Research Article

Effect of Instructional Package on Knowledge and Practices Regarding Care of the Patients with Intercoastal Drainage among Staff Nurses in Selected Hospitals

Amruta R. Sawant, Gayatri Gholap, Suchita Sawant

Department of Medical Surgical Nursing (CVTS), Bombay Hospital College of Nursing, Mumbai, Maharashtra, India

Abstract

Introduction: Lungs are the vital organs for respiration. The lungs are covered by a double-layered serous membrane called pleura. The space between the pleura contains pleural fluid which helps in lubrication and prevents friction between the lungs and chest wall. Intercostal drain is a flexible plastic tube that is inserted through the chest wall into the pleural space. It is used to remove air, fluid, and pus from the intrathoracic space. A patient may require an intercoastal drainage system at any time when the negative pressure in the pleural cavity is disrupted, resulting in respiratory distress.

Aims: The aim of the study was to assess the effect of instructional package on knowledge and practices regarding care of the patients with intercoastal drainage among staff nurses in selected hospitals.

Materials and Methods: A descriptive evaluatory research approach with one group pre-test post-test research design was used for the study. The sample comprised 50 staff nurses who fulfilled the inclusion criteria, using non-probability convenient sampling technique. Data were analyzed using descriptive and inferential statistics.

Results: We observed that knowledge and practices measured after instructional package was significant ($P < 0.05$). There were association of knowledge with age, department, and qualification and for practices association found with age and qualification, respectively.

Conclusion: Instructional package was effective measured to improve knowledge and practices regarding care of the patients with intercoastal drainage among staff nurses in selected hospitals.

Keywords: Instructional package, intercostal drainage, coronary artery bypass graft, effect

Introduction

"The trees are our lungs, the rivers our circulation, the air our breath, and the earth our body."

-Deepak Chopra

Date of Submission: 21-09-2022
Date of Revision: 28-09-2022
Date of Acceptance: 31-10-2022

Access this article online
Website: http://innovationalpublishers.com/Journal/ijns
ISSN No: 2454-4906
DOI: ***

The concept of intercostal drainage was first advocated by Hippocrates when he described the treatment of empyema. This intercoastal drainage is made from clear plastics such as PVC and soft silicone. Sizes measured by their external diameter from 6 Fr to 40 Fr. Conventional intercostal drainage feature multiple drainage fenestrations in the section of the tube which resides inside the patient, as well as distance marker along the length of the tube. A radiopaque stripe which outlines the first drainage hole.[1] National Patient Safety Agency reported in 2008, 12 deaths and 15 cases from 2005 to 2008 related to chest drains risk.[2] Several complications can occur when managing a patient with an intercostal drainage due to the carelessness of the health-care professionals. It is important that nurses receive

Address for Correspondence:
Mrs. Gayatri Gholap, Bombay Hospital College of Nursing, Mumbai, Maharashtra, India. E-mail: catchgayatri@gmail.com

appropriate training in the management of intercostal drainage and ensure that patients are cared for safely and competently.[3] While caring a patient with an intercostal drainage, the nurse requires problem-solving skills and critical thinking ability. After the intercostal drainage has been inserted, it is the nurse's responsibility to maintain a patent and intact pleural drainage system.

According to General Practice Research Database, primary spontaneous pneumothorax occurs most often in people between age 18 and 40 years and secondary spontaneous pneumothoraxes occur more frequently after age 60 years. The overall person consulting rate for pneumothorax in the GPRD was 24.0/100,000 each year for men and 9.8/100,000 each year for women.[4]

Lim-Levy *et al*. had done research on "Is Milking and Stripping Chest Tubes Really Necessary?" Sixty male subjects undergoing CABG procedures participated in the study. Subjects are divided into three groups: Milk, strip, and control group. They concluded that the chest tubes remained patent with or without milking or stripping. Neither milking nor stripping is necessary for the proper care of chest tubes. They recommend that tubes be positioned such that they promote continuous drainage.[5]

Anitha *et al*. had discussed on the topic "Intercostal drainage tube or intracardiac drainage tube?" in March 2016. They found that intracardiac drainage tube causes morbidity and occasional mortality, because ventricles were accidentally punctured leading to near-exsanguination. Hence, they concluded that intercostal drainage is the correct drainage method.[6]

Milking or stripping chest tubes are no longer recommended since these practices can dangerously increase intrapleural pressures and damage lung tissues. Position tubing so that drainage flows freely into drainage system and there is no need of milking or stripping.[7]

The researcher felt the need of improving knowledge and practices of healthcare workers to decrease the morbidity and mortality due to the chest trauma and related complications among the patients.

Materials and Methods

Research approach

The research method adopted for the present study is descriptive evaluatory approach.

Research design

In the present study, the investigator selected a one group pre-test post-test to assess knowledge and practices among staff nurses.

Variables

Dependent variables

The dependent variable of this study is knowledge and practice score of nurses working in recovery area and intensive care unit.

Independent variables

The independent variable is instructional package which is intended to improve knowledge and practices of nurses.

Population

In this study, population are the nurses.

Target population

Target population selected for this study consisted of nurses working in CRR and ICU in selected hospitals.

Accessible population

In this study, sample consisted of nurses available during my study in selected area.

Sampling technique

The sampling technique used in this research study is non-probability convenient sampling technique.

Sample size

In this study, the study samples consisted of the 50 nurses who are working in CRR and ICU.

Criteria for sample selection

Inclusion criteria

The following criteria were included in the study:

- Female Registered Nurses working in Recovery area and ICU
- Those who are willing to participate.

Exclusion criteria

The following criteria were excluded from the study:

- Those who are not available during the study.

Data analysis

- It was planned to analyze the data based on the objectives of the study
- Demographic data were analyzed using frequency and percentage
- Analysis of pre-test and post-test knowledge and practices were done using frequency and percentage
- Effect of instructional package on knowledge and practices was analyzed through paired *t*-test
- Association of knowledge and practices score with selected demographic variable was done using analysis of variance.

Results

Demographic variables

Table 1 depicts distribution of samples in relation to age, department, qualification, and experience of nurses. Maximum sample 49 (98%) was from age group between 21 and 31 years. Out of this 50% of staff nurses were working in CRR. Most of the (58%) staff nurses completed their B.Sc. nursing, among them 56% having 1–5 years of experience.

Table 1: Distribution of sample in relation to the age and department of nurses, *n*=50

Demographic variables	Frequency (f)	Percentage
Age		
21–31 years	49	98
32–42 years	1	2
43–53 years	0	0
Above 54 years	0	0
Total	50	100
Department		
CRR	25	50
8th Floor ICU	11	22
MICU	14	28
Total	50	100
Qualification		
G.N.M.	15	30
B.Sc. nursing	29	58
P.B.B.SC. nursing	6	12
M.Sc. nursing	0	0
Total	50	100
Experience		
<1 year	21	42
1–5 years	28	56
>5 years	1	2
Total	50	100

Assessment of pre-test and post-test knowledge and practices

Table 2 depicts the pre-test and post-test knowledge and practice score. Pre-test explains majority 42 (84%) had moderate knowledge. About 5 (10%) had adequate knowledge and about 3 (6%) had inadequate knowledge. After administration of instructional package, the knowledge in post-test explains that majority 48 (96%) had adequate knowledge, 2 (4%) had moderate knowledge, and about 0 (0%) had inadequate knowledge. Result regarding practices shows that pre-test explains that majority 43 (86%) had average practices. About 5 (10%) had good practices and about 2 (4%) had poor practices. After administration of instructional package, the knowledge in post-test explains that majority 47 (94%) had good practices, 3 (6%) had average practices, and about 0 (0%) had poor practices.

Effect of instructional package on knowledge and practices regarding care of the patients with intercoastal drainage (ICD)

Table 3 depicts the overall comparison of pre-test and post-test knowledge and practices after implementing instructional package. Calculated *t*-value for knowledge is 16.93 which is more than tabulated *t*-value (2.010) at 49° of freedom; thus, we reject null hypothesis ($P < 0.05$) and research hypothesis is accepted. This result shows that there is a significant difference in the pre-test and post-test knowledge regarding care of the patients with intercoastal drainage among staff nurses in selected hospitals. Calculated *t*-value for practices is 13.84 which is more than tabulated *t*-value (2.010) at 49° of freedom; thus, we reject null hypothesis ($P < 0.05$) and research hypothesis is accepted. This result shows that there is a significant difference in the pre-test and post-test practices regarding care of the patients with intercoastal drainage among staff nurses in selected hospitals.

Table 2: Distribution of pre-test and post-test knowledge and practice score, *n*=50

Overall level	Range	Pre-test		Post-test	
		F	%	F	%
Knowledge					
Inadequate knowledge	0–6	3	6	0	0
Moderate knowledge	7–13	42	84	2	4
Adequate knowledge	14–20	5	10	48	96
Total		50	100	50	100
Practices					
Poor practice	0–3	2	4	0	0
Average practice	4–7	43	86	3	6
Good practice	8–10	5	10	47	94
Total		50	100%	50	100

Association of demographic variables with knowledge and practice score

A significant association was found between the pre-test knowledge score with the sociodemographic variable, that is, age, department, and qualification. Thus, the null hypothesis (H_{0b}) is rejected for these variables, but there is no association found with experience, so the null hypothesis accepted for this variable. A significant association was found between the pre-test practice score with the sociodemographic variable, that is, age and qualification. Thus, the null hypothesis (H_{0b}) is rejected for these variables, but for the department and experience, there is no association found, so null hypothesis accepted for these variables.

Discussion

The findings of this study have been discussed with reference to the objectives and hypothesis. The study shown that instructional package is effective to improve the knowledge and practices regarding care of the patients with intercoastal drainage among staff nurses in selected hospitals. In this study, the pre-test mean of the knowledge obtained by the staff nurses was 10.08 and, in post-test, it increased to 17.10. It is evidence by the calculated *t*-value 16.93 which is greater than tabulated value 2.010 at 0.05 level of significance. Hence, the research hypothesis H1 is accepted, which states that instructional package regarding care of patients with intercostal drainage among staff nurses was effective.

The pre-test mean of the practices obtained by the staff nurses was 5.64 and, in post-test, it increased to 8.82. It is evidence by the calculated *t*-value 13.84 which is greater than tabulated value 2.010 at 0.05 level of significance. Hence, the research hypothesis H1 is accepted, which states that instructional package regarding care of patients with intercostal drainage among staff nurses was effective.

Similar study conducted by Emeka Blessius Kesieme, Ifeanychukwu Stanley Essu, Bruno Jeneru Arekhandia, Katrin Welcker, and Georgi Prisadov on "nurse" s knowledge of care of chest drain' in Nigeria 2016. Knowledge was relatively higher among nurses who cared for chest drains daily. Performance was poor in context of mobilizing the patient, application of suction to chest drains, daily changing of dressing over chest drain insertion site, milking of tubes,

Table 3: Effectiveness of instructional package by comparing pre-test and post-test overall knowledge and practices, *n*=50

Overall comparison	Mean	Standard deviation (SD)	'*t*' value	Degree of freedom (df)	Table value	Significance
Knowledge						
Pre-test	10.08	2.6	16.93	49	2.01	*Significant
Post-test	17.1	1.85				
Practices						
Pre-test	5.64	1.34	13.84	49	2.01	*Significant
Post-test	8.82	1.1				

and drainage system. Therefore, this study recommended that health-care personnel should train the staff nurses for proper care of the patients with ICD.[8]

Similar study conducted by Omaima L. Hamel, Sabah A on "Effectiveness of an Educational Program on Nurses" Knowledge and Practices Regarding Nursing Interventions of Chest Tube Drainage System' in Ibn Alnafees Teaching Hospital. Sixty nurses who were working in surgical units, intensive care unit, thoracic operating room, and open-heart operating room were selected and the educational program was implemented on them. The study concluded that nurses' knowledge and practices regarding nursing interventions of chest tube drainage system have been improved after implementation of the educational program.[9]

If chest tubes are accidentally removed, cover the insertion site with sterile petrolatum gauze and notify the surgeon. Do not apply occlusive dressing on the insertion site because this will increase the client's risk of developing tension pneumothorax. If respiratory distress develops then remove the petroleum gauze to allow air to escape.[10]

Conclusion

Knowledge and practices of nurses regarding care of patients with intercostal drainage are improved. The instructional package played an important role in improving the knowledge and practices of staff nurses. Instructional package is effective in improving knowledge and practices of staff nurses. All subjects were keen to participate in the study. This research also helps the researcher to understand the importance of providing knowledge and practices regarding care of patients with intercostal drainage.

Acknowledgment

The authors are thankful to all who helped them directly or indirectly to complete research.

Funding

Research was not funded by any outside agency. For doing research required fund if any agencies are providing fund, then researcher can does research on large scale to provide adequate knowledge and practices regarding care of patients with intercostal drainage to the nurses.

Conflicts of Interest

All authors declare that they have no conflicts of interest.

References

1. Miller KS, Sahn SA. Chest tubes. Indications, technique, management and complications. Chest 1987;91:258-64.
2. National Health Service Foundation Trust. Intra-Plueral Chest Drains Insertion and Management. Salisbury, England: National Health Service Foundation Trust; 2009.
3. Laura D. Guidelines for the Insertion and Management of Chest Drains; 2009. p. 3-4. Available from: https://www.dbh.nhs.uk [Last accessed on 2022 Oct].
4. Gupta D, Hansell A, Nichols T, Duong T, Ayres JG, Strachan D. Epidemiology of pneumothorax in England. Thorax 2000;55:666-71.
5. Lim-Levy F, Babler SA, De Groot-Kosolcharoen J, Kosolcharoen P, Kroncke GM. Is milking and stripping chest tubes really necessary? Ann Thorac Surg 1986;42:77-80.
6. Anitha N, Kamath SG, Khymdeit E, Prabhu M. Intercostal drainage tube or intracardiac drainage tube? Ann Card Anaesth 2016;19:545-8.
7. Lewis SL, Dirksen SR, Heitkemper MM, Bucher L, editors. Medical-Surgical Nursing: Assessment and Management of Clinical Problems. 2nd South Asia ed., Vol. 1. Netherlands: Elesvier; 2015. p. 573.
8. Kesieme EB, Essu IS, Arekhandia BJ, Welcker K, Prisadov G. Nurses' knowledge of care of chest drain: A survey in a Nigerian semiurban university hospital. Ann Afr Med 2016;15:28-33.
9. Indian J Public Health Res Dev 2020;11:1809-14.
10. Black JM, Hawks JH, editors. Medical-Surgical Nursing: Clinical Management for Positive Outcomes. 8th ed., Vol. 2. Haryana, India: Reed Elsevier India Pvt.; 2009. p. 1624.

How to cite this article: Sawant AR, Gholap G, Sawant S. Effect of Instructional Package on Knowledge and Practices Regarding Care of the Patients with Intercoastal Drainage among Staff Nurses in Selected Hospitals. Indian J Nurs Sci. 2022;7(4):102-105.