

Educational Needs Assessment of ED Nurses Regarding the Care for Major Trauma Patients at Prince Mohammed Bin Nasser Hospital

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Abstract: this study aimed to conduct an educational need assessment (ENA) to assess ED nurses' skills in managing trauma patients in Saudi Arabia at the Prince Mohammed Bin Nasser (PMBN) Hospital in Jazan city. Methods: to achieve the study objectives, the descriptive analytical approach was applied where a paper-based survey was used for data collection. Results: 62.5% of the ED nurses who responded were unsure regarding their confidence in managing patients with pelvis and femur fractures. Similarly, 50% of the ED nurses who responded were undecided regarding their confidence in caring for chest tubes. 43.75% of participants were unsure about their confidence in fluid resuscitation and hypothermia management. In addition, 31% were unsure regarding their confidence in large bore cannula insertion and 6.25% were not confident. 68.7% of participants reported having difficulties identifying and locating obstetrics instruments and 62.5% of participants were hesitant regarding their confidence in caring for obstetric trauma and providing specific procedures for assessing infants' heart rate. Conclusion: This study has shown the significance of applying the ENA to determining and prioritizing educational needs of ED nurses and it has found that ED nurses at the PMBN have difficulties in five major areas when dealing with trauma patients.

Keywords: Trauma Care, ED Nurses, Injury, Trauma Education

تقييم الاحتياجات التعليمية لتمريض الطوارئ فيما يتعلق برعاية مرضى الرضوض والإصابات الحرجة في مستشفى الأمير محمد بن ناصر

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مستشفى الأمير محمد بن ناصر || وزارة الصحة || المملكة العربية السعودية

الملخص: هدفت هذه الدراسة إلى إجراء تقييم الحاجات التعليمية ومهارات الممرضين العاملين في أقسام الطوارئ في التعامل مع الحالات المصابة بالصدمة في مستشفى الأمير محمد بن ناصر في مدينة جازان في المملكة العربية السعودية. منهجية الدراسة: تم اتباع المنهج الوصفي التحليلي حيث تم استخدام استبانة لجمع البيانات. النتائج: 62.5% من الممرضين المشاركين في الدراسة أجابوا بأنهم غير متأكدين من ثقتهم في إدارة المرضى الذين يعانون من كسور الحوض وعظم الفخذ. وبالمثل، فإن 50% منهم لم يقرروا بعد فيما يتعلق بثقتهم في رعاية الحالات المصابة في الصدر. كما أن 43.75% من المشاركين غير متأكدين من الإنعاش والتعامل مع حرارة الجسم. بالإضافة إلى ذلك، 31% كانوا غير متأكدين من ثقتهم في إدخال الكانيول الكبيرة. أفاد 68.7% من المشاركين بأنهم واجهوا صعوبات في التعامل مع الأدوات الخاصة بالمواليد وأن 62.5% من المشاركين كانوا مترددين بشأن قدرتهم على التعامل مع الصدمات عند المواليد. الخاتمة: أظهرت هذه الدراسة أهمية تطبيق أنشطة تحديد الاحتياجات التعليمية والتدريبية لتحديد وترتيب أولويات الاحتياجات التعليمية للممرضين العاملين في أقسام الطوارئ في المستشفيات، كما تبين أن الممرضين العاملين في المستشفى قيد الدراسة يواجهون صعوبات في التعامل مع حالات أو مرضى الصدمات.

Introduction

In the recent years more attention has been given on the issue of trauma care which is evident from the number of recent high-profile reports around the world. Several causes of trauma such as road traffic accidents, pedestrian accidents, falls and burns are commonly registered in Saudi Arabian hospitals⁽¹⁾. In particular, spinal cord injuries, head trauma, and disabilities that result from traumatic injuries require intensive and prolonged medical treatment^(2,3). Significantly, the emergency department (ED) nurses play a major role in managing acute critical patients⁽⁵⁵⁾. However, they confront difficulties in dealing with trauma patients⁽³⁰⁾. Therefore, trauma courses such as the Prehospital Trauma Life Support (PHTLS) are available to support ED nurses⁽²⁾. However, Al-Naami et al.⁽²⁾ admitted that trauma educators are inadequately qualified to deliver high-standard trauma courses. Accordingly, evaluating the knowledge and skills of those who are involved in treating people with trauma; such evaluation could be best done through Educational needs assessment (ENA) is one of the common processes for evaluating learners' knowledge and skills.

A crucial step before designing an education program is implementing an ENA, in order to investigate a new problem or avoid an undesirable situation and provide progress for an organization⁽⁴⁾. In particular, ENA can be used to enhance learning activities by identifying gaps in knowledge⁽⁵⁾. Dickerson and Graebe⁽⁶⁾ define a gap as the difference between the existing state and the anticipated outcome. Gap analysis is mainly used to assess the needs of health professionals for continuing education (CE). For instance, it can be used to determine the educational needs of a novice health worker commencing work or an expert staff member who may experience new equipment or be unfamiliar with a new situation⁽⁵⁾. Gap analysis can be conducted by using surveys in a large group or debriefing and group discussion for a small group. The process of developing an ENA includes determining the purpose, identifying the problem, planning and implementing the ENA tool, and analyzing and reporting the results^(5; 6). The application of ENA can help nursing educators to collect information about nurses' clinical skills and gain insight into nurses' educational requirements⁽⁷⁾. Therefore, this paper focuses on emergency nurses as the target group.

It has been found that ED nurses face difficulties in resuscitating and maintaining the airways of acute trauma patients⁽⁸⁾. Watts, Gibbons, and Kurzweil⁽⁹⁾ found that ED nurses demonstrate a low level of knowledge of head trauma management. In addition, Pak and Hardasmalani⁽¹⁰⁾ conducted a drill to manage a pregnant trauma patient and found that it was challenging for ED nurses to manage obstetric trauma patients. Similarly, Breederveld, et al.⁽¹¹⁾ identified that ED nurses were unable to accurately determine the total body surface area (TBSA) for burns percentage. Kahol, Vankipuram, Patel, and Smith⁽¹²⁾ highlighted that a

specialized trauma team may commit errors in immobilizing the spinal cord and using the log roll technique appropriately.

Several international trauma courses are available to support ED nurses, including International Trauma Life Support (ITLS), Trauma Nursing Core Course (TNCC) and Advanced Trauma Life Support (ATLS)^(2;13). However, there are discrepancies between the objectives and outcomes of trauma courses and only a few studies have examined their effectiveness for nurses' performance⁽¹⁴⁾. In addition, the high cost and workload can restrict ED nurses from attending these courses⁽¹⁵⁾. Therefore, this study aims to conduct an ENA and then propose a trauma-training course to meet ED nurses' educational needs at PMBNH and enhance their performance when caring for major trauma patients (MTPs).

The second step after determining the purpose of ENA is concerned with problem identification and types of learners^(16; 5). The PMBN hospital was established in 2015 and is a new hospital which does not specialize in managing MTPs. The target audience will be ED nurses at the PMBN hospital who have little experience in dealing with trauma patients. Based on the findings and those of Kahol et al.⁽¹²⁾ who stressed that the trauma team was unable to perform the log roll procedure accurately. Thereby, it can be predicted as a gap in the knowledge of ED nurses at PMBH is insufficient knowledge of immobilizing spinal cord injury patients. However, other areas such as airways management, Polytrauma patients, burn management and shock management as well as caring for obstetric trauma patients will be included in order to cover several educational aspects of trauma management.

Research Problem

The recognition of the importance of psychological trauma and its effect on families, individuals, society, and communities at large has considerably expanded over the years^(17;18). The current research carries on to further the general knowledge of trauma and its psychological, biological, and often self-perpetuating consequences within society⁽¹⁹⁾. To this data, literature and research have linked the general exposure to trauma with considerably higher rates of physical and mental disorders⁽²⁰⁾. For the ED nurses, trauma nursing is a specialty field of practice, which mainly includes all the elements of care for those at risk of any possible injury or the injured. The nurses essentially practice in all the settings across the continuum of trauma, from prehospital care, injury prevention, stabilization, supportive treatment, resuscitation, rehabilitation and reintegration into the community. Nursing such field requires specific skills and knowledge that provide the safest and highest quality of care as well as providing expertise in an evidence-based environment and initiatives for health prevention⁽²¹⁾.

The main prominence of undifferentiated trauma patients within the emergency department (ED) without any form of medical diagnosis or essential data to differentiate between the critically ill and the well,

require the ED nurses to be highly skilled at providing precise and timely patient evaluations. When the patients first introduced to the ED, the triage ED nurse proceeds a brief evaluation and gathers a triage category, which indicates the urgency level of the occurring issue⁽²²⁾. The current research investigates and seeks to understand the educational needs evaluation of ED nurses concerning the care for trauma patients at the Prince Mohammed Bin Nasser Hospital. In addition, evaluate their ability to provide a precise initial comprehensive evaluation of the trauma patients.

Research Questions

The main question of the current research is “What is the state of the ED nurses at Prince Mohammed Bin Nasser Hospital in providing an accurate and comprehensive evaluation of the trauma patients at the hospital? In order to answer the research’s main question, the following sub-questions need to be answered:

- 1- What are the skill levels ED nurses possessing for caring for trauma patients at Mohammed Bin Nasser Hospital?
- 2- Are the trauma education programs have provided the required knowledge for the ED nurses at Mohammed Bin Nasser Hospital?
- 3- What are the ED nurses’ perceptions regarding the levels of confidence in performing various trauma skills at Mohammed Bin Nasser Hospital?

Research Objectives

The main objective of the research is to understand and investigate the educational needs of the ED nurses concerning the care provision for major trauma patients at the Prince Mohammed Bin Nasser Hospital. Along with the main objective, the research is aiming to achieve the following:

- 1- Examine the skill levels of ED nurses that qualify them for caring for trauma patients at Mohammed Bin Nasser Hospital.
- 2- Evaluate the trauma education programs that provide the required knowledge for the ED nurses at Mohammed Bin Nasser Hospital.
- 3- Examine the levels of confidence for the ED nurses in performing several trauma-based skills and evaluation at Mohammed Bin Nasser Hospital.

Research Importance

Nurses, as direct providers of care working within a holistic environment and perspective, are basically positioned to have an integral part in the advancement of trauma-informed care (TIC) within the services of health care. Unfortunately, studies and literature suggest that several nurses are usually left

confused by the ambiguous definitions and strongly struggle to know how to construe the ideas of trauma-patients care into day-to-day performance and practice⁽²³⁾. Despite the emergence of implementation endeavors of TIC within several nursing specialties, including the institutions of emergency⁽²³⁾, mental health⁽¹⁸⁾, perinatal care⁽²⁴⁾, pediatric and neonatal acute care⁽²⁵⁾, and the correctional settings⁽²⁶⁾, the knowledge and views of ED patients and caring for trauma patients in general remains considerably understudied.

The importance of the research, as the researcher believes, is divided into two categories, the theoretical importance, and the practical importance:

1- The Theoretical Importance

The theoretical importance of the research can be summarized in the following:

- A. The research will manifest the need for training in resilience and coping for the ED nurses, which will assist in filling the gaps between practice and education.
- B. Making the ED nurses fully aware of the need for strategies of training and understanding the perception of caring for traumatic patients, which could encourage the ED nurses to adopt such training initiatives.
- C. Presented used preparations of coping and resilience for the ED nurses in order to decrease the negative results and increase the care's productivity.

2- Practical Importance

- A. Unless programs addressing adaptive coping and resilience strategies become available to practicing nurses, negative stress outcomes may continue
- B. Present the levels of traumatic stress that the ED nurses go through on their daily tasks looking after traumatic patients.
- C. The current research will contribute to the professional and academic nursing knowledge by discussing the clinical environment in such settings for the professional nursing staff.

Literature Review

The emergency department (ED) has several patients with a wide assortment of health conditions, who receive the required care simultaneously. ED's environment has been manifested as a stressful environment to operate work for trauma-based nurses and other personnel⁽²⁷⁾. Caring for trauma patients is the main characteristic of the ED nursing department and a prime concept described as ambiguous, intangible, invisible, and abstract in the general terms of nursing⁽²⁸⁾.

Through history,⁽²⁹⁾ stated, in his research, for the ED nurses to have experience in essential settings of care before commencing the tasks in the ED in order to meet such important skills of evaluation for the patients. Currently, in several hospitals around the world, the new graduate nurses could begin the nursing

careers in the ED with minimal preparation and prior experience in the clinical environment. Schultz et al.⁽³⁰⁾ examined a process for improving the disaster-based training grounded by the general and standardized competencies. Their research supported a procedure that can ensure the care professionals of the medical acute patients practice and demonstrate the skills and knowledge needed for response to disaster-based occurrences.

Evans, et al.⁽³¹⁾, stated the supportive and important to the ED trauma patients is to manifest their core competencies, which eventually provide a clinical framework that can be embraced within the local and constant-changing needs of clinical training. Petroze et al.⁽³²⁾ the educational courses of focused trauma around the world that caused decreased rates of mortality of the severely injured patients and trauma patients. In addition, a cross-sectional examination was given to “513” ED nurses at a Midwestern hospital in 2014; where the research resulted concluded that nurses had incorrect beliefs about the Traumatic Brain Injury (TBI) regarding recovery and had considerable differences in the outcome preferences.

For the ED nurses, the involvement in traumatic and hazardous events is an essential aspect of the fundamental practice as an ED patient with the predictability of results in its infancy and the certainty of coping methods elusive⁽³³⁾. For LeBlanc et al.⁽³⁴⁾, they concluded that the constant causes of negative results include deficiency of an optimistic coping style, occupational exposures to horrific events, lacking adequate support resources, and engaging emotionally with victims. Therefore, generally, the main information for Adriaenssens et al.⁽³⁵⁾, is to give a reminded that the ED nurses, caring for traumatic patients, do not necessarily have the inherent coping or resilience skills that can handle extreme events and circumstances.

Theoretical Framework

Every year, millions of individuals sustain a traumatic injury, either physical or psychological, around the world. Trauma patients and their families are usually concerned with the general expectations regarding recovery and seeking the required information from the operating nurses. The perceptions of nurses regarding the care provided could affect the data provided to the trauma patients and their families, especially, if the imprecise perceptions, skills, knowledge are mainly held. Thus, ED nurses for trauma patients have to understand the general perceptions of safety, knowledge, and skills regarding the care of these trauma patients.

The Safety of Trauma Patient

The safety of trauma patients is a critical health issue globally. Estimates presented that in the developed countries; mainly 1 in 10 individuals have traumatic injuries and has been harmed while having their care at the hospital⁽³⁶⁾. Patient’s safety is the essential foundation of good provided care. The unnerving

aspect that healthcare professionals can heal as well as harm is the reason for presenting such research, which also indicates that the patient's safety is at the essence of the health care high quality. The good quality and Patient safety are both interrelated, where the safety is fundamental for both the staff and the patients and is important for providing good clinical care ⁽³⁷⁾.

The structural foundation of human contributions to trauma patients and their safety have a number of failures, which have been created in the areas outside the profession of health care. Hsia, Kellermann, and Shen ⁽³⁸⁾ presented a modern perspective of human contributions to risks and safety where people are not to blame. However, the perception of safety is more than avoiding the adverse results and identifiable mistakes of happening.

The Safety's Climate and Culture

Awareness of the culture regarding trauma-patient safety is essential to all the patients' care. This is highly accentuated in the emergency department because of high patients' numbers and clinical staff, and the usually the dramatic circumstances involved. The concepts of safety climate and safety culture can only be derived from having roots, which is in more general concepts such as organizational climate and organizational culture. The culture of trauma-patient safety, which is a factor of the organizational culture, influences and includes all the ED staff member behaviors and attitudes in relation to the ongoing safety performance by the organizations around the world. ⁽³⁹⁾

Morello et al. ⁽⁴⁰⁾ wrote about the safety of trauma patients by describing the interactions and relationships between the patient safety culture, organizational culture, the climate of patient safety, and the ED nursing staff behavior and attitudes towards patient safety. The current concentration is on improving and measuring the educational needs of ED nursing staff for the patient safety culture can have an improvement on the patient's safety in the hospitals. Therefore, the ED nurses for the trauma-patient units provide an accurate evaluation and make essential modification in the proposed strategy of nursing care or provide suitable suggestions and recommendations. In addition, the ED nurses are generally able to acquire the physical examination of the trauma patients and their health history, which due to help any other medical professional and diagnostic process to prepare the health assessment of the patients in both their mental and physical aspects ⁽⁴¹⁾.

In order for this process to operate accurately, the researcher believes that the Educational Needs Assessments (ENA) of ED nurses should be developed enough to provide the nurses with the ability to critically think and interpret the patient's clinical status, physiological changes, and behavior.

The need for Trained ED Nurses and Trauma Education

The nursing educational need is the main difference between the current evaluated state of skills and/or knowledge that can be influenced by ED and the desired skills and/or knowledge. Retaining and recruiting experienced and fundamental workforce within the healthcare system has been known as a considerable issue across the world in general. Although many clinical courses exist for education the trauma effects, several professional nurses have not received suitable education in the management of trauma patients⁽⁴²⁾. When observing the incidence of trauma globally, Lee⁽⁴³⁾ identified that trauma causing in moderate to severe effects of disability over millions of individuals around the world annually. In particular, the injury or trauma caused by regular accidents, which have been increasing every year⁽⁴⁴⁾.

Evidence presented that the trauma patients take advantage from being treated at a specialized center for treating trauma equipped with well-trained professionals of healthcare and trauma studies, potentially causing considerably lower morbidity or mortality⁽¹⁴⁾. In response to the urgent need for trained ED nurses for trauma patients as an integral aspect of the team providing the trauma care, the general importance and significance of educating the health care professional in trauma education to develop and optimize the outcomes of the trauma patients all over the world in general, and in Saudi Arabia in particular⁽⁴⁵⁾. Whilst there are several courses of emergency nursing available internationally in the institutions of higher education, the main development of education for trauma nursing remains in the society's infancy.

Method

The descriptive analytical approach was applied where a paper-based questionnaire was developed to collect the data from the respondents. The questionnaire enabled the researcher to determine the gaps and needs for CE⁽⁵⁾. After that, the data collected was processed using SPSS V22.

The benefits of using surveys include their reliability for collecting data quickly at one time and at a minimal cost⁽⁴⁶⁾. This can be done by adopting an existing survey with permission from the original authors or creating a new survey by using one's own questionnaire⁽⁵⁾. A search and review of the literature revealed that no specific ENA survey has been developed to examine the learning needs of ED nurses regarding trauma management. Therefore, the writer developed his own survey. Developing a new survey is a complex process and requires an expert to test and validate the tool⁽⁵⁾. However, the writer incorporated the guidelines by Sleezer et al.⁽⁴⁾ and Johnson and Puglia⁽⁴⁶⁾ and sought help from an expert to check the survey. There are several steps that should be followed to develop a questionnaire and collect the data⁽⁴⁾.

Preparation Phase

This stage focuses on preparing the survey by determining the purpose of the ENA⁽⁴⁶⁾. The purpose of the study was to assess the educational needs of ED nurses at the PMBN hospital when caring for MTPs. Next, a scoping review was conducted to examine the most relevant data regarding trauma nursing care. After understanding the current issues of ED nurses and trauma nursing education, the questions were developed based on existing tools. The questionnaire focused on ED nurses' skills in trauma management.

Design phase

This phase mainly involves planning the type of participants and selecting the method of collecting and analyzing the data. To collect the data, the author used a paper format and the analysis was conducted simply by using frequencies to rank and prioritize ED nurses' educational needs. In addition, obtaining permission and managing ethical considerations were performed in this stage.

Sample, setting and inclusion and exclusion criteria

The ENA was conducted in Saudi Arabia in Jazan city and included nurses in the ED at PMBN hospital. The total number of ED nurses is 24, including the supervisor and head nurse. The ENA included all ED nurses who directly provide care for or have dealt with MTPs. The expected response rate was 15 participants in this study. Any ED nurse who has never encountered MTPs was excluded and this question was asked in the survey.

Ethical Considerations

First, permission was obtained from the nursing manager at PMBNH to develop the questions and conduct the ENA ethically. In addition, an explanatory letter was used to provide the instructions and the letter referred to implied consent. See Appendix 1. This means there was no signed consent form, and any completed and returned response was considered to mean that the respondent had agreed to participate⁽⁴⁷⁾. This study concealed subjects' information from the nursing director who has power over ED nurses in order to ensure the confidentiality of respondents⁽⁴⁾. In addition, all information was communicated and coordinated only with the nursing educator at PMBH.

Development of questionnaires

The questions were developed following the guidelines of Sleezer et al.,⁽⁴⁾ and both open-ended and close-ended questions were used. The questionnaire must be clear and arranged in a logical sequence⁽⁴⁾. First, the questions regarding demographic data were developed by examining different surveys and selecting the most suitable questions. In addition, a Likert scale was developed to assess ED nurses' confidence in trauma

management by focusing on five major areas: polytrauma patients, shock management, head, and spinal injury management, obstetric trauma management, and burns management. Another Likert scale was applied to rank educational needs from less to critical importance. Finally, two open-ended questions were developed to encourage participants to provide recommendations. See Appendix1.

Explanation letter

A crucial step is that the educator should supply an explanation letter to show the instructions for completing the survey and to whom the completed questionnaire should be returned and the due date⁽⁴⁾. The letter should also explain the purpose and benefits of the survey and when the respondents might expect to receive the findings⁽⁵¹⁾. These facilitate following the instructions and increase the response rate.

Pilot phase

Piloting the survey on a small group is a significant step to examine and ensure the clarity and validity of the questions before conducting a study⁽⁴⁶⁾. This survey was reviewed by a colleague who has experience in the ED and he stated the survey is direct and concise. Then, it was piloted on two colleagues and both considered that the instructions and questions were clear.

Implementing and following up the survey

After the pilot test, the student used a Word file to create a paper survey and it was sent via email to the nursing educator at PMBH. This method was used because the contact information of potential participants was not available for sending or emailing the survey. In addition, this facilitated communication between the student and the nurse educator, who acted as a mediator to collect and return the completed surveys. The student did not contact the participants, and this increased the rigor of the study by preventing selection bias and ensuring the privacy of participants. First, the PHBH nursing educator distributed the survey to the ED nurses. The student researchers requested the participants to complete the survey and return it within a week. To prevent a low response rate, a follow-up process should be applied⁽⁴⁾. Therefore, two emails were sent to remind the nursing educator about the due date. The first email was sent two days after providing the survey to ensure the survey had been distributed and to encourage the participation of the ED nurses. The second email was sent on the fifth day before the due date to remind the nurse educator regarding the collection and return of the survey.

Research Limitations

Some of the participants are unaware of the questionnaire terms. Thus, the researcher had to explain the questionnaire and research idea to many of the respondents. Besides, the limited geographic area of the

study could influence the generalization of results. Finally, the questionnaire was voluntary, but some participants felt like they are offering help and filled the questionnaires incorrectly.

Results

As advised by Sleezer et al. ⁽⁴⁾, the findings of the ENA were categorized and calculated by creating tables and using frequencies and percentages. The results were then presented using tables and graphs. The completed questionnaires were 17, which represents around 70% of the total number of ED nurses at PMBN hospital. Of the 17 responses, only one incomplete response was received and this was used in parts A and B of the survey. Part A focuses on demographic data. See Table 1. Secondly, part B explores the trauma education programs that ED nurses have attended. See Figure 1. For part C which aims to examine ED nurses’ skills in caring for trauma patients, a Likert scale was used to determine ED nurses’ perceptions regarding their level of confidence in performing different trauma skills. The ED nurses answered the scale from 1 to 5 in which number 1 (strongly disagree) indicates the lowest level of confidence, number 2 (disagree) indicates a low level of confidence and number 3 indicates the participants are unsure regarding their confidence, while number 4 and 5 indicate a good and high level of confidence, respectively. The results were calculated by counting the participation rate to determine the percentage of confidence for each level on the Likert scale. See Table 2.

The aim of section “D” was to prioritize and rank educational needs, and another Likert scale was used to rank educational needs from minor to critically important. See Table 3. This part also sought information about trauma courses that the ED nurses wished to attend. See Figure 2. Finally, to obtain nurses’ opinions and their recommendations for the education department, two open-ended questions were implemented. However, only four ED nurses answered these questions. See Table 4.

Table (1): Demographic Data on Participants

Number of participants (n) = 17	
Education	
Diploma	1
Bachelor	15
Master	1
Experience	
Less than 1 year	1
1 to 2 years	3
2 to 5 years	9

Number of participants (n) = 17	
5 to 10 years	3
More than 10 years	1
Types of patients that ED nurses frequently deal with:	
Only trauma patients	0
Only non-trauma patients	0
Both trauma and non-trauma patients	17
Nursing Role	
Staff nurse diploma	1
Staff nurse registered nurse (RN)	14
Staff nurse master	1
Head nurse	1
Nursing supervisor	0

Figure (1): Trauma education courses taken by ED nurses

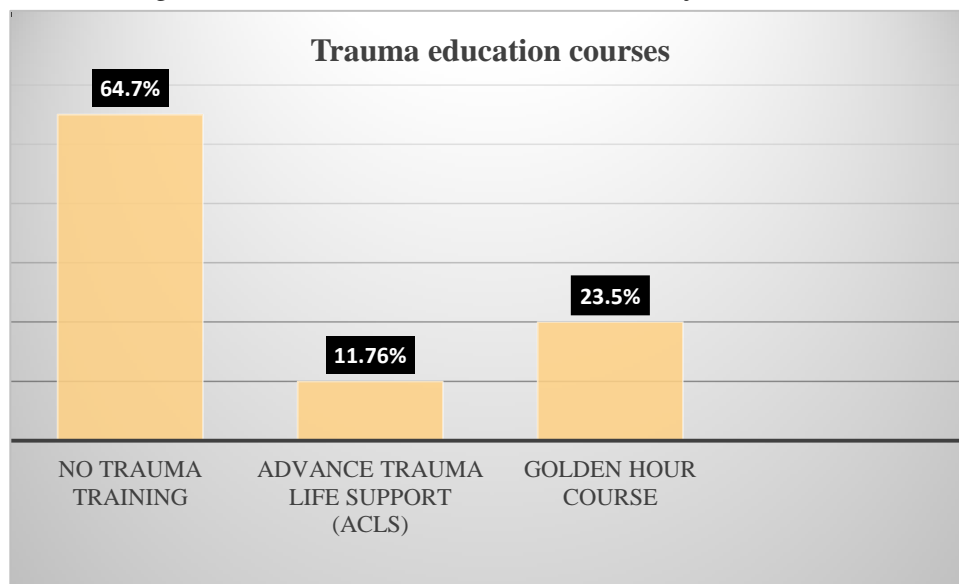


Table (2): ED nurses' level of confidence

	1	2	3	4	5
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Number of participants n = (16)					
1- Management of Polytrauma patients					

	1 Strongly Disagree	2 Disagree	3 Undecided	4 Agree	5 Strongly Agree
I confidently care for patients with pelvic and femur fractures and I can apply a splint or other traction devices accurately	0	6.25%	62.5%	31.25%	0
I am confident to prepare and assist for insertion intercostal drains (ICDs)	0	6.25%	50%	25%	18.75%
2- Shocks management					
I feel confident when assisting with or inserting large bore cannulas for trauma patients	0	6.25%	31.25%	43.75%	18.75%
I am able to administer Intravenous (IV) fluid replacement confidently	0	0	43.75%	43.75%	12.5%
I am confident in my knowledge regarding the consequences of hypothermia	0	0	43.75%	37.5%	18.75%
I am able to manage hypothermia effectively	0	0	37.5%	37.5%	25%
3- Caring for patients with head and spinal injuries					
I can manage head trauma patients with compromised airways confidently	0	6.25%	50%	31.25%	12.5%
I can confidently apply a cervical collar	0		50%	31.25%	18.75%
I feel confident to perform trauma log roll for spinal injury patients	0	18.75%	68.75%	6.25%	6.25%
4- Obstetric Trauma management					
I am confident to manage obstetric trauma patients	0	12.5%	62.5%	25%	0
I can easily identify and locate obstetric instruments in the emergency department	0	12.5%	68.75%	12.5%	0
I am able to perform specific procedures, such as preparing the fetal warmer independently and assessing fetal heart rate (FHR)	0	0	62.5%	37.5%	0
5- Burns management					
I am able to estimate Total Body Surface Area (TBSA) accurately	0	6.25%	62.5%	31.25%	0
I am confident about calculating and administering IV fluid requirements based on the Parkland formula	0	6.25%	56.25%	37.5%	0

Table (3): Prioritizing learning needs

	1 Unimportant	2 Minor importance	3 Important	4 Very Important	5 Critically Important
Number of respondents n = (16)					
Polytrauma patient management	0	0	31.25%	50%	18.75%
Shock management	0	0	18.75%	50%	31.25%
Head and spinal injury management	0	0	0	37.5%	62.5%
Burns management	0	0	0	56.25%	43.75%
Obstetric trauma management	0	0	0	43.75%	56.25%
Other (please specify): _____ No topics were suggested_____					

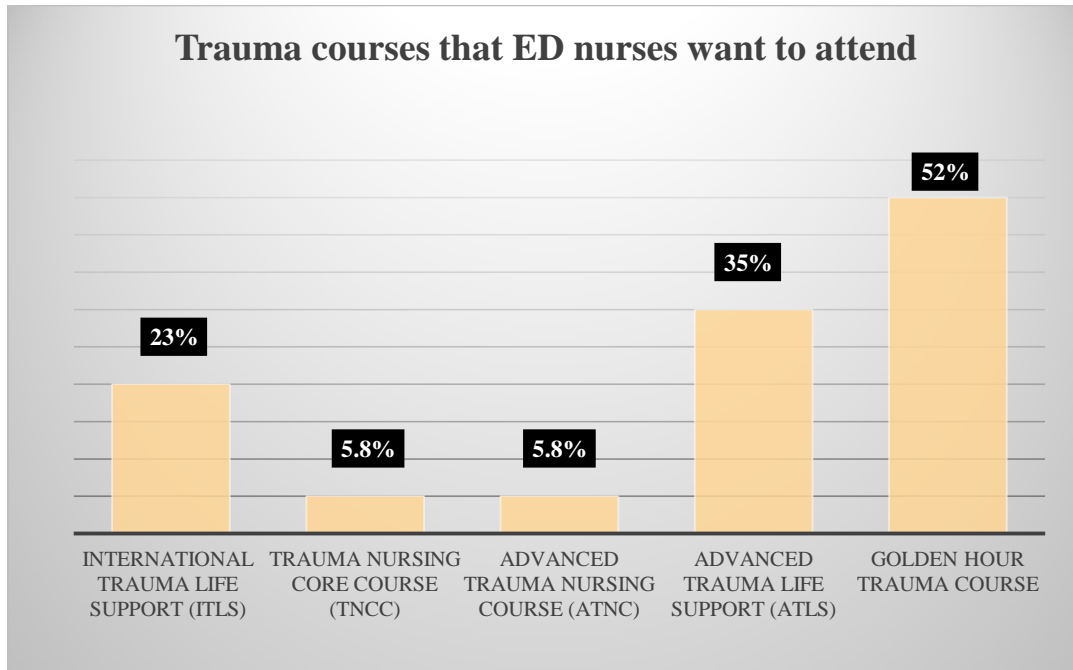


Figure (2): Trauma courses that ED nurses recommend

Table (4): Open-ended questions

Questions	Results
9) Do you have any other comments?	
10) Do you have any recommendations for the Education Department regarding the design of a trauma program?	<p>We really need these trauma courses.</p> <p>Road Traffic Accidents are common, and I need to develop my skills.</p> <p>I need more training to deal with RTA patients.</p>

Analysis

According to the demographic data in Table 1, most participants (15 out of 17) were registered nurses, while one held a diploma and the only one reported having a masters degree. Most of the ED nurses who responded had less than 5 years of experience and one ED nurse had less than one year of experience. In addition, three ED nurses had more than five years of experience and only one ED nurse had more than 10 years of experience in the ED department. All respondents reported frequently managing both trauma and non-trauma patients. Registered nurses were the highest number of the total at 14 ED nurses. In addition, one RN was the head nurse and one staff nurse had a master’s degree and one nurse held a diploma. This range of experience requires nurse educators to be familiar with the characteristics and responsibilities of nurses in

order to design a comprehensive course to meet their educational needs ⁽⁵⁾. Most of the ED nurses who responded had less than 5 years of experience in the ED. A low level of experience may negatively affect nurses' skills and confidence while caring for critical patients ⁽⁴⁸⁾. In particular, less experienced ED nurses have difficulties participating in teamwork for patient resuscitation ⁽⁴⁸⁾.

Trauma courses such as ITLS, TNCC and ATLS can be used to develop ED nurses' performance in caring for trauma patients. An examination of the ED nurse respondents who reported having attended formal trauma courses revealed that a substantial number of ED nurses (64.7%) had no trauma training. See Figure 1. In addition, only a few nurses reported having attended ATLS and Golden Hour courses (11.7% and 23.5%, respectively). Therefore, it appears that ED nurses at PHN hospital face difficulties in attending trauma courses. Factors such as the availability of courses, the high cost, and workload, may hinder ED nurses from attending trauma courses ⁽⁴⁹⁾.

Based on the results reported in Table "2", and to identify the learning needs of ED nurses, the author focused on the respondents' uncertainty or low level of confidence in five major areas. First, an examination of the ED nurses' reported abilities to care for polytrauma patients showed that 62.5% of the ED nurses who responded were unsure regarding their confidence in managing patients with pelvis and femur fractures. Similarly, 50% of the ED nurses who responded were undecided regarding their confidence in caring for chest tubes. Daugherty, Mehlman, Moody, LeMaster, and Falcone ⁽⁵⁰⁾ found that 60% of femoral splints were placed incorrectly in EDs. In addition, nurses demonstrate a low level of knowledge regarding chest tube care ⁽⁵¹⁾. These findings are consistent with the ENA results and indicate that nurses encounter challenges in performing specific clinical skills to care for polytrauma patients. Regarding shock management, 43.75% of participants were unsure about their confidence in fluid resuscitation and hypothermia management. In addition, 31% were unsure regarding their confidence in large bore cannula insertion and 6.25% were not confident. This indicates that ED nurses struggle to manage and resuscitate trauma patients from shocks. Early fluid resuscitation is crucial for trauma patients and Harris, Thomas, and Brohi ⁽⁵²⁾ therefore advise that nurses should be familiar with strategies to administer IV fluid accurately.

Head and spinal injuries and obstetrics trauma constitute the largest areas of uncertainty regarding ED nurses' confidence. In particular, 68.7% of ED nurses reported they were unsure of their abilities to perform the log roll procedure, and 18.75% of ED nurses were not confident in performing log rolls for spinal injury patients. This constitutes the largest number of participants and is consistent with the study prediction. In addition, 50% of participants were unsure regarding their confidence to provide airway management and applying cervical collars appropriately. These findings are supported by another study which found ED nurses inaccurately immobilize patients with spinal injuries and struggle to resuscitate and maintain airways for

compromised airway trauma patients⁽⁵³⁾. Therefore, Dulandas and Brysiewicz⁽¹⁹⁾ advise the improvement of ED nurses' skills in immobilizing spinal cord injury patients to prevent further injuries and other complications.

Moreover, 68.7% of participants reported having difficulties identifying and locating obstetrics instruments and 62.5% of participants were hesitant regarding their confidence in caring for obstetric trauma and providing specific procedures for assessing infants' heart rate. Pak and Hardasmalani⁽¹⁰⁾ also found that obstetric trauma is a high-risk and low-frequency case which ED nurses find difficult to manage and they may commit errors in identifying and using obstetric instruments. Therefore, Pak and Hardasmalani⁽¹⁰⁾ recommend educating ED nurses by using a simulation program to enhance their skills in managing obstetrics trauma appropriately and safely. Based on these findings, head and spinal injuries and obstetric trauma are the top priorities of educational needs. Regarding burns management, 62.5% and 56.25% of the ED nurse respondents were uncertain regarding their skills in calculating TBSA for burns patients and using the Parkland formula to determine the accurate amount of fluid replacement. This result of the ENA is consistent with a study in which the researchers found nurses face difficulties in determining the correct percentage of burns and calculating the accurate amount of IV fluid required⁽⁵⁴⁾. This is a priority regarding ED nurses' educational needs.

To prioritize educational needs accurately, the present wstudyriter focused only on the critically important aspects. See Table 3. The ED nurses were asked to rank topics that they required in managing trauma patients. Most of the ED nurses ranked head and spinal injuries, obstetric trauma, and burns management as critically important topics at 62.5%, 56.25%, and 43.75%, respectively. They also categorized shock management and polytrauma management as critically important topics at 31.25% and 18.75%, respectively. These topics are high priority educational needs for ED nurses.

Furthermore, around 52% of participants recommended attending the Golden Hour course, which is a cost-effective course conducted locally and regularly by the training center. It seems the availability of courses and low costs motivate ED nurses to attend trauma courses⁽¹⁵⁾. Some participants also recommended attending other courses such as ITLS, TNCC, and ATLS. See Figure 2. Finally, in response to the open-ended questions, the respondents advised the provision of in-service education regarding management of RTA patients as well as the facilitation of attendance at trauma training courses. This indicates the willingness of ED nurses to gain more knowledge in order to enhance their skills in caring for trauma patients⁽⁵⁵⁾. As a result, the student will advise the education department to provide in-service education and coordinate with the nursing administration to allow ED nurses to attend these courses.

Conclusion

This paper reports on an ENA at PMBN hospital using a paper questionnaire in order to examine ED nurses' educational needs in managing MTPs. It first provided an overview regarding the process of conducting the ENA and proposed that ED nurses may face difficulties in caring for trauma patients with spinal injuries. After determining the purpose and the target group, this paper developed a questionnaire following the steps in the guidelines by Sleezer et al. ⁽⁴⁾. Then, permission was obtained from the nursing manager in order to implement the survey and collect the data. The data were calculated and analyzed using frequencies and percentages to determine the confidence levels of ED nurses' in their skills in caring for MTPs. The analysis has shown that the ED nurses who responded lack confidence in immobilizing spinal injury patients, which is consistent with the study prediction. The recommended teaching plan focuses on five major areas: spinal cord immobilization, airway management, obstetric trauma, burn management and shock management. Finally, this paper reports the effectiveness of ENA for nursing educators in determining precise and accurate information regarding nurses' educational requirements. In the future, it is suggested that a study should be conducted with a valid ENA tool to assess nurses' skills in trauma management. The findings will be valuable in the nursing field.

Recommendations

The ENA indicates that the main gap in knowledge for the PMBN hospital ED nurses is their low confidence in immobilizing patients and using the log roll maneuver with spinal cord injury patients. Few studies have conducted ENA on ED nurses. However, these studies have examined emergency nurses' educational needs in general. Therefore, regarding future implications, it is recommended to conduct further studies with a valid ENA tool to gain an in-depth understanding of ED nurses' educational needs, specifically in relation to trauma management.

Emergency nurses' trauma training program

The nursing education department aims to conduct an in-service trauma-nursing program. This program has been designed to support ED nurses in managing critical trauma patients. Based on the ENA results, the teaching plan focuses on five major areas: spinal cord immobilization, airway management, obstetric trauma, burn management and shock management. In addition, a time frame has been determined for conducting the proposed topics. The aims and contents of proposed topics have also been devised. After gaining nursing administration approval, the nursing education department will start immediately organizing and designing the program.

Table 5: Teaching Plan

Topics	Aims	Time Frame (after approval)	Content
Spinal Injury Immobilization	This session aims to prevent spinal cord injury complications by improving nurses' skills in immobilizing patients with suspected spinal cord injuries.	Within two weeks	Mechanism of injury. The assessment and indications of spinal immobilization. Complications of improper immobilisation. Demonstration of log roll procedure.
Airway Management	This session focuses on enhancing nurses' skills in managing head injury patients with the compromised airway.	Within two weeks	An overview of airway management for trauma patients. Review the Glasgow Coma Scale (GCS). Airway assessment. Intubation guidelines. Crash cart equipment. Medications for intubation. Nursing roles. Nursing Considerations. Simulation of scenario regarding airway management.
Obstetric Trauma Emergency Care *To be organized and developed in cooperation with midwifery department	The session aims to equip ED nurses with essential skills in managing trauma obstetrics patients.	Within three weeks	Suggested contents: Effects of pregnancy on trauma management. Identification of equipment for providing obstetric care. Demonstration of specific procedures for infant care.
Fluid resuscitation in burns management	The topic aims to prepare emergency nurses for using the rule of nines in determining the correct percentage of burns. It also aims to assist emergency nurses to use the Parkland formula in calculating the correct dose of IV fluid.	Within two months	Pathophysiology of burns including types of burns and degrees of burns. Assessment of burns patients. Explanation of the rule of nines. IV fluid resuscitation using the Parkland formula
Trauma fluid shocks management	This session aims to improve emergency nurses' skills in providing fluid resuscitation for	Within two months	Pathophysiology of hypovolemic shocks in trauma patients. Assessing the signs and symptoms of

Topics	Aims	Time Frame (after approval)	Content
	trauma patients with shock.		hypovolemia shocks Types of IV fluid for hypovolemic shocks. The endpoints of fluid resuscitation in trauma patients.
Polytrauma emergency care	This session aims to enhance ED nurses' skills in managing polytrauma patients by focusing on the pelvis and femoral fractures.	To be determined	Pathophysiology of the pelvis and femoral fractures. Assessment of fractures. Medical management. Demonstration of the application of splints.

While conducting this ENA, the first issue identified was the complexity of creating the survey. It was time-consuming and required great effort to develop and ensure the validity of the tool. To solve this issue, the student suggests using an existing tool. If there is no tool, the student will use an alternative strategy such as an interview or focus group. In addition, it was difficult to communicate and coordinate with the nursing administration and nurse educator at PMBN hospital to collect the results. To solve this problem, as advised by some researchers⁽⁴⁾, the student sent two emails as a follow-up in order to remind the nurse educator to distribute and collect the survey. This assisted in increasing the response rate and collecting the responses on time. Another issue is related to the low response rate to the open-ended questions, as only 4 respondents completed the survey in full. According to Zuell, Menold, and Körber⁽⁵⁶⁾, the response rate to open-ended questions is low compared to closed-ended questions. Therefore, Zuell et al.⁽⁵⁶⁾ advise the use of small boxes when designing the survey and sending text messages in order to increase the response rate. Finally, there was missing data in one questionnaire which did not include parts C and D. It was decided to include the data provided in parts A and B.

List of abbreviations

- ENA: Educational Need Assessment
- PMBN: Prince Mohammed Bin Nasser
- PHTLS: Prehospital Trauma Life Support
- ED: Emergency Department
- TBSA: Total Body Surface Area
- ITLS: International Trauma Life Support
- TNCC: Trauma Nursing Core Course

- **ATLS:** Advanced Trauma Life Support
- **MTPs:** Major Trauma Patients
- **TIC:** Trauma-informed Care
- **TBI:** Traumatic Brain Injury

References

- (1) Alghnam, S., Alkelya, M., Al-Bedah, K., & Al-Enazi, S. (2014). Burden of traumatic injuries in Saudi Arabia: lessons from a major trauma registry in Riyadh, Saudi Arabia. *Annals of Saudi medicine, 34*(4), 291.
- (2) Al-Naami, M. Y., Arafah, M. A., & Al-Ibrahim, F. S. (2010). Trauma care systems in Saudi Arabia: an agenda for action. *Annals of Saudi medicine, 30*(1), 50.
- (3) Alshahri, S. S., Cripps, R. A., Lee, B. B., & Al-Jadid, M. S. (2012). Traumatic spinal cord injury in Saudi Arabia: an epidemiological estimate from Riyadh. *Spinal cord, 50*(12), 882.
- (4) Sleezer, C. M., Russ-Eft, D. F., & Gupta, K. (2015). Learning, training, and performance timeline: A walk through history. *Performance Improvement, 54*(2), 7-15.
- (5) Pilcher, J. (2016). Learning needs assessment: Not only for continuing education. *Journal for nurses in professional development, 32*(4), 185-191.
- (6) Dickerson, P. S., & Graebe, J. (2018). Analyzing gaps to design educational interventions. *The Journal of Continuing Education in Nursing, 49*(1), 4-6.
- (7) Hudson, A., Ellis-Cohen, E., Davies, S., Horn, D., Dale, A., Malyon, L., ... & Jauncey-Cooke, J. (2018). The value of a learning needs analysis to establish educational priorities in a new clinical workforce. *Nurse education in practice, 29*, 82-88.
- (8) Ireland, S., Cross, R., Decker, K., & Mitra, B. (2017). Perceptions of an educational programme for registered nurses who work at non-major trauma services in Victoria, Australia: The Nursing Emergency eXternal Trauma Programme. *Australasian emergency nursing journal, 20*(3), 131-138.
- (9) Watts, D. D., Gibbons, S., & Kurzweil, D. (2011). Mild traumatic brain injury: A survey of perceived knowledge and learning preferences of military and civilian nurses. *Journal of neuroscience nursing, 43*(3), 122-129.
- (10) Pak, K. M., & Hardasmalani, M. (2015). A multidisciplinary obstetric trauma resuscitation using in situ high-fidelity simulation. *Advanced Emergency Nursing Journal, 37*(1), 51-57.
- (11) Breederveld, R. S., Nieuwenhuis, M. K., Tuinebreijer, W. E., & Aardenburg, B. (2011). Effect of training in the Emergency Management of Severe Burns on the knowledge and performance of emergency care workers as measured by an online simulated burn incident. *Burns, 37*(2), 281-287.

- (12) Kahol, K., Vankipuram, M., Patel, V. L., & Smith, M. L. (2011). Deviations from protocol in a complex trauma environment: errors or innovations?. *Journal of biomedical informatics*, 44(3), 425-431.
- (13) Zhu, T. H., Hollister, L., Scheumann, C., Konger, J., & Opoku, D. (2016). Effectiveness of the Rural Trauma Team Development Course for Educating Nurses and Other Health Care Providers at Rural Community Hospitals. *Journal of Trauma Nursing*, 23(1), 13-22.
- (14) Ding, M., Metcalfe, H., Gallagher, O., & Hamdorf, J. M. (2016). Evaluating trauma nursing education: An integrative literature review. *Nurse education today*, 44, 33-42.
- (15) Armstrong, B., Crouch, R., Read, C., & Palfrey, R. (2013). Training nurses in trauma management. *Emergency Nurse*, 21(4).
- (16) Dickerson, P. S., & Graebe, J. (2018). Analyzing gaps to design educational interventions. *The Journal of Continuing Education in Nursing*, 49(1), 4-6.
- (17) Brown, S. M., Baker, C. N., & Wilcox, P. (2012). Risking connection trauma training: A pathway toward trauma-informed care in child congregate care settings. *Psychological Trauma: Theory, Research, Practice, and Policy*, 4(5), 507.
- (18) Muskett, C. (2014). Trauma-informed care in inpatient mental health settings: A review of the literature. *International journal of mental health nursing*, 23(1), 51-59.
- (19) LeBouthillier, D. M., McMillan, K. A., Thibodeau, M. A., & Asmundson, G. J. (2015). Types and number of traumas associated with suicidal ideation and suicide attempts in PTSD: findings from a US nationally representative sample. *Journal of Traumatic Stress*, 28(3), 183-190.
- (20) Cohen, J. A., Scheid, J., & Gerson, R. (2014). Transforming trajectories for traumatized children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 53(1), 9-13.
- (21) Hall, A., McKenna, B., Dearie, V., Maguire, T., Charleston, R., & Furness, T. (2016). Educating emergency department nurses about trauma informed care for people presenting with mental health crisis: A pilot study. *BMC nursing*, 15(1), 21.
- (22) Kosits, L. M., & Jones, K. (2011). Interruptions experienced by registered nurses working in the emergency department. *Journal of Emergency Nursing*, 37(1), 3-8.
- (23) Hall, A., McKenna, B., Dearie, V., Maguire, T., Charleston, R., & Furness, T. (2016). Educating emergency department nurses about trauma informed care for people presenting with mental health crisis: A pilot study. *BMC nursing*, 15(1), 21.
- (24) Choi, K. R., & Seng, J. S. (2015). Pilot for nurse-led, interprofessional in-service training on trauma-informed perinatal care. *The Journal of Continuing Education in Nursing*, 46(11), 515-521.

- (25) Kassam-Adams, N., Rzucidlo, S., Campbell, M., Good, G., Bonifacio, E., Slouf, K., ... & Grather, D. (2015). Nurses' views and current practice of trauma-informed pediatric nursing care. *Journal of pediatric nursing, 30*(3), 478-484.
- (26) Harner, H., & Burgess, A. W. (2011). Using a trauma-informed framework to care for incarcerated women. *Journal of Obstetric, Gynecologic & Neonatal Nursing, 40*(4), 469-476.
- (27) Jennings, N., Clifford, S., Fox, A. R., O'Connell, J., & Gardner, G. (2015). The impact of nurse practitioner services on cost, quality of care, satisfaction and waiting times in the emergency department: a systematic review. *International journal of nursing studies, 52*(1), 421-435.
- (28) Mahmoudi, H., Mohmmadi, E., & Ebadi, A. (2017). The Meaning of Emergency Care in the Iranian Nursing Profession. *Journal of Critical Care Nursing, 10*(1).
- (29) Baumberger-Henry, M. (2012). Registered nurses' perspectives on the new graduate working in the emergency department or critical care unit. *The Journal of Continuing Education in Nursing, 43*(7), 299-305.
- (30) Schultz, C. H., Koenig, K. L., Whiteside, M., Murray, R., & National Standardized All-Hazard Disaster Core Competencies Task Force. (2012). Development of national standardized all-hazard disaster core competencies for acute care physicians, nurses, and EMS professionals. *Annals of emergency medicine, 59*(3), 196-208.
- (31) Evans, C. J., Shackell, E. F., Kerr-Wilson, S. J., Doyle, G. J., McCutcheon, J. A., & Budz, B. (2014). A faculty created strategic plan for excellence in nursing education. *International journal of nursing education scholarship, 11*(1), 19-29.
- (32) Petroze, R. T., Byiringiro, J. C., Ntakiyiruta, G., Briggs, S. M., Deckelbaum, D. L., Razek, T., ... & Calland, J. F. (2015). Can focused trauma education initiatives reduce mortality or improve resource utilization in a low-resource setting?. *World journal of surgery, 39*(4), 926-933.
- (33) Kirby, R., Shakespeare-Finch, J., & Palk, G. (2011). Adaptive and maladaptive coping strategies predict posttrauma outcomes in ambulance personnel. *Traumatology, 17*(4), 25-34.
- (34) LeBouthillier, D. M., McMillan, K. A., Thibodeau, M. A., & Asmundson, G. J. (2015). Types and number of traumas associated with suicidal ideation and suicide attempts in PTSD: findings from a US nationally representative sample. *Journal of Traumatic Stress, 28*(3), 183-190.
- (35) Adriaenssens, J., De Gucht, V., & Maes, S. (2012). The impact of traumatic events on emergency room nurses: Findings from a questionnaire survey. *International journal of nursing studies, 49*(11), 1411-1422.
- (36) Guldenmund, F. W. (2010). (Mis) understanding safety culture and its relationship to safety management. *Risk Analysis: An International Journal, 30*(10), 1466-1480.

- (37) Burström, L., Letterstål, A., Engström, M. L., Berglund, A., & Enlund, M. (2014). The patient safety culture as perceived by staff at two different emergency departments before and after introducing a flow-oriented working model with team triage and lean principles: a repeated cross-sectional study. *BMC health services research*, *14*(1), 296.
- (38) Hsia, R. Y., Kellermann, A. L., & Shen, Y. C. (2011). Factors associated with closures of emergency departments in the United States. *Jama*, *305*(19), 1978-1985.
- (39) Farrokhnia, N., & Göransson, K. E. (2011). Swedish emergency department triage and interventions for improved patient flows: a national update. *Scandinavian journal of trauma, resuscitation and emergency medicine*, *19*(1), 72.
- (40) Morello, R. T., Lowthian, J. A., Barker, A. L., McGinnes, R., Dunt, D., & Brand, C. (2013). Strategies for improving patient safety culture in hospitals: a systematic review. *BMJ Qual Saf* 2013; *22*: 11–18.
- (41) Pejmankhah, S. (2014). Evaluate nurses' self-assessment and educational needs in term of physical examination of patients in hospitals of Birjand University of Medical Sciences. *Procedia-Social and Behavioral Sciences*, *141*, 597-601.
- (42) Armstrong, B., Crouch, R., Read, C., & Palfrey, R. (2013). Training nurses in trauma management. *Emergency Nurse*, *21*(4).
- (43) Lee, N. J. (2011). An evaluation of CPD learning and impact upon positive practice change. *Nurse education today*, *31*(4), 390-395.
- (44) World Health Organization. (2013). *Global status report on road safety 2013: supporting a decade of action: summary*(No. WHO. NMH. VIP 13.01). World Health Organization.
- (45) Münzberg, M., Mahlke, L., Bouillon, B., Paffrath, T., Matthes, G., & Wöfl, C. G. (2010). Six years of Advanced Trauma Life Support (ATLS) in Germany: the 100th provider course in Hamburg. *Der Unfallchirurg*, *113*(7), 561-566.
- (46) Johnson, R. H., & Puglia, C. (2012). Designing a needs assessment survey for clinical nurse educators. *Journal for Nurses in Professional Development*, *28*(5), 225-228.
- (47) Jones, M. and Rattray, J. (2015) Questionnaire design, Chapter 30 pp. 41225, in K. Gerrish and J. Lathlean (Eds) *The Research Process in Nursing* (7th edition). Chichester. Wiley-Blackwell.
- (48) Grover, E., Porter, J. E., & Morphet, J. (2017). An exploration of emergency nurses' perceptions, attitudes and experience of teamwork in the emergency department. *Australasian Emergency Nursing Journal*, *20*(2), 92-97.

- (49) Haley, K., Martin, S., Kilgore, J., Lang, C., Rozzell, M., Coffey, C., ... & Deppe, S. (2017). Establishing Standards for Trauma Nursing Education: The Central Ohio Trauma System's Approach. *Journal of Trauma Nursing*, 24(1), 34-41.
- (50) Daugherty, M. C., Mehlman, C. T., Moody, S., LeMaster, T., & Falcone, R. A. (2013). Significant rate of misuse of the hare traction splint for children with femoral shaft fractures. *Journal of Emergency Nursing*, 39(1), 97-103.
- (51) Kesieme, E. B., Essu, I. S., Arekhandia, B. J., Welcker, K., & Prasadov, G. (2016). Nurses' knowledge of care of chest drain: A survey in a Nigerian semiurban university hospital. *Annals of African medicine*, 15(1), 28.
- (52) Harris, T., Thomas, G. R., & Brohi, K. (2012). Early fluid resuscitation in severe trauma. *Bmj*, 345, e5752.
- (53) Ireland, S., Cross, R., Decker, K., & Mitra, B. (2017). Perceptions of an educational programme for registered nurses who work at non-major trauma services in Victoria, Australia: The Nursing Emergency eXternal Trauma Programme. *Australasian emergency nursing journal*, 20(3), 131-138.
- (54) Breederveld, R. S., Nieuwenhuis, M. K., Tuinebreijer, W. E., & Aardenburg, B. (2011). Effect of training in the Emergency Management of Severe Burns on the knowledge and performance of emergency care workers as measured by an online simulated burn incident. *Burns*, 37(2), 281-287.
- (55) Bolin, T., Peck, D., Moore, C., & Ward-Smith, P. (2011). Competency and educational requirements: perspective of the rural emergency nurse. *Journal of Emergency Nursing*, 37(1), 96-99.
- (56) Zuell, C., Menold, N., & Körber, S. (2015). The influence of the answer box size on item nonresponse to open-ended questions in a web survey. *Social Science Computer Review*, 33(1), 115-122.

Appendix 1.

Education Needs Assessment for emergency nurses

Explanatory statement and ethical considerations

You are invited to participate in this program by completing the survey provided. Before deciding whether to participate or not in this project, please read the instructions carefully. The survey will be collected and submitted to the nursing education department. If you would like further clarification on any point(s), you are encouraged to communicate with the student via the email address given above.

This survey is an educational needs assessment and aims to investigate the educational requirements for emergency department nurses in dealing with major trauma patients. Your completion and the return of the survey will be taken to mean that you agree to participate. The survey has four parts:

1. Part A focuses on demographic data.
2. Part B is concerned with trauma education courses.
3. Part C focuses on the nursing skills needed to manage trauma patients.
4. Part D aims to prioritize learning needs, invites you to suggest trauma courses you may wish to attend and gives you a chance to provide recommendations and other comments.

The estimated time required to complete the questionnaire is about 7-10 minutes.

Education Needs Assessment for emergency nurses

A) Demographics

1) What is your highest level of nursing education completed?

- Diploma Bachelor Degree Master Degree
- Other (specify) _____

2) Total years of experience in the Emergency Department:

- Less than 1 year 1-2 years 2-5 years 5-10 years
- More than 10 years

3) Is your current work in the Emergency department mainly with:

- trauma patients non-trauma patients both trauma and non-trauma patients
- Other (specify) _____

4) Please check your primary role in the patient care setting:

- Staff RN Staff Nurse Diploma
- Department Head/RN Supervisor/Nurse Manager
- Other (specify) _____

(B) Trauma Training courses

5) Have you had specific training related to trauma patients?

- YES NO

6) Which courses have you attended? (select all that apply)

- International Trauma Life Support (ITLS)
- Trauma Nursing Core Course (TNCC)
- Advanced Trauma Nursing Course (ATNC)

- Advanced Trauma Life Support (ATLS)
- Golden Hour Trauma Course
- Other (please specify):

(C) Perceived Confidence Items

1= Strongly Disagree

2 = Disagree

3 = Undecided

4 = Agree

5 = Strongly Agree

	1 Strongly Disagree	2 Disagree	3 Undecided	4 Agree	5 Strongly Agree
Management of Polytrauma patients					
I confidently care for patients with pelvic and femur fractures and I can apply a splint or other traction devices accurately					
I am confident to prepare and assist for insertion of intercostal drains (ICDs)					
Shocks management					
I feel confident when assisting with or inserting large bore cannulas for trauma patients					
I am able to administer Intravenous (IV) fluid replacement confidently					
I am confident in my knowledge regarding the consequences of hypothermia					
I am able to manage hypothermia effectively					
Caring for patients with head and spinal injuries					
I can manage head trauma patients with compromised airways confidently					
I can confidently apply a cervical collar					
I feel confident to perform trauma log roll for spinal injury patients					
Obstetric Trauma management					
I am confident to manage obstetric trauma patients					

	1 Strongly Disagree	2 Disagree	3 Undecided	4 Agree	5 Strongly Agree
I can easily identify and locate obstetric instruments in the emergency department					
I am able to perform specific procedures, such as preparing the fetal warmer independently and assessing fetal heart rate (FHR)					
Burns management					
I am able to estimate the total body surface area (TBSA) accurately					
I am confident about calculating and administering IV fluid requirements based on the Parkland formula					

D) Suggested educational topics and recommendations.

7) Based on your experience of caring for traumatic patients, which area requires more concentration regarding the care of acute trauma patients?

	1 Unimportant	2 Minor important	3 Important	4 Very Important	5 Critical Important
Airway management					
Polytrauma patient management					
Chest trauma management					
Shock management					
Head injury management					
Spinal injury management					
Cervical injury management					
Burns management					
Obstetric trauma management					
Shock management					
Other (please specify): _____					

8) Which of these courses would you need to enhance your abilities to manage a major trauma patient? (select all that apply)

- International Trauma Life Support (ITLS)
- Trauma Nursing Core Course (TNCC)
- Advanced Trauma Nursing Course (ATNC)
- Advanced Trauma Life Support (ATLS)
- Golden Hour Trauma Course
- Other (please specify): _____

9) Do you have any other comments?

10) Do you have any recommendations for the Education department regarding the design of a trauma program? _____