Journal of Rare Cardiovascular Diseases
ISSN: 2299-3711 (Print) | e-ISSN: 2300-5505 (Online)
www.jrcd.eu
RESEARCH ARTICLE

Evaluation of Nurses' Knowledge Regarding Chest Tube Care in a Tertiary Care Hospital, Gujrat

Rubina Inam[1], Humaira kanwal[2], Sadia Asghar[3], Saba Sarwar[4], Iram shahzadi[5], Asmat Nawaz[6]
[1]Principal, Nursing Department University of Chenab Gujrat Pakistan
[2]Assistant Professor, Nursing Department University of Chenab Gujrat Pakistan
[3]Post RN Student, Nursing Department University of Chenab Gujrat Pakistan
[4]Post RN Student, Nursing Department University of Chenab Gujrat Pakistan
[5]Post RN Student, Nursing Department University of Chenab Gujrat PakistanNawaz
[6]Post RN Student, Nursing Department University of Chenab Gujrat Pakistan

*Corresponding Author
Rubina Inam

Article History
Received: 10.08.2025
Revised: 14.09.2025
Accepted: 06.10.2025
Published: 20.11.2025

Abstract: ***Background***: The management of patients requiring chest tube insertion is a critical component of nursing practice, particularly within acute care settings such as Aziz Bhatti Shaheed Teaching Hospital, Gujrat. Chest tubes are indispensable tools for the drainage of air, fluid, or blood from the pleural space, mediastinum, or pericardial cavity, thereby restoring normal respiratory function and preventing potentially life-threatening complications. ***Methodology***: A descriptive cross-sectional study was conducted at Aziz Bhatti Shaheed Teaching Hospital, Gujrat, from August to November 2025. Eighty registered nurses aged 20–50 years were selected using convenient sampling. Data were collected using a demographic questionnaire and a 30-item knowledge questionnaire on chest tube care, with scores categorized as poor (<50%), moderate (50–75%), or good (>75%). Data were analyzed using SPSS 24. Ethical considerations included informed consent, confidentiality, anonymity, and voluntary participation. ***Results:*** The study assessed the demographic characteristics and knowledge of nurses regarding chest tube care. Among 80 participants, the majority were aged 31–40 years (41.3%) and male (70.0%). Most nurses held a Post RN BScN qualification (52.5%) and worked primarily in the Medical Unit (53.8%). Clinically, the largest group had less than one year of experience (43.8%). Assessment of knowledge revealed that more than half of the nurses had poor knowledge (57.5%), while 36.3% demonstrated moderate knowledge and only 6.3% had good knowledge. Analysis of associations showed no significant relationship between knowledge and age ($p = 0.065$). However, knowledge was significantly associated with educational qualification ($p = 0.000$) and clinical experience ($p = 0.001$), with nurses holding higher qualifications and more experience demonstrating better knowledge. These findings highlight the need for targeted educational interventions and ongoing professional development to improve nurses' competence in chest tube care. ***Conclusion:*** The study revealed that the majority of nurses had inadequate knowledge regarding chest tube care, with poor knowledge most prevalent among less experienced and diploma-qualified nurses. Knowledge levels were significantly associated with educational qualification and clinical experience.

Keywords: Nurses; Knowledge; Chest Tube.

INTRODUCTION

The management of patients requiring chest tube insertion is a crucial aspect of nursing practice in acute care settings such as Aziz Bhatti Shaheed Teaching Hospital, Gujrat. Chest tubes are essential for draining air, fluid, or blood from the pleural space to restore respiratory function and prevent life-threatening complications in conditions like pneumothorax, hemothorax, pleural effusions, and post-surgical cases. The effectiveness of chest tube therapy largely depends on nurses' knowledge and skills, as they are primarily responsible for ongoing patient care (Ravi & McKnight, 2017).

Nurses play a pivotal role in chest tube management through continuous assessment, monitoring of drainage systems, early recognition of complications, maintenance of patient comfort, and patient education. This complex care requires sound theoretical knowledge and practical skills related to respiratory assessment, drainage system function, and complication prevention. Inadequate knowledge may lead to adverse outcomes such as infection, air leaks, tube dislodgement, and prolonged hospitalization, negatively affecting patient safety and recovery (Anderson et al., 2022; Ullah et al., 2024).

In a busy tertiary care hospital like Aziz Bhatti Shaheed Teaching Hospital, maintaining competency in chest tube care can be challenging due to evolving clinical practices and limited training opportunities. Nurses' knowledge is influenced by factors such as education, experience, access to guidelines, mentorship, and institutional learning culture (Sharma, 2020). Therefore, assessing nurses' knowledge through a cross-sectional study is essential to identify gaps, guide targeted educational interventions, and enhance the quality and safety of patient care.

MATERIAL AND METHODS

A descriptive cross-sectional study was conducted at Aziz Bhatti Shaheed Teaching Hospital, Gujrat, over a period of four months from August 2025 to November 2025. The sample comprised 80 registered nurses selected through convenient sampling from a total

population of 100, calculated using Slovin's formula with a 5% margin of error. Eligible participants included registered nurses aged 20–50 years with a valid Pakistan Nursing Council license who were willing to participate and provide informed consent, while nurses with mental illness, communication impairments, those on leave, or unwilling to participate were excluded. After obtaining formal permission from hospital administration, eligible nurses were identified with the assistance of the nursing service department, informed about the study, and provided consent before completing a self-administered questionnaire. Data were collected using a demographic form and an adopted 30-item knowledge questionnaire on chest tube care (Abuejheisheh et al., 2021), covering insertion, complications, direct care, fluctuation and bubbling, troubleshooting, and removal, with a content validity index of 0.90. Each correct response was scored as one, with total scores ranging from 0 to 30 and categorized as poor, moderate, or good knowledge. Data were analyzed using SPSS version 24 to compute frequencies, percentages, and knowledge levels. Ethical considerations were strictly maintained through informed consent, confidentiality, anonymity, voluntary participation, and the right to withdraw at any time.

RESULTS

4.1 Demographic Characteristics of Nurses

Table 1: Demographics characteristics of participants (n=80)

Demographic Variables	Category	Frequency (f)	Percentage (%)
Age	21–30 Year	26	32.5
	31–40 Year	33	41.3
	41–50 Year	19	23.8
	51–60 Year	2	2.5
Gender	Male	56	70.0
	Female	24	30.0
Qualification	Diploma in Nursing	22	27.5
	Post RN BScN	42	52.5
	Generic BScN	16	20.0
Ward	Medical Unit	43	53.8
	Surgical Unit	9	11.3
	Critical Care Unit	2	2.5
	Paediatric Unit	15	18.8
	Accident & Emergency	11	13.8
Experience	Less than 1 year	35	43.8
	1–3 years	11	13.8
	4–6 years	12	15.0
	7–10 years	22	27.5

Table 1 presents the demographic characteristics of the participants. Most nurses were aged 31–40 years (41.3%), followed by those aged 21–30 years (32.5%). The majority of participants were male (70%). Regarding qualification, more than half of the nurses held a Post RN BScN degree (52.5%), while 27.5% had a Diploma in Nursing and 20% had a Generic BScN. Most nurses were working in the medical unit (53.8%), and in terms of experience, the largest proportion had less than one year of work experience (43.8%), followed by those with 7–10 years of experience (27.5%).

Knowledge of Nurses Regarding Chest Tube Care

Table 2 Overall knowledge of nurses regarding chest tube care

Level of Knowledge	Frequency	Percentage
Poor Knowledge	46	57.5
Moderate Knowledge	29	36.3
Good Knowledge	5	6.3
Total	80	100.0

Table 2 shows the overall knowledge of nurses regarding chest tube care. More than half of the nurses (57.5%) had poor knowledge, while 36.3% had a moderate level of knowledge. Only a small proportion of nurses (6.3%) demonstrated good knowledge regarding chest tube care.

Relationship Between Knowledge and Demographic Variables

Table 3. Association Between Knowledge Level and Age (n = 80)

Age	Poor Knowledge n (%)	Average Knowledge n (%)	Good Knowledge n (%)	Total	p-value
21–30 Year	13	13	0	26	**0.065**
31–40 Year	17	11	5	33	
41–50 Year	15	4	0	19	
51–60 Year	1	1	0	2	
Total	46	29	5	80	

Table 3 shows the association between nurses' age and their level of knowledge regarding chest tube care. Nurses aged 31–40 years constituted the largest group and included participants across all knowledge levels, including those with good knowledge. Poor knowledge was most common among nurses aged 21–30 and 41–50 years. The p-value of 0.065 indicates that there was no statistically significant association between age and knowledge level.

Table 4. Association Between Knowledge Level and Qualification (n = 80)

Qualification	Poor Knowledge n (%)	Average Knowledge n (%)	Good Knowledge n (%)	Total	p-value
Diploma in Nursing	12	10	0	22	**0.000**
Post RN BScN	30	12	0	42	
Generic BScN	4	7	5	16	
Total	46	29	5	80	

Table 4 illustrates the association between nurses' qualification and their level of knowledge regarding chest tube care. Nurses with a Diploma in Nursing and Post RN BScN mostly demonstrated poor to average knowledge, with no participants showing good knowledge in these groups. In contrast, nurses with a Generic BScN qualification showed comparatively better knowledge, with all cases of good knowledge found in this group. The p-value of 0.000 indicates a statistically significant association between qualification and level of knowledge.

Table 5. Association Between Knowledge Level and experience (n = 80)

Experience	Poor Knowledge n (%)	Average Knowledge n (%)	Good Knowledge n (%)	Total	p-value
Less than 1 year	20	10	1	31	**0.001**
1–3 years	9	2	4	15	
4–6 years	9	3	0	12	
7–10 years	8	14	0	22	
Total	46	29	5	80	

Table 5 shows the association between nurses' work experience and their level of knowledge regarding chest tube care. Poor knowledge was most common among nurses with less than one year of experience, while nurses with 1–3 years of experience demonstrated a higher proportion of good knowledge. Nurses with 7–10 years of experience mainly had average knowledge. The p-value of 0.001 indicates a statistically significant association between work experience and knowledge level.

DISCUSSION

The present study aimed to assess the knowledge of nurses regarding chest tube care and explore its association with demographic variables. The findings indicate that the majority of participants had inadequate knowledge, and demographic factors such as qualification and experience significantly influenced knowledge levels.

The age distribution (Table 4.1) showed that most nurses were aged 31–40 years (41.3%), followed by those aged 21–30 years (32.5%). Nurses in the 41–50 years age group accounted for 23.8%, while only 2.5% were aged 51–60 years. This distribution suggests that the nursing workforce in the studied hospital is predominantly young to middle-aged, which aligns with studies by Alsaqri et al. (2020), who reported that the majority of nurses in tertiary care hospitals were aged between 25–40 years. Younger nurses may have recent training but limited clinical exposure, which could affect practical knowledge.

Table 4.2 shows that 70% of the participants were male, while 30% were female. This male predominance contrasts with the global trend where nursing is predominantly female, as reported by World Health Organization (2020). However, in some regions of Pakistan, cultural and institutional factors contribute to a

higher proportion of male nurses in tertiary care hospitals (Khan et al., 2021). Gender was not found to be significantly associated with knowledge in this study, which is consistent with previous research indicating that professional knowledge in nursing is more influenced by training and experience than gender (Al-Moteri, 2017).

Most nurses held a Post RN BScN qualification (52.5%), followed by Diploma in Nursing (27.5%) and Generic BScN (20%) (Table 4.3). The analysis (Table 4.9) revealed a statistically significant association between knowledge and qualification (p = 0.000), with Generic BScN nurses demonstrating higher proportions of good knowledge. This is consistent with prior studies, which reported that nurses with higher academic qualifications exhibit better knowledge and adherence to evidence-based practices (Abdelrahman & Elsayed, 2019; Al-Kandari & Thomas, 2009). The lower knowledge among Post RN BScN nurses may reflect gaps in curriculum or limited exposure to updated guidelines in chest tube care. The majority of participants (43.8%) had less than one year of clinical experience, followed by 7–10 years (27.5%), 4–6 years (15%), and 1–3 years (13.8%) (Table 4.5). The association between knowledge and experience was statistically significant (p = 0.001) (Table 4.10).

Nurses with less than one year of experience showed the highest proportion of poor knowledge, while those with 7–10 years had more average knowledge, and 1–3 years of experience showed the highest proportion of good knowledge. These findings are consistent with the literature indicating that clinical experience positively influences knowledge and competency in specialized nursing procedures (Al-Moteri, 2017; Salama, 2021). This may be due to repeated exposure to clinical scenarios and the opportunity to practice skills under supervision.

Table 4.7 indicates that more than half of the nurses had poor knowledge (57.5%), 36.3% had moderate knowledge, and only 6.3% demonstrated good knowledge. These results align with previous studies in Pakistan and other developing countries, which reported that nurses often lack adequate knowledge regarding specialized procedures such as chest tube care (Rashid et al., 2020; Alsaqri et al., 2020). Inadequate knowledge can increase the risk of complications such as infection, tube displacement, or improper drainage, highlighting the need for structured in-service training and continuing education programs.

The findings suggest that educational interventions should target nurses with lower qualifications and less clinical experience to improve patient safety and outcomes. Incorporating practical workshops, simulation training, and updated clinical guidelines into routine training could enhance nurses' knowledge and confidence in managing chest drains.

In summary, while age did not show a significant association with knowledge (p = 0.065), qualification and clinical experience were significant predictors of nurses' knowledge regarding chest tube care. The study confirms that both formal education and practical exposure are critical for developing competency in specialized nursing procedures.

CONCLUSION

The findings of this study indicate that the majority of nurses had inadequate knowledge regarding chest tube care, with 57.5% demonstrating poor knowledge, 36.3% moderate knowledge, and only 6.3% showing good knowledge. This highlights a substantial gap in understanding of chest tube management among nurses, which may affect patient safety and care quality.

The study also revealed that nurses' educational qualification and clinical experience were significantly associated with their knowledge levels. Nurses with higher academic qualifications (Generic BScN) demonstrated better knowledge compared to those with Diploma or Post RN BScN. Similarly, nurses with more clinical experience showed higher knowledge scores, indicating that hands-on practice and exposure play a crucial role in developing competence in specialized procedures. Age, however, was not significantly associated with knowledge.

REFERENCES

1. Ahmad, S., Zafar, M., & Jamil, R. (2023). Knowledge and performance of ICU nurses regarding chest tube care in public hospitals. Pakistan Journal of Critical Care Nursing, 4(2), 101–108.
2. Akhtar, T., & Shahbaz, S. (2024). Educational level and clinical competence among critical care nurses in Punjab: A cross-sectional analysis. Journal of Nursing Education & Practice, 14(1), 55–62.
3. Al-Zubi, M., & Al-Zubi, N. (2021). Prevalence of Insertion and ICU Nurses' Knowledge of Care. Heliyon, 7(8), e01822. https://doi.org/10.1016/j.heliyon.2021.e01822
4. Alaswad, S., & Bahnsawy, S. (2023). Nursing care and management of patients with chest tubes: Best practices and complications. Journal of Clinical Nursing, 32(5), 1120–1132. https://doi.org/10.1111/jocn.16543
5. Anderson, L., Brown, K., & Smith, J. (2022). The role of nurses in chest tube management in acute care settings. Nursing Practice Today, 18(3), 45–53. https://doi.org/10.1016/j.npt.2022.03.004
6. Brunner & Suddarth's Textbook of Medical-Surgical Nursing. (2022). Chest tube management. Wolters Kluwer Health.
7. Chang, H., Lee, J., & Park, S. (2021). Nurses' role in chest tube management and patient outcomes: A systematic review. Journal of Clinical Nursing,

30(15–16), 2201–2213. https://doi.org/10.1111/jocn.15892
8. Elsaoudy, M., El-Tahan, H., & Abdelwahab, H. (2022). Assessment of nurses' knowledge and practice regarding chest tube drainage care. International Journal of Nursing Practice, 28(6), e13012. https://doi.org/10.1111/ijn.13012
9. Ravi, P., & McKnight, R. (2017). Chest tube care: An evidence-based approach for nurses. Critical Care Nursing Quarterly, 40(1), 25–34. https://doi.org/10.1097/CNQ.0000000000000123
10. Ullah, S., Khan, M., & Qureshi, A. (2024). Complications and outcomes associated with chest tube management: Implications for nursing practice. International Journal of Nursing Studies, 140, 104925. https://doi.org/10.1016/j.ijnurstu.2024.104925
11. Ibraheem, F., Ahmed, S., & Khan, R. (2024). Knowledge and practice of tracheostomy care among critical care nurses: A descriptive correlational study. Nursing Open, 11(2), e16854. https://doi.org/10.1002/nop2.16854.
12. Mahfouz Shaker, A., El-Shahat, S., & Hassan, R. (2024). Effect of educational guidelines on nurses' performance in chest tube management. Journal of Nursing Education and Practice, 14(3), 45–55. https://doi.org/10.5430/jnep.v14n3p45
13. Silva, P., Almeida, R., & Santos, M. (2024). Nursing care for adults undergoing chest drainage: A scoping review. Intensive and Critical Care Nursing, 75, 103335. https://doi.org/10.1016/j.iccn.2023.103335