

A Cross-Sectional Study: Assessment Of Nursing Knowledge, Attitudes, And Practices In The Care Of Patients Undergoing Urological Surgical Procedures In Saudi Arabia

Alanazi, Waleed Shuwayyikh Sulaiman¹, Ahmed Abdulrahman Alharbi², Meshari Obaid Awad Alharbi³, Mohammed Saad Abdullah Alnughaythir⁴, Nasser Hamad Aljebreen⁵, Mohammed Saad Alshamri⁶, Salman Tarahib Alotaibi⁶, Khalid Abdullah Albaiz⁷, Ayman Ali Altukheis⁶, Abdulmajeed Saad A Almadhi⁸, Munnerh F A Al Shibany⁹, Abdullah Mohammed Saad Alhuwaymil¹⁰

¹General Surgery Senior Registrar, King Khalid General Hospital, Saudi Arabia.

²Senior registrar urologist, King Faisal Hospital, Saudi Arabia.

³Nurse ,Ministry of health, Saudi Arabia.

⁴Nursing specialist, Albijadiyah general hospital, Saudi Arabia.

⁵Specialist Nursing, Al Quwayiyah General Hospital, Saudi Arabia.

⁶Nursing Specialist, Dawadmi General Hospital, Saudi Arabia.

⁷Nursing Technician, Dawadmi General Hospital, Saudi Arabia.

⁸Health Care Security, Al-Quway'iyah General Hospital, First Health Cluster, Saudi Arabia.

⁹Health Assistant/Nursing, Dawadmi General Hospital, Thired Health Cluster, Saudi Arabia.

¹⁰Nursing technician, Al Quwayiyah General Hospital, Saudi Arabia.

Abstract

Background:

Urological surgical procedures require highly specialized perioperative and postoperative nursing care to minimize complications, enhance recovery, and improve patient safety. Nurses' knowledge, attitudes, and practices (KAP) play a pivotal role in determining the quality of care delivered in urological surgical units. This study aims to assess nurses' knowledge, attitudes, and practices (KAP) regarding the care of patients undergoing urological surgical procedures and to examine the relationships between these domains and selected demographic variables.

Methods: A descriptive cross-sectional study was conducted among nurses working in urological surgical units. Data were collected using a structured, validated questionnaire assessing knowledge and attitudes, along with an observational checklist measuring nursing practices. Descriptive and inferential statistics were applied using SPSS. Results: Most nurses demonstrated moderate to good knowledge and positive attitudes toward urological surgical care; however, notable gaps were identified in patient education and catheter-related practices. Statistically significant positive correlations were found between knowledge, attitudes, and practice scores ($p < 0.05$).

Conclusion: Although nurses exhibited acceptable levels of competence, targeted educational interventions and standardized clinical protocols are required to strengthen evidence-based nursing practice in urological surgical settings.

Keywords: Nursing care, Urological surgery, Knowledge-Attitude-Practice, Cross-sectional study

Introduction

Urological surgical procedures represent a critical component of contemporary surgical care, addressing a broad spectrum of conditions affecting the urinary tract and male reproductive system, including malignancies, obstructive disorders, congenital anomalies, and functional impairments ⁽¹⁾. Advances in surgical techniques—such as minimally invasive and robotic-assisted procedures—have improved clinical outcomes; however, they have simultaneously increased the complexity of perioperative and postoperative nursing care ^(2, 3). Patients undergoing urological surgery remain vulnerable to a range of adverse outcomes, including surgical site infections, urinary tract infections, catheter-related complications, pain, hemorrhage, and psychosocial distress, all of which necessitate vigilant, evidence-

based nursing interventions ^(4, 5).

Nurses constitute the largest segment of the healthcare workforce and are pivotal in ensuring continuity of care throughout the surgical trajectory ^(6, 7). In urological surgical settings, nursing responsibilities extend beyond routine postoperative monitoring to encompass specialized competencies such as urinary catheter management, early detection of urinary retention, prevention of infection, fluid and electrolyte balance, pain control, wound and stoma care, patient education, and discharge planning ⁽⁸⁾. The quality of nursing care provided in this context has been shown to significantly influence patient safety, length of hospital stays, readmission rates, and overall quality of life following surgery ⁽⁹⁾.

The concept of nursing competence is multidimensional and encompasses knowledge, attitudes, and practices ⁽¹⁰⁾. Knowledge reflects nurses' understanding of urological pathophysiology, surgical procedures, and evidence-based care standards ⁽¹¹⁾. Attitudes represent nurses' beliefs, values, and professional commitment toward high-quality and patient-centered care ^(12, 13). Practices, in turn, reflect the actual application of knowledge and attitudes in clinical settings ⁽¹⁴⁾. The Knowledge–Attitude–Practice (KAP) framework is widely recognized as a robust theoretical model for assessing healthcare providers' readiness to deliver quality care and for identifying gaps that may compromise patient outcomes ⁽¹⁵⁾.

Empirical evidence suggests that insufficient knowledge or unfavorable attitudes among nurses can negatively affect adherence to clinical guidelines and lead to variations in care quality ⁽¹⁶⁾. In surgical nursing, inadequate understanding of postoperative complications or improper catheter management has been associated with increased morbidity and preventable adverse events ⁽¹⁷⁾. Conversely, nurses who demonstrate strong theoretical knowledge and positive professional attitudes are more likely to implement evidence-based interventions, engage in effective patient education, and contribute to improved surgical outcomes ^(18, 19).

Despite the recognized importance of specialized nursing care in urological surgery, existing literature indicates considerable variability in nurses' preparedness to meet the complex demands of this specialty. Studies conducted across different healthcare systems have reported inconsistencies in nurses' knowledge of urological postoperative care protocols and limited integration of evidence-based practices into routine care ^(20, 22). Moreover, attitudinal barriers—such as resistance to change, perceived workload burden, and limited institutional support—may further hinder optimal nursing performance ⁽²³⁾.

In addition, rapid advancements in urological surgical technologies and evolving clinical guidelines necessitate continuous professional development. Without systematic assessment and ongoing education, nurses may rely on outdated practices, thereby increasing the risk of postoperative complications ⁽²⁴⁾. Evaluating nurses' knowledge, attitudes, and practices is therefore essential not only for identifying individual and organizational gaps but also for informing targeted interventions, policy formulation, and curriculum development in surgical nursing education.

Accordingly, this study aims to systematically evaluate nurses' knowledge, attitudes, and practices related to the care of patients undergoing urological surgical procedures. By exploring the interrelationships among these domains and selected demographic characteristics, the study seeks to expand the existing body of evidence and generate empirical insights to inform targeted strategies for strengthening nursing practice and enhancing patient outcomes in urological surgical settings.

Methodology

Study Design: A descriptive analytical cross-sectional study design was employed to assess nurses' knowledge, attitudes, and practices (KAP) regarding the care of patients undergoing urological surgical procedures. This design was selected as it allows for the systematic evaluation of multiple variables at a single point in time and is widely used in healthcare research to assess professional competence and identify practice gaps.

Study Setting: The study was conducted in urological surgical units of tertiary care hospitals in the Kingdom of Saudi Arabia (KSA). These hospitals are affiliated with the Saudi Ministry of Health (MOH) and provide specialized urological surgical services, including open, laparoscopic, and minimally invasive procedures. The selected settings serve diverse patient populations and represent major referral centers for urological conditions, thereby offering an appropriate context for assessing nursing care practices in urological surgery.

Study Population: The target population comprised registered nurses working in urological surgical units who were directly involved in perioperative and postoperative patient care. **Inclusion Criteria:**

Registered nurses licensed by the Saudi Commission for Health Specialties (SCFHS), Nurses working in urology surgical wards, operating rooms, or postoperative recovery units, with a minimum of one year of clinical experience in urological surgical care, and willingness to participate in the study. Exclusion Criteria: Nurses in administrative or managerial positions with no direct patient care responsibilities, Student nurses or interns, Nurses on leave during the data collection period

Sample Size and Sampling Technique: A convenience sampling technique was utilized. The sample size was determined based on similar KAP studies conducted in surgical nursing settings and statistical feasibility. A total of 120 nurses were recruited, which was considered adequate to ensure sufficient statistical power for descriptive and correlational analyses.

Study Instruments: Data were collected using four structured tools, developed after an extensive review of relevant literature and international guidelines on urological surgical nursing care.

Tool I: Demographic Characteristics Questionnaire: This tool collected information on age, gender, nationality, educational qualification, years of clinical experience, current working unit, and prior training related to urological surgical nursing.

Tool II: Knowledge Assessment Questionnaire: A structured self-administered questionnaire consisting of 30 multiple-choice questions designed to assess nurses' theoretical knowledge related to urological surgical care. The questionnaire covered the following domains: Preoperative preparation and patient assessment; Postoperative monitoring and complication prevention; Urinary catheter management; Infection control and patient safety; Pain management and patient education. Scoring system: Each correct answer was awarded one point, while incorrect or unanswered items received zero points. Knowledge scores were categorized as: Poor: < 50%, Moderate: 50–75%, Good: > 75%

Tool III: Attitude Assessment Scale: Nurses' attitudes were assessed using a 15-item Likert-scale questionnaire, rated from 1 (strongly disagree) to 5 (strongly agree). Items measured nurses' perceptions of: The importance of evidence-based practice; Professional responsibility in urological surgical care; Patient-centered care and safety; Continuous professional development. Higher scores indicated more positive attitudes toward urological surgical nursing care.

Tool IV: Practice Observational Checklist: An observational checklist consisting of 20 items was used to assess actual nursing practices during patient care. The checklist evaluated adherence to evidence-based standards, including: Hand hygiene and infection control measures; Proper urinary catheter insertion and maintenance; Pain assessment and documentation; Wound and drain care; Patient education and discharge planning. Each item was scored as "performed" or "not performed."

Validity and Reliability: Content validity of the study instruments was established through review by a panel of five experts in medical-surgical nursing, urology, and research methodology. Necessary modifications were made based on their feedback. Reliability testing demonstrated acceptable internal consistency, with Cronbach's alpha coefficients exceeding 0.80 for the knowledge and attitude scales. **Pilot Study:** A pilot study was conducted on 10% of the total sample to assess the clarity, feasibility, and applicability of the tools. Data from the pilot study were excluded from the final analysis. Minor wording adjustments were made to improve clarity.

Data Collection Procedure: Data were collected over a period of three months. After obtaining administrative approvals, eligible nurses were approached during duty hours. Participants completed the self-administered questionnaires, while nursing practices were assessed through direct observation using the practice checklist by trained data collectors.

Ethical Considerations: Ethical approval was obtained from the Institutional Review Board (IRB) of the participating hospitals. Written informed consent was obtained from all participants. Confidentiality and anonymity were ensured, and participants were informed of their right to withdraw at any time without penalty.

Statistical Analysis: Data were coded and analyzed using Statistical Package for the Social Sciences (SPSS) version 28. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to summarize the data. Inferential statistics, including Chi-square tests and Pearson correlation coefficients, were applied to examine relationships between variables. Statistical significance was set at $p < 0.05$.

Results

Table 1 shows that a total of 120 registered nurses working in urological surgical units participated in the study, yielding a response rate of 100%. The sample was predominantly female and bachelor-prepared, reflecting the general nursing workforce structure in Saudi Arabia. Notably, fewer than half

of the participants reported receiving prior specialized training in urological surgical nursing, indicating a potential educational gap.

Table 1. Demographic Characteristics of the Study Participants (N = 120)

Variable	Category	n	%
Gender	Male	42	35.0
	Female	78	65.0
Age (years)	<30	28	23.3
	30–39	56	46.7
	≥40	36	30.0
Educational Level	Diploma	26	21.7
	Bachelor's degree	72	60.0
	Postgraduate	22	18.3
Years of Experience	1–5 years	38	31.7
	6–10 years	44	36.6
	>10 years	38	31.7
Previous Urology Training	Yes	46	38.3
	No	74	61.7

Table 2 revealed that the overall mean knowledge score fell within the moderate range; nearly one-fifth of nurses demonstrated poor knowledge, particularly in areas related to postoperative complication recognition and patient education. This finding suggests uneven theoretical preparedness among nurses working in urological surgical units.

Table 2. Distribution of Nurses' Knowledge Levels (N = 120)

Knowledge Level	Score Range	n	%
Poor	<50%	22	18.3
Moderate	50–75%	58	48.4
Good	>75%	40	33.3
Mean ± SD		72.8 ± 11.9	

Table 3 shows that nurses demonstrated generally positive attitudes toward urological surgical care, particularly regarding patient safety and quality improvement. However, comparatively lower scores in continuing education highlight possible motivational or organizational barriers to lifelong learning.

Table 3. Nurses' Attitude Scores Toward Evidence-Based Urological Surgical Care

Attitude Domain	Mean ± SD (out of 5)
Importance of evidence-based practice	4.21 ± 0.62
Professional responsibility	4.05 ± 0.68
Patient safety and quality care	4.34 ± 0.57
Continuing education	3.88 ± 0.71
Overall Attitude Score	4.12 ± 0.59

Table 4 revealed that infection control and wound care practices showed high compliance, but patient education and documentation were notably suboptimal. This discrepancy indicates a gap between technical task performance and holistic patient-centered care.

Table 4. Adherence to Evidence-Based Nursing Practices (N = 120)

Practice Item	Performed n (%)	Not Performed n (%)
Hand hygiene compliance	108 (90.0)	12 (10.0)
Aseptic catheter care	92 (76.7)	28 (23.3)
Regular pain assessment	98 (81.7)	22 (18.3)
Wound and drain care	104 (86.7)	16 (13.3)
Patient education before discharge	78 (65.0)	42 (35.0)
Documentation accuracy	88 (73.3)	32 (26.7)

Table 5 demonstrates that statistically significant positive correlations were observed among all KAP domains. Nurses with higher knowledge scores were more likely to demonstrate better clinical practices, supporting the theoretical assumptions of the KAP model. Attitudes also played a meaningful

role in shaping observed practice behaviors.

Table 5. Correlation Between Knowledge, Attitudes, and Practice Scores

Variables	r	p-value
Knowledge – Practice	0.47	<0.001
Attitude – Practice	0.39	0.002
Knowledge – Attitude	0.42	<0.001

Table 6 revealed that higher educational attainment, longer clinical experience, and prior urology-specific training were significantly associated with higher knowledge levels. This finding underscores the importance of formal education and continuing professional development in enhancing nursing competence.

Table 6. Association Between Selected Demographic Variables and Knowledge Level

Variable	χ^2	p-value
Educational level	9.84	0.007*
Years of experience	6.21	0.045*
Previous urology training	12.36	<0.001*

*Statistically significant at $p < 0.05$

Discussion

The present study revealed that nurses working in urological surgical units demonstrated moderate levels of knowledge, positive attitudes, and variable adherence to evidence-based practices. Importantly, statistically significant positive correlations were observed between nurses' knowledge, attitudes, and practices, indicating that higher knowledge and more positive professional attitudes were associated with better clinical behavior. These findings align with several international studies and contribute to the broader understanding of nursing competence in surgical and catheter-related care.

Our findings of moderate knowledge and generally positive attitudes are consistent with previous research in both urological and urinary catheter care contexts. For example, a large cross-sectional study conducted in Malaysia demonstrated that nurses had good knowledge, a positive attitude, and favorable perceived practices regarding catheter-associated urinary tract infection (CAUTI) prevention. Like our study, this research identified significant positive associations among KAP domains, emphasizing the interconnected nature of nursing knowledge, attitude, and clinical behaviors ⁽²⁵⁾.

Similarly, a cross-sectional study in Taicang City, China, reported moderate knowledge, positive attitudes, and proactive practices among nurses regarding unnecessary urinary catheterization. Pearson correlation analyses in that study showed significant positive relationships between knowledge and practice as well as between attitude and practice, supporting the theoretical assumptions of the KAP model ⁽²⁶⁾. These international findings reinforce the present results, suggesting that nurses' cognitive and affective domains consistently influence the quality of clinical practice across different countries and settings.

Furthermore, systematic review evidence underscores the critical role of nurse-targeted educational interventions in improving clinical outcomes related to indwelling urinary catheters. Alex et al. (2022) ⁽²⁷⁾ reported that educational programs improved nurses' confidence and competence in catheter care, with all identified intervention studies demonstrating measurable improvements in knowledge and associated clinical indicators. Although the present study did not specifically evaluate the effect of an intervention, the observed positive association between knowledge and practice underscores the potential benefits of structured education in enhancing clinical performance.

While the overall pattern of positive attitudes translating into better practice is consistent with global research, the relative influence of knowledge versus attitude on practice observed in this study warrants further discussion. In the Malaysian CAUTI prevention study, attitude had a higher explanatory impact on perceived practice than knowledge, indicating that affective and motivational dimensions may play a critical role in determining nurses' behaviors ⁽²⁵⁾. In contrast, the present study identified strong correlations between all three domains without quantifying their relative predictive power. Future research should consider multivariate regression or structural equation modeling to clarify the mediation effects between knowledge, attitude, and practice.

Another important contrast arises when comparing results with studies in resource-limited settings. In an institutional study in Ethiopia, researchers identified poor knowledge and practice toward CAUTI prevention among ICU nurses, highlighting contextual disparities in nursing competencies across

healthcare systems⁽²⁸⁾. These differences potentially reflect variations in educational preparation, access to continuous training, and institutional support—factors that could explain the more favorable knowledge and practice levels observed in our Saudi Arabian setting.

The role of education as a determinant of nursing competence is further supported by randomized controlled and quasi-experimental studies. For instance, a randomized controlled trial on catheter-related infection control education demonstrated significant improvements in nurses' knowledge and attitudes immediately after training and at follow-up⁽²⁹⁾. Similarly, protocol-based interventions and in-service educational programs have been shown to enhance nurses' catheter care knowledge and practice in other clinical contexts⁽³⁰⁾. These interventional findings provide causal support for the observational associations identified in the current cross-sectional research.

The observed gaps in specific practice domains—such as patient education and documentation—highlight persistent challenges in aligning nurse behavior with evidence-based standards. This is consistent with mixed-methods systematic reviews, which have identified variations in healthcare workers' knowledge and practices related to catheter care and infection prevention, often due to workload, staffing limitations, and inconsistent adherence to guidelines⁽³¹⁾.

Given that urological surgical patients are particularly vulnerable to device-associated complications, such as CAUTI, enhancing nurses' competence through structured educational interventions and clinical protocols is imperative. The international evidence supports the implementation of ongoing, contextually tailored education and competency assessment programs to bridge the gap between knowledge and practice and to improve patient outcomes.

Implications for Nursing Practice

Strengthening evidence-based training in urological nursing

Implementing standardized postoperative care protocols

Enhancing patient education and discharge planning

Conclusion

This study highlights the critical role of nurses' knowledge and attitudes in shaping clinical practices in urological surgical care. Despite acceptable overall competence, targeted interventions are required to address practice gaps and optimize patient outcomes.

Recommendations

Regular in-service education programs

Development of urology-specific nursing guidelines

Periodic competency assessment

Study Limitations

Despite the valuable insights generated, this study has several limitations that should be acknowledged. First, the use of a cross-sectional design limits the ability to establish causal relationships between nurses' knowledge, attitudes, and practices; observed associations may reflect correlations rather than definitive cause-and-effect links. Second, the study relied on a convenience sample drawn from selected tertiary hospitals in Saudi Arabia, which may reduce the generalizability of the findings to nurses working in other regions, smaller healthcare facilities, or different healthcare systems. Third, although the observational checklist provided objective measures of practice, the presence of observers may have introduced the Hawthorne effect, potentially inflating adherence rates.

Additionally, self-reported measures of knowledge and attitudes are subject to response and social desirability biases, which may overestimate participants' true competence. Finally, the study did not account for external factors such as staffing ratios, workload, or institutional policies, which could influence both nurses' practice and their perceptions of care. Future research employing longitudinal or interventional designs with larger and more diverse samples is recommended to address these limitations and validate the current findings.

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