

Effectiveness of Planned Teaching Program on Nursing Management of Patients with Chest Tube Drainage among Nursing Students of Selected Nursing College in Bhubaneswar, Odisha

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Abstract: *Using chest tubes and chest drainage is a complex and critical nursing function. Upto date knowledge and skill of the students nurses in this field will be helpful to protect the patient and help them to recover from a serious pulmonary problem. Objectives of the study was To assess the effectiveness of planned teaching programme on knowledge regarding the nursing management of patients with chest tube drainage. An evaluative research approach was utilized in the study, as the study aimed at evaluating the effectiveness of planned teaching programme regarding the knowledge of management of patients with chest tube drainage among B. Sc Nursing 2nd year students. 40 students are selected by using simple random sampling technique. The study was conducted in Kalinga Institute of Nursing Sciences. A structured knowledge questionnaire was utilized to obtain data from the students, followed by a planned teaching programme. The data obtained were analyzed in terms of objectives of the study Result revealed that the overall mean and standard deviation of post-test knowledge score regarding management of patients with chest tube drainage were with a standard deviation 3.68 the present study, the mean post-test knowledge score was 13.02 which are apparently higher the mean pre-test knowledge score was 7.82. The calculated paired test value (t_{cal} = 28.26, $p < 0.00001$) which represents significant gain knowledge through the planned teaching programme.*

Keywords: Effectiveness, Self Instructional Module, Nursing Management, Chest Tube Drainage, Staff Nurses

1. Introduction

Nursing staff development process helps to shape the future of the Profession and of nursing service. Staff development is the key to quality nursing care that helps to facilitate the competence of nurses in practice. It began with Florence Nightingale's efforts in the Crimean war when she worked with nurses to improve the care they were providing. Teaching is a deliberate intervention that involves the planning and implementation of instructional activities and experiences to meet intended learner outcomes according to a teaching plan. Teaching is also a highly versatile strategy that can be applied in preventing, promoting maintaining and modifying a wide variety of behaviour in a learner who is receptive, motivated, adequately informed. Lungs are the vital organs for respiration. The lungs are covered by a double-layered serous membrane called pleura. They are the visceral and parietal pleurae. The space between the pleura contains pleural fluid which helps in lubrication and prevents friction between the lungs and chest wall [1]. A chest drain is a tube inserted through the chest wall between the ribs into the pleural cavity to allow drainage of air (pneumothorax), blood (haemothorax), fluid (pleural effusion) or pus (empysema) out of the chest. The effective drainage of air, blood or fluid from the pleural space requires an adequately positioned drain and an airtight, one-way drainage system to maintain sub atmospheric intra pleural pressure. This allows drainage of the pleural contents and reexpansion of the lung. Chest tube management

includes the actions to keep the tube functioning properly, which is the prime role of nurses while caring for patients with chest tube drainage [2]. While caring a patient with a chest tube drainage the nurse requires problem solving skill and critical thinking ability. After the chest tube has been inserted, it is the nurse's responsibility to maintain a patent (clear) and intact pleural drainage system. Several complications can occur when managing a patient with a chest tube due to the carelessness of the health care professionals. It is important that nurses receive appropriate training in the management of chest drains and ensure that patients are cared for safely and competently [3]

2. Review of Literature

"The first step to knowledge is to know that we are ignorant" (Richard Cecil) The term review of literature refers to the activities involved in identifying and searching for information on a topic and developing an understanding of the state of knowledge of the topic. This term is also used to designate a written summary of the state of the art on a research problem. The literature reviewed has been presented under the following headings:

- 1) Literature related to chest tube drainage as an effective Interventional strategy.
- 2) Literature related to planned teaching programme as an effective teaching strategy.
- 3) Literature related to construction of planned teaching programme.

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4) Literature related to continuing professional education.

3. Literature Related to Chest Tube Drainage

1. Durai R, Hoqne H, Tony W. (2010) in an article on “managing a chest tube and drainage system” suggested that chest tubes are inserted to drain of air, blood, pus or lymph pleural cavity. During transport, the chest tube container should be below the level of patient’s chest and its clamping should be avoided. A nurse should responsible to manage the system, after the chest tube is inserted. This entails the monitoring of the chest tube position, controlling fluid evacuation, changing and emptying the containers and caring during transport. All nurses in this field should be perfect, as the tube insertion can cause complications like bleeding, pain, internal organ damage and death.2. Goltz J. et al (2011) an article written on “Iatrogenic perforation of the left heart during placement of a chest drain” emphasized a case of a 88 year old male patient suffering from chronic heart failure. Because of dyspnoea, an attempt was made to drain the left pleural cavity, a malposition of the chest drain was suspected as blood was draining from the catheter. The thermodynamically stable patient was referred for tomography of the chest. The drain had perforated the left ventricle, run through the mitral valve and exited the left atrium via a pulmonary vein ending in middle lobe. A left anterolateral thoracotomy was performed and drain was extracted successfully.3. Magner C, Houghton C, Craig M (2013) conducted a survey study to explore knowledge regarding chest drain management among nurses. The sample consisted of 121 critical care and ward nurses from a large urban paediatric hospital, who cared for chest drains on a regular basis. Data were collected using a 37-item. The findings demonstrate that increased exposure to caring for children with chest drains is synonymous with a greater perception of knowledge levels in this area of practice. While critical care nurses looked after children with chest drains more frequently than ward nurses, there was no difference in the knowledge assessment section of the questionnaire. This research identified where knowledge deficits exist An article written on “Chest tube care” emphasized that in chest tube drainage management, at least every 2 hours should document a comprehensive pulmonary assessment including respiratory rate, work of breathing, breath sounds and arterial oxyhemoglobin saturation measured by pulse oxymetry. All tubings should be kept below the level of patient’s chest. Check tidaling in the water seal chamber with respiratory effort is normal intermittent bubbling corresponding to respirations in the water seal chamber indicates air leak from the pleural space. If bubbling continues in the water seal chamber indicates leakage of the system.4. Andrea Loiselle, MD, MPH, James M Parish, MD, James Wilkens, MD, Dawn E, Jaroszewski, MD conducted a study on “managing iatrogenic pneumothorax and chest tube “in 2013 in J. Hospital. Md. General internal medicine training and the existing medical literature provided few guidelines to assist with this issue. They presented a discussion of the current published literature ad their management algorithms for hospitals caring for patients admitted with iatrogenic pneumothorax.5. RN, BN, Honours Yvonne Charnock (Honours student) RN, DipN, BN, MNS David Evans (coordinator of reviews) conducted a study on Nursing Management of chest drains:

a systematic review volume 14 Issue 4 November 2001 Pages 156-160. A comprehensive and systematic search of the literature was undertaken that all databases. Methodological quality was assessed using a developed checklist. The randomized controlled trial (RCT) design was rarely used. There is little evidence relating to other aspects of chest drainage management such as dressing.

Objectives of the study:

- 1) To assess the effectiveness of planned teaching programme on knowledge regarding the nursing management of patients with chest tube drainage.
- 2) To assess the post-test knowledge score after providing the planned teaching regarding the management of patient with chest tube drainage.
- 3) To compare the difference between pre-test and post-test knowledge score.

Hypothesis H1: The mean post test knowledge scores of the student nurses regarding management of patients with chest tube drainage will be significantly higher than the mean pre test knowledge score.

Research Approach: A Quasi-experimental research approach

Study Design: One group pretest post-test design”.

Setting: The study was conducted in Kalinga Institute of Nursing Sciences, Bhubaneswar. This is also an educational institution offering Post-graduate, graduate programme in Nursing. Both diploma and graduate nurses are posted in the various departments of different hospitals.

Sample Size and Sampling Technique:-The set of sampling units chosen for the study is called as sample. Sampling is the process of selecting a portion of the population to represent the entire population. The sample for the study comprised of 40 students nurses from B. Sc Nursing 2nd year KINS. convenient sampling technique was used to select 40 students nurses from B. Sc Nursing 2nd year KINS.

Duration of Study: 7 days

Criteria for the Selection of the Sample:

- 1) **Inclusion Criteria:** Students from the college, KINS.- Boys and Girls both students-Who are willing to participate-Who are present during the data collection period.
- 2) **Exclusion Criteria:** Students who are not willing to participate in this study.-Students who are not present at the time of study.

Data Collection Tool: Self structure Questionnaires

Data Collection Procedure: After taking permission from the competent authority and informed consent was taken from 40 student nurses in BSc nursing 2ndyr, &convenient sampling techniques was used to select the samples. After pretest planned teaching programme was provided. Post test was conducted after 7th day of intervention.

4. Result

The analysis and interpretation of data of this study are based on data are collected through planned teaching program on knowledge regarding management of patient with chest tube drainage among B. Sc Nursing 2nd year students in selected nursing college in Bhubaneswar, Odisha.

Presentation of data:

Section1: To assess the level of knowledge among B. Sc Nursing 2nd year students by conducting pre test and post test.

Section 2: To assess the effectiveness of planned teaching program on nursing management of patient with chest tube drainage among B. Sc Nursing 2nd year students by comparing mean pre test and post test knowledge score and by using paired t test.

Section 1

Table 1

Level of Knowledge	Pre Test Frequency	Percentage	Post Test Frequency	Percentage
Poor	20	50%	8	20%
Average	20	50%	14	35%
Good			18	45%
Total	40	100%	40	100%

It is observed in table no 1 that pre test knowledge score of students regarding Management of chest tube patient among B. Sc Nursing 2nd year students was poor 20 (50%) average 20 (50%) and none them good knowledge, where as post test knowledge score was good in 18 (45%) students, average in 14 (35%) students and poor in 8 (20%) students after planned teaching programme.

To assess the effectiveness of the planned teaching programme on knowledge regarding the management of patients with chest tube drainage among B. Sc Nursing 2nd year students by comparing pre-test and post-test knowledge score and by using T -test. TABLE NO 2 (MEAN, STANDARD DEVIATION, PAIRED t VALUE OF PRE TEST AND POST TEST)

Test	Mean	Standard Deviation	Paired T Test	"P" Value
Pre test	7.825	2.2	T cal = 28.26	P value
Post test	13.025	5.5090	Df = 35	<0.00001 HS

HS = highly significant df = degree of freedom Above data from table no 2 depicted that the mean of post test knowledge score among B. Sc Nursing 2nd year students was 13.025, which was significantly higher than the mean of pre test knowledge score of 7.825. Standard deviation of post test score and pre test score are 5.5090 and 2.2 respectively. The calculated paired value is 28.26, df= 35 at the level of $p < 0.00001$ which is < 0.05 that represents significant gain knowledge through planned teaching programme. Hence hypothesis is accepted.

5. Conclusion

The study concludes that planned teaching on care of patient with chest tube drainage was found to be effective in increasing the knowledge of student nurses. Student nurses had a significant gain in knowledge regarding care of patient with chest tube drainage.

6. Implications of the study

Nursing Practice: Nurses play a vital and major role in the health care delivery system. There is a fundamental link between 'education and practice' as the need for education is to inform and influence the development of nursing practice and thereby improve the delivery of patient care. The concept of enhanced professional recognition was highlighted as important to the nurse's ability to deliver high standards of care. By using teaching strategies that are best suited to staff nurses, a nurse educator can motivate them to deliver higher standards of patient care.

Nursing Education: The nursing curriculum is responsible for preparing the future nurses. The nursing curriculum should emphasize much on different aspects of patient care and management. Management should be focused on certain critical procedures in the intensive care units. Since chest tube drainage is the most common intervention performed in ICU patients, student nurses should be able to provide care for patients with chest tube drainage. But little is taught about the same in nursing programmes, so nurse educators have the additional responsibility to update the knowledge of staff nurses through various educational programme.

7. Limitations

- 1) The study was confined to a fewer number of subjects, which limit the generalization of the findings.
- 2) A structured knowledge questionnaire was used for data collection, which restricts the amount of information that can be obtained from the respondents.
- 3) Only the knowledge of staff nurses on management of patients with chest tube drainage was assessed, no attempt was made to assess the subsequent application of knowledge gained into practice.
- 4) No attempt was made to do the follow up, to measure retention of knowledge of staff nurses.

8. Recommendations

The study can be replicated on larger sample in different setting to have wider application by generalization.

Similar study can be conducted by using different teaching strategies like planned teaching programme. To provide better care to the patients and improve quality care.

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