

ORIGINAL ARTICLE

BRIDGING KNOWLEDGE AND PRACTICE IN SURGICAL WOUND CARE: A CROSS-SECTIONAL STUDY AMONG NURSES AT A MALAYSIAN TERTIARY HOSPITAL

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ABSTRACT

Surgical wound care is a crucial aspect of postoperative nursing. In other words, this is important for recovery, complications, and patient satisfaction. The purpose of this study was to evaluate the knowledge and practice of nurses in the surgical ward of Sabah Women and Children's Hospital regarding surgical wound management. A cross-sectional study design was employed from July to December 2024, utilising simple random sampling to select 60 Nurses. A self-developed, validated questionnaire in English was used to collect the data. It consisted of three sections, including demographics, knowledge, and practice. The experts validated the instrument, which showed high internal consistency (Cronbach's alpha > 0.80). The data was analysed using SPSS version 24. The analysis revealed that most respondents were female (96.7%), with a mean age of 29.4 years and an average of 7.3 years of clinical practice experience. The general average knowledge score achieved was 3.8 (SD = 0.6), based on the highest scores, indicating a strong understanding of theoretical concepts related to infection recognition and wound assessment. Nonetheless, notable gaps in knowledge were identified regarding moist wound healing and the use of topical antiseptics. The practice scores were generally high, with a mean of 4.1 and a standard deviation of 0.5. Most mothers demonstrated a high level of compliance with aseptic technique and hand hygiene. However, the use of separate tools on infected wounds was inconsistent. The results highlighted the need for ongoing clinical training, adherence to established procedures, and the implementation of regular audit mechanisms for surgical wound care. This study provides a basis for identifying and informing institutional policies and targeted nursing education.

Keywords: *Surgical wound care, nursing practice, wound infection, knowledge assessment, aseptic technique*

INTRODUCTION

As nurses, caring for surgical wounds is a fundamental aspect of the inpatient role, which has a significant impact on patient outcomes¹. Efficient wound management reduces the risk of complications after surgery, specifically surgical site infections (SSIs), wound dehiscence, and delayed healing. All of these are primary contributors to morbidity, prolonged hospitalisation, and costs to the healthcare system². SSI remain among the most common hospital-acquired infections globally, and these account for a large proportion of health care-associated morbidity³. The surgical ward nurses take the lead in performing wound assessments, changing dressings, and applying other aseptic techniques to promote healing and prevent complications⁴.

Nurses face challenges in the surgical ward. Patients leave, and others come in. Patients have more complex wounds after surgery. Often, care must be given quickly. Earlier studies have shown that the effectiveness of wound care interventions largely depends on the clinical knowledge of nurses and their consistency in using evidence-based practice^{5,6}. According to various international and regional studies, there

is inconsistency in wound care practices within organisations, despite nurses being centrally involved in wound management. The factors most often cited for discrepancies⁷ included limited knowledge, inadequate supervision in the clinic, lack of regular refresher training, and heavy workloads.

In Malaysia, the Ministry of Health has established clinical practice guidelines for wound care and infection prevention to standardise nursing practices and improve patient safety. Nevertheless, adherence to these guidelines among nurses across healthcare institutions remains inconsistent. Previous studies have reported that despite the availability of established protocols, some nurses demonstrate only moderate levels of knowledge and are unable to effectively translate guideline recommendations into routine clinical practice^{8,9}. Inadequate adherence to wound care protocols may increase the risk of wound infection, delayed healing, and other postoperative complications among patients. Additionally, wound dressing practices are influenced by several factors, including years of clinical experience, access to continuous professional training, and the availability of institutional support systems^{10,11}. In surgical

wards, where wound management requires technical competence and timely clinical decision-making, nurses' knowledge and practical skills play a crucial role in ensuring optimal patient recovery and preventing healthcare-associated infections

At the Sabah Women and Children's Hospital, a major tertiary referral centre in Sabah, nurses care for a variety of surgical patients, including post-operative obstetric and gynaecological patients. However, there was no published data on the existing knowledge and practical wound care competence of surgical ward nurses in the locality. Due to the institutional caseload and risk of wound-related complications, there was a ready appraisal of the surgical wound care delivery from the nursing perspective.

The purpose of this study was to assess the level of knowledge and practice regarding surgical wound care among nurses working in the surgical ward at Sabah Women and Children's Hospital. Understanding nurses' competency in wound care is essential to ensure adherence to institutional protocols and to support the delivery of safe and effective postoperative patient care.

METHODS

A cross-sectional study was conducted from July 1, 2024, to December 26, 2024, at the surgical ward of Sabah Women and Children's Hospital, Kota Kinabalu, Sabah. This hospital is the main tertiary referral centre for women's and children's health in East Malaysia. This research aimed to know the knowledge and practice of nurses regarding surgical wound care. The sample size was calculated using a sample size calculator for a single proportion, with a 95% confidence interval, 5% precision, and a 50% population proportion, as there was a lack of previous local prevalence data for the condition. The minimum sample size for nurses was calculated to be 60, assuming a 10% non-response rate. Eligible participants were limited to the surgical ward, where registered nurses specifically evaluated them. Nurses not on duty or on extended leave were excluded. Simple random sampling was employed to select participants from the list of eligible individuals, ensuring that every person had an equal chance of being selected.

Ethical approval for this study was obtained from the National Medical Research Register (NMRR) under the reference NMRR ID-18-740-40411. Let them participate at will and obtain written consent. A brief explanation of the research objective, data collection procedure, potential risks, and assurances of confidentiality was provided to each participant before data collection. They were assured that their employment and/or professional evaluations would not be affected if they chose not to

participate. It took each participant between 20 and 30 minutes to complete the questionnaire, which was conducted during the non-clinical hour.

The research instrument is a self-developed questionnaire in the English language, created based on a thorough review of the literature and clinical practice in Malaysia. The first part (A section) refers to age, gender, level of education, and year of clinical experience for demographic data capture. The second part (B section) outlines the knowledge required for caring for surgical wounds, including aseptic techniques, factors that affect wound healing, antiseptic solutions, and methods of wound dressing. The final part (C section) covers actual practices in dealing with wounds, including hand hygiene, the frequency of dressing changes, and compliance with infection control measures, among other topics. The 5-point Likert scale was used to rate items related to knowledge and practice. The scale ranged from 1 (strongly disagree/never) to 5 (strongly agree/always)¹². We used the Likert scoring system to evaluate trends rather than frequencies as a general interpretative tool to gauge the behaviour and understanding levels of various staff members with different work levels.

A panel of six experts, comprising two nurse educators, two infection control nurses, and two senior ward sisters, performed content validation of the questionnaire. Each item was examined for relevance, clarity and representativeness. Ten nurses from nonsurgical wards assessed the face validity of the questionnaire, with an Item-Face Validity Index (I-FVI) of greater than 0.90, indicating the items could be read and understood with ease. The reliability was checked through a pilot study done on 10 nurses from a different ward. Results showed good reliability, with Cronbach's alpha scores of 0.83 for the knowledge domain and 0.87 for the practice domain.

The researchers analysed the data using SPSS version 24. Descriptive statistics were used to summarise the demographic characteristics and responses of the participants in each domain. Numerical data were expressed as means and standard deviations (SD). Categorical data was expressed in frequencies and percentages. Demographic group comparisons were conducted (e.g., qualification level, years of experience) using between-group or independent sample t-tests at a significance level of $p < 0.05$.

Individual exit questionnaires were coded to be anonymous, and no personal identifying information was collected; therefore, no names were recorded to protect participant confidentiality. The locked cabinet containing all copies was accessible only to the lead investigator. Digital records were stored in a

password-protected folder. After completing the data analysis, all the study materials will be destroyed in keeping with ethical research practice and institutional policy. The research was conducted in accordance with the Declaration of Helsinki and national ethical principles. The research was conducted with the utmost care and complete transparency.

This methodological framework ensured a reliable and ethically sound approach to investigating surgical wound care practices among nurses. While limited to a single hospital, the validated instrument, appropriate sampling strategy, and robust ethical protocol make the findings applicable to similar inpatient care settings and can serve as a baseline for future interventions and policy development in nursing wound care standards.

RESULTS

A total of 60 nurses from the surgical ward of Sabah Women and Children's Hospital in Malaysia participated in this study. As shown in Table 1, the majority of respondents were female ($n = 58$, 96.7%), which reflects the gender distribution commonly observed in the Malaysian nursing workforce. The mean age of the participants was 29.4 years ($SD = 4.8$), with most respondents aged between 26 and 35 years. Regarding

educational background, most respondents held a diploma in nursing ($n = 42$, 70.0%), while the remainder held a bachelor's degree in nursing. The respondents had an average clinical experience of 7.3 years ($SD = 2.5$), indicating that many nurses had accumulated sufficient practical exposure in surgical ward settings. These demographic characteristics suggest that the nursing staff in the study setting consisted of relatively young professionals with a moderate level of clinical experience, which is typical of the workforce composition in tertiary healthcare institutions.

Table 2 presents respondents' knowledge scores regarding care for surgical wounds. The mean score for knowledge of signs and symptoms of wound infection was the highest (Mean = 4.2; $SD = 0.5$), indicating that the respondents had a good basic understanding. The majority of the participants were able to recognise signs of infection, including redness, purulent discharge, local heat and delayed healing. The second-highest score was for the understanding of the effect of wound size and anatomical location on healing (Mean = 4.1, $SD = 0.5$). This denotes awareness of physiological factors affecting clinical judgement (of a wound) in wound care.

Table 1: Demographic Characteristics of Respondents (N = 60)

Variable	n (%) or Mean $\pm$ SD
Age (years)	29.4 $\pm$ 4.8
Gender	
• Female	58 (96.7)
• Male	2 (3.3)
Educational Level	
• Diploma	42 (70.0)
• Bachelor Degree	16 (26.7)
• Post-basic Certificate	2 (3.3)
Years of Experience (years)	7.3 $\pm$ 2.5

Table 2: Knowledge Score Results on Surgical Wound Care

Item	Mean $\pm$ SD
Knowledge of wound infection signs	4.2 $\pm$ 0.5
Knowledge of moist wound healing	3.6 $\pm$ 0.7
Awareness of topical antiseptics	3.4 $\pm$ 0.6
Understanding wound size/location impact	4.1 $\pm$ 0.5
Overall knowledge score	3.8 $\pm$ 0.6

The results of this study showed that nurses demonstrated an adequate level of knowledge regarding surgical wound care. However, knowledge of moist wound healing principles was only moderate (Mean = 3.6, $SD = 0.7$), indicating that some aspects of wound care knowledge may still require improvement to optimise re-epithelialisation and minimise wound scarring. The lowest knowledge score was related to the use of topical antiseptic agents in wound

management (Mean = 3.4, $SD = 0.6$). This may reflect limited exposure to advanced wound care products or insufficient training in newer wound management approaches within the clinical setting. Overall, the mean knowledge score was 3.8 ($SD = 0.6$), suggesting that while the nurses possessed a satisfactory level of knowledge, certain areas may benefit from further reinforcement through continuous professional education.

According to Table 3, nurses' practice scores were generally higher than their knowledge scores, suggesting that routine wound care procedures had been well integrated into daily clinical practice. The highest practice score was observed for adherence to aseptic technique during wound dressing (Mean = 4.4, SD = 0.4), indicating strong compliance with infection prevention standards and procedural guidelines in the surgical ward. Similarly, proper hand hygiene before and after dressing procedures was rated highly (Mean = 4.3, SD = 0.5), reflecting consistent adherence to fundamental infection control measures among the nursing staff.

However, slightly lower scores were observed for the frequency of wound dressing changes (Mean = 3.9, SD = 0.6) and the use of separate equipment for infected wounds (Mean = 3.6, SD = 0.7). These findings may be influenced by practical considerations such as physician-directed dressing schedules, hospital policies, or the availability of sterile supplies. Such factors may affect strict adherence to certain

procedural elements despite generally good clinical practice.

The overall mean practice score was 4.1 (SD = 0.5), indicating that nurses generally demonstrated good compliance with wound care procedures. Nevertheless, the discrepancy between knowledge and practice scores suggests that some clinical practices may be performed routinely without full theoretical reinforcement.

To further explore this relationship, a bivariate analysis using Pearson correlation was conducted to examine the association between nurses' knowledge and practice scores. The results revealed a moderate positive correlation between knowledge and practice ($r = 0.38$, $p = 0.004$), indicating that higher levels of knowledge were associated with better wound care practices among nurses. This finding highlights the importance of strengthening nurses' theoretical understanding through ongoing education and training to further enhance adherence to evidence-based wound care practices.

Table 3: Practice Score Results on Surgical Wound Care

Item	Mean $\pm$ SD
Adherence to aseptic technique	4.4 $\pm$ 0.4
Proper hand hygiene before and after dressing procedures	4.3 $\pm$ 0.5
Frequency of dressing change	3.9 $\pm$ 0.6
Use of separate tools for infected wounds	3.6 $\pm$ 0.7
Overall practice score	4.1 $\pm$ 0.5

Table 4: Correlation Between Knowledge and Practice Scores

Variables	r	p-value
Knowledge score vs Practice score	0.38	0.004

DISCUSSION

This study was conducted to determine the knowledge and practice of nurses on surgical wound care at the surgical ward of Sabah Women and Children's Hospital. The results provided valuable insights into the strengths and gaps in wound management by frontline nursing staff in a high-acuity clinical setting. Nurses were found to possess a commendable level of knowledge and practice overall, particularly in areas such as infection identification, aseptic technique, and hand hygiene. However, there were significant gaps in knowledge areas related to moist wound healing principles and topical antiseptics, as well as in practice areas involving the separation of materials for infected and non-infected wounds^{13,14}.

Surgical Wound Care Knowledge of Nurses was 3.8 ± 0.6 . This means that most nurses have an average level of knowledge. Surgical nurses typically possess a moderate to high level of

knowledge in wound management¹⁵; however, they may lack a considerable level of expertise on specific topics without adequate training. The current study demonstrated that, due to their familiarity with routine post-operative care, nurses possessed a strong understanding of infection symptoms and the impact on wound sites^{16,17}. However, lower scores in topical agents and moist wound therapy suggest a fragmented awareness of the evidence, possibly because many clinicians have either not used the updated protocols for wound care or have not taken continuing education.

The practice score (4.1 ± 0.5) showed near-perfect compliance with core wound care procedures, aseptic technique, and hand hygiene. Two studies support this conclusion, suggesting that experienced nurses typically implement infection control practices effectively^{18,19}. The relatively low score of 3.6 ± 0.7 for the use of separate tools for infected wounds suggests that there may be resource

constraints, operational failures, or varying adherence in high patient loads. Even though institutional guidelines recommend protocols tailored to distinct infection cases, deviations may occur based on the availability of sterilisation resources and clinical discretion, especially in resource-constrained or time-limited circumstances.

One of the notable findings in this study was the variation in performance among respondents, even those with extensive clinical experience. This supports what Cleary and the team stated, that you cannot simply gain competency through clinical experience, as expertise in areas like wound management requires more than that^{20,21}. The findings of this study reveal the disparity between the knowledge and practice of nurses at a specific hospital. Nurses were unable to apply their knowledge in practice, as it was learned on a routine basis at the ward. Nurses teach it by observing them do it. It highlights the necessity for regular competency assessments, as well as formal clinical audits, to ensure that the practice is aligned with the best available evidence.

It is essential to highlight the crucial role of institutional support in maintaining high standards of wound care^{22,23}. The Ministry of Health Malaysia has published wound care guidelines, although they may not have been disseminated to all facilities. At tertiary hospitals like Sabah Women and Children's Hospital, with high surgical volumes, wound care champions or clinical educators embedded within the nursing team can work to improve the uptake of guidelines and compliance through training courses, mentoring, and immediate feedback.

The study also impacts clinical governance and the training of nurses. Regular in-service training and the integration of evidence-based wound care modules into nursing curricula should fill the existing gaps in knowledge²⁴. Nurses may benefit from workshops on new wound care technologies, topical therapies, and case-based learning, as these can facilitate more informed decision-making²⁵. Additionally, a system to clinically reflect and document wound healing outcomes may guide adherence to these measures, while also helping to identify areas that require training.

Though the findings reveal important insights, the study has several limitations. To begin with, the study took place in a single hospital, which may limit its generalizability to other healthcare facilities in Sabah or Malaysia. Another concern is that asking participants questions through self-reporting can lead to possible response bias²⁶. This means participants can rate their use of particular best practices very highly, even though their uptake may be low^{27,28}. The study's cross-sectional design captured only a snapshot of the nurses' knowledge and practices, and did

not account for the fluid nature of the clinical environment and the diverse workload²⁹. The findings may be enhanced by future research involving direct observation, multicentre comparisons, or longitudinal assessments.

Despite these shortcomings, this study makes a significant contribution to our understanding of wound care practices in Malaysian tertiary care institutions^{30,31}. They believe there is a need for ongoing education, better access to current clinical information and an organisational commitment to maintaining high standards in surgical wound care. The study sets the stage for evidence-informed interventions that can improve patient outcomes and enhance clinical practice in surgical nursing by identifying the perceived challenges of surgical nurses.

CONCLUSIONS

The present study assessed the knowledge and practices of nurses at Sabah Women and Children's Hospital regarding surgical wound care. The findings indicate that although nurses demonstrated generally satisfactory levels of knowledge and practice, certain gaps remain in specific areas, particularly in the understanding of moist wound healing principles and the use of antiseptic agents in wound management. These findings highlight the need to strengthen nurses' theoretical understanding of contemporary wound care concepts. Overall, the study suggests that improving knowledge through continuous professional education may further enhance nurses' adherence to evidence-based wound care practices. The results of this study may serve as a baseline for healthcare institutions in planning strategies to strengthen clinical competency and support the delivery of high-quality postoperative wound care in tertiary healthcare settings.

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