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ASSESSMENT OF KNOWLEDGE ATTITUDE AND PRACTICE REGARDING RISK FACTORS OF CATHETER ASSOCIATED URINARY TRACT INFECTION IN CRITICAL CARE SETTING IN GENERAL HOSPITAL, LAHORE.

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Abstract

Objective: To assess the knowledge and attitudes of healthcare professionals working in critical care settings regarding the risk factors of catheter-associated urinary tract infections (CAUTIs).

Study Design: Descriptive cross -sectional study.

Place and Duration of Study: The study was conducted among personnel, including physicians, nurses, and technicians, **at General Hospital and University of Health Sciences, Lahore, Pakistan,** from September 2025 to April 2026.

Methodology: A standardized questionnaire was used to assess participants' knowledge of CAUTI causes, risk factors, and preventive measures, as well as their attitudes and adherence to recommended prevention practices. Data were analysed to identify knowledge gaps and opportunities for improvement.

Results: A total of 122 participants were included in the study. Most participants were female (91.8%), and 83.6% were aged 23–28 years.

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Regarding educational qualifications, 54.1% held a General Nursing diploma, while 42.6% were BSN graduates. Participants demonstrated good knowledge of CAUTI prevention, with a mean knowledge score of 15.91. The mean attitude score was 22.54, reflecting a positive perception of infection prevention. Furthermore, 79.5% disagreed that CAUTIs are unavoidable, and 72.1% strongly disagreed that CAUTIs are non-serious infections. The mean practice score was 10.54, indicating strong compliance with recommended infection-control measures.

Conclusion: Operating theatre staff demonstrated high levels of knowledge, positive attitudes, and satisfactory preventive practices regarding CAUTI prevention. The findings highlight a well-informed workforce committed to reducing catheter-associated infections through adherence to evidence-based infection prevention measures.

INTRODUCTION

In hospitals, and notably in intensive care units, urinary catheterization is a necessary procedure. According to the Centres for Disease Control and Prevention (CDC), between seventy percent and eighty percent of all UTIs are the result of inappropriate or non-compliance with urinary catheterization protocols .Patients admitted with hip fracture, spinal cord damage, urine incontinence, bladder blockage, or prolonged usage of indwelling catheterization due to chronic illness are at increased risk of contracting a catheter- associated urinary tract infection (CAUTI), the most prevalent type of nosocomial infection (Centres for Disease Control and Prevention (CDC), (Rosenthal, 2024; Al-Amri, 2025).

Approximately 150 million persons worldwide are afflicted with nosocomial UTIs, of which 80% are linked to catheter use. The most frequent infectious agents that can result in catheter-associated urinary tract infections (CAUTIs) are Proteus and Pseudomonas species. The infection is also brought on by Enterococci, Klebsiella, Candida, Serratia, and a few other microbes. Female urinary tract anatomy and the hormonal changes that take place during menstruation can be used to explain the female prevalence in CAUTI. UTIs and bacteraemia are more common in people with weakened immune systems, diabetes, high blood pressure, obesity, and children and the elderly. (Centres for Disease Control and Prevention (CDC), (Rosenthal, 2024; Al-Amri, 2025).

According to the World Health Organization (WHO), hospital-acquired infections are a serious public health hazard. These infections have the potential to extend hospital stays, raise mortality and morbidity rates(Nawaz[1] et al., 2025), burden the healthcare system financially, and even exacerbate the pain of the patient's loved ones. More than 25% of all hospital in-patients require catheterization for a number of reasons (Centres for Disease Control and Prevention (CDC), (Rosenthal, 2024; Al-Amri, 2025).

Patients with CAUTI who are admitted may have a variety of symptoms, such as fever and body discomfort, and they run the risk of contracting MDR-pathogens because they will require antibiotics for a long time. There are drug-resistant bacteria that thrive in the urinary system and can spread to other people nearby. Catheter-associated urinary tract infections (CAUTIs) can be prevented in the

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great majority of cases. Following the guidelines and implementing preventative measures, such as properly cleaning hands with the appropriate techniques, taking good care of the indwelling catheter, and withdrawing the catheter appropriately, will help prevent precautionary urinary tract infections (UTIs). (Centres for Disease Control and Prevention (CDC), (Rosenthal, 2024; Al-Amri, 2025).

It's crucial to avoid urine catheterization unless it's absolutely necessary and to minimize the amount of time spent catheterizing. Adhering to evidence-based methods is essential to improving patient care. Preventing catheter-associated urinary tract infections (CAUTIs) requires careful catheter insertion. However, administering and following the required preventative measures may be challenging in busy clinical settings. The purpose of this study was to gather additional information about the attitudes, practices, and strategies of healthcare providers in Peshawar, Pakistan, regarding the prevention of catheter-associated urinary tract infections (CAUTIs). Because evidence-based practices are not adequately followed, CAUTI is still a major healthcare concern despite being avoidable. (Centres for Disease Control and Prevention (CDC), (Rosenthal, 2024; Al-Amri, 2025).

In the insertion, upkeep, and removal of catheters, nurses are essential. Nevertheless, little is known about the nurses' behaviours and understanding in this area at the institution under study. This study intends to close this gap by evaluating nurses' behaviours and understanding of CAUTI prevention, which will aid in the creation of focused interventions to improve patient care. Particularly in hospital settings, catheter-associated urinary tract infections (CAUTIs) pose a serious public health risk and significantly increase patient morbidity, mortality, and healthcare expenses worldwide. (Centres for Disease Control and Prevention (CDC), (Rosenthal, 2024; Al-Amri, 2025).

The use of indwelling urinary catheters, which circumvent the body's natural defences and allow microbes to enter and cause infection, is the main cause of CAUTIs. Catheter-associated urinary tract infections (CAUTIs) represent a significant public health concern, particularly within hospital settings, contributing extensively to patient morbidity, mortality, and heightened healthcare costs globally (Centres for Disease Control and Prevention (CDC) (Rosenthal, 2024; Al-Amri, 2025).

The use of indwelling urinary catheters, which circumvent the body's natural defences and allow microbial entrance and infection, is the main cause of CAUTIs (Rosenthal, 2024; Al-Amri, 2025). Despite being largely preventable, CAUTIs continue to account for a considerable portion of healthcare-associated infections, with approximately 150 million cases reported annually worldwide. The use of indwelling urinary catheters, which circumvent the body's natural defences and allow microbial entrance and infection, is the main cause of CAUTIs (Rosenthal, 2024; Al-Amri, 2025).

In order to close these gaps, a thorough evaluation of nurses' current clinical practices and knowledge of CAUTI prevention is required. Determining influencing factors, such as professional experience, educational attainment, the availability of guidelines, and organizational support, is essential to developing focused interventions that aim to improve nursing competencies and improve patient safety. Successful strategies include the dissemination of evidence-based guidelines, structured educational programs, and regular practice adherence monitoring, all of which are critical

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to lowering the prevalence and impact of CAUTIs (Association for Professionals in Infection Control and Epidemiology (APIC) (Rosenthal, 2024; Al-Amri, 2025).

Long-term catheterization, advanced patient age, weakened immune systems, and prolonged hospital stays are some of the risk factors that increase the incidence of CAUTIs. Particularly at risk are female patients and those in critical care settings. With around 449,000 cases and an associated financial burden of over $450 million annually, CAUTIs account for 32% of all healthcare-associated infections (HAIs) in the United States, according to the Centres for Disease Control and Prevention (CDC). Despite various preventive measures, NSIs continue to occur, leading to considerable health, psychological, and economic impacts on healthcare professionals(Hakeem et al., 2025) , same does CAUTIs do. What's more, it is estimated that the implementation of appropriate infection control measures could prevent 17–69% of CAUTIs, which cause about 9,000 deaths annually. (Rosenthal, 2024; Al-Amri, 2025).

Due to their responsibility for both urinary catheter insertion and management, nurses are essential in preventing CAUTIs. Reduced infection risks are largely dependent on their adherence to best practices, which include hand cleanliness, sterile catheter insertion techniques, and adequate catheter management. The necessity for ongoing education and training is highlighted by the data that nurses' views and adherence to CAUTI prevention measures vary greatly. (Rosenthal, 2024; Al-Amri, 2025).

OBJRCTIVES:

The study primary objectives are as follows:

- To assess the knowledge and attitudes of healthcare professionals working in critical care settings regarding the risk factors of catheter-associated urinary tract infections (CAUTIs).
- To evaluate the practices of healthcare professionals related to the prevention and management of risk factors associated with catheter-associated urinary tract infections (CAUTIs) in critical care settings.

MATERNAL & METHODS:

Research Methodology

Study Design:

Cross Sectional Descriptive study approach will be used to investigate the factors contribute **to risk of catheter associated urinary tract infection.**

Study Population:

The population of this study is the nursing staff who is working in Critical care department in **Lahore General Hospital.** The total staff was 175.

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Sampling Technique:

A Convinance sampling will be used to collect the sample from the total population.

Sample size:

SOLVIN'S FORMULA is used to calculate sample size when the population size is known.

Formula:

n = N/1 + N(e2)

Where:

n= sample size

N = population size

e = margin of error (usually 0.05 for 95% confidence)

- **Given:**

Population size=N= 175

Margin of error=e= (usually 0.05 for 95% confidence)

- **Calculation:**

n = (175) (1 + 175(0.05) ^2)

n = (175) (1 + 175(0.0025))

n = (175) (1 + 0.4375)

n = (175) (1.4375)

n = 121.74

Final Answer:

So, the sample size is approximately 122.

3.5: Research tools:

A self-administered survey with a number of assertions in 2026. The participant's response must be on a 5-point Likert scale. Only those were encouraged to reply who were prepared to do so. The **Nurses of General Hospital Lahore** to take part in this study because they met the requirements. The SPSS application was used to analyse the data. The findings were explained using the analysis's foundation. Based on the study's results, recommendations for additional improvements were made.

3.6: Selection Criteria:

- **Inclusion criteria:**

1.Age:20 to 30 years.

2.Experience: Minimum 1 Year experience of ICU Nurse.

3.Gender: Male and Female staff in the Critical Care nursing department.

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➢ **Exclusion criteria:**

1. Health Care workers who refused informed consent.
2. Data records with incomplete surveys questions were filtered out.
3. Health care personnel who maintained operational distance from room procedures or unavailable during the study period.

3.7: Data Collection:

- A questionnaire-based tool was used to gather the data.
- Questionnaire distributed to different staff of Critical care department.
- After collecting data from **122** questionnaires. After data collection we analyses the data.

Data Analysis:

The statistical programme SPSS version 27 was used to analyse the data. On the data that had been gathered, a descriptive statistical method had been used for

RESULTS

SECTION A: DEMOGRAPHIC INFORMATION

Table 4.1: Demographic Characteristics of Participants (N = 122)

Variable	Category	Frequency	Percent (%)	Valid %	Cumulative %
Gender	Male	10	8.2	8.2	8.2
	Female	112	91.8	91.8	100.0
	Total	**122**	**100.0**	**100.0**	
Age (Years)	18–22	1	0.8	0.8	0.8
	23–28	102	83.6	83.6	84.4
	29–35	19	15.6	15.6	100.0
	Total	**122**	**100.0**	**100.0**	
Qualification	BSN	52	42.6	42.6	42.6
	MSN	4	3.3	3.3	45.9
	General Nursing	66	54.1	54.1	100.0
	Total	**122**	**100.0**	**100.0**	
Marital Status	Married	42	34.4	34.4	34.4

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Variable	Category	Frequency	Percent (%)	Valid %	Cumulative %
	Unmarried	80	65.6	65.6	100.0
	Total	122	100.0	100.0	

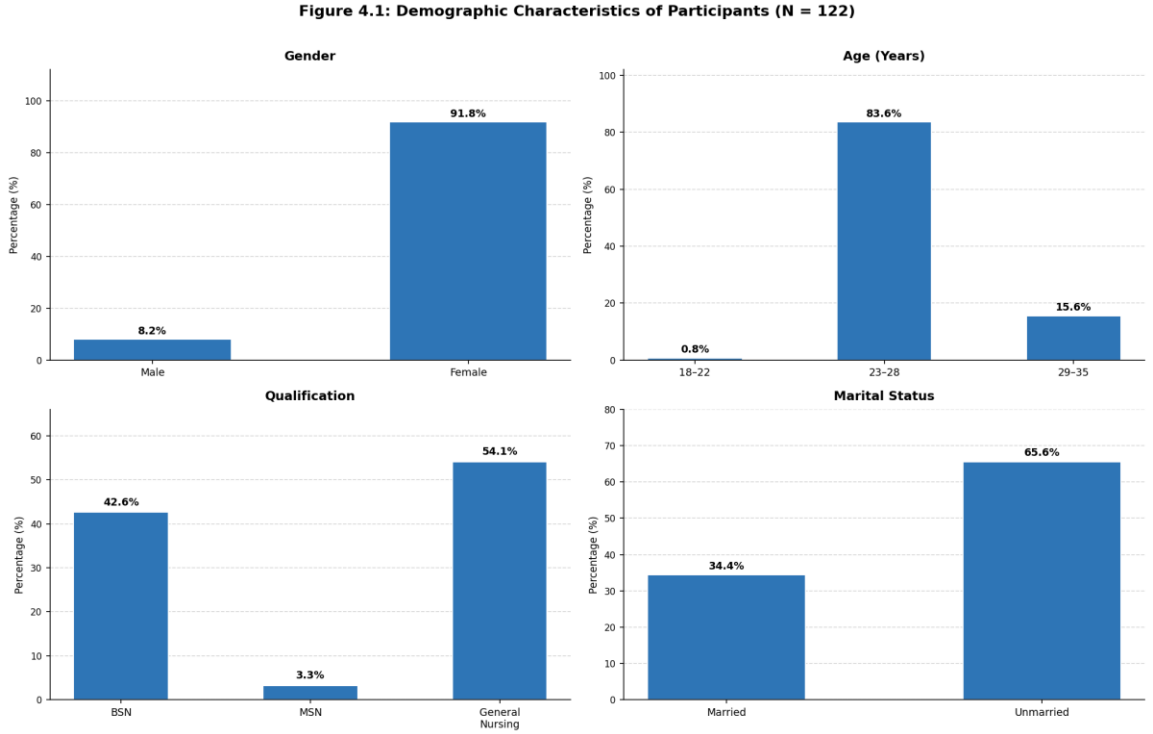

Figure 4.1: Bar Charts of Demographic Characteristics

A total of 122 nurses participated in this study. Regarding gender distribution, the overwhelming majority of respondents were females (n = 112; 91.8%), while males constituted only 8.2% (n = 10) of the sample, reflecting the predominantly female composition of the nursing workforce in Pakistan. In terms of age, most participants fell within the 23–28 years age group (n = 102; 83.6%), followed by those aged 29–35 years (n = 19; 15.6%), while only one respondent (0.8%) was in the 18–22 years age bracket, indicating a relatively young and professionally active cohort. Concerning professional qualification, the largest proportion held General Nursing qualifications (n = 66; 54.1%), followed by BSN graduates (n = 52; 42.6%), with only a small number holding MSN degrees (n = 4; 3.3%). With regard to marital status, the majority were unmarried (n = 80; 65.6%), whereas 34.4% (n = 42) were married, suggesting that many of the participating nurses were in the early stages of their professional and personal lives.

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SECTION B: KNOWLEDGE RELATED TO CAUTI

Table 4.2: Item-wise Frequency Distribution of Knowledge Responses (N = 122)

Q#	Statement	YES n (%)	NO n (%)	Total (N)
Q1	Most common Hospital-acquired infection is CAUTI?	109 (89.3%)	13 (10.7%)	122
Q2	Risk factor of CAUTI is not directly related to the duration of catheterization?	21 (17.2%)	101 (82.8%)	122
Q3	High-risk groups for CAUTI include female gender and elderly patients?	114 (93.4%)	8 (6.6%)	122
Q4	Acute urinary retention and bladder obstruction is the indication for catheterization?	118 (96.7%)	4 (3.3%)	122
Q5	Strict aseptic precautions to be followed for urinary catheterization?	121 (99.2%)	1 (0.8%)	122
Q6	Catheter must be removed as soon as possible or within 24 hours for catheterized post-operative patients?	120 (98.4%)	2 (1.6%)	122
Q7	Cleaning the peri-urethral region with antiseptics is mandatory to prevent CAUTI?	35 (28.7%)	87 (71.3%)	122
Q8	Secure the IUC catheter properly after insertion to prevent displacement and injury?	122 (100%)	–	122
Q9	CAUTI increases the duration of the patient's stay in the hospital?	121 (99.2%)	1 (0.8%)	122
Q10	If urinary catheter remains indwelling for a month, the risk of bacteriuria is high?	122 (100%)	–	122
Q11	Silicone alloy-coated indwelling urinary catheters may benefit patients for long-term care?	122 (100%)	–	122
Q12	Frequent use of lubricants with antiseptics may not be necessary?	115 (94.3%)	7 (5.7%)	122

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Q#	Statement	YES n (%)	NO n (%)	Total (N)
Q13	Daily cleaning of the meatus and catheter with soap and water reduces the possibility of CAUTI?	113 (92.6%)	9 (7.4%)	122
Q14	CAUTI is most often caused by Escherichia coli?	121 (99.2%)	1 (0.8%)	122

Figure 4.2: Knowledge Items – Frequency of Correct and Incorrect Responses (Q1-Q14)

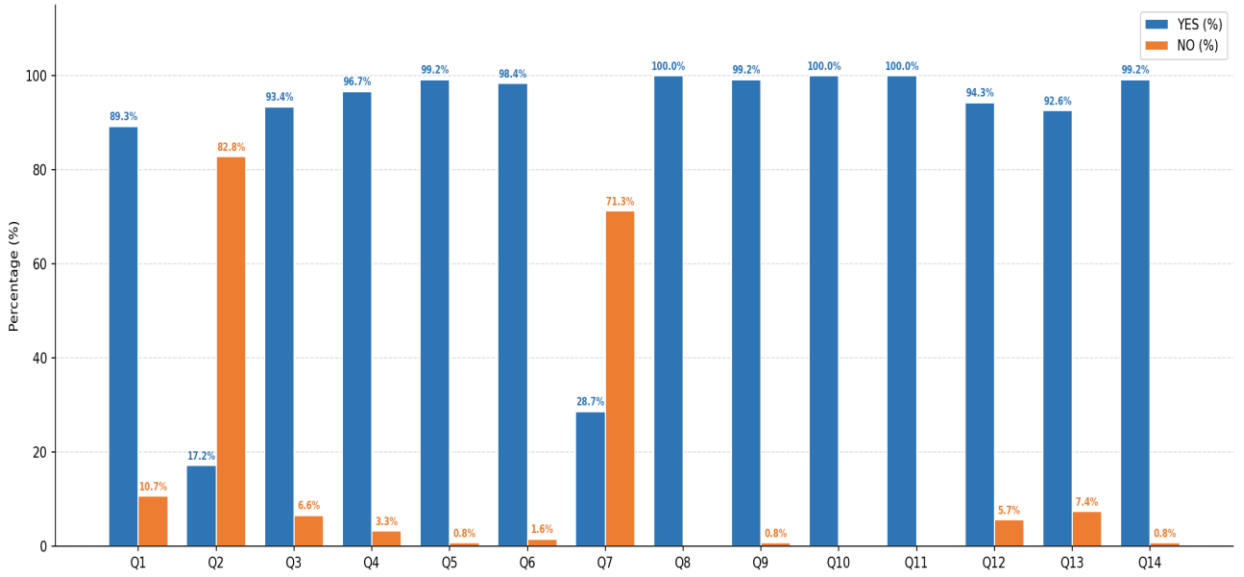

Figure 4.2: Grouped Bar Chart of Knowledge Item Responses (YES vs. NO)

The knowledge section comprised 14 items assessing nurses' understanding of CAUTI epidemiology, risk factors, prevention, and management. The majority of participants demonstrated strong foundational knowledge across most items. Most participants (89.3%) correctly identified CAUTI as one of the most common hospital-acquired infections (Q1), while 82.8% recognized that the risk of CAUTI is directly related to the duration of catheterization (Q2). Nearly all respondents (93.4%) correctly identified female gender and elderly patients as high-risk groups (Q3). A near-universal agreement was noted regarding appropriate indications for catheterization (Q4; 96.7%), the necessity of strict aseptic precautions (Q5; 99.2%), and timely catheter removal in post-operative patients (Q6; 98.4%). All participants (100%) agreed on the importance of proper catheter securing (Q8), the association of prolonged catheterization with bacteriuria (Q10), and the benefits of silicone alloy-coated catheters for long-term use (Q11). Similarly, nearly all respondents acknowledged that CAUTI prolongs hospital stay (Q9; 99.2%) and that Escherichia coli is its most common causative

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organism (Q14; 99.2%). A notably lower proportion (28.7%) agreed that antiseptic cleaning of the peri-urethral region is mandatory (Q7), with 71.3% disagreeing, which may reflect awareness of updated evidence-based guidelines. The majority also recognized that frequent use of antiseptic lubricants may not always be necessary (Q12; 94.3%) and that daily meatal cleaning with soap and water reduces CAUTI risk (Q13; 92.6%). Overall, these findings suggest a high level of knowledge among the participants regarding CAUTI prevention and catheter care practices.

SECTION C: ATTITUDE TOWARDS CAUTI PREVENTION

Table 4.3: Item-wise Frequency Distribution of Attitude Responses (N = 122)

Q#	Statement	Strongly Agree n (%)	Agree n (%)	Neither n (%)	Disagree n (%)	Strongly Disagree n (%)	Total (N)
Q15	Renewal reminders for catheter prevent CAUTI.	95 (77.9%)	25 (20.5%)	2 (1.6%)	–	–	122
Q16	Development of CAUTI cannot be avoided among catheterized patients.	1 (0.8%)	10 (8.2%)	14 (11.5%)	97 (79.5%)	–	122
Q17	CAUTI is not a very serious illness.	1 (0.8%)	8 (6.6%)	1 (0.8%)	24 (19.7%)	88 (72.1%)	122
Q18	Education regarding basic catheter care helps to prevent CAUTI.	106 (86.9%)	14 (11.5%)	1 (0.8%)	1 (0.8%)	–	122
Q19	Health care workers can remove the catheter whenever convenient.	98 (80.3%)	17 (13.9%)	5 (4.1%)	–	2 (1.6%)	122
Q20	Prevention of CAUTI is a frequent problem and impossible to attain.	9 (7.4%)	32 (26.2%)	1 (0.8%)	80 (65.6%)	–	122
Q21	Aseptic precautions may not be needed for removing Foley's catheter.	2 (1.6%)	7 (5.7%)	12 (9.8%)	89 (73.0%)	12 (9.8%)	122
Q22	Routine screening for ASB is recommended in catheterized patients (not	5 (4.1%)	20 (16.4%)	5 (4.1%)	89 (73.0%)	3 (2.5%)	122

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Q#	Statement	Strongly Agree n (%)	Agree n (%)	Neither n (%)	Disagree n (%)	Strongly Disagree n (%)	Total (N)
	advised by CDC prior to catheter insertion).						

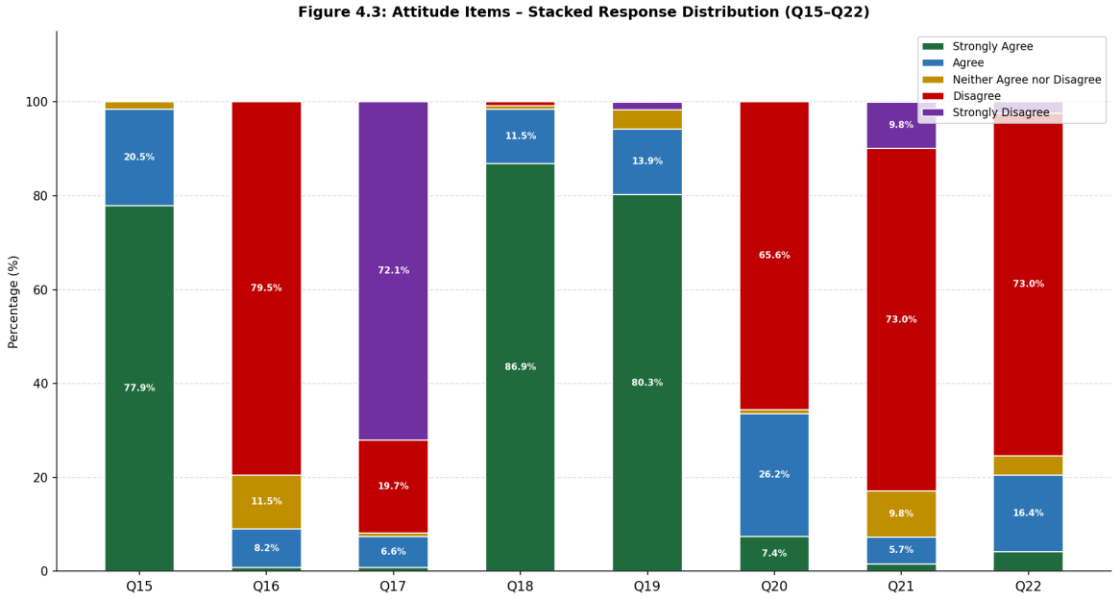

Figure 4.3: Stacked Bar Chart of Attitude Item Responses (Q15–Q22)

The attitude section comprised eight items measured on a five-point Likert scale to assess nurses' beliefs and perspectives towards CAUTI prevention. Overall, the participants demonstrated largely positive attitudes. The majority strongly agreed that catheter renewal reminders help prevent CAUTI (Q15; 77.9%) and that education regarding basic catheter care is essential for prevention (Q18; 86.9%), reflecting strong endorsement of systemic and educational strategies. A high proportion strongly disagreed that CAUTI is not a serious illness (Q17; 72.1%), underscoring awareness of its clinical significance and potential complications. Most respondents disagreed that CAUTI development is unavoidable in catheterized patients (Q16; 79.5%) and that its prevention is impossible to attain (Q20; 65.6%), indicating confidence in preventive measures. Most participants also agreed that healthcare workers can remove catheters at a convenient and appropriate time (Q19; 80.3%), reflecting clinical flexibility in catheter management. With respect to aseptic precautions during Foley catheter removal, the majority disagreed that such precautions are unnecessary (Q21; 73.0%), demonstrating adherence to infection control principles. Similarly, a large proportion disagreed with the continued recommendation of routine screening for asymptomatic bacteriuria

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before catheter insertion (Q22; 73.0%), aligning with updated CDC guidelines. Collectively, these attitudes reflect a sound understanding of evidence-based CAUTI prevention strategies among the study participants.

SECTION D: PRACTICES RELATED TO CAUTI PREVENTION

Table 4.4: Item-wise Frequency Distribution of Practice Responses (N = 122)

Q#	Statement	Agree n (%)	Neither n (%)	Disagree n (%)	Total (N)
Q23	Before and after handling the catheter site, hands must be washed with antiseptics.	116 (95.1%)	6 (4.9%)	–	122
Q24	Appropriate catheter size should be used to minimize urethral trauma.	121 (99.2%)	–	–	121*
Q25	Urinary catheterization must be done whenever there is an appropriate indication.	120 (98.4%)	2 (1.6%)	–	122
Q26	Twisting and kinking of the catheter must be prevented for unobstructed urine flow.	121 (99.2%)	–	1 (0.8%)	122
Q27	Bladder must be irrigated with antimicrobial/iodine solution at least once daily.	107 (87.7%)	1 (0.8%)	14 (11.5%)	122
Q28	Urine collection bag should be emptied regularly.	120 (98.4%)	2 (1.6%)	–	122
Q29	Urine collection bag must be positioned and fixed below the level of the bladder.	120 (98.4%)	1 (0.8%)	1 (0.8%)	122
Q30	Isolation must be done for a patient with UTI from other non-infected patients.	113 (92.6%)	4 (3.3%)	5 (4.1%)	122
Q31	Maintaining close drainage system prevents CAUTI.	117 (95.9%)	3 (2.5%)	2 (1.6%)	122
Q32	Regular educational training to be given on basic urinary catheter care.	121 (99.2%)	1 (0.8%)	–	122

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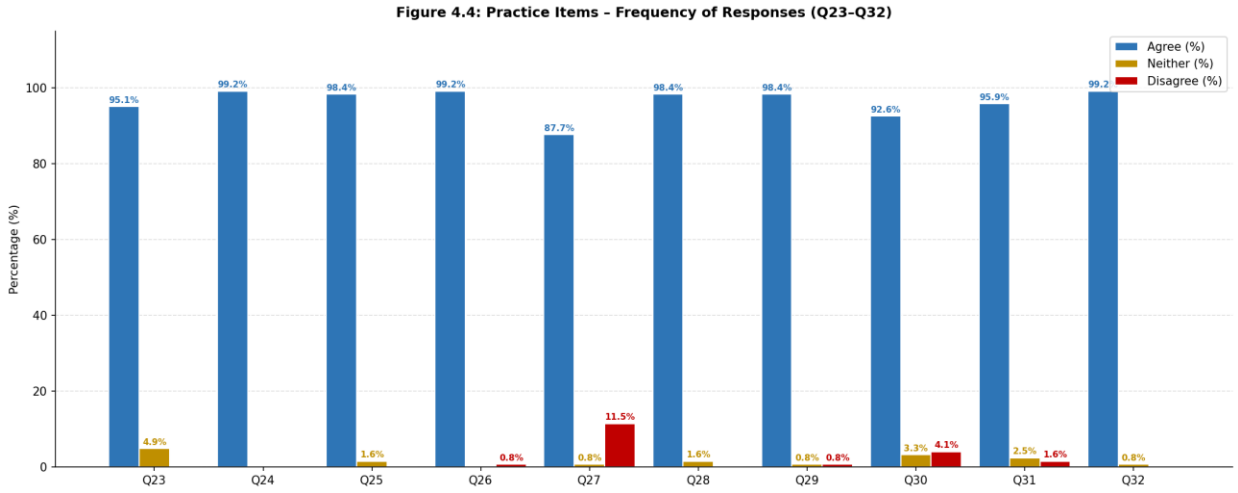

Figure 4.4: Grouped Bar Chart of Practice Item Responses (Q23–Q32)

The practice section assessed nurses' self-reported behaviours related to CAUTI prevention using ten items. The findings revealed consistently high levels of appropriate practices across all items. Nearly all participants agreed that hand washing with antiseptics before and after handling the catheter site is essential (Q23; 95.1%), and almost all endorsed using an appropriate catheter size to minimize urethral trauma (Q24; 99.2%) and performing catheterization only when clinically indicated (Q25; 98.4%). The prevention of twisting and kinking of catheters to maintain unobstructed urine flow was endorsed by 99.2% of respondents (Q26). A substantial majority agreed that daily bladder irrigation with antimicrobial or iodine solutions is a part of their catheter care routine (Q27; 87.7%), and nearly all agreed that urine collection bags should be emptied regularly (Q28; 98.4%) and positioned below the bladder level (Q29; 98.4%). Isolation of patients with UTI from non-infected patients was agreed upon by 92.6% of participants (Q30). The importance of maintaining a closed drainage system was recognized by 95.9% (Q31), and almost all endorsed regular educational training on urinary catheter care (Q32; 99.2%). These findings indicate that nurses in the study setting possess a high level of compliance with recommended CAUTI prevention practices.

MEAN KAP SCORES

Table 4.5: Descriptive Statistics for Total Knowledge, Attitude, and Practice Scores

Scale	N	Minimum	Maximum	Mean	Std. Deviation
Total Knowledge	122	14.00	20.00	15.92	1.14
Total Attitude	122	11.00	26.00	22.55	2.62

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Scale	N	Minimum	Maximum	Mean	Std. Deviation
Total Practice	121	10.00	14.00	10.55	1.00
Valid N (listwise)	121	–	–	–	–

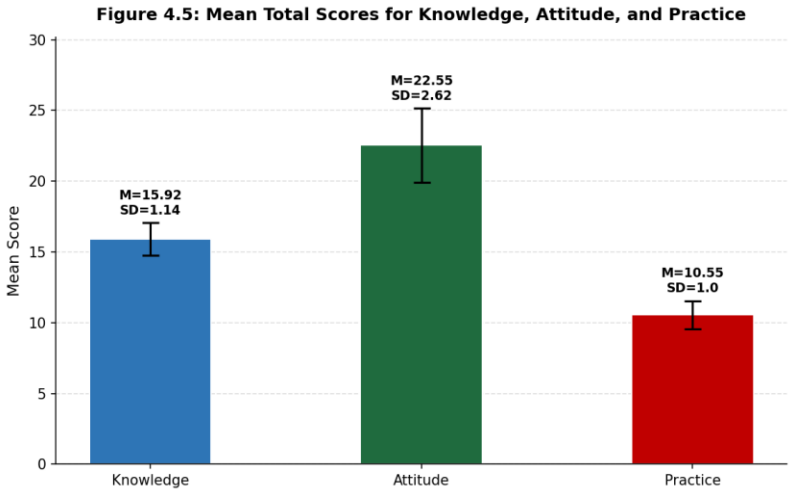

Figure 4.5: Mean Total Scores for Knowledge, Attitude, and Practice (with SD error bars)

Table 4.5 and Figure 4.5 present the descriptive statistics for the total scores of the three domains assessed in this study. For Knowledge, participants scored between a minimum of 14.00 and a maximum of 20.00 (Mean = 15.92, SD = 1.14), indicating a relatively narrow score range with a tendency toward the higher end, suggesting consistently adequate knowledge across the sample. The Attitude scores ranged from 11.00 to 26.00 (Mean = 22.55, SD = 2.62), reflecting a wider variability in attitude levels, though the mean score remained notably high, indicating predominantly positive attitudes towards CAUTI prevention. The Practice scores ranged from 10.00 to 14.00 (Mean = 10.55, SD = 1.00; valid N = 121), with a low standard deviation, suggesting that most respondents reported similar and generally appropriate practice behaviours. Overall, the high mean scores across all three domains indicate that the nursing staff in this study possessed a solid foundation of CAUTI-related competencies.

DISCUSSION

The demographic profile of the 122 participants indicates a workforce that is predominantly female (91.8%) and young, with 83.6% of respondents aged 23–28 years. In terms of education, 54.1% held a General Nursing diploma and 42.6% were BSN graduates. This young, female-centric demographic is consistent with research conducted by **Shehzadi et al. (2023)**, who noted a similar

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gender distribution in Pakistani clinical settings. The high prevalence of diploma-level education aligns with findings by **Teshager et al. (2023)**, who observed that diploma holders often constitute the primary frontline staff responsible for catheter-related care in public health systems.

The participants demonstrated a strong theoretical foundation, reflected in a mean knowledge score of 15.91. A significant majority (89.3%) correctly identified CAUTI as a leading hospital-acquired infection, and 82.8% understood that the risk of infection is directly tied to the duration of catheterization.

This level of awareness regarding the time-dependent risk of infection is notably higher than the knowledge levels reported by **Omari et al. (2023)**, whose study found that a significant portion of nursing staff could not pinpoint duration as the primary risk factor. Furthermore, 99.2% of participants correctly identified *Escherichia coli* as the most common causative agent.

This microbiological accuracy is supported by the work of **Mulu et al. (2024)**, whose clinical isolates confirmed *E. coli* as the dominant pathogen in urinary tract infections. Interestingly, only 28.7% believed antiseptic cleaning of the peri-urethral region is mandatory, suggesting that the participants are moving away from traditional methods in Favor of modern evidence-based practices supported by researchers like Abelson et al. (2023), who found no significant benefit of antiseptics over routine hygiene.

The mean attitude score of 22.54 indicates a professional culture that prioritizes infection prevention. Specifically, 79.5% of the staff disagreed with the notion that CAUTIs are unavoidable, while 72.1% strongly disagreed that CAUTI is a non-serious illness. This proactive attitude toward preventability is a critical psychological factor in clinical compliance, as noted by **Al-Sayaghi et al. (2023)**, who found that nurses with high perceived accountability had better adherence to infection control bundles.

Additionally, 86.9% of participants strongly agreed that education is a vital tool for prevention, which mirrors the findings of **Kim and Oh (2023)**, who demonstrated that continuous professional development significantly improves a nurse's commitment to safety protocols.

The reported practices among the participants, with a mean score of 10.54, show a high level of agreement with standard safety procedures. Nearly all respondents (98.4%) agreed that catheters should be removed as soon as possible and that drainage bags must remain below the bladder level. While these self-reported figures are high, researcher **Fashafsheh et al. (2023)** observed in clinical settings that actual bedside practice often lags behind theoretical agreement, particularly regarding the positioning of bags during patient transport. In this study, 95.1% of nurses advocated for hand hygiene before and after handling catheter sites, a practice identified by Ghazal et al. (2020) as the most influential factor in reducing cross-contamination.

However, 87.7% of participants still supported the use of daily bladder irrigation with antimicrobial solutions. This finding suggests the persistence of outdated "traditional" nursing rituals, which researchers such as **Vaughn et al. (2024)** have criticized as unnecessary and potentially harmful to the integrity of a closed drainage system. Finally, the near-universal agreement (99.2%) on the need

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for regular educational training highlights a strong desire for ongoing skill refinement among the staff.

CONCLUSION:

This study concludes that the nursing staff possesses a high level of knowledge and a predominantly positive attitude regarding the prevention of Catheter-Associated Urinary Tract Infections (CAUTI). With a mean knowledge score of 15.91 and an attitude score of 22.54, the participants demonstrated a clear understanding of the risks associated with prolonged catheterization and the importance of aseptic techniques.

The practice mean of 10.54 suggests that most nurses are committed to essential preventive measures, such as maintaining a closed drainage system and ensuring proper bag positioning. However, the persistence of certain outdated practices, such as the belief in routine bladder irrigation, indicates that while core knowledge is strong, there is a specific need to align clinical habits with the latest evidence-based non-recommendations. Overall, the study highlights a workforce that is well-informed and professionally motivated to reduce hospital-acquired infections.

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