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- The Quality of Symptoms in Women and Men Presenting to the Emergency Department With Suspected Acute Coronary Syndrome
- Anxiety and Stress in Live Disaster Exercises
- Emergency Nurses' Perception of Geriatric Readiness in the ED Setting: A Mixed-Methods Study
- Shared Decision-Support Tools in Hospital Emergency Departments: A Systematic Review
- Pediatric Triage Education for the General Emergency Nurse: A Randomized Crossover Trial Comparing Simulation With Paper-Case Studies
- Pediatric Emergency Department Staff Preferences for a Critical Incident Stress Debriefing
- EMTALA: The Evolution of Emergency Care in the United States
- Creating a Sensory-Friendly Pediatric Emergency Department
- Using Mathematical Modeling to Improve the Emergency Department Nurse-Scheduling Process

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An Epidemic of Incivility in the Emergency Department

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

I am not exactly sure why, but there seems to be a level of incivility toward health care workers in our emergency departments today that was not as prevalent before the pandemic. This is definitely a common thread as I talk to other concerned emergency nurses throughout the country and the world. Incivility is hard to describe but we know what it is immediately when we see it, and it is troubling.

I am not necessarily talking about violent acts against emergency workers, although there is often a fine line between incivility and violence. I am talking about the rudeness, gesturing, yelling, scene-making drama, and the "me first" attitude that we encounter on a daily basis. Incivility seems to be more prominent than violence in the emergency department.

As emergency nurses, we can often play "can you top this" when describing some incredibly negative encounters we have had with rude or demanding patients in the emergency department. In contrast, the patient we are caring for may be just fine, but the family and friends with that patient are the ones who are acting out toward us. It is still sometimes astonishing to me.

In the media, we often see videos of passengers berating a flight attendant or someone in a restaurant threatening and yelling at a server. Many of these encounters even become physical. Similar events occur in the emergency department on a regular basis (but we cannot film them).

My best advice for dealing with incivility is to *never* match it. It can be incredibly contagious and escalate in seconds. Take the moral high ground. Never let yourself get into a shouting match with a patient or visitor. If you see this happening to another nurse, gently step in to show your support and help deescalate the tension. Try not to argue. More and more I ask myself this question on a regular basis, "Do you want to be right or do you want to be at peace?" (Answer? I want to be at peace!) You do not have to take this treatment, and the best advice I can give is to disconnect. That disconnection comes in many forms—physically, emotionally, or spiritually. Find whatever works for you and do it.

As emergency nurses, do we try to step back to see past the incivility to find out *why* the person is behaving that way? Easier said than done—I know! Sometimes people act out because they feel as if they are not being heard. Is that the case? Some people have such a need for attention that even negative attention meets that need. Incivility is never acceptable, but as nurses, we often see where it is misdirected. An experienced professional knows this and is able to see past it. A patient may later apologize for their rudeness or unacceptable behavior, but we also know that some people can never apologize.

I heard an experienced emergency physician say we should be happy with just a few positive patient encounters today; that we cannot expect every single ED patient experience to be positive. I am not sure I agree with that. I understand what he is saying, but is that lowering our standards or just the reality today?

No method for dealing with incivility and rudeness works all the time. Try to deal with it and move on. In no way am I saying the incivility is acceptable, but it does seem to be a regular factor in our work. We deserve better.

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First Do No Harm: Addressing Bias in Emergency Nursing

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Several significant events in the past 5 years, including the coronavirus disease 2019 (COVID-19) pandemic[1,2] and alarming increases in maternal mortality in the United States, particularly among African/Black and Native American populations,[3] have prompted increased focus on racism in health care and the impact that bias has on health inequities. The COVID-19 pandemic affected humans from diverse backgrounds worldwide, and the resulting data regarding infection rates and outcomes highlighted stark health inequities among racialized groups. In the United States, people racialized as African/Black American, Asian, Hispanic, and Native American/Alaskan experienced higher rates of hospitalization and death caused by COVID-19.[1,2] Although some of these adverse outcomes are attributed to structural inequities such as employment and access to care, disparities are still prevalent after controlling for sociodemographics and underlying health conditions.[2] Evidence indicates that systemic racism, clinician bias, and discrimination contribute to the health inequities experienced among people who have been historically marginalized in the United States.[4]

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The concept of bias and discrimination is not new in health care. Health inequities related to race and ethnicity in emergency care have been documented for decades.[4-7] The National Institutes of Health[8] published a seminal book on unequal treatment 20 years ago, yet health inequities attributed to bias persist. People who are racialized as non-white are not alone in experiencing adverse health outcomes because of bias. There is compelling evidence that people identifying as members of the lesbian, gay, bisexual, transgender, queer, intersex, asexual, and two-spirit community, particularly transgender and nonbinary people, experience bias when seeking care.[9,10] Bias also occurs based on lived experience and disease process (eg, people experiencing homelessness, people with a substance use disorder, people with a mental health disorder, and people with chronic pain).

These are not the only forms of bias that may negatively affect health outcomes and patient experiences. Dozens of cognitive biases routinely affect the care provided in emergency settings. In the past decade, the Joint Commission published several safety-related messages discussing the impact of bias on patient safety. These safety alerts address implicit and explicit biases and cognitive biases.[11,12] According to the National Institutes of Health, implicit bias is a "form of bias that occurs automatically and unintentionally, that nevertheless affects judgments, decisions, and behaviors"[13](p.1). Personal experiences, beliefs, attitudes, and stereotypes often shape implicit and explicit biases. Both forms of bias can cause harm; therefore, emergency nurses must explore the explicit and implicit biases they hold. It is important to understand that implicit biases are no less harmful than other types of bias and to address these biases emergency nurses must engage in critical reflection and hold themselves and each other accountable.

The Joint Commission described cognitive biases as "flaws or distortions in judgment and decision making"[12](p.1). More than a hundred cognitive biases can influence clinician decision making in the emergency setting. A few of the common forms of cognitive bias that occur in emergency settings include, but are not limited to, anchoring bias, ascertainment bias, and confirmation bias. Anchoring bias occurs when clinicians rely on initial impressions and remain anchored to that initial impression despite the availability of new information. This form of bias can occur during patient handoffs or when emergency nurses and other emergency clinicians hold preconceived beliefs or stereotypes about a patient or population.[12]

Ascertainment bias is at play in emergency care when clinicians make decisions based on previous experiences with the patient or previous beliefs such as stereotypes.[12] This type of bias is common when the patient is known to the emergency care team or team members hold preconceived ideas about the patient type (eg, patients with sickle cell disease or people with frequent ED visits). Confirmation bias occurs when emergency nurses and clinicians selectively accept or seek information that confirms their opinion about the patient.[14] Although this is not a comprehensive description of all forms of cognitive bias that affect emergency nurses' care, it does provide a glimpse into how bias affects care delivery and safe care.

Emergency nurses often state that they provide equitable care even when they acknowledge bias exists, yet current evidence does not support the presence of equitable treatment in emergency care settings.[4-7] Wolf et al[15] conducted a study exploring emergency nurses' experiences with bias in the United States. The study results overwhelmingly demonstrated that emergency nurses routinely observe biased care. In addition, the investigators found that emergency nurses rarely confronted bias when it was observed.[15] In essence, that means that emergency nurses know bias is affecting care and are not taking action to address it in real time. This failure to rescue patients is likely caused in part by the desire to be a part of the team and maintain a comfortable working environment.[15] It may also result from emergency nurses lacking the knowledge and skills needed to address biased care.

Exploring personal biases and addressing biases observed in health care can be uncomfortable, but it is a critical step forward in advancing health equity in emergency care. Emergency nurses must be willing to examine their implicit and explicit biases. Nurses cannot continue to claim that they "treat everyone the same" and provide equitable care when the evidence clearly demonstrates that health inequities are prevalent in health care. This anchoring bias that nurses are inherently "good people" who do not cause harm prevents nurses from growing individually and leading change. All emergency nurses and clinicians have biases that influence the care they provide. Emergency nurses can examine their biases by seeking education, increasing awareness of inequities, and engaging in self-reflection.[16] The National Institutes of Health (https://diversity.nih.gov/sociocultural-factors/implicit-bias-training-course) and the Kirwan Institute for the Study of Race and Ethnicity (https://kirwaninstitute.osu.edu/implicit-bias-training) offer free self-paced implicit bias learning modules that nurses can use to gain foundational knowledge about implicit biases. Emergency nurses can also use the Harvard Implicit Association Test (IAT) to examine their implicit personal biases. The Harvard IAT helps people to identify implicit biases for a wide range of populations. The IAT is available at https://implicit.harvard.edu/implicit/takeatest.html.

The Future of Nursing Report 2020 to 2030 focused heavily on the nurse's role in charting a path to health equity.[17] Emergency nurses can begin to address bias in health care by ensuring adherence to evidence-based clinical practice guidelines, implementing zero-tolerance standards for derogatory statements or stereotypes, analyzing structural factors that affect health, and challenging all forms of bias in practice. Understanding the role that structural factors such as racism and discrimination have on social determinants of health provides a foundation for emergency nurses to address health inequities.[17] Emergency nurses should approach patient care with cultural humility and engage in perspective taking to better understand the experiences of people they accompany in care. Emergency nurses must also learn how to address biased care when encountering it and have the courage to speak up. Sharing a simple observation, such as "I am curious why this patient is not receiving the standard of care," can facilitate dialogue and help team members recognize that bias may be influencing decision making.

ED leaders and administrators must also gain insight into their personal biases and the culture of their departments. Wolf et al[15] found that when emergency nurses reported biased care, nothing was done about it, and at times the person who reported the bias was disciplined. Nurse leaders can take several steps to reduce the impact of bias, racism, homophobia, transmisia, and other forms of discrimination. Strategies include but are not limited to implementing and evaluating the impact of education for all emergency care providers, developing policies for equitable care, appropriately investigating, and addressing complaints of bias, including equitable care metrics in department and provider assessments, and providing equity-specific feedback.[11]

Emergency nurses play a critical role in advancing health equity.[17] Ensuring safe, respectful, and culturally informed care will require nurses to demonstrate reflexivity and courage. Developing cultural humility and structural competency can be a starting point for this work. First, emergency nurses must confront the anchoring bias that this work is not needed. Addressing the harms caused by bias and ensuring safe care is not divisive or unnecessary. It is our responsibility to engage in evidence-based practice. The evidence is clear that bias exists in emergency practice and causes significant harm to the people entrusted to our care. The evidence necessitates action and accountability at the individual and organizational level for all emergency care clinicians.

Author Disclosures

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Comment on the American College of Surgeons Trauma Program's "Best Practices Guidelines Screening and Intervention for Mental Health Disorders and Substance Use and Misuse in the Acute Trauma Patient"

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To the Editor:

I want to bring to your reader's attention the American College of Surgeons Trauma Program's "Best Practices Guidelines: Screening and Intervention for Mental Health Disorders and Substance Use and Misuse in the Acute Trauma Patient"[1] released in December 2022. The guideline is an extensive and excellent look at the literature surrounding screening and intervening in trauma patients regarding their pre-injury mental health and substance use history. It quantifies what clinicians dealing with traumatically injured patients intuitively know: there is a high level of preexisting mental health and substance use disorders in traumatically injured patients. The magnitude of this public health issue is well established. Although we know that mental health issues are present at a high degree in traumatically injured patients, often these underlying morbidities are not identified or treated. "Across Level I and Level II trauma centers in the U.S. in 2014, less than 25% are screened for depression and 7% for post-traumatic stress disorder symptoms. Failure to screen patients with traumatic injury for mental health difficulties leaves up to 90% of those with post-injury post-traumatic stress disorder or depression without adequate care to address these and related needs."[1] The guideline also outlines several strategies and techniques for screening and intervening in this population. I would like to specifically highlight the section concerning screening and intervening for underlying mental health disease.

In my opinion, and supported by this guideline and its cited literature, all trauma centers and emergency departments should have a predetermined protocol for identifying patients at risk of future injury or death associated with depression, post-traumatic stress disorder, or other underlying psychiatric illness. Much like the concept in substance use disorders, a Screening, Brief Intervention, and Referral to Treatment model can be used to identify and treat those with underlying mental health concerns. Screening can be accomplished by either using an automated chart screening for risk of underlying disease or using a trained clinician to perform bedside screening. The guideline suggests screening trauma patients for mental health disorders using a verified tool such as Injured Trauma Survivor Screen, Peritraumatic Distress Inventory, or Posttraumatic Adjustment Scale. This can be done by trained nursing staff, social work, peer coaches, or other appropriately trained health care providers. Those who screen the patient do not necessarily have to be the ones who perform an intervention if the screen is positive.

Those patients who screen positive should receive a brief intervention. The guideline explains many options related to interventions and offers excellent data supporting their use. Creating resources for mental health referral is also critical to success in treating underlying mental health illness in trauma patients. Screening, Brief Intervention, and Referral to Treatment programs make financial, medical, and public health sense when it comes to preventing future injury and death.

Those who create policy and procedures in trauma centers and emergency departments would be well advised to read this well written, excellently sourced position paper and implement the programs it contains. All health care providers caring for traumatically injured patients can gain valuable knowledge by reviewing this guideline.

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Systemic Lupus Erythematous Presenting as a Grand Mal Seizure: Case Report

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Implications for Emergency Nursing

- Systemic lupus erythematosus continues to be a disease of unknown etiology significantly affecting women in the childbearing years.
- The primary finding of this case study is to recommend an increased index of suspicion for an autoimmune or inflammatory condition if the workup for neurological disorders and infection is negative.
- Recommendations for translating the findings of this paper into emergency clinical practice include the importance of a thorough history, assessment, and evaluation when diagnosing systemic lupus erythematosus in the emergency department, given that not one test alone can diagnose systemic lupus erythematosus.

Abstract

A 30-year-old female presented to their local emergency department with an active, unprovoked generalized tonic-clonic seizure in progress. Past medical and family history of the patient did not include inflammatory or autoimmune conditions nor epilepsy or seizure. The patient's toxicology screen was negative, along with neurological and infectious differentials assessed for rule-outs. This case report includes updated guidelines for the diagnosis and treatment of neuropsychiatric systemic lupus erythematosus for advanced practice providers.

Key words: Systemic lupus erythematosus; Seizure; Neuropsychiatric SLE; Case report

Introduction

A 30-year-old Caucasian female presented to the emergency department in an active, unprovoked generalized tonic-clonic seizure. The patient and family history were absent for any autoimmune diseases, epilepsy, or seizure disorder. The patient was otherwise healthy with no known allergies before presenting to the emergency department. There was a noted low-grade oral temperature of 37.7 °C (100 °F). The patient had a negative toxicology screen, along with neurological and infectious differentials assessed for rule-outs. An electrolyte panel was also completed and no imbalance was noted. The goal of this case review is to discuss the differential diagnoses, final diagnosis, and treatment modalities an advanced practice provider (APP) would consider for such a reported case that presents to the emergency department following the CAse REports guidelines.[1]

Possible Differential Diagnoses

Considering seizure differentials in the emergency department, the APP must start with possible infectious and noninfectious processes at the time of patient presentation. The most common differential diagnoses for neuropsychiatric systemic lupus erythematosus (SLE) are presented in Table 1. The first infectious differentials to consider are encephalitis and meningitis. Noninfectious diagnoses that can mimic neuropsychiatric SLE include malignancy; ischemia, such as an acute cerebral vascular accident; or hemorrhage, a thrombotic neurological event. An APP must also evaluate

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TABLE 1
Most common mimicking or comorbid diagnoses for neuropsychiatric SLE

Diagnosis	Tests to consider
Systemic or central nervous system infection	Blood and urine culture aerobic and anaerobic, may need to indicate fungal, CBC with differential and platelet count, coagulation panel, viral panel including herpes, HIV, and syphilis, band count, IgG, MRI, ESR, CRP, unless contraindicated, a LP for CSF evaluation, including gram stain and culture, CT rule-out elevated intracranial pressure or mass
Delirium or acute confusional state, encephalopathy, posterior leukoencephalopathy syndrome (RPLS)	Blood sugar, arterial blood gas, CBC with differential, carbon monoxide and cyanide levels, electrolyte level, creatinine, BUN, serum osmolality, liver panel, including enzymes, bilirubin, alcohol and ammonia levels, thiamine and vitamin B12 levels, U/A, urine culture, estimated glomerular filtration rate, protein-to-creatine ratio, thyroid panel, serum cortisol level, if not contraindicated LP for CSF analysis and protein level, CT or MRI head, EEG
Central nervous system malignancy, tumor, brain abscess, or pseudotumor cerebri	CBC, fundoscopic exam, electrocardiogram, EEG, LP if not contraindicated, brain/head MRI with contrast, serum lactate, serum prolactin
Drug-induced SLE, glucocorticoid-related psychosis, or medication withdrawal	Assess temperature, review medication list, toxicology screen of urine and serum, electrocardiogram
Intracranial injury, TIA, or stroke—atherosclerotic, hemorrhagic, hypoxia, or thrombosis	CT brain/head in acute setting, MRI otherwise; pulse oximetry, chest x-ray for pulmonary insufficiencies, arterial blood gas, coagulation studies
Optic neuritis or myelitis, such as comorbid neuromyelitis optica spectrum disorder or multiple sclerosis	Antiaquaporin-4 antibodies; nerve conduction and EMG, brain and spinal cord MRI with and without contrast, myelin oligodendrocyte glycoprotein antibodies, herpes panel, CSF assessment
Acute chorea	CBC, electrolyte panel, thyroid panel, liver and renal panel, vitamin B12 level, genetic testing, antibody testing, toxicology screen, infectious screen and titers, copper level, brain MRI
Primary psychiatric disorder	Psychological evaluation for depression, anxiety, mania, schizophrenia, sleep disorder
Metabolic imbalance or condition	Blood sugar level, CRP, electrolytes, renal function, BUN, interleukin-6, liver panel including enzymes and ammonia level, thyroid panel, lipid level, cholesterol level, metabolic studies
Vasculitis of the CNS	Assess blood pressure, obesity, smoking status, and other risk factors, antibodies, CBC, ESR, CRP, electrolyte level including BUN and creatinine, U/A, liver panel, complement levels, immunoglobulin levels
Thrombotic thrombocytopenia purpura	CBC with differential and platelet count; may need to specifically request platelet level in some health care facilities
Hemophagocytic lymphohistiocytosis	CBC with platelet count, cytokine level, immunoglobulin levels, ferritin level, coagulation studies, liver panel, triglycerides, bone marrow evaluation, brain MRI

continued

TABLE 1
Continued

Diagnosis	Tests to consider
Neuropathy of peripheral nervous system such as Myasthenia gravis, Guillain-Barré syndrome	Antibody testing of muscle-specific, CBC, electrolytes including glucose, ESR, thyroid panel, biopsy of nerve, nerve conduction studies, Eval of CSF, EMG, MRI of mediastinum location of thymus

BUN, blood urea nitrogen; CSF, cerebral spinal fluid; CBC, complete blood count; CT, computed tomography; CRP, C-reactive protein; EEG, electroencephalogram; EMG, electromyography; ESR, erythrocyte sedimentation rate; LP, lumbar puncture; MRI, magnetic resonance imaging; SLE, systemic lupus erythematosus; U/A, urinalysis.
When another diagnosis can be considered or explained, then individual criteria must be taken into consideration for diagnosing SLE. This list may not be all inclusive.[2]

electrolytes specifically for hyponatremia, hypocalcemia, and hypomagnesemia. Once these differentials are ruled out, then inflammatory differentials should be considered such as seizure or epilepsy owing to autoimmunity.[3,4]

Diagnostic Testing

The presenting case started with obtaining a rapid point of care glucose, complete blood count with differential, chemistry panel including liver enzymes, magnesium level, thyroid stimulating hormone, renal function tests, blood cultures, urinalysis and culture, pregnancy test, and a toxicology screen, reporting negative results for sepsis and substance use. An electrocardiogram was performed with normal sinus rhythm noted at 72 beats per minute.

There was an immediate consultation to neurology for the seizure activity. Once the seizure was controlled, a magnetic resonance imaging and electroencephalography were completed. A lumbar puncture for evaluation of cerebral spinal fluid (CSF) was then performed, with negative results for infection; however, the results demonstrated signs of inflammation. This was then followed by additional orders for serum antinuclear antibodies (ANA), antiribosomal P protein antibodies, anti-Smith antibodies, antiphospholipid antibodies, anticardiolipin, and CSF for anti-double-stranded deoxyribonucleic acid antibodies. The criteria for diagnosing SLE according to the 2019 European League Against Rheumatism (EULAR) and American College of Rheumatology (ACR) Classification for SLE are presented in Table 2. These results indicated an autoimmune disorder and an immediate consult to rheumatology was made.

Management of Presenting Case

Immediate treatment of seizure activity was the priority. Once the seizure activity was controlled and other possible causes were eliminated, the working diagnosis became new-onset SLE with a neuropsychiatric component. Considering this presentation to be acute, treating the overriding symptoms must come first, and then the APP can proceed to order prophylactic and chronic treatment starting with the lowest recommended amount of titrated medication for symptom relief. Further discussion on specific medications will be discussed later in this article. The patient was admitted to the hospital for observation and to complete further diagnostic tests before discharge.

On admission, this patient was also seen by both the nephrology and the cardiology teams to further assess for potential system involvement given that this is increased in patients diagnosed as having SLE. An initial investigation for both renal and cardiac involvement was conducted, with follow-up kidney function tests and a kidney biopsy to guide treatment planning.[6]

According to the latest research, the lipocalin-2 biomarker is a key test in those with neuropsychiatric SLE.[7] Testing should assess the CSF for the lipocalin-2 biomarker in patients experiencing a neurological

TABLE 2
Criteria for diagnosing SLE using the 2019 EULAR/ACR classification

Clinical presentation	Immunological studies	Mandatory criterion
Unexplained noninfectious fever (CRP is not increased)	Anti-double-stranded DNA	Positive ANA
Acute pericarditis	Anti-Smith antibodies	
Alopecia of nonscarring nature	Antiphospholipid antibodies (anticardiolipin or anti-β2-glycoprotein I antibodies—IgA, IgG, IgM)	
Pericardial or pleural effusion	Thrombocytopenia	
Lupus nephritis classification II/V, III/IV by the International Society of Nephrology and Renal Pathology Society	Leukopenia	
Proteinuria	Hemolytic anemia and Coombs+	
Neuropsychiatric involvement of psychosis, delirium, or seizure	Low complement C3 and/or C4 levels	
Mucocutaneous/acute cutaneous lupus erythematosus, malar/butterfly rash, maculopapular rash	Hemolysis-decreased haptoglobin, high indirect bilirubin, reticulocytosis, high lactate dehydrogenase	
Joint involvement—arthritis/myalgia		
Subacute cutaneous lupus erythematosus-psoriasiform rash, photosensitivity		
Discoid lesions		
Oral ulcers		
Serositis		

ACR, American College of Rheumatology; ANA, antinuclear antibody; CRP, C-reactive protein; EULAR, European League Against Rheumatism; SLE, systemic lupus erythematosus.
Data adapted from[5] Aringer M, Leuchten N, & Johnson SR. New Criteria for Lupus. *Curr Rheumatol* 2020;22(18):1-8. https://doi.org/10.1007/s11926-020-00896-6.
Weighted points for 2019 ACR/EULAR classification can be found in Aringer et al.[5]

event such as seizures. Although not performed in the ED setting for this patient, it is valid in up to 50% of those diagnosed as having SLE having a neuropsychiatric event[8] and higher disease activity,[9] with 28% reporting seizure as their initial entry into the diagnosis of lupus.[10]

Follow-up Outcomes

Once the APP has determined the patient is experiencing something chronic rather than acute, determining immediate care, treatment plan, and follow-up with collaborative health care providers is needed. The presenting patient was discharged home the next day with scheduled follow-up appointments with rheumatology and neurology.

SLE

SLE is an under-recognized, chronic disease with an unknown etiology primarily affecting women in their childbearing years with T- and B-cell actions and autoantibody development with repeated exacerbations and remissions reported.[11,12] The presence of a butterfly rash is the most commonly known presentation for SLE and reported in up to 90% of the population who are diagnosed as having acute cutaneous lupus erythematosus (ACLE).[13] Those with ACLE also have positive ANAs and may go on to be diagnosed as having SLE.[14]

Zhang et al[15] reported 71.8% of those with neuropsychiatric SLE were more likely to report a butterfly rash to the face than those without a neuropsychiatric component. This case review includes a patient who did not report a rash, and the APP did not describe the presence of a rash on the patient's face. Important patient education should include the use of sunscreens and other protection along with smoking cessation for those living with ACLE and/or SLE.[13]

Lupus registries have been set up globally to record and monitor SLE. There is increasing incidence and prevalence of SLE in the United States, with SLE being 9 times more prevalent in females (128.7 per 100,000).[16,17] Despite these numbers, the incidence in males should not be ignored given that it is often reported later in the life of male patients, and the disease is more aggressive.[18] Prevalence data have demonstrated non-Hispanic Black females are disproportionately affected,[16] with numbers as high as 230.9 per 100,000.[17] Hispanic females rank at 120.7 per 100,000, whereas white females are at 84.7 per 100,000 and Asian/Pacific Islander females at 84.4 per 100,000.[17] Clinical manifestations of antiphospholipid syndrome, thrombocytopenia, and lupus nephritis are more often seen in the Asian/Pacific Islander, Black, and Hispanic populations.[19]

The EULAR and the ACR collaborated to write a new set of SLE classifications to assist with earlier diagnosis. Through this collaboration, the new classification for diagnosing SLE includes criteria for clinical presentation, criteria for immunological studies, and a positive ANA with the ANA set as a mandatory criterion as presented in Table 2.[20] Fever that cannot be explained for infectious reasons is also included in the EULAR/ACR 2019 guidelines, given that 34% of patients early diagnosed as having SLE had fever of unknown origin versus those diagnoses mimicking SLE (13.7%; $P < .001$).[20,21] Ultimately, this new classification now requires a positive ANA, 1 clinical manifestation, and 10 or more criteria for a diagnosis of SLE.[22]

Neuropsychiatric SLE

Neuropsychiatric SLE clinical manifestations include a number of signs and symptoms, such as headache, cerebral vascular accident, acute confusion, acute cerebellar ataxia, seizure, and psychosis. The EULAR/ACR 2019 guidelines recommend treating underlying manifestations along with the neuropsychiatric SLE and acute referrals as needed.[6,10,15,23] Neuropsychiatric SLE has been seen in up to half of those with SLE, and more than 30% of those presenting with said symptoms are an early SLE diagnosis, but continued research is needed.[24]

Patients with neuropsychiatric SLE report significant deficits in memory, visual acuity, and verbal reasoning and also having antiribosomal P protein antibodies.[15,23,25] Unterman et al[26] reported a mean prevalence of 8% for reported seizures in those with SLE. Nephrology and cardiovascular concerns reported in those with neuropsychiatric SLE have shown the white population, older in age, and anti-β2 glycoproteins or antiphospholipid antibody positive tests being factors for earlier presentation.[27,28]

Discussion

The costs for SLE treatment from ED visits to hospitalization and treatments have been steadily rising, with more severe disease equaling even higher costs.[29] As the incidence and prevalence of autoimmune disorders increase, the emerging trend of genome-wide association studies, along with ongoing research into environmental and hormonal risk factors, should be considered for personalized care in those with SLE.[11,12,14,30]

Treatment

Management to limit or stop the progression of inflammation and its associated damage to major organs is essential. The APP should be aware patients will have relapses requiring strategic treatment and follow-up during remissions.[6] First-line therapy for patients diagnosed as having SLE should start with hydroxychloroquine (HCQ) for reduction of symptoms, along with its long onset of action and low cost of therapy.[6] The APP needs to be aware that sudden discontinuation of this drug may put the patient at risk of an exacerbation.[6,31] Fanouriakis et al[6] and Marmor et al[32] recommend that these patients receive HCQ at a dose <5 mg/kg/day. It is important to use an accurate/measured weight from a recent visit to decrease the possibility of toxicity to the retina. A fundoscopic examination is mandatory to rule out existing maculopathy before starting HCQ and must continue to follow for macular or retinal concerns with long-term use of HCQ.[6,31] There is a protective reason for the administration of HCQ given that it is reported to slow down the progression and occurrences of central nervous system complications in those with SLE.[27]

Rodriguez-Hernandez et al[28] reported glucocorticosteroids (GCs) as the primary treatment for seizures in those

with SLE. The use of GCs is recommended for immediate relief and to titrate to <7.5 mg/day for the level of SLE disease severity as needed.[6,33] There have been significant side effects reported in conjunction with GC intake. These include increasing cardiovascular risks, injury to organs, diabetes risk, cataracts, mood disturbances, lipid abnormalities, and moon-face physical appearance with oral corticosteroids such as predniSONE.[34] When there is neuropsychiatric involvement, methylPREDNISolone administered intravenously or triamcinolone intramuscularly for quick administration in acute circumstance should be considered.[6,34]

Introducing an immunosuppressive medication such as mycophenolate, voclosporin, azaTHIOprine, or methotrexate can assist with lowering or even discontinuing GC for those with severe disease attributing to progressive organ damage. Any future pregnancy or fertility should be discussed with the patient before the introduction of immunosuppressant medications.[6] While on the subject of fertility and hormone therapy, it is important to note this case review patient was tested for antiphospholipids due to the increased risk of thrombosis if taking hormones for birth control or hormone replacement therapy.[22]

According to Fanouriakis et al,[6] the next step, if a patient has not been able to decrease the dose for GC or has not entered remission, is the consideration of another agent such as a biologic, belimumab (Benlysta), a popular, highly marketed medication, monoclonal antibody treatment is warranted. Another recommendation would be to start riTUXimab, an off-label medication for SLE, often used for those with severe renal, neuropsychiatric, or hematological disease not responding to immunosuppressive therapy choices in addition to the HCQ and GC.[6]

When neuropsychiatric symptoms, cardiovascular symptoms, or thrombovascular concerns are involved, the APP should consider anticoagulation therapy such as antiplatelet therapy with low-dose aspirin and antilipid medications. Overall, the therapies and medication recommendations are streamlined to an initial SLE disease course with neuropsychiatric symptoms. Further discussion and treatments to consider can be found in the 2019 EULAR/ACR guidelines.[6]

Recent research is reporting critically low vitamin D levels in those with SLE and correlating with higher SLE disease activity.[35] Assessing vitamin D levels has been recommended and vitamin D supplementation to be started on those with SLE who are deficient or critically low.[35,36] Low vitamin D serum 25(OH)D_3 levels of <30 ng/mL increase the risk of osteoporosis, but factoring in the use of steroids in those with SLE increases the risk of osteoporosis and reported higher SLE disease activity.[36] Vitamin D has been reported to have protective qualities and effects for those with SLE.[14] Monitor for dosing as needed.

The use of off-label medications and treatments is easily available for physicians or APPs to prescribe but comes with significant risk. Many of the medications previously listed are based on the 2019 guidelines for medications not approved for SLE per the United States Food and Drug Administration, such as cyclophosphamide, methotrexate, mycophenolate, and azaTHIOprine.[37] Please consider this before prescribing without consultation with a physician for scope of practice and liability purposes, and document rationale well.

Implications for Emergency Nurses

The mortality rate for patients with SLE is 3 times the rate of a healthy population.[16] Emergency nurses and APPs must remain current in the standards for practice including assessments for the signs and symptoms of SLE. Given that cardiovascular concerns and infections are the most common reason for increased mortality in those with SLE, early recognition and treatment for these issues are paramount.[16]

Conclusion

A sensitivity and specificity comparison report on the dual EULAR/ACR 2019 criteria reported 96% and 98% in sensitivity and specificity, respectively, and greater than the ACR 2012 criteria.[38] Classification and diagnosis have been modified in hopes that conditions that mimic SLE and actual SLE can be identified earlier.[20] The goal for this case review is to update APPs on the current guidelines and potential misses in the emergency department. Due to the chronic nature of SLE, a long-term management plan with regular follow-up care to evaluate the patient for exacerbations and remissions with multimodule treatments is needed. Recommendations to limit the dose of glucocorticoids when possible are important.[6] It takes a collaborative effort from all health care providers to help guide those in living with SLE and to help them navigate treatments to sustain a quality of life.

Author Disclosures

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A Grade III Severe Hypersensitivity Caused by Gadopentatic Acid Injection: A Case Report

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Contribution to Emergency Nursing Practice

- Gadopentetic acid is a common contrast agent for enhanced magnetic resonance imaging. Adverse reactions due to gadolinium-based contrast agents are rare.
- This case stresses the importance of being equipped with the medicines, items, supplies, and equipment needed for emergency medicines in all departments where contrast agents are used.
- Nurses and imaging technicians should be aware of the possibility of severe allergic reactions to GBCA, even if they are rare. Even mild adverse drug reactions (such as pruritus) should be taken seriously.

Abstract

Background: Gadopentetic acid is a common contrast agent for enhanced magnetic resonance imaging. Adverse reactions due to gadolinium-based contrast agents are rare and easily overlooked by medical staff. A patient developed a rash as the first symptom and quickly developed a severe allergic reaction after receiving gadopentetic acid.

Patient presentation: A 74-year-old female patient was admitted on January 11, 2022, for femur magnetic resonance imaging. At 12:05 PM, a routine intravenous rapid injection of gadopentetic acid (15 ml) was given. Two minutes after administration, the patient developed skin itching. No obvious rash was found, but a 10 mg intravenous injection of dexamethasone was given.

Recount of events: After 1 minute, skin pruritus had not improved significantly, saliva secretion had increased significantly, and a general discomfort appeared. At 12:10 PM, outside the scanning room, the patient suddenly became unconscious; 1 mg of EPINEPHrine was injected intramuscularly, and oxygen was given through a mask. Heart rate, blood pressure, and oxygen saturation steadily dropped. The patient was transferred to the intensive care unit. After EPINEPHrine, norepinephrine, terlipressin, and dexamethasone treatments, the vital signs eventually stabilized. The patient was judged to have had a grade III severe allergic reaction according to the first aid guidelines for severe allergic reactions in China. The patient was discharged from the hospital on the morning of January 14.

Conclusion: This case stresses the importance of being equipped with the medicines, items, supplies, and equipment needed for emergency treatments in all departments where contrast agents are used. Patients with apparently mild adverse reactions to contrast agents should not be overlooked.

Key words: Gadolinium DTPA; Hypersensitivity; Adverse drug reactions; Magnetic resonance imaging; Case report

Introduction

Magnetic resonance imaging (MRI) is an important imaging method. Enhanced MRI can provide more diagnostic information and has become an important evaluation method in clinical disease diagnosis and treatment.[1] Gadolinium-based contrast agents (GBCAs) are the most common MRI contrast agents in clinical practice. Currently, 9 GBCAs have been officially put into clinical use since the US Food and Drug Administration approved gadopentetic acid (Gd-DTPA) (the first GBCA on the market in 1987), and Gd-DTPA has become the most widely used and most frequently used GBCA in the world for MRI.[2] Immediate hypersensitivity reactions with GBCAs

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are rare (0.3%), with only 0.018% for Gd-DTPA, and severe reactions were mostly reported with gadopenic acid (Gd-BOPTA).[3] This paper reports a patient with a grade III severe allergic reaction following using Gd-DTPA.

Case Presentation

A 74-year-old female patient was admitted on January 11, 2022, for osteoporosis and presence of left hip pain for more than 1 year. The patient had a history of cholecystectomy, subtotal thyroidectomy, hypertension, and osteoporosis. The patient was scheduled to undergo an enhanced MRI examination of the femur.

After the absolute contraindications to GBCA were excluded, a routine intravenous rapid injection of Gd-DTPA (15 ml/7.04 g, Guangzhou Kangchen Pharmaceutical Co, Ltd, Guangzhou, China) was given at 12:05 PM. Two minutes after injection, the patient developed skin itching. No obvious rash was found, but a 10 mg intravenous injection of dexamethasone was given.

After 1 minute, skin pruritus had not improved significantly, saliva secretion had increased significantly, and a general discomfort appeared. The examination was stopped immediately, and the patient was transferred outside the scanning room. The patient was irritable during the transfer.

At 12:10 PM, outside the scanning room, the patient suddenly became unconscious. Their head was turned to 1 side, 1 mg of EPINEPHrine was injected intramuscularly, and oxygen was given through a mask. The heart rate was 88 bpm, blood pressure could not be measured, and oxygen saturation was 96%. The hospital emergency team was called. At 12:13 PM, blood pressure was 65/35 mm Hg (systolic blood pressure/diastolic blood pressure), and oxygen saturation was 85%. At 12:15 PM, heart rate dropped to 51 bpm, blood pressure was 76/42 mm Hg, blood oxygen saturation was 76%, and the Glasgow coma scale score was 3. The patient was transferred to the emergency intensive care unit and received emergency tracheal intubation, ventilator-assisted ventilation, sedation, analgesia, norepinephrine 1 mg booster, methylPREDNISolone (40 mg), and other anti-anaphylaxis treatments. By 12:30 PM, they received three 1-mg EPINEPHrine intravenous boluses. At 12:40 PM, norepinephrine (10 mg) was given. At 12:55 PM, methylPREDNISolone (40 mg) combined with norepinephrine and terlipressin (with normal saline 50 ml, 5 ml/h) were given to maintain blood pressure. The electrocardiogram revealed atrial fibrillation, premature ventricular contractions, and extensive anterior ST-segment elevation. The electrocardiogram at 3:13 PM after continuous medication showed sinus rhythm with no abnormality, and terlipressin was stopped. At 4:15 PM, the patient's vital signs were stable under ventilator assistance and analgesic and sedative drugs (fentaNYL citrate 0.3 mg and dexmedetomidine 0.2 mg); blood pressure was maintained at 106-126/58-67 mm Hg, heart rate was 87 to 96 bpm, and blood oxygen saturation was 98% to 99%.

The patient's family revealed that the patient had a history of allergy to antipyretic analgesics (allergic manifestations were shock), pollen, and alcohol. The patient was judged to have had a grade III severe allergic reaction according to the first aid guidelines for severe allergic reactions in China after receiving Gd-DTPA. On January 13, the patient was awake, the analgesic and sedative drugs were stopped, the tracheal intubation was removed, and spontaneous breathing resumed. The patient was discharged from the hospital on the morning of January 14.

Discussion

Strengths in the case reported here include the prompt response of the radiologists, nurses, and technicians, the presence of peripheral venous access in advance, and the timely initiation of the hospital's emergency response team. Patients with apparently mild adverse reactions (ADRs) to contrast agents should not be overlooked. This case stresses the importance of having the medicines, supplies, and equipment needed for emergency care in all departments where contrast agents are used.

Drug-induced anaphylactic shock (DIAS) is a type I hypersensitivity reaction involving the cardiovascular, respiratory, nervous, and digestive systems and the skin and mucosal tissues within minutes to hours after drug use. This leads to whole body capillary expansion and permeability increase, cardiac output drops sharply, and blood pressure drops to shock level.[4] DIAS can be life-threatening in the case of failure of timely rescue. The patient reported here had a Glasgow coma scale of 3, undetectable blood pressure, cyanosis, and decreased blood oxygen saturation, indicating grade III severe allergy according to the grading standard in the Chinese guidelines for first aid for severe allergic reactions. In the case of DIAS, an intramuscular injection of adrenaline is recommended as the first-line treatment by the European Society of Allergy and Clinical Immunology and the World Allergy Organization.[5,6] Adrenaline takes effect quickly and can quickly relieve the clinical symptoms and hemodynamic

abnormalities of patients with anaphylactic shock.[7] The attending clinician should inform the patient of the possible ADRs before examination and how to warn the technician or physician that an abnormal event is happening. The medical informed consent form of GBCA administration should be signed by the patient after understands the possible risks associated with MRI and GBCAs. In addition, the patient should be closely observed during the examination and within 30 minutes after the examination for ADRs. The radiology department should have a team available to deal with the emergency response for treating GBCA ADRs.

Allergy tests cannot predict the possibility of allergic reactions following the use of contrast agents,[8] and the international consensus on drug allergy clearly states that H1 receptor antagonists and glucocorticoids cannot prevent systemic allergic reactions mediated by IgE.[9] Therefore, it is very important to ask about the patient's allergy history and closely monitor the early stage of medication administration.

The absolute contraindications to MRI are excluded when prescribing an enhanced MRI examination. The patient was allergic to antipyretic analgesics, but it is not a contraindication to gadolinium contrast agents. It was the only allergy the patient had. The relationship of that allergy to the grade III event reported here is unknown. Still, the ADR observed in the reported case began with an apparently mild ADR of skin pruritus but very rapidly evolved into a life-threatening ADR. Therefore, patients with apparently mild ADRs to contrast agents should not be overlooked.

Gd-DTPA is a paramagnetic, ionic, and non-specific extracellular fluid contrast agent. Gadolinium ions are surrounded by chelates and form gadolinium chelates with significantly reduced toxicity. The common ADRs of Gd-DTPA are nausea, vomiting, dizziness, headache, and other ADRs.[3,10,11] Moreover, Gd-DTPA has rare serious ADRs, including anaphylactic shock, coma, disturbance of consciousness, cardiac arrest, shock, increased or decreased blood pressure, respiratory distress, and acute renal failure.[3,10,11] The incidence of acute ADRs with GBCAs is low at around 0.3%.[3,10,11] An early study suggested that patients with previous GBCA allergy history were 8 times more likely to have hypersensitivity than the general population.[12] It has also been reported that patients with a previous GBCA allergy history account for 30% of the GBCA ADR population.[13] The incidence of ADRs to GBCA was slightly higher in patients with asthma and other allergies.[13]

Implications for Emergency Nurses

Medical personnel should ask the patient about their disease and allergy history in detail and determine whether to perform an enhanced MRI examination after fully evaluating the possible advantages and disadvantages of MRI for the specific patient. The radiology department should have the medicines, supplies, and equipment needed for emergency treatments in workplaces where contrast agents are used. Nurses and imaging technicians should be aware of the possibility of severe allergic reactions to GBCAs, although they are rare. Even apparently mild ADRs (such as pruritus) should be considered suspicious.

Patient Recount of Events

I selected to undergo MRI in January 2022 because of left hip pain for more than 1 year and to determine whether a hip replacement would be necessary. I lay down on the machine table, and the technician prepared me. At some point, the technician told me that the contrast agent would be injected. Shortly after, I sensed my skin itching, which I told the technician, and she gave me something for the itching. But I rapidly began to feel sick, and then I had no real recollection of the events except for a few flashes. I finally woke up in the intensive care unit.

Conclusion

Preparedness, rapid response, and careful monitoring of patients who experience any sign of ADR after gadolinium injection are the key to emergency care if an ADR occurs. Patients with apparently mild ADRs to contrast agents should not be overlooked.

Data, Code, and Research Materials Availability

A written informed consent was obtained from the patient regarding the publication of this case report, use of the personal statement, and any/all accompanying images. A copy of written consent is available for review by the editor-in-chief of this journal.

This work has been carried out in accordance with the Declaration of Helsinki (2000) of the World Medical Association. This study was approved by the Second Hospital Affiliated to Medical School of Zhejiang University Human Research Ethics Committee (20220912), and all participants provided written informed consent.

Author Disclosure

Conflicts of interest: none to report.

The patient care evaluated in this case report was performed in the radiology department where both authors are currently employed.

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Strategies to Improve Emergency Department Care of the Deaf and Hard of Hearing Patient

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Contribution to Emergency Nursing Practice

- Strategies are provided for emergency nurses to improve care of the Deaf or Hard of Hearing patient in the emergency department.
- Highlights of effective communication are shared for emergency nurses to utilize during care of the Deaf or Hard of Hearing patient.
- Emergency nurses' responsibilities are reviewed in accordance with the recommendations of the Americans with Disabilities Act for Deaf or Hard of Hearing patients.

Key words: Deaf; Hard of Hearing; Emergency nursing

Introduction

Deaf and Hard of Hearing patients (DHH) encounter health inequities as they enter the health care system.[1-5] Patients who are Deaf or Hard of Hearing experience increased emergency department length of stay due to deaf or hard of hearing factors.[1-5] Communication is a significant barrier that DHH patients must overcome every time they enter the health care system.[1-5] These miscommunications or misunderstandings between patients and their health care providers can lead to substandard care, delay in care, and long-term chronic conditions for DHH patients.[1-5] The emergency nurse's ability to communicate effectively and in a timely manner is critical for all emergency patients. Some emergency nurses may not know how to communicate with DHH patients, which leads to delays in care and potential misdiagnoses.[1-5] This article provides strategies for emergency nurses to incorporate to improve care of the DHH patient.

Terminology to describe a person's hearing can be unclear to the emergency nurse. Commonly misunderstood terms are deaf, deafened, hard of hearing, and hearing impaired.[3,5] "Deaf" usually refers to a hearing loss so severe that there is very slight or no functional hearing.[3,5] Someone who is "Deaf" refers to a person who is unable to hear anything or is unable to hear very well.[3,5] "Deafened" usually refers to a person who becomes deaf as an adult and, therefore, faces different challenges than those of a person who became deaf at birth or as a child.[3,5] "Hard of Hearing" refers to a hearing loss where there may be enough residual hearing that an auditory device, such as a hearing aid, may be helpful.[3,5] The term "hearing impaired" is often used to describe people with any degree of hearing loss from mild to profound, including those who are deaf and those who are hard of hearing.[3,5] Most individuals who are deaf or hard of hearing prefer the terms "Deaf" and "Hard of Hearing" because they consider them to be more positive than the term "hearing impaired," which implies a deficit or that there is something wrong with the person.[3,5]

DHH people are a historically underserved population who face many obstacles in health care due to their need for additional communication resources.[1-6] Communication barriers during ED visits can lead to delays in timely care, misdiagnoses, and mortality.[5] Lack of effective patient-centered communication results in inadequate discharge follow-up instructions, which lead to return ED visits for

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DHH patients.[1-5] Current research reveals that Deaf Hard of Hearing, and Sign Language users (DHH SL) among ED patients were found to have 70.1% more ED encounters than patients who are not Deaf or Hard of Hearing.[1] Patients who are not Deaf or Hard of Hearing are more likely to have better health care provider communication due to their ability to navigate resources and hear follow-up information.[1] In comparison, DHH patients do not have the same available resources upon discharge to help navigate their follow-up in the health care system.[1-5]

Each person who is Deaf or Hard of Hearing has their preferred method of communication, which complicates timely emergency care.[1-5] They may or may not use Sign Language to communicate.[6] If an ED patient does communicate with Sign Language, the emergency nurse must understand there are different types of Sign Language for different languages.[1-6] Sign Language incorporates a visually interactive language that can incorporate hand gestures, body gestures, and facial expressions.[6] Patients who are Deaf or Hard of Hearing may be trained to speech (lip) read and can understand spoken words with the assistance of oral interpreters.[6] Oral interpreters have special training that incorporates speech, visibility of the lips, natural body language, and gestures.[6] Cued speech interpreters are similar to oral interpreters, except they use a hand code or cue that represents each sound.[6] Computerized Assisted Real-time Transcription (CART) is an interpreter service where words are typed by the operator and then displayed to the DHH patient.[6] The CART interpreter service is a good approach for DHH patients who are not trained in Sign Language or speech reading.[6] When emergency nurses are using a form of reading as a method of communication, the reading level of the patient should be taken into consideration.[1-6] Emergency nurses must investigate the optimal communication method for individual DHH people and employ those communication methods during ED care.[1-6]

Language barriers can be major health care problems for Deaf people. Many Deaf people utilize lip reading.[3-8] It is important for emergency nurses to recognize that only 30% to 40% of speech sounds can be lip-read (speech read).[3-8] Understanding the limitations of lip reading, emergency nurses need to recognize that patients who rely on lip reading may be unable to understand what was said in the conversation.[3-8] Additional forms of communication should be utilized, specific to the patient, to augment the patient's lip reading. Emergency nurses are required to enlist an interpreter specific to the patient's method of communication to provide effective communication.[4-8]

There are a variety of communication resources for patients who are DHH. Emergency nurses should be aware that DHH people may choose to use hearing aids, cochlear implants, or other assistive listening devices to boost their available hearing.[3-9] Alternatively, or in addition, they may read lips, use sign language, sign language interpreters, or closed caption.[3-9] Communication boards are a tool emergency nurses can use to communicate with patients who are Deaf or Hard of Hearing. The patient's method of communication, including if hearing aids are required for communication, should be documented in their electronic medical record (EMR).[1-6] There are many commercial products available to assist in communication with Deaf or Hard of Hearing people.[1-11] The following link https://www.wowktv.com/wp-content/uploads/sites/52/2020/04/EMS-Communication-Card-FINAL-4.14.20-1.pdf provides an example of one free Emergency Medical Services Communication Card[10] which can be used as a communication board. The coronavirus disease-2019 pandemic mask requirements have adversely affected communication with people who are Deaf or Hard of Hearing that use lip reading for communication.[11] Health care providers in most settings are still required to wear masks. Emergency nurses need to recognize that when talking with someone who lip-reads, they should keep a distance of at least 6 feet before putting their mask down for safety precautions.[11] If the ED patient has symptoms of coronavirus disease-2019, the health care provider should not put their mask down for their safety. Health care providers should wear a clear face mask during care of the DDH patient, which allows the patient to lip read and improves communication.[2-7]

Effective Communication with Deaf and Hard of Hearing ED Patients

Respectful communication by emergency nurses includes basic principles. The emergency nurse should utilize communication access services; stand beside the interpreter in full view of the patient; face the patient; and keep eye contact with the patient including when questions are asked.[1-6] Communication access services that are effective for DHH patients include interpreters, Video Remote Interpreters, or CART.[5-8] Emergency nurses must understand that it is critical to ask DHH patients their communication preferences.[5-8] There are 4 acceptable ways to get a DHH patient's attention.[5-8] These include moving one's self into the person's visual field, tapping the person's shoulder, flicking lights, and asking the individual their preferred method of communication.[3-6] The health care provider should

TABLE 1
Communication tips with Deaf and Hard of Hearing ED patients[4-7,11]

Do	Do not
• Walk up to the patient in the ED lobby	• Do not call name out in the ED lobby
• Face the patient	• Do not yell
• Use hospital interpreter services	• Do not talk loudly
• Make direct eye contact when speaking	• Do not mumble
• Allow more time for communication	• Do not overemphasize facial expressions
• Communicate in a quiet area	• Do not stay in an excessively noisy area
• Remove surgical mask when talking	• Do not overemphasize lip movements
• Wear a clear mask if possible	• Do not wear a traditional face mask
• Speak clearly for lip reading	• Do not use family members
• Keep cochlear implant with patient	• Do not remove patient's cochlear inplant
• Keep hearing aid with patient	• Do not remove patient's hearing aids
• Keep spare batteries for hearing assistance devices with patient	• Do not take patient's spare batteries
• Tap shoulder or feet to get attention	• Do not aggressively touch patient
• Speak normally if speech reading	• Do not speak too slowly
• Be patient and relaxed	• Do not speak too fast
• Ask preferred communication	• Do not assume to know patient preference
• Ask ways to improve communication	• Do not assume patient understands
• Repeat or rephrase communication	• Do not rely on one communication style
• Ask which is their dominant hand	• Do not restrict dominant hand
• Written communication must be understood by patient and staff	• Do not assume patient can read
• Medical illustrations are helpful	• Do not assume you understand the patient • Do not use complicated pictures
• Visual aids are helpful	• Do not assume patient understands aids
• Type back and forth on computer screen	• Do not assume patient can read
• Use email	• Do not only use email or assume patient can read
• Use instant message	• Do not assume patient can read
• Use texting	• Do not assume patient can read
• Use available technology	• Do not wait for interpreter services
• Inform patient that interpreter services are free and available	• Do not assume patient knows that interpreter services are free and available

ED, emergency department.

move into the person's visual field.[6-9] First, ensure you stand close to the patient, and if you are communicating using VRI, remember, do not block the VRI.[3-6] It is preferred that the VRI interpreter stands in front of a DHH patient and the provider stands next to the patient so the patient can see the interpreter. It is appropriate to tap the patient on the shoulder lightly to get their attention if they cannot hear.[3-6] In the Deaf culture, it may be acceptable to flick the lights on and off to get the patient's attention.[3-9]

When a DHH person becomes a patient in the emergency department, the emergency nurse's responsibility is to find out the most effective way to communicate with their patient (Table 1).[5-9] Multiple communication charts exist that health care providers can obtain free of charge or purchase to assist in communication.[5-11] Emergency

TABLE 2
ED documentation during care of Deaf and Hard of Hearing patients[7]

- Enter a note in the patient's chart regarding the hearing loss
- List the patient's preferences in communication
- Document all interpreter service requests, including response in the patient's medical record
- The National Association of the Deaf (www.nad.org) provides an in-depth description of recommended timetables, health care organization obligations, and federal guidelines
- Follow all organization, state, and federal guidelines during care of the Deaf patient or Hard of Hearing patient

nurses have 6 common choices to communicate with DHH patients.[5-11] These communication choices include the use of interpreters, text or captions, writing, lip reading, gestures, and assistive listening devices.[5-11] Tips for emergency nurses on how to communicate with DHH patients include making eye contact to get the person's attention, repeating, rephrasing, or writing down your request. Ask or indicate before touching the person, and ask the person their preferred method of communication.[6-9] Emergency nurses need to know that patients who wear hearing aids or have cochlear implants may still benefit from an assistive listening device to understand you.[5-9]

Emergency nurses can apply different strategies to empower DHH patients during their health care experience. The emergency nurse should document the patient's hearing loss in the medical record.[5,6] The patient's preferred communication method, along with any assistive devises, are recommended to be included in the medical record documentation.[5,6] If the patient in the waiting area is DHH, calling the patient's name may not be effective. Face to face contact should be provided to get the DHH patient's attention. Never use an intercom to communicate with a patient who is DHH because they cannot hear with that communication method. Emergency nurses should keep the patient's extra batteries accessible if they have a hearing aid or cochlear implant. Emergency nurses can incorporate drawings and illustrations to further explain medical information.[6-8] Health care personnel must remember to remove surgical masks, if safe and possible, before talking or wear clear masks when caring for patients who are DHH. When safe to do so, DDH people should not have their dominant hand or hands restrained to allow hand gesture communication.[4] Remember, it is important to allow more time to communicate with patients who are DHH.[8]

TABLE 3
Deaf resources for health care professionals and community[3-5]

Resources for health care professionals	American Association of the Deaf-Blind http://www.aadb.org/ Association of Late-Deafened Adults https://alda.org National Association of the Deaf https://nad.org World Federation of the Deaf http://wfdeaf.org/ https://www.ada.gov/hospcombrscr.pdf
LGBTQA+ resources (Lesbian, Gay, Bisexual, Transgender, Queer/Questioning, Ally)	Gallaudet University Lesbian, Gay, Bisexual, Transgender, Queer/Questioning, Ally Resource Center https://gallaudet.edu/multicultural-student-programs/lgbtqa-resource-center/lgbtqa-gallaudet-in-the-news/ https://www.gallaudet.edu/multicultural-student-development-and-mentoring/lgbtqa-resource-center/ Rainbow Alliance of the Deaf
Additional resources	Council De Manos https://www.councildemanos.org National Black Deaf Advocates https://www.nbda.org

The Americans with Disability Act

The National Association of the Deaf provides a variety of resources that address DHH Civil Rights Laws.[12] Federal laws in the United States of America, the Americans with

Disabilities Act (ADA) and the Patient Protection and Affordable Care Act require all hospitals to provide reasonable accommodations for DHH patients and family members.[12] These accommodations include access to Sign Language Interpreters or other reasonable interpreter services specific to the patient's need.[12] All hospitals and health care providers must have access to Certified Video Remote Interpreters who provide 100% confidential and medically certified interpreter services.[7,12]

According to the ADA, health care settings, including hospitals, are obligated to provide effective methods of communication for patients, family members, and hospital visitors who are Deaf or Hard of Hearing.[7,12] The method of communication and services the hospital must provide varies upon the needs of the patient.[7,12] Emergency departments, as with all areas of a hospital, must follow the ADA guidelines that require effective communication to be available wherever patients, families, friends, or members of the public are interacting with hospital staff.[7,12] Written notes or pointing during communication may be allowed during brief or simple face-to-face discussions.[7,12] Health care providers who need to provide complicated interactive communications that discuss symptoms, physician diagnosis, and treatment options to patients or family members require a qualified interpreter.[12] During an emergency, for a brief time, hospital personnel that has limited Sign Language ability may utilize family members until a qualified interpreter arrives; however, this is not an appropriate method for continued communication.[7,12]

One ED Nursing Service Assistant Making a Difference to Improve Care of Deaf and Hard of Hearing

Graham Lyons, BS, works as a Nursing Services Assistant in the emergency department at Tufts Medical Center in Boston, MA. Graham is Deaf with bilateral hearing aids. He is fluent in American Sign Language (ASL) and graduated from Gallaudet University. Graham is an asset to our emergency department and the whole hospital with his valuable Deaf culture knowledge. He has provided the emergency department with Deaf culture resources that include signs for health care providers on how to obtain a patient medical history, symptoms, allergies, communication boards, and the alphabet American Sign Language. All hospital staff were offered the opportunity to attend ASL classes taught by Lyons to further improve patient care. These ASL classes, which were well attended, included basic medical terminology, ASL alphabet, visual aids, how to request an interpreter, and use of communication technology for Deaf patients. The hospital supported Lyon's advocacy by supplying video remote telecommunication service interpreters for all languages in the emergency department and hospital. Through Lyon's advocacy, the Tufts Medical Center lobby has a new videophone for Deaf patients and visitors which provides them immediate access to communication.

Implications for Emergency Nurses

Emergency nurses are encouraged to take a proactive approach in educating themselves on ASL and their organization's resources for the care of DHH patients. Effective individualized communication strategies should be utilized during ED care to improve patient outcomes while mitigating miscommunication, medical errors, and mortality. Every emergency nurse should ensure that their organization has an EMR that provides an area to document the patient's method of communication. Within the EMR, the emergency nurse should be sure that the patient's specific hearing devices or hearing aids are included in their individualized ED care plan.

It is recommended that emergency nursing educators provide education on care of DHH patients. Emergency administrators need to ensure each emergency nurse understands and abides by the ADA federal law related to care of the Deaf or Hard of Hearing patient.[12] Emergency nurse educators must educate ED nurses on care of the patient with internal cochlear implants because diagnostic X-rays and CT scans may not be safe.[9] These diagnostic tests may cause damage to the external speech processor's microphone or erase/degrade the programs stored in the processor.[9] Patients should remove their speech processor when undergoing medical x-rays according to St Louis Children's Hospital website.[9] If a patient has an internal cochlear implant, an MRI can potentially be deadly.[9] The MRI can pull out or demagnetize the magnet as well as pull on the internal cochlear implants metallic parts.[9] In general, an MRI is contraindicated for patients with cochlear implants unless they have the specific type of cochlear implants that allow an MRI.[9] The patient's surgeon should be contacted to see if the patient's cochlear implant is compatible with MRI.[9] It is advised that emergency nurses follow their organization's policies regarding diagnostic tests allowed for patients with cochlear implants.

DHH patients require effective communication strategies throughout care. Nurses must ensure that discharge instructions are understood by patients before discharge from the emergency department. Multiple resources are available for emergency nurses to learn how to effectively and safely communicate during care of Deaf and Hard of Hearing patients (Tables 1-3).

Conclusion

Emergency patients who are Deaf or Hard of Hearing experience a variety of health inequities. These inequities are due to barriers in effective individualized communication in the emergency department and health care system. Limited training and experience with DHH patients have led to miscommunication and substandard care. All emergency nurses should incorporate effective individualized communication during care of all DHH patients to avoid medical errors, miscommunications, misdiagnoses, inadequate care, delays in care, or mortality. Health care systems are encouraged to provide resources for staff to effectively communicate while caring for the DHH patient.

Author Disclosures

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Neurogenic Shock: A Case Report

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Contribution to Emergency Nursing Practice

- The current literature indicates that neurogenic shock is a life-threatening condition that requires immediate intervention to restore or maintain hemodynamic stability. It is imperative to provide early cervical spine immobilization for trauma patients to prevent further damage to the spinal cord that could result in neurogenic shock.
- This article contributes to the current knowledge by providing an overview of a patient with neurogenic shock after a cervical spine injury. This case outlines clinical risk factors, evidence-based recognition, and treatment of a patient presenting with neurogenic shock.
- Emergency nurses with knowledge on neurogenic shock will be able to potentially prevent this emergent condition by providing early cervical spine immobilization and identify appropriate treatment interventions for patients who present with neurogenic shock.

Abstract

Background: Neurogenic shock is a life-threatening emergency associated with spinal cord injuries. Early cervical spine immobilization to reduce the risk of neurogenic shock is imperative. In addition, early recognition and treatment of neurogenic shock are essential to prevent hypoperfusion-related injuries and death.

Case Presentation: This case outlines a 65-year-old male who experienced a cervical spine fracture after a motorcycle crash. The patient received stabilizing treatment by a flight crew consisting of both a registered nurse and paramedic. After assessment and stabilization, he was diagnosed as having neurogenic shock. Despite invasive treatment and resuscitation efforts, the patient succumbed to his injuries.

Conclusion: It is important for emergency nurses to quickly identify the risk factors for cervical spine injuries and maintain cervical spine immobilization to minimize the risk of neurogenic shock.

Key words: Case report; Neurogenic shock; Cervical spine injury; Emergency nursing

Introduction

Trauma-related injury is one of the most common causes of death globally and is the leading cause of death for individuals younger than the age of 44 years in the United States.[1] Patients with polytrauma and those with a significant mechanism of injury (eg, ejection from vehicle, auto-pedestrian events, high-speed incidents, long falls, and large machinery accidents) are at high risk of spinal cord injury.[2,3] As a result, cervical spine immobilization should be considered for patients who present with polytrauma or a significant mechanism of injury.

During the initial stabilization and resuscitation of trauma patients in the prehospital and triage setting, no formal imaging is available to recognize spinal cord injuries. Therefore, it is important to initiate cervical spine immobilization to reduce the risk of potential spinal injuries. Spinal cord injuries can be devastating to patients and can lead to long-term disability and neurological deficits and can result in life-threatening emergencies, including neurogenic shock.[3] Neurogenic shock is a serious medical emergency resulting from spinal cord injuries that manifests as hypotension, bradyarrhythmia, and temperature dysregulation.[4,5] As a result, emergency

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nurses must be able to quickly recognize patients at risk of neurogenic shock and those presenting with symptoms of neurogenic shock to provide rapid interventions to reduce the potential for long-term complications.

Case Report

A 65-year-old male was driving a motorcycle in a rural area when he slid on loose gravel while attempting to navigate a turn. Upon losing control, the motorcycle struck a guardrail, ejecting the driver from the bike and down an embankment. He came to rest approximately 20 feet below the roadway. He was helmeted and it was estimated that he was traveling at approximately 45 mph. Upon arrival, Emergency Medical Services (EMS) and first responders found the patient to be unresponsive, with minimal spontaneous respiratory effort. A medical helicopter was dispatched to the scene owing to the significant mechanism of injury.

The patient's history was determined retrospectively at the hospital from the patient's medical record. Medical history included atrial fibrillation, hypertension, diabetes mellitus, and congestive heart failure. Initial vital signs obtained by the flight crew were as follows: blood pressure, not obtainable; heart rate, 50 beats per minute; respirations, minimal spontaneous respirations; tympanic temperature, 36.1 °C (97.0 °F); and a pulse oximetry reading of 95% via a bag valve mask with manual ventilations performed by EMS. The initial fingerstick blood glucose obtained by EMS was 225 mg/dL.

Upon initial assessment the patient had a Glasgow coma scale of 4 (E2, V1, M1). His trauma examination noted pink, warm, dry skin. He had notable deformities to the right lower extremity. His pupillary response was equal and reactive to light at 3 mm. The remainder of the trauma examination was unremarkable. EMS was unable to apply a cervical collar owing to the patient's habitus. The patient was estimated at 120 kg and had a shorter stature. The patient's head was kept midline on a spinal board, with head blocks in place. Although the client had altered mental status, a traumatic brain injury was not anticipated because his pupils were equal, round, and reactive to light. A typical pupilar response that would be found with a traumatic brain injury would be sluggish or fixed pupils, whether bilateral or unilateral.[6] This occurs because of the increased intracranial pressure that can occur with brain injuries.[6] The patient had weak carotid pulses and absent peripheral pulses. Both automatic and manual blood pressures were unsuccessful in obtaining a blood pressure.

The patient was minimally responsive with minimal spontaneous respirations and thus required airway support. However, hemodynamic stabilization was needed before performing rapid sequence intubation (RSI). Medications (eg, ketamine, etomidate) given during RSI can cause hypotension and negatively affect a patient's hemodynamic status. In this case, ketamine administration was of concern when performing this RSI procedure. Ketamine is a common induction agent when performing RSI that has vascular dilatory affects that can cause hypotension.[7] Due to the inability to obtain a blood pressure combined with the absent peripheral pulses, an intravenous (IV) push-dose of EPINEPHrine was administered to reduce the risk of hypotension and cardiac arrest during intubation of the patient. EPINEPHrine is a sympathomimetic catecholamine that has both alpha and beta effects on the body.[5] It can be given as a push-dose vasopressor or as a continuous IV infusion for hypotension or cardiac arrest.[8]

Airway management while preparing for intubation included a nasopharyngeal airway with manual respirations provided via a bag valve mask. After the client was successfully intubated, he was ventilated via a mechanical ventilator en route. An EPINEPHhrine drip was administered after intubation to maintain perfusion and the drip was continued in the emergency department. Upon arrival at the hospital, physical examination in the trauma room found absent rectal tone and priapism. These assessment findings added to the suspicion that the patient was having neurogenic shock. Initial hospital vital signs were as follows: blood pressure, 109/64 mm Hg; heart rate, 90 bpm; respirations 15 breaths per minute with mechanical ventilation; and a pulse oximetry reading of 96% on the ventilator. The patient's Glasgow coma scale was 3T. Laboratory tests performed included an arterial blood gas, a lactate level, complete blood count, and serum chemistry. Pertinent laboratory results included a lactate level of 9.5 mmol/L, arterial pH of 7.2, PaO_2 of 110 mm Hg, PCO_2 of 30 mm Hg, and a bicarbonate level of 26 mEq/L. A computed tomography scan revealed a C4 fracture and transection of the spinal cord, liver laceration, left femur fracture, small subdural hematoma, nondisplaced T4-7 fracture, and fractures to ribs 5, 7, and 8. His vital signs remained stable with a systolic blood pressure above 110 mm Hg and a heart rate sustained in the 90s bpm. Both the heart rate and blood pressure were being maintained with a continuous IV infusion of

EPINEPHrine. Upon identification of the C4 injury, the family chose to discontinue aggressive treatment and the patient unfortunately succumbed to his injuries.

Discussion

Emergency nurses should consider cervical spine immobilization for any patients with polytrauma or a significant mechanism of injury to stabilize spinal injuries and prevent complications, including neurogenic shock. Spinal cord injuries result in cellular changes that damage the neurons in the spinal cord; this is further exacerbated by hypoxemia and hypotension.[3] Most spinal injuries occur at the level of the cervical spine because this area is more vulnerable and less stable owing to the lack of surrounding anatomical structures to support this section of the spine.[3] Cervical collars should be considered for any patients presenting with neck and back injuries, polytrauma, or a significant mechanism of injury. If the patient's body habitus makes cervical collar placement difficult or ineffective, towel rolls or head blocks can be used to maintain cervical spine immobilization.[3]

Spinal cord injuries can result in life-threatening complications, including neurogenic shock. If left untreated, neurogenic shock can lead to irreversible tissue damage and death.[4] Neurogenic shock is characterized by hemodynamic instability, and clinical manifestations include hypotension, bradyarrhythmia, and warm, flushed skin associated with temperature dysregulation.[4] These symptoms occur because of the abrupt loss of sympathetic tone combined with preserved parasympathetic function, resulting in autonomic instability.[4]

Neurogenic shock occurs more commonly with cervical spine and upper thoracic spine injuries and can be difficult to diagnose owing to distracting injuries, intoxication, and difficulty differentiating among the various types of shock associated with trauma.[4] The Trauma Audit and Research Network indicated the incidence of neurogenic shock is 19.3% of spinal cord injuries. However, a retrospective study at a high-volume trauma center estimated that neurogenic shock was present in 31% of patients with cervical spine injuries.[4,9]

Identification of neurogenic shock requires meticulous physical assessment and recognition of risk factors and clinical manifestations.[5] Emergency nurses should recognize clinical manifestations of neurogenic shock including hypotension, bradyarrhythmia, and flushed, warm skin.[4] Patients with blunt cervical injuries, vertebral fractures, or vertebral dislocation are at an increased risk of neurogenic shock.[4] The significant systemic hypotension associated with neurogenic shock can result in hypoperfusion of the spinal cord, leading to ischemia and secondary injury.[5] The onset of neurogenic shock can vary; therefore, the client should be closely evaluated from initial assessment through admission to a critical care setting.[5] Diagnosis of neurogenic shock involves a combination of physical examination findings, hemodynamic monitoring, and diagnostic imaging.[4,5]

The treatment and management of neurogenic shock are focused on maintaining hemodynamic stability to maintain organ perfusion and prevent secondary injury associated with hypoperfusion.[4,5] A priority intervention is fluid volume resuscitation. However, if fluids alone are ineffective, alpha-1 and beta-2 adrenergic receptor agents should be considered to increase sympathetic nervous systemic activation.[5] Administration of IV vasopressors (eg, norepinephrine, EPINEPHhrine, DOPamine) should also be considered to improve blood pressure and perfusion. However, the risks of vasopressor therapy should be closely balanced against their benefits to prevent complications associated with vasopressor use.[10,11] Atropine may also be considered for patients with severe bradycardia.[5] Hemodynamic monitoring is imperative with a goal mean arterial pressure of 85 to 90 mm Hg for the first 5 to 7 days to promote perfusion of the spinal cord.[4,5,10]

Patients with neurogenic shock will require admission to a critical care unit for hemodynamic monitoring and interventions dedicated to improving perfusion and hemodynamic stability. Neurogenic shock can persist for up to 6 weeks after the initial injury and can result in cardiovascular complications, including bradycardia, which can result in the need for a permanent pacemaker.[12] Patients must be closely monitored for other common complications including autonomic dysreflexia, orthostatic hypotension, and decreased cardiac reflexes, which can lead to an absence of pain during cardiac ischemia.[5] After neurogenic shock, patients should be closely monitored and quickly treated for any stimuli that may induce autonomic dysreflexia, including pain, bladder distention, and fecal impaction.[4,5] Patients with neurogenic shock typically require extensive rehabilitation that includes mobility training, physical and occupational therapy, bowel and bladder training, and respiratory care.[5]

Conclusion

To promote optimal patient outcomes, the emergency nurse should be knowledgeable about the clinical presentation and risk factors of neurogenic shock. Recognizing the condition and quickly intervening can prevent severe life-threatening complications. Patients with spinal cord injuries should be closely evaluated for neurogenic shock. It is important for emergency nurses to be aware of this condition and provide

early cervical spine immobilization for patients with traumatic injuries to prevent further damage to the spinal cord that could result in neurogenic shock.

Author Disclosures

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Increased Use of Cannabis in Our Older Adults–An Emerging Trend

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Recent studies have found increasing numbers of older adults, those over age 65, turning to cannabinoid products–cannabis (marijuana), tetrahydrocannabinol (THC), or cannabidiol (CBD)–for medical reasons, with 61% using it for the first time.[1,2] This is concerning because the normal physiological and cognitive changes associated with aging combined with the effects of cannabinoids can place older adults at greater risk of harm and increased risk for injury.[1-9] An increase in injury-related ED visits by older adults who have used cannabinoids has also been seen.[3-6]

As legalization and the number and variety of methods of using the various forms of cannabinoids increase, emrgency nurses need to be aware of these growing trends and how the older adult patient may be affected.[1-9] Awareness of the physiological and cognitive effects and risks associated with cannabinoid use combined with the physiological and cognitive changes and risks associated with aging can help emergency nurses provide insightful and improved care for older adults.

It is important to note that less than half of older adults share with health care providers that they are using cannabis or other cannabinoid products when listing their medications, even when symptoms occur shortly after its use.[1,2] This may be due to concerns about being judged or labeled, doing something illegal, or not fully understanding how cannabinoids can affect them.[1,2,10,11] This failure to volunteer information combined with the risks associated with its use by an older adult make it important for emergency nurses to specifically ask the patient whether they are using a cannabinoid product such as cannabis (marijuana), CBD, or one of the THC variants.

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Reasons for Using Cannabinoids

Although some patients use cannabinoids–cannabis (marijuana) and products containing CBD and THC–purely for recreational purposes, most older adults state that they use it for medicinal reasons.[1-9] A study by the University of San Diego Geriatrics Department found that the most common reasons older adult patients gave for using cannabinoids were pain, insomnia, and anxiety.[1] Other reasons given by older adults for using CBD and THC included the following: to treat peripheral neuropathy, stress, depression, headaches, nausea (especially if receiving chemotherapy), inflammation, cognitive impairment in Alzheimer disease and Parkinson disease, schizophrenia, mood disorders, Post Traumatic Stress Disorder, muscle spasms, seizures, and glaucoma as well as to improve appetite, control inflammatory and irritable bowel symptoms, and as a complement or alternative therapy during end-of-life care.[1-10,12,13]

Epidiolex (CBD), a purified form of CBD for treatment of seizures associated with Lennox-Gestaut or Dravet Syndrome and Marinol (dronabinol), Syndros (dronabinol), and Cesamet (nabilone) (3 synthetic cannabis-related drug products) for nausea and vomiting related to chemotherapy or loss of appetite and weight loss due to HIV/AIDS—have been approved by the U.S. Food and Drug Administration.[10,13-15] The Food and Drug Administration has noted that they have not adequately studied or approved any other use of cannabinoids, but they will take reports of adverse reactions.[16]

Cannabinoids–Actions and Administration

The most commonly used cannabinoid products are cannabis (marijuana), which has a higher THC content, and CBD.[1-10,13-16] THC and CBD contain chemicals

that affect the CB1 and CB2 receptors of the body's endocannabinoid system.[2,4,8,17] THC stimulates the CB1 receptors and provides feedback to the endocannabinoid system telling it to increase alertness, hunger, and temperature.[2,4,8,17] CB2 receptors, found in the immune system tissues, are stimulated by CBD and are associated with a decrease in pain, inflammation, and tissue contraction.[2,4,8,17] THC is described as having psychoactive effects, whereas CBD is said to be non-psychoactive and causes relaxation or a calming sensation.[1-10,18-25] Most CBD products actually contain small amounts of THC because both products come from cannabis plants.[18-25] Delta 8, Delta 9, and Delta 10 are differing strengths of THC product, with Delta 9 considered to have the highest THC content and potency.[18-25] THC and CBD are frequently found mixed together in varying proportions to obtain a synergistic effect or reduce the unwanted effects of the other substance.[18-25]

THC and CBD may be inhaled by smoking or vaping, taken sublingually or as a capsule, ingested as an edible, or applied topically as a cream or lotion.[14-16,18-23] CBD tends to be found more frequently as an edible or as a cream or lotion.[14-16,18-23] Abuhasira et al[9] suggested that the safest route for cannabinoids was the sublingual route because there are risks to the respiratory system when inhaling and a delay in onset of effects and inconsistency in absorption when ingesting the drugs.

In order to obtain cannabinoids, older adults may reach out to request a prescription or recommendation from a health care provider, but it is suspected that most of its usage is self-prescribed based on advice from friends or internet research.[1-4,7,26] Many studies have noted a reliance on self-reported use of cannabinoids, thus making it difficult to know the accuracy of data about the actual amount of usage by older adults, what they are using it for (recreational versus medical conditions), and the type of product that they are using (THC vs CBD versus a blended product).[1,3,4,6-8]

Aging, Cannabinoid Usage, and Risks

While many older adults find cannabinoids very helpful in alleviating pain, insomnia, and anxiety, adverse effects have also been reported.[1-9] Dizziness, drowsiness, palpitations, confusion, and anxiety are the most commonly reported adverse reactions to cannabinoids reported by older adults. Restlessness, nausea, recurrent vomiting, diarrhea, urinary retention, blurred vision, feelings of being overly relaxed or tired, changes in processing sensory information, a sense that time is distorted, emotional lability, and paranoia have also been reported.[1-9,13-15] Symptoms may be dose-dependent due to the type and purity of the product (CBD vs THC vs a mixture) and the patient's tolerance.[1-9,13-15] Studies have also shown an increase in risk-taking behaviors, poor decision making, falls, and motor vehicle crashes associated with cannabinoid use by older adults.[3-6]

The effects of cannabinoids, especially those related to risk-taking behaviors and falls leading to injury, are concerning because normal physiological and cognitive changes associated with aging also increase risk of dizziness, palpitations, weakness, confusion, anxiety, restlessness, slower thought processing, and longer reaction times, which place the older adult at increased risk for falls, motor vehicle crashes, and other injuries.[27,28] When considering the most frequently experienced side effects of cannabinoids–dizziness, drowsiness, confusion, palpitations, poor decision making, and increased risk of falling–in light of the effects of normal aging, it is easy to see how cannabinoid use can magnify risks to the patient's safety.

Aging, Cannabinoids, and Alcohol

Injury related to aging combined with cannabinoid use is compounded by another factor that also increases risk of dizziness, slower reflexes, poor decision making, falls, and motor vehicle crashes. Alcohol is the most commonly used drug among older adults, with about 65% of people 65 and older reporting high-risk drinking to relieve pain, cope with stress, improve their mood, or out of boredom.[29] The effects of alcohol use combined with risks associated with normal aging are of concern, and several studies have found that many older adults admitted that they consumed alcohol at the same time that they used cannabinoids.[3,4,29,30] Effects of normal aging, alcohol use, and cannabinoid usage each place the older adult at risk of injury and harm, and the combination of all 3 is a triple threat to their well-being.

Aging, Cannabinoids, and Medications

Aging is typically accompanied by an increase in medical conditions and medications used to treat these conditions, while the ability to effectively metabolize and eliminate drugs slows.[27,28] This places older adults at increased risk of drug-drug interactions, drug toxicities, and adverse

medication reactions, as well as the previously noted dizziness, weakness, confusion, sleepiness, and increased risk of falling and motor vehicle crashes that accompany the normal aging process.[2,4,8,9,27,28,31-33] The American Geriatrics Society Beers Criteria (American Geriatrics Society Beers Criteria) for Potentially Inappropriate Medication Use in Older Adults warns of drug-drug interactions that lead to increased risk of adverse reactions and falling.[31] Although cannabinoids are not specifically included in the criteria, avoidance of medications with similar effects (weakness, confusion, etc.) is suggested.[31] Fick has noted that there are several reviews of cannabinoids that show high rates of adverse reactions that affect the nervous system (dizziness, lightheadedness, and delirium), but there were not enough quality studies in those over age 65 to argue for complete avoidance of cannabinoids.[32]

In addition to drugs that alter alertness, the Beer's criteria includes warnings about medications that can cause hypotension, changes in heart rate and rhythm, hypoglycemia, bleeding, and poor clearance of medications leading to drug toxicities.[31,32] It should be noted that cannabinoids–especially CBD–are detoxified by the cytochrome P-450 sites in the liver, thus competing for elimination with many of the drugs normally taken by older adults.[2,8,9,15,33] The concomitant use of cannabinoids with blood thinners, antibiotics, anticonvulsants, antidepressants, and antipsychotics has been identified as high risk for drug-drug reactions and toxicity.[2]

Cannabinoids not only alter alertness, but older adults are more likely to experience vomiting and diarrhea with its use, especially when using CBD.[2,5,14,15] This can lead to dehydration and hypovolemia, which may not be tolerated by the older adult–especially if they are taking medications that decrease the ability to compensate for hypovolemia and hypotension.

Abuhasira et al[9] has recommended caution when prescribing cannabinoids for patients with gait instability, nervous system impairment, and those on multiple drugs or with reduced drug elimination mechanisms because the combined risks of normal aging added to the effects of cannabinoids could lead to adverse effects for the older adult. It is important for emergency nurses to recognize and advise older adult patients that normal aging leads to cardiovascular, respiratory, fluid volume, neurological, cognitive, and musculoskeletal changes which may be further compromised by cannabinoid use. Additionally, the risks associated with effects of cannabinoids when added to the medications taken by older adults, and in some cases alcohol use, places them at high risk of injury, drug-drug reactions, and harm.

ED Visits, Considerations, and Tips

Many older adults use cannabinoids without experiencing difficulties; however, there are some concerns that emergency nurses should be aware of, recognize, and include when they educate older adults on the safe use of cannabinoids.

Injuries and Cannabinoids

The number of injuries and subsequent ED visits by older adults due to falls associated with orthostatic hypotension, reduced coordination, gait impairment, or risk-taking behaviors has increased, as have the numbers of those injured for nonfall–related reasons.[2-4,6,13,14,34] Older adults who use cannabinoids have been shown to have an increased incidence of being involved in motor vehicle crashes.[2-4,6,13,14,35] Impaired judgment, slowed response, and reduced coordination can also lead to other injuries, such as those that occur when individuals participate in sporting activities or use power tools or machinery after cannabinoid usage.[2-4,6,13,14,35] Increased use of alcohol along with cannabis use places the older adult at additional risk of injury.[3,4,6,29,30,34,36]

Anxiety and Cannabinoids

An increasing number of older adults have presented to the emergency department after using cannabinoids because they have experienced effects that they did not anticipate or want.[5,9,25] Severe anxiety, nausea, vomiting, panic attacks, paranoia, chest pain, and fear of having a stroke are some of the reasons for ED visits by older adults.[35,37-42] Higher doses of cannabinoid products can cause psychosis, extreme paranoia, hallucinations, delusions, and loss of consciousness.[13,14,16,19-21,24] Concerning symptoms such as these can often be attributed to an older adult not knowing what effects to expect, taking a dose that was too large, or ingesting a CBD product that contained or was contaminated with THC, thus leading to psychoactive effects rather than calming effects.[3,14,19,20,25,37-41] A 2017 laboratory analysis of 84 CBD products found that 27% of the products had less CBD than was stated on the label, and 43% had substantially more.[10] The THC content in some products was found to be higher than that stated on the packaging, and some products labeled as containing CBD only also contained THC.[2,10,15,16,25] In addition, the increased potency of the drug has led to some older

adults experiencing stronger effects than they anticipated. (THC concentrations rose by as much as 24% between 1975 and 2017, and some cannabinoid products now are 95% THC.)[37-39,41] Federal agency websites containing information on cannabis products warn of risks of product use and concerns about safety because the agencies do not monitor the quality or strength of cannabinoid products.[10,13-16]

Cannabis Intoxication

Cannabis intoxication or poisoning occurs when an older adult has taken more than the recommended amount of cannabis or cannabinoid product and exhibits significant behaviors or psychological changes and at least 2 physical symptoms (dry mouth, red eyes, tachycardia, extreme hunger) following ingestion of cannabinoids.[3,20,37-41,43] Older adults have been reported to develop extreme anxiety, panic, nausea, vomiting, paranoia, and even psychosis as the result of ingesting too much THC.[37-42,43] Bradycardia and unresponsiveness have also been reported.[37-42]

A common scenario is one in which an older adult who is unfamiliar with the onset of action and the potency of edible products ends up taking more than the recommended amount of cannabinoids often found in edible gummies or products sold as multi-dose items that are intended to be broken into small segments, with each segment being a full dose.[20,44] Patients familiar with smoking or vaping cannabinoids know that the effects are felt within minutes, and they inhale less frequently or even stop once effects are felt. (Effects usually peak within 30 minutes.)[20,37,43] When THC or CBD is taken as an edible, the onset of effects takes 45 to 60 minutes. (Effects peak in about 4 hours and last 12-24 hours.)[20,37,44] Sometimes a patient who is not feeling anything shortly after eating 1 gummy eats additional gummies, ultimately ingesting an amount much higher than the recommended dosage.[20,37,44] (The Canadian Center on Substance Use and Addiction recommends that if a patient is going to try edible cannabis, they should start with no more than 2.5 mg of THC the first time to learn how it affects them and have someone with them in case an adverse reaction occurs.[44]) If an older adult is having extreme anxiety related to the effects of the cannabinoid, the recommendation is to administer small doses of benzodiazepines and provide a calming environment to decrease the agitation and stress placed on the cardiovascular system and monitor the patient for cardiovascular and neurologic issues such as hypertension, cardiac ischemia, and stroke.[37,40,42,43] Patients with increased somnolence and respiratory depression will require provision of cardiac and respiratory support.[42,43] Patients with persistent vomiting and/or diarrhea will require replacement of fluids to avoid dehydration and maintain circulation.[43] Effects of cannabinoids may exacerbate an older adult's underlying risk for cardiovascular and respiratory compromise. Symptoms will need to be evaluated and pathology ruled out rather than just being attributed to anxiety.

Cannabis Hyperemesis Syndrome

Older adults with a history of weekly use of cannabis over an extended period of time may present to the emergency department with persistent vomiting or "cannabis hyperemesis syndrome."[37,39,43,45] Studies have shown that older adults using cannabis have an increased risk of hyperemesis and dehydration, and up to 6% of older adults presenting to the emergency department with vomiting have been linked to cannabis usage.[46] Although cannabis is frequently suggested as a treatment for nausea and vomiting related to chemotherapy, it is important to determine whether it is chemotherapy drugs that are causing the nausea and vomiting or whether it is actually the cannabis.[45] Stopping the cannabis and switching to a different antiemetic may stop the vomiting within a few days.[37,43,45,46] The patient should be treated with fluids and a different antiemetic drug and given instructions to stop using cannabis.[43,45,46] Although it is unclear why soaking in a tub of warm water covering the abdomen or standing in the shower with warm water flowing over the abdomen decreases vomiting and abdominal pain, a history of frequent showering has become a diagnostic indicator that cannabis usage is the cause of abdominal pain and vomiting.[43,45,46] Some studies have suggested that topical capsaicin applied to the abdomen may also decrease the vomiting, as will the use of droperidol or benzodiazepines.[43,45,46] Older adults are at risk of having an underlying fluid and electrolyte imbalance due to medical conditions, medications they take, or normal aging. Adding the effects of hyperemesis due to cannabis use will only exacerbate weakness, orthostatic hypotension, cardiac dysrhythmias, and risk of falls.[27,28]

Cardiopulmonary-Related Concerns

An older adult may present to the emergency department with complaints of chest pain, shortness of breath, and fear that they are having a stroke.[43,47,48] An increased risk of stroke and acute myocardial infarction has been reported,

although that may be related to tachycardia and hypertension caused by stress on the cardiovascular system attributed to anxiety caused by cannabinoids, especially THC.[47,49,50,51] These symptoms, even if due to anxiety, need to be considered in light of the normal physiological changes of the older adult's cardiovascular system, taken at face value, and investigated.

Use of cannabinoids–especially cannabis–has been linked to a variety of dysrhythmias (atrial tachycardia, supraventricular tachycardia, atrial fibrillation, non-sustained ventricular tachycardia, and premature atrial and ventricular contractions) in older adults.[9,43,48,52,53] Bradycardia and orthostatic hypotension have also been reported in older adults using cannabinoids.[9,10,40,43,54] A case of an older adult requiring intubation and assisted ventilation after becoming unresponsive and bradycardic followed by respiratory arrest due to cannabinoid intoxication has been reported. The patient's explanation when he woke up was that he "didn't realize that eating that many gummies would cause a problem."[54]

Lung irritation caused by inhalation of byproducts of combustion and the oils found in cannabinoids, especially with vaping, has led to coughing and wheezing, as well as to damage to lung tissue.[2,35,37,40,55,56] The Centers for Disease Control and Prevention has noted that smoking cannabinoids is as damaging to the lungs as cigarette smoking.[40]

Whether their symptoms are cannabinoid-induced or not, patients with cardiovascular or respiratory compromise will need monitoring and supportive care to ensure adequate circulation and oxygenation.

Assessment and Treatment Tips

Older adults presenting to the emergency department for the treatment of symptoms related to an injury or medical condition (such as a stroke, heart attack, respiratory infection, or abdominal issue) after using cannabinoids should be assessed and treated in the usual manner, even if the symptoms are believed to be related to the use of a cannabinoid.[43,55] Older adults have an underlying increased risk for cardiac and neurological events, respiratory disease, drug/drug interactions, and injuries related to falls.[27,28] Cannabinoid use may be a factor contributing to these negative outcomes, but they do not alter the symptoms.[37,56] When studying specific diagnoses to determine whether cannabinoid use changed presenting symptoms, researchers have found that a working diagnosis, assessments, and treatments followed normal practice, and in most cases cannabinoid use was not learned of until the patient was specifically asked about it.[37,56] Even older adults presenting with symptoms of cannabinoid-related psychosis should be assessed for other causes associated with delirium, and cannabis toxicity should only be considered as one of the differential diagnoses.[37,57–60] When obtaining a history and asking about events leading up to the symptoms, ask about cannabinoid usage while also considering health risks associated with older age. The patient's symptoms should not be negated just because they admit to use of cannabinoids.

Assessment findings that coincide with cannabinoid usage include the following: tachycardia (100-150 beats per minute), hypertension, body tremors, eyelid tremors, red/bloodshot eyes, altered sense of time and distance, alterations in thought processes, lack of concentration, relaxed inhibitions, impaired memory, disorientation, drowsiness, sedation, and mood changes. Patients may appear pale and complain of numbness and tingling, but muscle tone and temperature are normal. Pupils tend to be normal and react to light in a normal manner. There is generally no nystagmus noted; however, patients may not be able cross their eyes when following a finger coming toward their nose (convergence). A patient who has used cannabinoids has difficulty multi-tasking and a short attention span, difficulty balancing on 1 leg, gait instability, and difficulty performing the finger-to-nose test.[43,61]

Urine drug screens to check for THC and CBD may not helpful.[43,54,62] Urine drug screens will be positive if the cannabinoid product ingested by the patient contains THC.[62] Even though CBD does not turn a urine drug screen positive because CBD and THC come from the same plant, contamination is likely, and a patient who has "only been taking a CBD product" may end up with a positive result for THC.[47,63] A drug screen can remain positive for 3 days after a single use of THC and for more than 30 days if the patient has used THC heavily on a chronic basis.[43,62]

With aging, physical and cognitive changes occur that place older adults at increased risk of cardio-pulmonary system comorbidities, altered cognition, drug-drug interactions, and falls.[28,29] Use of cannabinoids, which cause similar physiological and cognitive effects, can lead to increased risk of adverse effects felt by older adults.[1-9,19,29-41] Providing a calming environment and using benzodiazepines may be sufficient to relieve symptoms if a cannabinoid is causing the anxiety, but older adults are at risk of a variety of life-threatening medical conditions that need to be ruled out.

Tips When Providing Education

When providing discharge education to an older adult, these tips may help provide safety information.

1. Purchase cannabinoids from a reputable source and/or talk with the dispensary personnel about the most appropriate product and dosage.
2. Carefully and completely read the labels to know what is being purchased, how to use it correctly, and what to expect during usage.
3. CBD products tend to cause calm and relaxed feelings.[17-19]
4. THC, including Delta 8, 9, and 10, have psychoactive effects, causing euphoria and increased engagement, but can also cause anxiety, palpitations, and paranoia.[17-19]
5. CBD products are often intentionally mixed with or may be contaminated with THC and may cause palpitations, anxiety, and other negative side effects.[17-19]
6. Common negative side effects of cannabinoids (CBD, THC, marijuana) include dizziness, palpitations, drowsiness, altered thought processes, and poor judgment.[1-19]
7. Start low, go slow–even more so with edibles. Edibles take 45 to 60 minutes to take effect, and effects will last 12 to 24 hours or more. Inhaled cannabinoids take effect in minutes, and the effects peak in 30 minutes.[44]
8. Use of cannabinoids leads to increased risk-taking, which has been linked to increased falls, motor vehicle crashes, and injuries.[3,4,6,9,35,37]
9. Cannabinoid use can lead to respiratory, cardiac, and blood pressure issues (hypertension and orthostatic hypotension), as well as drug toxicities and drug interactions.[6-10,15,19,32,35,37,40,42,43,48,55]
10. Many patients who use cannabis also use alcohol, leading to increased risk of intoxication.[3,4,6,29,30,34,36]

Emergency nurses need to be aware that cannabinoids are being used by older adults to control pain, nausea, stress, anxiety, and insomnia and for palliative care. Its use can affect them physiologically and cognitively. Older adults may present to the emergency department when they are experiencing unwanted effects related to cannabinoid use or may present with an injury or medical emergency secondary to use of a cannabinoid. Asking in a nonjudgmental manner about the use of a cannabinoid may provide useful information and an opportunity to provide older adults with information about the risks and words of caution related to safety in order to help them avoid future injuries when using these products.

Author Disclosures

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Myocardial Infarction With Nonobstructive Coronary Arteries: Clinical Features, Pathophysiology, and Management

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Introduction

Myocardial infarction (MI) with nonobstructive coronary arteries (MINOCA) is a syndrome of heterogeneous causes based on varying factors of pathophysiology. Several recent studies indicate that the working diagnosis of MINOCA is established based on the absence of coronary artery disease or presence of stenosis of <50% on angiography.[1] Studies have found that the prevalence of MINOCA in patients with MI is 1% to 5%.[1] Per Singh et al,[2] the incidence of MINOCA is 1% to 5% with an average of 5% to 6%. Furthermore, they found that up to 25% of patients presenting with acute coronary syndrome fall under the MINOCA classification. Recently, the incidence of cardiovascular events owing to MINOCA has affected predominantly the younger adult population and women. Data show that younger adult patients (median of 46 years) have 4.8 times higher odds of presenting with MINOCA rather than type 1 MI owing to obstructive arteries.[3]

MINOCA may have either epicardial or microvascular causes. Epicardial causes include coronary plaque disruption or rupture, coronary artery spasm, or spontaneous coronary dissection. The most common cause, which is coronary plaque disruption or rupture, leads to thrombosis and obstruction of the coronary artery; however, the presence of stenosis is <50%.[1] Coronary artery spasm, associated with angina, is another pathogenic cause of MINOCA. On the microvascular level, angina pectoris can lead to transmural ischemia with ST-interval changes even if the coronary artery remains normal. Another cause is spontaneous coronary artery dissection, which is more common in women.[1] This patient population does not have obstructive lesions on angiography, which is another characteristic of MINOCA. There are differing opinions whether nonischemic causes of MI fall under the umbrella term of MINOCA, yet Abdu et al[1] characterize both Takotsubo cardiomyopathy and myocarditis as underlying causes of the syndrome. Presently, there is no standard protocol for treatment for this patient group. It is necessary to identify the underlying cause of MINOCA to guide proper diagnosis and treatment for this syndrome to improve patient outcomes after MI.

Patient Information

A 45-year-old female has a past medical history of exercise induced asthma that is well controlled. She does not have a history of hypertension, hyperlipidemia, stroke, pulmonary embolism, or diabetes. She has had no previous echocardiograms or stress tests. Her last evaluation was with her primary care provider 6 months ago. Her current medication includes an as needed albuterol inhaler. She reported that she exercises twice a week and maintains a heart-healthy diet and drinks 1 cup of coffee per day. Of note, she quit smoking 11 years ago. She does not have a family history of cardiac disease. She denied current stressors and, in fact, recently got a promotion in her career. She denied previous surgeries.

Clinical Findings

The clinical presentation of MINOCA includes symptoms of ischemia, such as shortness of breath, chest pain, palpitations, and diaphoresis. A thorough history should be reviewed to determine a personal or family history of cardiac disease and comorbidities. ST segment elevation is uncommon with MINOCA, and these patients may have a smaller increase in cardiac troponin markers than those with coronary obstruction (Table).[2] MINOCA is twice as likely to

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TABLE
Differentiating myocardial infarction

Assessment considerations	Type 1 MI	MINOCA
Clinical presentation	Symptoms of ischemia, more commonly male, likely to have cardiac risk factors (ie, hypertension, hyperlipidemia, diabetes mellitus)	Symptoms of ischemia, typically younger, female, and less likely to have cardiac risk factors
Pathophysiology	Caused by atherosclerotic plaque or thrombus rupture or erosion with obstructive arteries	Epicardial or microvascular causes that are not related to atherothrombosis or obstructive arteries
Electrocardiogram	Commonly ST elevation or non-ST elevation	Commonly ST elevation or non-ST elevation
Laboratory tests/imaging	Elevated troponin T, >50 % coronary artery stenosis on angiography	Elevated troponin T, <50% coronary artery stenosis, or clear arteries

MI, myocardial infarction; MINOCA, myocardial infarction with nonobstructive coronary arteries.

be found in females compared with males.[2] Comorbid risk factors, such as diabetes, hypertension, and hyperlipidemia, are also less prevalent in this population.[2] Differential diagnoses may include obstructive coronary artery disease, pulmonary embolism, heart failure, and gastric reflux.

Timeline

The patient was preparing to go to her job when she experienced substernal, squeezing chest pain that radiated down her left arm. She also experienced diaphoresis and nausea. Initially she was concerned that she was experiencing an asthma attack, but the chest pain increased to 9/10. She called emergency medical services and received nitroglycerin and aspirin en route and experienced moderate relief to 2 out of 10 on the pain scale. She was admitted to the emergency department, where her troponin level rose from 10 to 40 within 2 hours. Her 12-lead electrocardiogram showed sinus bradycardia without ischemic change and no ST elevation. She was given clopidogrel 600 mg and started on a heparin infusion to prepare for cardiac catheterization. Owing to the history of present illness and rise in troponin levels, the patient was admitted to the hospital for non-ST elevation MI.

A coronary angiography showed normal coronary arteries. The intravascular ultrasound summary showed the left main coronary artery segment as normal. Her echocardiogram displayed an ejection fraction of 57% with no regional wall motion abnormalities and normal left ventricular filling pressure.

Diagnostic Assessment

For MINOCA identification, invasive angiography would reveal no or mild stenosis of the coronary artery (<50% stenosis). Intracoronary imaging such as intravascular ultrasound or optical coherence tomography should be performed to further rule out obstructive causes of MI and to help classify the underlying cause of MINOCA.[4] Cardiac magnetic resonance imaging also is used to help facilitate MINOCA diagnosis, because it may rule out the presence of cardiomyopathy or myocarditis.[5]

Therapeutic Intervention

If atherosclerosis is present with MINOCA, education should be given on treating modifiable risk factors, such as smoking, excess caffeine use, and stress.[5] In the event of plaque rupture leading to MI, aspirin therapy would be the initial treatment for MINOCA. [3] Statin therapy also is strongly recommended.[5] A large study of 9136 patients with MINOCA showed a reduction of adverse events with the use of statins, ACE-Inhibitors and/or angiotensin receptor blockers, and metoprolol, yet there was no significant adverse event reduction with the use of dual antiplatelet therapy.[3] For MINOCA caused by vasospasm, calcium channel blockers are recommended.[5] Microvascular dysfunction as a cause for MINOCA is difficult to treat, yet calcium channel blockers and beta blockers are recommended by the American Heart Association (AHA).[5] Management for patients with spontaneous coronary artery

dissection in the setting of MINOCA is not well established, but the AHA currently recommends the use of antiplatelet therapy and beta blockers.[5] Owing to its variety of causes, there is not a standard guideline for treatment of MINOCA. The underlying cause of MINOCA can guide treatment options that optimize patient outcomes.

Follow-up and Outcomes

The patient had no further symptoms of chest pain or MI symptoms during her hospital course. She was started on amLODIPine and atorvastatin. She also received a cardiac magnetic resonance imaging with results that were consistent with MINOCA. The cardiologist was concerned for microvascular spasm as a cause for the MI, which is consistent with MINOCA classification. She was prescribed amLODIPine and atorvastatin for the enhancement of endothelial function. If she were to develop angina in the future, the addition of metoprolol would be considered. The patient was discharged the next day, and she was referred to cardiac rehabilitation and will follow up with outpatient cardiology in 1 month.

Discussion

Although MINOCA is a syndrome with a heterogeneous definition, it is imperative to identify the underlying cause to help guide diagnosis and management. Agreement among experts should be established to standardize inclusion and exclusion criteria, given that it would improve treatment outcomes for this patient population. Furthermore, a deeper understanding of MINOCA can lead to improved primary and secondary prevention. Education should be given to the younger adult population, especially women, regarding the incidence of MINOCA in their population. With more research on underlying causes and subsequent treatment, clinicians can improve patient outcomes for those who experience MI in the presence of nonobstructive coronary arteries. It is necessary to identify the underlying cause of MINOCA to facilitate appropriate treatment and optimize patient outcomes; however, there are no specific guidelines for the treatment of MINOCA.[1] In this manuscript, the current recommendations are based on an updated statement by the AHA regarding the diagnosis and management of patients with MINOCA.[5]

Implications for Emergency Nurses

Implications for the emergency nurse involve prompt recognition of chest pain through the patient's history, vital signs, and assessment. In addition, a 12-lead electrocardiogram and troponin level are necessary for the diagnosis of MI. Cardiology also must be notified promptly to help further identify the cause of MI and to help facilitate effective treatment.

The topic of MINOCA is significant for the emergency nurse, because this type of MI can be present in both the young adult and female patient population. Recognition of MINOCA as a differential diagnosis for cardiac chest pain can help guide evidence-based treatment protocols in both the emergency department and throughout the hospital course, and it can lead to improved patient outcomes.

Author Disclosures

Conflicts of interest: none to report.

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Reappraisal of Multiple Cutaneous Ecchymotic Signs: Coexistence of Grey Turner Sign, Stable Sign, and Fox Sign in Spontaneous Abdominal Wall Hematoma

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An 81-year-old woman presented to our emergency department with sudden onset of right flank bruise and mild abdominal pain. She began to experience marked abdominal distension followed by vigorous vomiting and severe cough 3 days prior. Her medical history showed no pharmacology therapy but an abdominal surgery for uterine myoma about 40 years ago. On arrival she was afebrile and had stable hemodynamic parameters. Blood tests showed normal coagulation profiles and decreased hemoglobin of 10 g/dL, compared to previous value of 13 g/dL. Physical examination revealed abdominal distension with extensive ecchymosis on the right lateral abdominal wall extending to the upper thigh (Figure 1). There was mild pain without tenderness in right upper abdomen. An abdominal CT showed a hypodense area in the right internal oblique muscle which suggested a lateral abdominal wall hematoma (Figure 2). She was treated with supportive care including intravenous fluids, traMADol, blood transfusion and bed rest of 3 days. On the third day of admission, a follow-up complete blood count test demonstrated a normal white cell count of 7.6 × 103/μL and a hemoglobin value of 12.8 g/dL. Blood biochemistry and coagulation tests remained within normal range. On day 4 she resumed oral intake. The ecchymosis faded away gradually. She was discharged on the sixth day of admission and was followed at our outpatient department with complete

FIGURE 1

Grey Turner's sign. Cutaneous bluish discoloration extending from right flank to the iliac region.

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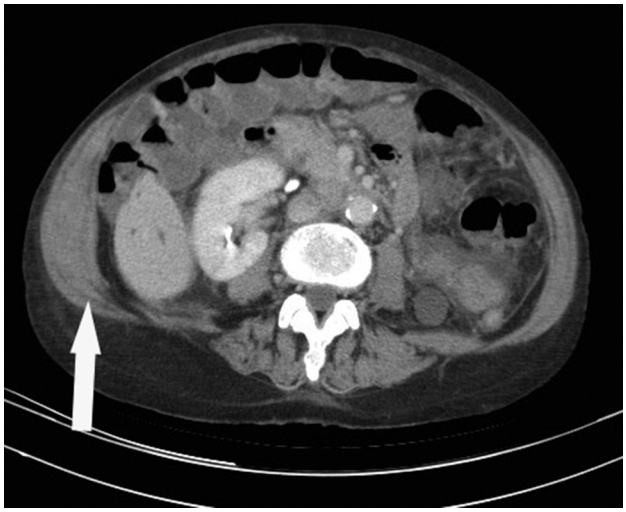

FIGURE 2

Abdominal CT scan showing a hematoma (12 cm × 3 cm × 6 cm) in right lateral abdominal wall (arrow).

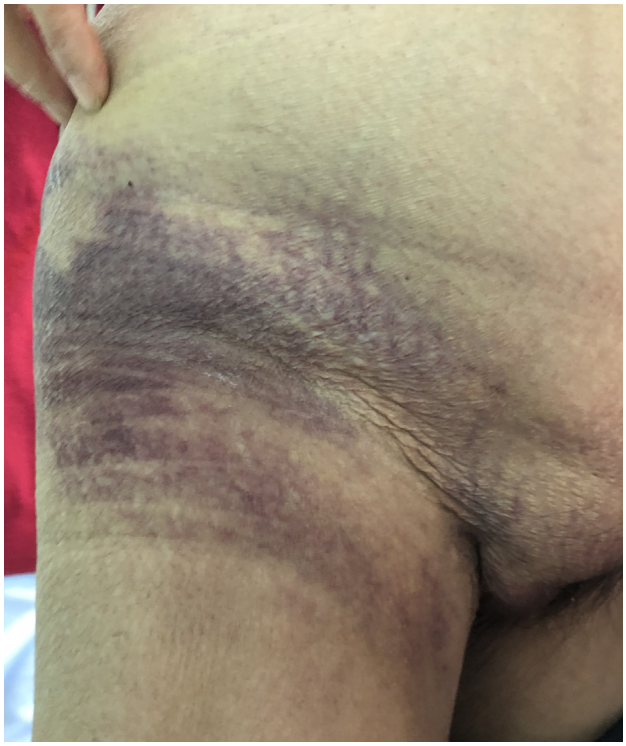

FIGURE 3

Stabler sign. Ecchymosis involving the right inguinal and pubic areas.

FIGURE 4

Fox sign. Ecchymosis in the right upper thigh.

resolution of abdominal wall hematoma and ecchymosis 2 weeks later.

Spontaneous lateral abdominal wall hematoma is rarely encountered and usually caused by disruption of the deep circumflex iliac artery[1] or tear of the internal oblique muscle[2] without any external mechanical insult. The most distinct feature in these patients is an extensive area of abdominal wall ecchymosis, which is associated with a number of medical eponyms of clinical characteristic. In our patient, Grey turner sign involving the right flank (Figure 1), Stabler sign on the right inguinal area (Figure 3), as well as Fox sign on the right thigh (Figure 4) could be identified.[3] Clinically various cutaneous signs may provide valuable diagnostic clues associated with their underlying causes. Although most frequently described as a manifestation of pancreatitis, Grey Turner sign has been cited with a wide variety of other conditions, including Idiopathic perirenal hemorrhage, splenic rupture, rectus sheath hematoma, portal hypertension, anticoagulation, perforated duodenal ulcer, malignancies, and liver disease.[4–6] Grey Turner sign develops in 3% of patients with acute pancreatitis, often

accompanying Cullen sign, especially in patients with retroperitoneal hemorrhage.[6] By contrast, Stabler sign and Fox sign are rather rare in clinical practice. They were most commonly identified in neonatal adrenal hemorrhage and acute hemorrhagic pancreatitis, respectively.[3,7]

Therefore, it is obvious that these signs are diagnostically neither sensitive nor specific for any medical disorder, although they may represent hallmarks for some potentially serious causes of internal bleeding or intra-abdominal pathology.[3,4] Moreover, it should be emphasized that the anatomical region of the ecchymosis does not indicate the actual etiology. Coexistence of multiple cutaneous ecchymotic signs in a single patient with spontaneous lateral abdominal wall hematoma appears to be uncommon. It is presumed that these signs might arise in a caudal fashion if extra-peritoneal blood sequentially track along the psoas and iliac fasciae beneath the inguinal ligament to the subcutaneous space in the upper thigh.[3,4]

In general, the treatment for lateral abdominal wall hematomas is supportive in most patients, and surgery or vascular embolization are restricted for patients with complications such as hematoma progression, a rupture into the peritoneal cavity, or infection.[2,8] Our findings, that complete resolution of the hematoma and disappearance of multiple skin signs can be obtained within 2 to 3 weeks after conservative management, are consistent with those in 2 recent reports regarding acute pancreatitis and abdominal wall hematoma induced by coughing.[9,10] Despite the advancement of imaging technologies, the eponymous cutaneous signs retain their relevance and should alert the clinician to conduct further investigations and to obtain optimal interventions.

Author Disclosure

Conflicts of interest: none to report.

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Submissions
Images Section: Submit a manuscript directly to the JEN.

Evaluating the Impact of a Multifaceted Distracted Driving Prevention Program

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Contribution to Emergency Nursing Practice

- Distracted driving is a serious threat to the safety of drivers, passengers, other motorists, and pedestrians. Didactic distracted driving prevention programs do little to affect attitudes toward distracted driving.
- The addition of a simulated distracted driving experience is a novel method of attempting to affect distracted driving attitudes. The multifaceted distracted driving program presented in this study helped promote negative attitudes toward distracted driving among undergraduate college students.
- Distracted driving is associated with increased ED visits. Emergency departments may invest in a distracted driving simulator to be used by medical providers and patients. Emergency nurses may use the driving simulator themselves to help educate patients and community members on how even minor distractions can be dangerous.

Abstract

Objective: The aim of this study is to evaluate undergraduate college students' attitude changes toward distracted driving after participating in a multifaceted distracted driving prevention program.

Methods: This study used a quasi-experimental, pre- post-test design. Participants were undergraduate college students who were aged 18 or older and had a valid driver's license. The Questionnaire Assessing Distracted Driving was used to measure participants' attitudes and behaviors. All participants completed the entire Questionnaire Assessing Distracted Driving survey and then participated in the distracted driving prevention program that consisted of a 10-minute narrated recorded PowerPoint lecture followed by a distracted driving simulation. Descriptive statistics were calculated to describe the study sample. The Questionnaire Assessing Distracted Driving data were analyzed to ascertain any statistically significant changes in responses from pre- to postintervention.

Results: From pre- to post-test, there were statistically significant increases in the number of participants who reported they would tell friends to stop texting and driving if they were a passenger, refrain from texting while driving, and wait until reaching home before retrieving their cell phones from the floor of the vehicle. Participants perceived a greater threat from drivers talking on phones or texting/emailing from pre- to post-test. Moreover, attitudes toward talking on a handheld device, talking on a hands-free phone, and texting/emailing became more negative from pre- to post-test.

Conclusion: The intervention helped promote negative attitudes toward distracted driving in a sample of college students immediately after participating in a distracted driving prevention program.

Key words: Distracted driving; Driving simulator; Injury prevention; Health promotion

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Background

According to the Centers for Disease Control and Prevention, distracted driving is performing an activity that could take attention away from the primary task of driving (Centers for Disease Control and Prevention).[1] The 3 basic

categories of distracted driving are visual (drivers taking their eyes off the road), manual (drivers taking their hands off the wheel), and cognitive (drivers taking their mind off driving).[1] Activities, such as cellular phone use, involve all 3 categories.

Distracted driving is particularly a concern among young adults.[2-14] Although the hazards of distracted driving are well documented, drivers (particularly teens and young adults) believe they are immune to these dangers. A large cohort study ($N = 4974$) found that college students who possessed confidence in their ability to multitask were more likely to drive distracted. Many of these students also reported being more likely to drive distracted after observing others engage in distracted driving without consequences.[2] A small cohort study ($N = 35$) of college students found that participants committed nearly 10 times the number of traffic infractions while texting and driving during a video game simulation.[3] McDonald and colleagues[4] tested a web-based intervention (Let's Choose Ourselves) to reduce adolescent driver inattention. They found that there were no significant effects of this web-based intervention and that self-reported risky driving behaviors increased over time.[4]

Despite legislation and programs to decrease distracted driving, the behavior persists, especially among young drivers. As of July 2021, handheld cell phone use is banned for all drivers in 24 states as well as Washington, DC, Guam, Northern Mariana Islands, Puerto Rico, and the United States Virgin Islands. Forty-eight states, Washington, DC, Puerto Rico, Guam, and the United States Virgin Islands ban text messaging for all drivers, and 21 states and Washington, DC, prohibit any cell phone use by school bus drivers.[5] Distracted driving, especially in states that do not have text-while-driving bans, is associated with increased emergency room visits owing to traffic accidents.[15] Although texting-while-driving prohibitions resulted in a decreased number of ED visits[15] and reduced traffic fatalities in the United States,[16] distracted driving is persistent. Programs to educate drivers about the consequences of distracted driving need to be developed and evaluated for their effectiveness in changing attitudes and behaviors in young adult drivers who have an increased likelihood of engaging in this behavior. Such programs may be implemented in emergency departments to train health care providers including nurses who can in turn offer education to patients and community members affected by distracted driving.

The objective of this study was to evaluate undergraduate college students' attitude changes regarding distracted driving immediately after participating in a distracted driving prevention program consisting of a virtual lecture followed by a distracted driving simulation. The theoretical framework for this study is the theory of planned behavior (TPB).[17] The TPB, which has been applied in conceptualizing previous research on distracted driving,[18] predicts an individual's intention to engage in a behavior at a specific time and place. It posits that individual behavior is driven by behavioral intentions, where behavioral intentions are a function of 3 determinants: an individual's attitude toward behavior, subjective norms, and perceived behavioral control.[17] The specific focus of this research was to evaluate the participants' attitudes toward the behavior of distracted driving before and after an educational intervention. An attitude toward a behavior refers to the degree to which a person has positive or negative feelings of the behavior of interest and includes a consideration of the outcomes of performing the behavior.[19]

Methods

This study used a quasi-experimental, pre- post-test design to examine changes in attitudes toward distracted driving immediately after an educational intervention. This study was approved by the University of Michigan Institutional Review Board and was deemed to carry no more than minimal risk to the human subject participants. The driving simulator could cause vertigo and anxiety in participants who had been involved in a motor vehicle crash. Therefore, all participants were queried about previous episodes of vertigo and motor vehicle crashes and were permitted to opt out of the study at any time. A written informed consent was obtained.

SAMPLE

Participants included a convenience sample of undergraduate students at one midwestern regional comprehensive university who were aged 18 or older and had a valid driver's license. Recruitment of participants was achieved using blast emails to all registered university students, flyers in university buildings, and word-of-mouth communications. All eligible students were permitted to participate in the study. Participants were volunteers and no incentive was offered for participation in this study. A power analysis was performed by a statistician a priori and it was determined that a minimum of 25 students serving as their own control on pre- and post-tests would be needed to produce meaningful results.

INSTRUMENT

The Questionnaire Assessing Distracted Driving (QUADD) was used with permission to gauge participants' attitudes and behaviors. This survey consists of 4 subscales: frequency of engagement in distracted driving by day, frequency of engagement by week, perception of driving ability, and perception of driving risk. The questions are answered using a variety of methods including numeric, select all that apply, Likert-scale, and narrative responses. Previous research on the internal consistency suggested that the subscales with Likert-scale items (Cronbach's alpha for each subscale ≥ 0.70) were reliable.[20]

INTERVENTION

The intervention took place in a university simulation center laboratory. All participants completed the entire QUADD survey and then individually participated in the distracted driving prevention program that consisted of a 10-minute narrated recorded PowerPoint lecture followed by a distracted driving simulation. The PowerPoint presentation included information on the definition of distracted driving, statistics on traffic accidents caused by distracted driving, and the possible consequences of distracted driving for the driver. The distracted driving simulator was purchased from Virtual Driver Interactive (model dVT29) (Figure). Using a program titled One Simple Decision, Virtual Driver Interactive developed a simulation-based distracted driving experience that sought to change attitudes and behaviors: "The simulation-based impaired and distracted driver program was designed to stop destructive driving behaviors. Young drivers are immersed in a personal experience and live through the consequences of their driving decisions."[21] The simulation is automatically stopped when the participant has 3 minor infractions (eg, veering into a bike lane, not coming to a full stop at a stop sign) or 1 major infraction (eg, car crash, running over a dog or pedestrian). After the intervention, the participants immediately answered an abbreviated version of the QUADD consisting only of the survey items related to attitudes toward distracted driving. In addition to sociodemographic items, participants also answered questions on their driving history such as past traffic tickets and accidents. The intervention and survey completion took approximately 45 minutes.

DATA ANALYSIS

Data were analyzed using IBM SPSS Statistics (Version 22.0). Descriptive statistics including mean, frequencies, and percentages were calculated to describe the sociodemographic characteristics and driving history of the study sample. Wilcoxon signed rank tests for QUADD data were performed to ascertain whether there were any statistically significant changes in responses from pre- to immediate postintervention. The significance level was set a priori as $P < .05$.

Results

SAMPLE

The participants who completed both pre- and post-test QUADD surveys in their entirety ($n = 40$) were used for the analysis. The demographic information for the participants is presented in Table 1. The predominant gender of participants was male (75%) and most participants reported that they were Caucasian (67.5%). Ninety percent of participants reported having access to a car they could drive that day. Fifty-eight percent reported that they drove every day and 82.5% reported that they drove at least 4 days per week. Participants also stated that they drove an average of 98.6 minutes per day Monday through Thursday (range 0-400 minutes) and an average of 104 minutes per day Friday through Sunday (range 0-480 minutes). When asked how many traffic tickets they had received in their lifetime, 67.5% of participants reported never receiving a ticket (range 0-7 tickets). Participants were also asked about the number of collisions in which they had been involved, with 92.5% reporting 2 or fewer collisions.

QUADD

Participants' baseline survey responses were compared with their responses to the same questions on the immediate postintervention survey. A descriptive review of question responses yielded several observations. The number of participants who would tell their friends to stop texting and driving if they were a passenger increased from 32.5% at baseline to 57.5% postintervention. The number of participants who would not text while driving increased from 15% at baseline to 55% postintervention. The number of participants who would not answer texts while driving increased from 27.5% at baseline to 67.5% postintervention. All participants, both at baseline and postintervention, reported not feeling comfortable riding in a car with a driver who was texting and driving.

When asked what they would do if their cell phone fell on the floor of their car, the results showed a statistically significant increase from pre- to post-test in the number of participants who would wait until they reached home before

TABLE 1
Demographic characteristics of participants

Characteristic	Number	Percentage
Total participants	40	
Gender		
Male	30	75.0%
Female	10	25.0%
Ethnicity		
Caucasian	27	67.5%
African American	6	15.0%
American Indian/Alaskan	3	7.5%
Asian	2	5.0%
Hispanic	1	2.5%
Arab American	1	2.5%
Do you have access to a car that you could drive today?		
Yes	36	90.0%
No	4	10.0%
No. of days you drive per wk		
0	2	5.0%
1	1	2.5%
2	3	7.5%
3	1	2.5%
4	4	10.0%
5	3	7.5%
6	3	7.5%
7	23	57.5%
No. of traffic tickets received		
0	27	67.5%
1	6	15.0%
2	4	10.0%
3	1	2.5%
6	1	2.5%
7	1	2.5%
No. of collisions		
0	23	57.5%
1	10	25.0%
2	4	10.0%
3	2	5.0%
5	1	2.5%

retrieving their cell phones ($P = .01$). Participants were asked how much of a threat existed to their personal safety when other drivers were exhibiting distracted driving behaviors. The results from this question (Table 2) indicated that participants felt a greater threat from pre- to post-test

TABLE 2
QUADD responses related to attitudes toward distracted driving

QUADD question	Z*	P value
How much of a threat to your personal safety are…		
drivers talking on phones?	−3.63	.000
drivers texting, messaging, emailing?	−2.31	.02
drivers checking social media?	−.33	.74
drivers taking selfies?	−.82	.41
How acceptable do you personally feel it is for a driver to…		
check or update social media?	−1.41	.16
take selfies while driving?	−.58	.56
talk on a handheld phone?	−3.29	.001
talk on a hands-free phone?	−2.94	.003
text or email?	−3.36	.001
How influential are the following on your driving habits?		
Advertisements about distracted driving	−.55	.59
Laws banning texting while driving	−2.50	.01
Your parents	−.13	.90
Police presence	−.43	.67

QUADD, Questionnaire Assessing Distracted Driving.
* Wilcoxon signed rank test.

regarding other drivers talking on phones ($P = .000$) or texting/emailing ($P = .02$). There was no significant difference from pre- to post-test in participants' perceived level of threat when drivers were checking social media ($P = .74$) or taking selfies ($P = .41$).

Participants were asked about the acceptability of several of their own driving habits. The results show that participants felt that checking or updating social media ($P = .16$) and taking selfies ($P = .56$) were unacceptable both before and immediately after the intervention. The participants' attitudes toward talking on a handheld device ($P = .001$), talking on a hands-free phone ($P = .003$), and texting or emailing ($P = .001$) were significantly more negative on the immediate postintervention survey than the preintervention survey. Participants were asked about their attitudes toward factors that influenced their own driving habits. Of the factors presented, the only significant change from pre- to postintervention was that

participants reported a greater influence by laws banning texting and driving ($P = 0.01$) (Table 2).

Discussion

The distracted driving prevention program helped promote negative attitudes toward distracted driving. From pre- to post-test, there were increases in the percentages of participants who would tell their friends to stop texting and driving if they were a passenger, refrain from texting others or answering texts while driving, and wait until they reached home before retrieving their cell phones from the floor of the car. Participants also reported a greater threat from other drivers talking on phones or texting/emailing from pre- to post-test. Moreover, their attitudes toward talking on a handheld device, talking on a hands-free phone, and texting/emailing became more negative from pre- to post-test. The lack of significant difference from pre- to post-test in participants' perceived level of threat when drivers were checking social media or taking selfies may be because they did not have experience with drivers exhibiting these behaviors.

The TPB states that attitude change must occur for people to change behaviors.[11] In addition, the persons must believe that they are in control of that behavior. With this attitude change, in addition to the fact that people have control over whether they engage in most distracted driving behaviors, one would assume that they would not engage in such behaviors owing to the subjective norm that people should not intentionally allow distractions when driving. Most prevention programs are unable to follow participants to ascertain behavior change and therefore attempt to create a negative attitude toward the desired behavior. This distracted driving prevention program seems to have achieved that objective of change in attitudes immediately after the intervention for the student participants.

The use of a reliable survey strengthened this study's results. In addition, the use of an innovative, simulation-based distracted driving experience specifically designed to help change attitudes related to distracted driving can be considered a study strength. This study also had limitations. One limitation was the small sample size and a lack of comparison between an intervention and a control group. Furthermore, the reliability and validity of the survey in the current study were not calculated. Another limitation was that the changes were assessed immediately after the end of the program. It is unknown whether the magnitude of the changes could be sustained over time. In addition, these findings may not be generalizable to people other than students at this university.

FIGURE

Virtual Driver Interactive Distracted Driving Simulator (dVT29) (used with permission).

Moreover, because most of the students (75%) were male, the results may not be generalizable to females.

Future research should assess the influence of the program on actual distracted driving behaviors in different populations over longer periods. In addition, future studies may include a control group to assess differences between the intervention and control groups over time. A survey study that was developed using concepts from the TPB found that, among 166 individuals aged 17 to 24 years, perceived peer pressure while driving increased the explained variance in the intent to participate in risky driving.[12] Therefore, future research may investigate whether the current intervention completed by peers jointly and collaboratively may contribute to improvements in outcomes.

A qualitative study could assess participants' suggestions for improving the simulation-based distracted driving experience during interviews and focus groups. To improve the intervention, strategies from previous effective programs can be added to the current activities, such as the use of educational videos, social media campaigns, movie theater trailers, and education on the influence of one bad choice on distracted driving.[22] Research also should include more female and minority students. Previous research focused on distracted driving issues among specific demographic and patient groups such as high school students,[23,24] teenagers with attention-deficit disorder,[25] teenagers and young

adults with traumatic brain injury,[26] and older adults with glaucoma.[27] Future research may assess the influence of a modified intervention tailored to the needs of these demographic and patient groups.

Implications for Emergency Nurses

The study has implications for emergency nursing practice and research. In the emergency department, injury prevention through patient education is a priority for nurses.[28] Emergency nurses develop and implement injury prevention programs.[28] Emergency nurses may use the distracted driving simulator themselves to be able to understand through the hands-on experience the dangerous effect of even minor distractions. Nurses can use their experiences with the simulator to educate patients on the dangers of distracted driving. Nurses may benefit their own health and well-being by using a distracted driving simulator because past research found that distracted driving, work-related burnout, and drowsiness owing to long shifts were concerns among health care workers including nurses.[28-30] Future research may focus on the influence of the simulation-based distracted driving experience on driving behaviors among nurses.

Conclusion

This distracted driving program helped promote negative attitudes toward distracted driving among undergraduate college students. Programs such as the one studied here could be beneficial to reducing distracted driving behaviors by creating a negative attitude toward distracted driving thereby motivating participants to consider the outcomes of performing this behavior. Emergency nurses may use information learned from the current study to help educate survivors of accidents caused by distracted driving on the dangerous consequences of even minor distractions. They may even experience positive effects on their own driving behaviors through using the distracted driving simulator. Future research may assess the longer-term effects of the simulated experience in studies of larger sample sizes on emergency room visits and mortality owing to accidents caused by distracted driving.

Author Disclosures

Conflicts of interest: none to report.

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Rethinking Traditional Emergency Department Care Models in a Post-Coronavirus Disease-2019 World

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Contribution to Emergency Nursing Practice

- Emergency nursing workforce shortages are not a new phenomenon, but they have become more serious in the coronavirus disease-2019 era. There is an extensive body of literature regarding emergency nursing burnout, stress, fatigue, and workplace violence, but there is not much literature about how to support emergency nurses.
- We offer a clarion call for hospitals to view their ED technicians as strategic resources which, if properly managed, can significantly mitigate the adverse effects of the nursing shortage on ED patient flow and satisfaction.
- Emergency department leadership should identify and implement strategies to expand the role of the ED-extenders when sufficient numbers of nurses are not available. This expansion will require additional training and an ongoing process of skills development and competency measurement.

Abstract

As the nursing shortage in United States emergency departments has drastically worsened since the coronavirus disease-2019 (COVID-19) pandemic, emergency departments have experienced increased rates of inpatient onboarding, higher rates of patients leaving without being seen, and declining patient satisfaction scores. This paper reviews the impacts of the coronavirus disease-2019 pandemic on the current nursing shortage and considers how various medical personnel (emergency nurse-extenders) can ameliorate operational challenges by redesigning emergency department systems. During the height of the coronavirus disease-2019 pandemic, the psychological effects of increased demand for emergency nurses coupled with the fear of coronavirus infection exacerbated nursing turnover rates. Health care workers who can be trained to augment the existing emergency department workforce include paramedics, Emergency Medical Technicians, emergency department technicians, ancillary staff, scribes, and motivated health sciences students. Utilizing non-nurse providers to fulfill tasks traditionally assigned to emergency nurses can improve emergency department flow and care delivery in a post-coronavirus disease-2019 world.

Key words: Nursing; Shortage; Emergency department; Pandemic

Introduction

While United States emergency department utilization increased by 28% between 2000 to 2019, emergency departments experienced episodic operational difficulties due to intermittent registered nurse (RN) shortages. During the coronavirus disease-2019 (COVID-19) pandemic, most emergency departments saw acute drops in patient volume with variable recovery patterns while simultaneously experiencing uneven, location-dependent staffing and systems

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challenges.[1-3] In recent years, operational difficulties have worsened and now include record levels of inpatient boarding in the emergency department, widespread nursing shortages, higher rates of patients leaving without being seen by a provider, and declining patient satisfaction scores.[4-7]

One of the more significant issues affecting care delivery post-COVID-19 is the dramatic shift in workforce availability. Undoubtedly some of the emergency department and hospital nursing shortages are due to COVID-19-related stress, coupled with significant economic incentives for nurses to "travel" rather than becoming "permanent" or "staff" employees. One survey found that 66% of critical care nurses were considering leaving the profession entirely due to COVID-19-related burnout and concerns over personal safety during the pandemic.[8]

The future of the US nursing workforce is uncertain, and its recovery is not guaranteed. As such, there must be a focus on restructuring care models to mitigate the effects of the nursing shortage. ED managers and hospital administrators should think creatively about effective care delivery in the absence of a "traditional, RN-heavy" care team. The purpose of this literature review is to explore how different medical personnel (emergency nurse-extenders) can augment existing workforces in redesigned ED systems by alleviating some of the task burden historically relegated to RN staff.

Methods

To explore the literature and evaluate new roles for specific emergency nurse-extenders, the following databases were searched: PubMed, SCOPUS, and Cumulative Index to Nursing and Allied Health Literature. Studies published as of October 30, 2022, were included in this review. PubMed and SCOPUS searches were conducted using a combination of the keywords, including: "nurse shortage," "COVID-19 workforce burnout," "ED Paramedics," "EMT," "EDT," "emergency department ancillary staff," and "triage tiered system." Studies were included in the review if they addressed ED patients' triage, screening, response, or education; focused on the emergency nursing workforce; and were published in the English language. We included letters, perspectives, clinical guidelines, retrospective studies, cohort studies, and editorials due to the novelty of some ideas and lack of evidence. Studies that addressed settings outside of the emergency department were excluded. We used the web-based Covidence system to manage our literature review (www.covidence.org, Melbourne, Victoria, Australia).

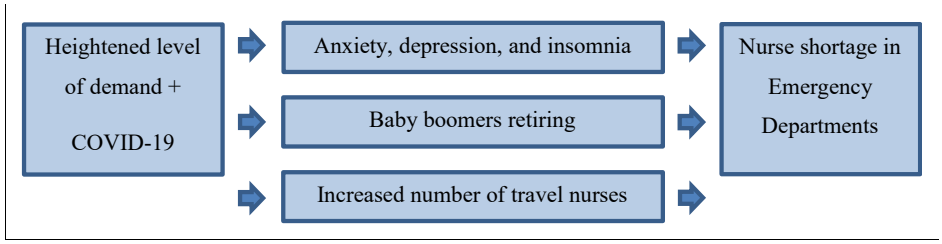
References of the included citations were also reviewed to identify additional sources. The initial literature search identified 150 articles, of which 34 articles were included in this review. We enclosed our search strategy in Supplementary Appendix 1 and 2.

Results

The ED nursing shortage is not a new phenomenon, and it has affected care delivery in emergency departments for most of the 21st century.[9] The COVID-19 pandemic, however, has dramatically increased nursing turnover rates.[6] Multiple studies have demonstrated an increased prevalence of anxiety, depression, and insomnia during the pandemic, and nursing burnout can be traced to "occupational psychological trauma" resulting from consistently working at a heightened level of stress for a prolonged period and fearing the possibility of being infected and infecting others.[10,11] Many nurses report the emergence of new sleep disturbances and decreased quality of life.[11,12] Psychological trauma combined with the current pressures of working through the pandemic have contributed significantly to workforce shortages as nurses leave the emergency department and/or field altogether.[4,13,14] In addition, a large cohort of aging "baby boomer" nurses are now retiring, thus adding to the problem.[15] Figure 1 outlines the impacts of the COVID-19 pandemic on the nursing shortage.

Emergency Medical Service call volume decreased during the first wave of the pandemic in early 2020 for a variety of reasons, including fear of infection in the emergency department and mandated restrictions that reduced out-of-home activities.[16,17] As a result, patients delayed care, worsening their medical conditions and skewing the triage scales toward life-threatening emergencies.[17,18] High overall acuity, patient load, and excessive inpatient boarding in the emergency department contributed significantly to both workforce stress and the breakdown of the standard ED operating paradigm.[4,19]

The current/standard ED patient flow system and care delivery model are built around the RN. Registered nurses are the largest provider group in the emergency department and lack of optimal nurse staffing has a significant adverse effect on patient care.[20] Studies have demonstrated an association between inadequate nurse staffing and increased patient morbidity and mortality.[21] Additionally, nursing shortages are not strictly limited to the emergency department, as a shortage of medical, surgical, and intensive care



FIGURE

Impacts of the COVID-19 pandemic on the current nursing shortage. COVID-19, coronavirus disease-2019.

unit staff contributes to ED boarding at many institutions.[12-14]

There is little evidence to suggest that nurse staffing woes will improve as the pandemic wanes, and ED managers must consider restructuring ED flow systems to account for continued RN shortages. The following sections will discuss how other categories of health care professionals, including paramedics, Emergency Medical Technicians (EMTs), ED technicians, ancillary staff, scribes, and health sciences students, can be utilized to improve ED flow and care delivery in a post-COVID-19 world.

PARAMEDICS

Paramedics have significant autonomy and decision-making capacity in the prehospital setting. Their scope of practice includes the administration of medications (orally or intravenously), interpreting electrocardiograms (ECGs), and using cardiac monitors and complex equipment. Wake Forest University Baptist Medical, a level-one trauma center, launched a pilot program utilizing paramedics as emergency nurse-extenders in times of workforce shortages.[22] Participants underwent a 12-week intensive course, during which they trained alongside newly graduated emergency nurses (further indicating that the groups had comparable baseline knowledge). The paramedics were subsequently able to assist with traditional nursing tasks like obtaining ECGs, placement of intravenous (IV) lines, triage, and medication administration.[22] Campbell et al[23] conducted a study that examined ED flow when paramedics were used to treat patients with a triage emergency severity index of 4 or 5 rather than ED RNs. The results demonstrated a decrease in wait time from 5.63 hours to 3.17 hours in the area managed by an advanced care paramedic, thus decreasing workload for ED RNs who could then manage patients with more serious injuries or illnesses.

A survey of paramedics in Britain, where paramedics have traditionally been used within the hospital health care system, determined that many participants felt their ambulance-developed diagnostic reasoning skills transferred well to the emergency department. However, some paramedics believed that their role in the emergency department was limited and that they lost the autonomy they had in the prehospital setting.[24] Whalen et al[25] conducted a survey on veteran paramedics transitioning to emergency department roles in Nova Scotia, demonstrating that paramedics developed advanced teamwork skills while addressing patient needs alongside emergency nurses. The participants in this survey felt that working in the emergency deparment allowed them to continue to use the skills they learned in the field and that it was beneficial for both their careers and patient care.[26]

EMERGENCY MEDICAL TECHNICIANS AND EMERGENCY DEPARTMENT TECHNICIANS

There are fewer studies examining Emergency Medical Technicians (EMTs) in the emergency department, possibly because EMT certification is often a prerequisite for becoming an ED technician. EMTs provide important assistance to paramedics in the prehospital setting. Patient care duties traditionally performed in the emergency department by a nurse that could be performed by an EMT include cardiopulmonary resuscitation, providing oxygen and glucose, and administration of certain treatments such as nebulizers and medications for allergic reactions.[15] With additional training, EMTs can serve as valuable members of the emergency department care team. In 2021, the Mississippi Department of Health authorized the use of both paramedics and EMTs in their emergency departments due to the nursing shortage.[27]

Nurses and ED technicians also work together and often divide patient care responsibilities in order to improve patient flow and enhance health care quality. Functions of Emergency Department Technicians (EDTs) vary widely between hospital systems and states but can include measuring and monitoring vital signs, specimen collection, venipuncture, peripheral and ultrasound-guided IV access,

splinting a limb or immobilization of a joint, wound care, ECG acquisition, point-of-care testing, patient transport, cardiopulmonary resuscitation, and some communication with the patient/family.[28] With additional training, they are able to provide further interventions such as urinary catheterization, patient discharge, and help with activities of daily living, all of which will substantially lessen the burden on emergency nurses. Studies show that EDT scope of practice can be successfully and efficiently expanded to include more advanced skills such as suturing, ultrasound-guided venous cannulation, and monitoring of low acuity patients.[29-32]

ANCILLARY STAFF

There are several additional categories of hospital staff that can be trained to perform patient care tasks historically assigned to emergency nurses. Respiratory therapists, radiology and ultrasound technicians, ECG technicians, wound care specialists, monitoring technicians, psychiatry technicians, and phlebotomists are potential untapped resources to consider when nursing shortages affect care delivery. By cross-training ancillary staff to perform roles that actively support the ED medical team—such as ultrasound-guided IV access, ECG acquisition, splinting, patient triage, or discharge protocols—they could alleviate the mounting pressure on nurses, freeing them to focus on other critical duties. For example, the ED phlebotomist can manage point-of-care testing and ensure compliance with Clinical Laboratory Improvement Amendments standards.[33]

In smaller hospitals, some of these technicians cover the floor and outpatient clinics in addition to the emergency department. Tasks are allocated differently in large emergency departments, and nurses have traditionally assumed virtually all responsibilities related to venipuncture, ECG acquisition, nebulizer treatments, and wound care, with occasional input from respiratory therapy for some complex needs. Although cross-training ancillary staff to perform nursing tasks may alleviate the pressure of widespread nursing shortages, many of these technician jobs are seeing a similar scarcity of staff. As such, there is potentially little or no benefit that can be achieved from off-loading nursing work onto this group.[34]

EMERGENCY DEPARTMENT SCRIBES

Scribes in the emergency department can offer a multitude of benefits, including faster patient throughput, increased revenue, and improved provider and patient satisfaction. Unlike most of the ED staff, scribes are generally hired by the physician group and are often employed by a third-party vendor. The main duty of scribes in the emergency department is documentation of the physician encounter, allowing providers to see more patients and improving the quality of documentation.[35] Hospital systems should consider allocating scribe resources to aid in nursing documentation in a similar manner to how this resource is utilized for physicians.

During periods of high boarding, ED nursing shortages, and overcrowding in the emergency department, physicians are often asked to evaluate patients in atypical locations such as triage (as in a "provider-in-triage" program) or a rapid assessment area (like in the split flow model).[36] Physicians engaging in these evaluations frequently have minimal support from ED staff, and scribes can be utilized as a resource to support the front-end providers in order to increase flow and maximize the number of patients seen. Scribes can also be trained to aid in triage documentation, thus freeing up RNs to participate in bedside patient care.[37]

HEALTH SCIENCES STUDENTS

Since prehealth undergraduate and graduate students often need practical clinical experience before applying to medical, physician assistant, or nursing school, offering courses that train students to perform noncritical nursing tasks can also ease the pressure caused by limited staffing. This has substantial benefits for both departments and students. Students will gain valuable clinical skills, affirm their commitment to medicine, and demonstrate a working knowledge of health care systems on their resumes.[38] In turn, their clinical responsibilities can offload a substantial work burden from nurses. Effective training of students is necessary to ensure operational efficiency and high-quality patient care. Current programs that train students to become EDTs can be replicated and modified to include other task-oriented activities such as wound care, splinting, obtaining ECGs, venipuncture, IV placement, and triage. Because these programs may lead to efficient task-shifting, further research and investigation are needed to study their impact.[38]

STANDARD PATIENT TRIAGE

Patient triage and assigning emergency severity index levels have historically been RN-specific tasks. However, health care systems can train other staff, such as paramedics, EDTs, or prehealth students, to perform triage functions in order to increase the number of nurses available for

bedside clinical care. Several studies have examined the concordance between triage assessments of other providers compared to evaluations by RNs. Ghanbarzehi et al[39] conducted a study on triage proficiency between RNs and EMTs in a 2-day training workshop. The study demonstrated that EMTs had a 0.20 concordance with nurses before training and a 0.71 concordance level after.[39] This, in turn, led to a 57.75% accuracy level between EMTs and triage nurses.[39] Additionally, Sarikaya et al[40] measured the consistency between emergency physicians and paramedics after a training session on triage decisions, the accuracy of which increased slightly for paramedics after the education.

PATIENT DISCHARGE

The majority of ED patients (67.5%) are discharged after initial evaluation and workup.[41] These patients require a set of written instructions that are usually reviewed verbally with the patient by both a physician or Advanced Practice Provider and an RN. Studies have demonstrated that direct verbal communication of discharge information and instructions from a medical professional is superior to paper discharge instructions alone due to literacy concerns or loss of paperwork.[42] Emergency nurses often bear the brunt of the responsibility regarding patient communication and education upon discharge. Ramsey et al[43] conducted a retrospective chart review that examined throughput data at a Chicago hospital, comparing total nursing hours to discharge time and patients who left without being seen. The results demonstrated that when nursing hours decreased during periods of limited staffing, emergency departments experienced an overall increase in patient discharge time and total number of patients leaving without being seen.[43]

The National Health Care Workers Association endorses that discharge from the emergency department is a duty that falls within the capabilities of a certified EDT.[44] Several hospital systems are already utilizing this tactic to offload nursing duties related to patient communication to EDTs, such as the University of Wisconsin, and the University of Louisville.[45,46]

Discussion

The ED nursing pool was inadequate before the onset of the COVID-19 pandemic, and the hardships associated with the last several years have led nurses to leave the emergency department and the profession entirely at historic rates.[8,9,12,14,47] Many emergency department processes have evolved to require nurses for normal operations, and thus many departments are failing in the provision of their core capabilities due to nursing staff limitations.[20,21,24] There has been no indication that the nursing shortage is temporary or recovering, so emergency department processes must be redesigned to utilize non-RN providers to fulfill some core responsibilities traditionally assigned to RNs.

Paramedics currently serve as autonomous providers during prehospital care and transport. The pilot study conducted at Wake Forest University Baptist Medical found that both nurse and paramedic participants felt that the utilization of paramedics in the emergency department improved patient care and decreased the workload burden on emergency nurses.[22] Therefore, the program demonstrated that the clinical skills paramedics already had could be transferred to in-hospital settings. Campbell et al[23] used in-hospital paramedics to treat higher-acuity patients and demonstrated a significant decrease in wait time for clinical care. In both studies, care was directed by a veteran triage nurse, with paramedics utilized in assisting roles.[22,23] The successful addition of paramedics to the ED workforce will require a comprehensive and well-rounded clinical orientation course and the ability to foster effective teamwork between emergency nurses and paramedics.[22,23,25] Paramedics will also expect to experience some degree of autonomy during prehospital care in order to feel adequately fulfilled in their new role.[24,26] These studies indicate that paramedics in a supportive role can reduce the burden on emergency nurses by assuming responsibility for many tasks historically assigned to nurses and freeing nurses to lead other patient care duties.

Furthermore, the triage quality of paramedics in the emergency department could be strengthened by displaying discrete guidelines for reference to improve consistency.[40] However, more research needs to be performed to assess patient care outcomes from a shift in standard triage protocols.

EMTs working clinically in the emergency department are less studied, and this is a potential topic for future research.[21] Like paramedics, EMTs possess valuable clinical skills that would be useful in an emergency department. Additionally, EMTs are already accustomed to a hierarchy of emergency care, as they provide assistance to paramedics in the prehospital setting.[15]

EDTs have varying responsibilities based on their clinical skills and the customs and norms of the hospital system within which they are employed.[28] Studies have shown that they are a valuable resource and able to develop additional skills through physician and nurse-led educational initiatives.[30,31] EDT job duties vary greatly geographically and between hospital systems, but the foundational clinical

TABLE
Areas in which various medical personnel could be trained to alleviate the stress on emergency nurses

Task	Paramedic	EMT	EDT	Ancillary staff	Emergency nurse
Electrocardiogram	✓		✓		✓
Intravenous lines	✓		✓		✓
Triaging			✓		✓
Medicine administration	✓				✓
Cardiopulmonary resuscitation	✓	✓	✓		✓
Oxygen administration	✓	✓	✓		✓
Glucose administration	✓	✓	✓		✓
Vitals monitoring	✓	✓	✓		✓
Specimen collection			✓		✓
Venipuncture	✓		✓		✓
Splinting			✓		✓
Wound dressing			✓	✓	✓
Point-of-care testing			✓		✓

continued

TABLE
Continued

Task	Paramedic	EMT	EDT	Ancillary staff	Emergency nurse
Patient transport	✓	✓	✓		✓
Urinary catheterization			✓		✓
Discharge			✓		✓
Ultrasound-guided venous cannulation			✓		✓
Patient monitoring	✓	✓	✓	✓	✓
Personal care	✓	✓	✓	✓	✓

EDT, emergency department technician; EMT, emergency medical technician.
The ✓ icon indicates tasks that these personnel already are trained to perform.

knowledge to understand discharge communication and procedure is well within the capabilities of EDTs. Discharge protocols are important tasks that can easily and effectively be relegated to EDTs and other clinical staff, allowing nurses to focus their efforts elsewhere. Furthermore, in states where venipuncture, ECG acquisition, splinting, and patient transport are within the scope of practice of an EDT, redistributing these tasks to techs can significantly offload responsibility from an already overstretched nursing staff. Comprehensive on-the-job training and continuous clinical education will be paramount to ensuring delivery of high-quality care.

Emergency department leadership should consider hiring additional non-nursing patient care personnel to meet the challenges of the post-COVID-19 health care workforce. For this to happen, RNs must be trained in a more "managerial" approach to patient care, including task delegation, supervision, and evaluation and feedback. This role is similar to the ways in which the attending physician(s) provide care in academic institutions, working in a supervisory capacity over several residents and Advanced Practice Providers. While some in the nursing profession may feel that assigning tasks to other staff equates to giving away their responsibilities and undermining their influence as health care professionals, these recommendations are intended to address the critical shortage of experienced nurses. The nursing shortage is affecting every facet of health care quality and delivery, and accepting the status quo is unsustainable and will exacerbate the resultant inefficiencies. Elevating nurses to more managerial positions may assuage the sentiment that nurses are "being replaced" by other health care professionals.

With additional training, nurse-extenders can meaningfully improve ED flow and care by performing a wider range of tasks. Table 1 outlines areas of training for various medical personnel in order to reduce the burden on emergency nurses, allowing them to focus on more complex diagnostic and therapeutic responsibilities. Hospital nurse educators can provide additional training during the onboarding process, and outcomes should be measured and compared to regional norms. It is important to note that the potential roles of nurse-extenders vary based on local and regional regulations and scope of practice restrictions.

Implications for Emergency Nurses

The emergency nursing task force shortage is significantly affected by COVID-19. Emergency nurses can use this information to explore the potential for using nurse-extenders to promote optimal patient outcomes during the current staffing crisis. ED-extenders, who are discussed in this paper, could help emergency nurses to provide safe care during periods of short staffing. Future studies may offer additional insight into emergency nurse-extenders and discuss the implementation and integration of these personnel in order to augment the existing ED workforce, as well as their effects on ED flow and care delivery.

Conclusion

The continuing nursing shortage in US emergency departments, exacerbated by the COVID-19 pandemic, demands innovation in care delivery models. One strategy is directing non-nurse providers, called nurse-extenders, to perform a variety of tasks otherwise carried out by emergency nurses. By delegating responsibilities such as ECG acquisition, venipuncture, discharge protocols, triage, and medication administration to non-nurse health care professionals, the patient care processes are streamlined and less reliant on an already over-burdened workforce. Nurse-extenders not only can alleviate the responsibilities shouldered by emergency nurses, but they also allow nurses to concentrate on higher-level operations, thus improving acute care delivery in the emergency department. This restructuring will hopefully generate an increase in patient satisfaction, decrease wait times, and lead to fewer patients who leave without being seen and evaluated by a provider. Additional training is required to build capacity for nurse-extenders to ultimately help improve ED flow and care delivery. The recommendations outlined are intended to support nurses and to ensure sustainability and efficiency while continuing to deliver the highest quality care. Roles and scope of practice for emergency nurse-extenders must be considered as laws and regulations vary by geographic region.

Author Disclosure

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Supplementary Data

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Supplementary Appendix 1

SEARCH STRATEGY

Search: **Nursing shortage** Sort by: **Most Recent**
("nursing"[MeSH Terms] OR "nursing"[All Fields] OR "nursings"[All Fields] OR "nursing"[MeSH Subheading] OR "nursing s"[All Fields]) AND ("shortage"[All Fields] OR "shortages"[All Fields])

TRANSLATIONS

Nursing: "nursing"[MeSH Terms] OR "nursing"[All Fields] OR "nursings"[All Fields] OR "nursing"[Subheading] OR "nursing's"[All Fields]
shortage: "shortage"[All Fields] OR "shortages"[All Fields]
Search: **emergency department** Sort by: **Most Recent**
"emergency service, hospital"[MeSH Terms] OR ("emergency"[All Fields] AND "service"[All Fields] AND "hospital"[All Fields]) OR "hospital emergency service"[All Fields] OR ("emergency"[All Fields] AND "department"[All Fields]) OR "emergency department"[All Fields]

Translations

emergency department: "emergency service, hospital"[MeSH Terms] OR ("emergency"[All Fields] AND "service"[All Fields] AND "hospital"[All Fields]) OR "hospital emergency service"[All Fields] OR ("emergency"[All Fields] AND "department"[All Fields]) OR "emergency department"[All Fields]

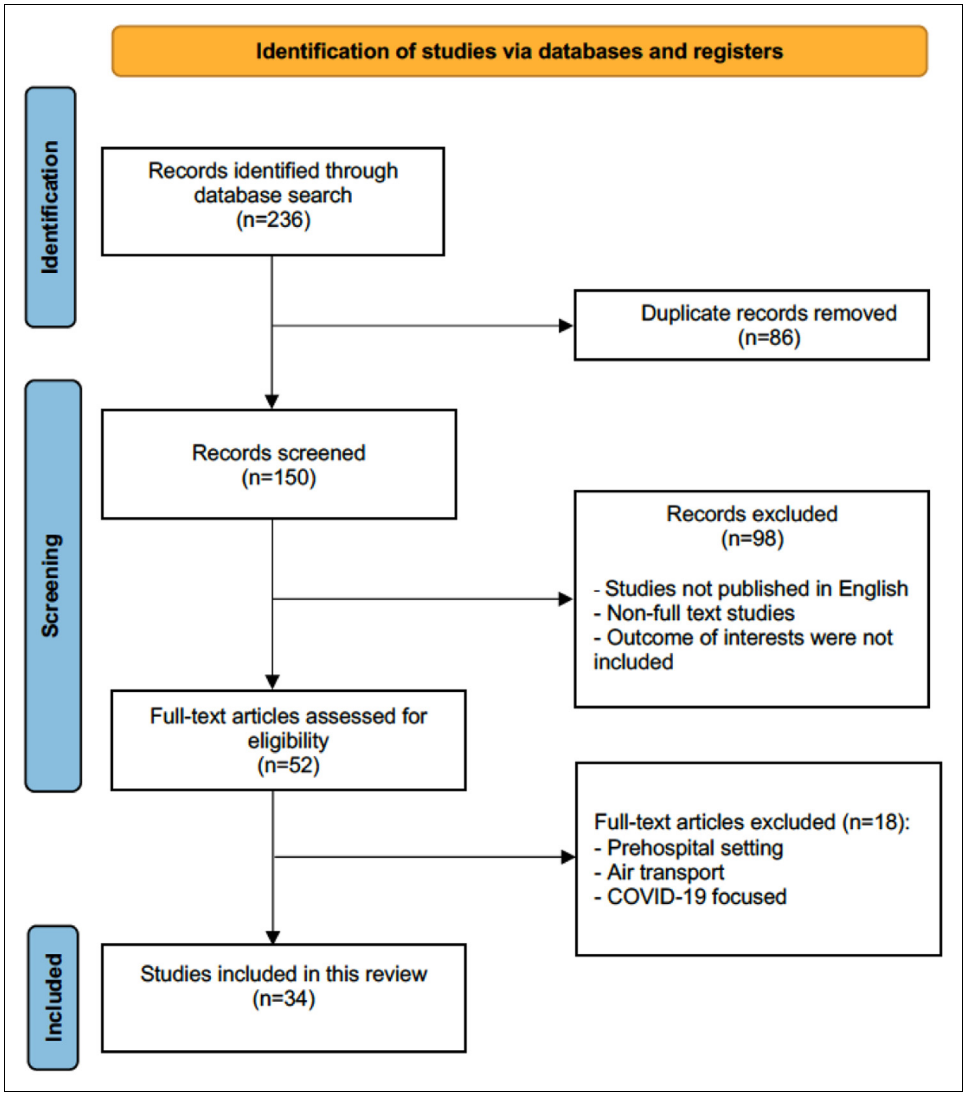
Search: **covid 19** Sort by: **Most Recent**

"covid 19"[All Fields] OR "covid 19"[MeSH Terms] OR "covid 19 vaccines"[All Fields] OR "covid 19 vaccines"[MeSH Terms] OR "covid 19 serotherapy"[All Fields] OR "covid 19 serotherapy"[Supplementary Concept] OR "covid 19 nucleic acid testing"[All Fields] OR "covid 19 nucleic acid testing"[MeSH Terms] OR "covid 19 serological testing"[All Fields] OR "covid 19 serological testing"[MeSH Terms] OR "covid 19 testing"[All Fields] OR "covid 19 testing"[MeSH Terms] OR "sars cov 2"[All Fields] OR "sars cov 2"[MeSH Terms] OR "severe acute respiratory syndrome coronavirus 2"[All Fields] OR "ncov"[All Fields] OR "2019 ncov"[All Fields] OR (("coronavirus"[MeSH Terms] OR "coronavirus"[All Fields] OR "cov"[All Fields]) AND 2019/11/01:3000/12/31[Date - Publication])

Translations
covid 19: ("COVID-19" OR "COVID-19"[MeSH Terms] OR "COVID-19 Vaccines" OR "COVID-19 Vaccines"[-MeSH Terms] OR "COVID-19 serotherapy" OR "COVID-19 serotherapy"[Supplementary Concept] OR "COVID-19 Nucleic Acid Testing" OR "covid-19 nucleic acid testing"[MeSH Terms] OR "COVID-19 Serological Testing" OR "covid-19 serological testing"[MeSH Terms] OR "COVID-19 Testing" OR "covid-19 testing"[MeSH Terms] OR "SARS-CoV-2" OR "sars-cov-2"[MeSH Terms] OR "Severe Acute Respiratory Syndrome Coronavirus 2" OR "NCOV" OR "2019 NCOV" OR (("coronavirus"[MeSH Terms] OR "coronavirus" OR "COV") AND 2019/11/01[PDAT] : 3000/12/31[PDAT]))

Supplementary Appendix 2

Flow chart of selected articles



Identifying and Mitigating Fraud When Using Social Media for Research Recruitment

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Key words: Research methods; Emergency nursing; Online research; Survey research

One of the biggest challenges in conducting a research study is the recruitment of study participants. Traditional recruitment methods of flyers, letters, or emails can be expensive. Posting a flyer on social media sites or on targeted websites can be accomplished quickly and efficiently without incurring any significant financial cost. The potential for many people to see the recruitment materials is high, given that the United States reached >302 million social media users in 2022.[1] Although the internet seems like a logical place for researchers to seek a broad range of participants, the wide distribution of recruitment materials may also open up the research team to potential fraud that can weaken the integrity of the research.

This article describes the experience of several researchers (A [study1], and B and C [study 2]) who recruited exclusively through social media, professional websites, and email communications for these 2 separate studies. As the research projects moved from recruitment to the study interview phase, the researchers individually and collectively identified participants who misrepresented themselves as being qualified to participate in the study. The researchers recognized similarities in the elements of fraudulent responses, shared information on the commonalities of fraudulent respondents, and reviewed tools to identify potential deceitful participants before engaging with them.

Background

The use of social media (eg, Facebook, Twitter) for recruitment and research activities has been described as convenient and affordable, with the ability to target specific populations. Sixty-nine unique papers reported the use of social media for health services research participant recruitment between 2011 and 2019.[2-4] However, there are concerns for ensuring privacy[5] and ethical concerns around study design[6] when using this type of recruitment approach. Of specific concern is the number of opportunistic individuals who use virtual private servers to fraudulently complete research surveys for profit, which may contribute to low-quality data.[7,8] Currently, strategies to preserve data integrity by ensuring eligible participants are recruited through social media are limited. Therefore, it is important to highlight this problem and give researchers tools to identify and mitigate the compromising effects of fraudulent participants. We use the word "fraudulent," rather than "ineligible," because it is clear from our own recruitment data that some participants intentionally misrepresented their profession, role, location, and topic interest for financial gain. We wondered if this was a studied phenomenon and, if so, how to prevent or mitigate the effects of fraudulent participants on both the time of the researchers and the integrity of research data.

Pozzar et al[7] found 94.5% of survey respondents were fraudulent and other studies report that people who misrepresent themselves in survey data are not uncommon.[9] We noted that there has been limited discussion in the literature of the challenges associated with the potential for fraud when using social media as a recruitment tool for research participants, especially when an incentive is offered. This

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discussion is based on the recent experiences of 3 emergency nursing researchers.

Recruitment and Fraudulent Participants

Researcher A and researchers B and C were engaged in 2 unrelated qualitative research studies, seeking to conduct interviews with United States–based registered emergency nurses. Researcher A (study 1) was seeking participants from across the United States. Researchers B and C (study 2) were seeking participants from specific states. Researcher A obtained permission to post a recruitment flyer on the research section of the Emergency Nurses Association website, the professional organization dedicated to emergency nurses. Researcher A also posted the recruitment flyer to her personal LinkedIn page, her Facebook page, and several emergency nursing–focused Facebook groups. Researchers B and C posted their recruitment text to various emergency nursing Facebook pages, Twitter, and LinkedIn. All 3 researchers sent emails to professional contacts. The recruitment verbiage for both studies described the study purpose, the qualifications for participants, and the compensation of $50 via gift card for people who completed the studies. The recruitment verbiage directed interested parties to the researchers' emails and to a screening tool.

The first week after posting recruitment materials, researcher A was pleased to have >85 responses to the online screening tool. Researchers B and C reported >200 responses to the online screening tool. All 3 researchers contacted some of their potential participants via email, inviting them to complete the consent form and demographics form that could be found online. Potential participants were instructed to return the completed consent forms to the researchers to set up an interview time. The research consent form described the studies as semistructured interviews lasting approximately 60 minutes. Researcher A was conducting her interviews via Zoom. Researchers B and C were conducting their interviews face to face or via Zoom. Participants attending the Zoom sessions were asked to have their cameras on so the researcher could observe the nonverbal communication of the participants.

In both studies, independently of each other, all 3 researchers reported the following similarities:

Interview 1: The participant reported being unable to turn their camera on. The researcher asked the first question on the interview guide. The response by the participant did not fit with what the researcher understood about the phenomenon being studied, so the researcher sought clarification through additional questions. The participant disconnected the call without answering the follow-up questions and made no attempt to reconnect or contact the researcher to reschedule.

Interview 2: The participant turned on their camera. The appearance of the participant and the surroundings raised immediate concerns. The participant appeared disheveled, and the visible surroundings appeared to be a bare room with a single light source. The researcher began the interview. The participant's response to the first question was again overly vague. The researcher became suspicious that the participant had misrepresented himself when he had difficulty answering the second question. The participant soon disconnected the call and also made no attempt to reconnect or contact the researcher to reschedule.

Interview 3: A predictable pattern was now starting to emerge. The participant appeared to be calling from the same type of environment, a bare room with a single light source. Similarly, the participant had an unfamiliarity with the subject matter. Suspicious of another potentially fraudulent participant, the researchers in both studies independently deviated from the interview guide and asked an off-topic question regarding the type of triage system used in the participants' emergency departments. The participants in both studies gave answers that suggested that they were unlikely to be registered nurses, let alone emergency nurses.

Mitigating Fraud

After discussing these similarities in 2 separate and unrelated study recruitment processes, the researchers now realized that many, if not all, of their potential participants were fraudulent. A review of the demographics and email sign-up data revealed patterns of data suggesting that fraudulent participants were trying to participate in the research studies. These patterns included:

- Batched responses (15 or 20 at a time)
- Education that did not align with the stated role (eg, licensed practical nurse licensed as a clinical nurse specialist)
- Age and experience that did not align (eg, age 18-24 years with 6 years' experience as a registered nurse)
- Google email addresses that contained very generic names, frequently 2 first names
- Multiple submissions from the same IP address
- Responses to email invitations for interviews that were timed 6 hours ahead of the researchers' time zones

- Email responses to the studies postings that all had similar verbiage and/or poor grammar (eg, "I will enjoy participating in the study kindly response quickly")
- Fraudulent respondents would state they were available "anytime" (ie, had no work schedule) when attempting to set up interviews

Suspected fraudulent participants who made it to the interview stage of the study also revealed patterns of behavior suggesting that they were not truly emergency registered nurses. These patterns included:

- Participants did not express any particular interest in the study subject matter.
- Participants did not disclose their role or general location.
- Participants were not using their cameras for the Zoom sessions because they refused to turn on their camera or they stated there were internet issues.
- Participants were unable to answer straightforward questions about their work environment (eg, "What triage system do you use in your department?").

Discussion

The number of fraudulent participants who attempted to participate across both studies was >2 dozen. This was both surprising and distressing for the researchers because this phenomenon had not previously occurred with their research studies, and having to determine which participants were fraudulent and which were legitimate was time consuming as well. Researchers B and C had originally scheduled face-to-face interviews requiring an outlay of travel costs. The fact that all of the researchers were providing an incentive to participate in the studies most likely contributed to the higher incidence of fraudulent participants. Fernandez Lynch et al[10] found that participants misrepresented their eligibility to researchers at rates between 10.5% and 22.8% when an incentive was offered, regardless of the amount of the incentive. As researchers, we all had higher rates of fraudulent participants, with researchers B and C nearing 90%.

To help mitigate fraudulent participants corrupting research data, researchers should incorporate strategies in their research design to limit participation in the study. This could include the use of Completely Automated Public Turing Test to Tell Computers and Humans Apart[11] in conjunction with online surveys. Completely Automated Public Turing Test to Tell Computers and Humans Apart refers to various authentication methods that validate users as humans, and not bots, by testing users with a challenge that is simple for humans but difficult for machines, such as choosing pictures off a screen or typing in a series of letters and numbers. Researchers can also use telephone screening interview questions to identify whether participants are eligible to participate in studies.[12] Bethel et al[11] suggested the use of open-ended questions on surveys as a means for researchers to screen the qualifications of potential participants. This technique was used by these researchers as patterns began to emerge from the fraudulent participants during the recruitment phase of the studies. Lynch et al[10] suggest that researchers should rely on objective tests to determine eligibility rather than relying on participants' self-report.

In an attempt to recruit legitimate participants, we reverted to using personal contacts and direct emails to emergency registered nurses for our studies. Throughout the research recruitment process, we continued to monitor for unusual patterns that might suggest fraudulent participants trying to register for the research studies.

When offering incentives for participation, researchers should consider adding statements into the consent that acknowledge incentives will only be distributed to participants who are eligible to participate in the research study. Researchers should decide ahead of time how and when incentives should be distributed, and incentive distribution should be clearly defined in the consent form. Eligibility is not the only criterion for receiving an incentive and so defining "participation" that meets the criterion for receiving the incentive is important. For example, if a study has several phases, then the incentive for each phase should be spelled out in the consent form. Researchers must be careful not to imply that incentives are a condition of enrollment in the study given that all participants have the right to stop participating in research studies at any time.

Implications for Nursing Research

Using social media and other internet-based recruitment strategies is likely to become more prevalent in research recruitment and data collection. Social media has been reported as an effective, no-cost/low-cost way to reach diverse populations. However, the use of social media or other internet-based recruitment strategies can result in increased fraudulent participants, especially when incentives are provided. Researchers need to consider ways to mitigate this phenomenon when designing their research studies and to consider what strategies or techniques will be used during

the recruitment process to ensure integrity of the research results and avoid wasting resources.

Author Disclosures

Conflicts of interest: none to report.

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Submissions to this column are encouraged and may be sent to Lisa Wolf, PhD, RN, CEN, FAEN at lwolf@ena.org

Implementing a Human Trafficking Educational Module and Protocol in the Emergency Department

Authors: Gail Greiner-Weinstein, DNP, RN and Vicki Bacidore, DNP, APRN, ACNP-BC, CEN, Maywood, IL

Contribution to Emergency Nursing Practice

- Emergency nurses can be educated to screen for potential human trafficking victims in the emergency setting.
- Revisions to the ED electronic health record can include a human trafficking screening and management protocol.
- Patient care can be improved when emergency nurses and social workers recognize red flags using a standard screening tool and a protocol, thereby identifying and managing potential victims.

Abstract

Introduction: The purpose of this quality improvement initiative was to educate emergency nurses and social workers about human trafficking and implement a human trafficking screening, management, and referral protocol adapted from the National Human Trafficking Resource Center.

Methods: A human trafficking educational module was developed and delivered at a suburban community hospital emergency department to 34 emergency nurses and 3 social workers through the hospital's e-learning platform, with learning outcomes evaluated via a pretest/posttest and program evaluation. The emergency department electronic health record was revised to include a human trafficking protocol. Patient assessment, management, and referral documentation were evaluated for protocol adherence.

Results: With established content validity, 85% of nurses and 100% of social workers completed the human trafficking educational program, with posttest scores being significantly higher than pretest scores (mean difference = 7.34, $P \leq .01$) along with high (88%-91%) program evaluation scores. Although no human trafficking victims were identified during the 6-month data collection period, nurses and social workers adhered to the documentation parameters in the protocol 100% of the time.

Discussion: The care of human trafficking victims can be improved when emergency nurses and social workers can recognize red flags using a standard screening tool and protocol, thereby identifying and managing potential victims.

Key words: Human trafficking; Emergency nurses; Emergency department

Introduction

Human trafficking (HT) is a widespread form of modern-day human slavery. It has been defined as "the recruitment, transportation, transfer, or harboring of victims through the use of force, coercion, deception, or abuse of power, and abduction" and is a crime in all 50 states.[1] According to the Polaris Project data, there were 22,326 HT victims identified in the United States, but hundreds of thousands of potential HT victims are likely unrecognized.[2] Persons at risk for HT include women, minors, orphaned children, runaways, the unhoused, victims of maltreatment, those living in congregate care facilities,

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persons with substance use disorders, and individuals with physical and mental health needs.[3] Limited education; low self-esteem; inadequate support systems; and a history of migration, violence, and trauma are additional risk factors for HT.[4] The health effects of HT range from physical, reproductive, psychological, developmental, and behavioral. Victims of HT may suffer from posttraumatic stress disorder, suicidality, anxiety, depression, and psychotic disorders.[5]

Many individuals use the emergency department as their sole source of medical care,[6] including a significant number of HT victims.[7,8] HT survivors have reported experiencing shame, humiliation, and at times feeling more harmed by providers when they seek care services. It is important that providers use the principles of trauma-informed care to manage these patients because many individuals who have been trafficked rarely self-identify.[9] The principles of trauma-informed care that often apply to victims of sexual assault and intimate partner violence can apply to HT victims.[10] Providers should maintain a high level of suspicion for red flags indicating possible HT, such as a scripted or inconsistent history, hesitancy to answer questions about their injury or illness, being accompanied by a person who will not allow the patient to speak, evidence of nervous behavior, and the inability to provide demographic information.[11]

There are no standardized and validated screening tools to identify potential HT victims, but there are several tools that can be adapted and used in the ED setting.[12] The National Human Trafficking Resource Center (NHTRC) has an assessment tool that includes red flags, screening questions, health indicators, and steps to take to ensure victim safety and referral resources.[13] The Vera Institute of Justice has a Trafficking Victim's Identification Tool, which assists health care providers and law enforcement with identifying potential HT victims.[14] Although many of these tools have proven to be useful, it is suggested that the delineation of a national and standardized framework for the identification of the HT victim is needed.[15]

The immediate priority in caring for an HT victim is first to ensure their safety and address any medical and psychological concerns.[16] It is essential to foster trust and build rapport by asking targeted, nonjudgmental questions and documenting any findings that may assist the victim in prosecuting their trafficker in the future. If an immediate perceived danger exists, providers should follow individual state reporting requirements by notifying law enforcement and contacting the National Human Trafficking Hotline.[17]

Unfortunately, very few health care providers are familiar with the identification and management of HT victims, and having defined protocols is essential.[18] Providers who have received training on HT have reported increased comfort and satisfaction with screening and treatment.[19-21] The federal government responded to the lack of HT education for providers by passing the "Trafficking Awareness Training Healthcare Act," which outlines the imperative for training health care providers to identify and treat victims of HT.[22] Emergency nurses and social workers need to be educated on the assessment of potential HT victims and follow a protocol in managing their care. The purpose of this quality improvement project was as follows: (1) to revise the ED electronic health record (EHR) to include an HT patient screening and management protocol, (2) to develop and implement an interprofessional HT educational module, (3) to evaluate learning outcomes via a pretest/posttest and program evaluation, and (4) to evaluate nurses' and social workers' documentation and protocol adherence.

Methods

The university's Institutional Review Board approved the project with an "Exempt Status" (LU#212068). The authors used the "Making Sure" classical grounded theory and the established RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) framework to guide implementation of the project. The "Making Sure" theory describes surveillance as an essential quality and safety intervention as nurses watch over their patients. This process is guided by a theory that emphasizes the importance of "knowing what's going on, being close, taking nothing for granted, taking action, and protecting patients from harm and negative events to the extent possible."[23] Nurses were educated regarding the importance of watching over and protecting HT victims from harm. The RE-AIM framework evaluates public health interventions by considering 5 dimensions (reach, effectiveness, adoption, implementation, and maintenance). Developed decades ago, the RE-AIM framework is frequently used for project implementation.[24] This integrative framework guided project planning and execution of the overall project.

This 6-month-long quality improvement project was set in a 247-bed suburban Chicago community hospital that serves 24,000 patients annually. Participants invited to participate included 40 emergency nurses and 3 social workers. Key support for the project included the ED nursing director, manager, educator, lead social worker, and an information technology (IT) specialist. The authors used the NHTRC[25] resources to develop an HT protocol, which was embedded in the EHR with the assistance of an IT specialist. These same resources were used for the

development of a 60-minute intraprofessional educational module, pretest-posttest, and program evaluation.

An IT specialist embedded HT red flags in the nursing triage navigator area of the EHR, and if one or more positive red flags were identified, an automated best practice alert screen generated the HT protocol for the nurses and social workers to follow. The protocol adapted from the NHTRC[25] included identifying red flags, treating medical concerns, assessing the patient for perceived physical danger, prompting inclusion of law enforcement intervention,[26] and performing an HT hotline referral. The protocol also included EHR documentation of discharge planning, referral, and follow-up. The IT specialist created a reports channel for retrieval and analysis of EHR documentation data over 6 months' time. Identification of all instances of positive HT red flags and protocol documentation was included. For added resources, HT red flags and protocol pocket cards with information adapted from the NHTRC[25] were printed and distributed to the nurses and social workers.

The 1-hour, online educational module delivered via the hospital's electronic nursing education platform was available to the nurses and social workers with a 1-month completion time. The module contained the following learning objectives: (1) describe the scope of the problem of HT, (2) describe the principles of trauma-informed care, (3) identify populations at risk for HT, (4) describe red flags that can assist emergency providers in identifying potential HT victims, (5) describe the health effects of the trafficked individual, and (6) describe the steps in the Emergency Department Human Trafficking protocol.

Red flags and indicators for identifying HT victims focused on general indicators, labor/sex trafficking indicators, and physical, mental, social, and developmental health indicators. Ten multiple-choice questions were written based on the content of the learning module, with 2 questions addressing each learning objective. A pretest was given before the educational module and a posttest after completion of the module. A program evaluation form was developed using a Likert scale evaluating whether learning objectives were met. Any nurses or social workers on leave during the education module rollout would be trained on their return and required to use the protocol.

Results

To establish educational module content validity, the authors recruited an expert panel of 4 nurses and 1 social worker to rate the relevance of each multiple-choice question using the Scale Content Validity Index Average. The score was based on the educational module content, using a 4-point Likert scale with a maximum score of 1.00. Cronbach's alpha was used to establish internal consistency, which was estimated to be 0.96 (0.89, 1.00). A paired sample t test was done to examine differences between the total pretest and posttest scores. Of 40 nurses, 34 (85%) completed the education module; all 3 social workers (100%) completed the education module. The pretest scores ranged from 71.66 to 82.46, and the mean (SD) was 77.06 (16.05); the posttest scores ranged from 91.06 to 96.00, and the mean (SD) was 93.53 (7.34). The results demonstrated a statistically significant difference between the scores at the $P < .01$ level. Between 82% and 89% of the nurses and social workers stated that the learning objectives were met to a moderate or great extent and that they would apply what was learned to their current practice. After the HT training was completed, 16,607 ED patient charts were reviewed over a 6-month period. Of these records, 45 patients had a "red flag" entry to an HT screening question (eg, providing an inconsistent history). For these patients, no other indicators of HT were identified during the comprehensive evaluation. At that time, no HT interventions or referrals were needed, and usual care was provided. Although no HT victims were identified during this data collection period, nurses and social workers adhered to the HT protocol 100% of the time.

Discussion

The findings of this quality improvement project indicate that emergency nurses and social workers can be educated on the identification of HT victims and follow an ED HT protocol. As emergency nurses are often the first providers to see victims of HT, it is important that they be given the knowledge and resources to identify and care for these patients. Without this education, nurses may "fail to rescue"[27] HT victims when red flags are overlooked owing to lack of knowledge regarding HT.[27] With the nurses' participation in the educational module at 85%, the ED manager and educator planned to provide the remaining nurses with the module on return from their leave. The lower-than-anticipated mean score on the pretest likely reflected the lack of familiarity and knowledge of HT that the nurses and social workers had at that time, and the expected increase in the posttest scores was demonstrated. Based on the encouraging program evaluation results, a high percentage of nurses and social workers acknowledged that the learning objectives were

achieved. Nurses and social workers successfully adhered to the HT protocol.

Recognizing the importance of this education and the protocol, the ED managers and educators (project champions) committed to continually deliver the learning module to all new hires and to educate the current staff during annual competency evaluation activities. To sustain the program, department champions will continue to monitor and evaluate the implementation of the HT protocol with processes to revisit, review, and update the educational content and protocol. To have a successful HT program, champions need to continue these quality improvement processes.[28]

Limitations

Limitations of this quality improvement project included the small sample of nurses and social workers who participated and the consequent inability to generalize the findings. The community hospital setting and short 6-month time frame of the project did not yield any HT victims. By continuously monitoring protocol adherence and analyzing EHR data, more patients could be identified and managed. Finally, the emergency department did not have an existing HT policy in place before this project, and the authors were unable to determine how such a policy could have affected ED nursing practice.

Implications for Emergency Nurses

Emergency nurses are in a position to screen for possible signs of HT, provide care for at-risk individuals, assist in developing a plan to safely leave a trafficking situation, and use resources to make the necessary referrals for follow-up. It is imperative that emergency nurses be empowered with the education and tools necessary to care for and advocate for vulnerable patients. Emergency nurses can be integral team members by participating with nurse leaders and educators in the development of HT policies.

Conclusions

Emergency nurses and social workers who are working collaboratively are in crucial positions to screen, treat, and refer victims of HT. This quality improvement project shows that nurses can be educated about HT and adhere to a protocol developed for this community hospital emergency department. Emergency nurses may be the first and only health care providers to help ensure the immediate safety and well-being of these at-risk individuals.

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Author Disclosures

Conflicts of interest: none to report.

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Reducing Nonemergent Visits to the Emergency Department in a Veterans Affairs Multistate System

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Abstract

Study Objective: The purpose of this quality improvement study was to reduce nonemergent visits to the emergency department attendance within a multistate Veterans Health Affairs network.

Methods: Telephone triage protocols were developed and implemented for registered nurse staff to triage selected calls to a same-day telephonic or video virtual visit with a provider (physician or nurse practitioner). Calls, registered nurse triage dispositions, and provider visit dispositions were tracked for 3 months.

Results: There were 1606 calls referred by registered nurses for provider visits. Of these, 192 were initially triaged as emergency department dispositions. Of these, 57.3% of calls that would have been referred to the emergency department were resolved via the virtual visit. Thirty-eight percent fewer calls were referred to the emergency department following licensed independent provider visit compared to the registered nurse triage.

Conclusion: Telephone triage services augmented by virtual provider visits may reduce emergency department disposition rates, resulting in fewer nonemergent patient presentations to the emergency department and reducing unnecessary emergency department overcrowding. Reducing nonemergent attendance to emergency departments can improve outcomes for patients with emergent dispositions.

Key words: Emergency department overcrowding; Telephone triage; Nonemergent emergency department attendance; Staffing shortages

Background

Nonemergent ED visits, defined as clinical issues that can be resolved in less acute settings, account for up to 40% of all ED patient presentations in the United States.[1] Overcrowding resulting from nonemergent visits to the emergency department has repercussions for others in the emergency department, including a higher rate of triage to undermonitored areas of the emergency department and longer time frames to initial provider assessment.[2] The cost of care in an emergency department is 2 to 3 times greater than care given in urgent care or primary care clinics.[3]

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Emergency department wasted dollars for nonemergent care was estimated to cost as much as $8.3 billion a year[4] in the United States. Embedding licensed independent providers (LIPs) such as physicians and advanced practice providers into traditional telephone triage systems within the Veterans Health Administration (VHA), termed Clinical Contact Centers (CCCs), raises potential opportunities for the VHA to achieve the goal of decreased nonemergent emergency department referrals.

Significance

There are 9 million veterans enrolled in the VHA, making it the largest health care system in the country.[5] The enrolled veterans receive care in a comprehensive medical system that includes primary care clinics, VHA Hospitals, specialty departments, mental health services, and emergency departments. This largest health care system in the United States has an annual budget of approximately $68 billion. Like outside medical facilities, the VHA works to alleviate nonemergent ED visits that can lead to overcrowding and poorer outcomes for all ED patients. One of the strategies employed in both VHA and private health systems to reduce nonemergent visits to the emergency department is the use of telephone triage nurses. Telephone triage registered nurses (RNs) have been shown to assist patients in receiving their care through their primary care provider(s) and reduce emergency department dispositions.[4] In addition to RNs, LIPs have been shown to be effective in reducing nonemergent ED visits and instead routing patients appropriately to their primary care provider(s).[6] Systematic reviews of the literature have shown acceptable patient safety, as adverse events and mortality rates for telephone triage patients were comparable with or better than standard care.[1] Emergency department disposition in the after-hours time period (after Monday-Friday traditional clinic hours) was decreased when telephone triage was utilized.[7] A 2013 systematic review reported prehospital diversion systems, such as telephone triage, reduced emergency department use.[8]

Overcrowding is an issue for emergency departments. A 1-year retrospective chart review in 2 large urban area tertiary hospitals found that 52% of the patients presented during times of emergency department overcrowding. When overcrowding was present, more patients were sent to an under-monitored area of the emergency department (25% during crowded hours, 16% during noncrowded hours). Designation to a under-monitored area was considered to increase patient risk as the study found the ED physician's initial exam time was delayed 132 minutes during crowded hours vs 99 minutes during noncrowded hours.[2] Patient mortality showed increases in a large retrospective study of 995,358 hospital deaths when patients were registered in the emergency department during periods of ED crowding; ED overcrowding was correlated with moderate increases in length of stay and resultant costs in addition to increased mortality.[9]

There is a cost saving for primary care or urgent care vs emergency department care. In the 1987 National Medical Expenditure Survey household survey file, ED visits were approximately 2 to 3 times the cost of care for the same condition cared for in alternate settings.[10] The Centers for Medicare and Medicaid estimated a higher amount at $38 billion by taking into consideration all nonemergent ED visits annually, not just the cost of emergency department vs alternative site visits.[11]

Methods

Licensed Independent Practitioners comprised of nurse practitioners and physicians were added to the RN staff at a VHA telephone triage system (CCC). The process utilized for incoming calls was as follows: Incoming calls to the CCC were first answered by a medical support assistant. These calls were screened for emergency conditions that could require 911 and emergent transfer to emergency care. Potential emergent conditions were sent directly to an RN to avoid a delay in care and preserve patient safety, whereas nonemergent conditions were sent to a queue for RN callback. When the RN connected with the veteran patient caller, regardless of emergence, the RN used an algorithm-based triage system to be prompted to ask and record answers from the patient's chief complaint. The protocol algorithm system concluded with a patient disposition including home care, follow-up clinic care, urgent care, dentist office, and emergency department care (Figure 1).

Using an RN to LIP referral protocol developed for use by the multidisciplinary CCC staff, the triage RN would determine if the chief complaint was appropriate for an LIP visit instead of the recommended algorithm protocol-driven disposition. Chief complaints were not just limited to emergency department triage referrals and included conditions such as afebrile rash, upper respiratory infection symptoms, eye problems without vision change, and medication refills. Triage chief complaints that were referred algorithmically to the emergency department but were designated as eligible for downtriage to an LIP visit included problems such as low-acuity shortness of breath,

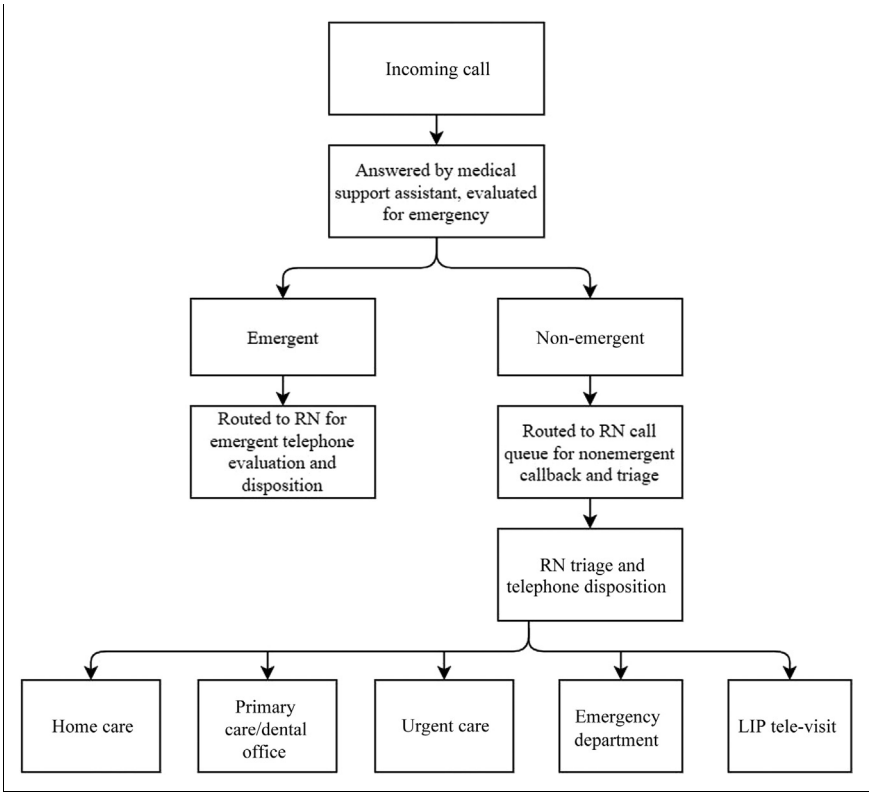

FIGURE 1

A flow chart depicting the process for triage flow from incoming call to triage disposition. LIP, licensed independent provider; RN, registered nurse.

asymptomatic hypertension, and noncardiac chest pain. For those with chief complaints included within the guidelines, the triage RNs were able to ask the patient veteran callers if they were willing to have a phone or video visit call with an LIP. If the veteran accepted, the calls were either sent directly to the LIP or queued for a return call, depending on LIP availability. LIPs were available for up to 3 virtual visits per hour for 12 hours per day Monday through Friday and for 10 hours per day on Saturday, Sunday, and United States federal holidays. Telephonic and video visits were offered at the patient's preference.

The LIP referred call outcomes were listed on a ledger as deidentified data by the LIP team in the CCC after review and approval of the project by the chief nurse scientist at the facility and an institutional review board waiver from both the VHA and Yale University. All data was collected via retrospective chart review and consisted of time from the RN referral to LIP visit to completion of the LIP visit, RN triage disposition, LIP virtual visit disposition, and International Classification of Diseases code entered for the LIP visit. Data was collected for a 3-month period from September to November 2021.

Results

There were 1606 calls logged from patients triaged by RN staff that were referred for an LIP visit based on the CCC RN to LIP referral of chief complaint guidelines. The mean time from call placement in the LIP queue to virtual visit completion was 58.4 minutes. Chief complaint breakdown is pictured in Figure 2; the "other" category consists of chief complaints with 2% call volume or less, such as dental pain, asymptomatic hypertension, and vaccine side-effects. Of the 1606 calls, 192 (12% of total call volume) were initially designated by the RN triage algorithm as ED dispositions. A total of 110 (57.3%) calls with an RN triage ED disposition were resolved by LIP virtual visit, and 143 (74.5%) calls with an RN triage ED disposition no longer required an ED disposition following the LIP virtual visit. A total of 118 were recommended to the emergency department by the LIP virtual visit, however, only 32 originally received an RN triage algorithm disposition to the emergency department. Table depicts the call type and call disposition breakdown for the RN and LIP calls, respectively.

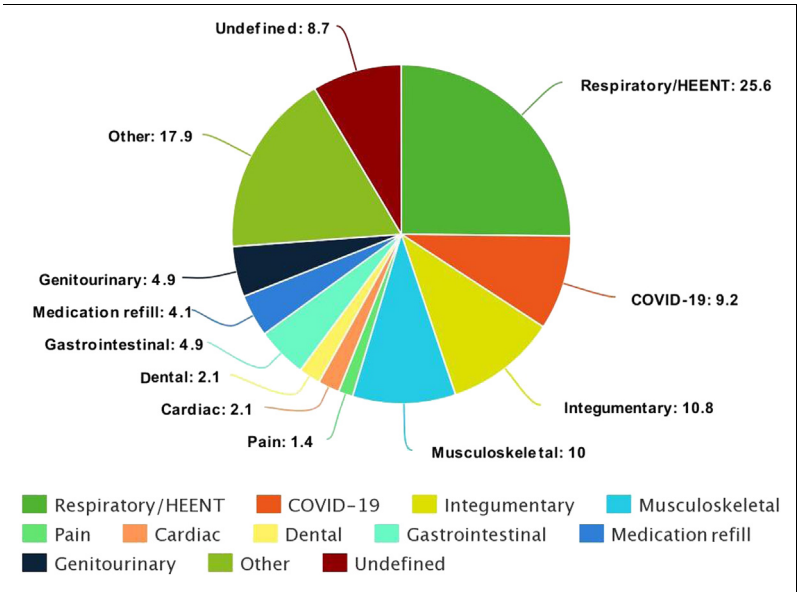

FIGURE 2

A pie chart depicting the breakdown (by percentage) of the 1609 calls included in this study. COVID-19, coronavirus disease-2019; HEENT, head, eyes, ears, nose, and throat.

Discussion

Based on the findings from this practice improvement project, it is unclear if more LIP staff or extended LIP hours would further decrease the ED disposition rates from this telephone triage system. The RN staff to LIP staff ratio was 7 to 1. RN staff covered 24/7, and the limited LIP staff was prioritized to cover approximately 12 hours per day during typical call volume peak hours during the daytime and early evening. Triage RNs were instructed not to transfer ED disposition patients to the LIP queue when there was not an LIP on staff. It is, therefore, unclear if there may be more opportunity to resolve nonemergent ED dispositions if an LIP was available 24/7. It is also unclear if the dearth of overnight resources for patient concerns, such as primary care clinics, results in greater ED disposition rates overnight. Further research is needed to evaluate the potential cost/benefit utility of LIP coverage on a 24/7 basis.

Cost comparisons have been done with studies of health centers for Native American Veterans in the southwest and found to save at least $45 per encounter with similar health outcomes.[12,13] The financial costs and benefits associated with embedding LIPs in the CCC and reduction in nonemergent ED visits are outside the scope of this study. Follow-up research to evaluate costs, benefits, and overall productivity of LIPs in the CCC is warranted to understand the efficacy of this intervention more thoroughly with regard to nonemergent ED dispositions from telephone triage.

Workforce satisfaction was found when a general practitioner was added to a nurse base triage system in Australia.[14] With LIPs included within the work environment, RN staff had readily available resources for questions and for informing where patients might be referred. Satisfaction for the LIP, RN staff, and patients was not examined in this study, however, RN and patient satisfaction could be ascertained with future research.

The Veterans Administration Healthcare system is a closed system. The VHA system involves emergency department, primary care, and specialty care. Veterans enrolled in the system have access to care within the system regardless of any service-connected disabilities. Veterans routinely access the telephone care departments for help determining next steps for health care concerns. For nonemergencies, veterans are connected to internal system resources, and for emergency care, veterans are directed to the nearest emergency department. The findings from this project in a closed nationwide system may translate to private health care systems, particularly health maintenance organizations and preferred provider networks, where patients are advised to call a telephone care triage system for medical concerns. Not only might embedding LIP into these triage systems reduce geographic ED overcrowding, but reduced nonemergent ED utilization may yield cost savings for health care payor systems. However, further research is needed to evaluate the efficacy of a similar protocol system in a private health care system or network.

TABLE
Call classifications

Reason for call	Call disposition following RN visit						Call resolution following LIP visit			
Chief complaint, *N* = 1606	**Home care, *n* = 116**	**PCC, *n* = 1036**	**Dentist, *n* = 26**	**UC, *n* = 21**	**ED, *n* = 192**	**Undefined/ Missing, *n* = 215**	**Issue resolved, *n* = 1076**	**PCC, *n* = 168**	**UC, *n* = 105**	**ED, *n* = 118**
Cardiac, $n = 34$	0	19	0	0	9	6	16	5	0	13
COVID-19, $n = 147$	22	89	0	0	27	9	117	8	7	15
Dental, $n = 33$	0	4	25	3	1	0	30	2	1	0
Gastrointestinal, $n = 55$	5	37	0	0	10	3	30	11	3	11
Genitourinary, $n = 78$	3	64	0	0	7	4	54	12	6	6
Integumentary, $n = 174$	13	141	0	3	8	9	139	18	11	6
Medication refill, $n = 66$	1	6	0	0	6	53	66	0	0	0
Musculoskeletal, $n = 160$	2	113	0	5	32	8	108	29	10	13
Other, $n = 287$	23	152	0	3	36	73	203	43	18	23
Pain, $n = 22$	3	11	0	0	7	1	9	8	1	4
Respiratory/HEENT, $n = 411$	35	310	1	7	32	26	304	32	48	27
Undefined, $n = 139$	9	90	0	0	17	23	X	X	X	X

ED, emergency department; HEENT, head, eyes, ears, nose and throat; PCC, primary care clinic; RN, registered nurse; UC, urgent care.
Chief complaint was collected via International Classification of Diseases code of the LIP visit, therefore all undefined calls did not have an LIP call resolution, eg, the return calls were unanswered or the patient indicated they no longer required assistance to the LIP.

Limitations

Data for this project was collected from only one call center, which may limit generalizability to other VHAs or the private sector. Additionally, this project did not measure health outcomes, which limited the ability to assess if this intervention affected health outcomes. The data collection took place over a 3-month period, which may not fully represent seasonal changes in physical and mental health conditions.

Data collection may have been limited by CCC protocols for managing high call volumes. During times of high call volumes, LIPs were encouraged to take calls directly out of the RN telephone queue, bypassing the RN triage process in some cases. Only calls that received both an RN disposition and LIP virtual visit were included in this data set; LIPs performing direct callbacks without RN triage were instructed to prioritize higher-acuity chief complaints, such as chest pain or shortness of breath, that were likely to receive an ED disposition from the RN triage algorithm. Additionally, during times of high call volumes, some calls were placed directly by RN staff into the LIP queue without prior telephone triage, so some data collected is missing the RN triage decision.

Implications for Emergency Nurses

Research demonstrates ED overcrowding results in poorer outcomes for the patients in the emergency department, longer time to triage, longer time in unmonitored areas of the emergency department, increased length of hospitalization, and increased patient mortality.[2,10] Reducing nonemergent attendance to emergency departments prevents staffing shortages, improves staff-to-patient ratios, and thereby improves outcomes for patients with emergent dispositions.[1,10] In this practice improvement project, 53% of patients who met safety criteria were managed via virtual care instead of through a nonemergent ED visit. Implementation of LIPs in telephone triage systems may therefore reduce the burden of nonemergent ED visits on overcrowded and understaffed emergency departments.

Conclusion

The addition of LIP staff reduced emergency department disposition rates by 57.3% for veterans who called with health concerns to a VHA nurse telephone triage system. Additional research is warranted to evaluate the broader applicability of this intervention and its efficacy in reducing the burden of nonemergent ED visits on overcrowded and understaffed emergency departments.

Author Disclosure

Conflicts of interest: none to report.

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Telestroke Process at a Community Hospital: A Quality Improvement Project

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Contribution to Emergency Nursing Practice

- Rural and community hospitals that rely on telestroke services experience unique challenges related to their stroke alert process, as compared to hospitals with in-house neurology.
- This paper describes how one community hospital used interdisciplinary collaboration to address nurse-driven elements of the emergency department stroke alert process, and successfully improved stroke alert times along key quality metrics.
- The methodology and process changes in the current project could be applied at other community hospitals who use telestroke services, especially if the goals at these hospitals focus on nurse-driven elements of the stroke process.

Abstract

Introduction: An updated stroke process was designed and implemented at an Acute Stroke Ready community hospital that relies on telestroke services. The objectives of the current quality improvement project were to describe the updates to the stroke process and compare pre- and postintervention data on nurse-driven elements of the process, namely telestroke notification and neurologist assessment.

Methods: Our multidisciplinary team reviewed quality data over several months to identify areas of improvement in the stroke process. Delays in door to telestroke notification and neurologist assessment were identified. A new process was developed and implemented, including e-alert notification and storing the telestroke cart in the computed tomography suite. The study period was 14 months, with nonrandomized, convenience sample data collected for 7 months before and after intervention.

Results: There was a significant reduction in door to telestroke notification and neurologist assessment after implementing the new process. Door to telestroke notification and neurologist assessment were also strongly correlated.

Discussion: This project led to significant improvements in nurse-driven elements of the stroke process. It demonstrates effective implementation of e-alert and collaboration with telestroke services at an Acute Stroke Ready Hospital serving rural communities.

Key words: Stroke; Telestroke; Teleneurology; Community hospital; Nurse-driven; e-alert

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Introduction

Stroke is a leading cause of morbidity and mortality in the United States. Approximately 800,000 strokes are diagnosed every year, with 7 million American adults reporting having had a stroke.[1] Ischemic stroke is the most common type, accounting for 87% of all stroke diagnoses.[1] Rapid symptom identification and neurologist evaluation in the emergent setting are essential to identify ischemic stroke patients who are candidates for treatment with intravenous (IV) thrombolysis and/or endovascular thrombectomy.[2-4] Any

delays in treatment lead to poorer functional outcomes.[5] Unfortunately, many Americans live in rural settings that do not have access to hospitals with in-house neurology services.[6] This disparity has led to the increased reliance on telestroke services for hospitals serving these communities[7] and has fueled much research on how to maintain a successful stroke program that relies on telestroke services.[6] A growing body of evidence has highlighted the importance of rapid telestroke notification and neurologist assessment in treating patients with acute stroke.[4,8,9] Several studies have looked at different ways to improve telestroke processes and treatment, with outcomes often dependent on study-specific goals and/or methodology.[3,4,6,10]

BACKGROUND

Our institution is a small, midwestern, designated Joint Commission Acute Stroke Ready Hospital serving suburban and rural areas. It has the services available to diagnose acute stroke, administer IV thrombolytics, and stabilize patients for transfer to a higher level of care.[11] The hospital had 10,569 ED visits in 2020. Our institution lacks in-house neurology coverage. It relies on an outside telestroke company to provide remote neurology services to all ED patients with a suspected stroke diagnosis and who receive a stroke-specific workup (hereafter referred to as stroke alert). An interdisciplinary team of members at our institution and the telestroke company performs monthly reviews of data related to telestroke services. These reviews revealed that our hospital was failing to meet its institutional time goals for telestroke notification (10 minutes or less on at least 50% of stroke alerts) and neurologist assessment (20 minutes or less on at least 50% of stroke alerts) (McWhorter M., personal communication, 2021). In particular, in the preintervention phase of the current project, we met our telestroke notification goal on 30.2% of stroke alerts and our neurologist assessment goal on only 24.5%. Such findings motivated the institution to revise its stroke management process.

Members of the hospital stroke committee, an interdisciplinary team of nurses, physicians, and allied health professionals from emergency medicine, radiology, pharmacy, and hospital medicine, reviewed the stroke management process at our institution, focusing on telestroke notification and neurologist assessment. During initial triage, the nurse would identify stroke-like symptoms and notify the provider. The provider would verify the symptoms and activate the stroke alert. Then the primary nurse would take the patient to computed tomography (CT), and the charge nurse would notify telestroke by making a phone call to an answering service (Figure). The answering service would take down patient information and then page the responding neurologist. Then, a member of the nursing staff would wheel the telestroke cart—a portable device stored in the emergency department and used to facilitate interaction between patient and neurologist—to the patient's room after the patient had departed for CT. The neurologist would appear on screen in the patient's room and then wait until the patient returned from CT to begin the initial National Institutes of Health Stroke Scale (NIHSS) assessment. Unfortunately, this process often led to delays in notification and assessment, which in turn led to delays in identifying candidates for IV thrombolytic and/or endovascular treatment.

OBJECTIVE

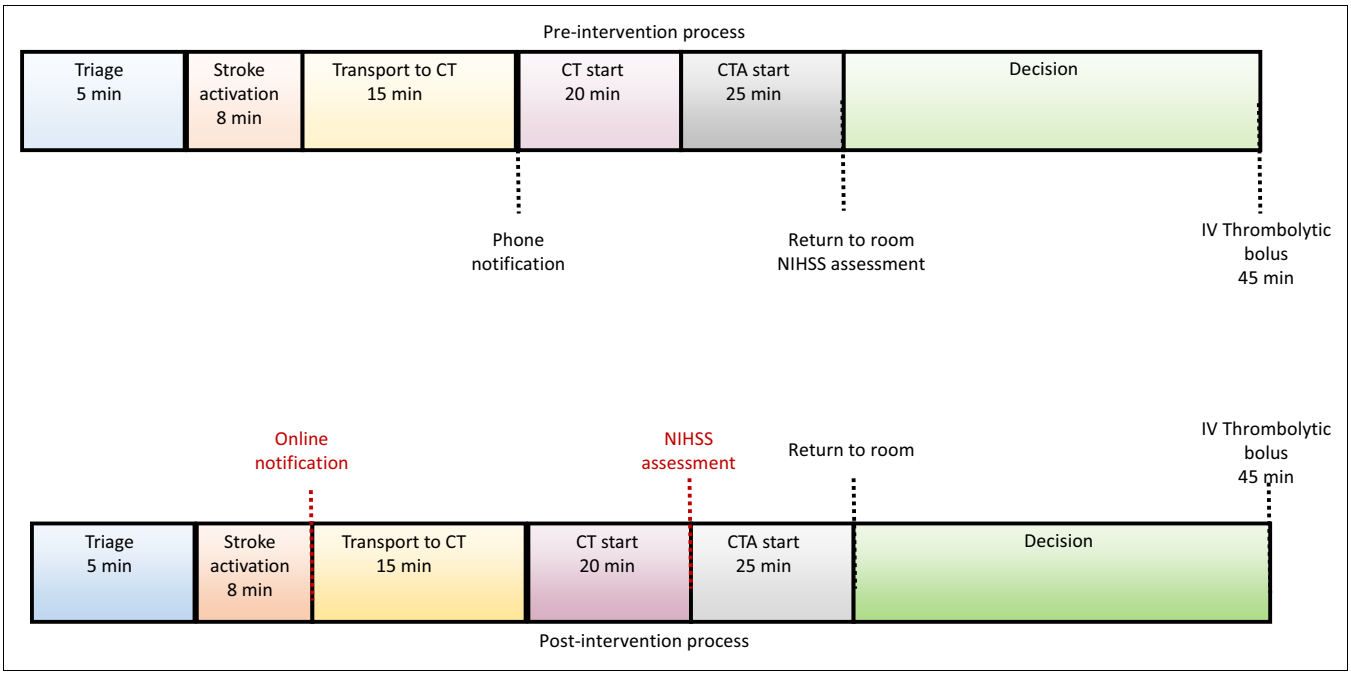
The interdisciplinary team developed and implemented a new, nurse-driven process to address delays in telestroke notification and assessment. The goal of the current quality improvement (QI) project was to determine the efficacy of this new process by measuring door to telestroke notification (DTT) and door to telestroke neurologist assessment (DTA) before and after implementation. This project was reviewed by our health system's institutional review board, which made a no-research determination.

Methods

A convenience sample of patients who presented to the emergency department with suspected stroke was included in the current project. All patients designated as stroke alerts who had symptom onset before ED arrival and who received a suspected stroke evaluation and NIHSS assessment by the telestroke neurologist while in the emergency department were included. There was no cutoff time for last known normal patient presentation in the current project, given that providers were trained to only activate a stroke alert if the patient presented within 24 hours of when they were last known to be well, had unknown last known well, or experienced symptoms upon waking. The new protocol was developed through collaboration with members of the hospital stroke committee and the telestroke company. It is described below.

TELESTROKE NOTIFICATION

Online telestroke notification (e-alert) access was made available to all staff. With e-alert, the triage nurse accessed a website and entered a username and password. The



FIGURE

Key event timeline in the stroke process. Top represents the preintervention process; bottom represents the postintervention process. Indicated times are goals for each event. Note that telestroke notification and neurologist assessment occur earlier in the postintervention process. CT, computed tomography; CTA, CT Angiogram; NIHSS, National Institute of Health Stroke Scale; IV, intravenous.

nurse entered a callback phone number, indicated whether the patient had arrived, and then clicked to activate telestroke consult. The e-alert infrastructure was developed by the telestroke company as a way to decrease the number of links in the chain of communication within the telestroke company. It was a newly developed method of notification and implemented in our hospital as an informal pilot program. At our hospital, e-alert was integrated earlier in the stroke process than phone notification (before departure to CT instead of after) (Figure). Informal feedback received by the primary author from bedside nurses revealed the e-alert process was easy to use and less time consuming than phone notification. Phone notification was still available after e-alert implementation. DTT goal was 10 minutes.

NEUROLOGIST ASSESSMENT

The telestroke cart was moved from the emergency nurses' station to the CT suite. The patient's primary nurse transported the patient to the CT suite and entered the CT control room. While the patient was receiving the noncontrast CT scan, the nurse addressed the neurologist via the telestroke cart. The primary nurse provided a brief report to the neurologist and then wheeled the cart into the CT room after the noncontrast CT was complete. This allowed the neurologist to assess the patient earlier in the process while still in the CT suite (Figure). DTA goal was 20 minutes.

STAFF EDUCATION

Members of the interdisciplinary team developed and delivered education to all emergency nursing staff involved in stroke patient care. This education was multimodal, combining lecture-style presentation, hands-on practice, written read-and-sign education, and individual rounding. Education was administered by the hospital's stroke program coordinator. Login information for e-alert was made available at all ED workstations, including patient rooms. Nurses were trained how to bookmark the website and save the username and password in their web browser for faster access. Nurses were also trained to identify stroke-like symptoms, notify the ED provider, and then complete the e-alert before sending the patient to CT. The new location of the telestroke cart was shown to all staff. Nurses were trained on the new process of giving report to the neurologist and facilitating the

TABLE 1
Demographic, clinical, workflow, and outcome variables for each patient who received IV thrombolytic during the study period

Arrival date	Phase	e-alert	Arrival method	Initial NIHSS	DTT (m:s)	DTA (m:s)	DTN (m:s)
January 16, 2021	Pre	No	EMS	4	7:46	40:21	67:28
May 2, 2021	Pre	No	EMS	2	16:22	30:15	58:00
July 16, 2021	Pre	No	Walk-in	1	12:28	20:47	71:42
July 18, 2021	Pre	No	EMS	5	12:08	22:37	63:44
July 25, 2021	Pre	No	EMS	8	4:11	22:09	32:37
August 11, 2021	Post	Yes	EMS	11	0:13	4:00	41:14
August 19, 2021	Post	No	Walk-in	1	15:59	28:05	62:00
December 23, 2021	Post	Yes	EMS	4	27:49	46:28	71:46

DTA, door to telestroke neurologist assessment; DTN, door to needle; DTT, door to telestroke notification; EMS, emergency medical services; m:s, minutes:seconds; NIHSS, National Institutes of Health Stroke Scale.
Door to thrombolytic bolus (or DTN) times did not improve after intervention (preintervention mean, 58.70; postintervention mean, 58.33; $F_{1,6}$, 0.001, $P = .98$).

neurologist's assessment as described earlier. Education was a dynamic process, as collaborative discussions to identify barriers and opportunities for improvement occurred after implementation.

Data collection was from January 1, 2021, to February 28, 2022. Staff training on the new process began on July 1, 2021, and was completed by July 31, 2021. Staff understanding was verified through teach-back and read-and-sign education. The telestroke cart was relocated to the CT suite on July 1, 2021, and the e-alert system went live on August 1, 2021. The preintervention phase was from January 1, 2021, to July 31, 2021. The final month of the preintervention phase occurred simultaneously with education on the new process and after the telestroke cart was relocated to the CT suite. However, staff could not fully implement the new process during this month, because the e-alert system was not yet live. Interestingly, 3 of the 8 patients who received IV thrombolysis during the study period arrived during this final month of the preintervention phase (Table 1). However, and as indicated below, detailed analyses of IV thrombolytic patients were not performed in the main text, owing to small sample size and a different focus for the current project.

The postintervention phase started after both process changes had been implemented and was from August 1, 2021, to February 28, 2022. This seamless preintervention to postintervention data collection paired with a gradual implementation of QI initiatives allowed for direct comparison of different phases of the study without losing a month of data and is consistent with the literature.[4] Faster arrival to telestroke notification and neurologist assessment in the postintervention phase was predicted.

Data were collected from the quality metrics report, a database pertaining specifically to the stroke alert telestroke process. This report was updated in real time by the neurologist and maintained by the telestroke company. The telestroke company permitted use of the report for purposes of the current project. Two primary variables were analyzed: DTT and DTA. Other variables, such as door to thrombolytic administration, were not analyzed in the main text, due to small sample size. Patient outcomes were also not analyzed, owing to project scope and lack of availability in the dataset. This is consistent with other stroke-related QI projects in the literature.[2,12] Neurologists time stamped events into the quality metrics report, with a precision at the level of 1 second.

All statistical analyses were performed by the primary author in R version 3.6.2 (Vienna, Austria: R Core Team). Because of abnormal distribution of response-time data, variables were log-transformed before analysis, unless indicated otherwise. Parametric data were analyzed using either Welch's *t* test or one-way multivariate analysis of variance, with follow-up Bonferroni α-correction, as appropriate.[13] Effect sizes were calculated using partial η^2, with 0.01, 0.06, and 0.14 indicating small, medium, and large effects, respectively. Nonparametric data were analyzed with Fisher exact test.

Results

The total number of stroke alerts during the project period was 209. Of these, 12 were excluded because of missing data along one of the primary variables. One additional

TABLE 2
Demographic, clinical, process, and QI variable data collected from the quality metrics report

Metric	Median (IQR), percent, or mean [range]		Test statistic	*P* value
Demographic variables				
	Old process ($n = 106$)	New process ($n = 90$)		
Age	63 (26.3)	67.5 (24.8)	$t = 0.37$	.71
Female (%)	51.8%	45.6%	OR = 1.28	.39
Clinical variables				
Symptom onset to arrival (h)	3.3 (11.6) $n = 87$	2.7 (8.5) $n = 76$	$t = 1.08$	.28
EMS arrival (%)	39.6%	53.3%	OR = 0.58	.06
Initial NIHSS	1 (4)	1 (4)	t = 0.15	.88
Process and QI variables				
e-alert (%)	0%	77.8%	OR > 1000	< .001
DTT (min)	13.39 (0, 85.20)	7.56 (0, 56.65)	F = 16.33	< .001
DTA (min)	26.17 (4.58, 95.88)	18.78 (3.00, 67.40)	F = 17.97	< .001
DTT (% goal met)	30.2%	60.0%	OR = 3.44	< .001
DTA (% goal met)	24.5%	55.5%	OR = 3.82	< .001

DTA, door to telestroke neurologist assessment; DTT, door to telestroke notification; EMS, emergency medical services; IQR, interquartile range; NIHSS, National Institutes of Health Stroke Scale; OR, odds ratio; QI, quality improvement.
There were no significant differences before and after intervention along any of the demographic or clinical variables.
There were significant differences in e-alert usage, DTT and DTA.
Age was not transformed before analysis.
Smaller n for symptom onset to arrival reflects the finding that not all patients had known time of symptom onset.

patient was excluded because the stroke activation occurred several hours after arrival and only after incidental infarcts were found on magnetic resonance imaging. The total number included in the analysis was 196; 106 before intervention and 90 after intervention. The total number of IV thrombolytic administrations during the project period was 8; 5 before intervention and 3 after intervention (Table 1). Demographic, clinical, process, and outcome variables for all stroke alerts before and after intervention are summarized in Table 2. There were no significant differences in age, gender, symptom onset to arrival, emergency medical services arrival, or initial NIHSS score. e-alert was used during 77.8% of the stroke alerts in the postintervention phase. DTT and DTA were significantly faster after intervention (one-way multivariate analysis of variance $F_{2,193}$, 9.23; $P < .001$). Follow-up and additional tests are explained below.

DTT

There was a significant reduction in mean DTT from 13.39 to 7.56 minutes after intervention ($F_{1,194}$, 16.33; $P < .001$; α, 0.025) (ranges included in Table 2). The effect size was moderate (partial η^2, 0.08). DTT within 10 minutes also improved from 30.2% to 60.0% after intervention (odds ratio, 3.44; $P < .001$).

DTA

There was also a significant reduction in mean DTA from 26.17 to 18.78 minutes after intervention ($F_{1,194}$, 17.97; $P < .001$; α, 0.025) (ranges included in Table 2). The effect size here was also moderate (partial η^2, 0.08). DTA within 20 minutes also improved from 24.5% to 55.5% after intervention (odds ratio, 3.82; $P < .001$). DTT and DTA were positively correlated (r, 0.87; $P < .001$).

Discussion

This project describes the revision and implementation of an ED stroke process at a community hospital without in-house neurology. It was possible through a combination of interdisciplinary collaboration and coordinated education provided to nursing staff. Findings from this project demonstrated statistically significant improvements along both measured quality metrics, suggesting that early e-alert notification and neurologist assessment in CT are effective ways to improve key elements in the stroke process.

DTT was almost 6 minutes faster after implementation of the new process. In the setting of a hyperacute disease such as ischemic stroke, where a patient can lose on average

2 million neurons per minute,[14] early mobilization of the stroke team is necessary to obtain time-sensitive treatment and save brain tissue.[9] At our facility, early e-alert notification is now an essential component of stroke-team mobilization. Our continued goal is to increase the percentage of e-alert utilization from 77.8% of stroke alerts in the current study to 100%.

DTA was more than 7 minutes faster after implementation of the new process. Extant literature suggests that early neurologist assessment reduces IV thrombolytic decision and administration time[3,4] and that early administration of IV thrombolytic leads to improved outcomes in patients with acute ischemic stroke.[15] Both of these findings are reflected in the current clinical practice guidelines, which recommend a neurologist assessment to safely administer IV thrombolytics.[15] The studies showing these effects were conducted at either multiple hospitals or a single larger hospital, across a longer time frame, or some combination thereof.[3,4,16] Moreover, these studies generally included analyses of process variables for thrombolytic patients only, which is currently impractical owing to the low rate of thrombolytic administration at our hospital. DTA is one possible way to gauge the success of QI projects like the one described here, especially at lower-volume hospitals.

Limitations

This project had several limitations. It lacked manipulation of an independent variable and random assignment to treatment groups. This precluded making a causal inference between the interventions and observed outcomes. Moreover, gradual implementation of the QI initiatives over 1 month could have had unknown effects on the measured variables, especially during the last month of the preintervention phase, in which the telestroke cart was moved to the CT suite and staff received education on the new process. Similarly, continued staff education and reinforcement during the postintervention phase could also have had unknown effects on measured variables. Finally, due to limitations in the dataset, the effects of process improvement on patient outcomes (eg, hemorrhagic transformation, survival rates, length of hospitalization) were not measured. This means that our process improvements led to faster times, but whether they actually benefited the patient is a question that has not been unexplored.

Implications for Emergency Nurses

Given that the components of the stroke process described in this project were nurse driven, success is attributed in large part to the ED triage and beside nurses. Nurses were required to integrate e-alert into a new stroke process and then hard-wire this process for sustained improvement. Nurses were also required to adjust their workflow to facilitate earlier neurologist assessment while the patient was in the CT suite. This often required the nurse to give report, assist with NIHSS assessment, perform nursing cares, and communicate thrombolytic decision to the pharmacy, all while physically away from the emergency department and in the CT control suite. The nurses' engagement in required education, continued buy-in, and willingness to apply themselves toward improving the stroke process helped make this project possible.

Conclusions

A multidisciplinary team of health care professionals successfully made improvements to the ED stroke process at a community hospital that relies on telestroke services. These process improvements led to significantly faster DTT and neurologist assessment times. Future studies should seek to correlate these improvements with IV thrombolytic/endovascular treatment times, as well as patient outcomes.

Author Disclosures

Conflicts of interest: none to report.

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Meeting Patients Where They Are: A Nurse-Driven Quality Improvement Project to Provide Influenza Vaccinations in the Emergency Department

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Contribution to Emergency Nursing Practice

- Although the public has focused on the coronavirus disease-2019 pandemic for the past few years, influenza is a vaccine-preventable disease that causes significant morbidity and mortality worldwide. Vaccination remains the primary method of protection against the virus, yet adult vaccination rates remain low throughout the United States. Increasing convenient access to the influenza vaccine increases uptake in the community and may improve public health.
- Very few published journal articles discuss emergency departments providing influenza vaccinations. This study's findings show that if nurses are allowed to work at their full scope of practice, initiate an order, and provide a vaccine, they can help address the rising demands of the health care system.
- According to the annual Gallup poll, nurses have consistently ranked the most honest and ethical profession. We should use our collective positive influence to improve community health and be vaccine advocates.

Abstract

Introduction: Influenza is highly contagious, vaccine-preventable, and may result in significant morbidity and mortality. While vaccination is the primary protection against influenza, vaccination rates remain low. Traditionally, primary care clinics, retail pharmacies, and public health departments offer influenza vaccines. However, offering influenza vaccines in new settings may increase their availability to the public and increase community uptake. This project aimed to add emergency departments as a new influenza vaccine location to increase the number of vaccines distributed during the 2020 to 2021 influenza season.

Methods: Adult patients discharged from 24 emergency departments were included in this pre- post-intervention project. A nurse-driven order set was established to enhance efficiency. Education materials (scripting, fliers, etc.) were developed to help nurses feel comfortable with vaccine information.

Results: Nurses indicated that education helped increase their belief that influenza vaccination was important. After completing the educational material, a higher number of nurses

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agreed that it was necessary to encourage others to be vaccinated ($P < .05$). Moreover, emergency department influenza vaccinations increased significantly throughout the 2020 to 2021 influenza season. Nurses across all 24 hospitals administered 2002 vaccines during this season compared to 9 during the previous year's season.

Discussion: The project demonstrated that delivering influenza vaccinations in emergency departments is challenging yet achievable. Educational offerings were valuable resources to increase nurses' knowledge and positive attitudes about providing influenza vaccines to patients. Further studies regarding how vaccinations could be provided in more emergency departments and alternative care sites, such as urgent care and clinics other than primary care providers, are needed.

Key words: Influenza vaccination; Emergency department influenza vaccination; Influenza; Public health; Community health; Vaccination

Introduction

PROBLEM DESCRIPTION

The influenza virus sweeps across the United States every year in the fall and winter. Most people who contract influenza will recover in less than 2 weeks. Still, some will develop complications such as pneumonia, myocarditis, encephalitis, respiratory failure, and sepsis.[1] Influenza represents a substantial cause of morbidity and mortality, but complications and hospitalizations are largely preventable with routine vaccination.[2] The influenza season of 2020 to 2021 was confounded because of the potential confluence of coronavirus disease-2019 (COVID-19) and seasonal influenza. The Centers for Disease Control and Prevention (CDC)[1] encouraged increased influenza vaccination to reduce the burden on the United States health care system, already weighed down by the COVID-19 pandemic. A potential new setting for influenza vaccination is the emergency department. Often, ED patients are less likely to receive primary care and are commonly under-immunized against influenza.[3-6]

There is a relatively small amount of data related to influenza vaccination administration in the emergency department. In the existing literature, emergency health care workers have expressed concerns about time constraints and shared a belief that it is not the role of the emergency department to provide vaccinations.[7-11] However, 1 exception to this view is the tetanus vaccination, which is routinely offered when a patient presents with a wound or laceration. The burden of influenza is far more significant than tetanus, yet ED practitioners have not been providing influenza vaccination while patients are in their care.

Administering the influenza vaccination in the emergency department is a significant opportunity to provide a valuable public health intervention and reduce the occurrence of a preventable illness in the community. Researchers reported that emergency departments are a viable option for influenza vaccination.[9,12,13] Moreover, a 2016 clinical practice guideline approved by the American Academy of Emergency Medicine recommends that emergency departments provide information on influenza vaccination for all patients older than 6 months.[14] The American Academy of Emergency Medicine states that if an unvaccinated patient presents to the emergency department and the emergency department has the required resources, influenza vaccination should be offered.[14]

The CDC[15] also suggests that communities can improve vaccination coverage and reduce coverage disparities by expanding access using nontraditional settings. The emergency department is an ideal location to capture those who may not receive health care elsewhere and to secure an opportunity where patients are already seeking care. Further, ED personnel are uniquely positioned to vaccinate many people who may not otherwise be vaccinated, including high-risk populations.[16] Providing the influenza vaccine upon discharge from the emergency department can save patients an additional visit to a different provider or health care location (Table 1). Implementing this practice was particularly important during the COVID-19 pandemic when people were not visiting primary care providers or health clinics, and rates of routine vaccinations had declined.[17,18]

While offering the influenza vaccine in the emergency department is warranted, implementing change in an increasingly busy emergency department is challenging. To carry out this program, we formed a quality improvement (QI) workgroup. This team included nurses, ED directors, pharmacists, financial managers, clinical informaticists, physicians, nurse educators, clinical operations managers, data managers, and advertisement consultants.

AIMS

To ensure a successful implementation, the QI team empowered the ED staff, kept them involved, and oversaw accountability and achievements. The team utilized Kotter's

TABLE 1
Influenza Immunization rates 2018 to 2019

Age group	Utah rates (%)	United States rates (%)
6 mo-17 y	55.8	62.6
18-49 y	26.3	45.3
50-64 y	37.0	47.3
65+ y	52.0	68.1

Centers for Disease Control and Prevention. Influenza (Flu). Flu Vaccination Coverage, United States, 2018-19 Influenza Season. https://www.cdc.gov/flu/fluvaxview/coverage-1819estimates.htm

8-step process for leading change (see Figure 1) to implement the project. According to Kotter,[19] changes can occur using a dynamic, nonlinear 8-step approach. By addressing each element of Kotter's process, the QI team ensured that the new methods were anchored in the routine care of ED patients (see Table 2).

The project's objectives were:

1. Assess the current influenza vaccination rate for adult patients in 24 emergency departments across an integrated system and determine the feasibility of increasing this rate for adult patients in the ED setting during the 2020 to 2021 influenza season (October through February).
2. Improve nurses' knowledge about providing the influenza vaccine to adult patients in the emergency department by implementing an education initiative for emergency nurses.
3. Develop a nurse-driven order set in the existing electronic health record (EHR) to allow nurses to order and administer the influenza vaccine.
4. Evaluate the project's effectiveness in increasing influenza vaccination rates in emergency departments and present information to corporate stakeholders.

FIGURE 1

Kotter's 8-step process for leading change. Kotter, J. Kotter Incorporation Web site. https://www.kotterinc.com/methodology/8-steps/. Accessed September 20, 2019. (Reproduced with permission from Kotter International, Inc., https://www.kotterinc.com/8-steps-process-for-leading-change/)

Methods

CONTEXT

This QI project occurred in a large not-for-profit health care organization in the Intermountain West. All emergency departments within this health care system use the same EHR, and the newly developed discharge tasks and nurse-driven order set allowed nurses to offer all discharged adult patients an influenza vaccine.

Roughly 750 registered nurses were provided the opportunity to complete 2 surveys. Data were collected and managed using Research Electronic Data Capture (REDCap) hosted by the health care system.[20] The setting represents rural, suburban, and urban hospital emergency departments.

INTERVENTIONS

The key to the success of this project was the nurse-driven order set. Nurses could screen and initiate the order and, therefore, not increase the length of stay by requesting and waiting for a provider's order. The clinical informatics team developed the Influenza Immunization ED screening form to allow emergency nurses to screen patients for the influenza vaccine and, if indicated, order the vaccine as a standing order. The screening questions were selected from the CDC's Advisory Committee on Immunization Practices recommendations.[21] After the provider entered a discharge order, the nurse completed the screening and discharge documentation tasks by recording the patient's influenza vaccination history, contraindications, and agreement or refusal of the vaccine. If indicated, the EHR automatically ordered the vaccine appropriate for the patient

TABLE 2
ED influenza immunization project based on Kotter's process for change

Kotter's steps*	Implementation actions
Create a sense of urgency	The 2020-2021 influenza season was complicated because of the potential confluence of the second wave of COVID-19 and seasonal influenza. EDs can play a crucial role in increasing influenza vaccine uptake in the community, and this message was conveyed to the emergency nurses through their managers and educators.
Form a guiding coalition	A QI team was formed that included multiple roles within the organization. A broad representation with different perspectives facilitated the rapid progression of the project.
Create a vision	The guiding team created a proposal. The ultimate goal was to make influenza immunization administration a standard process, not for this season but in future years. The vision was to reduce influenza spread in the community—optimistically reducing the infection burden (which was forecasted to be complicated with the COVID-19 pandemic).
Communicate the vision	Once the vision was established, it was shared with team members who executed the plan. The Medical Executive Committees approved the project, and ED managers and educators were tasked with sharing the message with their teams.
Empower others to act on the vision	It was essential to communicate the vision effectively, but any change requires buy-in from team members. Because the project needed to take off quickly (influenza season was imminent), the message did not effectively get to all frontline caregivers. Some ED managers and educators were supportive and proactive, but others did not encourage or promote the vaccine's administration.
Create quick wins	Changes were challenging to sustain. EDs during this time were very busy and overwhelmed with COVID-19. It was essential to advertise the wins during the project implementation. Some EDs had increased participation by regularly communicating the small successes to the frontline nurses. Acknowledgments such as thank-you messages and public recognition were given to nurses who regularly initiated the immunization questionnaire and process.
Build on the change	The guiding team met regularly to support the change process and continued to communicate with managers and staff. The data regarding the number of immunizations offered and administered were periodically shared with the ED leadership teams.
Institutionalize the change	The health care system was supportive of the project. The organization will continue ED influenza immunization administration as an annual initiative. Because change is gradual, it will take time to solidify and encourage buy-in.

COVID-19, coronavirus disease-2019; ED, emergency department; QI, quality improvement.
Kotter J. 8 Steps to accelerate change in your organization. 2018., https://www.kotterinc.com/wp-content/uploads/2019/04/8-Steps-eBook-Kotter-2018.pdf
* Reproduced by permission from Kotter International, Inc., https://www.kotterinc.com/8-steps-process-for-leading-change/.

based on age and allergy status; then, the nurse administered the vaccination. Outside of influenza season (October-March), nurses were not required to conduct the screening, and the task was removed so the vaccine could not be ordered.

The QI team's first step was identifying barriers that may make the project unachievable. After determining the project feasibility, the next step was to develop an influenza vaccination history and an exclusion checklist for nurses to complete before offering an emergency department patient the influenza vaccine (see Table 3). If 1 contraindication criterion was checked, or the patient refused or could not determine a vaccination history, the EHR order would not be activated. The QI team decided to include only adult patients in the pilot project. After completing the screening, the patient could consent or refuse the influenza vaccine.

The third step was to develop educational material for emergency nurses to educate patients and family members about its importance and effectiveness. Because the project needed to be implemented before the influenza season, the first phase of the education plan involved creating and

TABLE 3
Vaccination history and exclusion checklist

Influenza vaccine history	Contraindications–does this patient meet any of the following criteria?
■ Patient received influenza vaccine this influenza season	■ Allergy or sensitivity to a prior influenza vaccine
■ Patient has not received an influenza vaccine this influenza season	■ Patient is being admitted
■ Unable to obtain influenza vaccine history	■ Any history of Guillian-Barré syndrome
	■ Moderate to severe illness with or without fever of 38 °C (100.4 °F) or above
	■ Physician order not to immunize
	■ Transplant or bone marrow recipient in the last 12 mo
	■ History of any allergy to eggs
	■ Age younger than 19 y old

All selections indicate on or after August 1 of the current influenza season.

distributing a short educational infographic and a pocket job aid, which included scripting advice about the importance of influenza vaccination and tips on how to teach patients about the importance of the vaccine. The second phase involved developing a computer-based learning module that all emeregency nurses received as a required assignment in January 2021. The course covered why and how emergency departments would screen and administer the influenza vaccine to patients over age 18.

STUDY OF THE INTERVENTIONS

The final step was to evaluate the project's effectiveness and the nurses' knowledge and attitudes about the vaccine and the ED influenza vaccination project. To carry out this evaluation, content experts helped develop a survey programmed into REDCap. In October 2020, the corporate emergency nurse educator emailed nurses a link to a voluntary REDCap post-education questionnaire that measured knowledge and attitudes about the influenza vaccination (see Supplementary Appendix 1). Survey instruments measured influenza vaccine knowledge, self-reported acceptance and support of the vaccination, and comfort levels with encouraging vaccine acceptance with patients.

In late January, the emergency nurses received a second email containing a link to the same REDCap questionnaire with 4 additional open-ended questions (see Supplementary Appendix 2). Using the data from the open-ended questions, the QI team composed an executive summary for the organization based on the nurses' perceptions and opinions about influenza education and the implementation process of the ED influenza protocol. Additionally, hospitals reported the aggregate of influenza vaccines administered in each emergency department and compared the data to the previous year's (see Figure 2).

MEASURES

The measures for this project included post-education knowledge, post-project nurse feedback, and the number of influenza vaccines given to adult patients in emergency departments. Because the influenza season was imminent and the project needed to be implemented quickly, some

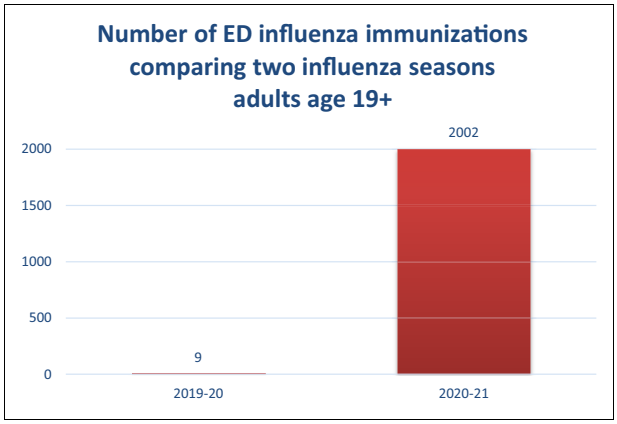

FIGURE 2
Comparison of the number of ED influenza vaccinations before and after implementing the quality improvement project. ED, emergency department.

TABLE 4
Participant demographics

Descriptive statistics	Percentage of participants		
	Before (n = 182)	After (n = 105)	Total (N = 287)
Age			
18-24 y	5%	4%	4%
25-34 y	39%	38%	38%
35-44 y	31%	31%	31%
45-54 y	13%	14%	13%
55-64 y	13%	11%	12%
Greater than 65 y	0.5%	1%	0.7%
Gender			
Female	78%	81%	79%
Male	22%	19%	21%
Years' experience			
Less than 1 y	3%	4%	3%
1-3 y	19%	14%	18%
3-5 y	14%	18%	16%
5-8 y	16%	17%	16%
8-11 y	13%	11%	12%
11-15 y	9%	7%	8%
Greater than 15 y	26%	30%	27%
Education			
Practical Nurse or Medical Assistant	0.5%	0%	0.3%
Associate degree	18%	21%	19%
Bachelor's degree	69%	72%	70%
Master's degree	10%	7%	9%
Doctorate degree	3%	0%	2%

nurses completed the first educational offering before completing the questionnaire.

To evaluate the effectiveness of the education, nurses were asked to rate their knowledge and attitudes about the influenza vaccine using a 1 to 5 Likert-type scale. The QI team downloaded the data from the questionnaires from REDCap into the Statistical Package for the Social Sciences (Version 26, IBM Corp., Armonk, NY). Data was used to assess the knowledge and attitudes about influenza vaccination and identify areas for improvement to expand the project during the following year. The team also evaluated the aggregate of influenza vaccines administered in each emergency department and compared it to the 2019 to 2020 influenza season.

The QI team utilized descriptive statistics for demographic and knowledge questionnaire scores appropriate to variable types. They examined inferential statistics comparing differences in participant knowledge scores in the 2 groups of participants at pre-education and post-education using a chi-square test (see Table 6). The sample could not be paired since questionnaires did not include unique identifiers. Additionally, the team conducted a content analysis on the open-ended questions from the second survey. The words were read word for word and then coded. The QI team then categorized, organized, and summarized the coded data.

Results

Of the 287 nurses who completed the surveys, 182 completed the survey before, and 105 completed it after the education. Respondents were primarily female (78%-81%), aged 25 to 44 years (69%), and had a bachelor's degree or higher (81%); (see Table 4). There was no

TABLE 5
Attitudes

Survey item	Response			
	Strongly disagree/disagree		Agree/strongly agree	
	Before	After	Before	After
Getting an annual influenza vaccine is important to me.*	11%	2.9%	89%	97%
It is important to me to encourage others to be immunized annually against influenza.†	11%	4%	89%	96%
As a health care provider, my strong recommendation for a vaccination will influence a patient's decision regarding vaccination.	31%	28%	69%	72%

* (X^2 [1287] = 5.973, P = .015).
† (X^2 [1287] = 4.479, P = .034).

statistically significant difference between the demographic variables before and after the education (chi-square $P >$ .05). Demographic variables were dichotomized into 2 variables for analysis. In the first survey, 59% of participants indicated that they had read the ED influenza education, and 81% reported having read it by the time of the second survey (X^2 [2287] = 5.78, P = .056).

ATTITUDES

Participants were given 3 statements to rate their attitudes about the influenza vaccine in each survey. The statements related to the importance of the vaccination, encouraging others to receive it, and the influence of a health care provider's recommendation (see Table 5). Responses were based on a 4-point Likert-type scaling, ranging from 1 (strongly disagree) to 4 (strongly agree). Responses were dichotomized into disagree and agree.

Importance

There was a statistically significant difference between the before and after surveys in participants' agreement that the vaccine was important to them personally and those who reported reading the educational materials. Younger participants agreed 92% to 98% of the time that the influenza vaccine was important to them and reported no difference in the second survey. However, participants over 25 years of age increased their agreement of importance between the 2 surveys (86%-97%, respectively), which was statistically significant (X^2 [1287] = 4.629, P = .031). Participants with a Bachelor of Science degree or higher reported high agreement of importance in both surveys (93% and 98%, respectively). Participants with education less than a bachelor's degree significantly increased in agreement on the second survey, from 73% to 95%, respectively (X^2 [1286] = 4.583, P = .032). There were no differences in agreement to the "importance" statement by years of experience or gender.

Encouragement

There was a statistically significant difference between the before and after surveys in participants' agreement that it was important to encourage others to be vaccinated and those who reported reading the educational materials. Also, in the second survey, nurses over 25 agreed more often that they encouraged influenza vaccination (98%) than nurses 25 years and younger (93%). (X^2 [1287] = 5.261, P = .022). There was no difference in agreement to the "encourage" statement by the level of education or gender.

Influence

There was no difference in agreement that health care providers' recommendations influence patients' decisions. However, there was a difference in the age of the participant. Nurses older than 25 agreed 74% to 80% that their recommendation influenced a patient's decision to receive the influenza vaccine. This was statistically different from those aged 25 years and younger, who agreed that they influenced patient decisions 61% to 62% of the time (X^2 [1285] =

TABLE 6
Knowledge

	Before			After			Did read the education			Did not read the education		
Item	**True/yes**	**False/no**	**Don't know**	**True/yes**	**False/no**	**Don't know**	**True/yes**	**False/no**	**Don't know**	**True/yes**	**False/no**	**Don't know**
Influenza vaccine has live virus vaccine.	6%	88%	3%	5%	93%	2%	5%	93%*	2%	9%	82%	5%
Patients with mild illness/cold should not receive vaccine.	46%	49%	4%	35%	60%	5%	41%	55%†	4%	49%	49%	2%
Influenza is very contagious.	96%	2%	2%	100%	0%	0%	98%	1%	.5%	98%	0%	2%
Influenza vaccine causes Guillain-Barré Syndrome.	52%	31%	17%	61%	25%	14%	57%	31%	12%	45%	23%	32%‡
There is an association between vaccines and autism or Multiple Sclerosis.	4%	91%	5%	1%	97%	2%	2%	94%	4%	4%	89%	7%
Vaccine response is similar to natural infection.	77%	19%	4%	92%§	7%	1%	83%	15%	2%	82%	13%	5%
Should pregnant 19-year-old receive vaccine?	74%	9%	17%	77%	13%	9%	75%	12%	13%	82%	5%	12%
Should 75-year-old with fracture receive vaccine?	59%	33%	8%	69%	26%	6%	63%	31%	5%	59%	30%	11%

* (X^2 [4286] = 19.439, $P = .003$).
† (X^2 [4286] = 12.405, $P = .015$).
‡ (X^2 [4287] = 14.206, $P = .007$).
§ (X^2 [2286] = 11.302, $P = .004$).

7.272, $P = .007$). This difference was noted regardless of the participant's educational level and results from the before and after surveys but not reported with years of experience. There were no differences in agreement with the "influence" statement by the level of education, years of experience, or gender (see Table 4).

This project aimed to educate emergency nurses before the onset of the influenza season to prepare them for challenging patient questions and increase their basic knowledge about influenza and the vaccine, but time constraints limited this goal. Due to the quick turnaround time for the project, there was not adequate time to develop educational initiatives and ensure that all nurses received the instruction. Additionally, the information provided was optional and not required; therefore, it was impossible to confirm that most nurses received influenza training and felt confident moving forward with this new effort. Multiple responses from the open-ended questions confirmed that nurses did not receive scripting, had not completed all their influenza vaccination modules, and had not read the educational materials.

QUALITATIVE RESULTS

The second survey sent to participants included 4 open-ended questions. These additional survey questions related explicitly to barriers and suggestions for improvement in providing the vaccine in the emergency department. Two themes emerged from these responses. First, participants emphasized that administering influenza vaccinations in the emergency department was too time-consuming. The following response from a participant expresses this theme: "Length of stay directly affects the flow of a busy ED. Even 5 to 10 extra minutes to ask about, obtain, and give the vaccine adds up quickly." Multiple comments, such as the following, were related to the length of time it takes to get the medication approved and sent from the pharmacy: "Pressure to discharge quickly. Waiting for the vaccine to be sent from the main pharmacy takes too long if it's not in stock." A similar comment stated, "I hear nurses complaining that they had to wait for them to come from the pharmacy and that we could not store them in the med room in our department."

A second theme was that providing immunizations is not an emergency nurse's obligation or responsibility. Several comments revealed a negative perception of providing preventive care in an emergency setting. Statements on this topic included the following: "Vaccinating should not be a priority in a busy emergency department. It is time-consuming when you need a room for other patients and patients wanting to yell their opinions about vaccines to you. You simply asked them if they wanted their flu vaccine."

Participants offered constructive ideas and suggestions when asked how the initiative may be improved. Several statements suggested beginning the screening statements at triage rather than at discharge. Comments related to this suggestion included "screening questions in the nursing history or part of triage" and "having the vaccine prompt before the patient is discharged so it can create an order for the vaccine before the patient is waiting to be discharged home." Other constructive comments included: "Post more information around the department in patient areas regarding the flu shot and the fact that it doesn't actually give someone the flu, along with other helpful facts." Another suggestion for the next influenza season was to "create an ad campaign for social media and print posters to display in our waiting room that instructs the patient to ask … if they are interested in getting the vaccine."

The qualitative data supported the quantitative data. Perhaps the most enlightening comment from a participant exemplifies many emergency nurses' attitudes: "I'm uncertain why people don't focus on preventive but prefer reactive or curative medicine. It's the American way, it seems." The results of this project suggest that nurses can change this way of thinking. Nurses made a significant difference in immunizing the population against influenza, although many did not feel the urgency or responsibility to encourage or administer the vaccines.

Limitations

This QI project posed some limitations. The first was the sample size. Although there were 182 responses to the first survey and 105 to the second, these numbers constitute a relatively small representation of the approximately 750 emergency nurses in the organization. A larger sample size would be helpful and more meaningful in determining whether the independent variables or the education impacted the nurses' attitudes toward the influenza vaccine.

Another limitation was that the knowledge tool was not tested and validated. No existing tool was located in an extensive literature review, and due to time constraints, it could not be adequately tested for validity and reliability. The project leader developed the tool, which was tested and reviewed by a panel of experts.

A third limitation was the short duration of data collection. The nurses were given the first questionnaire in October and the second in January. Survey fatigue can develop when people receive too many surveys within a short time.[22]

The final limitation was that this sizable QI project was implemented during a pandemic. Both leadership and bedside nursing efforts focused on optimizing and managing care for the large influx of COVID-19 patients, and the staff was overwhelmed with constant change. With the dramatic shift to the emergency department environment during this time, it was challenging to balance a new process and ask nurses to do 1 more thing when they were already overworked and stretched. However, significant positive changes were implemented, and the staff should be commended for their efforts to provide high standards of care for all patients who seek care in the emergency department.

Implications for Emergency Nurses

The results demonstrate that providing influenza vaccinations in emergency departments is a challenging yet achievable opportunity to improve a community's vaccine uptake. The quantitative results indicate that nurses who receive education and scripting to help prepare for vaccine administration and teach patients about its importance feel more confident in encouraging them to receive it.

An additional benefit discovered during this project was that the charge for the influenza vaccine administration ranged widely. The rates were reduced to match the lowest cost to the patient and ensured rates were the same for inpatient and outpatient settings. Patients were not screened for payment before the vaccine was offered; if they were uninsured or could not pay and wanted the vaccine, they could receive it.

In addition to the quantitative data, responses to the open-ended qualitative questions concerning barriers to the process and suggestions for improvement revealed that focused education and scripting may help nurses feel more at ease in offering the influenza vaccine to patients. Ultimately, addressing the barriers, such as rapid access to the vaccine and early identification of patients who qualify for the vaccine, may increase vaccination rates in emergency departments.

Based on some survey comments, nurses did not feel strong educator or managerial support during this initiative. Perhaps positioning a bedside nurse in the lead influenza vaccine champion role could enhance the vaccine uptake and ensure that all nurses receive the educational and scripting materials related to the influenza vaccine.[23]

Discussion and Conclusion

Public health is a collective undertaking. If enough of a population is immunized against infectious diseases such as influenza, transmission can be curtailed.[24] Undeniably, education that seeks to improve nurses' knowledge and attitudes about vaccinations should be pursued to respond to the critical bias of offering influenza vaccines in the emergency department. Vaccination programs based in emergency departments represent a novel approach that may be key to increasing vaccination in eligible patients. The debate regarding the appropriateness of ED influenza vaccinations will likely continue since many nurses and providers have differing opinions about the role of public health in the emergency department. Vaccination is usually a function of primary care offices, yet many ED patients go without primary care or receive that care in emergency department.[7] There is no perfect solution to improve vaccination rates, but using the emergency department as an additional setting can be effective and valuable.

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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.2023.02.002.

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Supplementary Appendix

Appendix 1

SURVEY 1

Questionnaire #1 for Emergency Department Influenza Vaccination Project

Knowledge/Attitude

1. Getting an annual influenza vaccine is important to me.
   a. Strongly Agree
   b. Agree
   c. Disagree
   d. Strongly Disagree
2. It is important for me to encourage others to be immunized annually against influenza.
   a. Strongly Agree
   b. Agree
   c. Disagree
   d. Strongly Disagree
3. A seasonal influenza vaccine has live viruses that can cause an influenza infection.
   a. Strongly Agree
   b. Agree
   c. Disagree
   d. Strongly Disagree
4. Influenza is very contagious.
   a. Strongly Agree
   b. Agree
   c. Disagree
   d. Strongly Disagree
5. Patients presenting with mild illness, such as cold or bronchitis, should not receive their influenza vaccine.
   a. True
   b. False
   c. I don't know
6. Seasonal influenza vaccine may cause Guillain-Barré Syndrome
   a. True
   b. False
   c. I don't know
7. As a health care provider, my strong recommendation for a vaccination will influence a patient's decision regarding vaccination.
   a. True
   b. False
   c. I don't know
8. Current scientific evidence supports associations between vaccines and chronic conditions such as autism and multiple sclerosis
   a. True
   b. False
   c. I don't know
9. Vaccines interact with the immune system and often produce an immune response similar to that produced by the natural infection.
   a. True
   b. False
   c. I don't know
10. A 19-year-old patient is in the ED today (October 16) because she was dizzy and light-headed. Results show she is pregnant. Would you offer her an influenza vaccine immunization prior to discharge?
    a. True
    b. False
    c. I don't know
11. A 75-year-old male is being discharged from the ED today (November 11) after being treated for a fractured ankle. He has a history of hypertension and diabetes. He states he has symptoms of an upper respiratory infection with no fever. Would you offer him an influenza vaccine immunization prior to discharge?
    a. True
    b. False
    c. I don't know

DEMOGRAPHICS

1. What is your age?
   a. 18-24 years
   b. 25-34 years
   c. 35-44 years
   d. 45-54 years
   e. 55-64 years
   f. Greater than 65 years
2. What is your gender?
   a. Female
   b. Male
   c. Non-binary
   d. Prefer not to answer
3. How many years of clinical practice (as a nurse) do you have?
   a. Less than 1 year
   b. 1-3 years

c. 3-5 years
d. 5-8 years
e. 8-11 years
f. 11-15 years
g. More than 15 years

4. What is the highest level of nursing education you have completed?
   a. Associate's degree
   b. Bachelors' degree
   c. Master's degree
   d. Doctorate degree
5. I have completed the Emergency Department Influenza Education for 2020.
   a. Yes
   b. No
   c. I don't know

Appendix 2

SURVEY 2

Questionnaire #2 for Emergency Department Influenza Vaccination Project

Knowledge/Attitude

1. Getting an annual influenza vaccine is important to me.
   a. Strongly Agree
   b. Agree
   c. Disagree
   d. Strongly Disagree
2. It is important for me to encourage others to be immunized annually against influenza.
   a. Strongly Agree
   b. Agree
   c. Disagree
   d. Strongly Disagree
3. A seasonal influenza vaccine has live viruses that can cause an influenza infection.
   a. Strongly Agree
   b. Agree
   c. Disagree
   d. Strongly Disagree
4. Influenza is very contagious.
   a. Strongly Agree
   b. Agree
   c. Disagree
   d. Strongly Disagree
5. Patients presenting with mild illness, such as cold or bronchitis, should not receive their influenza vaccine.
   a. True
   b. False
   c. I don't know
6. Seasonal influenza vaccine may cause Guillain-Barré Syndrome
   a. True
   b. False
   c. I don't know
7. As a health care provider, my strong recommendation for a vaccination will influence a patient's decision regarding vaccination.
   a. True
   b. False
   c. I don't know
8. Current scientific evidence supports associations between vaccines and chronic conditions such as autism and multiple sclerosis
   a. True
   b. False
   c. I don't know
9. Vaccines interact with the immune system and often produce an immune response similar to that produced by the natural infection.
   a. True
   b. False
   c. I don't know
10. A 19-year-old patient is in the ED today (October 16) because she was dizzy and light-headed. Results show she is pregnant. Would you offer her an influenza vaccine immunization prior to discharge?
    a. True
    b. False
    c. I don't know
11. A 75-year-old male is being discharged from the ED today (November 11) after being treated for a fractured ankle. He has a history of hypertension and diabetes. He states he has symptoms of an upper respiratory infection with no fever. Would you offer him an influenza vaccine immunization prior to discharge?
    a. True
    b. False
    c. I don't know

DEMOGRAPHICS

12. What is your age?
    a. 18-24 years
    b. 25-34 years
    c. 35-44 years
    d. 45-54 years
    e. 55-64 years
    f. Greater than 65 years
13. What is your gender?
    a. Female
    b. Male
    c. Non-binary
    d. Prefer not to answer
14. How many years of clinical practice (as a nurse) do you have?
    a. Less than 1 year
    b. 1-3 years
    c. 3-5 years
    d. 5-8 years
    e. 8-11 years
    f. 11-15 years
    g. More than 15 years
15. What is the highest level of nursing education you have completed?
    a. Associate's degree
    b. Bachelors' degree
    c. Master's degree
    d. Doctorate degree
16. I have completed the Emergency Department Influenza Education for 2020.
    a. Yes
    b. No
    c. I don't know

OPEN-ENDED QUESTIONS

17. What did you find most helpful about the influenza immunization scripting/ education?
18. What are the barriers to providing the influenza immunization to patients in the emergency department?
19. What would be most helpful in overcoming one of the barriers you mentioned (please identify the barrier)?
20. Is there anything else about influenza immunization administration in the emergency department that you would like us to know?

ETHICAL CONSIDERATIONS

The study was approved by the health care organization's Institutional Review Board (IRB) and was determined to be exempt from human subjects' review.

Nonurgent Pediatric Interhospital Transfers: A Narrative Enquiry of Nurses' Experiences in Australia

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Contribution to Emergency Nursing Practice

- Pediatric interhospital transfers are an important process within the health care system; however, they are a time when there is potential for patient harm and deterioration if not managed properly.
- Nurses' knowledge, capability, and confidence can be enhanced through formalized pediatric interhospital transfer programs and standardized clinical pathways.
- Nurses identified that preparation for transfer is essential for risk mitigation of the deteriorating pediatric patient.

Abstract

Introduction: This study aimed to explore nonurgent pediatric interhospital transfers through the lens of nurses' experiences and perceptions when undertaking these transfers.

Methods: Using a narrative inquiry approach, data were collected via semistructured interviews with registered nurses ($N = 7$) who had experience undertaking patient transfers between nonurgent low-acuity and urgent high-acuity hospital settings.

Results: Findings established the following 8 themes: ensuring transfer preparation for risk mitigation, practicing confident advocacy, being accountable for risk mitigation of the deteriorating patient during transfer, maintaining standardized procedure, using training and mentorship to support confidence, maintaining interhospital and intrahospital relationships, recognizing the significance of transfer on families, and acknowledging the burden of transfer and delay.

Discussion: By exploring the stories and experiences of emergency nurses who undertake pediatric interhospital transfers, a deep investigation of the risks and challenges has been described, an area often underrepresented in the literature. Findings from this study highlight important learnings for pediatric interhospital transfer that add value to the wider body of evidence.

Key words: Pediatric; Interhospital transfer; Education; Paramedics; Registered nurses; Narrative inquiry

Introduction

Interhospital transfers can be a time when patients are particularly vulnerable, especially when they are an infant or child who is at an increased risk of rapid deterioration during the transfer.[1] Registered nurses (RNs) can play a vital role in nonurgent pediatric interhospital transfers, given that they are required to assist the treating emergency physicians in the preparation of children and families, escort them on transfers, and safely hand over patient care at the arrival

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destination.[2,3] The ambulance transfer is recognized as a time of risk especially given that resources are limited within the environment.[4] There are growing concerns internationally that RNs are not adequately educated or resourced to undertake this specialized interhospital transfer role,[4] creating an opportunity for harm to themselves or the infant/child for whom they are caring.[5]

Interhospital transfers are a common phenomenon, with studies suggesting that as many as 1.5% of patients who present to hospitals in America are transferred to another tertiary or specialist hospital.[6] Interhospital transfers occur when a patient requires health care within a more suitable service than where they are currently being treated, and can include life-critical retrieval situations (in our context known as "retrievals"), and progress through to less urgent, but necessary transfers.[7,8] They are an integral process of the health care system. Internationally, interhospital transfers are generally for patients with nonurgent conditions that require time-critical access to specialist care; this is differentiated from retrieval services where patients require intensive care for a life-threatening condition.[6,8,9]

In their international systematic review, Hains et al[8] highlighted that there is limited evidence specifically relating to nonurgent transfers and patient outcomes related to these transfers. This is despite a high number of adverse events being reported, as well as delays and long transfer times.[8,10] Although classified as nonurgent, transfers can still be time critical. Key factors resulting in inefficient and unsafe patient transfers are lack of standardized processes, poor communication,[4] incomplete documentation,[8] and inappropriate skill level of escort staff.[6,11] Given that many transfers are supported by a nurse escort, understanding their knowledge, skills, expertise, and confidence is a critical factor within these areas.

Appropriate education and training are considered paramount to the quality and safety of pediatric transfers; however, concerns have been identified in the literature that this is often inadequate and even nonexistent.[2] Nonspecialized and/or inexperienced staff in nontertiary emergency departments have been shown to compromise patient outcomes during interhospital transfers, which can lead to medicolegal issues and cause stress, frustration, and burden for staff undertaking this responsibility.[4,12] To date, international research has focused on the transfer of critically ill children and the implementation of highly skilled pediatric retrieval teams.[13-16] The research focus also should include RNs who participate in noncritical interhospital transfers, a much more frequently found occurrence. Therefore, this study aimed to explore the perspectives of RNs undertaking pediatric interhospital transfers to understand what their needs were during this critical time in a pediatric patients' health care episode. The specific research question that guided this study was as follows: What are the experiences and perspectives of RNs undertaking nonurgent pediatric interhospital transfer within South East Queensland, Australia?

Methods

This study used narrative inquiry, a qualitative research approach that enables learning from the interpretation of stories.[17,18] Nurses provide rich and significant research data from the stories they tell, and they have a deep knowledge of patient experiences and health care complexities.[19] Stories are embedded in the ontology of nursing, with a strong oral tradition in this profession for communicating practice experience and making sense of the nursing world.[20] In qualitative research, stories are a powerful tool and provide a rich and deep understanding of complex phenomenon.[18] In health care, stories enable RNs' experiences to be presented in a way that provide comprehensive insight into ethical and professional practice and provide a holistic understanding of health care issues.[21] Individual stories enable insight into social groups, communities, and cultures,[20] with each of the nurse's accounts revealing personal experience of the phenomenon of interest.

RESEARCH SETTING

This study was undertaken in a coastal, regional area of South East Queensland, Australia. Within this context, children are transferred to the tertiary-level Sunshine Coast University Hospital from 4 smaller regional hospitals where specialized pediatric care is unavailable. On average 2 to 3 pediatric transfers occur per day with at least 1 per week being a moderately unwell child at high risk of deterioration. Owing to this risk, nurse escorts are often allocated. The smaller hospitals range from a 20-minute to 70-minute drive to the tertiary hospital. The demographic of the study is a regional setting.

PARTICIPANT RECRUITMENT AND SAMPLING

This study forms part of a larger research project exploring pediatric interhospital transfers, which includes procedure validation and implementation of an education package called Pediatric Education and Assessment for Nonurgent Transfers (PEANUT). Recruitment for this arm of the study was achieved through purposeful sampling, which is

TABLE 1
Participant eligibility criteria

1. Nurse working in a Sunshine Coast Health Hospital Service regional hospital.
2. Nurse will have completed the PEANUT training package.
3. Nurse will have undertaken or been involved in at least 1 nurse escorted pediatric interhospital transfer before completing the PEANUT training package.
4. Nurse will have undertaken or been involved in at least 1 nurse escorted pediatric interhospital transfer since completing the PEANUT training package.

PEANUT, Pediatric Education and Assessment for Nonurgent Transfer.
PEANUT is an online and simulation training package for nursing staff involved in pediatric interhospital transfers at a Sunshine Coast Health Hospital Service regional hospital. "Involved in" means the nurse participant coordinated or assisted with pediatric interhospital transfers from the transferring emergency department.

considered valuable in qualitative research to ensure participants with specific experiences are included.[18,22] Participants were either RNs working in the emergency department or nurses from the pediatric ward who assisted the emergency department to undertake interhospital transfers. Researchers invited participants through routine education session attendance in addition to snowballing techniques.[22] Approximately 50 staff members were contacted via email; there were 9 responses, with 2 staff unable to attend their appointment, leaving a total of 7 participants who were interviewed. Recruitment ceased at this stage, owing to theoretical data saturation being met, with repetitive and common themes evident in the data.[23] Participants who agreed to be contacted were sent an email explaining details of the study purpose, consent process, and ethics approval. An appointment time for their semi-structured interview was arranged. To understand diversity of perspectives, a stratified approach was used for participant demographics, such as age range, gender, and culture.[22] Participant eligibility criteria is outlined in Table 1.

DATA COLLECTION

Data were collected by RH, a pediatric emergency clinical nurse consultant within the health service (who had not been involved in delivery of the education, but had contributed intellectual content to the education package). Semi-structured interviews, which are commonly used in narrative inquiry to provide participants with a platform to share their stories, were offered by the clinical nurse consultant.[23] Interview questions were developed by the research team, which included both emergency and pediatric nurses and physicians. Questions centered on the nurse's experience of pediatric interhospital transfers, such as preparing for transfer, interactions with the multidisciplinary team, actual or potential risks in transit, confidence, and perceptions of training (see Table 2). Participants were offered face-to-face or online meetings at a location of their preference. Interviews were conducted with individual participants to encourage deeper sharing, which may be lost in more open forums such as focus groups.[22] Questions were provided to participants before interviews to allow participants more time to consider in-depth responses. Interviews were conducted online ($n = 6$) and face to face ($n = 1$), lasting approximately 60 minutes. They were audio and video recorded and transcribed verbatim. Transcripts were not returned to participants and repeat interviews were not offered.

DATA ANALYSIS

Data were analyzed by R.H. and reviewed by T.D. and L.K. as supervisors of the project. All researchers were female RNs or medical officers. Both supervisors were PhD qualified with experience in qualitative research. The quality of the transcripts was optimized through providing audio and video material to the transcriber to ensure facial and oral cues were available to aid translation.[22] An additional quality check was performed by the researcher iteratively reviewing the transcripts and cross comparing with field notes taken throughout the interviews to ensure translation was represented accurately. This ensured the researcher also was familiar with the data and embedded in the transcripts for thorough exploration of language and context.[24]

Thematic analysis was used to analyze the transcripts. Themes were identified and agreed upon by 3 researchers through coding, which involved labeling relevant or pertinent words or phrases in the data, enabling comparison and grouping when patterns occurred.[18] Thematic analysis within narrative inquiry identifies key concepts that capture the imagination and essence of the nurse's experience, consider individual perspectives and experiences, and create a community story through sharing findings that reflect social and cultural insights.[25,26]

When data analysis includes personal stories, researchers are advised to manually analyze the data owing to the complexities within storytelling.[27] Therefore, data analysis databases, such as NVivo, were not used for data coding in this study. Data text and quotes were instead manually and meticulously deducted into codes using color coded sticky notes under provisional categories for

TABLE 2
Questions used to guide the interview

No.	Question
1	Can you tell me about working in a regional emergency department? In your opinion, are there any challenges or difference in relation to a tertiary/central emergency department?
2	Tell me about your experience in relation to nonurgent pediatric interhospital transfers (ie, transferring a noncritical child who does not require a retrieval from 1 hospital to another?)
3	In relation to pediatric interhospital transfers, have you ever experienced any challenges or issues? Can you tell me about them?
4	Evidence shows that nurses who escort children often lack confidence. What do you feel affects a nurse's confidence to transfer children?
5	Tell me about your education and training in relation to pediatric interhospital transfers? Do you feel that education and training is important to nurses who transfer children? What does this look like?
6	The National Quality and Safety Health Service Standards set an expectation that we must provide safe and quality care for patients. In your experience, what does safe and quality care look like for children and families who are being transferred?
7	Reflecting back on your experience, do you feel safe when in the role of nurse escort? Can you tell me about your safety when asked to transfer a child and family?
8	Family-centered care is a key principle of pediatric nursing. In your experience, what do you feel is important to children and families who are being transferred?
9	In your opinion, how can the health care service enable nurses to improve the care for children and families being transferred?
10	Can you tell me about anything else in relation to pediatric interhospital transfers that you feel is important?

theming. The researcher's deep immersion in the direct quotes and phrases optimized representation of the intended meaning through remaining as true to the voices as possible.[25]

Thematic networks were used to organize, structure, and interpret the qualitative data in this study, a technique presented by Attride-Stirling.[28] Thematic networks reduce text data into basic, organizing, and global themes to provide a methodical approach to data analysis that aims to improve the yielding of meaningful and valid results, which is often lacking in qualitative research papers.[28]

Interview transcripts were coded using a pre-established coding framework generated from the semistructured interview questions.[28] Codes then were analyzed and issues to discuss generated from them. This formulated the constructs of the basic themes.[28] Organizing themes then were constructed from the basic themes, which were further integrated and explored to generate global themes that represented core interpretations of the text.[28] Global themes are considered accurate representations of the data to enable arguments, conclusions, and final summaries for the researcher and reader to analyze and interpret meaning.[28]

The manual color coding analysis technique, with the use of sticky notes, enabled deep immersion in the data to produce rigorous and productive findings for interpretation.[27] The researcher maintained reflexivity throughout with continuous critical reflection on the knowledge produced.[22,29] Functional reflexivity was facilitated by the use of the thematic network tool, providing a clear and formalized structure for analysis of the deeply personal and subjective data.[22]

ETHICAL CONSIDERATIONS

Ethical approval for this study was sought and approved by The Prince Charles Hospital Human Research Ethics Committee (59329), and the University of the Sunshine Coast Human Research Ethics Committee (S201446).

Results

Findings from this study highlight important learnings for pediatric interhospital transfers that add value to the wider body of evidence. The nurse participants ($N = 7$) were all female, at the age between 30 and 59 years with 10 to 20 years' nursing experience. They were employed in a mixed emergency department with both adult and pediatric patients ($n = 4$) or the general pediatric ward ($n = 3$), and

TABLE 3
Coding framework

Global themes	Organizing themes	Verbatim examples
Ensuring transfer preparation for risk mitigation	Planning for preparation	From my perspective, I think if I'm happy that I'm prepared well, I've gone over a plan with the medical staff and the child's stable, that will make me feel confident and happy to do the transfer…(P1)
	Communication to ensure adequate preparation	You feel underprepared sometimes when you're chucked in the deep end and especially with children (P5)
	Transfer preparation	A clear plan for the medical side is probably your next most important step to having a safe transfer…and communicate, again between medical and nursing staff to have that plan for treatment, your appropriate equipment and documentation (P1)
	Risk mitigation through adequate preparation	...but you still have to go to the doctor and say, I'm transferring this patient. Do we have a deterioration plan? And sometimes they can be offhanded and say, "They're not going to deteriorate. They're fine"…well they probably are fine, but I need a deterioration plan (P4)
Practicing confident advocacy	Dealing with the challenge of dismissive comments	And he gave me a lecture and said that it's because the kid was febrile and had increased work of breathing, and everything would settle, and I was worrying for no reason, basically made out that I had no idea what I was talking about (P3)
	Experience in risk mitigation	But I think just being able to risk manage, that's something that I think may be with more experience…they don't realize because they haven't got the experience and training to ask the doctor (P6)
	Relying on experience	I think you learn over time; nurses get that experience where they have to ask about the plan (P6)
Being accountable for risk mitigation of the deteriorating patient during transfer	Managing the deteriorating patient during transfer	It was like running across an ice-covered lake hoping the ice doesn't crack (P5)
	Assuming accountability	And when a kid crashes, it can be quite quick and catastrophic. So, I guess there's fear of that happening in the back of an ambulance (P3)
	Documenting patient deterioration	It always worries me. How you would stand up in a coroner's court if something terrible happened…It's always in the back of your mind that you're going to have to be in a coroner's court and say we didn't expect it (P5)
	Recognizing the risks during transfer	They're (ambulance officers) very cooperative and helpful. But when you're having a deteriorating patient, they're kind of like, "You're the nurse." At the end of the day, it's your patient…They're more accommodating but they're not really like having another nurse. Their skill set is different (P6)

continued

TABLE 3
Continued

Global themes	Organizing themes	Verbatim examples
Maintaining standardized procedure	Standardizing clinical documentation	So, I think that's really been good and given nurses a bit of a voice about safe versus not safe transfers now that there's the criteria and everything, and what's expected of them… (P3)
	Adhering to standardized procedure	That kid's not that sick, doesn't need an escort, oh hang on, you just get the table and say, well it says here, according to the policy that it does…Instead of just arguing that you felt the kid was sick and needed an escort, you had that backup document policy (P3)
Using training and mentorship to support confidence	Training improves transfer safety	…I noticed with our training and everything a lot of our staff were so much more at ease. They felt they had more support, more guidance in what they should be doing (P6)
	Attending capability training and review	...And I think from a pediatric point of view, having more input with them would be really wonderful, because they've got a lot of skilled staff there that we could benefit from their help…having more input from a peds CN, education-wise, would probably help (P1)
	Expectation of experience	I think they [parents]would expect the most experienced staff member to transfer their child. If it was my child, that's what I would hope for, for the staff member going with them has the full training… (P1)
Maintaining interhospital and intrahospital relationships	Family teams rely on staff permanency	In working in a small ED, it gives you a really close working relationship with your colleagues… It really does give us a family experience at work, I believe (P1)
	Small teams create close family-like workforce	We have a small department, but we see quite a lot of high-acuity and high-volume numbers… But we all get in and help everyone else (P3)
	Misunderstanding of regional and tertiary capabilities	I think input between the two health facilities would be really helpful. It's very much an 'us and them' environment… I think a closer relationship with SCUH (accepting unit) would really benefit our department… We're only 20 minutes away and yet sometimes we feel a world away (P1)
	Bridging the gap between tertiary and regional staff	And I am so embarrassed to take some of the kids down to SCUH…they're sitting there happy and smiling. And because of that the attitude is that we can't handle it up here (P7)

continued

TABLE 3
Continued

Global themes	Organizing themes	Verbatim examples
Recognizing the significance of transfer on families	Families reluctant to go but have no choice	One of the big things with us in pediatrics is we are not just looking after the child. We are looking at the whole family (P7)
	Psychosocial burden on families	They've got other kids at home. They work. They've got businesses. They've got farms. It's quite disruptive to families and just adds extra stress and pressure when their kid is sick (P3)
	Family separation	And they feel that they have no choice, so they feel a bit frustrated. They would like to stay here (P2)
	Support networks limited	…they're going to be anxious. And they might delay going or they might cut short the child's stay in hospital and jeopardize their care (P5)
	Communication is the key to trust and rapport	It's nice to have those conversations because they're right in these moments of fear and uncertainty. The more you give them knowledge and information about what the process is going to be, the quicker that fear of the unknown is halted (P4)
Acknowledging the burden of transfer and delay	Ambulance service supply and demand	And getting patients transferred to definitive care in a timely manner is a huge issue… It's just waiting hours for an ambulance… They don't have enough services. There's not enough. The demand is too much for the crews that they have on (P3)
	Exposure to inappropriate behavior by family members	There is one cubicle and it's nicely done up, very child friendly, very nice, but it's not always free, obviously. If it's busy, then the child may not end up in that cubicle… And if the clients in the department who are calling out loud or intoxicated, then it's just very frightening. And it's not always possible to shield the child (P2)

at the time of the interview, supported the pediatric interhospital transfers process in the emergency department (see Supplementary Appendix).

The 8 themes are listed in Table 3 along with details of the coding framework, global themes, organizing themes, and verbatim examples from the participants.

Throughout the 8 themes highlighted in Table 3, participants shared experiences that were diverse yet threaded with similarities. It was clear from the narratives that adequate preparation was needed to maintain patient safety. As described in Theme 1, through adequate planning, preparing, and communicating, potential risks can be mitigated. Practicing confident advocacy (Theme 2) highlights the importance for nurses to speak up. Nurses were found to advocate if they did not have the information they needed to transfer safely and felt it was unsafe. Being "thrown in at the deep end" by being asked to transfer at the last minute or undermined by other staff created anxiety among the nurses who were required to transfer high-acuity children. When nurse escorts undertake pediatric interhospital transfer, they experience fear owing to risks of deterioration. Theme 3, being accountable for risk mitigation of the deteriorating patient during transfer, highlights the fear nurses feel when undertaking transfers especially at the last minute.

The RNs who shared their stories clearly highlighted that after their training, with the PEANUT initiative, transfers became easier with standardized processes in place (Theme 4). Having a shared and clear understanding among staff regarding documentation required to safely undertake a pediatric interhospital transfer helped staff to maintain a standardized procedure. Using training and mentorship to support confidence (Theme 5) highlights the importance of interdisciplinary teamwork in the transfer of pediatric patients, by improving safety and expectations of the experience. Expanding on this, Theme 6 explores the importance of maintaining inter- and intrahospital

relationships when comparing a small emergency department where everyone knows each other with a large tertiary hospital with many staff. In addition, the added psychosocial burden for parents who lived some distance from a tertiary hospital was voiced (Theme 7). Of concern was the lack of availability of ambulances to safely transfer patients between hospitals especially if they were at risk of deteriorating (Theme 8). This led to anxiety among the staff when children were exposed to inappropriate behavior from other patients in the emergency department.

Discussion

This study has generated rich data exploring nurses' experiences conducting pediatric interhospital transfers and the various challenges and opportunities they encounter. The themes generated explore issues of professional role and competency, importance of respectful communication between the multidisciplinary team and departments, and the value education, collaboration, and standardized procedures have in supporting nurses to undertake this vital role. These findings were generated during a time when targeted education on care of infants and children during interhospital transfer was being provided to nurses working in general emergency departments.

Inadequate preparation and poor patient handover with limited timeframes were a key concern for nurses' confidence and furthermore create a risk to the safety of both the nurse and patient for the pediatric interhospital transfer. Protected preparation time was identified as a key implementation strategy to improve transfer safety and nurse confidence. Protected preparation time, together with a clear medical transfer and clinical care plan, markedly enhances communication and aligns with current evidence.[8] However, some nurses expressed frustration, stating that medical plans were often inadequate or nonexistent owing to a reluctance from physicians to complete them. The nurses describe how they must "fight for transfer plans" and felt as though they were interrupting or standing in the way of physicians when plans were requested. This was mitigated by the introduction of a standardized procedure for pediatric interhospital transfers (see online supplement file: Procedure). In keeping with the evidence, there was consensus from the participants that this improved risk assessments through having a clear procedure, which provided overarching guidance on how to manage patients being transferred, leading to improved risk assessment and patient outcomes.[8,30]

The importance of communication in pediatric interhospital transfers is reiterated across the literature, given that this process requires multiple handovers that can result in information getting lost.[8,31,32] Our findings concur, with nurses perceiving inadequate communication channels, especially from the treating physician to the transferring nurse. However, the smaller, highly collaborative team within the regional hospital was seen as protective regarding safer pediatric interhospital transfers, with trusting relationships and familiar team functioning improving confidence and communication in the pediatric interhospital transfer process. This highlights the need for staff stabilization in regional emergency departments to assist teams to manage the challenges of pediatric interhospital transfers.

This study identifies a disconnect between regional and tertiary facilities. Nurses shared a perspective that detailed assumptions from tertiary teams about the provision of care for children and available resources in regional hospitals, which are often misrepresented or inaccurate. Limited evidence exists exploring the dynamics between regional and tertiary facilities; however, tensions can exist between teams owing to the complexity of pediatric interhospital transfer and its involvement of multiple stakeholders and facilities.[4]

Pediatric interhospital transfer training is often inadequate across the globe, negatively affecting nurse knowledge and confidence.[12] Targeted education and training are essential to safe pediatric interhospital transfers,[2,4] a theme reiterated throughout this study. The nurse participants in this study had recently participated in PEANUT training and indicated that the education package increased their confidence and capability to conduct safe pediatric transfers. The unique considerations of transferring infants and children were fundamental to the program. Nurses desired more educational opportunities specific to pediatric illnesses and recognition of red flags, which is important with the known knowledge gaps evident in pediatric interhospital transfers.[11] Clarity around appropriate transfer training and capability standards to safely undertake pediatric interhospital transfer for nurses is required.

The greatest risk and fears for pediatric interhospital transfers are deterioration in transit, with one study reporting 65% of the nurses had experienced a physiological deterioration or adverse event.[5] These fears were reiterated in our study with numerous stories of deterioration or near misses. Deterioration plans to improve safety, alleviate fears, and improve confidence to transfer sick children, with illness-specific pathways to manage deterioration during transit, are essential to pediatric interhospital transfer. Nurses often feel alone in the back of the ambulance and carry a high level of accountability and risk.[9,33] Nurses also have reported experiencing anxiety and fear for their registration, owing to medicolegal issues when deterioration occurs during the transport.[34]

Similar findings to our study were reported by Water et al[35] where assertive dialogue and high-level communication skills between team members and the patient's family were valued as a mechanism for advocacy, ultimately improving staff and patient safety. Experienced nurses are more likely to voice concerns, suggesting that pediatric interhospital transfers require senior-level nursing support and oversight.[4]

Implications for Emergency Nurses

There are safety implications when providing a nurse escort for pediatric interhospital transfers. The emergency department is devoid of a key staff member that is usually not replaced, potentially leading to an emergency department that is now understaffed. Consequently, it is recommended that improved engagement between tertiary and regional facilities is fostered to minimize any disconnect and establish effective and efficient relationships. Our study findings support what others have reported, that targeted education and training are essential for improving the safety of pediatric interhospital transfers.[2,4] The introduction of a standardized interhospital transfer workflow, together with an education package, increases staff confidence and capability when undertaking pediatric transfers. Targeted pediatric interhospital transfer training needs to be prioritized within emergency clinical practice to ensure the safest clinical care is being provided to children and their families.

Limitations

Although the small participant sample size allowed for purposeful and deep exploration of the nurses' stories, an increased number may have provided greater saturation of the data and diversity of nursing experience.[22] The potential for bias is recognized, yet strategies were implemented to mitigate this, including the main data collector not being involved in education implementation, and a continuous reflexivity process undertaken by authors T.D. and L.K., who are experienced qualitative researchers and were not involved directly with the health services where the research was being conducted. The intention of the study was exploratory and context specific; however, potential learnings can be considered for similar contexts. Nurses with less than 10 years' experience, male nurses, and nurses younger than 50 years are underrepresented in this sample. Study participants all had greater than 10 years' nursing experience. Further research to include the perspective of the underrepresented nurses in this sample is warranted.

Conclusion

This study highlights that pediatric interhospital transfer is a complex process that carries clinical and psychosocial burden for staff, children, families, and health care organizations. Nurses' stories hold value given that they enable a deep exploration of the risks and challenges that are often underrepresented in the literature. It is evident that nurse advocacy is vital to minimizing pediatric transfer risks. Improved recognition and acknowledgment of the nurse's voice in pediatric interhospital transfers, together with adequate educational preparation and procedural pathways, hold the potential to improve outcomes and safety for children requiring transfer.

Author Disclosures

Conflicts of interest: None to report.

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Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2022.12.007.

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Supplementary Appendix

Pediatric interhospital transfer, research participant demographics.

Participant	Age in years	Gender	Years in nursing post qualifying	*Hospital classification	*Work location	*Nursing role	Years working in current workplace
1	>60	F	>20	Regional, public	Pediatric ward	Skipped	>10
2	50-59	F	10-20	Regional, public	Mixed ED	RN	>10
3	50-59	F	>20	Regional, public	Pediatric Ward	CN	>10
4	50-59	F	>20	Regional, public	Pediatric Ward	CN	>10
5	50-59	F	10-20	Regional, public	Mixed ED	RN	5-10
6	30-39	F	10-20	Regional, public	Mixed ED	CN	>10
7	50-59	F	10-20	Regional, public	Mixed ED	RN	>10

Demographics terms key

* Hospital classification- There are 5 public hospitals under the public health system in the district where the research was conducted. The hospital classification for 4 hospitals is regional that predominantly transfer into one large public tertiary level hospital.

* Work location- all the hospitals in the district where the research was conducted have mixed Emergency Departments (ED's), which means they see both adult and pediatric patients in the same location. The pediatric ward is solely for pediatric patients in an inpatient unit. A mixed ED provides care for both adult and pediatric patients

* In Queensland Health, nurses can be employed as registered nurses who are qualified to work in Australia with varying work experience. A Clinical Nurse is a nurse who is employed at a senior level with greater responsibility in terms of leadership and 'in charge' roles in ED.

Emergency Nursing Workforce, Burnout, and Job Turnover in the United States: A National Sample Survey Analysis

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Contribution to Emergency Nursing Practice

- Burnout and workforce turnover among nurses have reached alarming proportions and are associated with poor work environment characteristics, yet little is known about reasons for turnover specific to emergency nurses. In response to the coronavirus disease 2019 pandemic, it is critical to understand historic causes of burnout that may yield emergency nurse turnover.
- This paper presents new evidence about burnout and workforce turnover reasons among emergency nurses who have already left their position.
- Results of this study may help inform burnout interventions and work environment policy change, while helping to mitigate contributory factors for emergency nurse turnover.

Abstract

Introduction: Few studies have examined emergency nurses who have left their job to better understand the reason behind job turnover. It also remains unclear whether emergency nurses differ from other nurses regarding burnout and job turnover reasons. Our study aimed to test differences in reasons for turnover or not currently working between emergency nurses and other nurses; and ascertain factors associated with burnout as a reason for turnover among emergency nurses.

Methods: We conducted a secondary analysis of 2018 National Sample Survey for Registered Nurses data (weighted $N = 3{,}004{,}589$) from Health Resources and Services Administration. Data were analyzed using descriptive statistics, chi-square and *t*-test, and unadjusted and adjusted logistic regression applying design sampling weights.

Results: There were no significant differences in burnout comparing emergency nurses with other nurses. Seven job turnover reasons were endorsed by emergency nurses and were significantly higher than other nurses: insufficient staffing (11.1%, 95% confidence interval [CI] 8.6-14.2, $P = .01$), physical demands (5.1%, 95% CI 3.4-7.6, $P = .44$), patient population (4.3%, 95% CI 2.9-6.3, $P < .001$), better pay elsewhere (11.5%, 95% CI 9-14.7, $P < .001$), career advancement/promotion (9.6%, 95% CI 7.0-13.2, $P = .01$), length of commute (5.1%, 95% CI 3.4-7.5, $P = .01$), and relocation (5%, 95% CI 3.6-7.0, $P = .01$). Increasing age and increased years since nursing licensure was associated with decreased odds of burnout.

Discussion: Several modifiable factors appear associated with job turnover. Interventions and future research should

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account for unit-specific factors that may precipitate nursing job turnover.

Key words: Burnout; Professional; Workplace; Registered nurses; Emergency nurses; Population Surveillance Survey

Introduction

The unprecedented coronavirus disease 2019 (COVID-19) pandemic introduced substantial challenges for nurses to meet the high demand for patient care, altered clinical work environments and team compositions, and threatened personal safety risk during care delivery.[1,2] A substantial body of evidence has been formed surrounding exacerbated nursing burnout rates during the pandemic.[3] Nurses have been found to have significantly higher burnout rates than other health care worker disciplines, and some suggest that prepandemic system-level factors contributed to this phenomenon.[4] Before the pandemic, there was limited literature isolating burnout factors in emergency nurses, a health care worker population who was thrust onto the frontlines of the COVID-19 response. More and more organizations and policy makers have called for the investigation of factors that precipitate burnout risk. The United States Surgeon General recently released an advisory report highlighting the importance of identifying and addressing factors that contribute to burnout,[5] yet this knowledge remained largely unknown before the onset of COVID-19 and inhibits our ability to inform interventions during the aftermath of the pandemic outbreak. In this present study, we seek to advance the work on national estimates of emergency nurses to examine reasons for burnout and workforce turnover. The aims of our study were to (1) test prepandemic differences in reasons for turnover or not currently working between emergency nurses and other RNs and (2) ascertain factors associated with burnout as a reason for turnover or not currently working among emergency nurses. This knowledge may inform practice and policy changes for present day pandemic recovery by addressing prepandemic burnout factors that specifically affected emergency nurses.

Clinician burnout, defined by emotional exhaustion, cynicism, and a low sense of accomplishment at work,[6] is a pervasive challenge affecting broad swaths of the health care workforce. Recognized by the World Health Organization as an "occupational phenomenon," burnout can primarily be attributed to the work environment and ongoing discrepancy between an employee's resources and their workload.[7] Acute care clinicians, such as nurses and physicians working in an ED setting (emergency nurses and physicians), may be particularly vulnerable to burnout. Prepandemic literature demonstrates that almost half of the 900,000 practicing physicians in the United States report symptoms of burnout, with emergency physicians endorsing the highest rates.[8] Similarly, a systematic review conducted in 2017 found higher rates of emergency nurse burnout (31%) than nurses working in other specialties or units.[9] Burnout in nurses has been associated with not only adverse individual health outcomes such as increased risk of depression, drug abuse, and suicidal ideation, but also suboptimal professional and patient care outcomes, including increased workforce turnover, decreased quality of care, increased hospital-acquired infections, and reduced patient satisfaction.[6-8]

Compared with other nursing specialties, emergency nurses may face unique risk factors for burnout owing to the emergency care work environment, such as experience with violence and traumatic incidents.[9-11] Although past research has documented the prevalence of burnout among the emergency nursing workforce, such studies have been limited by small sample sizes and local sampling approaches, unable to capture the diversity of clinical, geographic, and demographic environments that encompass the emergency nursing workforce in the United States.[12-14] In addition, potential key factors associated with the presence of burnout have been described, ranging from individual, environmental, and system-level variables.[15] Few studies have examined burnout in participants who have left their job position or are not currently working, resulting in the potential for a healthy worker or survivor bias in the current body of evidence. In previous work on a national level, more than 17% of those licensed to practice as an RN were not working in nursing in 2017.[16] An analysis of reasons for job turnover that includes those not currently working after recently leaving a nursing position, among a diverse and nationally representative sample of emergency nurses, is essential to identify the most salient, priority focus of both risk detection and as a needs assessment for future national level interdisciplinary policies and interventions.

Methods

DESIGN

This study was a secondary data analysis design of responses to the 2018 NSSRN, publicly available and administered by the United States Census Bureau.[17] The required survey validity and reliability procedures are codified through the Office of Management and Budget's Standards and

Guidelines for Statistical Surveys.[18,19] Per institutional policy for data sets that are publicly available and deidentified, no human subjects ethical approval was required.

PARTICIPANTS

Participant sampling and recruitment information is publicly available at the study website.[17] Briefly, the source population for the sampling frame consisted of RNs from each of the 50 United States and the District of Columbia. Stratified sampling by state was applied separately for RNs and nurse practitioners. We aggregated the data set into 2 groups: (1) participants who identified as working in an ED setting in 2016 or 2017 and (2) nurses working in all other settings. We excluded (1) those not working due to retirement on December 31, 2017; (2) those not working in nursing for pay in both 2016 and 2017; and (3) participants who identified themselves as an advanced practice nurse (certified nurse practitioners, certified clinical nurse specialist, certified nurse-midwife, or certified RN anesthetist). To apply burnout perceptions among emergency nurses more specifically to only their emergency nursing job, we also excluded those who left another nursing position in 2016 due to burnout and entered emergency nursing in 2017.

VARIABLES

Demographic and work characteristics included in this analysis were sex, age, race and ethnicity, marital status, highest degree in nursing, years worked in nursing, hours worked per week, household income, thoughts of turnover in current position, temporary employment, degree enrollment, and secondary nursing position in addition to primary nursing employment.

The variables listed in Table 1 include the alphanumeric identifier (eg, B1) that appeared to participants on the original NSSRN survey and can also be cross-referenced with the publicly available survey to clarify future replication of our study. Emergency nurse included management, educators, direct care clinician, and many nursing roles associated with the emergency setting. Our analysis included critical access hospital, float, flex, and travel nurses who spent the most time in the emergency setting, even if their primary employer may not have been a specific emergency department.

DATA ANALYSIS

Analyses were conducted in Stata (version 14.0, StataCorp LLC, College Station, TX) and Python (version 3.8). All analyses were conducted using weighted design to relay the characteristics and results of the population estimates. The purpose of the weighting was population representativeness, and weights were generated by NSSRN in a complex, multistep process that incorporates sample design and the probabilities of participant selection. Design weights were applied using the jackknife estimation procedure. Data were analyzed using descriptive statistics, chi-square and t test, and unadjusted and adjusted logistic regression applying design sampling weights.

Results

CHARACTERISTICS OF STUDY SUBJECTS

A total of 1266 respondents (2.52%, weighted N = 217,706) identified as emergency nurses whereas 18,589 (36.98%, weighted N = 2,786,879) were aggregated as other nurses for our analysis. The weighted estimates of the demographic characteristics of emergency nurses and other nurses are presented in Table 2. The mean age of emergency nurses was 41.60 years, whereas the mean age for other nurses was older at 46.8 years. Similarly, emergency nurses had less work experience (11.7 years), on average, compared with their counterparts (16.9 years). A greater proportion of other nurses (91%), compared with emergency nurses (77.8%), identified as female. Participants identified predominantly as white non-Hispanic (71.1%-72.4%) and more than half held a bachelor's degree as their highest degree attained (52.7%-54.5%). A larger proportion of emergency nurses worked full time (84.5%) than other nurses (79.3%). Furthermore, more emergency nurses held other nursing positions (15.6% vs 9.9%) in addition to their primary nursing employment and were enrolled (20.1% vs 12.2%) in a nursing degree or certificate program to further their education. Almost half of our sample reported an annual household income of greater than $100,000 United States dollar (45.0%-49.4%) (Table 2).

REASONS FOR TURNOVER OR NOT CURRENTLY WORKING

Table 3 depicts the cross-tabulation results for the weighted estimated proportion of emergency nurses compared with nonemergency nurses, who endorsed each of the 22 reasons for turnover or no longer working in nursing. Although not significantly different, almost 11% (95% CI 8.3-13.6) of emergency nurses endorsed burnout as a reason for turnover or not currently working compared with 8.5% other nurses (8.5%, 95% CI 7.9-9.1). There were 7 reasons for job

TABLE 1
Items and respective responses extracted for data analysis

Variable	NSSRN item	Responses selected
Emergency nurse	B16. "For the primary nursing position you held on December 31, 2017, in what level or type of work did you spend most of your time?"	Emergency vs (all other categories)
	H8. "Which of the following best describes the employment setting of the primary nursing position you held on December 31, 2016?"	Emergency department vs (all other categories)
	B13. "Which of one of the following best describes the employment setting of the primary nursing position you held on December 31, 2017?"	Emergency department vs (all other categories)
Turnover or not working	B1. "On December 31, 2017, were you employed or self-employed in nursing?"	No
	B28. "Have you left the primary nursing position you held on December 31, 2017?"	Yes
	H5. "How would you describe the primary nursing position you held on December 31, 2016?"	Different employer as primary nursing position on December 31, 2017 or Different position and same employer as primary nursing position on December 31, 2017
Reasons for turnover or not working	C1. "Which of the following reasons contributed to your decision to leave the primary care nursing position you held on December 31, 2017?"	23 response options, including an option for "Burnout"
	G6. "What are the primary reasons you were not working in a nursing position for pay on December 31, 2017?"	
	H7. "What were the primary reason(s) for your employment change?"	

NSSRN, National Sample Survey of Registered Nurses.

turnover that were endorsed by emergency nurses and significantly higher than nonemergency nurses: insufficient staffing (11.1%, 95% CI 8.6-14.2, $P = .01$); physical demands (5.1%, 95% CI 3.4-7.6, $P = .44$); patient population (4.3%, 95% CI 2.9-6.3, $P < .001$); better pay elsewhere (11.5%, 95% CI 9-14.7, $P < .001$); career advancement/promotion (9.6%, 95% CI 7.0-13.2, $P = .01$); length of commute (5.1%, 95% CI 3.4-7.5, $P = .01$); and relocation (5%, 95% CI 3.6-7.0, $P = .01$) (Table 3).

Table 4 depicts the logistic regression results with burnout as the dependent variable. Of the nurses who endorsed burnout, we tested the associations between burnout and the other endorsed factors for job turnover. First, the results depict associations with burnout among both the emergency nurses category and each of the other reasons for turnover or not currently working in separate models before adjusting for demographics. Factors associated with increased odds of burnout, controlling for emergency nursing status, include insufficient staffing, lack of

TABLE 2
Characteristics of emergency nurses compared with other nurses

Characteristic	Emergency nurses (*n* = 217,706) %	Other nurses (*n* = 2,786,879) %	F(t)	*P* value
Sex			66.91	< .0001
Male	22.2	9.1		
Female	77.8	91.0		
Age, mean	41.6	46.8	(11.8)	< .001
Race and ethnicity			1.7	.13
Hispanic	13.4	10.8		
White non-Hispanic	72.4	71.7		
Black non-Hispanic	5.5	8.2		
Asian non-Hispanic	0.4	5.7		
American Indian	0.4	0.3		
Pacific Islander	1.4	0.6		
Other	0.9	0.9		
Multiple	2.0	1.8		
Marital status			4.5	.01
Married	66.3	70.4		
Widowed	14.6	15.8		
Never married	19.1	13.8		
Highest degree in nursing			3.3	.02
Diploma	3.0	6.4		
Associates	35.8	33.6		
Bachelors	54.5	52.7		
Masters	6.7	6.9		
PhD/DNP	0.1	0.3		
Turnover or not working	32.4	28.7	3.1	.08
Years in nursing,* mean	11.7	16.9	(12.1)	< .001
Full-time or part-time work			9.1	.01
Full-time	84.5	79.3		
Part-time	15.5	20.7		
Typical hours worked per wk, mean	37.6	37.3	(0.5)	.59
Household annual income USD			1.5	.19
≤25,000	0.5	0.9		
25,001-35,000	0.3	1.0		
35,001-50,000	3.9	0.5		
50,001-75,000	18.6	20.0		
75,001-100,000	24.7	24.2		
100,001-150,000	28.9	30.0		
150,001-200,000	15.3	12.0		
>200,000	0.8	7.4		
Enrolled in degree or certificate			14.6	< .001

continued

TABLE 2
Continued

Characteristic	Emergency nurses (n = 217,706) %	Other nurses (n = 2,786,879) %	F(t)	*P* value
Yes in nursing	20.1	12.2		
Yes in non-nursing field	1.7	0.8		
Remained in job but considered leaving in past year			0.27	.61
Yes	89.9	91.3		
Employed by temporary employment service			0.6	.53
Primary	3.3	2.6		
Secondary	1.4	1.1		
Any other nursing positions			21.9	< .001
Yes	15.6	9.9		

Note: Age truncated at 78.
CI, confidence interval; USD, United States dollar.
* Years in nursing variable truncated at 50.

good management, patient population, physical demands, and stressful work environment. Factors associated with decreased odds of burnout included better pay elsewhere, career advancement/promotion, disability/illness, family caregiving, laid off, relocation, educational program, spouse employment opportunities, sign-on bonus, and other (unspecified). No association was observed in these unadjusted models for career change, inability to practice to the full extent, interpersonal differences, lack of advancement opportunity, lack of collaboration/communication, length of commute, or scheduling.

In the models adjusting for age, race, sex, highest degree, and years since first nursing license, being an emergency nurse was no longer associated with burnout as a reason for turnover or not currently working when controlling for any of the other reasons for leaving/not working tested. All of the 22 other reasons tested were associated with burnout, and the strength of association increased substantially (eg, from odds ratio of 1.77-43.96 for stressful work environment). In addition to the data shown in Table 4, increasing age was significantly associated with decreased odds of burnout in all adjusted models. Increased years since nursing license was significantly associated with decreased odds of burnout in all adjusted models except those for better pay, insufficient staffing, good management, and sign-on bonus. Similarly, compared with the referent of a diploma degree, a highest degree as an associate, bachelor, or master's degree was associated with decreased odds of burnout. Doctoral education was not associated in any of the models. Being female was associated with decreased odds of burnout in the adjusted models when also controlling for insufficient staffing, scheduling, and stressful work environment. Race was not associated with burnout in our models (Table 3).

Discussion

This study aimed to (1) explore reasons for job turnover among a nationally representative sample of emergency nurses, (2) compare these reasons with the reasons of other RNs, and (3) analyze factors associated with burnout as a reason for job turnover or not currently working in nursing (limited by those that endorsed burnout as a reason for turnover). Our study contributes to the important growing body of evidence exploring burnout and emergency nurse turnover in the United States. In this nationally representative sample, 10.6% of all emergency nurses reported burnout before the pandemic as a reason they had left a job or were no longer working over a period of less than 2 years. This represents an estimated 23,000 RNs. Now, more than 2 years into the COVID-19 pandemic, these numbers have likely increased.[20] Characteristics of the emergency nursing subsample differed from other nurses in terms of age, years since nursing license, educational attainment, and gender. These demographic factors were also associated

TABLE 3
Differences in reasons for job turnover or currently not working in nursing between emergency nurses and other nurses

Reason for job turnover	Emergency nurses (n = 217,706)		Other nurses (n = 2,786,879)		Group difference	
	%	95% CI	%	95% CI	F	*P* value
Insufficient staffing	11.1	(8.6-14.2)	7.9	(7.3-8.5)	6.7	.01
Stressful work environment	10.2	(8.1-12.8)	9.5	(9.0-10.1)	0.3	.56
Lack of good management	10.7	(8.5-13.4)	9	(8.4-9.7)	2.1	.15
Physical demands	5.1	(3.4-7.6)	3.4	(3.0-3.8)	4.2	.04
Scheduling	6.6	(4.9-8.7)	5.6	(5.1-6.1)	1.2	.27
Lack of collaboration/communication	4	(2.7-5.9)	3.5	(3.1-3.9)	0.5	.48
Patient population	4.3	(2.9-6.3)	1.8	(1.5-2.2)	13.6	< .001
Interpersonal differences	4.6	(3.2-6.6)	3.8	(3.4-4.2)	1.2	.28
Inability to practice to full extent	2.6	(1.6-4.3)	2.4	(2.1-2.8)	0.1	.74
Any burnout	10.6	(8.3-13.6)	8.5	(7.9-9.1)	3.1	.08
Better pay elsewhere	11.5	(9-14.7)	7.5	(6.9-8.1)	11.4	< .001
Career advancement/promotion	9.6	(7.0-13.2)	6.1	(5.5-6.7)	7.6	.01
Lack of advancement opportunity	4.4	(2.9-6.6)	4.0	(3.6-4.5)	0.2	.69
Career change	5.4	(3.6-8)	3.8	(3.4-4.2)	3.0	.09
Educational program	1.3	(0.5-3.3)	1.1	(0.9-1.4)	0.11	.74
Retirement	1.2	(0.1-2.5)	1.9	(1.7-2.1)	1.6	.21
Laid off	0.9	(0.4-2.2)	1.5	(1.3-1.8)	1.5	.23
Length of commute	5.1	(3.4-7.5)	0.3	(2.5-3.3)	6.6	.01
Relocation	5	(3.6-7.0)	3.1	(2.7-3.5)	7.9	.01
Family caregiving	2.1	(1.2-3.6)	2.9	(2.5-3.3)	1.4	.23
Spouse employment opportunities	0.9	(0.5-1.7)	0.6	(0.5-0.8)	1.4	.24
Disability/illness	0.6	(0.2-1.5)	1.2	(1-1.4)	2.1	.15

CI, confidence interval.

with differences in burnout as a reason for turnover or not working in nursing. Thus, levels of burnout in emergency nursing may be indirectly explained by demographic differences of emergency nurses from RN working in other settings rather than explained solely by working in the specialty alone.

Our results are consistent with past work finding job absenteeism and turnover associated with nursing reports of burnout.[14,21] RNs experience high rates of burnout in general, with up to one-third of participants reporting burnout in previous smaller studies.[9] Existing studies that sample the current workforce are limited by a healthy worker effect or survivor bias in burnout estimates and fail to capture respondents who already have left their position. Our results contribute uniquely to the body of literature by including those who left a job or are no longer working in the emergency nursing workforce analysis at the national level, and reveal a national crisis in emergency nursing retention. Given the essential nature of the emergency nursing occupation and high proportion of turnover owing to burnout in the specialty, this study provides a timely and essential contribution to knowledge as a needs assessment for interdisciplinary preventative intervention to consider as we move beyond the COVID-19 pandemic.

In this present study, we investigated factors associated with both burnout and job turnover, using burnout as the primary dependent variable (Table 4). Past research demonstrates that burnout is associated to a variety of patient, organizational, and provider outcomes. For example, burnout is significantly associated with increased medical errors, poor perceived patient communication and satisfaction.[8] Furthermore, there is evolving evidence that burnout yields suboptimal health risk in clinicians, including poor psychological outcomes (eg, depression, substance abuse, and suicidality risk).[22,23] Past studies have also found a mediating role between burnout and job turnover, hence our present

TABLE 4
Reasons for turnover or not currently working associated with burnout

Reason for job turnover	Unadjusted						Adjusted*		
	Emergency nurses (vs other nurses)								
	OR	95% CI	*P* value	OR	95% CI	*P*	OR	95% CI	*P* value
Better pay elsewhere	0.12	(0.09-0.16)	< .001	0.72	(0.60-0.85)	< .001	7.45	(6.02-9.24)	< .001
Career advancement/promotion	0.13	(0.09-0.17)	< .001	0.48	(0.39-0.60)	< .001	4.36	(3.39-5.61)	< .001
Career change	0.12	(0.09-0.16)	< .001	–	–	–	8.34	(6.30-11.05)	< .001
Disability/illness	0.12	(0.09-0.16)	< .001	0.30	(0.20-0.46)	< .001	4.20	(2.61-6.75)	< .001
Family caregiving	0.12	(0.09-0.16)	< .001	0.44	(0.31-0.64)	< .001	4.23	(2.90-6.15)	< .001
Inability to practice to full extent	0.12	(0.09-0.16)	< .001	–	–	–	9.32	(6.50-13.36)	< .001
Insufficient staffing	0.11	(0.08-0.14)	< .001	1.94	(1.60-2.36)	< .001	36.30	(28.42-46.26)	< .001
Interpersonal differences	0.12	(0.09-0.16)	< .001	–	–	–	13.21	(10.54-16.55)	< .001
Lack of advancement opportunity	0.12	(0.09-0.16)	< .001	–	–	–	10.67	(8.35-13.63)	< .001
Lack of collaboration/communication	0.12	(0.09-0.16)	< .001	–	–	–	12.43	(9.46-16.34)	< .001
Lack of good management	0.12	(0.09-0.15)	< .001	1.3	(1.07-1.46)	.006	24.11	(19.62-29.63)	< .001
Laid off	0.12	(0.09-0.16)	< .001	0.20	(0.13-0.32)	< .001	2.43	(1.45-4.07)	.001
Length of commute	0.12	(0.09-0.16)	< .001	–	–	–	6.88	(4.91-9.64)	< .001
Patient population	0.11	(0.09-0.15)	< .001	2.47	(1.64-3.72)	< .001	16.74	(11.13-25.18)	< .001
Physical demands	0.11	(0.08-0.14)	< .001	2.70	(2.05-3.55)	< .001	32.79	(25.15-42.74)	< .001
Relocation	0.12	(0.09-0.16)	< .001	0.27	(0.19-0.39)	< .001	1.99	(1.40-2.84)	< .001
Scheduling	0.12	(0.09-0.16)	< .001	–	–	–	12.90	(10.33-16.10)	< .001
Educational program	0.12	(0.09-0.16)	< .001	0.41	(0.23-0.73)	.003	2.84	(1.60-5.05)	< .001
Spouse employment opportunities	0.12	(0.09-0.16)	< .001	0.34	(0.20-0.59)	< .001	2.32	(1.30-4.12)	.01
Stressful work environment	0.11	(0.08-0.15)	< .001	1.77	(1.51-2.07)	< .001	43.96	(35.74-54.07)	< .001
Sign-on bonus	–	–	–	0.04	(0.04-0.05)	< .001	.47	(0.31-0.71)	< .001
Other	0.12	(0.09-0.16)	< .001	0.30	(0.21-0.42)	< .001	2.92	(2.02-4.23)	< .001

CI, confidence interval; OR, odds ratio.
Columns 1 and 2 are estimates from the same model. Column 3 depicts results from the full adjusted model.
* Adjusted for age, race, sex, highest degree, and years of experience. All columns include emergency nursing status as independent variable.

focus on burnout.[24] Despite our results depicting no differences in burnout or turnover between emergency nurses and other RNs, we found significant difference in reasons for job turnover between groups. This finding suggests that factors contributing to burnout and turnover may vary by nursing discipline or setting. This result is aligned with emerging evidence that has depicted significant differences in unit culture.[25] It also supports the idea that there is no "one-size-fits-all" approach to reducing burnout.

It is also important to acknowledge that other factors outside of burnout may independently contribute to job turnover. This present study identified additional factors contributing to job turnover such as insufficient staffing, lack of good management, patient population, physical demands, and stressful work environment. This result is consistent with existing evidence about the substantial influence that nurse work environment factors have on nursing and patient outcomes. For example, safe staffing ratios have increasingly been at the forefront of recent policy discussions with mandated ratios disputed. Consistent with past evidence, insufficient staffing has been linked to job turnover, failure to rescue, and missed and delayed patient care.[26] Cross-sectional and longitudinal observational studies have demonstrated consistent associations between increased nurse-to-patient ratios and higher education and training of nurses, with improved morbidity and mortality for hospital inpatients.[27] In this current study, stressful work environments, scheduling, and insufficient staffing appear to be associated with a gender difference between male and female nurses' experience with burnout as a reason for not working or turnover. Although staffing ratios have been found to significantly affect patient safety risk, length of stay, and quality of care,[28] more research is needed to isolate which setting-specific (eg, emergency department, medical/surgical unit) ratios optimize patient care outcomes and mitigate burnout and subsequent job turnover. Furthermore, it remains unclear how unmet peri- and postpandemic staffing needs precipitated higher risk of burnout and/or job turnover. Appropriate emergency nurse staffing may rely on having adequate overall budgetary and human resources in a hired pool of qualified full-time equivalents, ensuring sufficient numbers and skills mix of nurses for shift-to-shift patient care, and maximizing efficient work processes to enhance productivity.[29] The Emergency Nurses Association has developed staffing guidelines, and further health services research is needed to ascertain the effectiveness and efficacy of implementing these guidelines, the national proportion of emergency departments that meet or exceed recommended benchmark staffing levels, and the impact on both patient outcomes and emergency nurse burnout and turnover.[26,29] Physical demands were also found to be endorsed by emergency nurses significantly more than nonemergency nurses as a reason for job turnover. However, it remains unclear what causes increased physical demand and whether physical demand is related to a particular patient population. More research that investigates the physical aspects of job performance is needed to inform policies and practice that promote a healthy and safe work environment for emergency nurses.

Evidence on promising interventions to reduce burnout and job turnover includes enhancing the quality of work environments (including sufficient resources/staffing among other factors), implementing culture change, applying leadership strategies, and supporting individual coping.[30] Although clinician self-care practices can mitigate some risk factors for burnout, there is little evidence supporting individual-level intervention alone, without also addressing multilevel workload and work environments in the emergency setting.[31-33] The National Academy of Medicine's (NAM) *Future of Nursing 2020-2030* report highlights the importance and necessity of addressing policies, structures, and systems that create threats in the workplace that contribute to burnout and poor mental/physical health among the nursing workforce.[34] NAM recognizes that the health and well-being of nurses directly affect the safety, quality, and cost of the care they provide. Consistent with recommendations in past studies, future work aimed at the precursors of nursing burnout as modifiable targets of intervention to reduce turnover offer the promise of improving individual well-being and career longevity, as well as patient care outcomes and enhancing the financial viability of health care organizations.[30,35-38] Emergency specialty-specific applications of the guidance provided in the framework for clinician well-being, also published by NAM, are needed, parallel to the collaborative models produced jointly by intensive care clinician specialty organizations.[39,40]

Our study also indicates increasing age and years since nursing license appear to have a protective association with burnout. These findings warrant further exploration, but it may be reasonable to proactively tailor interventions to younger nursing cohorts and prioritize early career nurses. One cross-sectional study examined formal orientation programs on burnout and emergency nurses' intent to leave.[14] Authors found that participation in a formal orientation program may enhance a sense of personal accomplishment, decreasing intent to leave.

Limitations

The results of our study must be interpreted while considering several limitations. As a cross-sectional survey, the results represent factors associated with, but not causative for, turnover. In addition, sampling bias or random chance may have affected the data observed, and therefore the evidence presented in this paper needs to be interpreted as such. Owing to limitations of the data set, we were unable to cluster the sample by types of emergency departments (eg, freestanding emergency department vs hospital-based emergency department). Burnout in this study was measured as an endorsement to one response option among a list of up to 23 factors associated with intention to leave or already having left a nursing job, and individual participants may have conceptualized burnout differently. The survey did not ask specifically what factors contributed to burnout, and our analysis about associations between burnout and factors for job turnover were limited by a cluster analysis. Finally, owing to the smaller sample size of emergency nurses than the overall workforce, wide CIs were observed in weighted estimates.

Implications for Emergency Nursing

This paper aimed to identify factors before COVID-19 that precipitated burnout risk and job turnover in emergency nurses. This study contributes new evidence about emergency nurses after they have left their primary position and provides key insight into what drives nursing workforce turnover. Although there were no significant differences in burnout between emergency nurses and other nurses, we did find significant difference of factors that precipitate job turnover when comparing groups. Factors such as staffing, physical job demands, and better pay elsewhere were significantly associated with burnout and turnover. Age and increased experience appeared to be protective of burnout. Organizations should invest efforts in new graduate nurse retention interventions and continue to test the impact of unit-specific staffing ratios on burnout, among other organizational outcomes.

Conclusion

This study quantified burnout endorsement and reasons for national nursing estimates of job turnover or no longer working, in both emergency and nonemergency nurses before the pandemic at the national level. There was no significant difference in burnout when comparing emergency nurses with other nurses. However, we identified that insufficient staffing, physical demands, patient population, better pay elsewhere, career advancement, length of commute, and relocation were significantly endorsed more in emergency nurses than all other nurses for job turnover reasons. Our findings suggest the need to address job turnover factors at the unit-specific level given that the needs and preferences of nurses across settings may vary and subsequently yield job turnover differently.

Data, Code, and Research Materials Availability

Data are de-identified and publicly available at https://data.hrsa.gov/topics/health-workforce/nursing-workforce-survey-data. Analytic code is available upon reasonable request.

Author Disclosures

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Evidence-Based Approaches to Mitigate Workplace Violence From Patients and Visitors in Emergency Departments: A Rapid Review

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Abstract

Introduction: This is a rapid review of the published evidence on the effectiveness of interventions for mitigating workplace violence against staff in hospital emergency departments. Focused on the specific needs of an urban emergency department in Canada, this project sought to address the question, "What interventions have evidence regarding effectiveness for addressing workplace patient/visitor violence toward staff in the emergency department?"

Methods: Following Cochrane Rapid Review methods, 5 electronic databases (MEDLINE via PubMed, Cochrane CENTRAL, Embase, PsycINFO, CINAHL) and Google Scholar were searched in April 2022 for intervention studies to reduce or mitigate workplace violence against staff in hospital emergency departments. Critical appraisal was conducted using Joanna Briggs Institute tools. Key study findings were synthesized narratively.

Results: Twenty-four studies (21 individual studies, 3 reviews) were included in this rapid review. A variety of strategies for reducing and mitigating workplace violence were identified and categorized as single or multicomponent interventions. Although most studies reported positive outcomes on workplace violence, the articles offered limited descriptions of the interventions and/or lacked robust data to demonstrate effectiveness. Insights from across the studies offer knowledge users information to support the development of comprehensive strategies to reduce workplace violence.

Discussion: Despite a large body of literature on workplace violence, there is little guidance on effective strategies to mitigate workplace violence in emergency departments. Evidence suggests that multicomponent approaches targeting staff, patients/visitors, and the emergency department environment are essential to addressing and mitigating workplace violence. More research is needed that provides robust evidence on effective violence prevention interventions.

Key words: Workplace violence; Aggression; Emergency medical services; Health personnel

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Introduction

The hospital emergency department is a busy and often unpredictable setting, and the capacity for delivering health care can be strained by high demand and limited resources.[1-4] This strain became more pronounced during the coronavirus disease 2019 pandemic.[5] Although ED staff are highly specialized and dedicated to delivering care in this demanding environment, they may go through consequences from experiencing workplace violence (WPV) from patients and visitors.[6-8] WPV refers to abuse, intimidation, or assault experienced at work and includes threatening behavior, verbal abuse, and physical attacks.[9,10] WPV from patients and visitors has become a persistent and common challenge in emergency departments worldwide, with an estimate of 1 in 4 health care providers experiencing violence from patients or visitors each year.[11] However, accurately measuring WPV in health care settings is challenging, given that incidents may go unreported or unrecognized, because staff presume these events are inherent in the work they do.[12,13]

The variety of interventions designed to mitigate WPV from patients and visitors in health care include patient screening questionnaires, staff education and training, environmental modifications, and reporting systems.[14-16] Given the constraints of limited resources and the high demands on the ED setting, health care leaders looking to address WPV want to ensure the measures they implement will be effective.

OBJECTIVES AND RESEARCH QUESTION

This review was initiated through a partnership between practice and academia. The main objective was to provide evidence-informed recommendations for reducing WPV in the emergency department, in collaboration with an organizational leader in a large, Canadian, urban hospital. This rapid review was guided by the specific needs of an organizational leader at the urban emergency department, who was the knowledge user on our research team. The knowledge user's experiences and needs guided the project to ensure the review findings were directly relevant to their emergency department.

The rapid review addressed the research question: What are the interventions that have evidence regarding effectiveness for addressing workplace patient/visitor violence toward ED staff in the emergency department? Although other sources of WPV exist, such as bullying between workers, this review focused on client/customer violence committed against emergency health care workers.[17]

Methods

This review followed recommendations from the Cochrane Rapid Review Methods Group for conducting rapid reviews.[18] Rapid reviews are defined as being driven by "the need for timely evidence for decision-making purposes."[18(p15)] This form of knowledge synthesis streamlines the steps within the systematic review process to accelerate completion, overcome resource or time-based constraints, and meet the needs of the knowledge user.[18] Given our objectives and the 6-month study timeline, a rapid review was the most appropriate knowledge synthesis approach. This review used Preferred Reporting Items for Systematic Reviews and Meta-Analyses reporting guidelines.[19]

RESEARCH TEAM AND APPROACH

The research team consisted of 4 academic researchers (C.R., M.M., S.P., C.H.), 2 patient partners (P.N.S., E.P.J.), an academic librarian (G.M.), and the knowledge user (O.S.). Two academic researchers took primary responsibility for the project (C.R., M.M.), with oversight from the third (C.H.), and the fourth was a content expert consulted at various stages of the review (S.P.). Patient partners brought their personal experiences as patients and caregivers and were actively and meaningfully engaged as research collaborators. Patient partners were integral to the process, each providing a unique perspective based on their personal and professional experiences. They helped to maintain an emphasis on the experiences of patients and families in the ED setting. The academic librarian provided invaluable guidance in developing and refining the search strategy to execute a precise and comprehensive search. The knowledge user shared their experience and needs as an organizational leader in the emergency department. Given the knowledge user's limited time, they were engaged in the rapid review process both synchronously and asynchronously, with regular meetings as well as content reviews and discussions by email. All team members were involved in regular meetings throughout the review process, providing input at each step of the review.

At the outset of the rapid review, the knowledge user shared details about the context of their emergency department, experiences of WPV, and current mitigation strategies so the review team could learn more about the problem of WPV in their emergency department. We also reviewed literature they had previously consulted regarding WPV and discussed the strengths and limitations of various interventions in the context of their emergency department. The review question was set and refined based on ongoing conversations among the review team members. Once the

review question was set, the team defined the problem, interventions, and outcomes of interest and established the study eligibility criteria.

INCLUSION AND EXCLUSION CRITERIA

Studies were included if they described an intervention that was implemented and evaluated for mitigating WPV from patients and visitors in the emergency department. The intervention could be any change, strategy, program, policy, or tool intended to prevent, mitigate, reduce, or de-escalate violence. The study settings needed to provide emergent care within a hospital, including medical and psychiatric emergency departments. Most importantly, studies needed to include outcome data on the effectiveness of the WPV intervention, such as the rate of violent incidents, staff perceptions related to violence, or frequency of restraint use. All types of methodologies and publications were considered, including quality improvement projects and dissertations, provided they met the stated inclusion criteria. Studies were excluded if they focused on other types of violence or abuse (ie, domestic violence) or if they took place in a setting not applicable to the knowledge user's context (ie, pediatric emergency department).

SEARCH STRATEGY

Guided by the Cochrane Rapid Reviews Methods Group recommendations, we searched MEDLINE (via PubMed), Cochrane CENTRAL, and Embase databases.[18] Searches were also conducted in PsycINFO, CINAHL, and Google Scholar. Search terms were identified through literature review and discussions with the knowledge user, content expert, and patient partners, and through testing within the databases. The search strategy combined key words and subject headings related to 5 key concepts within the review question: (1) WPV (eg, "aggression"), (2) intervention/outcome (eg, "de-escalation," "prevention"), (3) emergency department (eg, "emergency medical services"), (4) patient/visitor (eg, "patient," "patient visitor"), and (5) emergency department staff (eg, "health personnel"). The initial search was developed in MEDLINE (see Supplementary Material) and adapted for the other databases by adjusting for controlled vocabulary and subject headings. The database searches were conducted on April 22, 2022, and limited to articles published since January 1, 2012, and in the English language. The first 100 results from the Google Scholar search (April 24, 2022) were extracted.

STUDY SELECTION

All records identified through the database searches were imported into Covidence,[20] a web-based systematic review software, where we conducted article screening and data extraction. Duplicates were removed before screening. Titles and abstracts were screened independently for relevant studies by 2 research team members (C.R., M.M.). At the beginning of this stage, a pilot screening of 40 articles was done to calibrate the process. Disagreements were resolved by discussion. Subsequently, the same 2 team members (C.R., M.M.) independently screened the full text of articles while abiding by the study eligibility criteria and resolving disagreements through discussions. The search and screening process is depicted in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses diagram in Figure 1.[19]

DATA COLLECTION

A standardized data extraction form was created within Covidence.[20] The extracted information for the individual studies included first author, publication year, country, study design, study setting and population, sample size, type of intervention and description, outcome(s) and measurement details, and findings. In addition to this information, data extraction from the review articles included details about the search strategy such as date of search, number of databases, whether gray literature was included, and whether the authors conducted a critical appraisal. For both individual and review articles, we noted any PROGRESS-Plus characteristics that stratify health outcomes or may be associated with equity.[21,22] Two team members (C.R., M.M.) conducted the data extraction; each extracted data for half of the articles and then reviewed and verified the extracted data of the other 12 articles.

CRITICAL APPRAISAL

The search yielded a heterogenous collection of studies that used varying research methods. No single quality assessment tool was appropriate for appraising all the different included studies. Given that it was important to ensure we had a consistent, systematic approach to critical appraisal, individual studies were appraised using a modified version of the Joanna Briggs Institute checklist for quasi-experimental studies.[23] This checklist has 9 items with 4 response options: yes, no, unclear, and not applicable. We removed 1 item regarding whether outcomes were measured in a reliable way (eg, intra/inter-rater reliability) because most of the studies did not report about this aspect of reliability. Additionally, for

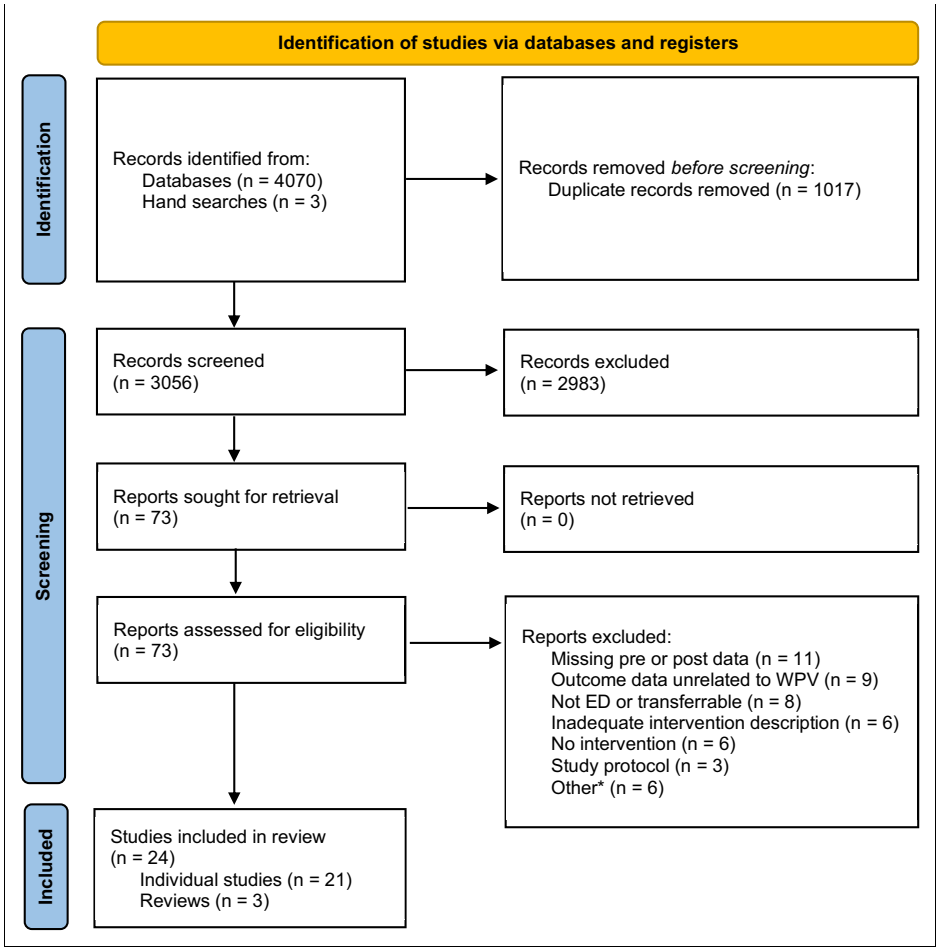

FIGURE 1

PRISMA diagram. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses. ED, emergency department.

the question regarding pre- and post-data, we added weighted scoring to reflect the robustness of data collection over time. The 3 review studies were critically appraised using the Joanna Briggs Institute checklist for systematic reviews.[23] Numeric scores from the checklists were translated into 3 critical appraisal categories: low, moderate, and high.

Results

We identified 4070 publications through database searches and 3 additional articles from references of included studies. After removing duplicates, 3056 titles and abstracts were screened, resulting in 73 full-text articles being subsequently assessed for eligibility. Twenty-four studies (21 individual studies, 3 reviews) were included in the rapid review (see Figure 1). A descriptive summary of study characteristics is presented below, followed by a narrative synthesis of key study findings.

STUDY CHARACTERISTICS

Individual Studies

The 21 individual studies were published between 2013 and 2022, and most (n = 18) were published within the last 5 years.[24-41] Sample sizes ranged greatly (n = 30-76,246) depending on the methods, target population, and outcome of interest (see Table 1).

Although many of the studies were conducted in the United States,[25,26,28,34,35,40,42-44] 12 were set outside of the United States, including in Canada,[30] Pakistan,[24,33,37] Iran,[31,32,38] Taiwan,[27,41] Australia,[36] Israel,[29] and

TABLE 1
Characteristics of the included individual studies

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Bailey,[25] USA (dissertation)	Determine whether or to what degree the implementation of Lippincott's Violent and Assaultive Behavior Management Clinical Guideline impacts the use of patient restraints in response to WPV	Quasi-experimental (Pre-post)	Patients (3023)	Policies and Procedures	Lippincott's Violent and Assaultive Behavior Management Clinical Guideline was used to train nurses on recognizing and de-escalating assaultive behaviors to diffuse situations before violence occurred.	Significant decrease in restraint use	Moderate
Chang et al,[27] Taiwan	Evaluate the effects of a novel integrated WPV and Management Training Program on patient and visitor violence	Randomized controlled trial	Nurses (75)	Education	12-session course covered 12 components. Sessions were 1 hour and done by video conference. Teaching methods included role-plays, scenarios based on actual WPV, and communication exercises.	Nurses had a significant increase in confidence and in managing violence and significant increase in coping self-efficacy with violent situations.	High

continued

TABLE 1
Continued

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Shaikh et al,[37] Pakistan	Determine the effect of low-cost interventions to reduce violent events in 2 tertiary-care emergency departments	Quasi-experimental (Pre-post)	Violent events Site 1 (481) Site 2 (135)	Multicomponent	2-hour education for health care workers comprised 4 modules delivered through participatory teaching methods. Awareness-raising material for patients/visitors included pamphlets and posters on rights and responsibilities of patients, their companions, and health care workers; posters on zero tolerance for violence; and educational videos on trusting and following advice of health care workers. Hospital-specific policy-related interventions included how to respond to violence events, visitor ID cards, and staff training on sharing information about waiting times and progress of patients.	Site 1: physical violence significantly decreased No significant change in verbal abuse Site 2: verbal abuse and physical violence significantly decreased	Moderate

continued

TABLE 1
Continued

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Campbell et al,[26] USA	Design, implement, and evaluate feasibility of an ED-specific tool to help nurses proactively identify and intervene with patients' escalating behaviors, capture better documentation of aggressive/violent patient events, and reduce restraint usage	Quality improvement	Patient visits (48,492) Nurses (30)	Screening/assessment	The Emergent Documentation Aggression Rating Tool classified specific behavior based on level of aggression/violence into 5 levels. All patients were to be assessed with the Emergent Documentation Aggression Rating Tool at least on admission and discharge.	Decrease in restraint use (not significant)	Moderate
Choe et al,[28] USA	Evaluate the impact of a multidisciplinary team of medical and nonmedical staff members in the rapid evaluation, intervention, and safe disposition planning of acutely agitated patients presenting to the emergency department	Quality Improvement	Patients (553)	Response team	A Code Staff Assist workflow for agitated patients. A Code Staff Assist brought a multidisciplinary team of medical and nonmedical staff members to expeditiously assess the patient, attempt verbal de-escalation, and administer treatment if necessary.	Reduced incidence of attempted assaults on staff (Mean monthly assaults)	Low

continued

TABLE 1
Continued

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Khan et al,[33] Pakistan	Evaluate the effectiveness of a half-day training on de-escalation of violence against health care personnel regarding prevention and management of violence incidents	Quasi-experimental (Comparative cross-sectional)	Health care personnel (200)	Education	Half-day training on de-escalation of violence for health care personnel comprised 5 modules. Training employed varied teaching methodologies.	No significant difference between groups in incidence of WPV Intervention group had significantly greater confidence in coping with patient aggression. Fear of WPV significantly greater in intervention group	Moderate
Legambi et al,[34] USA	Improve the early detection and management of patient agitation, to reduce use of restraints in the emergency department, and to determine the usability of Behavioural Activity Rating Scale	Quality improvement	Behavioural Health visits (1295)	Screening/ assessment	Behavioral Activity Rating Scale (BARS) – a 7-item tool for detecting changes in behavioral activity in behavioral health patients	No significant difference in restraint use	Moderate

continued

TABLE 1
Continued

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Okundolor et al,[35] USA	Develop, implement, and evaluate a multifaceted approach to reducing the number of physical assaults on staff	Quality improvement	Patients (230) Psychiatric emergency nurses (42)	Multicomponent	Increasing behavioral response team drills Shift briefing huddle to promote team communication Screening for patients at risk of violence Posting signage to alert about high-risk patients Mitigating countermeasure Postassault debriefing, peer and leadership postassault support	Number of physical assaults per month decreased Nurses-perceived self-efficacy increased after team drills	Moderate
Senz et al,[36] Australia	Evaluate the impact of a novel approach to recognition and response to occupational violence and aggression (OVA) on staff knowledge, perceptions, and confidence regarding OVA in emergency department and the rate of security events related to OVA	Quasi-experimental (Pre-post)	Security responses(1083) Nurses Survey 1 (76) Survey 2 (83)	Screening/ assessment	Behaviors of concern chart includes (1) Brøset violence checklist, to predict potential for violence and (2) A score-based notification and response matrix that outlines suggested multidisciplinary escalation strategies and interventions.	Significant decrease in unplanned security responses Significant increase in planned security responses No change in nursing confidence to prevent violence or feelings of safety	Moderate

continued

TABLE 1
Continued

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Efrat-Treister et al,[29] Israel	Examine the moderating role of information in the relationship between time waited and aggressive tendencies among health care receivers (patients and escorts) waiting to receive service in a hospital emergency department	Quasi-experimental (Pre-post)	Health care receivers (328) 1 year post (99)	Environment (signage, general information, etc)	Health care receivers were provided with information about organizational procedures, specifically wait durations, through large signs and pamphlets.	Providing patients information about ED procedures and wait times likely to reduce aggression, up to the point that patients wait is not longer than expected, based on the information provided	Moderate
Sharifi et al,[38] Iran	Determine the effect of an education program, risk assessment checklist, and preventive protocol on violence against nurses at an emergency department	Quasi-experimental (Pre-post)	Nurses (37)	Multicomponent	4-hour workshop on using the risk assessment checklist and the preventive protocol for violence prone persons 6-item risk assessment checklist completed at admission and preventive protocol implemented according to score	Reported exposure to violence significantly decreased Severity of violence score significantly decreased	Moderate

continued

TABLE 1
Continued

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Touzet et al,[39] France	Assess the impact of a comprehensive prevention program aimed at preventing incivility and verbal abuse against health care professionals working in the ophthalmology emergency department of a university hospital	Quasi-experimental (Single-center prospective interrupted time-series)	ED admissions (22,107) Violent Acts (376)	Multicomponent	Computerized triage algorithm to prioritize patients. Signage to help patients navigate, messages providing patients with general information (ie, ED team and activity, waiting times) Mediator present to intervene when patients showed signs of impatience and in the case of conflict Video surveillance	Significantly decreased incidence of violence; biggest decrease occurred after computerized triage algorithm (first intervention)	Moderate
Wu et al,[41] Taiwan	Reveal the benefits of designing simulation training courses that can aid health care personnel in responding to ED violence	Quasi-experimental (Pre-post)	Nurses, physicians, security guards, and social workers (34)	Education	Situational Simulation Training for ED violence provided lectures on how to identify and approach WPV followed by experiential training with situational simulations.	Self-efficacy scores for post-tests were greater than pre-test. Response to WPV score for both post-tests were greater than pre-test.	Moderate

continued

TABLE 1
Continued

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Baig et al,[24] Pakistan	Assess the effectiveness of training in prevention, de-escalation, and management of violence in health care settings	Quasi-experimental (Control group)	Physicians, nurses, medical students (141)	Education	4-hour de-escalation training comprised 4 modules using varied teaching methodologies.	Confidence in coping with violence significantly higher in intervention group No difference in frequency of violence between groups	Moderate
Geoffrion et al,[30] Canada	Assess the impact of the Omega Program for the Management of Aggressive Behaviours training program on the use of seclusion and restraint	Quasi-experimental (Pre-post)	Seclusion and restraints (880)	Education	Omega training delivered by security peer trainers to employees (4 days), to reduce dangerous behaviors from patients toward self or others and focus on skills and intervention methods	Seclusion and restraint use possibly unaffected by intervention in the emergency department	Moderate

continued

TABLE 1
Continued

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Hemati-Esmaeili et al,[31] Iran	Plan a workplace violence prevention program to reduce the level of patients' and their families' violence against nurses	Participatory action research (Pre-post)	Nurses (49)	Multicomponent	3-day education for nurses on identifying, preventing, and managing instances of violence A new role, violence prevention nurse, with specific responsibilities for preventing and handling violent incidents Patients presented with written guidelines on reception and prioritization of patients Guiding policies on treating aggressive patients, educational posters and fliers with instructions on communication	Significant decrease in incidence of verbal abuse, mobbing/ bullying No significant decrease in physical violence Significant decrease in mean score of nurses' fear of violence	Moderate

continued

TABLE 1
Continued

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Kalbali et al,[32] Iran	Determine the effect of anger management training on controlling the perceived violence and aggression of nurses in emergency departments	Quasi-experimental (Control group)	Nurses (112)	Education	4-hour educational workshop on violence and aggressive behaviors and communication using varied teaching methodologies For 2 months after the workshop, nurses received a training note (textual, visual, or audio) every 3 days covering workshop contents.	Intervention group had significantly decreased physical and sexual violence; verbal abuse had no significant difference. Control group had no significant difference in physical or sexual violence; significant increase in verbal abuse.	Moderate
Winokur et al,[40] USA	Improve timeliness of care for the behavioral health population, reduce acts of aggression and use of restraints	Quality improvement	Nurses (125)	Policies and procedures	A standardized procedure allowed nurses to perform functions that would otherwise be considered the practice of medicine (ie, assessing patients for anxiety and agitation and selecting medication based on assessment scores).	Decreased restraint episodes and length of time in restraints Decreased average time to first medication Employee injuries unchanged Initial decrease in significant aggression or violence, slight increase in second year	Moderate

continued

TABLE 1
Continued

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Gillam,[42] USA	Evaluate the nonviolent crisis intervention training, its impact on reducing violent events in the emergency department, and the training investment	Quality improvement	ED visits (76,246) Emergency responses (111)	Education	8-hour nonviolent crisis intervention training program on skills for identifying and de-escalating crisis-related behaviors	Lower incidence of security team responses to violence after some delay, and effects of training seem to wane after 6 months.	Low
Gillespie et al,[43] USA	Test the effectiveness of a comprehensive program to reduce the incidence of assaults and physical threats against emergency providers by patients and visitors	Quasi-Experimental (Control group)	Direct patient care providers (209)	Multicomponent	Environmental changes, policies and procedures, and education and training (online and classroom)	Both intervention and control sites had a significant decrease in assaults and threats.	High

continued

TABLE 1
Continued

Reference, country	Study aim	Study design	Sample (sample size)*	Type of intervention	Intervention	Findings	Critical appraisal
Henderson and Colen-Himes,[44] USA	Describe how a hospital addressed WPV by designing a safer emergency department	Quasi-experimental (Pre-post)	ED staff (42)	Multicomponent	8-hour crisis management training on de-escalation and escape techniques Assessing/ identifying patients for risk of violence A violence management procedure was developed. Policy issuing complementary bus passes and cab vouchers implemented. All ED entrances restricted to card and code access by staff. Increased presence of security at entrance and patients/visitors enter through metal detectors.	Staff reported feeling safer after training	Low

ED, emergency department; HCP, health care provider; significant, statistical significance; WPV, workplace violence.

* Sample size conveys information about the number of study participants, ED visits/admissions, and/or WPV-related events.

France.[39] All studies were conducted in urban emergency departments, including general emergency departments,[24-29,31-34,36-44] psychiatric emergency departments,[30,35] and an ophthalmological emergency department.[39] Two studies had interventions that were set in emergency departments and other hospital units,[24,30] and 2 others focused on behavioral health patients within the emergency department.[34,40] Thirteen studies used quasi-experimental designs,[24,25,29,30,32,33,36-39,41,43,44] and 6 were conducted as quality improvement projects.[26,28,34,35,40,42] Additionally, there was 1 randomized control trial,[27] and 1 participatory action research project.[31] Only 5 studies included a control group.[24,27,29,33,43] The target population for the intervention(s) in 17 studies was ED staff,[24-28,30-36,38,40-43] with 9 of these studies focusing specifically on nurses.[25-27,31,32,34,36,38,40] Three studies targeted both patients and ED staff with their interventions,[37,39,44] and a single study focused directly on ED patients.[29]

Strategies for mitigating WPV varied in types and number of approaches used and the timing of the intervention in relation to the violent event. Seven studies implemented a multipronged approach,[31,35,37-39,43,44] and 14 used single component interventions.[24-30,32-34,36,40-42] In terms of the intervention timing in relation to a violent event, 13 studies implemented strategies aiming to reduce violence before it occurs, such as staff training and patient screening.[24,25,27,29,30,32,33,37,38,41-44] Two studies implemented interventions during violent events to de-escalate the situations,[26,28] and 6 studies had interventions directed before and during violent events.[31,34-36,39,40] Additionally, 2 studies included post-violence reviews/debriefings as part of their interventions.[31,35] Outcome data for the included studies were mostly collected from staff[24,27,31–33,38,43,44] or patient records.[25,26,28,30,34,39,40] A single study collected data from waiting ED patients and visitors through a survey.[29] Most used a single data source,[25-34,38-40,43,44] and a few used multiple sources.[24,35,36,41,42] Finally, although basic demographics such as age and gender were commonly reported, there was generally little information concerning characteristics that may pertain to inequity, as presented in the PROGRESS-Plus framework.[21,22]

Review Articles

The 3 review articles were published in 2016, 2017, and 2021. Two articles were systematic reviews,[16,45] and the third did not specify a review method.[46] The total number of articles reviewed ranged from 8[45] to 15,[16] and the search dates spanned from 1985 to 2021. None of the review articles included gray literature searches. Two of the reviews systematically assessed the quality of their included articles. One review[16] focused on evaluating preventive measures, the second[45] focused on the effectiveness of nonpharmacological interventions, and the third[46] aimed to review and evaluate response programs for WPV (see Table 2).

FINDINGS FROM INDIVIDUAL STUDIES

The interventions were categorized according to whether they included a single or multicomponent approach and then further broken down into the type(s) of intervention: patient screening and assessment, education (comprised classroom, online, and simulation training), response teams, modifications to the environment, and policies and procedure changes. Many studies used multicomponent interventions that involved a combination of education/training, screening for risk of violence, staffing changes, and/or environmental changes within the emergency department. Education interventions were commonly delivered using a variety of strategies such as online modules, classroom learning, and simulation training that varied in length from a single 4-hour session[24,32] to multiple days.[30] Studies that implemented screening to assess patients/visitors for risk of violence used different screening tools with training to support the tools. A small number considered the perspectives of patients in their interventions, improving signage and information available to waiting patients.[29,31,37,39] Findings from studies on single component WPV interventions are presented first, followed by the findings from studies with multiple component WPV interventions.

Single Component Interventions

The single component interventions are described within 4 groupings: education and training, policies and procedures, violence screening and assessments, and other interventions.

Education and Training. Of the 14 studies that implemented single intervention approaches to address WPV from patients and visitors in emergency departments, 7 implemented some type of education to reduce WPV.[24,27,30,32,34,41,42] A 4-hour intervention focused on de-escalation training with physicians, nurses, and medical students in Pakistan found the intervention group's confidence in coping with violence was significantly higher than the control group's confidence after 4 months.[24] Testing the same intervention, Khan et al[33] found no significant difference between the intervention

TABLE 2
Characteristics of the included review papers

Reference	Study aim	Study design	Date range of search	Databases searched (N)	Studies reviewed (N)	Included critical appraisal	Findings and recommendations	Critical appraisal
Wirth et al[16]	Summarize the existing evidence from evaluation studies on the prevention of patient-on-employee violence and aggression in emergency departments, where the purpose of the studies was to reduce the frequency of violent incidents, to increase knowledge, skills, or awareness related to violent incidents, or to help ED staff feel safer and more at ease	Systematic Review	January 1, 2010, to May 31, 2021	MEDLINE, Web of Science, Cochrane Library, CINAHL, PsycINFO (5)	15	Yes	Studies mostly showed some positive impact of behavioral and multidimensional interventions on the reduction of violent incidents from patients toward ED staff or the preparedness of staff to deal with violent situations. Studies of high methodological quality and ones that consider environmental and organizational interventions are needed	High

continued

TABLE 2
Continued

Reference	Study aim	Study design	Date range of search	Databases searched (N)	Studies reviewed (N)	Included critical appraisal	Findings and recommendations	Critical appraisal
Weiland et al[45]	Systematically review the efficacy of nonpharmacological strategies for acute behavioral disturbances management within emergency departments that involved changes to environment, architecture, policy, and practice	Systematic Review	January 1, 1985, to April 21, 2016	OVID MEDLINE, CINAHL Plus, PsycINFO, Embase (4)	8	Yes	Studies reporting interventions for acute behavioral disturbances within the emergency department are limited in number and quality. Gap in the literature regarding the efficacy of interventions for acute behavioral disturbances management in emergency departments involving environmental, policy, or practice-based changes	High
Ramacciati et al[46]	Propose a narrative of the current approaches to reduce WPV in the emergency department, with a particular focus on evaluating the effectiveness of the proposed emergency response programs	Review type not specified	January 1, 2011, to December 7, 2015	PubMed, CINAHL (2)	10	No	Studies that have attempted to evaluate the effectiveness of interventions have shown weak evidence. Further research is needed to identify effective actions to promote safe ED work environments	High

ED, emergency department.

and control groups in incidents of violence; however, participants who received the de-escalation training reported significantly greater confidence in coping with patient aggression than the control group participants.[33]

Geoffrion et al[30] assessed the impact of a more intensive, 4-day program on management of aggressive behaviors for ED employees led by security agent peer trainers. The researchers found no statistically significant differences in the use of seclusion and restraints before and after the intervention.[30] A randomized controlled trial in Taiwan evaluated the effects of a 12-session program of 1-hour video conferences for nurses and found intervention participants had increased confidence and self-efficacy in managing violence compared with the control group.[27] Using varied teaching methods in a 4-hour workshop for nurses, Kalbali et al[32] found the intervention group had a significant decrease in reported physical and sexual violence 2 months after the workshop, but no difference in verbal abuse. Comparatively, the control group had no significant difference in reported physical or sexual violence and reported a significant increase in verbal abuse.[32]

A quality improvement study that used incident data to evaluate nonviolent crisis intervention training found the incidents of security team responses to violence decreased after an 8-hour interdisciplinary session focused on identifying and de-escalating violence; however, the negative correlation between training and incidents of security team responses was delayed (approximately 90 days) and then appeared to wane after 6 months.[42] The researchers suggested this finding may indicate a single training session is inadequate and suggested repeating sessions semi-annually. Wu et al[41] examined the benefits of simulation training with interdisciplinary learners for responding to WPV from patients and visitors. The education involved lectures followed by experiential training with situational simulations and demonstrated an increase in participants' self-efficacy for responding to violence.[41]

Policies and Procedures. Two United States studies evaluated policy and procedural changes. Bailey[25] implemented an evidence-based guideline to train nurses on recognizing and de-escalating assaultive behaviors to prevent violence from occurring. A significant decrease in restraint use was found 4 weeks after compared with 4 weeks before implementation.[25] Similarly, Winokur et al[39] found a decrease in restraint use after implementing a standardized procedure for nurses to assess patients' agitation and administer medication accordingly.

Violence Screening and Assessments. Three studies implemented violence screening and assessments. In Australia, Senz et al[36] implemented the 6-item Brøset violence checklist to assess patient characteristics and behaviors along with a corresponding score-based notification and response matrix of multidisciplinary de-escalations strategies. After the checklist was implemented, a significant decrease in unplanned responses by security personnel (ie, reactive) and an increase in planned responses (ie, proactive) were found.[36] Notably, use of the checklist had no effect on nurses' confidence in preventing violence or feelings of safety.[36] Legambi et al[34] used the Behavioral Activity Rating Scale, a 7-item instrument, for detecting changes in patients' behavioral activity to improve management of agitation and reduce restraint use. No significant difference in the incidents of restraint use was found after the Behavioral Activity Rating Scale was implemented.[34] Using quality improvement methods, Campbell et al[26] tested the Emergent Documentation Aggression Rating Tool to help nurses identify and intervene with escalating patient behaviors and reduce use of restraints. This screening tool was used on all patients at minimum at admission and discharge and classified patient behaviors based on levels of aggression.[26] The tool was deemed to be feasible for nurses to use and showed a decrease in restraint use 1 year later.[26]

Other Interventions. Finally, 2 studies had unique single component interventions. Choe et al[28] evaluated the impact of a multidisciplinary violence response team to assess, de-escalate, and treat acutely agitated patients on reducing the incidents of assaults on staff. The response team intervention significantly reduced the incidents of attempted assaults on staff.[28] The other intervention focused on environmental changes that provided patients and visitors with information about wait durations and ED procedures through large signs and pamphlets.[29] This study found these strategies were likely to reduce aggression, but only up to the point that the anticipated wait time was not exceeded.[29]

Multicomponent Interventions

Seven studies implemented a collection of strategies to address WPV in the emergency department.[31,35,37-39,41,43] Gillespie et al[43] found a significant decrease in violence 9 months after implementing policy changes, environmental changes, and education; however, this decrease was observed in both the intervention and control groups rendering the effects of the intervention uncertain. With an education component, as well as distributing information about ED guidelines to patients and creating an additional nursing role focused on preventing and addressing violence,

Hemati-Esmaeili et al[31] found no change in physical violence yet did observe a decrease in verbal abuse against nurses and nurses' fear of violence.

With a multifaceted approach, including screening and communicating risk of violence to the staff through chart labels and shift huddles, as well as postincident debriefing, Okundolor et al[35] found a decrease in the number of assaults on ED staff, which was sustained for a year. Shaikh et al[37] also evaluated a comprehensive approach of low-cost interventions including patient materials, education, and policy changes, in 2 sites, which resulted in decreased physical violence at both sites. Combining education with a screening checklist and a preventive protocol, Sharifi et al[38] found that nurses' reported exposure to violence decreased and subsequently recommended that violence screening be integrated into the triage process. Henderson and Colen-Himes[44] implemented an education session on crisis management and introduced new procedures to reduce overcrowding. After attending the education session, staff reported an increased feeling of safety.[44] Additional interventions such as a risk assessment tool, enhanced security (ie, metal detection), and providing patients with food and means for transportation from the emergency department were also implemented; however, there were no details about the effectiveness of these additional measures on reducing WPV from patients and visitors.[44]

Finally, in the context of an ophthalmological emergency department, Touzet et al[39] found a significant decrease in acts of violence after implementing a comprehensive program that included a computerized triage system, video surveillance, increased signage, and the addition of a mediator in the emergency department. Notably, in this prospective, interrupted time-series study, the biggest decrease in violent acts occurred after the first intervention: the computerized triage system.[39]

FINDINGS FROM REVIEW PAPERS

The 3 review papers all concluded that the body of evidence concerning interventions to address WPV from patients and visitors in the emergency department is lacking. Ramacciati et al[46] called for further research, describing the existing body of evidence concerning approaches to reduce WPV in the emergency department as weak. The systematic review conducted by Weiland et al[45] identified a particular gap in the literature about interventions that address WPV through environmental, policy, and practice-related changes. Most recently, Wirth et al's[16] systematic review evaluating studies focused on preventing violence found that although most studies showed some positive impact, again, the methodological quality was lacking. Additionally, Wirth et al[16] called for a greater focus on environmental and organizational interventions, as opposed to those focused on individual behaviors such as educating individual staff on how people act in circumstances of violence.

Discussion

This review examined the evidence on the effectiveness of interventions for addressing WPV from patients and visitors toward staff in emergency departments. The articles included in the review identified a variety of strategies to consider in efforts to mitigate WPV in emergency departments; however, there was no strong evidence to definitively support a particular strategy. Education or training is frequently implemented to reduce violence,[24,27,30,32,34,41,42] yet the details of how these sessions are conducted, such as the content and how it was delivered, were sparsely reported in the literature, making it difficult to discern and replicate what is truly effective. In addition, studies were often lacking a longer-term follow-up,[16,46] making it challenging to determine the impact of training on participants' subsequent actions to prevent and manage violence on an ongoing basis in the emergency department. For example, in Gillespie et al,[43] despite having an 18-month study period to evaluate a comprehensive intervention, questions remained regarding the organizational commitment and adoption of interventions, and the authors called for ongoing evaluation, feedback, and revision to continuously endorse safety as a top priority in the emergency department.

Although practices of screening for violence may lend themselves to quantitative evaluation most easily, these interventions were often tied to follow-up preventive measures that were minimally described in the literature,[26,34,36] providing limited guidance on implementation. The variety of measures found in the reviewed articles, such as providing patients with information about ED processes and wait times, changing the ED physical space, and altering ED staff roles to include staff focused on violent behavior, were often combined with other interventions as part of a more comprehensive approach.[37,39,43,44] A combination of strategies may prove to be more effective than a single intervention; however, it was difficult to discern the effects of each strategy individually. Finally, issues that may be interconnected with instances of violence, such as cognitive impairments, socioeconomic inequities, or racial violence, were rarely considered. Future efforts to address WPV must take these contextual aspects into account to effectively address safety within the emergency department.

RECOMMENDATIONS

Overall, we recommend a multicomponent approach that considers the context and complexity of the ED setting to mitigate WPV from patients and visitors. We did not find compelling evidence to support any individual strategies to addressing WPV; however, there is value in considering the collective findings and conclusions among the reviewed studies. These insights can inform recommendations for taking action to address WPV from patients and visitors toward ED staff and direct future research on this topic. Experts and professional organizations have recently produced recommendations to address WPV in emergency departments that could also direct actions to mitigate WPV.[6,47]

The sustainability and long-term effectiveness of an intervention are an important aspect to consider when taking action to mitigate WPV. It is imperative that the onus for addressing WPV does not fall solely on ED staff. Interventions should be minimally taxing on ED staff, who are already addressing the demands of their high-intensity work. Given the constant and often exceptionally high demands in ED settings, efforts to address WPV must be dynamic to adapt to the circumstances in which staff are currently working. Efforts need to focus on promoting and maintaining a safe environment for staff and preventing WPV before it occurs, as well as introducing adaptable measures for responding to higher intensity situations where there is increased risk of WPV and injury. The cumulative impact of repetitive exposure to violence, particularly verbal abuse, warrants serious consideration because this may be more subtle, yet the impact is significant.[48] Additionally, given the historically persistent nature of WPV, interventions ought to be deeply integrated into the operations of an emergency department, rather than episodic "fixes," the effects of which may wane over time.

A comprehensive approach to mitigating WPV should consider the progression of violence and focus on prevention, de-escalation, and debriefing and also target the multiple groups within the emergency department (ie, leadership, interdisciplinary care providers, security personnel, and patients and families). Strategies to mitigate WPV from patients and visitors that have evidence of some effectiveness include education (for both staff and patients/visitors), screening patients/visitors for risks of violence, staffing modifications, and environmental changes to the ED setting. Education-focused interventions need to address participants' feelings, emotions, and attitudes and teach preventive measures and behavioral training in responding to violence.

Moreover, interventions to address violence should consider patient perspectives and experiences. In the process of conducting this review, the contributions of the patient partners were both valuable and unique. Involvement of patients as partners in research teams has been shown to enhance research rigor, feasibility, and relevance.[49] In designing the search and analyzing the data, patient partners identified areas such as cultural sensitivity, social determinants of health, and empathy and understanding for the patient and family in the care context as key factors related to WPV that were often unaddressed in the reviewed articles. Overall, to be effective, efforts to mitigate violence should take into account the perspectives of patients and families and consider the systemic challenges faced by populations that experience marginalization and discrimination.

This review's findings indicate more rigorous research is needed. The effectiveness of interventions should be evaluated using multiple data sources that are collected over an extended period of time, including incidents of WPV, patient and provider perspectives, and additional measures such as wait times, staff turnover, and days and times that WPV is most prevalent. Using more robust investigative methods will produce more definitive insights into what interventions are the most effective and in what circumstances, to help nurse and other health/clinical leaders establish best practices that ensure staff safety.

Limitations

This study has notable limitations. Our findings may be relevant to other urban ED settings, yet not entirely generalizable. The rapid review method is ideal for addressing the needs of a particular context, and the specific needs and context of the knowledge user within our research team guided the search strategy and eligibility criteria. Given the short timeline of this rapid review (6 months), the gray literature search was limited to articles retrieved by the Google Scholar search and is not presumed to be exhaustive. The search was also limited to articles published in the last 10 years based on guidance from the content expert, academic librarian, and knowledge user and published in English only, in accordance with the rapid review approach.[18]

Implications for Emergency Nurses

Nurses are integral to delivering quality patient care in the emergency department, and it is incumbent upon nursing leadership to ensure the environment is safe for nurses to perform their professional duties.[47] WPV from patients

and visitors is a concern for staff in the ED setting, and strategies such as screening tools, education on de-escalation, and environmental changes, including increasing security and providing patients/visitors with expected wait times, have been implemented as mitigation strategies with varying effects. This rapid review synthesizes the recent body of evidence related to mitigating or preventing WPV in urban emergency departments. Although a variety of interventions have been implemented to reduce violence in the emergency department, there is limited evidence to support the effectiveness of any single and/or combination of interventions. More research is needed in this area. Since this review was initiated, the knowledge user has been working on several changes in their emergency department to decrease the incidence of violence, including providing education, refining screening and care plans for those at increased risk of violent behaviors, and re-designing the triage, waiting, and treatment spaces to enhance layers of defense (ie, using bulletresistant materials, purposefully locating security personnel, increasing accessibility of exits).

Conclusion

This rapid review synthesized recent evidence on mitigating WPV from patients and visitors toward staff in ED settings. Findings are disparate, lacking clear, concise direction as to effective interventions. A variety of strategies to address this type of WPV have been evaluated in the literature with positive results, suggesting the need for a multipronged approach. Given the complexities of patient care in this setting, interventions that target staff, patients/visitors, and the ED environment are necessary. Further research, with more rigorous methodologies, is needed to evaluate the effectiveness and sustainability of interventions for mitigating WPV in the emergency department. Additionally, it is imperative to integrate the perspectives of patients and family members and account for the multiple stressors associated with seeking emergency care. Finally, interventions should be designed and implemented with attention on systemic enablers of inequity that may contribute to aggressive behaviors from patients and visitors during ED encounters.

Author Disclosures

Conflicts of interest: none to report.

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Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jen.2023.03.002.

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The Experience of Families Accompanying a Senior to the Emergency Department: A Scoping Review

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Contribution to Emergency Nursing Practice

- Family members often accompany seniors who make up a large part of the ED population.
- This scoping review highlights that seniors' families play an important role in the emergency department. They act as a safety net, at each phase of the trajectory, that is, before, during, and after the ED stay.
- The presence of seniors' families must be encouraged, while considering their needs and supporting them. Following geriatric emergency guidelines can improve the many issues raised by families in this scoping review.

Abstract

Introduction: Seniors are often accompanied by a family member to the emergency department. Families advocate for their needs and contribute to the continuity of care. However, they often feel excluded from care. To improve the quality and safety of care for seniors, it is necessary to consider the experience of families in the emergency department. The aim was to identify and synthesize the available scientific literature dealing with the experience of families accompanying a senior to the emergency department. To identify and synthesize the available scientific literature dealing with the experience of families accompanying a senior to the emergency department.

Methods: A scoping review was conducted using the Arksey and O'Malley framework. Six databases were targeted. A description of the identified scientific literature and an inductive content analysis were performed.

Results: Of the 3082 articles retrieved, 19 met the inclusion criteria. Most articles (89%) were published since 2010, were from nursing (63%), and used a qualitative research design (79%). The content analysis identified 4 main categories related to the experience of families accompanying a senior to the emergency department: (1) process leading to the emergency department, families feel uncertainty and ambiguity with the decision to go to the emergency department; (2) staying in the emergency department, families' experiences are influenced by the triage, the ED environment, and the interactions with ED personnel; (3) discharge from the emergency department, families consider that they should be part of the discharge planning; and (4) recommendations and possible solutions, there is a paucity of recommendations specifically focused on families.

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Discussion: The experience of families of seniors in the emergency department is multifactorial and part of a trajectory of care and health services.

Key words: Emergency department; Scoping review; Family; Caregivers; Senior; Aged

Introduction

In 2021, adults older than the age of 65 years represented 18% of Canada's population.[1] The elderly population is expected to double by 2050 worldwide[2]; consequently, the proportion of seniors presenting to the emergency department will increase.[3-8] Seniors come to the emergency department for cardiovascular, respiratory, neurological, and gastrointestinal problems[9] and for other complications such as falls, pressure ulcers, nosocomial infections, delirium, and functional decline.[10,11] The care management of this group is more complex, owing to the atypical presentation of health problems, comorbidities, polypharmacy, and geriatric syndromes.[7,9]

Families accompanying seniors to the emergency department are important: they advocate for seniors' needs, ask questions, and supplement their medical history.[12-14] Their contribution in terms of accompanying and completing the information is even more valuable when the senior is cognitively impaired, has a delirium, or has an altered level of consciousness.[13,15] In the context of overcrowding in the emergency department, families can also reduce nurses' workload and stress.[15] However, families often feel excluded from the care provided in the emergency department.[13] They want more information about investigations, ongoing treatments, and wait times and to be included in decision making.[13]

Two main knowledge syntheses[13,15] have been identified that provide an overview of what it means to be a caregiver in the emergency department. It is noteworthy that the caregivers' experience has been integrated with that of the seniors. No review has been identified focusing solely on families, including caregivers, in this context. The words "family" and "caregiver" are both used throughout this article to respect the terms used by the authors of the studies cited. Overall, the term "family" is used more often in this scoping review and will be defined in the methodology section (see Table 1). Van Oppen et al[13] published one of the 2 aforementioned knowledge syntheses: this is a systematic review on the expectations and preferred outcomes for emergency care among older people or their caregivers. They conclude that seniors' care preferences in the emergency department include active communication, participation in decision making, caregiver inclusion, and a holistic approach.[13] A vision of partnership in health care is also identified (person- and family-centered care) as an avenue for ED care improvement provided to seniors and their families.[13] The second knowledge synthesis is published by Watkins et al[15]: the aim of this integrative review is to identify the experiences of older people with dementia, their caregivers, and emergency nurses. The authors recognize the potential for partnership between seniors' caregivers and emergency nurses. They recommend favoring a relationship-centered approach to care as a strategy to improve care for older people with dementia.[15] Therefore, relationship-centered[15] or person- and family-centered[13] partnerships have been suggested as 2 approaches to the improvement of seniors' ED care. These approaches encourage the active participation of patients and caregivers in the decision-making process and in the accompaniment of seniors in the emergency department (eg, reorienting the senior, advocating for them, giving information).[13,15] Thus, nurses need to understand how families accompanying a senior perceive their ED stay, given that they appear to improve the quality and safety of care offered to seniors.[16,17]

To integrate this approach to care, it is necessary to understand how families accompanying a senior perceive their stay in the emergency department; hence, the interest in undertaking a scoping review exclusively focused on families. Based on the abovementioned points, it is necessary to support the presence of families in the emergency department to improve the quality and safety of care offered to seniors.[16,17] To achieve this, it is essential to enhance nurses' current knowledge to ensure adequate support and to develop interventions that will meet the families' needs. Thus, a scoping review was undertaken to determine the current state of knowledge on the experience of families accompanying a senior to the emergency department. The aim of the scoping review is to identify and synthesize the available scientific literature focusing on the experience of families accompanying a senior to the emergency department.

Methods

This scoping review was conducted using the Arksey and O'Malley's 5-step framework.[18]

IDENTIFYING THE RESEARCH QUESTION

What is the experience of families accompanying a senior to the emergency department? This was structured around population, concept, and context specific to the subject (see Table 1).

IDENTIFYING RELEVANT STUDIES

In consultation with a university librarian specializing in nursing, 6 databases were selected to perform the literature search: Cumulated Index to Nursing and Allied Health Literature (CINAHL), MEDLINE, Nursing and Allied Health Database, PsycINFO, and Scopus. Keywords included emergency department, family, elderly, and experiences. The search strategy used on CINAHL is presented in Table 2. Once validated on CINAHL, the search strategy was replicated for the other databases. The list of references for each selected article using the inclusion criteria was reviewed to target other potential studies.

The inclusion criteria for the selected studies were as follows: (1) focus on the experiences of families accompanying a senior (individual aged 65 years and older) to the emergency department, (2) be published in peer-reviewed journals, and (3) be published in English or French.

TABLE 1
Identification of the research question: population, concept, and context (PCC)

Terms (PCC)	Definitions
Population	• Families accompanying a senior (individual 65 y and older) to the emergency department • The term "family" includes: ➢ Any person older than the age of 18 y who is a family member of the senior (eg, children, siblings, spouse) ➢ Any person older than the age of 18 years who acts as a caregiver to the senior without being paid to do so
Concept	• The experience of families accompanying an older adult to the emergency department • The term "experience" also includes perspectives, perceptions, views, opinions, attitudes, reflections, and so on
Context	• Emergency department of a hospital

TABLE 2
Search strategy on CINAHL

Search number	Search strategy on CINAHL (May 04, 2022)	Results
#15	S5 AND S8 AND S11 AND S14	917
#14	S12 OR S13	970,566
#13	(MH "Life Experiences") OR (MH "Life Style Changes")	45,206
#12	Perceptions or attitudes or opinion or experience or view or reflection or beliefs	959,179
#11	S9 OR S10	1,190,808
#10	(MH "Aged") OR (MH "Aged, 80 and Over")	910,438
#9	Elderly or aged or older or elder or geriatric or elderly people or old people or senior	1,190,808
#8	S6 OR S7	126,996
#7	(MM "Emergency Service") OR (MM "Trauma Centers")	36,862
#6	Emergency department or emergency room or ed or er	126,594
#5	S1 OR S2 OR S3 OR S4	780,264
#4	(MH "Caregivers")	40,101
#3	Caregivers or informal caregivers or family caregivers	79,144
#2	Family or families or family members or relatives or parents or mother or father or siblings or sister or brother or spouses or wife or husband	735,815
#1	(MH "Family") OR (MM "Adult Children") OR (MH "Extended Family+") OR (MH "Family Characteristics") OR (MH "Family Relations+") OR MH "Patient-Family Relations") OR (MH "Sibling Relations")	129,403

MH, subject heading; MM, major subject heading; S, search number; +, explode.

Qualitative, quantitative, or mixed studies were considered. No geographical limits were applied, and all articles published up to May 2022 were taken into account.

Studies were excluded if they: (1) dealt primarily with the ED experience of seniors or that of health professionals (eg, nurses and physicians); (2) dealt with the experience of families accompanying a senior in a context of critical care other than that of the emergency department (eg, intensive care) or strictly in a cardiopulmonary resuscitation context; (3) were part of the gray literature, unpublished, and master's or doctoral theses; and (4) were knowledge syntheses (eg, systematic review, narrative review).

STUDY SELECTION

Retrieved articles were imported into *Covidence*, and duplicates were removed. Studies were screened by 2 independent evaluators (first author and second author, or first author and fifth author). First, studies were sorted by title and abstract according to the inclusion and exclusion criteria. Subsequently, the final sample was based on a complete reading of the studies previously selected. In the event of a disagreement between the evaluators at each of these selection stages, a third evaluator (second author or fifth author) was integrated to resolve the disagreement. At the stage of selecting articles based on titles and abstracts, in 4.54% of the cases, the third evaluator was required. At the stage of full text review, the third evaluator was required in 39.50% of the cases. The selection process is presented in Figure.

CHARTING THE DATA

Extracted data included the characteristics of the selected studies and the specific information to answer the research question.[18] Bibliometric information, methodological characteristics of the studies, and relevant content of all selected articles were compiled into a summary table in Microsoft Word (Redmond, CA).

COLLATING, SUMMARIZING, AND REPORTING THE RESULTS

Descriptive statistics provided a detailed picture of the characteristics of the studies. The identified literature was subsequently described and summarized using the qualitative content analysis method described by Elo and Kyngas.[19] Through an inductive approach, common categories, as well as the relationships between them, were identified in the selected textual information.[19]

Results

RESULTS OF THE SEARCH STRATEGY AND CHARACTERISTICS OF THE SELECTED STUDIES

The search strategy was first conducted in the fall of 2020 with an update in May 2022. The initial search strategy produced a total of 2114 articles of which 15 articles were retained, whereas in the update, 4 articles were retained from 968 additional articles. The final sample for the scoping review consisted of 19 articles (Figure). No additional articles were added after the review of the reference lists of the selected articles.

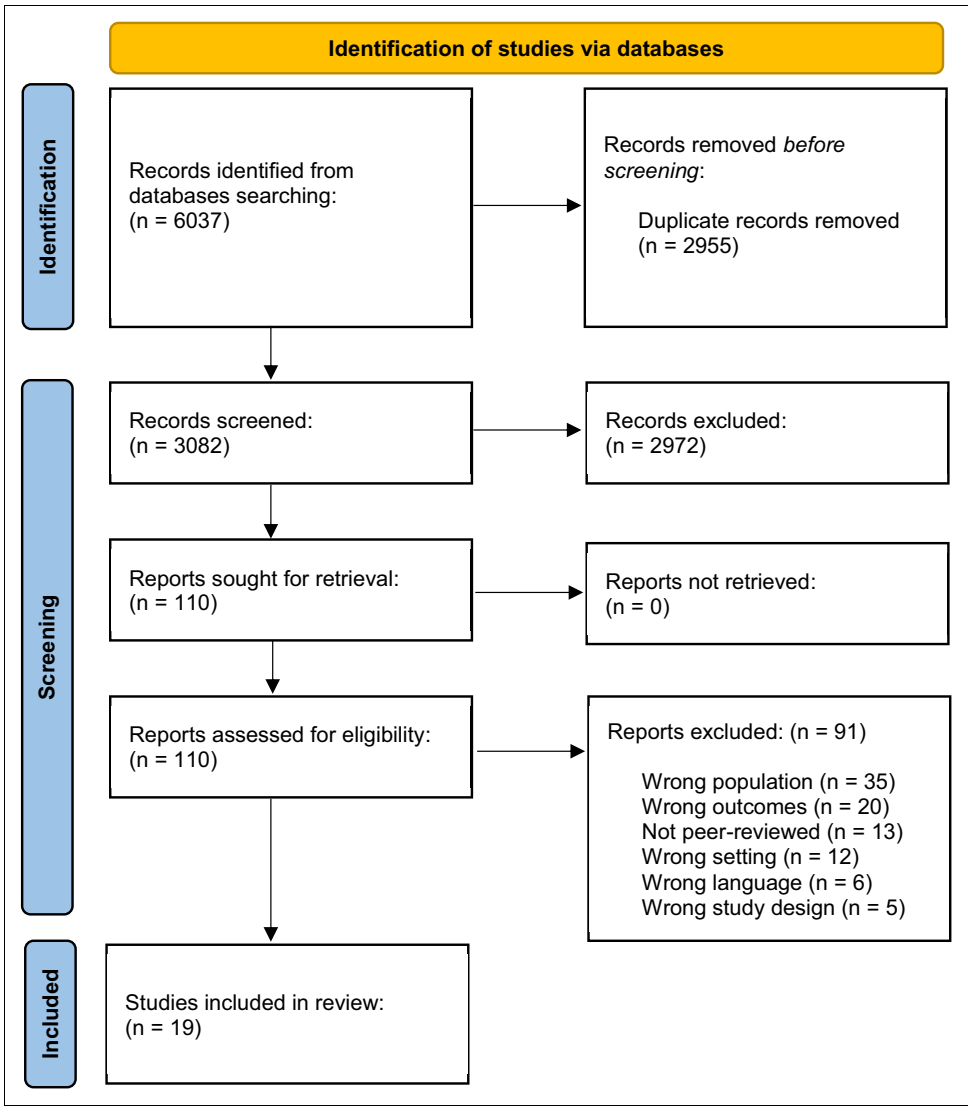
The selected studies were published between 1997 and 2021,[16,17,20-36] with most studies being published between 2010 and 2021 ($n = 17$, 89%), and mainly in Australia ($n = 5$, 26%) and Canada ($n = 5$, 26%). Most studies were in nursing ($n = 12$, 63%). With the exception of 4 studies,[21,27,33,34] the qualitative research design ($n = 15$, 79%) predominated, with the interview as the primary method of data collection. A summary of the selected studies is presented in Table 3.

CONTENT ANALYSIS RESULTS

Four categories were identified to represent the experience of families accompanying a senior to the **emergency department**, **namely:** (1) process leading to the emergency department, (2) stay in the emergency department, (3) discharge from the emergency department, and (4) recommendations and possible solutions. See Table 4 for the distribution of studies by categories and Table 5 for a synthesis of the categories.

Category 1: Process Leading to the Emergency Department

The process leading to the decision for the senior to go to the emergency department is twofold: staying in the community or going to the emergency department. Seniors and their families prefer that the elderly stay in their usual environment, either at home or at the nursing home (NH).[20,22,24] Families know that the emergency department is not adapted for seniors' needs[20] and do not want the senior to present for minor complaints.[22,23] They may not always have knowledge of the signs and symptoms to look for and possible treatment options and the day-to-day management of medical conditions,[24,27] yet if there is hesitancy before going to the emergency department, the senior's condition may deteriorate further during this period of time and then may reach a crisis point.[22,24] Seniors and



FIGURE

PRISMA flow diagram of screening process and outcome. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

their families may have difficulty determining whether the senior's clinical condition requires emergency services.[24,27]

Families may seek the approval of community health professionals (eg, family doctor) or other family members before heading to the emergency department.[22,23,27,31] Sometimes there are inconsistencies between the recommendations of community health professionals and those of the emergency department.[27] Families find that the decision to go to the emergency department is easier to make when the needs of the senior exceed the possible services of the NH or the community[20,24,35] or when they feel insecure or lose confidence in community care.[21] According to Jacobsohn et al,[24] families of seniors with dementia went to the emergency department because they were not able to access community services. Indeed, seniors and families may experience uncertainty and ambiguity with the decision to go to the emergency department.

Category 2: Staying in the Emergency Department

Once in the emergency department, 3 subcategories were noted: triage, ED environment, and interactions with ED personnel.

TABLE 3
Results of data extraction

Author(s), year of publication, and country	Design	Study aims	Sample description	Sample size	Methods and analysis	Key findings related to the scoping review subject
Arendts et al[20] 2015 Australia	Qualitative	To capture and interpret the perspectives of 3 important decision-making groups (residents, relatives of residents and residential aged care facilities [RACF] nursing staff) concerning the transfer of residents from RACF to the emergency department; to understand how the perspectives of these converge and diverge and to explore shared decision making and the extent to which there was delegation of transfer decisions to others	RACF staff (nurses or nurse assistants) Relatives of residents of RACF Residents of RACF	$N = 42$ 17 staff members 14 relatives of residents of RACF 11 residents of RACF	Semistructured interviews Data analyzed by using a qualitative content analysis	Two main subthemes emerged regarding residents' relatives experience of transferring from RACF to the emergency department: 1) Partnership: involvement of relatives in transfer decisions varies from situation to situation 2) Ambiguity: relatives have mixed feelings about ED transfer and hospitalizations
Bone et al[21] 2019 United Kingdom (UK)	Quantitative	To describe patterns of ED attendance by older people in the last 3 months of life; to examine factors associated with frequent ED attendances and to explore the circumstances of such attendances, to develop a conceptual model for policy and practice	Family member of people aged ≥65 y who died 10 months previously	688 respondents	Questionnaire with open and close questions Data analyzed by using multivariate analysis and content analysis for free-text response	Based on the free-text comments of the bereaved family members, 4 themes influence older adults' frequent end of life ED attendance: 1) Community services' responsiveness to changing needs, encompassing family members' role as patient advocate to access services, and emergency department as a cry for help 2) Involvement of multiple health professionals with poor coordination leading to confusion and mistakes 3) Untimely and unprepared discharge from hospital resulting in readmission 4) Feeling unsafe and lacking confidence in care and support in the community as a reason for seeking care from the hospital

continued

TABLE 3
Continued

Author(s), year of publication, and country	Design	Study aims	Sample description	Sample size	Methods and analysis	Key findings related to the scoping review subject
Bracken-Scally et al[33] 2021 Ireland	Mixed methods	To understand how changes to the physical environment may improve service delivery and outcomes for people living with dementia and their families; To investigate service providers' perspectives of the ED environment for people living with dementia and the impact of environmental changes implemented; To inform dementia-inclusive design in ED settings	Service users (family carer/ member of a person living with dementia) Service providers (ED staff and other key stakeholders)	10 family carers (interviews) 13 emergency nurses and clinical nurse manager (focus group) 16 ED staff (survey) 3 key stakeholders (hospital staff and project consortium members) involved in the conceptualization and design development process (interviews)	Survey Semistructured interviews Focus group Environmental audit data Qualitative data analyzed by using a thematic analysis Quantitative data analyzed by using descriptive statistics	Results can be divided into 5 themes: 1) Orientation and navigation 2) Sensory stimulation 3) Adequate space 4) Design development 5) Continuing positive change
Cetin-Sahin et al[34] 2020 Canada	Mixed methods *This article is the qualitative component of the mixed method study.	To describe the lived experiences of ED care and discharge processes among patients aged 75 y and older (or their family members) discharged to their original residence with a particular focus on those domains that are more relevant to older patients	ED patients aged ≥75 y Family member or friend who were with the patient in the emergency department	32 family members or friend 76 patients aged ≥75 y	Semistructured interviews Questionnaire Qualitative data analyzed by using a deductive-inductive thematic analysis.	Emerging subthemes were categorized under 3 domains: 1) Older patients' physical needs 2) The needs of family members 3) Transitional care needs
Considine et al[22] 2010 Australia	Qualitative	To describe older people's perspectives of accessing ED care	ED patients aged ≥65 y Caregivers or family members who were with the patient in the emergency department	27 ED patients aged ≥65 y 12 caregivers or family members	Semistructured interviews Data analyzed by using a thematic analysis	Four themes related to access to emergency care and the triage process were identified: 1) Variation in ED use by older people 2) Reluctance to access ED care 3) Mixed experiences of waiting 4) Perceived factors influencing access to emergency care

continued

TABLE 3
Continued

Author(s), year of publication, and country	Design	Study aims	Sample description	Sample size	Methods and analysis	Key findings related to the scoping review subject
Fry et al[36] 2021 Australia	Qualitative	To explore the family members' perspectives of ED discharge of the older person	Family members who were present during the older person's (aged >64 y) discharge from the emergency department	133 family members	Semistructured interviews Data analyzed by using a thematic analysis and descriptive statistics	Three themes were identified related to the ED discharge experience by family accompanying an older person: 1) A sense of time-moving through the emergency department 2) Giving voice to the impact of clinician communication 3) The delivery of comfort and care
Goodridge et al[23] 2018 Canada	Qualitative	To identify the health system and provider factors affecting the patient experience for older adults and their caregivers in the emergency department, to describe the strategies used by older adults to negotiate the patient experience in the emergency department, and to list key recommendations from older adult service users and their caregivers for enhancing the ED patient experience	Adult aged ≥65 y Caregivers or family members who had accompanied an older adult to the emergency department	41 adults aged 65 or older years 15 caregivers	Focus group and individual interviews Data analyzed by using a thematic analysis	Results can be divided into 3 themes: 1) Health system and provider factors affecting the ED patient experience of older adults 2) Older adults' strategies for negotiating the patient experience in the emergency department 3) Key recommendations for enhancing the older adult experience in the emergency department
Jacobsohn et al[24] 2019 United States	Qualitative	To explore stakeholders' perspectives on the decisions and drivers influencing ED use, and suggestions for effectively addressing unmet needs	Key stakeholder: caregivers who have experience with caring for people with dementia (PwD); emergency medicine physicians; primary care physicians; geriatric health providers (physician and nurse); aging service providers and community paramedics	n= 27 stakeholders: 4 informal caregivers of PwD 4 emergency medicine physicians 5 primary care physicians 5 geriatric health care providers 6 aging service providers 3 community paramedics	Semistructured interviews Data analyzed by using thematic analysis	Four overarching themes were identified: 1) System fragmentation influences emergency care use by PwD 2) Informational, decision-making, and social support needs influence emergency care use by PwD 3) Emergency departments are not designed to optimally address PwD and caregiver needs 4) Options to prevent and address emergency care needs of PwD

continued

TABLE 3
Continued

Author(s), year of publication, and country	Design	Study aims	Sample description	Sample size	Methods and analysis	Key findings related to the scoping review subject
Kihlgren et al[25] 2004 Sweden	Qualitative	To describe, through observations and interviews with patients aged ≥75 y and the relatives who accompanied them to the hospital, the conditions and the events that took place during their stay at the emergency department	Older adult aged ≥75 y who arrived at the emergency department in need of acute care	20 older adults 15 older patients of the 20 arrived in the company of a relative	Open non-participant observations and interviews Data analyzed by using a grounded theory approach	Six themes were identified: 1) Unpleasant waiting 2) Unnecessary waiting 3) Lack of good routines during the waiting stage 4) Suffering during the waiting stage 5) Bad feelings during the waiting stage 6) Nursing care during the waiting stage
Majerovitz et al[26] 1997 United States	Qualitative	To develop a research agenda for the study of communication between staff and the older patient in the emergency department	Older adult aged ≥60 y who had spent at least 3 hours in the emergency department Family members of older ED patients	71 older adults 32 family members	Semistructured interviews Demographic questionnaire and the 7-item Physical Function subscale of the Functional Status Questionnaire Date analyzed by using descriptive statistics and coding criteria	Most patients and family members had an incomplete understanding of medical information Most family members expressed a desire for more information or greater access to the patient While in the emergency department, the older adult wants to be an active participant in their medical care Family members seem more likely to express their dissatisfaction than the older adult to the medical team

continued

TABLE 3
Continued

Author(s), year of publication, and country	Design	Study aims	Sample description	Sample size	Methods and analysis	Key findings related to the scoping review subject
Marr et al[27] 2019 Canada	Mixed methods	To learn more about the perspectives of older adults and their caregivers on their experiences transitioning to the community after an ED visit, specifically in terms of their understanding of their health conditions and treatment recommendations, perceptions of their ability to self-manage care and identification of factors that enabled and challenged their ability to self-manage their care	Older adults aged ≥65 y admitted to the emergency department and their primary caregivers	Survey: 380 older adults 116 caregivers Interviews: 26 older adults 25 caregivers	Survey and interviews Quantitative data: Descriptive statistics, chi-square, t test, and analysis of variance Qualitative data: Naturalistic inquiry approach	Most patients and caregivers believed they understood the information given to them in the emergency department and perceived themselves as able to manage the patient's condition at home Six categories were generated through qualitative data analysis: 1) Communication 2) Limited understanding of health condition(s) 3) Availability of caregiver support 4) Patient resistance to accept recommendations 5) Inadequate support for caregivers 6) External factors beyond the patients' and caregivers' control
Morphet et al[17] 2015 Australia	Qualitative	To investigate the experiences of relatives who had a family member transferred from an aged care facility to an emergency department	Relatives of residents who were transferred from an aged care facility to an emergency department	24 relatives	Semistructured interviews Data analyzed by using an inductive content analysis	Four themes emerged from the analysis: 1) The need for clear communication 2) The role of relatives in ED care 3) How older people are perceived in the health care system 4) Ability to provide specialized care
Nikki et al[16] 2012 Finland	Qualitative	To describe the experiences of family members of elderly patients aged >65 y in the emergency department for internal medicine	Family members of elderly patients aged ≥65 y in the emergency department for the internal medicine	9 family members	Semistructured interviews Data analyzed by using an inductive content analysis	Three themes were identified through the analysis: 1) Family member as a satisfied participant 2) Family member as an invisible participant 3) Family member as a disappointed outsider

continued

TABLE 3
Continued

Author(s), year of publication, and country	Design	Study aims	Sample description	Sample size	Methods and analysis	Key findings related to the scoping review subject
Palonen et al[28] 2016 Finland	Qualitative	To describe the experiences of ED service users and nurses regarding older people's discharge education in emergency departments	Older adults discharged from centralized emergency departments Family members emergency nurses	7 older adults 5 family members 15 nurses	Interviews Data analyzed by using an inductive content analysis	Family involvement in older patient discharge education was seen as "turbulence" Four themes were identified through analysis: 1) Families being acknowledge 2) Families being ostracized 3) Family as a resource to nurses 4) Families as obliged initiators
Parke et al[29] 2013 Canada	Qualitative	To identify factors that facilitate or impede safe transitional care in the emergency department for community dwelling older adults with dementia and to identify solutions that would support registered nurses' (RN) roles to provide gerontologically sensitive care that could be tested in future studies	Community dwelling older adult aged ≥60 y with dementia Family caregivers of community dwelling older adult with dementia Emergency registered nurses (RNs) Nurse practitioners (NPs) from hospital geriatric consultative teams	Interviews: $n = 16$ people (6 dyads + older adults + 4 caregivers) Focus group: 4 caregivers 10 emergency RNs 4 NPs	Semistructured interviews, photographic narrative journal, and photo elicitation focus group Data analyzed by using a constant comparative analysis	One overarching theme with 4 subthemes emerged from the analysis: 1) The way it works how priorities are determined: 1.1) Being under-triaged 1.2) Waiting: worried about what's wrong 1.3) Time pressure: lack of attention to basic needs 1.4) Relationships and interactions: feeling ignored, forgotten, and unimportant
Robinson et al[30] 2012 Canada	Qualitative	To identify key elements influencing the success of transitions in care for residents moving between nursing homes (NHs) and emergency departments from multiple perspectives(ie, residents, family members, and professional health care providers) within the 3 settings of care (NH, Emergency Medical Services, and emergency department)	NH resident Family members of a NH resident Professional health care providers (RN, licensed practical nurses, paramedics, physicians and administrators)	7 NH resident 20 Family members 23 NH professional health care provider 11 Emergency medical services professional health care provider 10 emergency professional health care provider	Semistructured interviews and focus group Data analyzed by using the method of constant comparison	Five elements were identified to influence the success of transitions in care for residents moving between NHs and emergency departments: 1) Knowing the resident 2) Critical geriatric knowledge and skilled assessment 3) Positive relationship 4) Effective communication 5) Timeliness

continued

TABLE 3
Continued

Author(s), year of publication, and country	Design	Study aims	Sample description	Sample size	Methods and analysis	Key findings related to the scoping review subject
Stein-Parbury et al[31] 2015 Australia	Qualitative	To explore the expectations and experiences of older people and their carers leading up to and after presentation to the emergency department	Older people aged ≥65 y who had a chronic illness presenting to the ED Caregivers	10 dyads ($n = 20$): 10 older people 10 caregivers	Semistructured interviews Data analyzed by using a content analysis	Four themes were identified after analysis: 1) Leading to ED admission 2) Experience in the emergency department 3) Advice to others 4) Perceptions of ED staff
Watkins and al.[32] 2019 Ireland	Qualitative	To generate insights about what matters and is valued by family members of older PwD in the emergency department and to explore the experiences of emergency nurses looking after older PwD in an episode of care	Family members of older PwD Emergency nurses	15 family members 12 emergency nurses	Semistructured interviews and observation Data analyzed by using a thematic analysis	Two main themes were identified through analysis with subthemes: 1) What matters to family members 1.1) Being triaged quickly 1.2) A cubicle space offers sanctuary 1.3) Contact and conversation with emergency nurses 1.4) Compassion over technical skills 1.5) Challenges for family members and nurses 2) Challenges for family members and nurses in the emergency department 2.1) Vulnerability 2.2) Keeping vigil
Wright et al[35] 2021 United Kingdom (UK)	Qualitative	The aim was to improve ED-based palliative care delivery through exploration of experiences, and co-design processes with ED clinicians, patients, and family caregivers *This article focuses only on patient and family experiences.	ED patient aged ≥65 y with long term/ terminal conditions Family caregiver of a ED palliative patient aged ≥65 y	6 ED patients aged ≥65 y 4 family caregivers	Narrative interviews Non-participatory observation Data analyzed by using a thematic framework analysis.	Five themes were identified after analysis (presented in order of importance according to participant ranking): 1) Communication and information 2) Systems and processes 3) Changing expectations 4) Recommendations 5) Acknowledgment and validation

ED, emergency departments; NH, nursing home; RACF, residential aged care facilities.

Triage: Triage, which is the first step in the emergency department, is not always easy for seniors and their families. The current "one size fits all" approach does not meet the seniors' needs.[22,29,31,32] Indeed, the triage process does not capture the complex nature of seniors' health problems, thereby minimizing situations such as immobility, falls, and confusion; these may be indicative of an atypical clinical presentation of acute illness.[22,29,31,32] This can lead to seniors being undertriaged; they may be more seriously ill than what the triage assessment reveals, which can lengthen the time spent in the emergency department and increase the risk of physical, psychological, and emotional complications.[29] However, the families' experience was improved when nurses prioritized seniors with dementia at the time of triage.[32]

ED environment: The ED environment can have more of a negative impact than a positive one on families accompanying a senior to the emergency department. The ED environment is characterized by prolonged wait times, high traffic, brightness, continuous noise (eg, monitor alarms), lack of privacy and comfort, ongoing care activities, and lack of routine.[16,17,22,23,25,26,29-36] Seniors are at a greater risk of deterioration, discomfort, anxiety, confusion, and functional decline, especially in people with dementia.[22,29,30,32-34] Families of seniors with dementia were concerned that the symptoms of the senior's dementia could have a negative effect on them or inconvenience those around them.[32] Indeed, families see the emergency department as being chaotic, stressful, always busy, and noisy.[16,22,23,25,29,32,33]

The preservation of the senior's dignity during their ED stay is important for families.[23,32,33] Privacy is difficult to maintain because stretchers are separated by curtains and several patients are in close proximity.[16,20,22,23,32,33,35] The emergency department offers minimal physical space for families to be present as active participants.[17] In Bracken-Scally et al's[33] study, 2 cubicles in the emergency department were modified to meet the needs of people with dementia and their families; these cubicles included adjustable lights, removable screens, foldable fixed chairs for families, and a digital clock.[33] Families found these changes to be helpful in reducing senior disorientation, having a calming effect, and promoting family intimacy.[33]

The wait time between arrival at the emergency department and medical care is a recurring problem.[16,20,22,25,29,30,36] Families are left to fend for themselves during this time with little contact with the health care team, which fuels their anxiety, incomprehension, mistrust of the health care team, and feeling abandoned or fearful.[22,25] The longer the wait time, the greater the need to be seen, listened to, included, and informed.[16,22,25,29,36] Being informed of wait times, including those related to diagnostic or treatment processes, gives seniors and their families a temporal benchmark on which to rely, thereby alleviating their uncertainty and frustration.[22,25,29,30,36]

Family satisfaction is influenced by the perception of how crowded the emergency department is, the senior's comfort, and the nurses' anticipation of seniors' needs.[25,29,30,35,36] The experience of seniors and families is improved when the health care team does not leave seniors on stretchers for hours and offers them water and food at meal times and pillows and blankets.[25,29,30,33,34,36] Families are aware that health care professionals including nurses are overwhelmed, must provide care to other critically ill individuals, and are working in a demanding environment.[31] Although families are grateful for the attention given to seniors' needs, their own distress may go unnoticed.[32,35] Wright et al[35] note that although some participants were well supported and informed during their stay in the emergency department, others mentioned the dehumanizing aspect of emergency care.

Interactions with ED personnel: Families often feel "physically" excluded in the emergency department, but also excluded from decisions made about the senior's care.[16,17] They have reported feeling like "spectators" and being "in the way,"[16] as well as being invisible or strangers to the health care team.[16] Consequently, families moderate their behavior because they do not wish to be a burden on the ED staff.[31] They want to collaborate,[31,32] yet they feel compelled to act in a certain way, for example, patiently and passively waiting to be asked to go to the emergency department or to receive information.[17] Nonetheless, families play several roles. They act as a liaison between the senior and the health care team, because they can clarify the senior's health history, ask questions that the senior would not dare to ask or is unable to ask, identify concerns about the senior's situation, and ensure continuity of care.[16,17,22,23,25-28,31,35,36] Families also perceive themselves as advocates for seniors to ensure that their needs are met.[16,27,30,31,36] Indeed, the participants in Cetin-Sahin et al's[34] study suggested an ED family visiting policy that would allow them to have unlimited access to their loved ones.

The quality of collaboration with the ED staff influences family satisfaction with ED care.[16,17,32,35,36] Families are more satisfied when they feel included in discussions about treatments and when their role is recognized,[16,17,35] thereby reducing their anxiety.[32] When families perceive that nurses incorporate a relational aspect into the care offered and demonstrate empathy and compassion, it makes their experience more enjoyable.[32] By contrast, when families' interactions with nurses are more directed to task,

TABLE 4
Distribution of studies by categories determined by the content analysis

Categories	References*
Category 1: Process leading to the emergency department	Arendts et al,[20] Bone et al,[21] Considine et al,[22] Goodridge et al,[23] Jacobsohn et al, 24, Marr et al,[27] Stein-Parbury et al,[31] Wright et al[35] (n = 8)
Category 2: Stay in the emergency department	
Triage	Considine et al,[22] Parke et al,[29] Stein-Parbury et al,[31] Watkins et al[32] (n = 4)
Emergency environment	Arendts et al,[20] Bracken-Scally et al,[33] Cetin-Sahin et al,[34] Considine et al,[22] Kihlgren et al,[25] Fry et al,[36] Goodridge et al,[23] Majerovitz et al,[26] Morphet et al,[17] Nikki et al,[16] Parke et al,[29] Robinson et al,[30] Stein-Parbury et al,[31] Watkins et al,[32] Wright et al[35] (*n* = 15)
Interactions with ED personnel	Cetin-Sahin et al,[34] Considine et al,[22] Fry et al,[36] Goodridge et al,[23] Kihlgren et al,[25] Majerovitz et al,[26] Marr et al,[27] Morphet et al,[17] Nikki et al,[16] Palonen et al,[28] Robinson et al,[30] Stein-Parbury et al,[31] Watkins et al,[32] Wright et al[35] (*n* = 14)
Category 3: Discharge from emergency department	Bone et al,[21] Cetin-Sahin et al,[34] Fry et al,[36] Goodridge et al,[23] Jacobsohn et al,[24] Marr et al,[27] Nikki et al,[16] Palonen et al,[28] Wright et al[35] (*n* = 9)
Category 4: Recommendations and possible solutions	Bone et al,[21] Bracken-Scally et al,[33] Cetin-Sahin et al,[34] Considine et al,[22] Fry et al,[36] Goodridge et al,[23] Marr et al,[27] Morphet et al,[17] Nikki et al,[16] Palonen et al,[28] Parke et al,[29] Robinson et al,[30] Stein-Parbury et al,[31] Watkins et al,[32] Wright et al[35] (*n* = 15)

ED, emergency department.
* Some references were used in more than one category.

lack support, and are less meaningful,[16] their satisfaction is reduced.[16,25,32]

The ED environment appears to constrain the health care staff in terms of time, ability, and willingness to communicate effectively with seniors and their families.[23,35]

Category 3: Discharge From the Emergency Department

Two aspects regarding seniors' discharge from the emergency department affect their families. The first aspect involves discharge planning. There appears to be little or no preparation for the senior's discharge, poor consideration of the needs of seniors and their families, and a lack of coordination with community resources, and families are often left to coordinate care and follow-up for the senior upon discharge.[21,23,24,27,28,34-36] They feel that they do not receive enough information to prepare them for the future[16,27,34,36] and to ensure optimal follow-up when the senior returns home or to the NH.[27] Consequently, families feel a sense of uncertainty, which can lead to the senior's eventual readmission to the emergency department.[21,27,36] However, when families feel involved and communication is present with the ED staff, most of family members (69%) have a greater understanding of the senior's clinical condition.[36]

The second aspect involves how seniors understand and follow recommendations made by the ED staff upon discharge; the family's availability and support make it easier for them.[16,27,36] The ED staff do not always take into account the context in which these recommendations have to be applied.[27] Seniors are sometimes discharged without notifying the family and without the family having the necessary information to ensure the associated follow-up.[21,23] In this sense, families do not feel recognized in their role.[27] The needs of families need to be considered when planning the senior's discharge from the emergency department; if their needs are not met, it can be a barrier to their ability to help the senior after discharge.[27,36]

TABLE 5
Categories developed through content analysis

Categories	Description	Highlights
1. Process leading to the emergency department	This category reflects the experiences of families before the senior arrives in the emergency department and what this means for them.	• Families' decision-making process to go to the ED is fraught with ambiguity and uncertainty. • Families base their decision on several factors before heading to the emergency department and often rely on the decision of a health care professional to justify their presence in the emergency department.
2. Staying in the emergency department 2.1 Triage 2.2 ED environment 2.3 Interaction with ED personnel	This category describes the experience of families once the senior arrives in the emergency department. It covers both the triage process and the stay in the emergency department.	• Families feel that triage is not well suited to the needs of the senior population. • Families deplore the waiting time, the overcrowding spaces, the continuous noise, the lack of privacy, and comfort that negatively affect their experience and the one of their seniors. • Families perceived themselves to play an important role but feel excluded from care.
3. Discharge from emergency department	This category depicts the experience of families during the process of planning and preparing for the senior's discharge from the emergency department.	• Families feel that there is little to no preparation for discharge. • Families consider that there is a poor consideration of their needs and those of their senior during the discharge process. • Families raised the lack of coordination with community resources after discharge.
4. Recommendations and possible solutions	This category presents the recommendations and possible solutions identified in the selected studies of this scoping review.	• There is a paucity of recommendations specifically focused on families who accompany a senior to the emergency department.

Families need to be part of discharge planning, because they can identify issues not considered in relation to the senior's discharge and can ensure that the recommendations made and the associated follow-ups are well performed.[21,27,28,34-36]

Category 4: Recommendations and Possible Solutions

Several recommendations and possible solutions were identified according to each of the aforementioned categories (Table 6). Despite the fact that most of them affect the senior's ED care or discharge planning, there is a paucity of recommendations regarding families. However, given the results of this review, if the care given to seniors in the emergency department is improved, this may have a positive impact on the experience of the families who accompany them, given that many of their concerns directly affect the care of seniors.

Discussion

This article aimed to identify and summarize the scientific literature regarding the experience of families accompanying a senior to the emergency department. Nineteen studies

were identified using the Arksey and O'Malley[18] framework. The small number of selected studies in this scoping review attests to a domain that is underexplored. However, the findings reveal that the experience of families follows a trajectory of care and health services and is multifactorial.

The findings of this scoping review present a beginning portrait of the experience of families accompanying a senior to the emergency department. First, families are present from the beginning to the end, given that they play a role before, during, and after the ED stay. Second, the families' trajectory is intertwined with that of the seniors. Third, families experience a multitude of emotions during each of the 3 trajectory phases, especially uncertainty, ambiguity, stress, and frustration. Fourth, the families' needs are not always identified nor answered to. It appears that most of their needs include being kept informed, being involved in decision making in regard to the senior's care, and being supported in their role and ability to care for the senior. Finally, families play different roles during their trajectory, such as being an advocate for the senior's needs and interests, a liaison between the senior and health care team, and a source of additional information.

Although the findings highlight the importance of recognizing the role of families and their needs, they experience stress and anxiety during their ED stay. Their distress was not specifically nor directly mentioned in the selected studies. In the scoping review published by Ringer et al[37] that focused on caregivers' distress when accompanying a patient to the emergency department, not one study was identified in relation to seniors' caregivers. This is of concern in light of the increase in the number of seniors and caregivers over the next few years. Ringer et al[37] indicate that the distress of caregivers who accompany an adult to the emergency department was less studied than those of children and that no intervention was identified to reduce adult caregivers' distress other than in the context of resuscitation. In this sense, implementing patient- and family-centered care[38,39] is provided as an option to reduce families' distress, increase their satisfaction, and recognize their role and needs. Patient- and family-centered care is defined as: "…an approach to the planning, delivery, and evaluation of health care that is grounded in mutually beneficial partnerships among health care providers, patients, and families."[40]

The experience of families is also multifactorial, namely, that several factors influence their experience during each of the trajectory phases. Before their arrival to the emergency department, the experience of families is affected mostly by the senior's health status and the intricacy of the decision-making process leading to the emergency department. Once in the emergency department, their experience is influenced by internal processes such as the triage, the ED environment, and the interactions with the ED staff. Toward the end of their trajectory, their experience is particularly affected by their degree of involvement and the consideration of their needs and those of the senior in preparation for discharge. In contrast, many of the factors raised should be addressed by respecting the geriatric emergency guidelines.[41,42] Indeed, in the last few years, various initiatives have emerged to adapt emergency services to seniors' complex and specific needs. For example, emergency departments can obtain the Geriatric Emergency Department Accreditation; this formal designation is given out by the American College of Emergency Physicians.[41,42] This designation is based on compliance with the guidelines that can be adapted according to the reality of emergency departments (eg, rural to urban), and allows a restructuring of the vision of care for the elderly and the various ED care processes. When these guidelines are properly applied, there is an improvement in the care provided to the seniors, in customer service and with staff satisfaction.[42] However, despite the dissemination of these geriatric emergency guidelines, their application remains heterogeneous and compliance that is low.[41,43,44] Despite all of these various initiatives, it is important that these efforts continue to encourage and sustain the implementation of geriatric emergency guidelines.

It is no longer sufficient to only consider the experience of families in the emergency department. Instead, what happens before the family's arrival at the emergency department, their stay in it, and upon discharge planning need to be all taken into consideration. A visit to the emergency department should be perceived as being part of the health care system, rather than just as an isolated event.[35] Consequently, a patient- and family-centered care approach should be reinforced in the emergency department and throughout the continuum of health care.[38-40]

IMPLICATIONS FOR RESEARCH

The studies selected for this scoping review were predominantly qualitative in nature with an exploratory and descriptive focus. This is consistent with the need of knowing and understanding the experience of families accompanying a senior to the emergency department. However, other methodological approaches, such as mixed methods research, would be an interesting alternative to better capture and enhance current knowledge, particularly in terms of families' needs and their distress. In future research, it would also be relevant to further explore caregiver-specific factors, such as their gender, their relationship to the senior (eg, adult child vs spouse), and where the senior resides (home vs NH).

TABLE 6
Recommendations and possible solutions

Process leading to the emergency department	Staying in the emergency department	Discharge from the emergency department
• Provide education to seniors to prepare them for an ED visit (eg, what is useful and relevant to bring to the emergency department).[23]	• Review the triage process to adapt it to the senior population and people with dementia.[22,29,32] • Provide access to a volunteer when the family is not available to accompany the senior to the emergency department.[23,34] • Offer or improve the quality of signage in the emergency department to promote seniors' orientation.[23] • Focus on the environmental impacts of the emergency department and adapt them to the physical and sensory needs of seniors: eg, cleanliness, lighting, ambient noise, privacy, and medical equipment.[17,23,29,33,34] • Adapt the physical environment to provide space for families accompanying a senior to the emergency department so that they can sit and stay close to the senior.[33,34] • Focus on "basic" comfort measures (eg, hydration, hygiene, food).[17,23,29,34,36] • Explain to seniors and their families how the emergency department works, the diagnostic and treatment processes, and give them the opportunity to ask questions and have them answered.[29,31,34,35] • Use standardized and validated tools for the assessment of different risks or geriatric syndromes in the elderly.[27,34] • Provide care to seniors and their families through a multidisciplinary team specializing in geriatric care.[17,21] • Promote the presence of Geriatric Emergency Management nurses.[27]	• Provide information and instructions written in plain language and with an appropriate font size.[23,27] • Verify that seniors and their families have a good understanding of the medical condition and associated implications as well as recommendations and discharge instructions.[27,31] • Explore the support that seniors and their families need to ensure and promote adherence to recommendations and the treatment plan once they return home.[27,28,36] • Assess the caregiver's ability to help the senior manage himself or herself.[27] • Inform and refer seniors and their families to services or programs in their community.[27] • Ensure coordination between the different health professionals who will be involved after discharge from the emergency department.[34] • Enhance community support after an ED visit (eg, transitional care program/postacute care transition support program/intensive geriatric service workers).[27]
	Combined recommendations and possible solutions for "staying the in emergency department" and "discharge from the emergency department" • Focus on respectful, nonageist communication, using a comfortable rhythm for seniors, while respecting sensory deficits, if any.[23] • Provide communication training to ED personnel to improve the engagement of seniors and their families, for example, through simulation.[36] • Inform the family quickly so that they can participate actively in the decision-making process.[16] • Foster a family- or relationship-centered approach to care and policies that encourage the inclusion of families in the emergency department.[16,28-30,32,34-36] • Provide training to ED personnel on the presence and involvement of families in ED care.[16,28]	

ED, emergency department.

Finally, only 2 studies[21,29] explicitly identified their theoretical framework; none of the other studies mentioned using theory. The transitions theory of Meleis et al[45] could be used in future research, given that seniors and their families face several types of transitions, including health/disease, situational, developmental, and organizational.[45]

Strengths and Limitations

To the best of our knowledge, this is the first knowledge synthesis that focuses exclusively on the experience of families accompanying a senior to the emergency department. This scoping review used the Arksey and O'Malley framework.[18] In accordance with this framework, the quality of the selected studies was not assessed[18]; therefore, the findings should be interpreted with caution. Only empirical studies (qualitative, quantitative, or mixed) published in English or French were considered. Indeed, critical, theoretical, gray literature and other relevant articles published in other languages could have been overlooked.

Implications for Emergency Nurses

This scoping review highlights the importance of considering the senior's family as a partner for the optimization and continuity of ED care. Families act as a safety net throughout the trajectory of care, that is, before, during, and after the ED stay. Finally, many factors influence the experience of families in the emergency department, thus the need to support them, so that they in turn can take care of their senior. To address many of the issues raised by families in this scoping review, following geriatric emergency guidelines is highly recommended.

Conclusion

This scoping review provides a beginning understanding of the experience of families accompanying a senior to the emergency department. The family is important for the senior and for the health care team, especially as the health care system is currently under pressure for restructuring. Their experience is part of a trajectory of care and health services and is multifactorial. Seniors' families play a special role in the emergency department; therefore, emergency nurses must encourage their presence while considering their needs and supporting them. Finally, many of the issues raised by families in this scoping review can be potentially improved by following geriatric emergency guidelines. Efforts to develop family inclusive geriatric emergency departments must continue over the next few years.

Author Disclosures

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Setting the Stage: Innovation in Port Access Education for Pediatric Emergency Nurses

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Contribution to Emergency Nursing Practice

- Port access education for nurses primarily focuses on adults using motionless, tabletop training devices. Pediatric port access has unique procedural and situational challenges. When pediatric patients with ports come to the emergency department, they are often acutely ill and need immediate intervention. Emergency nurses require competence and confidence in accessing pediatric ports to provide lifesaving care.
- Pediatric port education must include procedural aspects using appropriate pediatric models and situational management techniques to improve nursing performance and promote optimal patient outcomes and family satisfaction.
- The results of this study support the integration of a unique simulation curriculum and device that emphasizes skill-based practice combined with situational and emotional aspects inherent in pediatric port access procedures.

Abstract

Introduction: Pediatric port access can be challenging in the emergency department; however, it must be performed promptly and safely. Port education for nurses traditionally includes procedural practice on adult-size, tabletop manikins, which lacks the situational and emotional aspects inherent in pediatrics. The purpose of this foundational study was to describe the knowledge and self-efficacy gain from a simulation curriculum that promotes effective situational dialogue and sterile port access technique, while incorporating a wearable port trainer to enhance simulation fidelity.

Methods: An educational intervention impact study was conducted using a curriculum integrating a comprehensive didactic session with simulation. A unique element included a novel port trainer worn by a standardized patient, along with a second actor portraying a distressed parent at the bedside. Participants completed precourse and postcourse surveys on the day of simulation and a 3-month follow-up survey. Sessions were video recorded for review and content analysis.

Results: Thirty-four pediatric emergency nurses participated in the program and demonstrated an overall increase in knowledge and self-efficacy with port access that was sustained at the 3-month follow-up. Data revealed positive feedback regarding the participants' simulation experience.

Discussion: Effective port access education for nurses requires a comprehensive curriculum integrating procedural aspects and situational techniques to address the components of a true port access experience involving pediatric patients and families. Our curriculum successfully combined skill-based practice with situational management, and promoted nursing self-efficacy and competence with port access in the pediatric population.

Key words: Implantable venous access device; Nursing education; Simulation; Pediatrics; Emergency nursing; Port access

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Introduction

A port is a central venous access device surgically inserted into a major vein and implanted entirely under the skin, usually of the anterior chest. Ports allow for repeated and long-term venous access in patients with poor peripheral access. They have lower infection rates and are less restrictive in daily life than long-term central venous catheters.[1] Ports are commonly used in pediatric care for the delivery of fluids, medications, nutrition, and blood products; however, port access presents unique challenges for pediatric emergency nurses (PENs). Pediatric patients with ports who present to the emergency department often have poor peripheral venous access, may be immunocompromised, and are at high risk of bloodstream infection. In addition, serious and potentially life-threatening complications associated with ports include central line-associated bloodstream infection, venous thrombosis, catheter occlusion, catheter breakage, and dislodgement.[2-4] The purpose of this foundational study was to develop and implement a curriculum that promoted effective situational dialogue and incorporated a unique, wearable trainer to enhance the fidelity of port education for PENs.

Background and Significance

Port access can be difficult to perform in the ED setting where there is significant pressure to address competing demands and prioritize multiple tasks. This procedure can be particularly challenging to execute on a frightened, emotionally distressed child who is anticipating needle pain, yet must remain properly positioned to adhere to sterile technique.[5] Moreover, port access in children must occur promptly to administer fluid and medications, especially if sepsis is suspected.[6] These contextual challenges, coupled with family presence at the bedside, may place PENs in high-anxiety circumstances that could negatively affect procedural performance, decision making, and family satisfaction.[7,8]

Findings in the nursing literature have indicated that rigorous standards of care, infection prevention bundles, nurse-led port access algorithms, and evidence-based nursing interventions promote patient safety, reduce high morbidity and mortality rates, and standardize best nursing practice surrounding port access.[9-13] If these safety standards are disregarded, port access may cause life-threatening infections that pose significant morbidity, mortality, prolonged lengths of stay, and added medical costs for pediatric patients.[14]

HISTORICAL METHODS OF PORT EDUCATION

Although port access has traditionally been included in general nursing education, procedural practice has predominantly used motionless, adult-sized chest models or manikins.[15] Portable technology devices, online video-based learning, and social media platforms provide convenient access to clinical skill demonstration; however, relevant content must be analyzed for accuracy.[16] Using educational just-in-time videos has shown some benefit, but has been limited to teaching psychomotor skills such as urinary catheterization, endotracheal suctioning, and gastric lavage.[17] The use of virtual reality technology has been explored, although restricted by computer cost, software design, technological literacy, and internet connectivity.[18,19]

Unfortunately, most port access educational methods are neither applicable to the pediatric population nor do they emphasize the emotional aspects inherent in pediatric needle procedures that can be particularly acute in emergent situations.[20] Both are critical components of situated learning in port access for PENs. Situated learning is an educational approach in which students learn by actively participating in the experience and are challenged to use their critical thinking and kinesthetic abilities. It is informed by authentic context, culture, and a community of practice that embody certain beliefs and acquired behaviors.[21] Social interaction and collaboration are essential elements of situated learning, enabling students to transfer acquired knowledge, skills, behaviors, and attitudes to real-life procedures. Port access is a high-risk procedure that requires effective communication and collaboration among the PEN, patient, and family, and is therefore applicable to situated learning methodology.

ROLE OF SIMULATION

Simulation plays a major role as an effective educational strategy to increase self-efficacy for all levels of learners in the medical field.[22] Self-efficacy is defined as confidence and belief "in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands."[23,24] Simulation-based learning using standardized patients (SPs) has shown to have positive impacts on psychomotor, cognitive, communication, and affective domains of learning, including significantly improved self-efficacy and learning motivation.[25] Recently, integration of SP and innovative technology has led to the use of wearable devices, such as a chest vest for tracheostomy care, to improve simulation fidelity.[26]

TABLE
Participant demographics

Sample size	***n* = 34**	**%**
Years of RN experience		
<2 y	0	0%
2-5 y	6	18%
6-10 y	9	26%
>10 y	19	56%
No. ports accessed in the past 6 mo		
None	8	24%
<5	15	44%
>5	10	29%
>10	1	3%

RN, registered nurse.

An enhanced program that educates nurses on proper port access under the strains of a high-stress environment, high patient acuity, strict time constraints, and challenging family presence is warranted to protect patient, family, and staff safety. The purpose of this study was to describe PENs' knowledge and self-efficacy gain from a simulation curriculum that promoted effective situational dialogue and sterile port access while incorporating a unique, wearable trainer, crafted in collaboration with nursing and simulation specialists, to enhance the fidelity of port education. We introduced this curriculum at our institution to improve our previous port education program. This curriculum was 2-fold:

1. Development of a novel, wearable device used to simulate an implanted port
2. Creation of a unique, simulation-based port access education program

The curriculum was designed to educate nurses in procedural aspects of port access using hybrid simulation to promote a focus on situational instruction relating to the management of the pediatric patient and family. Hybrid simulation is defined as the use of wearable or augmentative technology by a professional actor in a health care education context.[27] Hybrid simulation allows the nursing professional development specialist (NPDS) to create a learning scenario that incorporates invasive procedures with human interactions, emotions, reactions, and dialogue, thereby bringing procedural and communication skills training into a sense of realism.[28] We hypothesized that PENs who completed this enhanced education, including behavioral and emotional management through hybrid simulation, would improve their self-efficacy in procedural confidence when accessing the port of a distressed pediatric patient with a distraught family member at the bedside.

Methods

We conducted an educational intervention impact study of a new curriculum developed in partnership between the emergency department and our hospital's simulation program. The study was approved and deemed exempt by the institutional review board, given that the research was conducted in an established educational setting involving normal educational practices.

SETTING

This study was conducted in a freestanding 404-bed, urban, quaternary-care pediatric hospital with a 53-bed emergency department. A retrospective chart audit revealed PENs accessed 934 ports in the emergency department between July 1, 2017, and June 30, 2019, which is more than 2 ports per day or approximately 1 port per 12-hour shift.

STUDY POPULATION

One hundred PENs, 1 nurse manager, and 1 nurse director were invited via email to participate in the program. Our goal was to educate 30% of the staff in 10 sessions (3 PENs per session). Thirty-four PENs ranging from novice to expert volunteered; recruitment was closed within 3 weeks once each session had at least 3 participants (33% response rate). PENs received 2 hours of their regular pay to attend the program. Participant demographic information is described in the Table.

DEVELOPMENT OF THE WEARABLE PORT TRAINER

The NPDS collaborated with simulation engineers in the development of the port trainer (Figure 1). This unique, wearable device replicated an implanted port during the simulation. It was engineered to fasten around the chest of the user and be positioned on either side of the anterior chest. When accessed with a noncoring needle, it provided simulated blood return upon aspiration and accommodated up to 100 mL of infusate. The anterior surface of the trainer replicated a smooth skin-like surface that can withstand repeated cleansing and needle punctures. The posterior surface was an impenetrable plate fabricated to protect the wearer from needle injury. The device contained an internal adjustment mechanism allowing for 5 millimeters of port

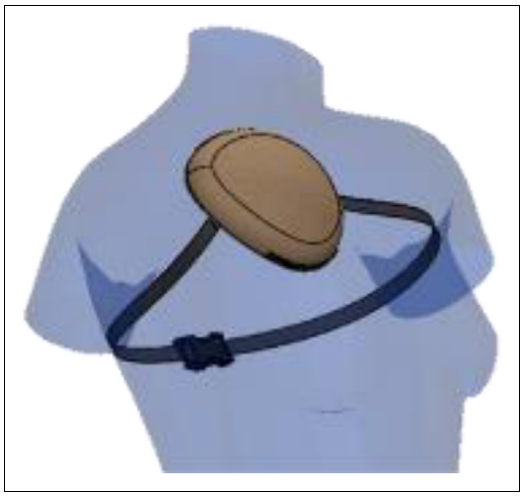

FIGURE 1
Wearable port trainer.

elevation to simulate patient variation and to accommodate multiple catheter shapes and sizes with a custom shim attachment. This trainer has been featured in our ED nursing education program since 2016.

CURRICULUM DEVELOPMENT

The NPDS led a team consisting of a simulation research coordinator, 2 simulation engineers, a curriculum development specialist, and a nurse scientist to develop a curriculum integrating a comprehensive didactic session with simulation and debriefing. Each session was 2 hours in duration and facilitated by the NPDS, with at least 3 nurse participants. Learning objectives were to:

- Practice strategies to increase nursing confidence and decrease procedural performance anxiety with pediatric port access
- Demonstrate techniques to effectively manage patient/family anxiety with port access
- Simulate successful port access per hospital policy for a pediatric patient while promoting family presence at the bedside
- Verbalize the importance of improving patient safety and family satisfaction with port accessing activities

DIDACTIC SESSION

The didactic elements of the curriculum began with a procedural review consisting of a prerecorded video demonstration of proper port access, followed by a discussion of port access guidelines and best nursing practices. Discussion points included strategies to initiate and promote patient and family dialogue and active participation and to form a trusting relationship between the nurse, patient, and family. Potential complications with port access and subsequent prevention strategies were reviewed. To provide practical advice for nurses from the parent perspective, learners reviewed key elements from actual informal conversations between the NPDS and parents of patients with ports.

Developmental considerations of patients from infants to adolescents were integrated throughout the curriculum. Forming a trusting relationship among the patient, family, and PEN was most significant. Other considerations included patients' fear of needle pain and separation anxiety. Strategies to address these considerations promoted family-centered care based on the patient's developmental level, such as comfort measures, needle pain interventions, parental presence, simple and honest explanations, patient and parent participation, and limit setting with positive reinforcement. The importance of using available resources, such as child life specialists to provide additional support during the port access procedure, was emphasized. Pharmacologic interventions to minimize needle pain, such as the application of topical anesthetics, were encouraged. Nonpharmacologic interventions, such as comfort holds, distraction techniques, music, and offering age-appropriate rewards, also contributed to successful port access.

HYBRID SIMULATION

Simulation technicians assisted with the setup of the hybrid simulation to create an authentic, fully immersive ED experience. The NPDS facilitated each simulation. Professional actors portrayed the SP and accompanying parent and were provided with complete details about their characters' personal and clinical backgrounds. The SP selected for the simulation was a 16-year-old adolescent male professional actor who was readily available to our program. This SP had the ability to understand the role and objectives of the simulation and to provide feedback to the participants from the patient perspective during the debriefing sessions. The SP, outfitted with the wearable port trainer, verbally and nonverbally interacted with the PEN and parent actor throughout the simulation. The SP exhibited the commotion of a distressed pediatric patient during port access by being uncooperative, crying, and moving around on the bed during the procedure. The parent remained close to the bedside and interfered with the procedure by contaminating the sterile field. Conversations and interactions

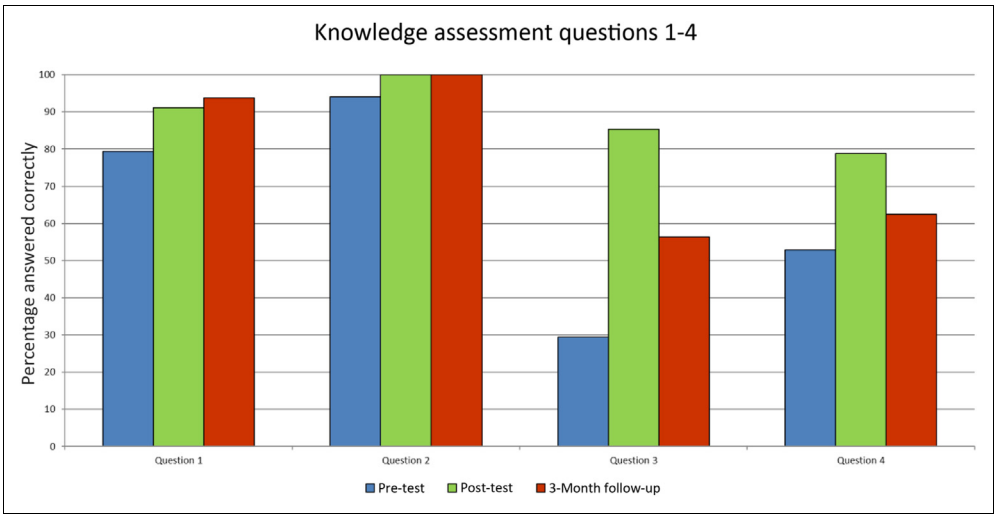

FIGURE 2

Knowledge assessment scores pre-test, post-test, and 3-month follow-up.

between the patient and parent would become loud, disruptive, or emotional at times. The nurse was expected to obtain patient assent before the procedure by providing education, support, and reassurance and to successfully access the port after applying strategies to establish trust and rapport with the patient and family. Procedurally, successful port access was achieved when a blood return was produced from the training device. Each scenario typically lasted 15 minutes. Three unique scenarios were conducted in a theater-style simulation suite, allowing each nurse to participate individually in at least one scenario while the other nurses observed from a distance. After the conclusion of each simulation, the PENs, NPDS, and actors participated in a debriefing session.

DATA COLLECTION

All participants completed a paper precourse survey consisting of a brief knowledge assessment and a self-efficacy survey at the beginning of the program. The NPDS created the 4-question knowledge assessment and determined validity measures during a pilot session with expert PENs experienced in port access. The self-efficacy survey contained 8 items adapted from the New General Self-Efficacy Scale by Chen et al.[29] At the program conclusion, participants completed another paper postcourse survey that was similar to the precourse survey with the addition of a simulation effectiveness tool. The Modified Simulation Effectiveness Tool (SET-M) created by Leighton et al[30] was used to evaluate the simulation experience. The SET-M was used with permission from the author. The New General Self-Efficacy Scale and the SET-M have both produced strong evidence of validity and reliability.[29,30]

Participants were asked to complete a second postcourse survey within 3 months after the curriculum to evaluate their lasting perceptions of competence and self-efficacy after receiving the education. This survey was electronic and sent to participants via email. With participant consent, each simulation session was videotaped for subsequent review and content analysis to identify recurring themes that emerged during the open discussions. Research data may be available upon request by contacting the corresponding author.

Results

Following a focus group of nursing experts who accessed ports routinely and a pilot session that resulted in minor modifications of the program, the NPDS presented the curriculum in 10 sessions from May to August 2018. Knowledge assessment and self-efficacy survey data were collected immediately before and after the sessions ($n = 34$). By the 3-month follow-up, 2 nurses left the institution before completing the survey; thus, we collected 32 data sets.

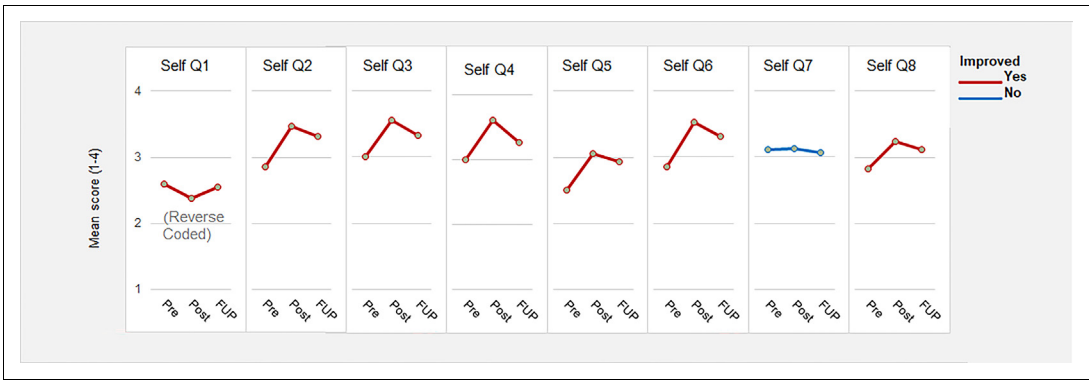

FIGURE 3

Change in self-efficacy: pre-test/post-test/3 month follow-up mean score comparisons for 8 elements.

KNOWLEDGE ASSESSMENT

Participants demonstrated an overall increase in procedural knowledge after completing the program. Knowledge gains were greatest immediately postcourse; notably, average improvement was sustained at the 3-month follow-up (Figure 2).

SELF-EFFICACY

Nurses' self-efficacy related to the port access procedure significantly improved in 6 of 8 elements from presimulation to postsimulation. "I am confident that I can cope with unexpected events that might occur during the procedure" and "I can solve most problems that arise during port access procedures if I prepare ahead of time" showed notable increases from presimulation to 3-month postsimulation. Although participants tended to rate their self-efficacy somewhat lower at the 3-month follow-up than they had at the immediate postsimulation survey, follow-up scores were on average higher than the pre-educational intervention (Figure 3).

SIMULATION EXPERIENCE

At the end of the course, participants rated their simulation experience by completing the SET-M Tool.[30] One participant inadvertently omitted the SET-M Tool; thus, $n = 33$. Data revealed positive feedback regarding participants' simulation experiences during the program.

Through content analysis of the recorded debriefs, the authors identified themes of communication, teamwork, promptness/time management, and authentic learning environments. The participants specifically mentioned the following critical learning points as contributing to situational awareness:

1. Create rapport with the patient and family in a timely manner.

Nurse participant A shared the following comment:

"I think, especially in pediatrics, you are really negotiating with 2 patients. You not only have to communicate with the patient, but also with the parent. And meet them where they're at."

2. Negotiate fairly and give clear instructions when needed.

The parent actor shared the parent perspective:

"I really appreciated that the 'no' was firm and clear, but not aggressive. And then the follow-up: 'And this is why…we can't do that now, but we can do that later.'"

3. Use the buddy system.

Nurse participant B shared the following comment:

"You can always have someone come in and be a second set of eyes for you, even just to validate what you're thinking. Parents would rather you do that before you stick the needle, than to be not sure and you stick."

4. Enhance simulation fidelity by using parent actors and SPs with the wearable port trainer.

Nurse participant C commented:

"The scenarios were so real. On the inside, our feathers were ruffling, but on the outside, we had to just remain calm, which is the truth…."

Discussion

Our findings were consistent with the port access literature. Nurses' knowledge of ports and other central venous access devices is a global health concern that requires improvement to reflect clinical practice standards.[31–34] Although the Centers for Disease Control and Prevention recommends standardization of care for these devices, educational requirements and continued competency for nurses who access ports are determined at the local hospital level.[35] The 47th Annual Oncology Nursing Society Congress held in April 2022 suggested standardizing training and ongoing competency requirements to consist of asynchronous online learning modules, videos, manikins, and competency checklists.[15] Although technical elements are important, education regarding procedural situational management must also be included, especially when accessing a pediatric patient's port. Real-time, hands-on simulation with SP allows PENs to practice on live patients, mimics actual clinical experiences, and is important to improve self-efficacy, outcomes, and the patient and family experience. It also enforces the significance of including the patient and family as partners in the care process.

We identified a lack of effective situational management training in port access education for our nurses in the pediatric ED setting. PENs requested education that included situational management during port access. To address this educational need, a collaboration between nursing and the simulation program was formed, resulting in the development of a novel device that authentically replicated pediatric port access. We developed a curriculum combining the wearable device with simulation using SPs. The curriculum included didactics and scenarios in which PENs accessed ports in situations that simulated actual patient and family dialogue. This innovative program was designed to improve patient outcomes by providing PENs skill-based practice in a realistic setting using state-of-the-art simulation. The curriculum addressed the learning needs of PENs relating to port access procedures, as well as essential situational management specific to the pediatric patient and family. It also proved successful in educating novice nurses and validating competency for experienced nurses in port access procedures involving the pediatric patient. Wearable technology was shown to be an effective tool when used in conjunction with simulation to increase nurses' confidence and competence with port access procedures.

Findings of the SET-M demonstrated positive responses regarding the effectiveness of the PEN simulation experiences; notably, the responses demonstrated that the debriefing sessions after each simulation contributed significantly to the program's value. During postsimulation debriefing, the PENs identified the escalating behaviors of either the patient or the parent actor during each scenario as the major anxiety-causing factor, posing a significant hindrance to successful port access. Participants stated that they often encountered similar situations in their daily practice, and incorporating an SP outfitted with the wearable trainer enhanced the fidelity of their simulation experience. Throughout the program, PENs identified areas of self-improvement, included communication strategies to promote patient assent, and recognized patients and parents as partners in care. Solutions were generated to reduce PENs' anxiety, improve their performance, and increase patient and family satisfaction. Allowing PENs to practice situational strategies to manage challenging aspects of port access in a manner that promoted trust in the safety of the simulation suite was a significant contribution to the curriculum.

Limitations

We acknowledge this pilot study has limitations. The study was performed at a single academic medical center with a small convenience sample in which all the participants were female. Future opportunities include expanding the study to include additional clinical settings, such as outpatient clinics and smaller community hospitals, and younger patient age groups, such as toddler and schoolage children. We also recognize the interdisciplinary collaboration between nursing and our simulation program to develop and pilot the wearable trainer was essential for our study. Similar resources may not be available at other institutions; however, including situational dialogue in port access education is possible with minimal resource utilization.

Implications for Emergency Nurses

The value of nursing innovation evolving from the point of care led to a notable collaboration and successful partnership with an expert team to develop a novel training device and a curriculum that effectively enhanced simulation fidelity. This study emphasized the need for situational training to be included in the emergency nursing education curriculum for port access for pediatric patients. It reinforced the importance of developing trust with the patient and family to

promote nursing adherence to procedural guidelines, improve patient safety, and enhance patient/family satisfaction. We found it essential to teach PENs several key tools and techniques. For example, we emphasized use of age and developmentally appropriate comfort measures, including the use of topical anesthetics, patient distraction or active participation, comfort holds, and family presence. In preparation for port access, we reinforced the importance for PENs to focus on communication with the patient and family. For example, PENs should listen to families' concerns and ask questions about what has worked best for port access. In advance of the procedure, PENs should address the elements for a safe and successful procedure, such as maintaining the sterile field, which may require limit setting with the patient and family. Having a contingency plan is equally important.

Conclusion

Port access education requires a comprehensive curriculum that includes situational training and procedural aspects to address all components of an authentic port access experience. Our curriculum successfully combined skill-based practice using a novel, wearable port trainer with essential situational management techniques specific to the pediatric patient and family. It allowed PENs to rehearse challenging, and often emotional, situations with SPs to ensure patient safety without reducing procedural performance and decision making. In addition, it promoted PEN self-efficacy and competence with port access. The impact this program has on measurable patient outcomes such as pediatric central line-associated bloodstream infection rates, time to first dose of antibiotics, hospital length of stay, and, importantly, patient and family satisfaction with port accessing experiences has yet to be determined. Further study of this educational initiative and of its sustainability is warranted with a larger sample of nurse participants beyond the emergency department to include oncology units and outpatient clinics whose patients have ports. The usefulness of the wearable port trainer for patient and family education, child life programs, and formal nursing academic settings should also be evaluated.

Author Disclosures

Conflicts of interest: none to report. This project was partially funded by the Boston Children's Hospital Academy for Teaching and Educational Innovation and Scholarship Health Professional Education Grant. Research data may be available upon request by contacting the corresponding author.

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Emergency Nursing Review Questions: JULY 2023

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Section Editors: Benny Marett, EdD MSN CEN TCRN CCRN COHN NPD-C NE-C FAEN FAHA and Sara Webb, MSN, C-PNP, CFNP, C-NPT, Paramedic.

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

QUESTIONS

1. A 44-year-old male patient presents to the emergency department with chest pain. He displays a sinus rhythm with a left bundle branch block on his electrocardiogram. His pain started earlier in the day. The nurse would agree with which of the following statements?
   - **A.** Infarction patterns cannot be accurately diagnosed with the left bundle branch block.
   - **B.** Cardiac ischemia would be highly unlikely owing to the age of the patient.
   - **C.** A chest image and lung scan would be indicated early in the treatment plan.
   - **D.** The electrocardiogram should be analyzed for prolonged QT intervals relating to injury.
2. A 15-year-old is hit in the chest with a soccer ball and immediately collapses. The patient is pulseless upon assessment. A likely diagnosis would be:
   - **A.** Ruptured spleen
   - **B.** Commotio cordis
   - **C.** Traumatic asphyxia
   - **D.** Pulsus alternans
3. The best method for evaluation and estimation of total body surface area for scattered burns in various locations around the body would be:
   - **A.** Lund-Browder chart
   - **B.** Size of the patient's hand as a template
   - **C.** Rule of nines
   - **D.** Parkland formula for burn calculation
4. A patient is brought to the emergency department with a gunshot wound to the left anterior chest. The nurse notes stippling around the wound. Which of the following would be a true statement concerning the stippling?
   - **A.** The wound would most likely be an exit wound.
   - **B.** The weapon was fired at a fairly close range.
   - **C.** Subcutaneous air would cause the stippling effect.
   - **D.** Stippling should be washed off to protect the wound.
5. A patient presents to the emergency department with lethargy and confusion. The cardiac monitor displays a prominent U wave.

The nurse would suspect:
   - **A.** Low potassium level
   - **B.** Myocardial infarction
   - **C.** Pericarditis
   - **D.** Hypothermia

ANSWERS

1. Correct answer: A

Infarctions or injury patterns on the electrocardiogram are difficult to detect owing to the distortion of the ST segment by the bundle branch block pattern. The delayed

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repolarization of the left ventricle distorts the ST segment (A). Cardiac ischemia can occur at any age and should not be disregarded as a differential diagnosis in a patient with chest pain (B). Although a chest image and or lung scan may be indicated, early management and priority for this patient are to rule out cardiac ischemia or injury first (C). Prolonged QT intervals could be present owing to medication effect or delays in conduction but would not be an initial defining pattern for injury (D).[1]

2. Correct answer: B

Commotio cordis is a condition caused by a sudden blow or injury to the anterior chest while the heart is in repolarization. The blow causes a sudden ventricular fibrillation. Causative events are more common in younger individuals who are engaged in sports, but can occur with any chest injury. Rapid cardiopulmonary resuscitation and defibrillation are essential to improve outcomes (B). A ruptured spleen could be seen in an injured sports player, usually from a blow to the left upper abdomen or side (A). Traumatic asphyxia is usually caused by a crush injury to the chest with severe airway compromise (C). Pulsus alternans is a pulse with alternating strong and weak beats. It is usually seen in patients with severe ventricular dysfunction (D).[1,2]

3. Correct answer: B

The size of a patient's hand including the fingers represents approximately 1% of the patient's total body surface area. The hand assessment method should be used for scattered burns over the body (B). The Lund-Browder chart is a very accurate assessment tool for concise burns in localized body areas (A). The rule of nines assessment is also an accurate tool for concise burn area percentage determination (C). The Parkland formula is one method used to determine fluid replacement in the burn patient (D).[3,4]

4. Correct answer: B

Stippling (tattooing) is caused by unburned powder and debris from a gun. The stippling is typically present with close range gunshot wounds, causing punctate abrasions on the patient. The tattooing is more present in wounds from a 2- to 3-foot shooting distance (B). Stippling is most likely present on an entrance wound at close range (A). A chest wound may cause subcutaneous air to be felt under the skin but does not cause stippling (C). The stippling cannot be washed off and should not be attempted, given that evidence preservation should be considered (D).[5]

5. Correct answer: A

A patient with a low potassium (hypokalemia) may present with lethargy and confusion. If the potassium is <2.5 mEq/L, U waves may possibly be seen on the cardiac monitor (A). Typically changes on the electrocardiogram of a patient with a myocardial infarction would be elevation of the ST segment (B). The electrocardiogram of a patient with pericarditis typically demonstrates elevation of the ST segment in multiple leads (C). The electrocardiogram of a patient with moderate hypothermia may demonstrate Osborn waves or notching on the downward slope of the QRS (D).[1]

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Emergency Nursing Review Questions: Oh, Baby!

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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. Before birth, oxygen is supplied to the baby by the:
   A. baby's alveoli.
   B. uterus.
   C. placenta.
   D. cervix.
2. A communication technique that ensures that instructions are heard and understood:
   A. Closed loop communication
   B. Listening
   C. Nonverbal communication
   D. Open loop communication
3. The ideal place to resuscitate a newly born baby is:
   A. in mom's bed.
   B. on a preheated warmer.
   C. outside of the mother's room.
   D. on mom's chest.
4. What is the most important and effective action during neonatal resuscitation?
   A. Ventilation of the lungs
   B. Chest compressions
   C. Intravenous access
   D. Umbilical venous catheter placement
5. Which baby does not need gentle suctioning of their nose and mouth with a bulb syringe after birth?
   A. Baby with meconium-stained fluid
   B. Baby with poor tone and difficulty clearing their secretions
   C. Baby with secretions obstructing their airway
   D. Baby that is vigorous, breathing, and crying

ANSWERS

1. Answer: C.

Before birth, the alveoli in the baby's lungs are filled with fluid and do not allow for gas exchange. Oxygen is delivered to the baby via the placenta. Once the baby is born and takes big breaths under pressure, the fluid is forced out of the alveoli allowing gas exchange.

2. Answer: A.

Closed loop communication is the process of acknowledging the receipt of information and clarifying with the sender of the communicated message that the information received is correct. In open loop communication, the information can only be sent and received, but not confirmed.

3. Answer: B.

The ideal place to resuscitate a newly born baby is on a preheated warmer. It allows for a safe, warm place to provide care for the neonate. Mom's bed is an unpredictable place because there is not a good place to put the baby owing to mom being on the bed. She may move and injure or displace the baby and/or interventions for the baby. If the room size allows, the preheated warmer should be placed in the mother's room so she is included in the care of her baby. The mother's chest is not a stable place

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to resuscitate a newly born baby, especially if the baby requires interventions.

4. Answer: A.

Ventilation of the baby's lungs is the most important and effective action during neonatal resuscitation. The baby must have effective ventilation for them to transition from intrauterine life to extrauterine life (learning to exchange gases with their lungs vs receiving oxygen through the placenta).

5. Answer: D.

A baby who is vigorous, breathing, and crying with good tone does not need suctioning of their mouth and nose; they will clear their secretions on their own. Suctioning should be performed on newly born babies with meconium-stained fluid, difficulty clearing their secretions, and secretions obstructing their airway and those who are not breathing or crying, have poor tone, or require positive pressure ventilation.

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Table of Contents

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