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Enhancing Wound Care Practices for Patients with Comorbidities

Evidence from Hospitals in the 5th District of Camarines Sur, Philippines

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ABSTRACT

This study examines wound care practices among healthcare providers managing patients with comorbidities in hospitals in the 5th District of Camarines Sur, Philippines. Using a descriptive-evaluative design, data were collected from 147 nurses through structured questionnaires and analyzed using frequency, percentage, weighted mean, and chi-square tests. Findings indicate that wound care practices are generally "very much practiced," particularly in wound cleaning, dressing, documentation, and patient education. However, gaps remain in the use of standardized assessment tools and educational resources. Statistical analysis revealed that age, educational attainment, area of assignment, length of service, and training significantly influence wound care practices, while sex does not. Common challenges include delayed wound healing, infection risks, and patient noncompliance. The study proposes a comprehensive wound care management program integrating early detection, multidisciplinary collaboration, and continuous professional development. These findings highlight the need for standardized protocols and capacity-building initiatives to improve patient outcomes in complex clinical settings.

Keywords
Chronic Wounds
Clinical Assessment
Comorbidities
Nursing Competence
Wound Care

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Introduction

Wound care is a critical component of healthcare, particularly for patients with comorbidities such as diabetes, hypertension, and vascular diseases, which significantly delay healing and increase complications [1], [2]. Chronic wounds, including diabetic foot ulcers and pressure injuries, represent a growing global burden, affecting millions of patients and placing substantial strain on healthcare systems [3]. The global prevalence of chronic wounds continues to rise due to aging populations and the increasing incidence of non-communicable diseases, making wound management a priority in modern healthcare systems [4]. Effective wound management requires a holistic approach that integrates accurate assessment, infection control, appropriate dressing, patient education, and systematic documentation [5].

Globally, evidence-based wound care practices are guided by international standards emphasizing early intervention, aseptic techniques, and individualized care strategies [6]. Clinical guidelines highlight the importance of timely wound assessment and appropriate intervention to reduce complications and improve healing outcomes [7]. The World Health Organization and other global health bodies underscore the importance of tailoring wound management strategies based on wound type, severity, and patient condition to prevent infection and promote healing [8]. However, in low- and middle-income countries, disparities in healthcare infrastructure, resource availability, and workforce training often hinder the effective implementation of these standards [9].

In the Philippines, the Universal Health Care (UHC) Act (Republic Act No. 11223) aims to ensure equitable access to quality healthcare services, including wound management [10]. Despite this policy framework, healthcare facilities—particularly in rural districts such as Camarines Sur—continue to face challenges related to limited resources, workforce capacity, and inconsistent adherence to standardized protocols [11]. Previous studies have shown that inadequate training and variability in clinical practices contribute to poor wound outcomes, including increased infection rates, delayed healing, and prolonged hospitalization [12].

Healthcare providers play a central role in wound care delivery, as their competence directly influences patient outcomes. Clinical competence is shaped by multiple factors, including educational background, years of experience, and exposure to specialized training programs [13]. Moreover, patient-related factors—such as treatment adherence, health literacy, and psychosocial conditions—further complicate wound management, particularly among individuals with multiple comorbidities [14]. These complexities require healthcare providers to adopt not only technical skills but also critical thinking and patient-centered approaches.

In the 5th District of Camarines Sur, anecdotal and clinical observations suggest persistent challenges in wound care practices, particularly in managing complex cases

involving comorbidities. These challenges include delayed wound healing, limited access to specialized care, and inconsistent application of evidence-based practices. Despite the importance of this issue, there is limited empirical evidence documenting the current state of wound care practices in this setting.

This study aims to (1) describe the profile of healthcare providers, (2) assess their wound care practices, (3) examine relationships between profile variables and practices, (4) identify challenges encountered, and (5) propose an intervention program to enhance wound care outcomes. By providing localized empirical evidence, this study contributes to strengthening healthcare quality and aligning clinical practices with both national policies and global standards.

Materials and Methods

A. Research Design

This study employed a descriptive-evaluative research design to assess wound care practices among healthcare providers managing patients with comorbidities. The descriptive component aimed to present current practices, while the evaluative aspect examined their effectiveness and relationships with respondent characteristics. This design is appropriate for capturing real-world clinical conditions without manipulating variables. It allows for systematic analysis of existing practices and identification of gaps in care delivery. By combining description and evaluation, the study provides practical insights into how wound care is implemented and highlights areas for improvement aligned with evidence-based standards in healthcare settings.

B. Participants and Setting

The study involved 147 staff nurses from hospitals in the 5th District of Camarines Sur, Philippines. Participants were selected using purposive sampling, focusing on nurses directly involved in wound care management. This ensured that respondents had relevant experience and knowledge related to the study objectives. The inclusion of multiple hospitals allowed for a broader representation of clinical practices across different settings. The sample included nurses with varying levels of experience, education, and assignments, providing a comprehensive perspective on wound care delivery. This diversity strengthens the reliability and applicability of the findings within similar healthcare contexts.

C. Data Collection and Analysis

Data were collected using a structured questionnaire covering respondent profiles, wound care practices, and challenges encountered. A five-point Likert scale was used to measure the level of practice across different domains. Frequency and percentage were applied to describe demographic characteristics, while weighted mean was used to determine practice levels. The chi-square test was employed to examine relationships between variables. These statistical

tools allowed for both descriptive and inferential analysis, ensuring a comprehensive understanding of the data. The approach supports reliable interpretation of patterns and provides a strong basis for evidence-based conclusions and recommendations.

Results

A. Demographic Profile of Respondents

The demographic profile of the respondents reveals important insights into the composition and readiness of the nursing workforce involved in wound care management (from Fig. 1 to Fig. 6). The majority of participants were young adults aged 21–25 years, predominantly female, and holders of a bachelor's degree in nursing. Most were assigned to medical wards and had relatively short professional experience, typically ranging from one to five years. While this profile reflects a workforce that is academically prepared and actively engaged in clinical practice, it simultaneously suggests a potential limitation in terms of clinical maturity and exposure to complex wound care cases.

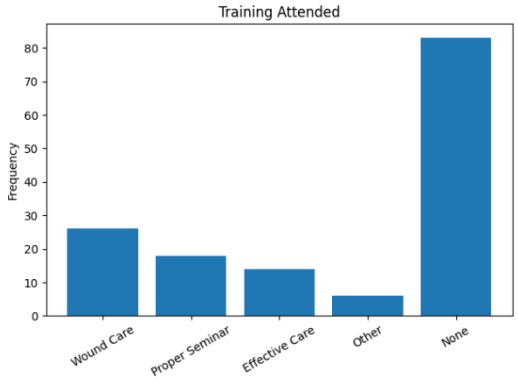


Fig. 1. Training Attended

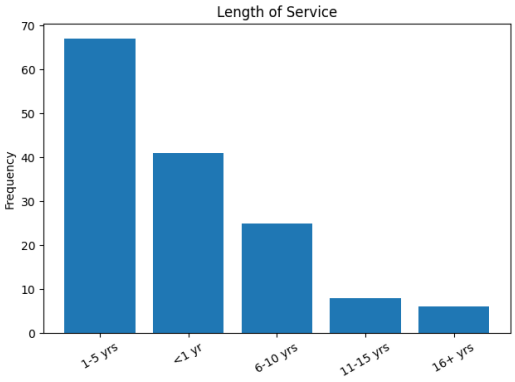


Fig. 2. Length of Service

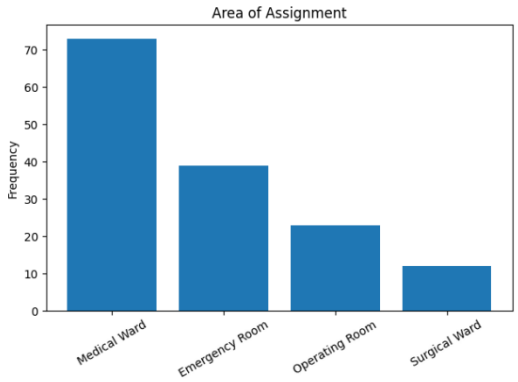


Fig. 3. Area of Assignment

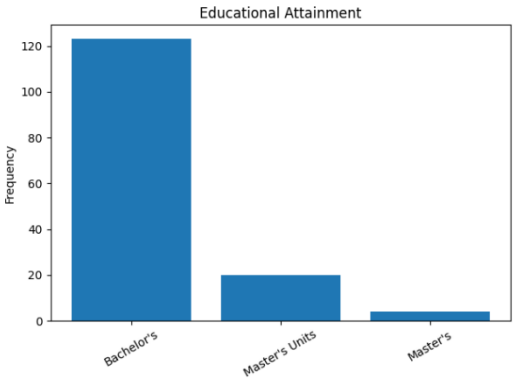


Fig. 4. Educational Attainment

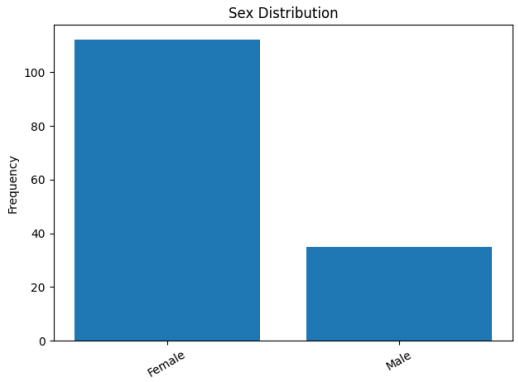


Fig. 5. Sex Distribution

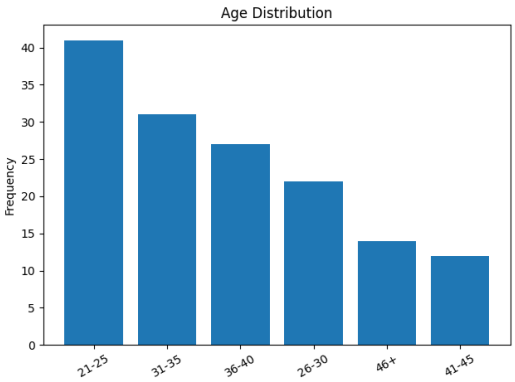


Fig. 6. Age Distribution

B. Wound Care Practices along with Assessment

As presented in Table 2, the level of wound care practices in terms of assessment obtained an average weighted mean of 4.18, interpreted as *"much practiced."*

Table 2. Wound Care Practices along with Assessment

Indicator	WM	Interpretation	Rank
Consider patient's comorbidities during assessment	4.39	Very Much Practiced	1
Assess for signs of infection regularly	4.30	Very Much Practiced	2
Communicate with healthcare team	4.24	Very Much Practiced	3
Involve patient in assessment	4.24	Very Much Practiced	4
Document assessments accurately	4.15	Much Practiced	5.5
Reassess wound regularly	4.15	Much Practiced	5.5
Assess wound size, depth, condition	4.13	Much Practiced	7
Use standardized assessment tools	4.12	Much Practiced	8
Adjust assessment approach	4.09	Much Practiced	9
Encounter challenges in assessment	3.98	Much Practiced	10
Average	**4.18**	**Much Practiced**	

The highest-rated indicator was the consideration of patients' comorbidities during wound assessment (WM = 4.39), followed by regular assessment for signs of infection (WM = 4.30) and interprofessional communication (WM = 4.24). These findings indicate that healthcare providers demonstrate strong awareness of the complexity of wound conditions in patients with comorbidities and integrate this into their clinical evaluation. However, lower ratings were observed in the use of standardized assessment tools (WM = 4.12) and adjustment of assessment approaches (WM = 4.09). This suggests variability in clinical assessment practices, which may affect consistency and diagnostic accuracy. The indicator on challenges in wound assessment (WM = 3.98) also reflects the inherent difficulty of managing complex cases. Overall, while assessment practices are generally adequate, the findings highlight the need for more standardized and systematic approaches.

C. Wound Cleaning and Dressing

As shown in Table 3, wound cleaning and dressing practices recorded the highest overall mean among all domains (WM = 4.37), interpreted as *"very much practiced."*

Table 3. Wound Cleaning and Dressing

Indicator	WM	Interpretation	Rank
Apply aseptic techniques consistently	4.50	Very Much Practiced	1
Take precautions to prevent infection	4.49	Very Much Practiced	2
Ensure thorough cleaning before dressing	4.46	Very Much Practiced	3
Educate patients on dressing techniques	4.45	Very Much Practiced	4
Follow hospital protocols	4.37	Very Much Practiced	5.5
Change dressing appropriately	4.37	Very Much Practiced	5.5
Select appropriate dressing	4.34	Very Much Practiced	7
Modify approach based on condition	4.26	Very Much Practiced	8
Confidence in managing care	4.25	Very Much Practiced	9
Challenges in selecting materials	4.16	Much Practiced	10
Average	**4.37**	**Very Much Practiced**	

The most highly practiced activity was the consistent application of aseptic techniques (WM = 4.50), followed by infection prevention measures (WM = 4.49) and ensuring thorough wound cleaning (WM = 4.46). These results demonstrate strong adherence to infection control principles, which are essential in promoting wound healing and preventing complications. Other high-performing indicators include patient education on dressing (WM = 4.45) and compliance with hospital protocols (WM = 4.37).

Nevertheless, the lowest-rated indicator was the difficulty in selecting appropriate dressing materials (WM = 4.16), indicating that decision-making in complex cases remains a challenge. Despite the overall high performance, this suggests a need for enhanced clinical support tools and training to improve decision-making in wound management.

D. Health Teaching and Support

Table 4 shows that health teaching and support practices achieved an average weighted mean of 4.20, interpreted as *"very much practiced."*

Table 4. Health Teaching and Support

Indicator	WM	Interpretation	Rank
Encourage patient participation	4.43	Very Much Practiced	1
Provide clear home care instructions	4.39	Very Much Practiced	2
Explain impact of comorbidities	4.35	Very Much Practiced	3
Assess patient understanding	4.28	Very Much Practiced	4
Tailor health teaching	4.26	Very Much Practiced	5
Provide emotional support	4.21	Very Much Practiced	6
Discuss lifestyle changes	4.13	Much Practiced	7
Follow-up patients	4.07	Much Practiced	8
Time constraints in teaching	3.97	Much Practiced	9
Provide materials (brochures/videos)	3.86	Much Practiced	10
Average	**4.20**	**Very Much Practiced**	

The most prominent activity was encouraging patient participation in wound care (WM = 4.43), followed by providing clear instructions for home care (WM = 4.39) and explaining the impact of comorbidities on wound healing (WM = 4.35). These findings reflect a strong patient-centered approach, where nurses actively involve patients in their care. However, certain aspects showed relatively lower scores, particularly the provision of educational materials

such as brochures or videos (WM = 3.86) and time constraints in delivering health teaching (WM = 3.97). This indicates that while verbal education is well practiced, structured and resource-based patient education remains limited. Strengthening educational resources and improving time allocation for patient teaching may enhance the effectiveness of this domain.

E. Adherence to Hospital Protocol

As indicated in Table 5, adherence to hospital protocols obtained an average weighted mean of 4.19, interpreted as *"much practiced."*

Table 5. Adherence to Hospital Protocol

Indicator	WM	Interpretation	Rank
Document according to protocol	4.29	Very Much Practiced	1
Use materials per protocol	4.25	Very Much Practiced	2
Follow wound care protocol	4.24	Very Much Practiced	3
Follow assessment frequency	4.23	Very Much Practiced	4
Follow infection control protocols	4.22	Very Much Practiced	5
Report deviations	4.20	Very Much Practiced	6
Align interventions with guidelines	4.16	Much Practiced	7
Attend protocol training	4.14	Much Practiced	8
Consult protocols regularly	4.13	Much Practiced	9
Challenges in adherence	4.08	Much Practiced	10
Average	**4.19**	**Much Practiced**	

The highest-rated indicator was documentation according to protocol (WM = 4.29), followed by compliance with material usage guidelines (WM = 4.25) and consistent adherence to wound care protocols (WM = 4.24). These results suggest that healthcare providers maintain strong compliance with institutional standards. However, lower scores were observed in regularly consulting protocols (WM = 4.13) and participating in training programs (WM = 4.14), indicating that adherence may be routine-based rather than continuously updated. Additionally, challenges in managing patients with multiple comorbidities (WM = 4.08) suggest limitations of rigid protocols in complex clinical situations. This highlights the need for more adaptive and flexible guidelines.

F. Documentation Practices

Based on Table 6, documentation practices were rated "very much practiced" with an average weighted mean of 4.22.

Table 6. Documentation Practices

Indicator	WM	Interpretation	Rank
Document all interventions accurately	4.30	Very Much Practiced	1
Document assessments consistently	4.27	Very Much Practiced	2.5
Document health teaching	4.27	Very Much Practiced	2.5
Record patient adherence	4.26	Very Much Practiced	4
Follow documentation guidelines	4.22	Very Much Practiced	5
Note challenges encountered	4.21	Very Much Practiced	6
Record wound changes	4.20	Very Much Practiced	7
Document deviations	4.18	Much Practiced	8.5
Update documentation regularly	4.18	Much Practiced	8.5
Time constraints in documentation	4.11	Much Practiced	10

Average	**4.22**	**Very Much Practiced**

The most practiced indicator was accurate documentation of wound care interventions (WM = 4.30), followed by documentation of assessments and health teaching (WM = 4.27). These findings emphasize the importance placed on proper documentation for ensuring continuity of care and supporting clinical decisions. However, lower ratings were observed in documenting deviations from protocols (WM = 4.18) and updating documentation regularly (WM = 4.18). Time constraints affecting documentation (WM = 4.11) also indicate workload-related challenges. While documentation practices are generally strong, improving efficiency and completeness remains necessary, particularly in complex cases.

G. Summary of Wound Care Practices

As summarized in Table 7, wound cleaning and dressing ranked highest (WM = 4.37), followed by documentation (WM = 4.22) and health teaching (WM = 4.20). Adherence to protocol (WM = 4.19) and assessment (WM = 4.18) ranked slightly lower.

Table 7. Summary of Wound Care Practices

Domain	WM	Interpretation	Rank
Wound Cleaning and Dressing	4.37	Very Much Practiced	1
Documentation	4.22	Very Much Practiced	2
Health Teaching and Support	4.20	Very Much Practiced	3
Adherence to Protocol	4.19	Much Practiced	4
Assessment	4.18	Much Practiced	5
Overall	**4.23**	**Very Much Practiced**	

The overall weighted mean of 4.23 indicates that wound care practices are generally *"very much practiced."* This pattern suggests that procedural and routine tasks are more consistently implemented compared to analytical and evaluative components. The findings imply that while technical competencies are strong, there is a need to enhance critical thinking and decision-making skills in wound care practice.

H. Relationship between Profile and Wound Care Practices

Table 8 presents the results of the chi-square test examining the relationship between respondent profile and wound care practices.

Table 8. Relationship between Profile and Wound Care Practices

Variable	Computed Value	Tabular Value	Decision	Interpretation
Age	26.85	25.00	Reject Ho	Significant
Sex	5.42	7.82	Accept Ho	Not Significant
Educational Attainment	14.07	12.59	Reject Ho	Significant
Area of Assignment	19.69	16.92	Reject Ho	Significant
Length of Service	21.91	21.03	Reject Ho	Significant
Trainings/Seminars	17.38	16.92	Reject Ho	Significant

The findings reveal that age (χ^2 = 26.85 > 25.00), educational attainment (14.07 > 12.59), area of assignment (19.69 > 16.92), length of service (21.91 > 21.03), and training participation (17.38 > 16.92) all have significant relationships with wound care practices. In contrast, sex

(5.42 < 7.82) was found to have no significant relationship. These results indicate that professional and experiential factors play a more important role than demographic characteristics in influencing clinical performance. The findings highlight the importance of continuous professional development, experience, and proper staff deployment in improving wound care practices.

I. Problems Encountered in Wound Care

As shown in Table 9, the overall mean for problems encountered was 3.80, interpreted as *"often."*

Table 9. Problems Encountered in Wound Care

Indicator	WM	Interpretation	Rank
Delayed wound healing	3.88	Often	1.5
Multiple comorbidities increase infection risk	3.88	Often	1.5
Patient noncompliance	3.86	Often	3
Lack of cooperation	3.81	Often	4.5
Lack of knowledge (patient/family)	3.81	Often	4.5
Lack of resources	3.78	Often	6.5
Availability of materials	3.78	Often	6.5
Antibiotic resistance	3.75	Often	8
Complications (infection, necrosis)	3.72	Often	9
Psychosocial factors	3.71	Often	10
Average	**3.80**	**Often**	

The most common challenges were delayed wound healing and increased infection risk due to comorbidities (WM = 3.88), followed by patient noncompliance (WM = 3.86). Other frequently encountered issues include lack of patient knowledge (WM = 3.81), lack of cooperation (WM = 3.81), and resource limitations (WM = 3.78). Lower-ranked challenges include antibiotic resistance (WM = 3.75) and psychosocial factors (WM = 3.71). These findings indicate that wound care challenges are multifactorial, involving clinical complexity, patient behavior, and systemic limitations. Addressing these issues requires comprehensive strategies that integrate clinical, educational, and organizational interventions.

Discussion

The findings of this study reveal a consistent pattern in which procedural aspects of wound care—particularly wound cleaning, dressing, and documentation—are more strongly implemented than cognitive and evaluative components such as assessment and protocol adaptation. This imbalance suggests that while healthcare providers demonstrate high compliance with routine clinical tasks, there remains a relative gap in analytical decision-making required for managing complex cases involving comorbidities. Similar patterns have been identified in clinical nursing research, where task-oriented performance often exceeds higher-order clinical reasoning skills [15], [16].

The high performance in wound cleaning and dressing indicates strong adherence to infection prevention protocols, which are widely emphasized in global wound care standards

[17]. However, the relatively lower utilization of standardized wound assessment tools represents a critical gap. Evidence suggests that structured wound assessment frameworks significantly improve diagnostic accuracy, facilitate interdisciplinary communication, and enhance patient outcomes [18], [19]. The absence of consistent assessment tools may therefore lead to variability in clinical judgment and treatment effectiveness.

In terms of health teaching, the study findings demonstrate a strong emphasis on verbal communication and patient engagement, aligning with patient-centered care frameworks [20]. However, the limited use of structured educational materials suggests a lack of sustainability in patient education practices. Research shows that multimodal education strategies—including written, visual, and digital interventions—are more effective in improving patient adherence and wound healing outcomes [21], [22].

Adherence to hospital protocols was generally high, reflecting a structured clinical environment. Nevertheless, the findings suggest that adherence may be routine-driven rather than knowledge-driven, as indicated by limited engagement in training and protocol review. This is consistent with literature showing that compliance without continuous learning can reduce adaptability in complex clinical situations [23]. In cases involving comorbidities, rigid adherence to protocols may be insufficient, necessitating flexible and individualized care approaches [24].

The significant relationship between professional variables—such as education, experience, and training—and wound care practices highlights the importance of continuous professional development. Studies confirm that nurses with higher educational attainment and specialized training demonstrate better clinical competence and improved patient outcomes [25], [26]. Clinical experience further enhances decision-making abilities and adaptability in complex care scenarios [27]. The absence of a significant relationship between sex and practice reinforces that clinical competence is primarily determined by professional rather than demographic factors.

The challenges identified in this study—including delayed wound healing, infection risks, patient noncompliance, and resource limitations—underscore the multifactorial nature of wound care. Chronic conditions such as diabetes are well-documented to impair wound healing through mechanisms such as reduced perfusion and immune dysfunction [28]. Additionally, patient adherence remains a critical determinant of outcomes, particularly in long-term wound management [29]. System-level constraints, including limited resources and staffing shortages, further complicate care delivery [30].

Moreover, psychosocial factors and antibiotic resistance contribute to the complexity of wound management. Emerging evidence highlights the role of stress, social support, and

behavioral factors in wound healing trajectories [31]. At the same time, antimicrobial resistance poses a growing global challenge, limiting effective infection control strategies [32].

Taken together, these findings highlight the need for a paradigm shift from a task-oriented approach to a more analytical, evidence-based, and patient-centered model of care. Strengthening clinical reasoning, promoting standardized assessment tools, and enhancing patient education strategies are essential steps toward improving wound care outcomes. This aligns with contemporary integrated care models that emphasize multidisciplinary collaboration and continuous quality improvement [33], [34].

Conclusion

This study demonstrates that wound care practices among healthcare providers in the 5th District of Camarines Sur are generally well-implemented, particularly in infection control, documentation, and patient education. However, important gaps remain in the use of standardized assessment tools and access to specialized training. The findings confirm that professional characteristics—such as education, experience, and training—significantly influence the quality of wound care delivery. The challenges identified, including delayed healing, infection risks, and patient noncompliance, highlight the complexity of managing patients with comorbidities. These issues are compounded by systemic constraints such as limited resources and inconsistent adherence to protocols. To address these gaps, the study recommends the implementation of a comprehensive wound care management program that emphasizes multidisciplinary collaboration, continuous professional development, and standardized clinical practices. Strengthening patient education and engagement is also essential to improve adherence and outcomes. Overall, this research contributes to the growing body of evidence on wound care in resource-constrained settings and provides actionable insights for healthcare institutions aiming to enhance clinical quality and patient outcomes.

Conflict of Interest

The authors declare that there is no conflict of interest.

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