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A Study to Assess the Knowledge regarding care of patients with intercostals drainage tube among staff nurses at selected hospital, Bangalore with a view to develop an information guide sheet."

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ABSTRACT

Competent nursing personnel are vital assets to the healthcare delivery system, particularly in providing safe, ethical, and quality care to patients. Caring for patients with an intercostal drainage (ICD) tube is a critical nursing responsibility that requires adequate knowledge and skill. Lack of awareness and competency in this area can lead to complications and poor patient outcomes. The present study aimed to assess the knowledge of staff nurses regarding the care of patients with ICD tubes at a selected hospital in Bangalore. A descriptive survey design was adopted, and data were collected using a structured knowledge questionnaire from 50 staff nurses selected through a simple random sampling technique at SDS TB and Rajiv Gandhi Institute of Chest Diseases, Bangalore. Descriptive and inferential statistics were used for analysis. The study findings revealed that the majority (40%) of respondents were between 40–49 years of age, 96% were females, and 78% were designated as staff nurses. A significant portion (58%) scored below the median knowledge level, indicating a knowledge deficit. The overall mean knowledge score was 68.63%. A statistically significant association was found between the area of working (χ^2 = 13.786, P = 0.003) and professional qualification (χ^2 = 6.004, P = 0.049) with knowledge scores, suggesting that nurses working in postoperative wards and ICUs, and those with higher professional qualifications, had better knowledge. Other demographic variables such as age, gender, designation, religion, general education level, and years of experience showed no significant association. The study concludes that there is a substantial need for regular in-service education and training programmes to enhance the knowledge and practice of nurses in managing patients with ICD tubes, thereby improving patient safety and quality of care.

Introduction:

Nurses should have knowledge to take care of patient with intercostal drainage tube. Nurses play a key role in improving the nation's health and they recognize the importance of lifelong learning to keep their knowledge and skills current. Nurses with holistic approach to care delivery should capture educator role and make it part of their unique professional domain.

Intercostal drainage is the insertion of a tube into the pleural space to evacuate air or fluid or to help regain negative pressure. Whenever the chest is opened, from any cause, there is loss of negative pressure which results in collapse of the lung.

The use of intercostal drainage tube in intensive care units for evacuation of air or fluid from the pleural space has become common place and also some pathological states necessitating chest tube insertion. Many advances have permitted safe use of tube thoracostomy for treatment of spontaneous or iatrogenic pneumothoracies and hydrotherapies following cardiothoracic surgery or trauma, or for drainage of pus, bile, or chylous effusions.

The management of critically ill patients has become very important in modern medical and nursing system. At the same time the number of intensive care beds in hospitals has grown. The complexity of medical and nursing problems and the severity of illness in critically ill patients has also increased. Critically ill population now occupying intensive care units and demand appropriate diagnosis as well as management skills. The management of critically ill patient needs a continual balancing act in which the risks and benefits of diagnostic procedure and interventions must be carefully measured.

Methodology

The study adopted a **descriptive survey design** to assess the knowledge of staff nurses regarding the care of patients with intercostal drainage (ICD) tubes.

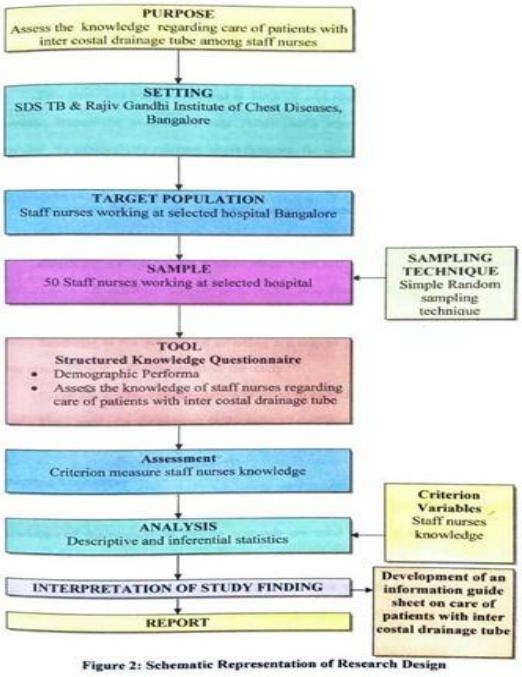

Figure 2: Schematic Representation of Research Design

Research Approach and Design

A descriptive survey approach was used to collect data and analyze the existing knowledge of staff nurses about ICD care. The research design selected was **exploratory descriptive**, involving 50 staff nurses as study participants.

Setting and Population

The study was conducted at **SDS TB and Rajiv Gandhi Institute of Chest Diseases, Bangalore**, a tertiary care center specializing in chest diseases, tuberculosis, accidents, and emergency care.

The **target population** included staff nurses working in various wards of the hospital.

Sample and Sampling Technique

A total of **50 staff nurses** were selected using a **simple random sampling technique**, ensuring every nurse had an equal chance of being included.

Inclusion Criteria:

- Staff nurses working in different wards of the selected hospital.
- Willing to participate in the study.
- Present at the time of data collection.

Exclusion Criteria:

- Nursing personnel other than staff nurses.

Tool Development

A **structured knowledge questionnaire** was developed after a systematic review of literature and expert consultation.

The tool comprised two parts:

- **Part I:** 10 questions on demographic variables (e.g., age, gender, designation, area of work, professional qualification, experience, and exposure to in-service education).
- **Part II:**
  - **Section A:** 25 questions on general respiratory system knowledge and ICD.
  - **Section B:** 10 questions on chest tube mechanisms and principles.

Section C: 15 questions on care of patients with ICD tubes.

The final tool was validated by experts, with a **reliability coefficient of 0.98** (Guttmann Split-half method) and **Cronbach's alpha of 0.91**, confirming its reliability.

Pilot Study

A pilot study was conducted with a small group of nurses to:

1. Test the reliability and feasibility of the tool.
2. Determine the time required for questionnaire administration.
3. Identify potential issues for the main study.

Data Collection Procedure

Data were collected after obtaining permission from the Director of SDS TB and RGICD. The researcher personally visited the participants, explained the study purpose, and obtained informed consent. Data were collected over a one-month period, with approximately 2–3 nurses surveyed daily.

Data Analysis

The collected data were analyzed using **descriptive and inferential statistics**.

- Descriptive statistics were used to summarize demographic data and knowledge scores.
- Chi-square test was used to determine associations between knowledge and selected demographic variables.

Results

The study aimed to assess the knowledge of staff nurses regarding the care of patients with intercostal drainage (ICD) tubes. Data were analyzed using descriptive and inferential statistics to evaluate the knowledge levels and identify associations with selected demographic variables.

1. Knowledge Scores According to Aspect-wise Distribution

The structured knowledge questionnaire comprised three sections. The results revealed that the majority of respondents had moderate knowledge in all areas.

Aspect	Maximum Score	Mean	SD	Mean %
Section A: General information on respiratory system, abnormalities, and ICD tube	25	17.5	4.6	70.0%
Section B: Mechanism of chest tube, drainage system, and principles	10	6.8	1.7	68.0%
Section C: Care of patients with ICD tube	15	10.2	2.6	67.9%
Overall	50	34.35	8.9	68.63%

The overall mean percentage (68.63%) indicates that while staff nurses possess moderate knowledge, significant improvement is required, particularly in-patient **care aspects** related to ICD management.

***2.* Association between Knowledge Scores and Demographic Variables**

The Chi-square test was used to determine the association between knowledge scores and demographic variables.

Regarding the association between knowledge scores and demographic variables, it was found that the area of working had a statistically significant association with knowledge scores ($\chi^2 = 13.786$, $p = 0.003$). Staff nurses working in postoperative wards and ICUs demonstrated higher knowledge levels compared to those in medical and surgical wards. Similarly, there was a significant association between professional qualification and knowledge scores ($\chi^2 = 6.004$, $p = 0.049$). Nurses with PC B.Sc. Nursing and Basic B.Sc. Nursing qualifications scored higher than those with GNM qualifications.

Other demographic variables such as age, gender, designation, religion, general educational level, and years of experience were not significantly associated with the knowledge scores. These results indicate that specialized training and exposure to critical care units play a vital role in enhancing nurses' knowledge of intercostal drainage tube management.

4. Knowledge Level Distribution of Staff Nurses

The study revealed several important insights into the knowledge levels of staff nurses regarding the care of patients with intercostal drainage (ICD) tubes. A significant finding was that 58% of staff nurses scored below the median knowledge score**,** highlighting a considerable knowledge gap and underscoring the urgent need for targeted educational interventions and training programs. It was observed that nurses with higher professional qualifications, such as PC B.Sc. Nursing and Basic B.Sc. Nursing**,** as well as those working in specialized areas like ICUs and postoperative wards**,** demonstrated significantly better knowledge levels compared to their counterparts in general wards. This indicates that advanced education and direct exposure to critical care environments positively influence nurses' competency in managing ICD tubes.

Knowledge Level	Score Range	Frequency (n)	Percentage (%)
Poor	0 – 24	4	8%
Average	25 – 34	25	50%
Good	35 – 44	15	30%
Excellent	45 – 50	6	12%
Total	**50**	**50**	**100%**

Overall, the study revealed a **knowledge deficit among staff nurses**, particularly in the area of direct patient care, highlighting the need for **regular in-service training programs** to ensure safe, ethical, and high-quality care for patients with intercostal drainage tubes.

Discussion

The study revealed a moderate level of knowledge among staff nurses regarding the care of patients with intercostal drainage (ICD) tubes, with 58% scoring below the median, indicating a significant knowledge gap, particularly in practical patient care such as monitoring and complication prevention. The highest mean score was in theoretical knowledge (70%), while the lowest was in patient care practices (67.9%), highlighting a gap between theory and practice.

There was a significant association between professional qualification ($\chi^2 = 6.004$, $p = 0.049$) and area of working ($\chi^2 = 13.786$, $p = 0.003$) with knowledge levels. Nurses with higher qualifications and those working in ICUs and postoperative wards demonstrated better knowledge. No significant relationship was found with demographic factors like age, gender, and years of experience. The absence of in-service training, reported by all participants, likely contributed to the knowledge deficit, emphasizing the need for structured educational programs.

Summary

This study assessed the knowledge of 50 staff nurses at SDS TB and Rajiv Gandhi Institute of Chest Diseases, Bangalore, using a structured questionnaire. Results showed that 58% scored below the median, indicating inadequate knowledge. Nurses with higher qualifications and specialized ward experience had significantly better knowledge ($p < 0.05$), while other demographic facto were not associated with knowledge levels. The overall mean knowledge score was 68.63%, with stronger theoretical knowledge but weaker practical skills. These findings highlight the urgent need for training and professional development programs to ensure quality and safe ICD tube care.

Recommendations

1. **In-service Training:** Conduct regular workshops and hands-on training focused on ICD tube care and complication management.
2. **Curriculum Strengthening:** Include comprehensive content on ICD management in nursing education programs.
3. **Standard Guidelines:** Develop protocols and checklists for uniform and safe ICD care practices.
4. **Continuous Development:** Promote participation in continuing education and critical care certification courses.
5. **Further Research:** Expand studies to larger, multi-centre samples to validate and generalize findings.
6. **Monitoring Systems:** Implement periodic evaluations and refresher courses to maintain competency levels.

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