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Original Article

Effect of Chest Drain Management Guidelines on Knowledge and Practice Among Nurses at Services Hospital

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ABSTRACT

Chest drain are inserted to help treat various conditions like pneumothorax, empyema and pleural effusion etcetera. It is also very much indicated after chest trauma and thoracic surgeries**. Objective:** To determine the effect of chest drain management guidelines on knowledge and practices among Nurses at Services Hospital Lahore, Pakistan. **Methods:** One group Pre-post quasi experimental design was used. The study was conducted from December 2021 to April 2022 at the thoracic surgery, medical and surgical ICUS department of services hospital Lahore, Pakistan. Thirty-six registered nurses were selected by convenience sampling from services hospital Lahore according to inclusion and exclusion criteria. Data was collected from the participants by adopted, valid, and reliable tools. A structured questionnaire was used to evaluate the pre-post data that contained 25 true false-based knowledge questions and checklist containing 13 items were used to assess the level of practice of nurses before and after guidelines-based educational intervention. **Results:** The results revealed a positive effect of educational guidelines on improving the knowledge and practice of nurses about chest drain management with Mean ± S.D(8.83±1.69; 19.08 ±2.53) (4.92±1.73; 10.97±0.74) in post-test respectively with statistically significant p-value (p-value <0.001). **Conclusions:** The education of nurses by educational guidelines have a significant effect on improving nurses' knowledge and practice about chest drain management.

INTRODUCTION

Chest drain are inserted to help treat various conditions like pneumothorax, empyema and pleural effusion etcetera. It is also very much indicated after chest trauma and thoracic surgeries [1]. Globally it has been founded that there are nineteen (19) people dying from chest drain per 1000 people [2]. In U.S over one million chest drain are inserted every year [3]. British thoracic society (BTS) pleural procedure audit estimated that an acute hospital would carry out the placement of fifteen drains per month on average, thus approximating 15,00 drains yearly in UK [4]. National Patient Safety Agency (NPSA) reported in 2018, 45 deaths related to chest drain risks. The reason behind these risks is nurses' unsatisfactory practice [5]. More than 300,000 patient undergo cardiothoracic surgery every year, requiring placement of at least one chest drain, the procedure of chest drain system carries 02-25% of severe consequences which can result due to lack of nurses' knowledge about thoracic anatomy and not following standard practices [6]. The second most prevalent cause of chest drain was physical trauma to the chest, which occurred in 13.5 percent of patients. Other causes of chest intubations include COPD in 7.5 percent of patients, lung malignancy in 4.5 percent of patients, and spontaneous pneumothorax in 1.5 percent of patients. A chest drain was also placed on 0.5 percent of patients with a burst lung abscess [7]. In Australia all major trauma patients about more than 25% of patient admitted to trauma center needed chest drain. Furthermore American Heart Association (AHA) reported that more than 448,000 patient underwent cardiothoracic surgery annually, including Coronary Artery Bypass Grafting (CABG), valve replacement, or repair of defects which are familiar

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rationales for chest drain insertion [3].Numerous studies reported that nursing practices for chest drain management is unsatisfactory regarding swinging, bubbling, tidal ling, kinking, milking, protecting drain while positioning, monitoring the drain entrance area for sign of infection and Valsalva manure [8]. The inappropriate management of chest drain may result significant morbidity which leading to prolonged hospitalization. Nurses are the first professional on the patient's bedside after chest drain insertion. So, they should have enough knowledge and good skills on the chest drain management. The critical care knowledge and technical practicing skills among the critical care nurses need to be sustained with the help of updated and appropriate clinical guidelines and relevant education [9]. Nurses play an important role to provide care of patient's chest drain including, assisting, insertion, managing and removing chest drain. Regarding the educational practice guidelines content for nurses working in the critical care department should include: knowledge, skills and competencies to maintain a quality critical care patient's management. Educational session needs to be planned to promote nurses' knowledge and improve skills about chest drain [10]. Chest drains care is a very complicated and critical nursing activity. Nurses with good knowledge about it and practicing basic guidelines and skills while taking care of patients with chest drain will be helpful to protect the patients. Knowledge among nurses regarding chest drain system and performing basic skills can help the nurses to recover patients from serious pulmonary problem [11]. Patients with chest drain have chance of Complication as high as 30%. Inappropriate management of chest drain may cause delayed or incomplete evacuation of the collected air or fluid in the pleural space, and delayed expansion of the collapsed lung. In Pakistan, there is a frightful situation due to poor management of chest drain patients. A statistically significant relationship exists between chest drain management and use of guidelines; it shows guidelines are still ignored for caring the patients. Proper guidelines at the hospitals are the need of hour in Pakistan to reduce the high rates of chest drain complication and morbidity [12]. Since, nurses need to get the education about guidelines regarding chest drain management to improve the knowledge and practice of nurses for empowering the nurses. This influences the researcher to conduct the research.

METHODS

Study was conducted by using the protocols of declaration of Helsinki. All the participants were well-informed and written consent was obtained. Institutional Review Board of University of Lahore had granted the approval (IRB-UOL-FAHS/976/2021) dated on 26-10-21 to conduct this study. One group Pre-test Post-test (quasi-experimental) study was conducted from December 2021 to April 2022, Registered nurses were included from the thoracic surgery unit, Surgical Intensive care units and medical intensive care units of Services hospital Lahore.36 registered nurses were selected by using purposive sampling technique. Nurses who attended the recent training session on chest drain management, who had the plan to go on leave and Nurse working at managerial posts were excluded from the study. To calculate the sample size, mean and standard deviation is used from the previously published articles. Sample size was 36 by adding 20% drop out rate and 80% power of the test. Tool was adopted from the published research with permission [13, 14]. Tool had three parts; Part A Demographic Variables, Part B Knowledge Assessment Questionnaire, Part C Practice checklist. Knowledge level assessed by using True false based questionnaire that contained the 25 questions before and after educational intervention. Right answer was marked as '1' and wrong answer marked as '0'. Knowledge was categorized by summing the scored obtained as; poor knowledge< 50% (1-12.5), if percentage is 50-70% (12.5-17.5) it will be considered as moderate and >70%(18-25) will be considered as good. Nurse's practice checked by using 13 statements on Practice categorized into two by summing up the obtained scores as; unsatisfactory practice <70% (9.1) and satisfactory practice >70% [10]. Educational intervention was given to the nurses by making small groups including 3-5 nurses and also carried out with 1 nurse according to availability and working schedule. 10 Weeks educational training was given by using PowerPoint lectures, audio-visual demonstration and videos regarding chest drain management. Total 15 sessions were conducted by taking 3 sessions per week. 2 weeks were given for the implication of knowledge and 4 weeks were given for practice improvement. SPSS version 20.0 used for statistical analysis. Demographic and professional variables assessed by frequency and percentages. Data collected in the form of whole numbers and twice i.e. before and after educational intervention. Mean difference calculated by paired t-test with $p \leq 0.05$ considered as significant.

RESULTS

Total 36 individuals were chosen from Services hospital Lahore. Table 1 depicted that most of the nurses 14 (38.9%) had Diploma in Nursing. 15(41.1%) had working experience between 1-5 years; 15(41.7%) were 26-30 Years of age (Table 1).

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Variables	Frequency (%)
Age (years)	
26-30	15 (41.7%)
31-35	12 (33.3%)
36-40	9 (25.0%)
Gender	
Female	36 (100%)
Education	
Diploma nursing	14 (38.9%)
Post RN	11 (30.6%)
BSN	11 (30.6%)
Experience (years)	
0-1	3 (8.3%)
1-5	15 (41.7%)
6-10	11 (30.6%)
> 10	7 (19.4%)

Table 1: Demographic characteristics of studied sample

Table 2 depicted that Mean ± SD in pre-teaching indicates all nurses had poor level of knowledge while in post-teaching, majority of the nurses had good level of knowledge. This showed a statistically significant difference in mean Knowledge Scores after intervention with p-value <0.05.

Variable	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean difference	t-test	p-value
Knowledge	8.83±1.69	19.08 ±2.53	10.25±.44	23.45	<.001

Table 2: Comparison of pre and post intervention Knowledge score of nurses regarding chest drain management(n=36)

Table 3 depicted that Mean ± SD in pre-teaching indicates all nurses had poor level of Practice while in post-teaching, majority of nurses had good level of Practice. This showed a statistically significant difference in mean practice Scores after intervention with p-value <0.05(Table 3).

Variable	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean difference	t-test	p-value
Practice	4.92±1.73	10.97±0.74	2.67±0.48	6.056	<.001

Table 3: Comparison of pre and post intervention practice score of nurses regarding chest drain management(n=36)

DISCUSSION

The aim of study was to determine the effect of educational Guidelines for improving the knowledge and practice of nurses regarding chest drain management. Knowledge and practice of the nurses are the basic pillars to enhance the patient care. This study has the same findings as the previous study conducted in Peshawar using pre and post intervention assessment design showed that there is an increase in the knowledge and practice level of nurses regarding chest drain management [15]. which highlights the positive correlation between knowledge and practice of nurses. So, educational programs should be arranged by the Nursing administrators to enhance the practice and knowledge regarding chest drain management. The findings of the current study are consistent with the study conducted in Ismailia University which revealed significant improvement in mean scores as Mean ± SD (56.0±19.5, 95.6±3.4,) for the knowledge of Nurses as compared to the poor knowledge before education [16]. Since, the entire studied nurses did not have any under or postgraduate training program about chest drain management, lack of supervision, unpresented evaluation system for nurses' performance. Another study conducted in North Gujrat using cross sectional study design with a sample size of 70 nurses to evaluated the knowledge of nurses regarding chest drains management through a validated questionnaire [17]. The results of the study showed similar findings that, majority of the participants (81.4%) had poor knowledge regarding chest drains care management. Similarly, scores regarding nurses' role in chest drain management (65.7%), and nursing interventions (68.6%) were reportedly poor. A study conducted in Lahore regarding the knowledge of staff nurses regarding chest drain care with a sample of 150 nurses [18]. The findings of the study were in contrast with our findings which showed that 24% participants had poor or average score while majority of the participants (40%) has good score where they answered 19 or more questions correctly. Another study on assessing the effects of nursing management guidelines for patients with chest tube drainage on nurse's performance showed that before implementing the guidelines, nurses' had poor knowledge level (62.5%) with unsatisfactory practice level (70%). After implementation of the guidelines, results showed improvement with 65.0% of them had good knowledge level and 90% had satisfactory practice level. It also indicated that education in the form of informative booklet is helpful in improving knowledge and practice of nurses [19]. Another study where the effectiveness of an educational program on nurses' knowledge and practices regarding nursing interventions of chest drain drainage system was conducted using a pre-test/post-test approach for the study group and control group. The results of this study showed significant improvement in nurses' knowledge and practices for chest drainage system in post-test which is similar to the findings of this study [20].

CONCLUSIONS

This study concluded the effect of educational guidelines in improving nurses' knowledge and practice regarding chest drain management has a significant positive impact.

Conflicts of Interest

The authors declare no conflict of interest.

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REFERENCES

[1] Elsayed N and Hassanin A, Mohammed H. Effect of Implementing Nursing Management Guidelines for Patients with Chest Tube Drainage on Nurses' performance At Mansoura University Hospitals. Mansoura Nursing Journal. 2016 Jan; 3(1): 315-33. doi: 10.21608/mnj.2016.149466.

[2] Talpur AA, Khaskheli AB, Hashmi SF, Jamal A. Analysis of 200 cases of tube thoracostomies performed by general surgeons. Journal of Liaquat University of Medical and Health Sciences. 2014 Jan; 13(1): 22-6.

[3] Hassanin AA, Mohammed H, Ahmed Hassanin A, Abo-Bakr Mohammed H, Hassanin AA, Mohammed HA. Effect of an Educational program for nurse's working at Mansoura University Hospitals on Chest Tube Complications. IOSR Journal of Nursing and Health Science (IOSR-JNHS). 2016 Sep; 5(5): 34-42. doi: 10.9790/1959-0505083442.

[4] Jackson K, Kafi O, Bhullar DS, Scott J, Storey C, Hyatali S, et al. Complications after Thoracocentesis and Chest Drain Insertion: A Single Centre Study from the North East of England. Journal of Respiration. 2021 May; 1(2): 135-40. doi: 10.3390/jor1020014.

[5] Elfaki B, Mustafa H, Hassan Ahmed A. Nurses' knowledge and practice regard care of patient with chest drains in Sudan Heart Center, Khartoum, Sudan. IOSR Journal of Nursing and Health Science. 2016 Nov; 5: 2320-40. doi: 10.9790/1959-0506040106.

[6] Bedier NA, EL-Ata AB, Ibrahim NM. Impact of an educational program on nurses, practice related to care of patients with chest tube. International journal of Nursing Didactics. 2016 Sep; 6(9): 27-34. doi: 10.15520/ijnd.2016.vol6.iss9.168.27-34.

[7] Khanzada TW and Samad A. Indications and complications of tube thoracostomy performed by general surgeons. The Journal of the Pakistan Medical Association. 2008 Jan; 58(1): 39-40.

[8] Jabar HA and Aziz AR. Effectiveness of an Education Program on Nurses Knowledge toward Care of Chest Tube in Children at Pediatric Teaching Hospital Baghdad City. Indian Journal of Forensic Medicine & Toxicology. 2021 Jul; 15(3): 839-45.

[9] Abuejheisheh A, Qaddumi JA, Darawad MW. Chest drains: prevalence of insertion and ICU nurses' knowledge of care. Heliyon. 2021 Aug; 7(8): e07719. doi: 10.1016/j.heliyon.2021.e07719.

[10] El-Senousy T, Mahrous FM, Abd-Al Salam SN, Zedan HI. Educational Guidelines for Nurses' Competence Level Caring for Patients with Accidental Chest Trauma during Emergency Period. Systematic Reviews in Pharmacy. 2020 Dec; 11(12): 440-9.

[11] Ramya KR and Jose N. Effectiveness of self-instructional module on nursing management of patients with chest tube drainage for staff nurses working in a selected hospital of Odisha. International Journal of Nursing Education. 2013 Jul; 5(2): 155. doi: 10.5958/j.0974-9357.5.2.085.

[12] Sheta H and Mahmoud M. Effectiveness of Structured Educational Program on Knowledge and Practice among Nurses Regarding Body Fluid Balance Assessment for Critically Ill Patients. IOSR Journal of Nursing and Health Science. 2018 Sep; 7: 74-83. doi: 10.9790/1959-0705117483.

[13] Tarhan M, Akbaş Gökduman S, Ayan A, Dalar L. Nurses' knowledge levels of chest drain management: a descriptive study. Eurasian journal of pulmonology. Eurasian Journal of Pulmonology. 2016 Sep; 18(3): 153-159. doi: 10.5152/ejp.2016.97269.

[14] Öztaş B, Dursun S, Öztaş M. Determination of Nursing Practices Related to Drain Care. Türk Kolon ve Rektum Hastalıkları Dergisi. 2020 Nov; 30(2): 128-33. doi: 10.4274/tjcd.galenos.2020.2019-11-3.

[15] Jamshed A and Fahad M. Impact of an Education intervention on knowledge regarding Chest Tube among Resident Surgeons and Nurses. Pakistan Journal of Chest Medicine. 2021 Dec; 27(4): 184-8.

[16] Ibrahim NM. Impact of an Educational Program on Nurses' Practice Related to Care of Patients with Chest Tube. Port Said Scientific Journal of Nursing. 2014 Dec 1; 1(2): 248-64. doi: 10.21608/pssjn.2014.35070.

[17] Patidar D, Patidar K, Patel A. A Study to assess the effectiveness of Self-Instructional module on Knowledge about practice regarding management of patient with chest tube drainage among Nurses working in selected hospitals of North Gujarat. International Journal of Nursing Education and Research. 2021 Feb; 9(1): 67-8. doi: 10.5958/2454-2660.2021.00016.8.

[18] Tufail S, Ali A, Begum MF. Knowledge of Nurses Regarding Chest Drain Care at Public Tertiary Care Hospital Lahore. Saudi Journal of Nursing and Health Care. 2018 Jun, 1(3): 211-16.

[19] Mohammed MA, Mahmoud ME, Sleem HA, Ibrahim NM. Assessment the Nurses Performance in Providing Care to Patients Undergoing Chest Tube in Suez Canal University Hospital. International journal of Nursing Didactics. 2016 Sep; 6(9): 19-26. doi: 10.15520/ijnd.2016.vol6.iss9.167.19-26.

DOI: https://doi.org/10.54393/pjhs.v4i01.505

[20] Hamel OL, Ahmed SA. Effectiveness of an Educational Program on Nurses' Knowledge and Practices Regarding Nursing Interventions of Chest Tube Drainage System in Ibn Alnafees Teaching Hospital. Indian Journal of Public Health Research & Development. 2020 Apr; 11(4): 1809-04.