



Knowledge and practice of wound care among nurses in Jigme Dorji Wangchuck National Referral Hospital in Bhutan

Chewang Dorji¹, Dipsika Rai¹, Thinley Dema¹, Sangay Chozom¹, Wang Gyeltshen¹, Kinley Tshering¹, Rinchen Pelden¹, Pema Choden¹, Tashi Choden¹

¹Jigme Dorji Wangchuck National Referral Hospital (JDWNRH)

Corresponding author:

Chewang Dorji

chewangd@jdwnrh.gov.bt

ABSTRACT

Wound care is a fundamental aspect of nursing that directly influences patient recovery, safety, and quality of life. Despite its importance, global research highlights a consistent gap between nurses' wound care knowledge and their clinical practice. In Bhutan, however, this issue has received limited research attention. This study aims to assess the wound care knowledge and dressing practices of Bhutanese nurses, identify knowledge and practice gaps, and provide baseline evidence to inform future training and policy interventions. A descriptive cross-sectional study was conducted among 148 nurses (69% female and 31% male) from 12 wards of a Bhutanese hospital. Participants were selected using Yamane's formula and convenience sampling (ref). Data were collected between October and December 2021 using a validated self-administered questionnaire to assess knowledge and a direct observation checklist to evaluate wound care practices. Data were analyzed using Epi-Data software with descriptive statistics and correlation analysis, and a significance level of $p < 0.05$. While 86% demonstrated excellent wound

Keywords: Wound care, Nursing practice, Knowledge-practice gap, Evidence-based nursing, Bhutan, Wound management, Clinical competence

INTRODUCTION

Wound care is a fundamental aspect of nursing practice that spans all clinical disciplines and affects patients across different stages of life. It is estimated that approximately 1-2% of the population worldwide has a wound at any given time, although the underlying causes may vary (Falanga et al., 2022). Furthermore, quality of life is significantly impacted by the presence of chronic wounds (Sen, 2021) as they impose a significant clinical and economic burden on healthcare systems. Researchers found that inadequate wound care can lead to delayed healing, increased complications, prolonged hospital stays, and elevated morbidity and mortality rates (Alla et al., 2018; Hasan et al., 2025). As the prevalence of chronic wounds continues to rise, the associated financial strain on health systems intensifies (Sharma et al., 2024), and thus, wound management remains a resource intensive process. In the United Kingdom, the annual cost of wound management has been estimated at between £4.5 and £5.1 billion, reflecting its substantial economic impact (Guest et al., 2015).

Wound care constitutes one of the largest portions of the nursing workload in daily care, representing up to 65% of community nurses' workload and about 50% of primary care nursing responsibilities (Welsh, 2018). Evidence-based wound care enhances healing outcomes, reduces hospital stays, reduces costs, improves patient safety (Lindsay et al., 2017) and supports evidence-based decision making (Adeline & Kathleen, 2022). Existing literature reports mixed findings regarding nurses' knowledge and practice in wound management. Some studies have reported moderate to high levels of wound care knowledge

with scores ranging from 57.8% to 87%, (Bilal et al., 2018) and have shown that knowledge generally improves with increasing years of clinical experience (Tegegne et al., 2022). However, other studies indicate that adequate knowledge does not necessarily lead to effective clinical practice, revealing a persistent gap between knowledge and practice (Builders et al., 2020; Kielo et al., 2020). Study conducted in Finland and Nigeria reported that nurses with good theoretical knowledge often fail to adhere consistently to best wound care practices (Builders et al., 2020; Kielo-Viljamaa et al., 2022). Similarly, a study on pressure ulcer management in Bhutan found that although nurses exhibited good knowledge of pressure ulcer management, their wound care practices were rated as poor in 93.1% of observed cases (Wangmo et al., 2020).

Although sound knowledge is a prerequisite for effective wound management, evidence suggests that practice is influenced by multiple contextual factors such as training, time constraints, institutional support, and workload (Tegegne et al., 2022). Given the scarcity of empirical data in Bhutan, there remains a lack of understanding of nurses' knowledge and practices in wound care. Therefore, this study aims to assess the current level of wound care knowledge and practice among nurses in a Bhutanese hospital and to explore the correlation between the two. As one of the few studies conducted on this topic in Bhutan, It establishes an important baseline to support the development of evidence-based training programs, inform policy interventions and strengthen wound care competency and the quality of nursing practice in Bhutan.

METHODS

This descriptive cross-sectional study was conducted between October and December 2021 in a tertiary hospital in Bhutan. A tertiary hospital is a health care center where specialized care is provided to patients with complex cases requiring advanced technology, expertise and multi-disciplinary team. The study targeted nurses working in wards and units directly involved in wound care management. Wards providing wound care services were identified from the hospital's inpatient departments (IPDs) and the outpatient departments (OPDs). A total of 12 areas were involved in wound care services from the existing 19 different areas of work. The 12 areas were Medical Ward, Medical Extension Ward, Eye Nose and Throat (ENT) Ward, Cabin, Adult Intensive Care Unit (AICU), Maternity Ward, Surgical Ward, Epidural Ward, Orthopaedic Ward, Paediatric Ward, Paediatric Intensive Care Unit (PICU), and OPD Dressing Room.

Participants were recruited using a non-probability convenience sampling method. The required sample size was determined using Yamane's formula (1967) with a 95% confidence level for a known population size, " $n = N/(1+N \cdot e^2)$ "; where, n is the required sample size, N is the total population size, e is the margin of error, or desired level of precision, expressed as a decimal (0.05 at 95% confidence level)". As per Yamane's formula, the minimum calculated sample size was 112, however we recruited 148 nurses to account for potential incomplete data. As no non-response or incomplete data identified, all 148 participants were included in the final analysis.

Research Instruments

The researchers developed a Demographic Data Questionnaire, a Wound Care Knowledge Questionnaire and a Wound Dressing Practice Checklist to collect relevant information that could assess the nurses' knowledge and skills in wound care. The Demographic Data Questionnaire was used to collect participant's demographic data, including age, gender, qualification, professional category, years of experience, work area and prior wound care training (Bilal et al., 2018; Tayyib & Ramaiah, 2021). The Wound Care Knowledge Questionnaire was developed based on a review of relevant literature (Kielo-Viljamaa et al., 2022; Kielo et al., 2020; Hinkle & Cheever, 2014). It consisted of 20 multiple choice questions and was validated by 9 experts, resulting a content validity index of 0.8 (Polit & Beck, 2021). The Wound Dressing Practice Checklist was adapted from the Faculty of Nursing and Public Health, Khesar Gyalpo University of Medical Sciences. The questionnaire was then pilot tested with 20 nurses of varying levels of wound care experience from the selected wards and units for reliability and it was found to be reliable.

Data Collection and Analysis

The research was approved by the Research Ethics Board of Health and Policy (REBH/Approval/2021/071) and the Planning Division, Ministry of Health. Permission to conduct the research was obtained from the participating hospital (JDWNRH/MERU/01/2020-2021/3129), and the informed consent was

obtained from all the nurses who met the inclusion criteria and were willing to participate in the study voluntarily. Data was collected every day, until a total of 148 participants were recruited. An additional data from 20% of the participants was collected to address missing information and questionnaires with missing data were excluded from analysis. Descriptive statistics were used to describe demographic characteristics, and correlation analysis was performed to examine the relation between knowledge and practice on wound care. The level of statistical significance was set at $\alpha = 0.05$.

RESULTS

Participant Characteristics

A total of 148 nurses participated in the study. The majority were female (69%, $n = 102$), while 31% ($n = 46$) were male. The predominant age group was 26–30 years (43%, $n = 63$), followed by 20–25 years (26%, $n = 39$) and 31–35 years (24%, $n = 36$). A smaller proportion of participants were aged 36–40 years (2%, $n = 3$) and above 40 years (5%, $n = 7$). With respect to professional experience, nearly two-thirds of the participants (64%, $n = 94$) had 0–5 years of work experience, followed by 25% ($n = 37$) had 6–10 years, 5% ($n = 8$) had 11–15 years, and 3% each ($n = 4$ and $n = 5$) had 16–20 years and more than 20 years of experience, respectively. In professional category, staff nurses represented the majority (62%, $n = 92$), followed by clinical nurses (28%, $n = 41$) and assistant nurses (10%, $n = 15$). Participants were recruited from a wide range of work area providing wound care services. The largest proportions were from maternity (18%, $n = 26$), surgical (13%, $n = 19$), and orthopedic (13%, $n = 19$) wards. The remaining participants work in medical (11%), medical extension (8%), ENT (6%), cabin (7%), AICU (6%), epidural (6%), pediatric (5%), OPD dressing room (3%), and PICU (4%). Only a few participants (2%, $n = 3$) reported having received any training or continuing medical education (CME) on wound care, while the majority (98%, $n = 145$) had no formal training in wound care.

Knowledge and Practice Levels

The participants' wound care knowledge was assessed using a 20-item questionnaire, with scores classified as Poor (0–5), Average (6–10), Good (11–15), and Very Good (>15). The overall mean knowledge was scored at 10 ($SD = 3$), which indicates an average level of knowledge. More than half of the nurses (52%, $n = 76$) had an average level of knowledge about wound care, while 41% ($n = 61$) showed good knowledge. Only a small number of participants had very good (4%, $n = 6$) or poor knowledge (3%, $n = 5$). Wound dressing practice scores indicated a high level of performance with a mean practice score of 42 ($SD = 3$), indicating a very good standard. Most of the nurses (86%, $n = 128$) achieved very good practice, while the remaining 14% ($n = 20$) demonstrated good practice. Notably, none of the nurses fell into the poor or average categories.

Between Knowledge and Practice

Table 1: Demographic characteristics of the participants

Variable	f	%
Gender		
Male	46	31
Female	102	69
Age(years)		
20-25	39	26
26-30	63	43
31- 35	36	24
36- 40	3	2
>40	7	5
Work experience		
0 – 5 years	94	64
6 – 10 years	37	25
11 – 15 years	8	05
16 – 20 years	4	03
>20 years	5	03
Professional category		
Assistant nurse	15	10
Staff nurse	92	62
Clinical nurse	41	28
Place of work		
Medical	16	11
Medical Extension	12	8
ENT	9	6
Cabin	11	7
AICU	8	6
Maternity	26	18
Surgical	19	13
Epidural	9	6
Orthopedic	19	13
Pediatric	8	5
OPD Dressing Room	5	3
PICU	6	4
Received training/CME on wound care		
Yes	3	2
No	145	98

The Pearson's product correlation revealed no statistically significant relationship between knowledge and practice scores ($p = .108$, $\alpha = .05$). This finding suggests that higher knowledge levels did not necessarily correspond to better practical performance of wound care among this sample.

Knowledge and practice by area of work

The average knowledge scores varied across work areas. The highest scores were observed in the surgical unit ($M = 12$, $SD = 3$), followed by the Adult Intensive Care Unit (AICU) ($M = 11$, $SD = 4$), medical extension ($M = 11$, $SD = 1$), ENT ($M = 11$, $SD = 2$), cabin ($M = 11$, $SD = 3$), and orthopedics ($M = 11$, $SD = 2$). Moderate scores were observed in the medical ($M = 9$, $SD = 2$), maternity ($M = 9$, $SD = 2$), epidural ($M = 9$, $SD = 3$), pediatric ($M = 9$, $SD = 2$), and PICU ($M = 9$, $SD = 2$) units. The lowest average score was found in the OPD dressing room ($M = 8$, $SD = 3$), indicating that nurses in this area have limited understanding of wound care.

Wound care practice scores also varied across clinical areas. Nurses in the Adult Intensive Care Unit (AICU) had the highest average practice score ($M = 45$, $SD = 1$), followed by those in the OPD dressing room ($M = 44$, $SD = 2$), cabin ($M = 43$, $SD = 4$), and pediatric units ($M = 43$, $SD = 3$). High practice scores were also seen in the medical extension ($M = 42$, $SD = 4$), ENT ($M = 42$, $SD = 2$), surgical ($M = 42$, $SD = 3$), epidural ($M = 42$, $SD = 4$), and PICU ($M = 42$, $SD = 2$) units. Meanwhile, the

Table 2: Knowledge and practice level of the participants

Variable	f	%
Knowledge		
Very Good (>15)	06	04
Good (11-15)	61	41
Average (6-10)	76	52
Poor (0-5)	05	03
Practice		
Very Good (>36)	128	86
Good (25-36)	20	14
Average (13-24)	00	00
Poor (0-12)	00	0

Table 3: Association between knowledge and practice

Variable	Mean	SD	P
Knowledge	10	3	0.108
Practice	42	3	

Table 4: Knowledge level as per the work area

SL No	Area of Work	Range	Mean	SD
1	Medical	7-12	09	2
2	Medical Extension	9-14	11	1
3	Ear Nose and Throat (EENT)	7-13	11	2
4	Cabin	7-15	11	3
5	Adult Intensive care unit (AICU)	7-17	11	4
6	Maternity	5-12	09	2
7	Surgical	8-18	12	3
8	Epidural	6-13	09	3
9	Orthopedic	8-16	11	2
10	Pediatric	7-12	09	2
11	Outpatient Dressing (OPD) Room	4-10	08	3
12	Pediatric Intensive care Unit (PICU)	5-13	09	3

Table 5: Practice level as per work area

SL No	Area of Work	Range	Mean	SD
1	Medical	36-47	41	3
2	Medical Extension	37-46	42	4
3	EENT	40 - 44	42	2
4	Cabin	36 - 47	43	4
5	AICU	44 - 47	45	1
6	Maternity	35-45	41	2
7	Surgical	36 - 46	42	3
8	Epidural	35 - 47	42	4
9	Orthopedic	36 - 44	40	3
10	Pediatric	39-46	43	3
11	OPD Dressing Room	42 - 47	44	2
12	PICU	41 - 45	42	2

medical (M = 41, SD = 3) and maternity (M = 41, SD = 2) units had moderate practice scores, and the orthopaedic unit had the lowest average practice score (M = 40, SD = 3).

Wound Dressing Practice Assessment

Pre-procedure Phase: The pre-procedure phase consists of seven items assessing on preparation, communication, and aseptic readiness before commencing the actual process of wound care. The mean scores ranged from 1.4 to 2.0, which indicated an overall good practice. The highest compliance was observed for confirming physician's order (M=2.0) and assisting the client to

a comfortable position (M = 1.9) before they commenced wound care. Lower scores were observed for greeting and identifying the patient (M = 1.4) and explaining the procedure to the patient (M = 1.5). These findings suggest that while technical preparation was followed well, interpersonal communication and patient education were comparatively weaker components of pre-procedure practice.

Intra procedure phase: During the intra-procedure phase, nurses were evaluated on 12 key tasks that are central to wound care. These tasks included following aseptic techniques, cleaning the wound properly, and applying dressings accurately. The average scores for these activities ranged from 1.1 to 2.0, showing a high level of adherence to proper wound management practices. Nurses scored the highest in tasks like inspecting wound drainage, preparing a sterile field, applying antiseptic-moistened gauze, and securing the dressing, all with an average score of 2.0. However, they scored lower in tasks such as placing a mackintosh (protective sheet) under the wound (1.1), performing hand hygiene after removing gloves (1.5), and communicating with the patient during the procedure (1.5). Overall, the intra-procedure findings indicated strong competence in aseptic dressing techniques, though aspects of patient engagement could be further strengthened.

Post-procedure Phase: In the post-procedure phase, participants were assessed on five items such as tasks like waste disposal, termination of the used equipment, patient comfort, and documentation. The average scores in this phase ranged from 0.9 to 1.9, with the highest score noted for removing gloves correctly (M = 1.9) and cleaning and replacing articles (M = 1.9), followed by moderate compliance for waste disposal (M = 1.7) and assisting the client to a comfortable position (M = 1.6).

Table 6: Practice Items Individual scoring

Sl. no	Wound dressing practice items	Mean
Pre Phase		
1	Confirm Physician's order	2.0
2	Greetings, self-introduction and identification of client	1.4
3	Explain the purpose and procedure to the client. Respond to any questions or concern	1.5
4	Wash hands and dry thoroughly	1.7
5	Gather all required articles (sterile and clean articles)	1.7
6	Provide privacy with a screen (in open wards)/ take the patient to intervention room	1.6
7	Assist the client to a comfortable position that provides easy access to the wound area.	1.9

Intra Phase		
8	Place the mackintosh underneath the wound area.	1.1
Sl. no	Wound dressing practice items	Mean
9	Put on a clean glove and remove old dressing carefully. If dressing is stuck, soak it with saline and remove one layer at a time.	1.8
10	Inspect and assess the amount, type and odor of the drainage.	2.0
11	Remove clean gloves and perform hand hygiene.	1.5
12	Open sterile dressing tray and prepare a sterile field and add supplies	2.0
13	Put on sterile gloves.	1.9
14	Clean the wound using strict aseptic technique (CAT method)	1.9
15	Discard used gauze after each stroke and repeat the step using new gauze with each stroke until the wound is clean	1.8
16	Soak plain gauze in antiseptic or plain solution and wring until moist but not dripping.	2.0
17	Apply sterile moistened gauze then cover with dry gauze pad over moistened gauze in sufficient amounts to absorb drainage	1.9
18	Secure the dressing with adhesive tape or bandages	2.0
19	Communicate with the client throughout the procedure	1.5
Post Phase		
20	Before removing gloves, dispose of waste materials as per the infection control and medical waste management protocol	1.7
21	Remove gloves by turning inside out and dispose	1.9
22	Clean and replace all the articles in proper place	1.9
23	Assist clients to a comfortable position	1.6
24	Document in wound assessment and progress note	.9

Table 7: Knowledge and practice in phases

Items	Min	Max	Mean	SD
Pre phase (Practice)	7	14	12.1	1.7
Intra phase (Practice)	16	24	21.5	1.8
Post phase (Practice)	4	10	8.1	1.4
Items	Min	Max	Mean	SD
Knowledge of Wound Healing	2	8	4.0	1.2
Knowledge of Pressure Ulcer	0	4	2.6	.9
Knowledge on Techniques	1	4	2.5	.6

However, lowest score was noted for documenting the wound progress notes ($M = 0.9$), indicating that the record-keeping and documentation is an area that needs significant improvement and critical attention.

The practice phases showed that the nurses were demonstrating high levels of practice across all stages. The intra-procedure phase had the highest mean score ($M = 21.5$, $SD = 1.8$), indicating that the nurses were very thorough in following aseptic techniques, cleaning wounds properly, and accurate dressing application. The pre-procedure phase also showed good results ($M = 12.1$, $SD = 1.7$), especially in verifying doctors' orders, maintaining sterile conditions, and gathering necessary sterile materials. However, the post-procedure phase had a slightly lower average score ($M = 8.1$, $SD = 1.4$), suggesting that activities such as documentation, equipment cleaning, and waste disposal practices were not consistently performed. The assessment of wound care knowledge showed a moderate level of understanding among the participants, with some variation in different areas. The highest mean score was noted for knowledge about wound healing ($M = 4.0$, $SD = 1.2$), while lower scores were noted for pressure ulcer management ($M = 2.6$, $SD = 0.9$) and wound care techniques ($M = 2.5$, $SD = 0.6$). Overall, a small variation in standard deviations and the relatively low mean values were noted.

DISCUSSION

The study evaluated nurses' knowledge and practice of wound care in a hospital in Bhutan and found moderate theoretical understanding but strong practical skills. The majority of the participants were between the ages of 26 and 35. Overall, the participants demonstrated outstanding competency in wound care practice, with strong aseptic technique and dressing during procedures. Pre-operative preparation was generally well performed, whereas the post-procedure documentation, equipment cleaning, and waste management were weaker. These results are consistent with the wound care compliance study conducted by Bilal et al. (2018), who reported that intra-procedure performance was the highest and post-procedure compliance was the lowest. Likewise, Najm & Hussein (2018) identified lower compliance in documentation and infection-control procedures. These similar findings suggest that nurses may often prioritize the immediate technical aspects of care and pay less emphasis

on the follow-up components such as record-keeping and patient comfort.

Additionally, we found overall moderate nurses' wound-care knowledge, with higher scores in areas of wound-healing and lower scores in pressure-ulcer management and wound-care techniques. Furthermore, the lack of a significant correlation between knowledge and practice ($p = .108$) suggests that having more theoretical knowledge did not necessarily lead to better practical performance. This finding aligns with previous research stating that knowledge alone is not a reliable predictor of practice in wound management (Helen N Obilor & Odinaka, 2021; Welsh, 2018). One possible reason for this could be that the wound care is still a relatively new and evolving field in Bhutan, with nurses often acquiring practical skills on-the-job experience rather than through formal specialized training. In this study, only 2% of the nurses reported receiving structured continuing medical education (CME) on wound care. Similar challenges have been observed in other developing countries, where limited access to specialized training hinders evidence-based practices (Lee & Chang, 2023).

Some nurses who scored low in knowledge were observed with better performance at wound care practices and vice versa. This phenomenon might be due to experiential learning, where hands-on experience in wards enhances practical skills due to constant practice despite limited formal knowledge (Najm & Hussein, 2018). On the other hand, the newly trained nurses may have recent theoretical knowledge, but they often lack the confidence needed to perform practical procedures (Kreedi et al., 2021). Bhutan's hospitals have recently introduced structured continuing medical education sessions on wound care during induction programs, which may gradually bridge this gap. Variation in knowledge and practice levels across area of work was observed. It was noted that the nurses in the surgical ward exhibited the highest knowledge scores, likely due to their greater exposure to complex wounds and daily dressing routines which provide them with better opportunity to practice and keep themselves updated theoretically. In contrast, those working in the OPD dressing room had lower knowledge scores. These findings contrasted with that of Najm and Hussein (2018), who found senior nurses generally performed better. In this study, the surgical ward nurses tended to be younger and more recently recruited, while OPD nurses were older and more experienced, which could have led to the differences in the studies. In Bhutan's context, this may reflect the generational differences in training, where younger nurses benefit from updated nursing curriculum that integrates basic wound-care principles. Further, this study partially aligns with the findings from Wangmo et al., (2020) in Bhutan which reported nurses exhibited good knowledge of pressure ulcer management, but their actual wound care practices were rated poor in 93.1% of cases (Wangmo et al., 2020). Together, these findings reinforce the persistent knowledge-practice gap in wound care.

Guided by the broader principles of Gross National Happiness (GNH) and universal health coverage, the Bhutanese

healthcare system emphasizes on the holistic and compassionate care. Yet, as this study suggests, sustaining that vision requires continuous professional development to ensure that the nurses' clinical competence matches the evolving health care demands. The integration of dedicated wound care continuing medical education, coupled with the mentorship from experienced professionals could strengthen both the knowledge and practical competencies (Donovan et al., 2025; Skórka et al., 2021). In addition, the hospitals should emphasize and monitor the use of standardized wound care documentation tools to ensure proper record keeping, and routine clinical and record audits should be performed to enhance procedure compliance (Bunting & de Klerk, 2022). Furthermore, integrating wound management audit into the nursing workplan at the headquarters would help institutionalize wound care audit, eventually expanding its access to training across the districts and reducing the urban-rural skills disparities, and thereby, ensuring equitable patient outcomes in line with Bhutan's national health policy.

Limitations

This study has several limitations. Its cross-sectional design limits the ability to draw conclusions on its cause-and-effect relationships. Additionally, the study's reliance on the observation checklist and self-reported questionnaires could be prone to social desirability and Hawthorne biases. The results of the study are limited in generalizability as the study was conducted in a single hospital setting. Future research could incorporate longitudinal studies, evaluate targeted educational interventions and measure patient outcomes in relation to nurse's competence and wound healing outcomes.

CONCLUSION

This study establishes baseline of understanding the levels of knowledge and practice of wound care among nurses in Bhutan, and highlights a clear gap in the knowledge and practice of wound care. While the Bhutanese nurses display strong practical competence in wound care, they demonstrated moderate theoretical understanding. Addressing this gap will require sustained educational initiatives, structured continuing professional development, supportive supervision and mentorship, and strengthened system-level reinforcement of documentation and infection control protocols. Bhutan's nursing workforce can further enhance the quality, safety and sustainability of patient care by investing in the structured wound care training and professional development of the workforce.

Acknowledgement

The researchers would like to express their sincere gratitude to the Department of Nursing for providing the opportunity and continuous guidance to undertake this study. A heartfelt appreciation is extended to the management and staff of Jigme Dorji Wangchuck National Referral Hospital for their kind cooperation, support, and facilitation throughout the data collection process. Special acknowledgement to the Ministry

of Health and the Research Ethics Board of Health for their invaluable support in granting the necessary approvals and ensuring that all ethical considerations were upheld during this research. Finally, the researchers extend deep appreciation to all the nurses who participated in the study, for their time, honesty, and invaluable contributions, without which this research would not have been possible.

REFERENCES

- Bilal, M., Haseeb, A., Rehman, A., Arshad, M. H., Aslam, A., Godil, S., Qamar, M. A., Husain, S. N., Polani, M. H., Ayaz, A., Ghazanfar, A. S., Ghazali, Z. M., Khoja, K. A., Malik, M., & Ahmad, H. (2018). Knowledge, attitudes, and practices among nurses in Pakistan towards diabetic foot. *Cureus*, 10(7), e3001. <https://doi.org/10.7759/cureus.3001>
- Builders, M., Joseph, O., & Bassi, P. (2020). A survey of wound care practices by nurses in a clinical setting. *International Journal of Healthcare and Medical Sciences*, 6(5), 74–81. <https://doi.org/10.32861/ijhms.65.74.81>
- Bunting, J., & de Klerk, M. (2022). Strategies to improve compliance with clinical nursing documentation guidelines in the acute hospital setting: A systematic review and analysis. *SAGE Open Nursing*, 8, 23779608221075165. <https://doi.org/10.1177/23779608221075165>
- Donovan, H., Bui, U. T., Kaim, K., Finlayson, K., Martinez, A., Dunlop, A., & Parker, C. N. (2025). Wound education opportunities for rural and regional health care sectors of Australia: A scoping review. *Journal of Tissue Viability*, 34(4), 100959. <https://doi.org/10.1016/j.jtv.2025.100959>
- Helen, N. O., Obilor, A. B., & Odinaka, B. A. (2021). A survey of nurses' wound assessment knowledge, attitude, and competence in Nigeria. *Wound Practice and Research*, 29(3), 140–147. <https://doi.org/10.33235/wpr.29.3.140-147>
- Hinkle, J. L., & Cheever, K. H. (2014). *Brunner & Suddarth's textbook of medical-surgical nursing* (12th ed.). Wolters Kluwer Health/Lippincott Williams & Wilkins.
- Kielo-Viljamaa, E., Suhonen, R., Jalonen, L., & Stolt, M. (2022). Areas of nursing competence in acute wound care: A focus group study. *Collegian*, 29(1), 44–53. <https://doi.org/10.1016/j.colegn.2021.04.003>
- Kielo, E., Suhonen, R., Ylönen, M., Viljamaa, J., Wahlroos, N., & Stolt, M. (2020). A systematic and psychometric review of tests measuring nurses' wound care knowledge. *International Wound Journal*, 17(5), 1209–1224. <https://doi.org/10.1111/iwj.13417>
- Kreedi, F., Brown, M., Marsh, L., & Rogers, K. (2021). Newly graduate registered nurses' experiences of transition to clinical practice: A systematic review. *American Journal of Nursing Research*, 9(3), 94–105. <https://doi.org/10.12691/ajnr-9-3-4>
- Lee, Y. N., & Chang, S. O. (2023). How experienced wound care nurses conceptualize what to do in pressure injury management. *BMC Nursing*, 22(1), 189. <https://doi.org/10.1186/s12912-023-01364-z>
- McCluskey, P., & McCarthy, G. (2012). Nurses' knowledge and competence in wound management. *Wounds UK*, 8(2), 37–47.
- Najm, H. Y., & Hussein, R. N. (2018). Assessment of wound dressing practices among nurses at the emergency hospitals in Erbil city. *Zanco Journal of Medical Sciences*, 22(1), 96–103. <https://doi.org/10.15218/zjms.2018.013>
- Polit, D. F., & Beck, C. T. (2021). *Nursing research: Generating and assessing evidence for nursing practice* (11th ed.). Wolters Kluwer.
- Skórka, M., Malisiewicz, A., Sałacińska, I., & Bazaliński, D. (2021). The mentoring scheme in clinical nursing involving chronic wound treatment as an efficient tool for professional development: A study of three cases. *Nursing Problems / Problemy Pielęgniarstwa*, 29(3), 136–142. <https://doi.org/10.5114/ppiel.2021.115845>
- Tayyib, N. A., & Ramaiah, P. (2021). Nurses' challenges in wound care management: A qualitative study. *Journal of Clinical and Diagnostic Research*, 15(2), 1–6. <https://doi.org/10.7860/jcdr/2021/47039.14626>
- Tegegne, B., Yimam, F., Mengesha Yalew, Z., Wuhib, M., Mekonnen, L., Yitayew, Y. A., Ademe, S., Tsegaye, D., Eshetie, Y., & Chanie, M. (2022). Knowledge and practice of wound care and associated factors among nurses working in South Wollo Zone government hospitals, Ethiopia. *Chronic Wound Care Management and Research*, 9, 1–11. <https://doi.org/10.2147/cwcmr.S366322>
- Wangmo, K., Tshering, D., Phuntsho, T., Dorji, T., & Yangchen, Y. (2020). A cross-sectional study on knowledge, attitude, and practice on pressure ulcer among nurses in Jigme Dorji Wangchuk National Referral Hospital (JDWNRH). *International Journal of Nursing Care*, 8(2), 15–20. <https://doi.org/10.37506/ijonc.v8i2.11278>
- Welsh, L. (2018). Wound care evidence, knowledge and education amongst nurses: A semi-systematic literature review. *International Wound Journal*, 15(1), 53–61. <https://doi.org/10.1111/iwj.12822>