violence can increase nurse burnout and negatively affect patient care outcomes.[21] Mitigation and prevention strategies and increased education are recognized as top needs for future emergency nurse research.[22] Although there is an increase in emergency research focused on workplace violence, the bulk of the research remains descriptive; interventional research is needed.[23]

NURSE WELL-BEING

Nurse well-being is a comprehensive construct. It includes burnout, mental health care of the provider, supportive leadership, work-life balance, resilience, stress mitigation, and a healthy work environment. It is influenced by safe staffing ratios, effective training, retention strategies, and workplace violence. Respondents in this study emphasized the importance of healthy nurses. They realized nurses with higher levels of well-being tend to stay in the profession longer and provide better patient care, demonstrate increased empathy, and improve relational skills during patient interactions.

A paradigm shift is needed where nurse well-being is included in leadership responsibilities and concerns. In addition to recognition and promotion, regularly assessing and including mitigation strategies to reduce or prevent nurse burnout should be top priorities for nurse leaders.[24] The workplace is central to nurse well-being. When it is evident that organizations value safe working environments where staff feel protected at work, the rates of burnout and stress are lower.[25] This includes strong relationships among care providers and support when working in critical, trauma, and emergency care environments. The framework of Total Worker Health from the United States National Institute for Occupational Safety and Health describes the

TABLE 3
Research focus areas and illustrative quotes*

Number of individuals (net % of respondents)	Nets	Constructs	Frequency by construct
137 (62%)	ED overcrowding	Boarded patient care guidelines	55
		Boarding	47
		ED crowding/overcrowding	51
		Throughput	24

Illustrative quotes

- "Boarding remains an ED [emergency department] challenge. A high-risk environment often exists when caring for both boarded patients with needs (often time-related) atypical to the usual ED environment while also managing continuous ED patient flow for those not boarded. Data to support guidelines, protocols, policies, and risk-lowering strategies for boarded patients is greatly needed."
- "Boarded patients are not calculated in ED daily stats, and this doesn't appropriately allocate for inpatients to have the care they should receive. Guidelines would help determine appropriate care."
- "ED crowding and overcrowding is a massive issue and ties into boarding and throughput."
- "Boarding/overcrowding: paramount safety issue, affects every aspect of the health care system."
- "With the advent of Covid and ultimate exodus of nurses from bedside care, the EDs across the nation are seeing an unprecedented amount of boarders and the length of time those patients are in the ED post admission orders. This is the number 1 issue facing EDs' ability to provide safe, timely and quality care to our ED patients."

59 (27%)	Workplace violence	Workplace violence	59

- "Workplace violence – is worsening! Need data and strategies to mitigate!"
- "Workplace violence continues to increase and our current 'best practices' are widely variable; research would help us determine 'what works'."
- "Workplace violence would be number 1. I feel we do need to align our protection to that of flight attendants. I feel it is the most important issue that affects nurses."
- "Workplace violence is out of control. We need to feel safe. We need to make it public that violence against health care workers will not be tolerated."
- "Workplace violence is a tragic reality and ED nurses deserve better. ENA Government Affairs has done a great job in this area, but research would speak volumes to aid advocacy efforts."
- "There have been more instances of workplace violence in EDs and other areas of the hospital. This is an area that ENA could collaborate with other professional organizations to help address."

59 (27%)	Nurse well-being	Burnout	22
		Healthy work environment	16
		Nurse well-being	14

- "Nurse well-being will help nurses stay longer in nursing."
- "Heathy work environments improve recruitment/retention/burnout/resilience in ED nurses."
- "A healthy work environment is important for nurse satisfaction and retention."
- "There is a global crisis in health care, with staffing shortages as a key element. We would benefit from research/strategies/resources for the root causes of staff burnout. Nurse retention strategies are not always a priority (more dedicated resources to recruitment and orientation in many facilities)."
- "Also work-life balance. Going from three 12-hour shifts to five days a week. Eight plus for ER educators, there is no balance anymore due to size of job. Having the support from leadership and organizations on mental well-being and mental health and balancing the effect of high-stress jobs."

51 (23%)	Appropriate use of the emergency department	Public education on when to use the emergency department	51

continued

TABLE 3
Continued

Number of individuals (net % of respondents)	Nets	Constructs	Frequency by construct
• "We need data to support our push for insurance and policy changes for non-ED options to manage non-emergency conditions."			
• "Inappropriate use of the ED is 1 of the biggest problems that leads to overcrowding of the ED."			
• "I feel that the utilization of the ED for non-emergency care has greatly impacted throughput resulting in ED crowding. This has resulted in an overcrowded situation and then regulations have impacted additional care delivery that requires work to be completed prior to patients being admitted, which has more patients boarding in the ED. Care delivery is further complicated with these boarded patients being held for longer periods resulting in errors in care as well as patient flow issues with walkouts occurring because there is no space in the ED to deliver care for ED patients. This subsequently presents additional challenges resulting in patient satisfaction issues and violence against health care workers."			
• "Public education on when to use the ED should help prevent issues like overcrowding. This research could extend into when PCPs send patients to the ED for further work up and the appropriateness of using the ED to have things done faster."			
• "The public should be educated on where to seek efficient/effective care to avoid overcrowding of EDs."			
50 (23%)	Nurse graduate training	New graduates in the emergency department/training new graduate nurses	30
		Length of nurse orientation	20
• "New grads are a constant in the ED – need to know how to support them."			
• "Proper orientation sometimes prevents turnover in nursing."			
• "Length of nursing orientation in the ED needs to be standardized, and it would be interesting to study patient quality outcomes compared against percent of new grads on staff, how long their orientation is, as well as how experienced their preceptor was (and maybe how many preceptors they had)."			
• "Orientation – too many brand-new nurses with no foundation starting in ED"			
• "In an attempt to address the staffing issues, I believe that nurses are just pushed through orientation to get a body working in the department. These nurses may or may not feel comfortable as a staff member yet, but because coworkers and managers want to get that nurse working to help relieve conditions they may hesitate to admit to their concerns for fear of retribution."			
• "EDs are faced with hiring new grads or very inexperienced ED RNs. Research could benefit safety outcomes and nursing longevity by identifying what can be done to get a novice to expert level safely and expeditiously without burnout."			
34 (15%)	Mental health care/behavioral health	Mental health care/behavioral health—pediatric	24
		Mental health care/behavioral health—adult	21
• "Mental health is a challenge in most EDs. There are not enough inpatient or outpatient facilities to care for this population."			
• "No matter where you work, we are all boarding mental health and just don't have the training or time to treat these patients effectively."			
• "Mental health issues are rising – with little to no resources. Identification of best practice with implementation ideas would be helpful."			
• "Mental health issues are challenging all of us and for adults as well as children. Parents bring their children to the ED when they cannot handle the issues at home, and we are ill-prepared to [care for] these children."			
• "Pediatric mental health is a growing area with little research or solutions."			
• "Pediatric behavioral health has resulted in record high rates of pediatric suicide."			
26 (12%)	Disaster training	Disaster training	26

continued

TABLE 3
Continued

Number of individuals (net % of respondents)	Nets	Constructs	Frequency by construct
• "Nurses providing care in disasters have repeatedly reported that they felt unprepared for this work, and much of the nursing research is on general or ICU nurses and not emergency nurses."			
• "Natural disasters and [human]-made disasters are increasing in frequency. Knowing how to prepare, what your role is, when to evacuate and how to develop a plan are important for every facility. People keep getting caught by natural disasters completely unprepared because they believe it can't happen to them."			
• "Disaster Management is always good for the 'when it happens'. Mass shootings are happening every week it seems like."			
• "Disasters are increasing in frequency and there is more research needed on effective preparation training."			
• "Disaster training is a passion of mine, especially related to pediatrics and pandemics, and it's too easy to forget about it day-to-day. We need to continue to focus on this area."			
21 (10%)	DEI	Diversity, equity, inclusion, bias, and discrimination	21
• "As a member of ENA's DEI committee, it is important to me that ENA understand how bias/discrimination impacts delivery of ED care, and how to improve ED nurses' behavior and understanding of DEI."			
• "DEI is a new concept that needs to be improved to increase retention and promote nurses entering into the profession."			
• "DEI – because there is a lot of racism in nursing."			
• "DEI should always be part of our work groups – diversity in teams supports the best outcomes."			

ENA, Emergency Nurses Association; DEI, diversity, equity, and inclusion; ICU, intensive care unit.
* Participants could mention more than 1 construct within a net.

connection of work and personal life to an individual's overall health.[26] Thus, future research could study the intersection of work and home experiences for nursing well-being.

APPROPRIATE USE OF THE EMERGENCY DEPARTMENT

The construct of appropriate use of the emergency department ranked high on the list of priorities (23%). This construct recognized the need to educate the public on when to go to the emergency department. Increased public education could reduce the volume of nonurgent patients receiving care in emergency departments.[27] This would reduce overcrowding within the emergency department as well.[28] In research, it is important to look at this aspect as separate from ED overcrowding, because this aspect specifically examines the rationale for patients coming to the emergency department versus patient movement into and through the emergency department. Interventions aimed to inform the public of when it is appropriate to seek emergency care versus seeking treatment from a nonemergent care provider could be generated from future funding.

NEW GRADUATE TRAINING

Respondents acknowledged how quality training prepares new nurses for the demands of working in emergency care. They explained there is an increase in nurses who are beginning their career in the emergency department, without prior work experience, due to limited staffing resources after the coronavirus disease 2019 pandemic. Therefore, thorough training is needed to improve nurse well-being, resilience, and staff retention.[29,30] Future research can determine best practices for orientation, consider the needs of a novice nurse, and generate quality metrics to ensure readiness for practice.

MENTAL HEALTH CARE/BEHAVIORAL HEALTH

Respondents explained the need for mental health care continues to rise, and they would like training to help them provide for patients and families. This was noted to be a current need and high priority within both pediatric and adult facilities. They reported feeling poorly equipped to provide quality care to patients with varying mental and behavioral

health concerns. Significant others will bring patients to the emergency department when they are at a loss of what to do next. Due to limited bed availability and treatment centers, these patients remain in the emergency department as boarded patients.[31] It is during this time emergency nurses acknowledge they do not have the best resources to assist them in caring for this population of patients, which at times can escalate to workplace violence. Overall, respondents wanted more resources and training to improve patient care.

DISASTER TRAINING

The emergency department is the frontline for many local, regional, and national disasters. Emergency nurses are confronted with epidemic diseases such as Ebola[32] and coronavirus disease 2019,[33] natural disasters,[34,35] and human-inflicted disasters such as school shootings.[36] Respondents in this study stated that they did not feel adequately prepared to handle large-scale disasters. They stated it is always best to have a specific plan in place, instead of having a false assumption it could never happen to them. Previous studies state increased preparation and training can improve the lived experience of trauma and can increase well-being of nurses caring for the people involved.[37] The National Academy of Medicine in The Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity called for more education, training, and research funding to prepare nurses for future disasters.[38]

DEI

Research geared toward creating a more inclusive environment is essential to providing the best patient care. Bias and discrimination are present among health care providers and can influence patient care and staff satisfaction.[39] Focused funding aims to propel emergency nurses into a profession where patients are often cared for by professionals who look like them, have similar lived experiences, and can improve patient care outcomes. It also can help reduce the level of bias and discrimination experienced by patients while receiving care in the ED setting. DEI became a focus of ENA in 2013 with the publication of the "Cultural Diversity and Gender Inclusivity in the Emergency Care Setting" position statement (revised in 2018).[40] In 2019, ENA created the DEI committee. This committee subsequently developed the "Care of LGBTQ Patients in the Emergency Care Setting" toolkit, which was approved by the ENA Board of Directors in 2019.[41]

Limitations

When designing this study, the research team wanted to gain a broad understanding of the research topics ENA members were interested in. Therefore, they sent the 1-question survey to a random sample of 5000 members and state and chapter leaders, which yielded a low response rate. This single question design was to avoid creating survey fatigue. Therefore, the research team did not collect demographic information from the respondents. This meant the research team was unable to identify the current role, working status, race, gender, or ethnicity of the respondents. Unfortunately, it is not known whether the respondents were currently working as emergency nurses, whether any of the respondents conducted research, or whether the responses were representative of a diverse emergency nursing workforce. Future studies would benefit from working to obtain better engagement from members of the association.

Implications for Emergency Nurses

The 8 research priorities identified in this study are closely aligned with the strategic goals of the ENA. The research priorities of ED overcrowding, workplace violence, nurse well-being, and appropriate use of the emergency department directly align with ENA's Practice Environment Goal. Strategies of this goal include improving quality and safety in emergency nursing practice, promoting nurse wellness, and preventing violence in the emergency department.[42] New graduate training and mental health care align with the education goal, which seeks to generate new knowledge and increase translation of best evidence into practice, as well as create a gold standard for orientation to emergency nursing.[42] The research priority of DEI, including the constructs of bias and discrimination, aligns with the culture goal. An atmosphere of inclusion brings more voices to the table and empowers the nursing profession to transform health care. The community goal looks to the broader impact of ENA. A specific strategy of this goal is to focus on disaster preparedness, with the aim to develop a framework to guide emergency care during a disaster.[42] Another goal has aims to broaden the impact of the ENA Foundation, which is what this study hopes to facilitate. By designating research priorities, which ultimately aligned with the strategic goals, the ENA Foundation's Board of Trustees adopted these 8 research priorities and will consider these top priorities for future grants. With this new focus, nurse researchers are

encouraged to conduct research to improve emergency care overall for both patients and care providers. This study provided an opportunity for emergency nurses to have an active voice by sharing their expertise and perspective in the decision making of a funding foundation.

Conclusions

Conducting this study using a modified Delphi survey method was an appropriate and effective way to identify the ENA Foundation's key research priorities. Researchers were able to assess the broad interests of ENA members with the first survey round and then narrow topics down based on ENA leader feedback in round 2. The 8 research priorities identified are multifaceted and interrelated; they also are congruent with ENA's strategic plan. Through intentional funding, the ENA Foundation will be able to provide resources to generate a rich depth of knowledge to improve focused aspects of emergency care for patients and professionals alike.

Author Disclosures

Conflicts of interest: none to report.

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ENA Clinical Practice Guideline Synopsis: Suicide Risk Assessment

EMERGENCY NURSES ASSOCIATION

Clinical Question

What risk assessment tools are effective in screening for self-harm or suicidal ideation during initial assessment of patients across the lifespan in the emergency department?

Problem

According to the Centers for Disease Control and Prevention (CDC), suicide is the tenth leading cause of death for all age groups in the United States. Among younger populations, it ranks much higher as a cause of death. For those ages 10 to 34 years, it is the second leading cause of death; the fourth leading cause for ages 35 to 44 years, and fifth for those 45 to 54 years. There were 47,511 deaths caused by intentional self-harm (suicide) in 2019. This reflects only a small percentage of the individuals considering or attempting suicide. In 2019, 2 million adults contemplated suicide and 1.2 million attempted suicides (Centers for Disease Control and Prevention 2021). The Joint Commission (2016) discussed the rise in suicide rates, lack of screening for suicidal ideation by providers, and the fact that those who committed suicide received health care treatment—often for nonmental health reasons—in the year before death. As a result, new requirements for suicide screening were established. Accredited emergency departments, primary care physicians, and behavioral health clinicians are now required to (1) screen all individuals being evaluated for behavioral health conditions for suicidal ideation using a validated tool, starting at age 12 years; (2) use an evidence-based process to evaluate the severity of ideation for those who screen positive for suicidal ideation (This can be completed using a single tool to identify presence of ideation and severity.); and (3) document the individual's overall risk level and mitigation plan (The Joint Commission, 2019).

It can be challenging for emergency care providers to identify individuals who attempt suicide or have suicidal ideations. Patients often do not volunteer that their injuries are caused by self-harm. In 2010, for example, more than 450,000 individuals received emergency care for their self-inflicted injuries; the combined cost of their medical care and lost labor totaled 15.9 billion dollars (Centers for Disease Control and Prevention 2021). Care providers need to maintain an elevated level of vigilance and attempt to identify the potential risk factors and personal characteristics associated with suicidal behaviors. Owing to constraints of time and personnel, screening within the emergency department must be brief and easily administered by the staff. The initial suicide screening tool should efficiently identify those at risk of self-harm and be easily integrated with the current clinical assessments performed in the emergency department. It is imperative to stress that suicide screening will not identify all patients at risk of self-harm. Screening is dependent on the accuracy and completeness of responses received to the screening questions. Screening cannot predict psychiatric admission and/or subsequent self-harm (Chang and Tan, 2015; McMillan et al, 2007; Randall et al, 2011; Simpson et al, 2021). The goal of universal screening is to identify the population at risk of self-harm that is currently undetected and allow for providers to complete a more in-depth lethality or depression screening to assist with placement or discharge planning. Once a person is identified as a potential suicide risk, care providers should provide safety and preventive care until the patient can be transferred to an area or facility that can provide further psychiatric evaluation and services (Jacobs et al, 2007; Knesper, 2011). Although assessment tools are available to help with assessing suicidal patients, the tools often have limitations for use in the emergency department.

Recommendations

Description of Decision Options/Interventions and the Level of Recommendation		
Overall Screening Practices	Suicide risk assessment tools may predict patients at risk for suicide in the ED (Ballard et al., 2013b; Bilen et al., 2013; Boudreaux et al., 2015; Boudreaux et al., 2016; Cooper et al., 2007; Desjardins et al, 2016; DeVylder et al., 2019; Fein et al., 2010; Horowitz et al., 2012; Horowitz et al., 2020; Joiner et al., 2002; King et al., 2015; Newton et al., 2017; Santa Mina et al., 2006; Steeg et al., 2012; Stefansson et al., 2012).	A
	Universal suicide risk assessment may help identify at risk patients regardless of chief complaint (Boudreaux et al., 2015; Boudreaux et al., 2016; Devylder et al., 2019; Devylder et al., 2020; Fein et al., 2010; Horowitz et al., 2012; Horowitz et al., 2020; O'Connor et al., 2020; Richardson et al., 2010; Santa Mina et al., 2006; Simpson et al., 2021)	A
Initial Tools for Suicide Risk Assessment	There is a moderate amount of evidence to support that the following instruments are valid, feasible, and reliable for initial assessment of suicide risk in the ED: • The Ask Suicide-Screening Questions (ASQ) (Ballard et al., 2017; Ballard et al., 2013a; DeVylder, 2019; DeVylder, 2020; Horowitz et al., 2012; Horowitz et al., 2020). • Manchester Self-Harm Rule (MSHR) (Bilén et al., 2013; Cooper et al., 2006; Cooper et al., 2007; Randall et al., 2011; Runeson et al., 2017).	B
	There is a weak amount of evidence to support that the following instruments are valid, feasible, and reliable for initial assessment of suicide risk in the ED: • The Patient Safety Screener (PSS) (Boudreaux et al., 2015; Boudreaux et al., 2016). • Risk of Suicide Questionnaire (RSQ) (Ballard et al., 2013a; Folse & Hahn, 2009; Newton et al., 2017).	C
Tools to Assess Lethality for Discharge	There is a moderate amount of evidence to support that the following instruments may be used to evaluate lethality for discha rge from the ED setting: • Behavioral Health Screening Emergency Department (BHS-ED) (Fein et al., 2010; McMillan et al., 2007; Runeson et al., 2017). • Columbia Suicide Severity Rating Scale (C-SSRS) (Chang & Tan, 2015; Gipson et al., 2015; King et al., 2015; Lindh et al., 2019; Mullinax et al., 2018; Newton et al., 2017; Posner et al., 2011; Runeson et al., 2017; Simpson et al., 2021). • The ReACT Self-Harm Rule (Cooper et al., 2006; Runeson et al., 2017; Steeg et al., 2012). • Suicide Intent Scale (Lindh et al., 2019; Lindh et al., 2020; Runeson et al., 2017; Stefansson et al., 2012).	B
	There is a weak amount of evidence to support that the following instruments may be used to evaluate lethality for discharge from the ED setting: • SAD PERSONS Scale (Bolton et al., 2010; Chang & Tan, 2015; Katz et al., 2017; Runeson et al., 2017).	C
	The tools listed below have been referenced in the literature as comparisons to those tools used for screening in the ED. The re is insufficient evidence to make a recommendation for the use of these tools for suicide risk assessment in the ED setting: • Beck Depression Inventory (Runeson et al., 2017). • Beck Scale for Suicide Ideation (BSS) (Chang & Tan, 2015). • Center for Epidemiological Studies Depression Scale (CES-D) (Joiner et al., 2002). • Death/suicide Implicit Association Test (d/s-IAT) (Harrison et al., 2018). • Depressive Symptom Index-Suicidality Subscale (DSI-SS) (Harrison et al., 2018). • Edinburgh Risk of Recognition Scale (ERRS) (Runeson et al., 2017). • General Health Questionnaire (GHQ-12) (Joiner et al., 2002). • HEADS-ED (Newton et al., 2017). • Karolinska Interpersonal Violence Scale (KIVS) (Lindh et al., 2019). • Mini Neuropsychiatric Interview (MINI) Runeson et al., 2017). • Modified SAD Persons Scale (MSPS) (Bolton et al., 2012). • Patient Health Questionnaire (PHQ-2, PHQ-9) (Chang & Tan, 2015; Richardson et al 2010; Runeson et al., 2017). • Scale for Suicidal Ideation (SSI) (Runeson et al., 2017). • Sodersjukhuset Self-Harm Rule (SoS-4) (Runeson et al., 2017). • Suicide Assessment Scale (SUAS) (Lindh et al., 2019; Runeson et al., 2017).	INE

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

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ENA Clinical Practice Guideline Synopsis: Gastric Tube Placement Verification

Clinical Question

In patients having gastric tubes (GTs) inserted in the ED setting, which bedside technique is best for confirmation of accurate placement immediately after tube insertion compared with radiograph?

Problem

GT placement is a common bedside procedure performed by registered nurses in the emergency department. GTs may be inserted nasally or orally. Regardless of the insertion route, GTs are used for multiple indications. Large- and small-bore GTs have been designed to meet treatment needs. Large-bore GTs, which are inserted via the nose or mouth and guided into the stomach, are considered for short-term use and aid in gastric decompression and the administration of liquids or medications. Small-bore GTs are advanced through the gastrointestinal tract into the stomach or small intestine, remain in place for a longer period, need frequent reevaluation to determine correct placement, and are reserved for the administration of enteral nutrition, liquids, and medications. In the emergency department, large-bore GTs are most common and the primary need for placement verification occurs immediately after placement.

Although often considered an innocuous procedure, incorrect GT placement can result in serious and even lethal complications such as respiratory distress or death. The standard of care requires verification of the GT placement before its use to minimize complications resulting from incorrect placement. Currently, radiographic verification is referred to as the "gold standard" for GT placement verification, and it is recommended by some professional organizations (American Association of Critical Care Nurses, 2016; Metheny et al, 2019). The Society of Pediatric Nurses (2011) and American Society for Parenteral and Enteral Nutrition (Irving et al, 2018) recommend gastric aspirate testing for pediatric patients and, if unable to confirm after testing, to request radiographic verification. Concerns related to radiation exposure, associated costs, time delays, and nursing scope of practice have led to shifts in recommended workflows and the exploration of additional or alternative methods for placement verification (British Association of Parenteral and Enteral Nutrition, 2020; Irving et al 2018; Patient Safety Movement, 2020). This clinical practice guideline aims to evaluate various bedside large-bore GT placement verification methods as alternatives to radiography.

Recommendations

	Description of Decision Options/Interventions and the Level of Recommendation	
Adults	There is moderate evidence to support the use of ultrasound for bedside verification of accurate gastric rube placement in adult patients (Brotfain et al, 2022; Kim et al, 2012; Lin et al, 2017; McMullen et al, 2022; Tsujimoto et al, 2017; Wong et al, 2017; Yildirim et al, 2018).	B
	There is moderate evidence to support the use of carbon dioxide detection for bedside verification of accurate gastric tube placement in adult patients (Burns et al, 2006; Chau et al, 2011; Elpern et al, 2007; Erzincanli et al, 2017; Heidarzadi et al, 2020; Wong et al, 2017).	B
	There is limited evidence that pH testing of gastric aspirates alone can verify accurate gastric tube placement in adult patients (Boeykens et al, 2014; Stock et al, 2008).	C
Pediatrics	There is limited evidence to support the use of ultrasound for bedside verification of accurate gastric tube placement in pediatric patients (Atalay et al, 2018; Dias et al, 2018).	C
	There is limited evidence to support the use of carbon dioxide detection for bedside verification of accurate gastric tube placement in pediatric patients (Ellett et al, 2014; Gilbert and Burns, 2012).	C
All Patients	There is moderate evidence to support the use of pH testing of gastric tube aspirates as a component of multiple-method bedside verification of accurate gastric tube placement in pediatric and adult patients (Dias et al, 2019; Ellett et al, 2014; Fernandez et al, 2010; Kearns and Donna, 2001; Metheny et al, 1997; Metheny et al, 2000).	B
	There is insufficient evidence supporting the use of auscultation to confirm accurate gastric tube placement in the emergency department (Boeykens et al, 2014; Kearns and Donna, 2001; Kim et al, 2012).	INE
	There is insufficient evidence supporting the use of electromagnetic devices to confirm accurate gastric tube placement in the emergency department (Kearns and Donna, 2001).	INE
	There is insufficient evidence that bilirubin testing of gastric aspirates alone can verify accurate gastric tube placement (Metheny et al, 2000).	INE
	There is insufficient evidence that gastric aspirate, carbon dioxide detection, or ultrasound can detect inaccurate gastric tube placement (Burns et al, 2006; Gilbert and Burns, 2012; Metheny et al, 1999, 2000; Stock et al, 2008; Yildirim et al, 2018).	INE
	There is no evidence that transillumination or magnetic detection can detect inaccurate gastric tube placement (Kearns and Donna, 2001).	INE

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

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Supporting a Healthy Work Environment and Just Culture in the Emergency Care Setting

EMERGENCY NURSES ASSOCIATION

Description

Healthy work environments and just culture are associated with improved nursing outcomes, such as increased autonomy and control over practice, increased job satisfaction, and decreased nurse burnout, sick time, and turnover (American Nurses Association [ANA], n.d.; Canady & Allen, 2015; Halm, 2019; McHugh et al, 2016; Shirey, 2017). Characteristics of unhealthy work environments include high workload; low decision authority; low support; poor communication; abusive behavior; disrespect; resistance to change; lack of vision or leadership; distrust; conflict with values, mission, and vision; and loss of understanding of the central purpose of professional duties (Wang et al, 2020). In 2004, the Institute of Medicine (IOM) report, *Keeping Patients Safe: Transforming the Work Environment of Nurses*, identified the need for transformational nurse leadership to develop and sustain a healthy work environment. Subsequently, the American Association of Critical Care Nurses (AACN) developed Standards for Establishing and Sustaining Healthy Work Environments in 2005 and updated the document in 2016. The AACN work group identified 6 standards to demonstrate healthy work environments: skilled communication, true collaboration, effective decision making, appropriate staffing, meaningful recognition, and authentic leadership (AACN, 2016). Although the document does not address just culture per se, the standards on skilled communications and true collaboration speak to the definition.

The term "just culture" was first used in 1999 and became widely adopted by hospitals following the release of the IOM (now the National Academy of Medicine) report *To Err is Human* (IOM, 2000). Just culture is an organizational practice where both leadership and employees share responsibility for supporting practices that create a healthy work environment and where errors are acknowledged by responding to incidents or near misses in a fair and just manner through trust, transparency, and open communication (Canadian Medical Protective Association [CMPA], 2021; Maassen et al, 2021; Marx, 2019; Paradiso & Sweeney, 2019; van Baarle et al, 2022). Unfortunately, people make errors. The concept of just culture was conceived to address that reality. In addition, it has been noted that a just culture provides certain advantages. "Transparent, just, and timely reporting mechanisms of medical errors, without the fear of criminalization, preserve safe patient care environments." (ANA, 2022). The evidence is also clear that transformative leadership incorporates the essential characteristics to achieve, establish, and maintain a healthy work environment (ANA, n.d.; Shirey, 2017; Wei et al, 2018).

A crucial component of a healthy work environment in health care is safe staffing. Several factors contribute to safe staffing, including patient census and acuity, length of time required for care delivery, and experience and educational preparation of the staff (eg, advanced practice, baccalaureate or associate degree, nursing diploma, unlicensed staff) (Starr Rogers, 2021; Wolf et al, 2017). Integral to safe staffing is the inclusion of rest breaks, meal breaks, and debriefing after critical events. Although evidence supports the inclusion of breaks and debriefing in the emergency department, considerable variability exists in the clinical setting (Kessler et al, 2015; Toews et al, 2021). Bullying and violence may hamper the safety of staff, patients, and visitors in the emergency department. (Lenaghan et al, 2018; Wolf et al, 2014; Wolf et al, 2018). It is imperative that leaders work to identify and apply a systematic, easily accessible method of reporting and responding to episodes of bullying and violence.

The just culture model focuses on improving system design and managing at-risk behaviors by creating an open and fair learning culture geared toward designing safe systems and managing behavioral choices resulting in successful

outcomes (Marx, 2019). The focus of the just culture model is on the prevention of harm before it occurs and, as such, has documented success in reducing errors and improving outcomes (Rogers et al, 2017). According to the Occupational Safety and Health Administration (OSHA) (n.d., 2015, 2016), a first step in developing a plan to address workplace violence/bullying in the emergency department starts with implementation of a screening tool to identify its existence and characteristics. Nurse leaders then need to collaborate with key stakeholders to identify and implement evidence-based policies and procedures. Through collaboration they can establish best practices to promote a just culture and a healthy work environment that mitigates workplace violence, while improving patient outcomes and staff satisfaction. Researchers have identified a relationship between these negative characteristics and decreases in nurse satisfaction and retention, patient safety, worsened patient outcomes, and lower care quality. All of these factors are detrimental to health care organizations because they result in human suffering and nurse turnover with its resulting financial cost (Recio-Saucedo et al, 2015; Wei et al, 2018; World Health Organization [WHO], 2022).

The essential role of leadership in developing a safety culture is a transparent and nonpunitive approach to event reporting, which is critical to promoting learning from adverse events, close calls, and unsafe conditions (The Joint Commission [TJC], 2021). *Leading a Culture of Safety: A Blueprint for Success*, co-authored by representatives of the American College of Healthcare Executives and The National Patient Safety Foundation's Lucian Leape Institute (2017), establishes 6 leadership domains requiring leadership to focus on developing and sustaining a culture of safety. "Lead and Reward a Just Culture" is one of the identified leadership domains. As explained in the blueprint, a just culture recognizes that punishing people for mistakes will discourage reporting, which results in failure to rectify problems in the system and sets the stage for recurrence of the error. Delivering safe nursing practice and safe patient care requires the integration of many complex factors working together simultaneously.

ENA POSITION

It is the position of the Emergency Nurses Association (ENA) that:

1. Leadership and health care workers have a mutual responsibility to create collaborative values that support a just culture, healthy work environment, and both personal and organizational accountability.
2. Health care workers and leadership share responsibility for respectful, professional, and effective communication with zero tolerance for intimidation, abusiveness, or bullying from any source.
3. Leadership and health care workers strive to identify and assess workplace violence triggers and support the implementation of an effective workplace violence prevention program to mitigate violence and its effects.
4. Leadership ensures resources and education are available in the workplace to sustain the physical and psychological needs of the health care worker, such as safe staffing levels, reduction of fatigue-related risks, protected mealtimes, and opportunities to debrief after critical events.
5. Emergency nurses and nurse researchers use current evidence to recommend best practices aimed at creating healthy work environments.

Background

Researchers have identified characteristics of a healthy nursing work environment as including a productive and collaborative setting in which nurses and other health care workers are free from physical and psychosocial harm (TJC, 2021; Wei et al, 2018; WHO, 2022). At the same time, such a work environment should enable them to maximize their ability to provide safe, quality care as well as meet personal needs and empower them to promote a satisfying work experience (IOM, 2000; TJC, 2021; Wei et al, 2018; WHO, 2020, 2022). A just culture, along with a culture of safety, depends on the collective attitude of stakeholders at all levels, with everyone taking responsibility for safety and safe practice in the work environment. This can lead to increased safety and decreased injuries for patients and staff (Kanaskie & Snyder, 2018; Marx, 2019; van Baarle, 2022). A healthy work environment is multifaceted. Research supports the intricate connections between the many personnel and organizational factors that contribute to a healthy work environment.

A key to providing and sustaining a healthy work environment is quality leadership. Shirey (2017) identified 4 themes describing leadership practices necessary to maintain

a healthy work environment: quality leadership, relational exchanges, environmental elements, and contextual factors. Leaders who maintained positive relationships with staff and demonstrated competence as a leader were identified as being effective in establishing healthy work environments. Important environmental factors centered on a supportive employer who is receptive to the needs of the nursing workforce. A recent review of nurse work environments indicates that healthy work environments are strategic in maintaining a stable and sufficient nursing workforce, promoting hospital efficiency and safety, encouraging positive nurse performance and productivity, improving patient care quality, and supporting a health care organization's financial viability (Wei et al, 2018).

Essential to developing and maintaining a healthy work environment is the concept of a just culture. ANA (2010) identified a just culture as an environment where individual health care workers are not held responsible for systems or organizational failure. According to Marx,[8] a just culture framework should be proactive and preventative, not reactive, and designed to address potential inherent risks within the health care system. Keys to a just culture include learning from errors after incidents occur, while fostering patient safety with attention to learning rather than blaming, thus showing support for staff (Marx, 2019; van Baarle, 2022). A just culture improves patient safety through the creation of an environment of shared accountability, evaluating systems and individual behavioral choices (ANA, 2010). There are 3 types of behaviors leading to mistakes: human error, at-risk behaviors, and reckless behaviors. Human error is an inadvertent action, the inadvertent doing of something other than what should have been done. At-risk behaviors are those that increase risk where risk is not recognized or is mistakenly believed to be justified. Reckless behavior is a choice to consciously disregard a substantial and unjustifiable risk (the Institute for Safe Medication Practices, 2020).

The Joint Commission urges organizations to establish a safety culture, which promotes trust. The Joint Commission's Comprehensive Accreditation Manual for Hospitals (2023) outlines leadership safety culture components. One component, accountability/just culture, calls on leaders to "provide and encourage the use of systems for blame-free internal reporting of a system or process failure, or the results of a proactive risk assessment." (TJC, 2018, p. 2).

A punitive approach will not solve the problems described here. Individuals may be at fault, but the system is also at fault. To achieve a just culture, the ANA supports partnerships among state boards of nursing, professional nursing and hospital associations, and individual health care organizations (2010). The criminalization of a health care provider's action may stifle open and transparent learning as health care providers weigh the risks of disclosing an error within their organization or reporting an error. (ISMP, 2020; ISMP, 2021). A healthy and just work environment is safe, productive, and satisfying (ANA, 2010; Mabona et al, 2022) rather than punitive.

It is recommended that safe staffing policies include intermittent breaks and meal breaks (Starr Rogers, 2021). Sufficient, quality rest breaks during work shifts are a key part of decreasing nurse fatigue and increasing attention to details and standards of safe patient care (ANA & National Council of State Boards of Nursing, 2014; Starr Rogers, 2021) Many hospitals have policies stipulating rest and meal breaks for nurses. However, frequently nurses do not receive these breaks due to demanding patient assignments and inadequate staffing (Patricelli, 2016). Although currently there is no single standard across all states for rest and meal breaks, evidence suggests the importance of breaks for nurses as related to patient safety (Buppert, 2017; Sixel, 2016; Washington State Nurses Association, 2018).

Additionally, integral to the promotion of safe patient care is debriefing after critical events. Debriefing after critical events has been identified as an effective means of increasing positive patient outcomes through the evaluation of staff performance and the implementation of effective processes (Kessler et al, 2015; Toews et al, 2021). Debriefings can be an economical method of highlighting positive actions and identifying areas for improvement and retraining without negatively isolating individual team members. Researchers indicate that when debriefing after critical events is used in the clinical setting, individual and team performance can improve by 25% in future critical events (Kessler et al, 2015; Twigg, 2020).

Consumer and relational violence are a significant contributing factor to an unhealthy work environment. Researchers highlight the fact that violence against nurses perpetrated by patients and visitors is as much as 3 times higher than violence against all other workers, resulting in injuries and increased stress, which exert a negative effect on nurse productivity (Dressner & Kissinger, 2018; Potera, 2016). Among health care environments, emergency department and mental health inpatient departments are considered to be the highest risk areas for staff, patients, families, and visitors (Lenaghan et al, 2018). In addition,

relational violence (workplace bullying) poses a significant threat to patient safety (TJC, 2021) and is a contributing factor to nurse dissatisfaction and turnover (Sauer & McCoy, 2018; TJC, 2021). Sauer and McCoy (2018) reported that as many as 40% of nurses routinely experience bullying in the workplace. Left unchecked, bullying of nurses not only has a high probability of decreasing nurse retention but also of leading to negative patient outcomes (Wolf et al, 2018).

In 2015, ANA developed a position statement that promoted zero tolerance of workplace violence (ANA, 2015). This policy launched an organizational campaign whereby violence against nurses in the workplace, regardless of the source or type of violence, would no longer be allowed or accepted as a mere side effect of nursing practice (ANA, 2015). Staff education on bullying and enforcement of a zero-tolerance policy for bullying can be a factor in increasing nurse retention and satisfaction. ENA supports a zero-tolerance policy of violence in the workplace that includes bullying and identifies hospital leadership as key to developing and instituting these policies (Wolf et al, 2019). The adoption of standards of evidence-based practice is critical to the development and maintenance of a healthy and just work environment.

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Plain Language Emergency Alerts

EMERGENCY NURSES ASSOCIATION

Description

Emergency alert codes (eg, "Code Blue," "Code Red") are widely used in hospitals worldwide to quickly and efficiently direct staff to critical situations without alarming patients and visitors. However, the lack of emergency alert standardization across the health care sector has resulted in a remarkably wide range of code words being used to designate a relatively small number of critical situations, even among hospitals in the same area. For example, in Pennsylvania health care facilities between 2004 and 2013, there were 80 different emergency codes designating 37 different functional categories, creating 154 combinations of terminology and intended meaning. (Wallace & Finley, 2015). Among them were 15 different codes for "combative person," 15 for "internal/external emergency," and 15 for adult medical emergencies. "Code Yellow" had 10 different meanings, "Code Orange" had 9, and "Code Purple," "Code White," and "Code Silver" each had 7. In addition, not all the codes were color codes—Pennsylvania hospitals also used 16 different letter codes ("Code A," "Code O," etc), 4 different names ("Dr Gray," "Dr Quick," etc), 12 different numbers ("Code 1," "Code 222," etc), and 22 different words ("Code Alpha," "Code Wintergreen," etc). (Wallace & Finley, 2015). Pennsylvania is not alone. Studies in at least 22 United States states, Puerto Rico, and multiple countries have found similar situations (Al-Aboud & Al-Aboud, 2010; Ashworth et al., 2015; Dyble, 2011; Committee HE-026, 2010; Padilla-Elias et al., 2013). California, which in 1999 was one of the first states to confront the issue, found that hospitals in the state had 47 different codes for infant abduction and 61 different codes for a combative person (Truesdel, 2005).

This "code confusion" is of critical importance because many health care workers work at multiple facilities, whether it is because they are travel nurses, resident physicians, or fellows or they work multiple jobs in different facilities or states. Remembering the meanings and protocols for a broad range of codes can be difficult under any circumstances but is even more difficult when the same code means very different things. For instance, "Code Green" may mean "oxygen system failure" at one facility and "violent incident" at another, which have 2 very different response protocols (Iowa Hospital Association, 2014).

One solution to this decades-old problem is plain language emergency alerts. In addition to eliminating code confusion entirely, plain language alerts are easily adaptable to novel situations, and they provide specific instruction about what those who hear alerts need to do without compromising preordained response protocols. For these reasons, the Department of Homeland Security, the National Incident Management System, the Federal Bureau of Investigation, and 10 state hospital associations (Colorado, Florida, Iowa, Kansas, Minnesota, Missouri, North Carolina, South Carolina, Texas, and Wisconsin) support the use of plain language alerts (DHS, n.d.; U.S. Department of Health and Human Services [HHS], 2014) United States.

ENA POSITION

It is the position of the Emergency Nurses Association (ENA) that:

1. Plain language for emergency alerts be adopted by all hospitals.
2. National ENA and state ENA collaborate with hospital and governmental agencies to advocate for standard national plain language alerts.
3. National ENA, ENA state councils, and ENA chapters advocate for the use of plain language alerts in all hospitals.
4. Emergency nurses advocate for plain language emergency alerts.

Background

The use of codes to activate in-hospital emergency response teams began more than a half century ago. (Harbutt, 1964, Hosler, 1958.). "Code Blue," the alert that is most widely and consistently used by hospitals in the United States, was coined in 1960. (Day, 1962; Day, 1972). This evolved into a series of color codes and "secret words" that hospital staff were expected to memorize and respond to. These codes varied widely from hospital to hospital and state to state, creating confusion.

The difference between coded alerts and plain language alerts can be seen in the contrast between active shooter situations at West Anaheim Medical Center (WAMC) in 1999 and at Brigham and Women's Hospital in 2015. At WAMC, there was no specific color code for an active shooter, and the code alert system, by its very nature, prohibited adaptation of established codes to novel situations (The People of the State of California v. Trinh, 2014). As a result, "Code Gray" was announced, which indicated the presence of a combative person. However, the Code Gray protocol at WAMC directed male staff members to respond and help control the situation, which drew them toward the shooter and resulted in 2 of them being killed (The People of the State of California v. Trinh, 2014).

Brigham and Women's hospital, on the other hand, had replaced coded alerts with plain language alerts prior to the 2015 active shooter incident. Their overhead emergency alert stated "A life-threatening situation now exists at Watkins Clinic. All persons should immediately move away from that location if it is safe to do so. If it is not safe to move away, shelter in place immediately" (Sweeney, 2015, June).

In addition to its clarity and specific instruction, the Brigham and Women's alert relieved hospital staff of the task of communicating to every patient and visitor what "Code Gray" meant and what they needed to do about it while also executing the active shooter protocols (Sweeney, 2015, July).

Health care workers are far more likely than the general population to have multiple employers. Nearly 200,000 nurses across the United States hold multiple jobs. (McMenamin, 2014). A 2013 survey found that between 25% and 40% of physicians (depending on the specialty) are employed at more than one health care facility. (Bernard, 2014; McMenamin, 2014). The same applies to respiratory therapists, social workers, nursing assistants, housekeeping personnel, and other hospital staff (Hipple, 2010; Mapp, et al., 2015) resulting in real danger of code confusion and has led to adverse events (Rice, 2016; Weikel, 2017). This supports the need for plain language alerts throughout health care settings. (Dauksewicz, 2019)

For example, a part-time nurse who worked in multiple Washington State hospitals called a "Code Blue" for a patient who had stopped breathing, but "Code Blue" in that hospital meant that an armed police response was required. The nurse did not realize that "Code Blue" meant something else until the police arrived with guns drawn. (Rice, 2016). One survey of hospital staff in the Delaware Valley Region found that 41% had worked at hospitals with different codes, 40% had witnessed code confusion, and most of them were unfamiliar with the color codes for security events (Mapp et al., 2016). A seasoned physician and hospital CEO in Minnesota admitted that he had worked at 5 different hospitals during his career and never knew all of the color codes at any of them (Minnesota Hospital Association [MHA], 2011). In 2017, Weikel reviewed the ethical dilemma of not using plain language alerts, stating that the plain language alert results in "effective communication to the most amount of people" (p. 104). The author explains how lack of plain language can create confusion and delay actions, which can contribute to increased morbidity and mortality (Weikel, 2017).

Opposition to plain language alerts is usually rooted in a belief that patients and visitors will panic in an emergency, so coded language will protect both them and the staff (MHA, 2011; Proulx & Sime, 1991). However, studies of human behavior in emergency and disaster situations have shown not only that people tend not to panic but that they are more composed when they know what is happening and are given direction (Dezecache, 2015; Glass & Schoch-Spana, 2002; HHS, 2014; Mawson, 2005; National Center for Missing & Exploited Children [NCMEC], 2014; Proulx, & Sime, 1991). Perhaps this is why most hospital patients and visitors polled in multiple surveys have said that they prefer the transparency of plain language alerts over coded alerts (Drury et al., 2013; McMenamin, 2014; MHA, 2011;). Plain language alerts have many benefits, including integration into the National Incident Management System and improved response and safety for hospital patients, staff, and visitors. (Dauksewicz, 2019).

Opposition to plain language alerts also includes the belief that patients do not need to know about emergencies that do not concern them (eg, a cardiac arrest on another floor) and that plain language alerts would constitute a stressor (MHA, 2011). However, it is noteworthy that the majority of coded alerts indicate situations that could potentially harm patients and visitors, without alerting them as to what is happening or what they should do. All alerts other than those for medical emergencies, including alerts for an abducted baby or child, have potential implications for patient and visitor safety and so should be announced in plain language. (Hsu et al., 2012). As for the small number of codes that are used to designate medical emergencies, it is believed by some that most are effectively plain language alerts already due to their use on TV (eg, Code Blue) or their already-assigned plain language (eg, Code Stroke, Code Rapid Response). In many studies, however, plain language alerts are still not widely used. (Iroquois Healthcare Association, 2020). In addition, multiple studies have shown that the real stressor in overhead alerts is unnecessary noise, so the position that patients might be stressed by overhead alerts in plain language is an argument for silencing alerts altogether, rather than an argument for using coded language. (DHS, n.d.; Konkani et al., 2014; Ryherd et al., 2012;).

The formulaic nature of plain language alerts (eg, "medical emergency," plus descriptor, plus location) ensures that they provide a great deal of information in a short amount of time without violating the Health Insurance Portability and Accountability Act. (Drury et al., 2013). Concerns that plain language alerts come with the security risk of alerting perpetrators to the knowledge of their presence have been deemed unfounded by many security experts (DHS, 2017; Garloch, 2016; HHS, 2014; Hsu et al., 2012; International Association of Fire Chiefs (IAFC), 2009; Washington State Hospital Association, 200; Weikel, 2017). In a 2018 study by Prickett and Williams-Prickett, health care professionals expressed a preference for plain language alert standardization. As noted by the Director of Security at Brigham and Women's Hospital, Robert Chicarello, "There's no downside" in using plain language emergency alerts (Sweeney, 2015, July, p. 1).

Types of plain language recommended include the following (see resources):

1. Facility Alerts:
2. Bed capacity
3. Emergency plan activation
4. Fire alarm activation
5. Hazardous spill
6. Command center activation
7. Disaster alert
8. Medical alerts
9. Cardiopulmonary or cardiac arrest (adult, pediatric, or neonatal)
10. Mass casualty incident
11. Hypothermia response team
12. Stroke response team
13. STEMI response team
14. Sepsis response team
15. Malignant hyperthermia
16. RRT (rapid response team)
17. OB (obstetric) alert
18. Delivery team
19. Postpartum hemorrhage
20. Trauma
21. Security Alerts:
22. Missing person/elopement
23. Armed, violent intruder
24. Bomb threat/suspicious item
25. Combative patient/security assistance
26. Infant/child abduction
27. Lockdown
28. Civil disturbance
29. Hostage
30. Weather alert
31. Severe weather

Examples of overhead or silent paging include the following:

32. Medical alert – cardiopulmonary arrest – adult – room 202
33. Medical alert – OB alert – trauma – emergency department – bed 38
34. Security alert – infant abduction – second floor – (add descriptor of alleged perpetrator, if known)
35. Weather alert – tornado – move away from windows and take shelter
36. Facility alert – fire alarm – third floor

Resources

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Emergency Nursing Review Questions: March 2024

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These review questions are based on the Emergency Nursing Core Curriculum and other pertinent resources to emergency nursing practice. They offer emergency nurses an opportunity to test their knowledge about their practice.

QUESTIONS

1. A patient is brought to the emergency department with a severe headache and dizziness. The patient has a described history of hypertension but has not refilled prescribed medication for several months. The patient is alert and oriented ×4 and describes tingling in fingers on both hands. The patient's blood pressure is 240/140 mm Hg with a pulse of 100 beats per minute. The nurse would anticipate which of the following treatment options initially?
   - **A.** Dobutamine 5 micrograms/kilogram/minute
   - **B.** Nitroglycerin 5 micrograms/minute
   - **C.** Nitroprusside 15 micrograms/kilogram/minute
   - **D.** Clevidipine 0.1 to 0.2 milligrams/hour
2. A patient presents to urgent care with the complaint of excessive bruising over their body. The patient describes a new medication of apixaban for a new onset of atrial fibrillation. Which of the following statements by the patient would indicate an understanding of the treatment with this medication?
   - **A.** There is an antidote available if I take too much of this medication and bleed a lot.
   - **B.** I take both of my dosages in the morning to avoid forgetting the night dose.
   - **C.** This medication will keep my heart in the regular rhythm.
   - **D.** I think I need to decrease the dosage by half to avoid this bruising.
3. A patient presents to triage carrying a washcloth stating his 2 front teeth were displaced after a fall. He has the teeth in the washcloth. Dental services will be approximately 2 hours for evaluation and treatment. Which of the following would be the best option for the teeth?
   - **A.** Wrap each tooth in sterile gauze and maintain with patient.
   - **B.** Place the teeth in a labeled cup of milk.
   - **C.** Clean the teeth with an alcohol solution.
   - **D.** Refer the patient to local dentist the next day.
4. A patient is evaluated at the scene by the transport nurse after a fall downstairs. The patient opens their eyes to name call, is confused regarding the events and time, and moves left arm to a localized stimulus. The Glasgow coma scale score assigned to this patient would be:
   - **A.** 3
   - **B.** 7
   - **C.** 12
   - **D.** 15
5. A patient in the emergency department is receiving a massive blood transfusion protocol after a motorcycle crash. The patient has multitrauma injuries. After 6 units of blood have been administered, which of the following medications should be considered?
   - **A.** Potassium chloride 20 milliequivalents intravenous
   - **B.** Heparin 10,000 units intravenous
   - **C.** Amiodarone 300 milligrams intravenous
   - **D.** Calcium chloride 1 to 2 grams intravenous
6. A football player is assessed in the emergency department after a rough tackle on the field. The patient states he heard a pop in his lower leg after landing under a pile of players. He is unable to flex his foot and the foot does not move when the calf muscle is squeezed. Your suspicions would suggest:
   - **A.** Ruptured Achilles tendon
   - **B.** Fractured proximal tibia

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C. Grade III ankle sprain
D. Plantar fasciitis

ANSWERS

1. Correct answer: B

A hypertensive crisis is defined as a sudden, severe increase in blood pressure. Generally, a blood pressure reading of 180/120 mm Hg or greater is defined as a hypertensive crisis. A history of essential hypertension is commonly described. The goal of treatment is to lower the blood pressure by 25% in the first hour, then to 160/100 over the next 2 to 6 hours, and then gradually to normal over 2 days. Of the drugs listed, the most appropriate drug would be nitroglycerin 5 micrograms/min. When titrated, this medication would slowly lower the blood pressure by vasodilation. Nitroglycerin is a nitrate, and its action is directed to relaxing the blood vessels and increasing the supply of blood and oxygen to the heart while reducing its workload. An initial low dose can be increased to achieve blood pressure reduction (B). Dobutamine is an inotrope that increases the strength of the heart muscle and increases blood pressure. It would not be indicated in a patient with hypertensive crisis. It is used to treat congestive heart failure (A). Nitroprusside is a potent vasodilator, which is used to lower blood pressure. The correct dose is 0.5 to 8 micrograms/kilogram/minute, which can lower the blood pressure very quickly (C). Clevidipine is an intravenous infusion used to treat hypertension. It is an ultrashort-acting dihydropyridine calcium channel antagonist that vasodilates blood vessels, especially coronary vessels. The correct dosage for infusion is 1 to 2 milligrams/hour (D).[1,2] (Please check with manufacturer and institution recommendation regarding all dosage amounts because dosage range recommendation may vary over time.)

2. Correct answer: A

Apixaban is an anticoagulant used in patients with atrial fibrillation to reduce risk of a stroke and systemic embolism. Apixaban is a factor Xa inhibitor decreasing thrombin generation and thrombus formation. Andexanet alfa is used when the anticoagulation effects of Eliquis need to be reversed quickly because the patient's life is at risk due to uncontrolled bleeding. Andexanet alfa works by mimicking the action of the blood's factor Xa component, which aids in clotting (A). The patient should take medication as prescribed, usually 5 mg twice a day (B). Apixaban acts as an anticoagulant and does not regulate the atrial fibrillation (C). The patient should take medication as prescribed and not alter the dosing. The patient should contact their provider for any alterations (D).[2,3]

3. Correct answer: B

Tooth avulsion is a dental emergency causing eventual necrosis of the tooth pulp. For the best chance of reimplantation, the teeth should not be handled except by the crown and placed in a compatible solution to avoid further damage. A pH preserving fluid (Hank's solution) or milk would be a suitable storage receptacle for the teeth (B). Keeping the teeth dry would cause further damage to the pulp and other dental structure (A). The teeth should not be handled for any cleaning and placed under the patient's tongue, returned to the socket, or placed in a labeled solution as described (C). The periodontal ligament dies if the tooth is out of the socket for greater than 60 minutes. A rapid replacement should be the goal (D).[4]

4. Correct answer: C

The Glasgow coma scale is a standardized neurological assessment tool, evaluating 3 components: eye opening, verbal response, and best motor response. A score of 3 to 15 can be obtained, with 15 being fully alert and normal. This patient opens eye to speech, 3/4; is confused, 4/5; and moves left arm to stimuli, 5/6. The total score would be 3+4+5 = 12/15 (C). The other scores would not be a correct assessment analysis (A, B, D).[5]

5. Correct answer: D

A patient receiving a rapid transfusion protocol can develop hypocalcemia due to the citrate anticoagulant used in banked blood binding with free serum calcium. Calcium replacement should be considered with the rapid transfusions (D). Hyperkalemia can be observed due to high potassium levels in banked blood and intracellular potassium release from lysed blood cells. Potassium should be monitored but not administered as part of the protocol

(A). Heparin is an anticoagulant and would further depress any clotting factors (B). Amiodarone is an antidysrhythmic used primarily for ventricular dysrhythmias. Indications for amiodarone would be defined depending on the patient's cardiac rhythm status (C).[6,7]

6. Correct answer: A

The Achilles tendon is a thick tendon located on the posterior surface of the distal leg. It connects the gastrocnemius and soleus muscles in the calf to an insertion point at the calcaneus. It is the strongest tendon in the body and allows a person to walk, run, push off, or jump. A tear to the Achilles tendon may demonstrate a loud pop at the time of injury and may limit foot movement if totally torn (A). A fracture of the proximal tibia would be near the knee and not have the foot issues (B). A grade III ankle sprain would cause severe pain and swelling, but not the inability to flex the foot (C). Plantar fasciitis effects the bottom of the foot, causing severe pain with walking (D).[8]

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