Journal of Population Therapeutics & Clinical Pharmacology

Educational Guideline Impact on Nurses' Care for Emergency Patients with Accidental Chest Trauma

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Abstract:

Background: Trauma remains a leading cause of mortality worldwide. Chest injuries, ranging from minor rib fractures to severe heart or tracheobronchial injuries, affect a significant portion of patients.

Objective: This study aimed to assess the impact of an educational guideline on nurses' practice in caring for emergency patients with accidental chest trauma.

Design: A quasi-experimental design with pre and post-tests was employed. Setting: The study took place in the emergency room (ER) of Emergency Hospital.

Participants: A convenience sample of 60 ER nurses, of diverse demographics and willing to participate, cared for patients with accidental chest trauma.

Instruments: Data collection utilized two tools: Nurses' Self-Administered Questionnaire assessing demographics, knowledge, and attitudes, and Nurses' Observational Checklist evaluating practice levels.

Results: The study revealed a significant improvement in nurses' knowledge, practice, and attitudes following the educational guideline implementation. While no significant association was found between nurses' attitudes (pre & post) and their education level ($P > 0.05$), a significant relationship was observed post-guideline implementation between nurses' education level and their practice and knowledge ($P < 0.001$ & 0.004, respectively).

Conclusion: The educational guideline positively influenced nurses' practice in caring for patients with accidental chest trauma during emergencies, supporting the research hypothesis.

Recommendation: Regular educational programs should be scheduled every six months for ER nurses to enhance their practice and ensure high-quality care for patients with chest trauma.

Keywords: Trauma, educational guideline, emergency nursing, chest trauma, thoracic injury.

Introduction:

Trauma stands as a prominent global cause of mortality, with chest injuries affecting a significant proportion of patients, ranging from minor rib fractures to severe heart or tracheobronchial disruptions. Thoracic injuries, including blunt and penetrating trauma, contribute substantially to mortality and disability rates, ranking second only to head and spinal cord injuries (Huber, Biberthaler et al., 2014). Effective management of these injuries requires a multidisciplinary approach, starting from the accident scene through emergency

transportation, surgical intervention, and intensive care unit (ICU) treatment. Early and efficient management is pivotal in reducing morbidity and mortality rates in these cases (Ghoneim et al., 2018).
Assessing and managing major thoracic injuries such as tension pneumothorax, open pneumothorax, flail chest, pulmonary contusion, and severe hemothorax demands a thorough evaluation of breathing and clinical examination of the thorax, including respiratory motions and quality of respiration. Rapid and accurate primary surveys, along with the ability to identify life-threatening thoracic injuries and intervene effectively, are essential skills for nurses managing trauma patients (Ursic & Curtis, 2010).
In the context of emergency room (ER) nursing, educational practice guidelines play a critical role. These guidelines should encompass knowledge, skills, and competencies required for quality emergency management in a dynamic setting characterized by constant movement, competing pressures, and diverse patient presentations. Nurses must be equipped to handle the unique physical and psychosocial dynamics of each patient encounter (Chu & Hsu, 2011).

Aim of the Study:
This study aimed to evaluate the impact of educational guidelines on nurses' practice levels in caring for patients with accidental chest trauma during emergency periods by:

1. Assessing nurses' knowledge levels in caring for patients with accidental chest trauma during emergencies.
2. Evaluating nurses' practice levels in caring for patients with accidental chest trauma during emergencies.
3. Developing and implementing educational guidelines for caring for patients with accidental chest trauma during emergencies.
4. Assessing the effect of educational guidelines on caring for patients with accidental chest trauma during emergencies.

Research Hypothesis:
The hypothesis of this study was: The implementation of educational guidelines would positively impact nurses' practice levels in caring for patients with accidental chest trauma during emergency periods.

Subjects and Methods:
Research Design:
A quasi-experimental design (one group pre/posttest design) was utilized in this study.
Setting:
The study was conducted at the emergency department of Emergency Hospital, which includes various units such as triage, resuscitation, radiology, operating rooms, recovery wards, internal medicine emergencies, and toxicology.
Subjects:
The study included a convenience sample of all available nurses (60) working in the emergency department, of various ages and genders, who agreed to participate.
Data Collection Tools:
Nurses' Self-administered Questionnaire:
Part 1: Demographic characteristics.
Part 2: Nurses' knowledge in providing emergency care for patients with chest trauma.
Nurses' Practice Observational Checklist:
Assesses nurses' practical skills in emergency care for chest trauma patients.
Operational Design:
The study went through several phases, including a preparatory phase involving literature review and tool development, validity and reliability testing, a pilot study with six nurses, and fieldwork conducted over six months. The study was divided into assessment, planning, implementation, and evaluation phases.

Educational Guidelines:
Educational sessions were conducted over three days, covering theoretical and practical aspects of caring for chest trauma patients. Sessions were conducted individually or in groups, emphasizing the importance of continuing training courses.
Evaluation:
The effect of educational guidelines on nurses' knowledge and practice was evaluated through pre and post-implementation assessments using the same tools. Statistical analysis was performed using SPSS, including descriptive statistics, paired t-test, Chi-square, ANOVA test, and Pearson coefficient.

Ethical Considerations:
The study was approved by the ethics committee, and written consent was obtained from participating nurses. Data confidentiality and voluntary participation were assured, with permissions obtained from hospital authorities.
Statistical Analysis:
Data were analyzed using SPSS, with statistical significance set at $P < 0.05$. Descriptive statistics, paired t-test, Chi-square, ANOVA, and Pearson coefficient were used for analysis.

Results
The study's demographic analysis revealed that 83.3% of the nurses were female, indicating a female-dominated workforce in the emergency department. Regarding educational qualifications, 53.3% of nurses held bachelor's degrees, reflecting a relatively high level of academic attainment among the participants. In terms of professional experience, 60% of the nurses had between one and less than five years of experience, suggesting a mix of relatively new and moderately experienced staff. Interestingly, 55% of the nurses reported a lack of formal training courses, highlighting potential gaps in structured educational opportunities within the department. However, a significant majority (68.3%) acknowledged the presence of emergency trauma care protocols, indicating an institutional focus on preparedness and standardized care practices.
The age distribution of the nurses showed that 71.7% fell within the age range of 20 to less than 40 years, with the mean age being 33.18 ± 6.45 years. This demographic profile suggests a relatively young workforce, which may impact their experience levels and approach to patient care.
The study's key findings related to knowledge and practice levels before and after the implementation of educational guidelines were notable. There were high statistically significant differences in nurses' satisfactory levels of total knowledge pre and post-implementation of the guidelines ($P \leq 0.001$), indicating a substantial improvement in understanding and awareness following the educational intervention. Similarly, significant improvements were observed in nurses' satisfactory levels of overall practice, particularly in areas such as primary and secondary surveys, patient evaluation with chest trauma, occlusive dressing, and needle decompression. These results underscore the effectiveness of the educational guidelines in enhancing both theoretical knowledge and practical skills among the nursing staff.
Furthermore, the study revealed a positive shift in nurses' attitudes toward nursing care of patients with chest trauma post-implementation of the educational guidelines. Notably, there were significant improvements in attitudes related to emergency transport reporting and community trauma care. The percentage of nurses reporting positive attitudes increased from 44.3% to 86.7% post-implementation, indicating a favorable response to the educational program's objectives.
However, it's important to note that there was no significant relationship found between nurses' years of experience and their levels of knowledge, practice, and attitude regarding the implementation of the educational guidelines. This suggests that the educational intervention had a uniform impact across different experience levels, highlighting its effectiveness in bridging knowledge and practice gaps irrespective of tenure in the field.

Discussion

The field of trauma nursing is dynamic and demands constant adaptation to evidence-based practices. Optimal patient outcomes hinge on the expertise of specialized providers, particularly in emergency and critical care contexts. Effective trauma nursing necessitates a deep understanding of emergency concepts and critical care principles. In this context, it's crucial to recognize and empower leaders in trauma nursing to foster growth and excellence within the specialty (Polovitch, 2019).

In the study, a significant majority (more than three-quarters) of the nurses were female, a trend observed in various healthcare settings. This finding aligns with Hassanin and Mohammed's (2016) study on chest tube complications, where female nurses constituted the majority. This demographic trend could be attributed to historical educational practices, such as nursing programs initially being exclusive to females in certain regions. For example, in Egyptian universities, Bachelor of Science in Nursing (BSN) programs were traditionally for females until recent years, leading to a predominantly female nursing workforce.

Regarding education levels, more than half of the nurses held bachelor's degrees. This is consistent with findings from other studies, such as Shakeri et al. (2018) and Ghaniyoun et al. (2017), which also reported a substantial proportion of nurses with bachelor's degrees. The establishment of nursing faculties and programs over the years has contributed to this educational attainment among nurses, enabling their deployment in critical care settings like emergency and trauma units.

The study also highlighted that a significant portion of nurses had relatively short work experience, with many having between one and less than five years of experience. This finding resonates with similar studies that noted a similar distribution of experience levels among nurses (Wang et al., 2018; Chege et al., 2018). It's worth noting the potential impact of continuous turnover and workload on nurses' opportunities for ongoing training, as evidenced by the substantial proportion lacking formal training courses in trauma care.

Concerning trauma care protocols, a substantial majority of nurses acknowledged the presence of protocols for primary and secondary assessment and management of trauma patients. This contrasts with findings from other settings, such as Pulhorn et al. (2016), where a significant portion of nurses did not use trauma care protocols. The differences could stem from institutional practices and the emphasis placed on standardized protocols in emergency and trauma settings.

Age-wise, the study showed that most nurses were in their second and third decades, indicating a relatively young workforce. This is consistent with findings from Jeffries (2017), who reported a similar age distribution among emergency department nurses. The educational intervention in the present study significantly improved nurses' knowledge and skills related to trauma care, as evidenced by high levels of satisfaction post-implementation.

Moreover, the study demonstrated a positive shift in nurses' attitudes toward nursing care of chest trauma patients post-implementation of educational guidelines. This echoes findings from Hull (2019), which observed positive attitude changes following educational workshops. Similarly, significant improvements were noted in nurses' practice levels, particularly in primary and secondary surveys, occlusive dressing, and needle decompression, highlighting the efficacy of the educational intervention in enhancing practical skills.

Interestingly, there was no significant correlation between nurses' years of experience and their levels of knowledge, practice, and attitude before and after guideline implementation. This suggests that the educational intervention had a uniform impact across different experience levels, emphasizing its effectiveness in bridging knowledge and practice gaps irrespective of tenure in the field.

Overall, the study's results underscore the importance of tailored educational interventions in enhancing nurses' competence and confidence in trauma care. By addressing knowledge gaps, improving attitudes, and enhancing practical skills, such interventions contribute significantly to the delivery of high-quality care in emergency and trauma settings.

Conclusion

The findings of the present study indicate that the educational guidelines implemented had a positive impact on nurses' practice levels in caring for patients with accidental chest trauma during emergency situations. The results across different phases of the program demonstrate the effectiveness of the educational

intervention. Therefore, it can be concluded that the research hypothesis, which posited a positive effect of the educational guidelines on nurses' practice levels, was indeed fulfilled. This underscores the importance of targeted educational initiatives in improving healthcare outcomes, particularly in critical care scenarios like trauma nursing.

References

1. Abdel Bary, M., Branscheid, D., Mertzlufft, F., & Beshay, M. (2018). Long term management of thoracic trauma in a high frequency trauma center; what have we learned? Journal of the Egyptian Society of Cardio-Thoracic Surgery, 26(1), 73-81. https://doi.org/10.1016/j.jescts.2017.12.004
2. Axtman, B. C., Stewart, K. E., Robbins, J. M., Garwe, T., Sarwar, Z., Gonzalez, R. A., & Albrecht, R. M. (2019). Prehospital needle thoracostomy: What are the indications and is a post-trauma center arrival chest tube required? The American Journal of Surgery. doi:10.1016/j.amjsurg.2019.09.020
3. Blackburn, J., Ousey, K., & Stephenson, J. (2019). Nurses' Education, Confidence, and Competence in Appropriate Dressing Choice. Advances in Skin & Wound Care, 1. doi:10.1097/01.asw.0000577132.81124.88
4. Cannon, L. M., Coolidge, E. M., Legierse, J., et al. (2020). Trauma-informed education: Creating and pilot testing a nursing curriculum on trauma-informed care. Nurse Education Today, 85. doi:10.1016/j.nedt.2019.104256
5. Chege, A., Mwaura, J., & Kirui, A. (2018). Evaluation of the Nursing Management for Patients on Underwater Chest Drainage at Kenyatta National Hospital. Open Journal of Obstetrics and Gynecology, 8, 1222-1235. doi:10.4236/ojog.2018.812124
6. Chu, W., & Hsu, L. (2011). Developing Practical Knowledge Content of Emergency Nursing Professionals. Journal of Nursing Research, 19(2), 112-118. doi:10.1097/JNR.0b013e31821aa0eb
7. DeForest, C. A., Blackman, V., Alex, J. E., Reeves, L., Mora, A., Perez, C., & Walrath, B. (2018). An Evaluation of Navy En Route Care Training Using a High-Fidelity Medical Simulation Scenario of Interfacility Patient Transport. Military Medicine, 183(9-10), e383–e391. doi:10.1093/milmed/usx129
8. Ghaniyoun, A., Shakeri, K., & Heidari, M. (2017). The association of psychological empowerment and job burnout in operational staff of Tehran emergency center. Indian Journal of Critical Care Medicine, 21, 563-567. doi:10.4103/ijccm.IJCCM_56_17
9. Ghoneim, A. T., Saleh, G. E., & Salama, R. S. (2018). Management of chest trauma. Benha Medical Journal, 35, 1-4. doi:10.4103/bmfj.bmfj_82_16
10. Gurney, D. (2019). Tension Pneumothorax: What Is an Effective Treatment? Journal of Emergency Nursing, 45(5), 584–587. doi:10.1016/j.jen.2019.06.003
11. Hassanin, A. A., & Mohammed, H. A. (2016). Effect of an Educational program for nurse's working at Mansoura University Hospitals on Chest Tube Complications. Journal of Nursing, 5(5), 34-42. DOI: 10.9790/1959-0505083442
12. Huber, S., Biberthaler, P., Delhey, P., Trentzsch, H., Winter, H., Griensven, M. V., & Lefering, R. (2014). Predictors of poor outcomes after significant chest trauma in multiply injured patients: a retrospective analysis from the German Trauma Registry. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine. https://doi.org/10.1186/s13049-014-0052-4
13. Hull, S., Mcliesh, P., & Salamon, Y. (2019). Does an orthopaedic workshop improve the confidence of nurses transitioning into the specialty of orthopaedics? International Journal of Orthopaedic and Trauma Nursing, 35, 100700. doi:10.1016/j.ijotn.2019.04.003
14. Jordi, K., Grossmann, F., Gaddis, G. M., et al. (2015). Nurses' accuracy and self-perceived ability using the Emergency Severity Index triage tool: a cross-sectional study in four Swiss hospitals. Scandinavian Journal of Trauma Resuscitation and Emergency Medicine. doi:10.1186/s13049-015-0142-y
15. Jeffries, M. (2017). Evidence to support the use of occlusive dry sterile dressings for chest tubes. MedSurg Nursing, 26(3), 171-174. https://www.thefreelibrary.com/Evidence+to+support+the+use+of+occlusive+dry+sterile+dressings+for...-a0502001243
16. Kenny, L., Teasdale, R., Marsh, M., & McElnay, P. (2016). Techniques of training in the management of tension pneumothorax: bridging the gap between confidence and competence. Annals of translational medicine, 4(12).
17. Ludwig, C., & Koryllos, A. (2017). Management of chest trauma. Journal of Thoracic Disease, 9(Suppl 3), S172-S177. doi:10.21037/jtd.2017.03.52
18. Magdi, M. (2017). Trauma care in Egypt: how to efficiently meet patients' needs? Available at https://www.egypttoday.com/Article/1/12484/Trauma-care-in-Egypt-how-to-efficiently-meet-patients-needs
19. Mohamed, I., & Elhanafy, E. (2019). The Effect of A Structured Training Program on Intensive Care Nurses Performance. Journal of Health, Medicine, and Nursing, 60. DOI: 10.7176/JHMN
20. National Association of Emergency Medical Technicians (NAEMT) (2018). Pre-Hospital Trauma Life Support Committee, 8th edition. Jones & Bartlett Learning, USA.
21. Pulhorn, H., Westmoreland, L., & McMahon, C. (2016). The management of minor head trauma (GCS 15-13) across a Trauma Network. British Journal of Neurosurgery, 30(5), 536–540. http://dx.doi.org/10.1080/02688697.2016.1211249

22. Shaver, B., Eyerly-webb, C., Gibney, Z., Silverman, L., Pineda, R. N. C., & Solomon, T. R. J. (2018). Trauma and Intensive Care Nursing Knowledge and Attitude of Foley Catheter Insertion and Maintenance. Journal of Trauma Nursing, 25(1). doi:10.1097/JTN.0000000000000344
23. Shakeri, K., Fallahi-Khoshknab, M., Khankeh, H., Hosseini, M., & Heidari, M. (2018). Knowledge, attitude, and clinical skill of emergency medical technicians from Tehran emergency center in trauma exposure. International Journal of Critical Illness and Injury Science, 8, 188-193. Available at http://www.ijciis.org/text.asp?2018/8/4/188/247783. Accessed on 11/10/2019 at 17:03.
24. Sharifi, S., Shahoei, R., Nouri, B., Almvik, R., & Valiee, S. (2019). Effect of an education program, risk assessment checklist and prevention protocol on violence against emergency department nurses: a single center before and after study. International Emergency Nursing. doi: https://doi.org/10.1016/j.ienj.2019.100813. Accessed on 31/12/2019 at 20:59.
25. Ursic, C., & Curtis, K. (2010). Thoracic and neck trauma. Part one. International Emergency Nursing, 18(1), 47-53. https://www.ncbi.nlm.nih.gov/pubmed/20129442. doi:10.1016/j.ienj.2008.11.010. Accessed on 28/5/2018 at 16:57.
26. Wang, Y. L., & Jones, D. (2020). Pulmonary Trauma. In J. E. Tintinalli, O. Ma, D. M. Yealy, G. D. Meckler, J. Stapczynski, D. M. Cline, & S. H. Thomas (Eds.), Tintinalli's Emergency Medicine: A Comprehensive Study Guide (9th ed.). New York, NY: McGraw-Hill. Available at http://accessmedicine.mhmedical.com/content.aspx?bookid=2353&sectionid=222406837. Accessed on February 07, 2020.