



eISSN: 2281-7824

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Healthc Low-resour S 2024 [Online ahead of print]

To cite this Article:

Rosdiana Saniapon, Kuswanto Rusca Putra, Dina Dewi Sartika Lestari Ismail, Retno Lestari. **What factors influence clinical nurses' self-efficacy after wound care training? A scoping review.** *Healthc Low-resour S* doi: 10.4081/hls.2024.13040

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Review

What factors influence clinical nurses' self-efficacy after wound care training?

A scoping review

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Running title: What factors influence clinical nurses' self-efficacy

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Key words: clinical nurses; self-efficacy; wound training

Acknowledgment: We are grateful to the Faculty of Health Sciences, Universitas Brawijaya Malang, Indonesia, for their support and encouragement.

Contributions: The authors contributed equally to this research.

Conflict of interest: The author declares no potential conflicts of interest.

Funding: This study was financially supported by the Ministry of Health of the Republic of Indonesia.

Clinical trials: Not Applicable.

Availability of data and materials: All data generated or analyzed during this study are included in this published article.

Ethics approval and informed consent: Not applicable.

Conference presentation: Part of this article was presented at the 4th International Nursing and Health Sciences Symposium, from 27th-28th of October 2023, Universitas Brawijaya, Malang, East Java Indonesia.

Significance for public health: Nurses currently employed face the ongoing challenge of effectively making professional contributions to society. The degree of self-efficacy plays a pivotal role in determining nurses' belief in their capabilities, ultimately influencing the quality of their performance. Programs that foster professional competency can play a significant role in bolstering nurses' perceived self-efficacy, thereby enhancing their confidence in establishing empathetic connections with patients, resulting in heightened patient contentment. From a public health perspective, heightened self-efficacy among wound care nurses equips them with the confidence to establish independent practices and offer home care. This enables individuals, especially those with chronic wounds, to access specialized wound care services.

Abstract

The inadequate management of wounds carries significant implications for patients and challenges clinical nurses. Consequently, there is a need for wound care training to enhance self-efficacy. However, despite participation in such training, nurses often need more practical experience and educational background to exhibit higher confidence levels. This results in a deficiency in self-efficacy when performing wound care. This study aims to amalgamate literature discussing the determinants influencing self-efficacy and present strategies for clinical nurses to enhance it after wound care training.

The article search utilized the PRISMA method, with searches conducted in Google Scholar, Proquest, Science Direct, and Pubmed databases. Sixteen articles met the specified inclusion criteria, which required English-language articles published within the last five years (2018-2023) discussing factors affecting clinical nurse self-efficacy after wound training.

Various factors, including competence, social support, and self-motivation, influence wound nurses' self-efficacy. Competence factors encompass structured training and education, while social support involves sharing experiences and engaging in case reflection. Additionally, motivational factors play a significant role, such as reinforcing values and attitudes when facing obstacles and maintaining the belief that nurses can effectively adhere to wound care standards. Enhancing self-efficacy includes improving competencies through standardized wound training, increasing educational opportunities, self-experience, social persuasion support, sharing experiences, high self-motivation, and managing emotions when assessing one's ability to achieve goals successfully.

Professional development programs designed to provide structured training for nurses have enhanced their competencies, social support, and motivation, strengthened holistic wound care clinical skills and improved self-efficacy. Therefore, exploring additional factors that may further contribute to this positive outcome is advisable.

Introduction

In recent years, there has been a notable increase in the number of patients seeking care from home and public healthcare units, many of whom present with chronic and challenging-to-treat wounds.¹ These chronic wounds necessitate specialized attention from nurses, as they have substantial implications for healthcare services and the affected patients, leading to increased care costs and directly impacting the patient's quality of life.² Social isolation, feelings of burden on family and relatives, persistent pain, infection, and resistance to antibiotics are additional significant effects associated with chronic wounds.³

The persistent presence of chronic wounds is increasingly acknowledged as a significant issue in the healthcare sector, exerting a substantial impact on global morbidity and mortality reminiscent of an "unrecognized epidemic." The escalating prevalence of chronic wounds imposes a considerable burden on patients, healthcare providers, and the entire healthcare system. This affects the quality of life and influences resource allocation and healthcare expenditures.⁴ In Europe, chronic wounds primarily affect the lower extremities in approximately 1.51% of the population and 2.21% of patients with mixed aetiology.⁵ Within Italy, an estimated 24% of the population, approximately two million people, are affected by chronic wounds, mainly due to factors related to ageing and lifestyle-related comorbidities such as diabetes, obesity, hypertension, and peripheral vascular disease.³ To address this issue effectively, the healthcare team must comprehensively understand the elements that define chronic wounds, the management of wound drainage, and the assessment of wounds while providing wound care.^{2,6}

Wound care is a specialized clinical area that demands multidisciplinary teamwork, with nurses playing a pivotal role.⁵ Nursing professionals are responsible for contributing to society and are expected to maintain their professional capabilities in providing direct care.⁷ Hence, it is imperative to conduct education and training programs to enhance nurses' knowledge, attitudes, and skills, particularly regarding wound healing and care.⁸ In a prior study, it was shown that the training of community nurses in wound care led to significant improvements in their knowledge and practice ($p < 0.001$). In addition to this, utilizing the TIME

framework effectively provided wound care education, ultimately resulting in notable enhancements in wound care practice.⁹

Inadequate wound care represents a significant challenge for clinical nurses and has substantial implications for patient outcomes. Addressing this challenge necessitates specialized wound care training to enhance nurses' self-efficacy. However, despite participating in training programs, nurses often need more confidence due to insufficient experience and education, resulting in reduced self-efficacy in the provision of wound care. Bandura (1997) contends that self-efficacy is a cognitive process involving decisions, beliefs, and expectations about individuals' perceived ability to execute specific tasks or actions necessary to achieve desired outcomes.¹⁰ Nurses' self-efficacy denotes their faith in their ability to effectively undertake particular nursing care activities. Augmenting nurses' knowledge and experience in wound care represents a practical approach to enhancing competence, confidence, and service quality. By affording nurses opportunities to strengthen and refine their knowledge through training, self-efficacy can be bolstered, thereby amplifying the nurse's role in delivering comprehensive patient care. The level of self-efficacy significantly influences nurses' confidence in their abilities, which determines their performance quality. Professional competency development programs can aid in elevating nurses' perceived self-efficacy, fostering confidence in developing empathetic patient relationships and ultimately enhancing patient satisfaction. Competency development programs, such as wound care training initiatives, are crucial. They empower nurses to gain a deeper understanding of wound conditions and improve their capacity to select appropriate treatment modalities and equipment for managing complex wounds, consequently elevating nurses' confidence. More literature on strategies to enhance self-efficacy following standardized wound care training programs is needed. Therefore, synthesizing articles that address the factors influencing self-efficacy and strategies utilized by clinical nurses to enhance self-efficacy post-wound care training is imperative.^{11,12}

Materials and Methods

The research design employed in this study involves analyzing 16 articles. These articles were sourced from various scholarly databases, including Google Scholar (n=13500), ProQuest (n=1154), Science Direct (n=676), and PubMed (n=1681). The search for articles was conducted using the PRISMA method, following predefined criteria for inclusion and exclusion.

To maintain the highest level of methodological integrity, the article search process strictly adhered to the PRISMA method (Figure 1), which involved a meticulous and thorough search process. The inclusion criteria were predefined and encompassed several specific parameters. These parameters included the requirement for articles to be in the English language, address factors influencing nurse self-efficacy in clinical practice following wound care training, and have been published within the last five years (2018-2023). Conversely, exclusion criteria were carefully established to ensure the selection of relevant and accessible articles. These criteria encompassed the exclusion of paid articles, articles without full-text accessibility in book or module formats, articles in the form of undergraduate theses, master's theses, dissertations, and scientific papers, as well as articles not in English. The articles that satisfied the criteria were deemed to have met the specified requirements. Table 1 shows the summary of articles.

Results and Discussion

The provision of wound care is integral to upholding patients' health and overall well-being, constituting a fundamental aspect of nursing practice. Various studies have underscored nurses' need to augment their expertise in this specialized care. This imperative often stems from the need for more clearly defined and standardized competency frameworks among nurses, particularly in consistent and efficient wound care administration.¹³ The proficiency of wound care nurses is influenced by various factors that can impact their self-efficacy. One significant factor is the need for some nurses to develop confidence in wound care post-training, primarily due to limited experience and education. This can lead to a deficit in self-efficacy when performing wound care. A closely related factor is nursing students' relatively insufficient

wound care education, particularly in contemporary moist care techniques. Nurses primarily acquire numerous skills based on empirical knowledge and experience throughout their clinical careers.^{2,8}

One proven effective method for acquiring new skills and enhancing nurses' performance is through training, leveraging previous nursing experience as the most influential source. It is crucial to consider the influence of nurses' educational backgrounds on developing essential skills required for providing optimal wound care to patients. Training programs facilitate a better understanding of wound status and enhance the nurses' capacity to select appropriate medical methods and equipment for managing complex wounds, consequently bolstering their confidence levels.² To this end, nurses must augment their nursing competencies by undergoing wound care training programs and implementing these learnings in their daily practice. The domain of competency in wound care is intrinsically linked to theoretical knowledge and practical training, reinforced by the nurses' educational background.¹⁴

According to the study, nurses who received specific training in wound care demonstrated significantly higher proficiency in providing wound care than those who did not. The research findings indicate that a substantial number of nurses needed to gain the necessary knowledge and skills in wound care, with over 40% failing to offer comprehensive discharge planning related to wound care education. This highlights the urgent requirement for well-structured educational and training initiatives that prioritize advancing nurses' proficiency in wound healing and care while emphasizing the enhancement of academic standards in this critical area of healthcare.¹⁵ This stands consistent with the research conducted by Welsh (2018), which underscored the deficiency in applying wound care theory to practice owing to the absence of structured education. Proficiency in wound care knowledge significantly influences wound healing and care practices, with well-informed professionals more likely to adhere to recommended practices. Consequently, it can be concluded from these two studies that trained nurses are more likely to possess up-to-date knowledge of wound care and can apply evidence-based practices obtained in wound care service settings. Enhanced knowledge

in the care of patients with wounds can bolster nurses' practical competence and self-efficacy, while also fostering evidence-based wound care practices.¹⁶

Competence, social support, and self-motivation significantly influence the self-efficacy of wound nurses. Nurses who have received comprehensive training are more likely to exhibit high levels of self-efficacy.¹⁷ Competence, rooted in a person's interest and experience, is a behaviour-based characteristic influenced by motivation and attitude, thus directly impacting self-efficacy.⁷ Training and simulation can enhance nurses' competence and skills, increasing confidence and self-efficacy.^{12,18} Allowing nurses to enhance their knowledge during exercise can improve self-efficacy and enhance their role in providing comprehensive nursing care to patients. Remember, nurses' motivation is the key to your success.¹⁹

Moreover, social support from clinical nurse colleagues, reflection, sharing of experiences, and mentoring play a crucial role in enhancing nurses' self-efficacy.¹³ Furthermore, it is imperative to consider environmental and resource variables, as well as knowledge, skills, and the impact of social and spiritual factors when seeking to enhance nurses' clinical practice.²⁰ A systematic continuing education program, delivered through a blended learning approach, is essential for nurses caring for patients with wound problems, as it leads to better knowledge, clinical performance, and increased self-efficacy scores.^{21,22}

Developing clinical nurses' self-efficacy in their practice is of utmost importance. This involves augmenting their knowledge and expertise in wound care, fostering confidence in their clinical skills, and establishing standardized fundamental and advanced competencies. Additionally, it requires comprehensive wound nursing education and drawing on successful experiences from others to bolster self-efficacy.^{23,24} Providing enhanced social support and encouragement for independent wound care performance is crucial. Equally important is the need for nurses to prioritize maintaining positive emotional and physical well-being, as it is a pivotal factor in achieving their objectives.²⁵⁻²⁸

Conclusions

Nurses who have received training are more likely to possess knowledge regarding wound care and the capability to apply evidence-based practices within wound care services. This heightened expertise in tending to patients with wounds enhances nurse competence and boosts nurse self-efficacy when accompanied by adequate knowledge and competence. Moreover, structured training assists nurses in improving their competence, nurturing social support capabilities, and igniting motivation to provide comprehensive wound care, enhancing nurses' self-efficacy. Therefore, exploring additional contributing factors to improve evidence-based wound care practices is recommended.

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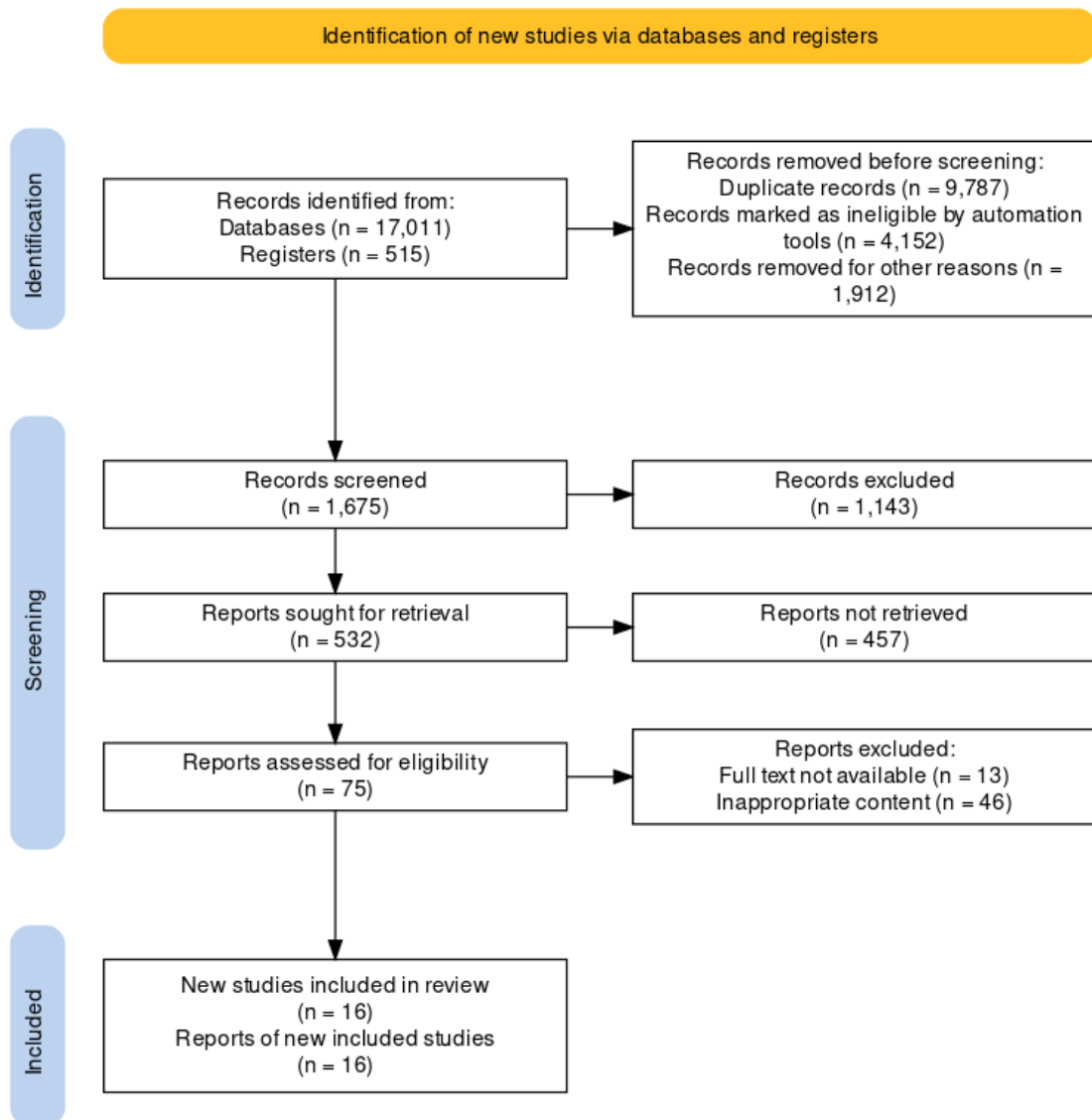


Figure 1. Flowchart of scoping review with selection process using PRIS-MA

Table 1. Summary of Articles

No	Title	Author (Year)	Objective	Method	Results
1.	Wound Care Self-Efficacy Assessment of Italian Registered Nurses and Wound Care Education in Italian Nursing Education System: A Cross-Sectional Study	(Lelapi, et al., 2022).	To evaluate perception of Italian registered nurse (RN) in the field of maintaining wound, knowledge, tasks in giving care, wounds management, values, and attitudes, as well as to explore their previous specific education received-during nursing education.	Survey of web-based online observation. The variables were analyzed with one ANOVA test direction, after being verified as having normal distribution and homoscedasticity each using the Shapiro Wilk normality test and F test. All variables were also analyzed in post hoc analysis using the Tuckey test, showing significant comparison.	This study also indicates that the education provided to nursing students in wound care needs to be improved in Italy. It suggests that many skills acquired during nurses' careers are based on empirical knowledge. Further studies are necessary to determine the educational interventions required for nursing students and registered nurses (RNs) working in clinical settings where wound care management is essential.
2.	Nurses' Knowledge, Practice, and Confidence after the Training Program on Wound Care at the Agriculture General Hospital in Vietnam	(Dung, et al., 2020).	This study aims test the knowledge, practice, and level trust between nurse at AGH after 12 months wound care training program based on VNBNCs.	Descriptive and comparative methods were applied to evaluate the score of knowledge, practice, and self-confidence of nurses. In this case, the data were collected through questionnaire consisting 48 items for knowledge, 13-item for beliefs, and 16 items for skills.	Knowledge, practice, and belief of nurses related to wound care increased after 12 months of training. This shows that wound care training program based on VNBNCs (Vietnam's Basic Nursing Competency Standards) developed by Viet Duc University Hospital is a good fit to be used in AGH and has reached good result. Therefore, this program must-be duplicated for the others health facilities.
3.	Knowledge and Practice of Wound Care and Associated Factors among Nurses	(Tegegne, et al., 2022)	To evaluate knowledge and practice in wound care and its relevant factors among nurses working at government	The design applied is cross-sectional study in Hospital. Data were entered in EpiData 4.4.2 and exported to SPSS 25.0 for analysis. Statistics descriptive as well as bivariate and multivariate	According to the findings, 40.3% and 51.0% of the nurses respectively had good knowledge and practice in wound care. Most of the respondents had bachelor or higher educational degree (AOR 3.27, 95% CI 1.97–5.43) and training (AOR 3.71, 95% CI

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No	Title	Author (Year)	Objective	Method	Results
	Working in South Wollo Zone Government Hospitals, Ethiopia		Hospital of South Wollo Zone, Ethiopia.	logistics regression are implemented. Variable with mark $P < 0.05$ is: considered significant for knowledge and practice of good wound care.	2.37–5.81), thus it is significantly related to knowledge about wound care. More than 10 years' experience (AOR 3.15, 95% CI 1.96–5.04), training (AOR 3.75, 95% CI, 2.38–5.85), and no patients burden (AOR 3.15, 95% CI 1.96–5.04) were significantly related to wound care practice. Furthermore, low knowledge and practice of wound care of nurses are determined by education, training, load patients, and experiences. Hence, nurse must get training and sharing experience.
4	Level of Knowledge and Wound Care Practice at a Tertiary Referral Hospital in Ethiopia: A Survey in 180 Nurses	(Desta, et al., 2020)	To evaluate knowledge and practice of nurses working at Fleeger Hiwot Comprehensive Specialized Hospital for wound healing and care.	The design applied is observational survey. In this case, analysis was done through STROBE checklist report.	The study revealed deficiencies in nursing staff's knowledge and application of wound care, with over 40% of nurses failing to provide pre-homecoming education on wound care. Implementing structured pre-service and in-service training and educational programs focused on wound healing and care is imperative. Additionally, efforts should be made to enhance nurses' education and shared experience. Establishing hospital assessments based on wound healing and care guidelines and tools is also essential for improvement in this area
5	Effect of Training Program on Performance of Nurses Caring for Patients with Negative Pressure Wound Therapy	(Mohamed, et al., 2019)	To evaluate the influence of training program on nurses' performance in taking care of patient with negative wound pressure therapy.	The design applied is quasi-experimental studies. The comparison was determined through one direction analysis of variance (ANOVA). Chi-square test was also used to compare variable with categorical data. In this	Educational initiatives targeting specific areas, such as negative pressure wound therapy, can augment nurses' proficiency and clinical performance. Hospital management must promote and support continuous education for nurses to ensure the currency of their knowledge. Moreover, prioritizing practical, demonstration-oriented training and

Table 1. Summary of Articles

No	Title	Author (Year)	Objective	Method	Results
				case, the significance statistics was set at $p < 0.05$.	workshops over conventional lectures is vital. This approach bridges the divide between theoretical knowledge and its practical implementation in wound care practices.
6	Nursing Competency: Definition, Structure and Development	(Fukada, 2018)	To identify the training method to teach nursing competence.	Observation survey design.	Nursing competence encompasses the fundamental skills and expertise necessary to fulfil a nurse's duties effectively. As such, it is imperative to clearly define nursing competence as a foundation for nursing education curricula. Furthermore, it is essential to delineate the developmental trajectory of nursing competence to establish a sustainable professional framework post-nursing licensure.
7	Areas of nursing competence in acute wound care: A focus group study	(Kielo-Viljamaa et al., 2022)	To identify the general competence field for registered nurse who provide wound care during their transition from student to healthcare professional.	In study this, qualitative design and research have been done. In this case, it is known that registered nurse and graduate nursing student have limited competence in wound. Further, the method used is direct interview.	Registered nurses providing wound care for patients must demonstrate proficiency in two primary competency areas: knowledge, skills, and performance in aetiology and treatment, along with management and assessment of wounds. Within this shared-competence field, more detailed subcategories emerge. The desired values and attitudes encompass autonomous and privacy-respecting behaviour, holistic care, professionalism, courage, and considerations related to the economics of wound care.
8	Knowledge, practice, and associated factors towards postoperative wound care among	(Gizaw, et al., 2022)	To know the level of knowledge and practice of nurse about post-surgery wound care management and the contributing factors among nurses	A cross-sectional study was conducted on 465 nurses who worked at general hospital in West Showa Zone, Oromia, Ethiopia.	Less than half of the nursing staff demonstrates proficient knowledge and adherence to best practices in managing post-surgery wound care. Several contributing factors have been identified for this deficiency.

Table 1. Summary of Articles

No	Title	Author (Year)	Objective	Method	Results
	nurses working in public hospitals in Ethiopia: A multicenter cross-sectional study in low resource setting area		working at general hospital in West Showa, Oromia region, Ethiopia, 2020.		
9	A systematic and psychometric review of tests measuring nurses' wound care knowledge	(Kielo et al., 2022)	This study aims to identify, define, and analyze knowledge development test to measure the nurses' wound care knowledge and evaluate the psychometrics characteristics of the test.	Systematic literature review	According to the findings of the analysis, the Pressure Ulcer Knowledge Test (PUKT) and Pressure Ulcer Knowledge Assessment Tools (PUKAT) are deemed the most reliable instruments for assessing nurses' knowledge in wound care. Most of the identified and evaluated instruments primarily focus on pressure ulcers, suggesting the need for future instruments to centre on other types of injuries or general wound treatment to comprehensively assess nurses' knowledge of wound care.
10	Psychometric Properties of the Taiwanese Pressure Ulcer Management Self-Efficacy Scale in Nursing Practice	(Chao, et al., 2022)	This study aims to set the psychometrics characteristic of the Pressure Ulcer Management Self-Efficacy Scale (PUM-SES) for Taiwan and determine the validity and reliability of the Taiwan version of the PUM-SES.	Cross-sectional survey	Seven expert assessed PUM-SES-T with CVI value of 0.995. Internal consistency, using Cronbach's α , was obtained by 0.762 and reliability test obtained 0.997. PUM-SES-T is positively correlated with GSES ($p < 0.001$). Furthermore, multiple regression discloses that the practice of PUM-SES-T predictions with strong validity prediction ($F = 8.077, p < 0.001$), had an adjusted R^2 of 0.455, however no significant collinearity with found. PUM-SES-T is a validated instrument with appropriate psychometrics evaluation about consistency, reliability test content validity,

Table 1. Summary of Articles

No	Title	Author (Year)	Objective	Method	Results
					concurrent validity, and predictive validity. It is simple and easy to evaluate the self-efficacy to PI prevention and treatment in 3 to 5 minutes. Nursing administrator can use this instrument to identify the nurses' confidence and weakness in preventing and managing PI.
11	What factors influence community wound care in the UK? A focus group study using the Theoretical Domains Framework	(Gray, et al., 2019)	This study aims to explore the care influencing factors in the public environment with complex wound.	This qualitative study used the Theoretical Domains Framework (TDF) to compile questions, clues, and analysis.	A TDF (Theoretical Domains Framework) domain was found in the form of environment context and power sources, knowledge, skills, social support influence, and best regulatory behavior to explain variation in wound care and lack of use of proof research. Factors such as finance pressure is considered to have its own negative effect on care continuity, wound care service availability, and work burden. We also found out that most of the practices carried out is based on knowledge experience and personal preferences and significantly affected by colleagues, patients and pharmacy industry, though it is not supported by research evidence.
12	A survey of nurses' wound assessment knowledge, attitude and competence in Nigeria	(Obilor et al., 2021)	To evaluate the knowledge, attitudes, and competency of nurses regarding wound assessment in Nigeria.	A cross-sectional study used a structured questionnaire based on pertinent literature and wound assessment guidelines to collect data.	A considerable proportion of nurses demonstrated a high level of knowledge in wound assessment yet exhibited deficiencies in specific competencies. A notable number of nurses regarded wound assessment as the responsibility of physicians. Notably, there needed to be a discernible correlation between nurses' competence, knowledge, and attitude towards wound assessment..
13	Status of core competencies of	(Yu, et al., 2022)	To know the core competencies of nurses on	A survey was distributed to 123 patients, nurses caring for wounds,	The proficiency of nursing careers and core competencies in wounds, ostomy, and continence in

Table 1. Summary of Articles

No	Title	Author (Year)	Objective	Method	Results
	wound, ostomy and continence nurses and their influence on career success: a cross-sectional study		wounds and continence as well as their demographic characteristics.	ostomy and continence, recruited from 108 hospital in 28 provinces. Multivariate logistic regression was done to explore relationship between success career results and scores of core competencies of nurses in caring for wounds and continence.	China is currently above average. A positive correlation exists between the success of nursing careers and the core competencies of nurses providing care for wounds, ostomy, and continence, suggesting that improving competence can lead to increased success in a nursing career.
14	Clinical Nurses' Continuing Education Needs in Acute Burn Care	(Oh, 2022)	The objective of this study is to explore the need for sustainable clinical nurse education in caring for patient with acute burn wound.	A descriptive study design was implemented to explore the need for sustainable clinical nurse education in caring for patient with acute burn wound that is carried out through directed group interview. Evaluation on educational in knowledge and skills of burn wound care developed based on the analysis filled from directed group interview.	The nurses show needs for higher education in knowledge and skills of caring for patient with acute burn wound. It is further indicated that the education needed contain comprehensive nursing knowledge and skills for care, emergency care, and psychosocial nursing care to change physical injury caused by acute burn. The systematic educational programs sustainability need to be developed for nurse caring for patient with acute burn wound through mixed learning approach.
15	Effects of Standardized Patient-Based Training on Surgical Nurses' Competencies for Managing Hand Injuries	(Hong, et al., 2020)	This study tries to identify the effect of Standards Patient (SP)-based training surgical ward nurses' knowledge, clinical performance, and self-efficacy about finger replantation.	Control waiting list group with cross-sectional design was used for this study. Data concerning knowledge, performance, and self-efficacy were collected at the beginning after the first intervention, and after 1 month on crossing groups and second interventions. Data were further analyzed using ANOVA of repetitive measures.	Nurse showed better knowledge, clinical performance, and self-efficacy score after SP based training. After crossover, knowledge, clinical performance, and self-efficacy score were maintained for 1 month after training in group A. In conclusion, SP-based Training generates improvement and retention of knowledge, clinical performance, and self-efficacy.
16	Knowledge, attitude, perceived	(Chuang, et al., 2023)	This study aims to (1) test knowledge, attitudes,	Cross-sectional, descriptive and web-based questionnaire via Google	This study disclosed that related articles with wound and use dressing level further, as well knowledge on

Table 1. Summary of Articles

No	Title	Author (Year)	Objective	Method	Results
	barriers of hard-to-healed wound care and the association with confidence: A cross-sectional study among community nurses		perceived barriers, and self-beliefs of public nurse in recognizing and dealing with patient with HHW (Hard-to-Healed Wound), (2) explore relationship between participants, characteristics, knowledge of wound care, attitudes and care obstacle, and self-confidence, (4) determine most predictive factor of public nurses' self-confidence in nurse caring for patient with HHW.	Spreadsheet was conducted and answered by public nurses from various public facilities in Taiwan. The target population included 2500 nurses from 735 public facilities including homecare center affiliated with pain, community, homecare service affiliated with health center, and home care facilities. This study takes part in the strengthening program Observational Studies Reporting in Epidemiology Guidelines checklist.	wound care, attitudes in caring for injuries, and obstacles in wound care together with covariance, shows 81% related to variance with self-confidence in caring for wounds. In this case, the remaining self-confidence in caring for wound is possible also related to other factors such as teaching and learning method. Building self-confidence in caring for wounds does not only need proof-based training, but also through promoting positive attitude from nursing staff in nurse patient by planning holistic care, reducing wound obstacle, improving self-confidence in wound care, and improving the quality of patient care.