

ORIGINAL

Patient Readiness on the Edge: How Age, Gender, and Surgical Experience Shape Preoperative Understanding and Surgical Safety

Preparación del Paciente al Límite: Cómo la Edad, el Género y la Experiencia Quirúrgica Moldean la Comprensión Preoperatoria y la Seguridad Quirúrgica

Richa Noprianty¹ , Cici Valiani¹ , Ria Indriani¹ , Berliani Fashi Nurpadilah¹

¹Bhakti Kencana University, Bachelor of Applied Anesthesiology Nursing, Bandung, Indonesia.

Cite as: Noprianty R, Valiani C, Indriani R, Fashi Nurpadilah B. Patient Readiness on the Edge: How Age, Gender, and Surgical Experience Shape Preoperative Understanding and Surgical Safety. *Salud, Ciencia y Tecnología*. 2026; 6:2467. <https://doi.org/10.56294/saludcyt20262467>

Submitted: 01-07-2025

Revised: 10-09-2025

Accepted: 16-11-2025

Published: 01-01-2026

Editor: Prof. Dr. William Castillo-González 

Corresponding author: Richa Noprianty 

ABSTRACT

Introduction: preoperative patient readiness is the fundamental cornerstone of surgical safety. Adequate preoperative knowledge plays a crucial role in reducing anxiety, improving cooperation, and preventing postoperative complications, including surgical site infections (SSI). However, patient understanding varies and is thought to be influenced by individual characteristics. This study aims to examine the relationship between patient characteristics and the level of preoperative knowledge.

Method: the research employed a comparative cross-sectional design involving 300 patients scheduled for elective surgery across several hospitals in the Greater Bandung area, Indonesia, using accidental sampling. Data were collected through questionnaires and analyzed using the chi-square test, followed by binary logistic regression with odds ratio (OR) and 95 % confidence interval (CI).

Results: the findings indicate that age, gender, and history of previous surgery were significantly associated with patients' levels of preoperative knowledge. Significant factors influencing preoperative knowledge included age ($p=0,012$), gender ($p=0,047$), and surgical history ($p=0,024$). Fasting preparation scored highest (91,38), while physical preparation was lowest (80,16). Younger patients, males, and those with prior surgical experience tended to have better understanding. Conversely, education level, occupation, and type of anesthesia to be administered showed no significant association. Preoperative readiness is not solely determined by social or educational background but is more influenced by demographic factors and personal experience.

Conclusion: these findings highlight the need for personalized preoperative education, particularly for older, female patients, and those without prior surgical history. Such tailored interventions have great potential to enhance surgical safety and reduce the risk of surgical site infections.

Keywords: Preoperative Patient Preparedness; Patient Characteristics; Preoperative Knowledge; Surgical Safety; Surgical Site Infection (SSI).

RESUMEN

Introducción: la preparación preoperatoria del paciente constituye la base fundamental de la seguridad quirúrgica. Un conocimiento preoperatorio adecuado desempeña un papel crucial en la reducción de la ansiedad, la mejora de la cooperación y la prevención de complicaciones postoperatorias, incluidas las infecciones del sitio quirúrgico (ISQ). Sin embargo, la comprensión del paciente varía y se cree que está influenciada por las características individuales. El presente estudio tiene como objetivo examinar la relación entre las características del paciente y el nivel de conocimiento preoperatorio.

Método: la investigación utilizó un diseño comparativo transversal, con la participación de 300 pacientes

programados para cirugía electiva en varios hospitales del área metropolitana de Bandung, Indonesia, seleccionados mediante muestreo accidental. Los datos se recopilaron mediante cuestionarios y se analizaron con la prueba de chi-cuadrado, seguida de regresión logística binaria utilizando la razón de momios (OR) con un intervalo de confianza (IC) del 95 %.

Resultados: los resultados indican que la edad, el sexo y los antecedentes de cirugías previas se asociaron significativamente con el nivel de conocimiento preoperatorio de los pacientes. Los pacientes más jóvenes, los hombres y aquellos con experiencia quirúrgica previa tendieron a tener una mejor comprensión. Por el contrario, el nivel educativo, la ocupación y el tipo de anestesia que se iba a administrar no mostraron una relación significativa. La preparación del paciente no está determinada únicamente por el entorno social o académico, sino que está más influenciada por factores demográficos y experiencias personales.

Conclusiones: estos hallazgos subrayan la necesidad de una educación preoperatoria personalizada, especialmente para pacientes mayores, mujeres y sin antecedentes quirúrgicos. Dichas intervenciones personalizadas tienen un gran potencial para mejorar la seguridad quirúrgica y reducir el riesgo de infecciones del sitio quirúrgico.

Palabras clave: Preparación Preoperatoria del Paciente; Características del Paciente; Conocimiento Preoperatorio; Seguridad Quirúrgica; Infección del Sitio Quirúrgico (ISQ).

INTRODUCTION

Preoperative preparation is a crucial component in ensuring the success of surgical interventions and optimizing patient recovery. Adequate knowledge of preoperative preparation—including psychological readiness, fasting, personal hygiene, and medication management—plays an essential role in minimizing patient anxiety and reducing the risk of postoperative complications.⁽¹⁾ Despite this, some patients remain uncooperative or noncompliant with preoperative procedures, leading to deviations from established instructions and increased clinical risks. Studies have shown that comprehensive preoperative education can enhance patient understanding, improve compliance, and significantly reduce postoperative anxiety and pain.⁽²⁾

Patient knowledge levels are influenced by various individual characteristics such as age, gender, educational attainment, and prior surgical experience. These demographic and experiential variations can impact how effectively patients absorb and apply preoperative information.⁽³⁾ Therefore, it is essential to examine the relationship between patient characteristics and their understanding of preoperative preparation to design educational strategies that are more targeted and responsive to patient needs.

Previous studies have reported a persistently high rate of noncompliance among preoperative patients. Approximately 4 % of patients admitted to providing false information about their fasting duration due to fear of surgical delays, primarily resulting from poor communication and limited comprehension.⁽⁴⁾ Furthermore, about 30 % of patients failed to adhere to fasting guidelines, which was associated with postoperative nausea and vomiting, particularly when fasting duration was less than six hours.^(5,6) Inadequate fasting also increases the risk of aspiration pneumonia (Mendelson's syndrome) during anesthesia induction.⁽⁷⁾ Additionally, insufficient patient awareness of preoperative personal hygiene, such as showering with 2 % chlorhexidine solution and avoiding the use of nail polish, which can interfere with pulse oximetry readings, remains problematic.^(8,9) Many elective surgery patients still fail to follow pre-anesthetic instructions even when provided with verbal and written information.⁽¹⁰⁾

This research holds significant importance in improving the quality of preoperative nursing care. The adherence of nurse anesthetists to thorough and standardized preoperative assessments in accordance with standard operating procedures (SOPs) can effectively reduce the occurrence of adverse events.⁽¹¹⁾ Moreover, the implementation of the World Health Organization (WHO) Surgical Safety Checklist is an essential measure to minimize surgical errors and risks while ensuring that healthcare professionals obtain accurate baseline data for each patient.⁽¹²⁾ By understanding the relationship between patient characteristics and their level of preoperative knowledge, healthcare providers can develop more individualized and effective educational interventions that enhance surgical safety, patient compliance, and overall comfort throughout the perioperative process.^(13,14,15,16,17)

The present study aims to assess the level of patient knowledge regarding preoperative preparation and analyze its association with patient characteristics such as age, gender, educational background, and prior surgical experience. Specifically, the study seeks to identify the characteristics of patients undergoing surgical procedures, evaluate their understanding of preoperative requirements, determine the relationship between demographic factors and knowledge levels, and identify the most dominant characteristics influencing

preoperative preparedness. The findings are expected to serve as a foundation for developing more effective and individualized preoperative education strategies, ultimately improving patient safety and surgical outcomes.

METHOD

This study employed a quantitative comparative cross-sectional design conducted between June and September 2025. The research was carried out in the preoperative patient care units of five government hospitals located in the Greater Bandung area, West Java Province, Indonesia. The design was selected for its ability to describe and compare relationships between variables objectively and systematically within a specific time frame.

The study population included all inpatients scheduled for elective surgical procedures in the selected hospitals. Using accidental sampling, a total of 300 respondents were obtained. The inclusion criteria were: 1) patients scheduled for elective surgery, 2) conscious and able to communicate effectively, and 3) willing to participate and signed informed consent. The exclusion criteria were: 1) patients with severe cognitive impairment or psychiatric disorders, 2) patients undergoing emergency surgical procedures and 3) patients who withdrew participation before data collection (exit criteria).

The main dependent variable was preoperative knowledge, measured through five components: psychological preparation, fasting preparation, physical preparation, personal hygiene, and medication management. Independent variables included age, gender, education level, occupation, type of anesthesia, and surgical history. Each variable was operationally defined and coded before analysis.

Data were collected using a structured questionnaire developed from a literature review.^(18,19) The questionnaire consisted of 35 true-or-false items divided into five domains: 1) psychological readiness (7 items), 2) fasting preparation (12 items), 3) physical preparation (6 items), 4) personal hygiene (7 items), and 5) medication management (3 items). The instrument underwent expert validation by three anesthesiology and nursing specialists for content validity, assessing relevance, clarity, and comprehensiveness. A pilot test was conducted among 30 preoperative patients with similar characteristics to the main sample to assess reliability. The instrument demonstrated a Cronbach's alpha coefficient $\geq 0,7$, indicating satisfactory internal consistency. The questionnaire was administered face-to-face by trained data collectors following a standardized procedure to ensure uniformity.

Data collection took place over a four-week period in each hospital. Prior to data gathering, the research team coordinated with the head nurses and anesthesiology staff. Eligible patients were identified from the daily surgical schedule and approached in the preoperative ward. After obtaining informed consent, participants completed the questionnaire under the supervision of the researcher to minimize missing data and ensure comprehension.

Data were analyzed using SPSS (Statistical Package for the Social Sciences) version 26. Descriptive statistics were used to summarize demographic data and preoperative knowledge scores (frequency, percentage, mean, minimum, and maximum). Bivariate analysis utilized the Chi-square test for categorical variables and t-test for continuous variables. Multivariate analysis employed binary logistic regression to determine the strength of associations (Odds Ratio, OR) and 95 % Confidence Intervals (CI). The enter method was used with a significance level set at $p < 0,05$.

This research adhered to ethical principles for studies involving human subjects. Ethical approval was obtained from the Health Research Ethics Committee of Bhakti University (Approval No. 272/09.KEPK/BKU/IX/2025). The study complied with the ethical standards of the World Health Organization (WHO) and the Council for International Organizations of Medical Sciences (CIOMS). Participants were informed about the purpose, procedures, potential benefits, and risks of the study, and all signed a written informed consent form prior to participation. Confidentiality and anonymity were strictly maintained throughout the research process.

RESULTS

Characteristics of responden

The study was involved 300 patients scheduled for surgical procedures at five government hospitals located in the Greater Bandung area, West Java, Indonesia. The characteristics of the patients were obtained through a structured questionnaire distributed to all participants. The demographic and clinical characteristics of the respondents are presented in table 1 below.

Based on table 1, the results show that among the 300 respondents, 80,3 % were adults aged 19-59 years, and 61 % were female. Most respondents were senior high school graduates (45 %), unemployed (64,3 %), and received general anesthesia (58 %). Furthermore, 72,3 % of the patients had no prior surgical experience, and the participants were evenly distributed across the five hospitals (20 % each).

Table 1. Characteristics of Respondents (n = 300)		
Characteristics	N	%
Umur		
0 - < 5 years (infants and toddlers)	5	1,7
5 - 9 years (children)	5	1,7
10 - 18 years (adolescents)	14	4,7
19 - 59 years (adults)	241	80,3
≥ 60 years (elderly)	35	11,7
Jenis Kelamin		
Male	117	66,5
Female	183	33,5
Educational Background		
No formal education	15	5
Elementary school	62	20,7
Junior high school	65	22,3
Senior high school	134	45
Higeher education (college/university)	21	7
Occupation		
Unemployed	193	64,3
Employed	107	35,7
Type of Anesthesia		
General anesthesia	174	58
Spinal anesthesia	126	42
History of surgery		
Never	217	72,3
Once	54	18
More than once	29	9,7

Overview of Average Components of Preoperative Preparation

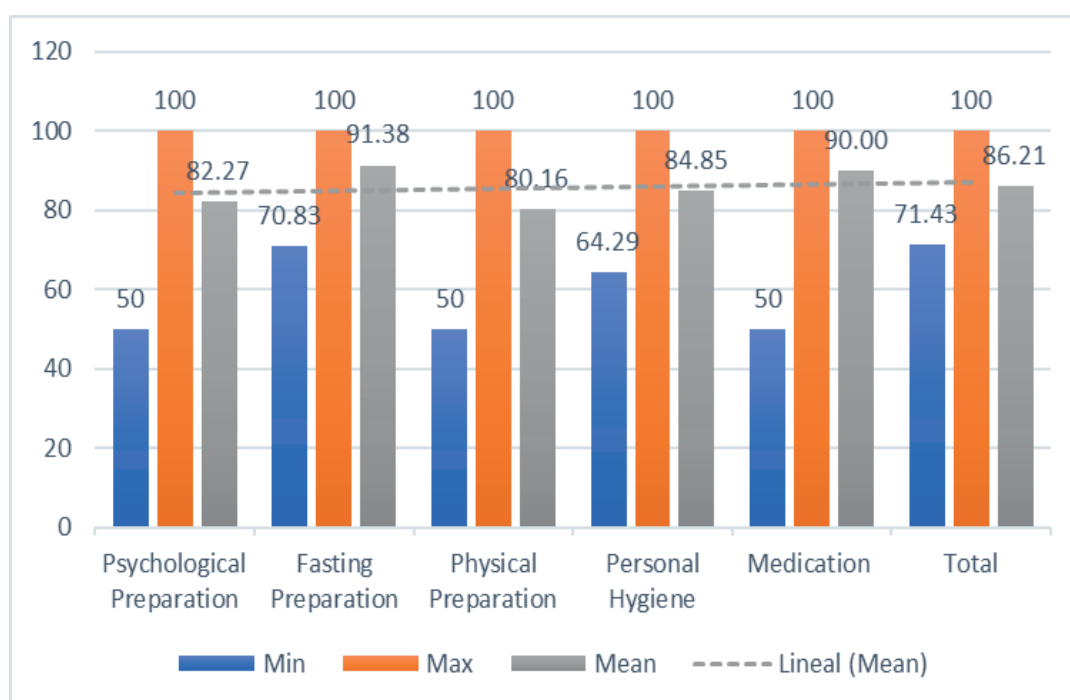


Figure 1. Componen of Preoperative Preparation

Figure 1 presents the minimum, maximum, and mean values for the five categories of preoperative preparation: psychological, fasting, physical, personal hygiene, and medication management. The data indicate that fasting preparation achieved the highest mean score (91,38), while physical preparation recorded the lowest mean score (80,16). All categories reached a maximum score of 100, demonstrating the potential for optimal readiness. Overall, the total mean score of 86 reflects a generally good level of preoperative preparedness across all assessed aspects.

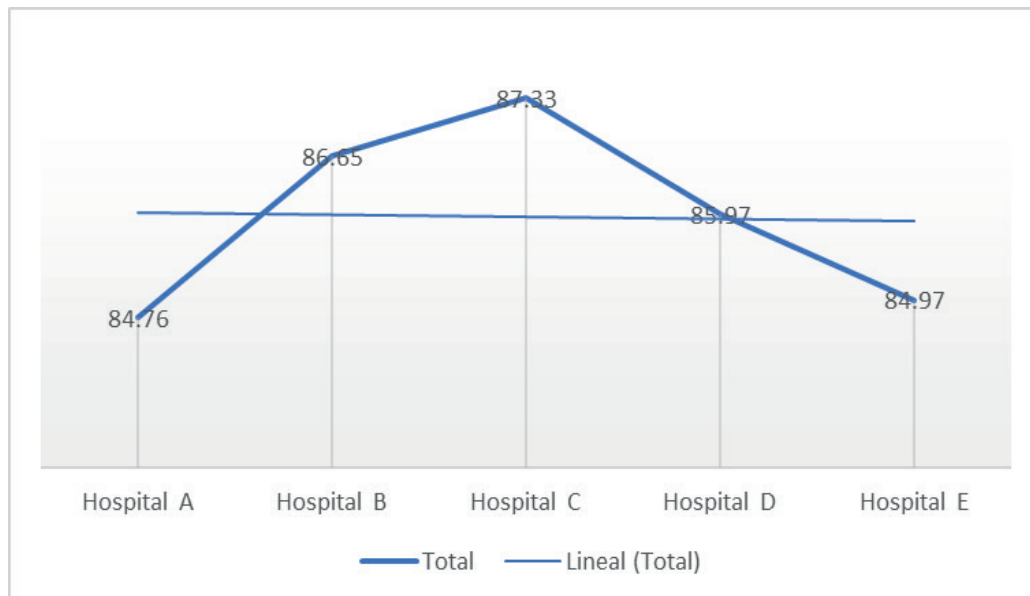


Figure 2. Percentage of Preoperative Preparation by Hospital

Figure 2 presents the total transportation costs for various routes to hospitals. The data indicate that Hospital C has the highest total transportation cost (87,33), while Hospital A has the lowest (84,76).

Multivariate Analysis

The results of the analysis show that variables with a significant relationship ($p < 0,05$) include age, gender, and surgical history. Other variables such as education level, employment status, and type of anesthesia did not show statistically significant relationships. The detailed data are presented in the following table:

Variable	Beta coefficient	P value	OR	95 % CI		Significant
				Lower	Upper	
a. Age	-0,814	0,012	0,443	0,234	0,838	Significant
b. Gender	-0,170	0,047	0,844	0,715	0,996	Significant
c. Surgical education	-0,333	0,024	0,717	0,540	0,952	Significant
d. Education	0,089	0,421	1,093	0,878	1,361	Not significant
e. Occupation	-0,124	0,318	0,883	0,688	1,133	Not significant
f. Type of anesthesia	0,056	0,687	1,058	0,803	1,394	Not significant
Constant	2,456	0,000	11,657			

DISCUSSION

Analysis of Respondent Characteristics

The demographic data obtained from the questionnaire provide important context for understanding this study. A total of 80,3 % of respondents were adults within the productive age range, indicating that most surgical patients in the studied health facilities were in their productive years. This has important implications for preoperative education strategies since adult patients generally have better cognitive abilities to receive and process medical information compared to elderly patients.

The gender distribution showed a predominance of male patients (66,5 %) compared to females (33,5 %). This phenomenon aligns with previous studies suggesting that women tend to be more proactive in seeking

healthcare services and exhibit higher levels of anxiety related to medical procedures.⁽²⁰⁾ In the context of preoperative education, gender differences require tailored communication approaches, as women are generally more responsive to interactive and empathetic health education.

Regarding educational level, 45 % of respondents were high school graduates, while the remainder varied from elementary to higher education levels. This educational profile is directly relevant to patients' ability to understand complex medical information. Although education level is often considered a key predictor of health literacy, this study suggests that other factors may play a more dominant role in influencing preoperative knowledge.

Employment status showed that 64,3 % of respondents were unemployed, including housewives, students, and retirees. This profile is interesting because theoretically, unemployed patients have more free time to receive preoperative education. However, socioeconomic factors and access to health information may act as mediating variables. Additionally, 72,3 % of respondents had no prior surgical experience, indicating the need for comprehensive education about the surgical procedures they would undergo.

Overview of Preoperative Readiness

Preoperative knowledge and readiness are essential components of surgical patient care that significantly impact clinical outcomes and patient satisfaction. Adequate preparation before surgery can reduce anxiety, minimize postoperative complications, and accelerate patient recovery. This study aims to identify and analyze factors influencing patients' preoperative knowledge and readiness in several hospitals across West Java, including both general and specialized hospitals.

Preoperative education has become a standard requirement in healthcare facilities. However, the effectiveness of this education is often influenced by various demographic, clinical, and psychosocial factors. This study employed a multivariate analysis approach to identify variables statistically associated with preoperative knowledge, thereby providing evidence-based recommendations for improving the quality of preoperative nursing care.

The analysis of average preoperative preparation components revealed interesting patterns regarding which aspects were best and least prepared by patients. The fasting preparation component had the highest average score (91,38), indicating that patients had the best understanding of preoperative fasting rules. This phenomenon may be explained by the fact that fasting education is typically emphasized due to its direct link with patient safety during anesthesia. Hospitals generally implement the "NPO after midnight" rule, meaning "nothing by mouth after midnight," to reduce the risk of gastric content aspiration during anesthesia or invasive procedures. Studies have reported average fasting durations of 13,5 hours for solids and 9,6 hours for liquids. However, prolonged fasting provides no significant benefits and instead leads to patient discomfort and complaints.^(21,22,23,24,25)

The physical preparation component scored the lowest (80,16), indicating weaknesses in areas such as breathing exercises, effective coughing techniques, early mobilization, and skin preparation at the incision site. Low patient understanding in this area may stem from the complexity of information, lack of practical demonstration, and the perception that physical preparation is less important than fasting. Recent studies emphasize the importance of physical preoperative education. The Teach-Back method in preoperative mobilization education has been proven to improve postoperative mobility, accelerate recovery, and enhance patient satisfaction.⁽²⁶⁾ Preoperative inspiratory muscle training and pulmonary physiotherapy have also been shown to reduce postoperative complications in upper abdominal surgery.^(27,28) Furthermore, early mobilization within 24 hours post-surgery reduces hospital stay and morbidity rates.^(29,30)

Comparisons of preoperative readiness levels among hospitals revealed significant variations, with Hospital A achieving the highest score (87,33) compared to other hospitals. This difference may reflect variations in preoperative education protocols, available resources, or patient characteristics in each facility. As a teaching hospital, Hospital A may implement more structured and rigorous educational programs, contributing to higher patient readiness. Therefore, strengthening education strategies through practical demonstrations, interactive materials, and comprehension monitoring can help close the gap in physical preparation and contribute to better clinical outcomes.^(2,31)

A deeper analysis of preoperative readiness components showed that the psychological aspect had an average of 82,27 %, which is high but still below fasting preparation. This indicates that although patients have received information about the procedure and its psychological impact, there remains room for improvement in managing patient anxiety and expectations. This finding aligns with studies showing that preoperative anxiety remains a significant issue despite standard education being provided.^(3,32)

The Relationship Between Respondent Characteristics and Preoperative Knowledge

The age variable showed a negative regression coefficient (B) with an odds ratio (OR) of 0,443 and a 95 % confidence interval (CI) ranging from 0,234 to 0,838. This indicates that each increase in age category is

associated with a decreased likelihood of having good preoperative knowledge. In other words, as patients get older, they tend to have lower levels of preoperative knowledge compared to younger patients. This finding is consistent with previous studies showing that advanced age is a risk factor for poor health literacy and decreased cognitive function, both of which can affect the processing of medical information.⁽³³⁾ Moreover, elderly patients tend to have less experience with digital technology, which is increasingly used in modern health education. Age is an important predictor of patient knowledge and satisfaction regarding preoperative education. A 2025 study found that elderly patients were 2,3 times more likely to experience postoperative complications, partly due to inadequate preoperative understanding.⁽³³⁾ These results are consistent with our findings, which demonstrated a significant negative relationship between age and preoperative knowledge.

The gender variable showed an interesting result with an OR of 0,844 (95 % CI: 0,715-0,996). Assuming males as the reference category, an OR < 1 suggests that females are more likely to have good preoperative knowledge compared to males. This finding aligns with research indicating that women are generally more proactive in seeking health information and exhibit higher levels of anxiety regarding medical procedures, which motivates them to pay closer attention to preoperative instructions.⁽³⁴⁾ However, it is important to note that this relationship is complex and may be influenced by sociocultural factors that shape gender roles within the healthcare context.

A history of previous surgery also showed a significant relationship with preoperative knowledge (OR = 0,717, 95 % CI: 0,540-0,952). Patients who had undergone surgery before tended to have better preoperative knowledge, likely due to their direct experience with perioperative processes. This previous experience provides a stronger reference framework for understanding new information and reducing uncertainty related to surgical procedures. These findings are supported by studies showing that patients' previous experiences with the healthcare system are important predictors of their understanding and engagement in subsequent care.⁽³⁵⁾

The education level, which theoretically is expected to be a strong predictor of health knowledge, did not show a significant relationship in this multivariate analysis. This suggests that in the context of preoperative knowledge, factors such as direct experience (surgical history) and basic demographic characteristics (age and gender) may play a more dominant role than formal educational attainment. Several studies have found a positive association between education level and health literacy, but this relationship is often mediated by factors such as health literacy skills, access to information sources, and social support. These findings challenge the common assumption that patients with higher education automatically possess better health understanding and highlight the importance of innovative, engaging, and personalized educational approaches tailored to individual patient characteristics.^(36,37)

This study has some limitations. The cross-sectional design prevents establishing causal relationships between variables. The use of accidental sampling may introduce selection bias and limit generalizability. In addition, data were obtained through self-reported questionnaires, which may lead to response bias. Future studies should consider probability sampling and longitudinal designs to strengthen causal inference.

CONCLUSIONS

The main factors influencing preoperative knowledge and readiness among patients in several hospitals across West Java indicate that age, gender, and previous surgical history are significant predictors of preoperative knowledge, whereas formal education level does not demonstrate a statistically significant association. These findings underscore the importance of adopting a personalized approach in preoperative education that takes into account patients' demographic characteristics and individual experiences. The physical preparation component was identified as the area with the lowest level of patient understanding, highlighting the need to enhance educational quality in this aspect. Furthermore, performance differences among hospitals emphasize the necessity for standardization of preoperative education protocols to ensure consistent service quality across healthcare facilities.

REFERENCES

1. Fekede MS, Abebe BA, Awol MA. Assessment of adherence to preoperative fasting guidelines and associated patient discomfort in adult elective surgical patients in public hospitals of Addis Ababa, Ethiopia: a multicenter cross-sectional study. *IJS Short Reports*. 2022;7(4):e60. <http://dx.doi.org/10.1097/SR9.0000000000000060>
2. Wang Y, Huang X, Liu Z. The effect of preoperative health education, delivered as animation videos, on postoperative anxiety and pain in femoral fractures. *Front Psychol*. 2022;13:1-8. doi:10.3389/fpsyg.2022.881799
3. Bazezew AM, Nuru N, Demssie TG, Ayele DG. Knowledge, practice, and associated factors of preoperative patient teaching among surgical unit nurses at Northwest Amhara Comprehensive Specialized Referral Hospitals, Northwest Ethiopia, 2022. *BMC Nurs*. 2023;22(1):1-13. <https://doi.org/10.1186/s12912-023-01175-2>

4. Alshurtan KS, Elsaid RM, Alabdulaali AK, Alanazi WF, Alruwaili RF. Community's knowledge and attitude of pre-operative fasting in the Kingdom of Saudi Arabia, 2022. *Signa Vitae*. 2023;19(6):127-36. doi:10.22514/sv.2023.106
5. Wulandari IS, Megasari AL, Cahyanto EB, Mulyani S, Musfiroh M. Optimalisasi kepatuhan puasa pra operasi melalui aspiration simulation devices. *Jurnal Masyarakat Mandiri*. 2024;8(5):1-10. <https://doi.org/10.31764/jmm.v8i5.25979>
6. Suhadi S, Hafiduddin M, Julfatwiah AR. Hubungan lama puasa dengan kejadian mual muntah pada pasien pasca spinal anestesi. *Jusika*. 2021;5(2):111-20. <https://doi.org/10.57214/jusika.v5i2.635>
7. Akbuğa GA, Başer M. Effect of preoperative oral liquid carbohydrate intake on blood glucose, fasting-thirst, and fatigue levels: a randomized controlled study. *Braz J Anesthesiol*. 2021;71(3):247-53. <https://doi.org/10.1016/j.bjane.2021.02.053>
8. Rahman S. Efektivitas mandi chlorhexidine sebelum operasi elektif ortopedi dalam mencegah infeksi daerah operasi. *J Kedokt Syiah Kuala*. 2019;19(1):42-4. <https://doi.org/10.24815/jks.v19i1.18050>
9. Aggarwal AN, Agarwal R, Dhooria S, Prasad KT, Sehgal IS, Muthu V. Impact of fingernail polish on pulse oximetry measurements: a systematic review. *Respir Care*. 2023;68(9):1271-80. doi:10.4187/respcare.10399
10. Azer M, Chandrasekar N, Jacqueline J, Lai V, Yang JJ, Zhuo T, et al. Patient compliance with preoperative instructions prior to an elective procedure: a quality improvement audit. *Anaesth Intensive Care*. 2023;51(3):226-8. <https://doi.org/10.1177/0310057X221141104>
11. Noprianty R, Mutmainah I, Wahdana W, Wahyudi FM. Compliance with the implementation of pre-anesthesia assessment toward prevention of adverse events in the operating room. *Gac Méd Caracas*. 2025;133(1):48-59. doi:10.47307/GMC.2025.133.1.5
12. Noprianty R, Putri RA, Manuopo H. Compliance in filling surgical safety checklist at the central surgical installation. *JAI*. 2024;16(3):208-17. <https://doi.org/10.14710/jai.v0i0.61515>
13. Noprianty R, Wahyudi FM, Valiani C. Pemenuhan kebutuhan dasar manusia II. 1st ed. Bandung: Media Sains Indonesia; 2023. eISBN 978-623-195-640-8.
14. Noprianty R, Pramithasari ID, Rumondang PR, Legawati S, Santoso R, Rifai SI, et al. Keselamatan pasien (Patient Safety) di Rumah Sakit. Magelang: PT Adikarya Pratama Globalindo; 2024. 194 p.
15. Mistri IU, Badge A, Shahu S. Enhancing patient safety culture in hospitals. *Cureus*. 2023;15(12):1-7. doi:10.7759/cureus.51159
16. Wah Goh LP, Marbawi H, Goh SM, Abdul Asis AK, Gansau JA. The prevalence of hospital-acquired infections in Southeast Asia (1990-2022). *J Infect Dev Ctries*. 2023;17(2):139-46. doi:10.3855/jidc.17135
17. Fauziyyah R, Basabih M. Patient safety culture in public general hospitals: literature review. *J Adm Rumah Sakit Indones*. 2023;9(2). doi:10.7454/arsi.v9i2.6937
18. Goldenhart AL, Nagy H. Assisting patients with personal hygiene. *StatPearls*. 2025. <https://www.ncbi.nlm.nih.gov/books/NBK563155/>
19. National Institute for Health and Care Excellence. Surgical site infections: prevention and treatment. Clinical Guideline 74. London: NICE; 2020. www.nice.org.uk/guidance/ng125
20. Kefelegn R, Tolera A, Ali T, Assebe T. Preoperative anxiety and associated factors among adult surgical patients in public hospitals, eastern Ethiopia. *SAGE Open Med*. 2023;11. <https://doi.org/10.1177/20503121231211648>
21. Bekele B, Hildingsson I, Johansson A. Nil per os in the emergency department: a quantitative study on fasting before presumptive emergency surgery. *J Emerg Nurs*. 2025;51(4):675-83. <https://doi.org/10.1016/j.jen.2025.02.014>

22. Black MKM, Lupa MC, Lemley LW, Dreesen EB, Deaton AM, Williams RMW III. Things we do for no reason: NPO after midnight. *J Hosp Med.* 2021;16(6):368-70. doi:10.12788/jhm.3537
23. Ramírez-Pimiento JD, Diaztagle-Fernández JJ. Nil per os after midnight: history of preoperative fasting. *Colomb J Anesthesiol.* 2025;53(1):1-10. <https://doi.org/10.5554/22562087.e1134>
24. Kurti F, Xinxo S, Babameto A, Vyshka G. Nil per os or enteral nutrition in mild and moderately severe acute pancreatitis: a case series. *Open Access Maced J Med Sci.* 2022;10(B):2039-43. <https://doi.org/10.3889/oamjms.2022.10653>
25. Peterson B, Nowacki AS, Ulintz A, Mace SE. Procedural sedation in the emergency department: Does nil per os status matter? *West J Emerg Med.* 2025;26(2):200-9. doi:10.5811/westjem.18561
26. Arslan E, Özkan S. Effects of preoperative mobilization education using the teach-back method on patient outcomes after gynecological surgery: a randomized controlled study. *Nurs Health Sci.* 2025;27(2):1-12. <https://doi.org/10.1111/nhs.70151>
27. Boden I, Skinner EH, Browning L, Reeve J, Anderson L, Hill C, et al. Preoperative physiotherapy for prevention of respiratory complications after upper abdominal surgery: pragmatic, double-blind, multicentre randomized controlled trial. *BMJ.* 2018;360:j5916. <http://dx.doi.org/10.1136/bmj.j5916>
28. Katsura M, Kuriyama A, Takeshima T, Fukuhara S, Furukawa TA. Preoperative inspiratory muscle training for postoperative pulmonary complications in adult patients undergoing cardiac and major abdominal surgery. *Cochrane Database Syst Rev.* 2015;(2). doi:10.1002/14651858.CD010356.pub2
29. Öztaş İ, Yava A, Koyuncu A. The effect of early mobilization on constipation after abdominal surgery: a systematic review. *J Surg Med.* 2024;8(9):1-? (sin paginación disponible). <https://doi.org/10.28982/josam.7832>
30. Willner A, Teske C, Hackert T, Welsch T. Effects of early postoperative mobilization following gastrointestinal surgery: systematic review and meta-analysis. *BJS Open.* 2023;7(5):1-10. <https://doi.org/10.1093/bjsopen/zrad102>
31. Fecher-Jones I, Grimmett C, Ainsworth B, Wensley F, Rossiter L, Grocott MPW, et al. Systematic review and narrative description of outcomes of group preoperative education before elective major surgery. *BJA Open.* 2024;10:100286. <https://doi.org/10.1016/j.bjao.2024.100286>
32. Almutary H, Almashi A. Preoperative patient education: perceptions and actual practice among nurses working in surgical units. *SAGE Open Nurs.* 2024;10. doi:10.1177/23779608231226090
33. Paige Wyatt H, Gursky AK, Chinta SR, Shah AR, Ceradini DJ, Rodriguez ED. Impact of age on complications and outcomes in gender-affirming surgery: analysis of the National Surgical Quality Improvement Program Database. *Plast Reconstr Surg Glob Open.* 2025;13(S2):79. doi:10.1097/01.GOX.0001114472.07165.aa
34. Getahun SY, Edmealem A, Eshetu AS, Andargie EM, Adem YF. Factors influencing satisfaction with preoperative education among elective surgical patients at Dessie Hospital, Ethiopia, 2024: a cross-sectional study. *Langenbecks Arch Surg.* 2025;410(1):1-10. <https://doi.org/10.1007/s00423-025-03802-9>
35. Ataro BA, Geta T, Endirias EE, Gadabo CK, Bolado GN. Satisfacción del paciente con la atención de enfermería preoperatoria y factores asociados en procedimientos quirúrgicos. *BMC Nurs.* 2024;23(1):2-13. <https://doi.org/10.1186/s12912-024-01881-5>
36. Barret H, Langlais T, Laumonerie P, Faruch M, Mansat P, Bonneville N. Which preoperative factors influence patients' short-term subjective assessment after rotator cuff repair? *Orthop Traumatol Surg Res.* 2023;109(2):103490. <https://doi.org/10.1016/j.otsr.2022.103490>
37. Ali Z, Ahsan Z, Liaqat N, Din I. Bridging the gap: evaluation of preoperative patients' education by comparing expectations and real perioperative experiences. *BMC Health Serv Res.* 2024;24(1). <https://doi.org/10.1186/s12913-024-11388-z>

INFORMED CONSENT STATEMENT

All participants provided written informed consent after receiving comprehensive information about the study's objectives, procedures, potential benefits, and associated risks. For participants under 18 years old, written consent was obtained from their parents or legal guardians.

ETHICS STATEMENT

This study obtained ethical approval from the Health Research Ethics Committee of Bhakti University, with approval number 272/09.KEPK/BKU/IX/2025, in accordance with the ethical standards outlined by the World Health Organization (WHO) and the Council for International Organizations of Medical Sciences (CIOMS).

FINANCING

No financing.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Richa Noprianty.

Methodology: Richa Noprianty.

Software & Data analysis: Ria Indriani.

Research & Data curation: Berliani Fashi Nurpadilah.

Supervision & Validation: Cici Valiani.

Project management & Resources: Cici Valiani.

Writing - original draft: Richa Noprianty.

Writing - proofreading and editing: Richa Noprianty.