



Awareness and Practice of Nurses' Regarding Care of Patient with Chest Drains

Afshan Rafique (Bscn student)

Lahore School of Nursing,

The University of Lahore

Lahore, Pakistan

Afshikhanna123@gmail.com

Authors Name/s per 2nd Affiliation

Muhammad Hussain

Associate professor at LSN, The University of Lahore

Muhammad.hussain@lsn.uol.edu.pk

Authors Name/s per 3th Affiliation

Kausar Parveen

Assistant professorat LSN, The University of Lahore

Authors Name/s per 4th Affiliation

Muhammad Afzal

Associate professor at LSN,

The University of Lahore

Abstract

Background: The tube inserted for drainage of its contents (fluid or air) in the pleural region is a chest drain and remains in place until drainage is complete. But in emergency circumstances and aseptic tube inserted, informed consent should be obtained. A chest tube was inserted to assist with the treatment of pneumothorax, hemothorax, empyema, pleural effusion and chest trauma, and after thoracic surgery. Chest tubes and a closed drainage system are used to re-expand the collapsed lungs and to remove excess air, fluid, and blood. It was connected to an underwater seal drainage device after it was inserted into the pleural region.

Objectives: To assess the awareness and practice of nurses' regarding care of patient with chest drains

Methodology: A cross sectional descriptive study design. The setting will be the Punjab Institute Cardiology. Using SPSS, data analysis was performed and used to define the corresponding chi-square factor. Graphs and tables provided the details.

Result: Total 150 participants are involved this study 24.7% participants belong to 21-30 years of age group, 33.3 % participants have 31-40 years of age group, 20.0% participants have 41-50 years of age group, and 22.0% participants have above 51 years of age. 67% participants were male and 83% female. 40.0 % (n=60) participants were Diploma holder, 22.0% (n=33) participants were Bachelor degree, 38.0 % (n=57) and participants were Master's degree. 56.0 % (n=84) participants were surgery department, 44.0 % (n=66) participants were Medicine department. 16.0 % (n=24) participants were 0-5 years, 23.3 % (n=35) participants were 6-10 years, 28.7% (n=43) participants were 11-15 years, 21.3 % (n=32) participants were 16-20 years, and 10.7 % (n=16) participants were above 20 years.

Conclusion The study showed variations in the level of knowledge and practice of nurses, most of which reflected in their nursing practice their knowledge between the poor and the average. Many nurses have not been aware of the suggested practice and an amount have shown possibly dangerous practice. The research also raised concern about all aspects of chest drain

treatment and highlighted the criteria for practice improvements and developed body of knowledge. Any of these issues are preventable and when they occur, they must be handled correctly and appropriately.

Key word: Awareness, Practices, Care, Patient, Chest, Drains, tube.

INTRODUCTION

Background

The tube inserted for drainage of its contents (fluid or air) in the pleural region is a chest drain and remains in place until drainage is complete. But in emergency circumstances and aseptic tube inserted, informed consent should be obtained. A chest tube was inserted to assist with the treatment of pneumothorax, hemothorax, empyema, pleural effusion and chest trauma, and after thoracic surgery. Chest tubes and a closed drainage system are used to re-expand the collapsed lungs and to remove excess air, fluid, and blood. It was connected to an underwater seal drainage device after it was inserted into the pleural region. Chest drainage systems include a suction source, a storage chamber for pleural drainage and a mechanism for preventing air from re-entering the chest by inhalation (Elfaki, B., Mustafa, H., & Hassan Ahmed, A. 2016). Chest drain is normally replaced when the drainage is less than 200 ml over 24 hours, pneumothorax resolution or when the drain no longer works; bubbling has stopped and chest x-ray can confirm that the underlying issue has been resolved (Maskell 2017).

Chest tubes are widely use in the clinical side for patients with cardio operation or who have endured chest injury, The main aim of chest tube is to preserve cardiorespiratory purpose and hemodynamic integrity by preventing problems associated to the increasing pericardial sac and pleural space of debris, fluids, blood and clots. The value and standing of after operation hemostasis and the existence of hemorrhage starting surgical sites are also evaluated for the amount and character of waste. Irrigation is typically carried out by large-bore tube, which essential be mounted and maintained appropriately. Residual blood and subsequent

thrombus formation, it become dangerous and threaten after surgery hemodynamics, have also been proposed as a probable reason of chest tube obstruction. Such obstruction is specific danger of heart operation in grown person. This means that the efficiency of thoracic waste after surgery would have a detrimental effect on surgical results and prolong the recovery of patients with a diameter greater than Fr. 14. Typically, using the Seldinger method, SBCTs are placed, while LBCTs may be positioned by partition or by a trocar or the Seldinger method (Carmona, Mateo et al. 2018).

Depending on the external diameter, (CTs) originate in a range of magnitudes, reaching as of 6 to 40 French (Fr). The single French tube is equal to one-third of a millimetre, so it has a diameter of 3 mm for a 9-Fr CT. broadly speaking, at the end ('pig-tail'), CTs can be straightforward. Tunneled pleural catheters are CTs use for patient body waste lasting pleural effusion treatment also are mined toward avoid dislodging then contamination. Now the case of malignant are not present pleural illness, CTs are usually implanted for long time or days. A (SBCT) is normally 14 Fr or lesser, while it is usually 14 Fr or lesser for a (LBCT) (Mahmood and Wahidi 2016).

We assumed that CTs barrier could result in reserved blood disease when heart surgery (RBS). Assess the incidence of RBS to investigate this assumption, we have launched an unceasing feature assurance procedure, then developed and implemented a worldwide practice using vigorous tube approval to regularly pure the inner lumen of CTs (Christensen, Dziewior et al. 2017).

Chest drain is normally replaced when over 24 hours the drainage is less than 200 ml pneumothorax resolution or if the drain no longer acts; bubbling has stopped and chest x-ray can confirm that the underlying issue has been resolved (Hull, Schumaker et al. 2018). Chest drain nursing care aims to maintain an intact aseptic system to prevent infection and the derange system, introduce infection into the pleural space to ensure that the hole system remains straight, clean, all link tubes to prevent

pneumothorax tightness and liquid aspiration, and control the patient to avoid the possibility of problems (Elfaki, Mustafa et al. 2016).

In addition, patients were told that their chest tube and drainage system should be taken over. Patients should be taught to keep the bottle of the underwater seal below their chest height, and patients and nursing staff should be able to report any issues such as inadvertently removing drain from the insertion site and safety instructional content. There could be significant problems when the chest tube is in place, including pain, chest tube dislodgement, diaphragm damage, internal Injury to the organ, occlusion, extreme harm and death. Incidence is approximately 6.3 cases per 100,000 population per year among males and 2 cases per 100,000 population per year among females with majority of the cases occurring later in life. 2 Clinical presentation includes severe dyspnoea, chest pain, hypoxia and hypotension, all of which do not resolve spontaneously. Any of the causes of these severe complications have been linked to drain insertion. Partial or absolute dislodgement of the chest tube can be avoided by careful treatment and successful drain insertion methods (Durai, Hoque et al. 2017).

Literature Review

Studies have connected together CTs blockage and preserved pericardial blood to POAF. Further studies take shown that forcing blood over pericardial spaces to redirect blood to pleural places decreases POAF. One and only benefit of ATC above pericardiotomy be situated that blood remains not only pushed toward the pleural places (where pleural effusions may result), and problems such as herniation and long lasting lung adhesion to the cardiac may be less likely (Biancari, Mahar et al. 2016).

We have faith in this study is vital for a many of causes. CTs are used for the duration of any heart surgical procedure with a recorded disappointment frequency that is considerable greater than earlier estimated due to clogging. The finding that RBS treatment is required by almost 20% of patients suggests that this issue is a clinically important and possibly adaptable

issue. Present procedures such as milking and stripping to prevent clogging of chest tubes have been shown to be unsuccessful and may be ineffective (Karimov, Gillinov et al. 2017).

Make shift procedures such as initial and suctioning tubes or removing clots with a balloon catheter rise protection apprehensions. Assumed the absence of successful techniques to systematically avoid CTs obstruction now the ICU, this research is a stage towards researching replacements.

(Boyacıoğlu, Kalender et al. 2017).

The safety triangle has been suggested by the Thoracic Society British (TSB) as the site for intercostal drain insertion. This segment borders the forward edge of the latissimus dorsi, the horizontal edge of the pectoralis main muscle, the mark above the straight equal of the nipple then the apex underneath the armpit. A study of inferior populations on the structural breakthroughs showed that 45 percent were positioned outer the harmless part of chest drain insert when inserting an intercostal drain (Griffiths and Roberts 2016).

As a pathological contact among the pleural universe then the hypodermic soft tissue, pleurocutaneous fistula is described. No physical symptoms are exhibited in patients with pleurocutaneous fistula. Typically the key diagnosis is the computerized tomographic scan of the chest; although, upper body ultrasonography is useful both as a method for identification of disease and follow-up of these client (Lin, M. T., Shih, J. Y., Lee, Y. C., & Yang, P. C. 2018).

The ratio for the Lehwaldt and Timmins studies of the same term was 29.6%. The point that there is no clear description in the literature on this subject suggests that the practice may have represented ambiguity and confusion. Treatment should be discussed for patients with chest tubes with respect to guidance and clinical information from national authorities and international guidelines, with a view to standardizing the care of these clients and evaluating evidence-based

nursing practices. In all studies, the term for safe use was known to most nurses (78.4%) (Lehwaldt and Timmins 2018).

Almost all nurses were correctly aware of this expression in the Magner et al study. In order to prevent air and fluid from accessing the pleural space, safe use includes holding the drainage bottle below the chest. To make them aware of this problem, nurses should clarify why drainage bottles should be held in such a place for patients and their families (Magner, Houghton et al. 2016).

Avery argued that the chest tube incision should be tested for signs of infection and tracked and that regular records should be kept. In their study, However, Magner et al. accepted the statement relating to daily dressing changes as incorrect and Lehwaldt and Timmins also supported this view. In this study, the view of the need for everyday bandage on the cut side of the chest tube was accepted and 62.1 per cent of nurses responded correctly to this statement. There are different opinions on the dressing applications of patients with chest tubes. In order to ensure standardized nursing care, comprehensive experimental clinical trials are necessary at this stage (Avery 2017).

The insertion of a chest tube resulted in high levels of pain and anxiety in patients, Luketich et al. found. Therefore, a procedure was developed that included patient education, technological challenges, local anesthetics, and pre-medication for pain relief. In general, nurses who assist in the insertion of a chest tube are likely to respond to premedication questions in a greater proportion. The number of correct, incorrect, and "I don't know" answers given by the nurses to the statement "During the insertion of a chest tube, additional analgesics may cause shortness of breath and should therefore not be given" were somewhat similar (Luketich, Kiss et al. 2017).

Problem statement

Chest drains are inserted as an invasive procedure to Remove fluid/air from the pleural space, and Re-expand the lungs and restore negative intrapleural pressure and respiratory

function. When it is not properly perform then cause many complication like Failure to enter the pleural space, Infection at insertion site, Penetration, Penetration of peritoneal space - laceration of the diaphragm, Hemorrhage, Blocked drains, Pleural sepsis, and Subcutaneous emphysema The problem was prioritized by looking at aspects such as severity and mortality rates. Nurse students have a poor skill regarding chest drainage Therefore, considering all these aspects, these particular problems have been chosen for the work of the project.

The study objective will be:

To assess the awareness and practice of nurses' regarding care of patient with chest drains

OPERATIONAL DEFINITIONS

Awareness : In this study, awareness is considering knowledge of it will be measured through a 16-item multiple-choice question adopted from the Awareness Questionnaire (Miledler, Gressl et al. 2019).

Practices: In this study, skill is the ability of nurses to give care to their patients with nasogastric tube insertion to utilize their skills of caring with competency in each step according to need. It will be measured through a 9 item checklist for measuring technical skills in the total score ranged from 0 to 30 (Soliman 2017).

HYPOTHESIS

Null Hypothesis H_0 :

There is no effect of awareness and practice of nurses' regarding care of patient with chest drains.

Alternative Hypothesis H_1 :

There is an effect of awareness and practice of nurses' regarding care of patient with chest drains

MATERIALS AND METHODS

Study Designs: A cross sectional study

Setting: The setting will be the Punjab Institute Cardiology

Duration of Study: 4 months after the approval of synopsis

Sample Size: sample size calculated from base article. Which is **150**.

Sample size was the 150.

The sample size of the study was 150 nurses
significant level 0.05

N=240

Sample size determined by the formula of
Slovin

$$n = \frac{N}{1 + N(e)^2}$$

n=

$$240 / 1 + 240(0.05)^2$$

$$n = 240 / 1 +$$

$$240(0.0025)$$

$$n = 240 / 1 + 0.6$$

$$n = 240 / 1.6$$

$$n = 150$$

Sampling Technique: Simple random sampling

Sample Selection: selected hospital
Punjab institute of cardiology

Inclusion Criteria: All nursing staff
will be included in this study

Willingness to participate:
Only Willing participant

Exclusion Criteria: The participant will be
excluded in this study who:

- Nursing staff who already took training
- Have already received any educational training on this topic.

ETHICAL CONSIDERATIONS

- Written informed consent (attached) will be taken from all these participants.
- All information and data collection will be kept confidential.
- Participants will remain anonymous throughout the study.
- The subjects will be informed that there are no disadvantages or risks to the procedure of the study.
- They will also be informed that they will be free to withdraw at any time during the process of the study.
- The potential benefit of the study for the participants will be an increase in awareness and practice of nurses' regarding care of patient with chest drains

- We will do everything we can to protect the privacy of participants. The identity of the participant will not be revealed in any publication resulting from this study.
- Reassure the participants that they can withdraw their consent to participate at any time. They will not be penalized in any way should they decide not to participate or to withdraw from this study.

DATA COLLECTION PROCEDURE

Recruitment:

The study participants will be recruited through the process of simple random sampling. A meeting will be arranged with all the eligible participants. In which the researcher will personally explain the study purpose, procedure, and benefits to the participant. In the meeting, participant's questions regarding the study will clear. Demographic data will be collected through face to face intervention and the knowledge of client will be assessed through instrument, Assessment including questionnaires, observation, focus groups, and interviews.

Study Variables:

1. Awareness will be measured through 11-item multiple-choice questions adopted from Awareness Questionnaire.

2. Methods for Collection of Data:

Facilitator evaluators will be trained regarding the scoring of each scale data collection. The data will be collected after the approval of the synopsis at the given setting.

ANALYSIS PROCEDURE

The data analysis will be made using the Statistical Package for the Social Sciences (SPSS) version 25 software to predict the differences in the outcome variables. The frequencies and percentages will be calculated for qualitative variables whereas mean and standard deviation will be calculated for quantitative variables. Sample chi-square test will be used for comparing the mean and significance different will be measured on P value <0.05.

RESULT

Table (1): Demographic Characteristics

Sr#	Demographic Characteristics	Response <i>f</i> (%)
1	Age	
	21 - 30 yrs	37 (22.7%)
	31 - 40 yrs	50 (33.3%)
	41 - 50 yrs	30 (20.0%)
	Above 51 yrs	33 (22.0%)
		150 (100%)
2	Gender	
	Female	83 (55.3%)
	Male	67 (44.7%)
		150 (100%)
3	What is your level of completed professional nursing training	
	Diploma	60 (40%)
	Bachelor's degree	33 (22.0%)
	Master's degree	57 (38.0%)
		150 (100%)
4	What is your current deployment	
	Surgery	84 (56.0%)
	Medicine	66 (44.0%)
		150 (100%)
5	What is the length of your experience in nursing practice?	
	0 - 5 years	24 (16.0%)
	6 - 10 years	35 (23.3%)
	11 - 15 years	43 (28.7%)
	16 - 20 years	32 (21.3%)
	Above 20 years	16 (10.7%)

	150 (100%)
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This section represents the distribution of participant by demographic characteristics. The data is summarized in terms of frequency and percentage. 24.7% participants belong to 21-30 years of age group, 33.3 % participants have 31-40 years of age group, 20.0% participants have 41-50 years of age group, and 22.0% participants have above 51 years of age. 67% participants were male and 83% female. 40.0 % (n=60) participants were Diploma holder, 22.0% (n=33) participants were Bachelor degree, 38.0 % (

n=57) and participants were Master's degree. 56.0 % (n=84) participants were surgery department, 44.0 % (n=66) participants were Medicine department. 16.0 % (n=24) participants were 0-5 years, 23.3 % (n=35) participants were 6-10 years, 28.7% (n=43) participants were 11-15 years, 21.3 % (n=32) participants were 16-20 years, and 10.7 % (n=16) participants were above 20 years.

Table (2): Nurses Knowledge on Underwater Chest Drainage

Sr#	Knowledge	Good f (%)	Average f (%)	Poor f (%)	Total
1	What is your level of competence/comfort in the nursing management of a patient on underwater chest drainage?	62 (41.3%)	58 (38.7%)	30 (20.0%)	150 (100%)
2	Rate your knowledge on the nursing assessment of patients on underwater chest drainage?	54 (36.0%)	55 (36.7%)	41 (27.3%)	150 (100%)
3	Rate your knowledge on the nursing diagnosis of patients on underwater chest drainage?	43 (28.7%)	78 (52.0%)	29 (19.3%)	150 (100%)
4	Rate your knowledge on the nursing care planning for patients on underwater chest drainage?	51 (34.0%)	63 (42.0%)	36 (24.0%)	150 (100%)
5	Rate your knowledge on the nursing implementation of care for patients on underwater chest drainage?	48 (32.0%)	67 (44.7%)	35 (23.3%)	150 (100%)
6	Rate your knowledge on the nursing evaluation and monitoring for patients on underwater chest drainage?	51 (34.0%)	66 (44.0%)	33 (22.0%)	150 (100%)
7	Rate your knowledge on the nursing evaluation and monitoring for patients on underwater chest drainage?	47 (31.3%)	68 (45%)	35 (23.3%)	150 (100%)

This section represents the awareness of the participant about care of chest tube. The data is summarized in terms of frequency and percentage. 41.3 % (n=62) participants were good response about level of competence/comfort in the nursing management of a patient on underwater drainage 38.7% (n=58) participants were average and 20.0% (n=30) participants were poor. 28.7 % (n=43) participants were good response knowledge on the nursing diagnosis of patients on underwater chest drainage 52.0% (n=78) participants were average and 19.0% (n=29) participants were

poor. 34.0 % (n=51) participants were good response knowledge on the nursing care planning for patients on underwater chest drainage 42.0% (n=63) participants were average and 24.0% (n=36) participants were poor. 32.0 % (n=48) participants were good response, 44.7% (n=67) participants were average and 23.0% (n=35) participants were poor. 34.0 % (n=51) participants were good response, 44.0% (n=66) participants were average and 22.0% (n=33) participants were poor. 31.3 % (n=47) participants were good response, 45.0% (n=68) participants were average and 23.0% (n=35) participants were poor.

participants were poor. 42.0 % (n=63) participants were yes, 58% (n=87) participants were no. 42.0 % (n=63) participants were yes,

58% (n=87) participants were no. mostly 53.3 % (n=80) participants were yes, 46.7% (n=70) participants were poor response.

Table (4): Demographic Characteristic Association with Adherence to the Standard guidelines in Underwater Chest Drainage Management

Sr #	Statement	Yes	(%)	No	(%)	X ²	p-value
1	Do you encounter any challenges during provision of nursing care to underwater chest drainage patients?						
	Yes	63	42	2	1	9.446	.009
	No	87	58				
2	Do you regularly give health messages to patients on underwater chest drainage regarding their condition?						
	Yes	78	52	2	1	2.183	.336
	No	72	48				
3	How do you think the nursing management of patients on underwater chest drainage can be improved?						
	Yes	80	53.3	2	1	22.319	.000
	No	70	46.7				

Chi-square analysis showed that there were a significant association between adherence to the standard guidelines in underwater chest drainage management with Do you encounter any challenges during provision of nursing care to underwater chest drainage patients χ^2 (9.446) =.009, $p > 0.5$ but there is no significant

association between adherence to the standard guidelines in underwater chest drainage management and how do you think the nursing management of patients on underwater chest drainage can be improved results are shown in the (Table #04).

DISCUSSION

The nurses who given care for patients connected to chest drains should be knowledgeable about managing this chest drains and patients with chest drains should be managed in areas with registered nurses who are competent to give care. The demographic characteristic of participants in the study 24.7% participants belong to 21-30 years of age group, 33.3 % participants have 31-40 years of age group, 20.0% participants have 41-50 years of age group, and 22.0% participants have above 51 years of age. 40.0 % (n=60) participants were Diploma holder, 22.0% (n=33) participants were Bachelor degree, 38.0 % (n=57) and participants were Master's degree. According to Dr. Badria A. et al. 2016 The study was included fifty nurses, their age range from 21- 45years, the majority of them were females 73%, more than eighty percent with qualification

of bachelor and only 13.6% have master degree (Tavares and de Araujo 2017) In this study majority of 56.0 % (n=84) participants were surgery department. In spite of their difference working experience in nursing and at Sudan Heart Center, but the majority of them had never been worked in chest units. Chi-square analysis showed that there were a significant association between adherence to the standard guidelines in underwater chest drainage management with Do you encounter any challenges during provision of nursing care to underwater chest drainage patients χ^2 (9.446) =.009, $p > 0.5$ but there is no significant association between adherence to the standard guidelines in underwater chest drainage management and how do you think the nursing management of patients on underwater chest drainage. In this study Majority 52.0% (n=78) of

participants were average. According to Dr. Badria et al. 2016 in routine practice the nurse would have known that it is important to connect the chest tube to the bottle with secure cover and suction (Tavares and de Araujo 2017). In this study found that knowledge on the nursing evaluation and monitoring for patients on underwater chest drainage 31.3 % (n=47) participants were good response, 45.0% (n=68) participants were average and 23.0% (n=35) participants were poor. In the study found that the 41.3 % (n=62) participants were good response about level of competence/comfort in the nursing management of a patient on underwater drainage 38.7% (n=58) participants were average and 20.0% (n=30) participants were poor. But the other study show that Nurses had good knowledge about indications and time for chest tube removal and average knowledge about the basic principles of chest drainage system function, complications, action when tube leakage and dislodge and had poor knowledge to do action when the tubes displacement (Elfaki, Mustafa et al. 2016). In this study found that 34.0 % (n=51) participants were good response knowledge on the nursing care planning for patients on underwater chest drainage 42.0% (n=63) participants were average and 24.0% (n=36) participants were poor. According to Al-gabri, Mohammed et al 2019 the chest tube must be removed once the fluid drainage has decreased to less than 200 ml per day, resolution of the pneumothorax or if there is no fluctuation of fluid in the water- seal and the chest x-ray film confirms the full re-expansion of the lungs (AL-gabri, Mohammed et al. 2019). In present study found that Encounter any challenges during provision of nursing care to underwater chest

Recommendations

The study recommended the need for extensive improvements in the knowledge and practice of nurses by Impetus to provide evidence-based treatment for each nurse., It is the duty of nurses to develop a body of knowledge in their field of work, to promote the growth and personal development of local practice, to recognize knowledge gaps, to pursue appropriate training and resources, and to base all practice on facts.

drainage patients 42.0 % (n=63) participants were yes, 58% (n=87) participants were no. According to E.B kesieme 2016 a survey in a Nigerian semi urban university hospital and study conducted in surgical wards at Teaching Hospitals in at Alhariri, Alyarmouk during These studies were revealed deficit in knowledge and practice of nurses regard care of patient with chest drainage system which seriously impact the patient life (Kesieme, Essu et al. 2016). In this study found that nursing management of patients on underwater chest drainage can be improved mostly 53.3 % (n=80) participants were yes, 46.7% (n=70) participants were no. According to D. Lehwaldt 2017 On the other hand, nurses practice toward preparation of equipment's which were needed in the insertion of the chest drain; majority of them were performed improper preparation of equipment in spite of availability of facilities at hospital. This was subsequent with their practice towards routine patient care (Lehwaldt and Timmins 2017).

Conclusion

The study showed variations in the level of knowledge and practice of nurses, most of which reflected in their nursing practice their knowledge between the poor and the average. Many nurses have not been aware of the suggested practice and an amount have shown possibly dangerous practice. The research also raised concern about all aspects of chest drain treatment and highlighted the criteria for practice improvements and developed body of knowledge. Any of these issues are preventable and when they occur, they must be handled correctly and appropriately.

Limitations

This is my first attempt to write and perform research studies, so study is not productive and quick because of this. People were not cooperative, when data collection faced some hospital difficulties: they did not have time to answer my questions and declined to respond.

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