

Wound Care Knowledge, Self-Management Practice and Wound Healing Outcomes among Adult Patients with Chronic Wounds in Southwest Nigeria: A Cross-Sectional Study

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Abstract

Original Research Article

Chronic wounds represent a substantial and under-recognised burden on health systems in sub-Saharan Africa, consuming disproportionate clinical resources and imposing prolonged physical, psychological and economic costs on affected individuals. Because the greater part of wound care after the initial clinical encounter is necessarily carried out by patients themselves, healing outcomes depend heavily on what patients know about wound care and on how consistently they translate that knowledge into daily self-management. Despite the growing prevalence of diabetes and other chronic conditions predisposing to wounding in Nigeria, empirical evidence linking patients' wound care knowledge and self-management practice to measurable healing outcomes remains scarce. This study therefore examined wound care knowledge, self-management practice and wound healing outcomes among adult patients with chronic wounds attending selected secondary and tertiary healthcare facilities in Southwest Nigeria.

The study was anchored on Orem's Self-Care Deficit Nursing Theory, which explains how a deficit between an individual's self-care demand and their self-care agency generates the need for nursing intervention, with Bandura's Self-Efficacy Theory and the TIME framework for wound bed preparation providing complementary behavioural and clinical perspectives. A facility-based analytical cross-sectional design was adopted, involving 302 adults with wounds of at least four weeks' duration. Participants were selected through systematic sampling from wound care, surgical outpatient and diabetes clinics. Data were collected using a validated wound care knowledge and self-management practice questionnaire and a structured wound healing outcome assessment instrument scored on a 0–100 scale. Data were analysed using descriptive statistics, chi-square analysis, Pearson's correlation, one-way analysis of variance and multiple linear regression, with statistical significance established at $p < 0.05$.

The findings revealed that 39.1% of respondents had adequate wound care knowledge, while 35.1% and 25.8% demonstrated marginal and inadequate knowledge respectively; corresponding figures for self-management practice were 34.4%, 37.4% and 28.1%. The mean wound healing outcome score was 58.6 ± 15.2 , indicating a moderate level of healing progress. Both wound care knowledge and self-management practice exhibited moderate positive and statistically significant relationships with wound healing outcomes ($r = 0.47$ and $r = 0.52$ respectively, $p < 0.001$). The regression analysis further showed that adequate self-management practice, adequate wound care knowledge, absence of comorbid diabetes mellitus, wound duration of less than twelve weeks and tertiary educational attainment significantly predicted better healing outcomes, the model accounting for 41% of the variance in healing scores.

The study concludes that wound care knowledge and, more strongly, self-management practice are significant predictors of wound healing outcomes among adult patients with chronic wounds in Southwest Nigeria, and that the effect of practice is not reducible to knowledge or formal education alone. Strengthening patients' capacity for wound self-management through structured, culturally appropriate education integrated into routine wound care can shorten healing trajectories and reduce complication rates. The study therefore recommends that structured wound self-management education, supported by teach-back counselling and simplified visual materials, be incorporated into routine wound clinic practice, with priority given to patients with comorbid diabetes and wounds of longer duration.

Keywords: Wound care knowledge; self-management practice; wound healing outcomes; chronic wounds; diabetic foot ulcer; Southwest Nigeria.

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1.0 INTRODUCTION

Wounds are among the most frequently encountered clinical problems at every tier of the health system. A wound is conventionally defined as a break in the continuity of any bodily tissue arising from the action of an external agency, including surgery. Where healing follows the expected trajectory, the injury is termed acute; where it fails to progress within roughly four weeks to three months, it is classified as chronic (Peña & Martin, 2024).

Chronic wounds carry a burden disproportionate to their prevalence. They may never heal, or may take years to do so, causing severe physical and emotional distress while consuming considerable clinical time, consumables and hospital bed-days. Global wound care expenditure is estimated at over \$148 billion annually, and biofilm-associated chronic wound infection alone is estimated to cost roughly \$386 billion each year, a substantial share of which reflects wounds that fail to close on schedule (Sen, 2025; Hurlow, Wolcott & Bowler, 2025). Prevalence in general populations is roughly one to two per cent of adults, rising steeply with age, diabetes, peripheral vascular disease and immobility (Sen, 2025). Nigerian facility-based data illustrate the same pattern at ground level: a retrospective review of a community outpatient wound clinic in Ibadan found diabetic, post-traumatic and haemoglobinopathic wounds among the leading presentations, with more than a third of patients self-discharging before healing was complete, chiefly because of cost, distance and discouragement at slow progress (Iyun & Iyun, 2022). Such attrition is itself a marker of the self-management burden this study investigates: patients who disengage from formal care do not stop needing to dress and monitor their wounds, they simply do so without professional oversight.

The burden in sub-Saharan Africa is shaped by the region's rapidly changing chronic disease profile. Nigeria has the largest number of adults living with diabetes in the African Region, and a recent systematic review and meta-analysis pooling sixty Nigerian studies estimated a type 2 diabetes prevalence of about 7.0%,

corresponding to roughly one in fourteen adults (Olamoyegun, *et al.* 2024). Since diabetes is the most common cause of the peripheral neuropathy underlying neuropathic ulceration, and since the coexistence of peripheral vascular disease materially increases the risk of infection and amputation, the epidemiological trajectory of diabetes in Nigeria implies a parallel rise in chronic wound presentations. Southwest Nigeria, one of the country's most populous and urbanising zones, is characterised by wide disparities in educational attainment, income and access to structured wound care services, making it an important setting in which to examine the determinants of wound healing.

Critically, the management of a chronic wound is not confined to the clinical encounter. Between scheduled clinic visits, patients and their household caregivers undertake dressing changes, monitor for signs of infection, maintain offloading and compression regimens, and manage moisture and peri-wound skin. Universal wound management principles, haemostasis, classification, assessment, risk-factor modification, infection control, cleansing with debridement and dressing, moisture and perfusion control, analgesia, closure and nutritional support, are therefore only partially deliverable by health professionals. Their sustained application depends on what patients understand about their wound and on how reliably that understanding is converted into daily practice.

Against this background, a clear gap persists. Although the pathophysiology of wound healing and the technical principles of wound management are well documented, and although the clinical and socio-demographic correlates of poor healing have been described, the extent to which patients' own wound care knowledge and self-management practice relate to measurable healing outcomes — independently of formal education and clinical status — has received little empirical attention in Nigeria. Addressing this gap matters because, unlike educational attainment, wound care knowledge and self-management practice are modifiable within routine clinical encounters. This study therefore

examined wound care knowledge, self-management practice and wound healing outcomes among adults with chronic wounds in Southwest Nigeria, and determined the association between them after adjusting for relevant socio-demographic and clinical factors.

The specific objectives of the study were:

- i. to examine the relationship between wound care knowledge and self-management practice and wound healing outcomes among adult patients with chronic wounds; and
- ii. to determine the socio-demographic and clinical factors that independently predict wound healing outcomes.

The study was guided by the following research questions:

- i. What is the relationship between wound care knowledge and self-management practice and wound healing outcomes?
- ii. Which socio-demographic and clinical factors independently predict wound healing outcomes?

In line with the research questions, the study tested the following null hypotheses:

H₀₁: There is no significant association between wound care knowledge and self-management practice and wound healing outcomes among adult patients with chronic wounds in Southwest Nigeria.

H₀₂: Wound care knowledge and self-management practice are not significant independent predictors of wound healing outcomes after adjusting for relevant socio-demographic and clinical factors.

2.0 LITERATURE REVIEW

2.1 Conceptual Review

Overview of the Anatomy and Physiology of the Skin

An understanding of wound care knowledge necessarily begins with the structure it is meant to describe. The skin, the body's largest organ and primary barrier, comprises the epidermis,

generated in its deep stratum and shed from its superficial stratum corneum, and the underlying vascular dermis, whose fibroblasts synthesise the collagen and elastin that give skin its strength (Someya & Amagai, 2019). Its appendages, hair follicles, glands and an array of cutaneous receptors, mediate touch, temperature and pain (Maranduca et al., 2019). This matters clinically because the depth of tissue disruption determines severity and healing route: a superficial break regenerates from adnexal structures within days, whereas full-thickness loss removes the vascular and appendageal structures that support rapid repair (Ozgok & Kopitnik, 2025).

Concept of Wound and Wound Classification

A wound is a break in the continuity of any bodily tissue due to the action of an external agency, including surgery, and may involve complete loss of the epidermis together with portions of the dermis and subcutaneous fat. Wounds are classified along three complementary axes. By integrity of the skin, closed wounds, contusions, blisters, seromata and haematomata, leave the surface intact and carry limited contamination risk, while open wounds, abrasions, punctures, incisions, lacerations, avulsions and amputations, breach the surface and permit entry of foreign material, with punctures carrying a particular risk of deep-seated infection (Ozgok & Kopitnik, 2025). By duration of healing, acute wounds progress at the expected rate, whereas chronic wounds fail to progress within roughly four weeks to three months, often remaining arrested in the inflammatory phase (Peña & Martin, 2024). By aetiology, blunt trauma, burns (thermal, chemical, electrical or radiation) and penetrating injury are distinguished, burns being graded by depth of tissue destroyed rather than mechanism.

The four principal categories of chronic wound, pressure, venous, arterial and neuropathic ulcers, draw on distinct combinations of these mechanisms, culminating in either painful ischaemic ulceration or painless neuropathic ulceration. The practical self-management tasks facing a patient, protecting an insensate foot from unnoticed trauma versus managing pain

and swelling in a venous leg, differ accordingly, so a single undifferentiated notion of 'wound care knowledge' risks obscuring this heterogeneity.

Concept of Wound Healing

Normal wound healing proceeds through four overlapping phases: haemostasis (two to five days), in which platelets aggregate to stem bleeding; inflammation, in which neutrophils and macrophages clear debris and bacteria; proliferation (two days to three weeks), in which fibroblasts build a collagen network and epithelium migrates across a moist wound bed; and remodelling (three weeks to two years), in which organised collagen replaces the immature form, though tensile strength never fully returns to baseline. Healing is also classified by intention: primary intention closes a clean, well-approximated wound with the best cosmetic result; secondary intention heals a wound left open through granulation and contraction, more slowly and with greater infection risk, and is the route by which most chronic wounds close, when they close at all; and tertiary intention delays closure deliberately to allow swelling or contamination to resolve first (Ozgok & Kopitnik, 2025; Peña & Martin, 2024). The route a wound is expected to heal by therefore shapes the self-management burden a patient carries: secondary-intention healing demands sustained dressing changes over a longer, more visually alarming trajectory.

Interventions succeed largely to the extent that they support rather than interrupt these phases. This is why cytotoxic antiseptics, excessive irrigation pressures and inappropriate dressing choices can each delay the healing they are intended to promote, and it is the reason that patient practice, rather than patient intention, is the operative variable in chronic wound care.

Wound Infection: Recognition, Biofilm and Complications

A wound is colonised by microorganisms from the moment the skin barrier is breached, but colonisation becomes clinically significant infection when bacterial burden overwhelms

host defences, producing erythema, warmth, swelling, pain and purulent discharge, with fever and malaise where infection spreads. Left unaddressed, infection can progress to cellulitis, abscess, osteomyelitis, sepsis and limb loss. A further complication is biofilm: within days, bacteria in a chronic wound can organise into a matrix-embedded community that tolerates antimicrobial agents far better than free-floating bacteria and is a principal reason many chronic wounds stall despite apparently appropriate care (Hurlow, Wolcott & Bowler, 2025). Because biofilm produces subtler signs, friable granulation, malodour, stalled progress, than acute infection, patient education must extend beyond the classic signs to these subtler indicators so that re-presentation occurs before deterioration advances.

Concept of Wound Care Knowledge and Self-Management Practice

Wound care knowledge, as conceptualised in this study, refers to the patient's understanding of the nature of their wound, the rationale for the prescribed regimen, recognition of signs of infection and deterioration, and the circumstances requiring re-presentation. Self-management practice refers to the behaviours through which that understanding is enacted: hand hygiene, adherence to dressing-change frequency, appropriate cleansing, protection from soaking, offloading or compression, nutritional and glycaemic adherence, and timely help-seeking. Knowledge is necessary but insufficient for practice, a patient may know a dressing needs daily changing yet be unable to afford consumables, or a caregiver may deliver adequate practice without the patient possessing deep understanding, so the two constructs are measured and modelled separately here. Self-management is not, however, autonomy from clinical supervision: professional expertise remains indispensable (Mayer, Tettelbach, Ciprandi et al., 2024), and self-management instead operates in the interval between encounters, determining how much of that professional contribution is preserved.

Concept of Wound Healing Outcomes

Wound healing outcome is a multidimensional construct, operationalised variously as binary healing status, time to closure, percentage reduction in wound area, or composite scores combining wound bed characteristics. Composite instruments better capture incremental progress in wounds that remain unhealed, which is the majority of chronic wounds at any assessment point, and typically aggregate wound surface area, exudate, tissue type and the condition of the wound edges and peri-wound skin. In the present study, wound healing outcome was measured as a composite score on a 0–100 scale, permitting parametric analysis of the independent contribution of knowledge and practice while adjusting for clinical covariates.

Wound Care Knowledge, Self-Management Practice and Healing Outcomes

Conceptually, knowledge and practice influence healing outcomes through interconnected pathways: stronger knowledge supports understanding of the regimen, earlier recognition of warning signs, and avoidance of wound-bed damage, and better health-system navigation, capabilities that plausibly reduce infection and support earlier intervention. Practice is expected to exert a stronger direct effect than knowledge, since it immediately determines the wound bed's physical condition, so the relationship is best understood as indirect and multifactorial, consistent with the moderate correlations typically reported in the literature.

Universal Principles of Wound Management, Cleansing, Debridement, Dressing and Nutrition

Whatever its aetiology, wound management follows a common set of principles: control of bleeding, accurate classification, structured assessment, risk-factor modification, infection prevention and control, cleansing with appropriate debridement and dressing, perfusion and moisture balance, analgesia, appropriate closure, and nutritional support (Mayer,

Tettelbach, Ciprandi et al., 2024). Clean tap water is now well supported as an alternative to sterile saline for cleansing, with little or no difference in healing or infection outcomes, a finding especially relevant where sterile saline is not readily available (Holman, 2023); antiseptics, by contrast, are cytotoxic to fibroblasts and keratinocytes at antimicrobial concentrations and are best reserved for confirmed infection. Debridement, removal of dead or biofilm-laden tissue, is the intervention most consistently associated with progression toward healing; because biofilm re-establishes within roughly a day, current best practice treats debridement as an ongoing 'wound hygiene' cycle repeated at every dressing change rather than a single procedural event (Mayer, Tettelbach, Ciprandi et al., 2024). Most debridement techniques require professional training, so the corresponding self-management task is maintaining the moist environment that supports autolytic debridement between visits and recognising when a wound's failure to progress warrants a further clinical visit. The domains of wound care knowledge and self-management practice measured in this study were constructed to correspond to these universal principles.

Dressings protect the wound, manage exudate, maintain the moist environment that supports epithelial migration, and, where relevant, deliver an antimicrobial agent; selection is guided by exudate volume and the TIME framework domains described below rather than by a single all-purpose product. An updated meta-analysis found honey dressings modestly shorten healing time in chronic wounds, though the certainty of this evidence is only moderate and effects on infection clearance are inconsistent (Tang, Chen & Ran, 2024); adjunctive modalities such as electrical stimulation show some promise but are not yet supported strongly enough for routine recommendation (Mayer, Tettelbach, Ciprandi et al., 2024). Where closure rather than secondary-intention healing is possible, options range from sutures and adhesive closures through delayed primary closure to skin grafting for complex defects. For the patient, dressing frequency and type are not incidental details but decisions tied to exudate level and healing route, so adherence

to the prescribed regimen, rather than substitution of a more familiar or affordable alternative, remains central to progress. Wound repair is also metabolically demanding: protein, vitamin C, vitamin A and zinc each support collagen synthesis, epithelialisation and immune function, and protein-calorie malnutrition can measurably impair healing within days of onset (Seth et al., 2024). Evidence for routine micronutrient supplementation absent a demonstrated deficiency remains limited, so nutritional advice is best framed around a balanced, adequate diet; nutritional adherence was accordingly included among the self-management domains assessed in this study.

2.2 Theoretical Review

This study is anchored primarily on Orem's Self-Care Deficit Nursing Theory, while Bandura's Self-Efficacy Theory and the TIME framework for wound bed preparation provide complementary behavioural and clinical perspectives. Together, these frameworks explain how the capacity to undertake wound self-care translates into wound bed condition and, ultimately, into healing outcomes.

Orem's Self-Care Deficit Nursing Theory

Orem's Self-Care Deficit Nursing Theory conceptualises self-care as the activities individuals initiate and perform on their own behalf to maintain life, health and well-being (Orem, 2001), distinguishing therapeutic self-care demand from self-care agency, the capability to meet it; where demand exceeds agency, a deficit exists requiring nursing intervention through wholly compensatory, partly compensatory or supportive-educative systems. This framework justifies treating wound care knowledge and self-management practice as measurable components of self-care agency: a chronic wound generates a high, sustained self-care demand, and where agency, comprising knowledge, skill, motivation and resources, falls short, healing is predictably impaired. The theory further implies that the appropriate nursing response is supportive-educative rather than merely compensatory,

which directly informs this study's recommendations on structured wound self-management education.

Bandura's Self-Efficacy Theory

Bandura's Self-Efficacy Theory offers a mechanism linking knowledge to behaviour: self-efficacy, an individual's belief in their capacity to execute the actions a situation requires, is a strong predictor of whether patients initiate and sustain demanding self-care routines (Bandura, 1977). Wound care knowledge is thought to enhance self-efficacy by equipping patients to act on clinical instruction with confidence, and higher self-efficacy in turn supports adherence to dressing, offloading, compression and nutritional recommendations. This helps explain why practice may exert a larger effect on outcomes than knowledge, while knowledge retains an independent effect after adjustment: it operates partly through practice and partly through the confidence and vigilance that sustain it.

The TIME Framework for Wound Bed Preparation

The TIME framework complements these behavioural theories by clarifying the outcome side of the relationship. Developed as a clinical decision tool for systematic wound assessment, it directs attention to four components: Tissue type, Infection or Inflammation (including biofilm), Moisture balance, and Edge advancement (Alam, 2024). By specifying the proximate physical determinants of healing, it identifies precisely the wound bed characteristics that patient self-management can protect or compromise, and provides the conceptual basis for the composite healing outcome measure used here. Together, these three perspectives, Orem's theory operationalising the exposure, Self-Efficacy Theory articulating the behavioural mechanism, and TIME structuring the outcome, support the central proposition that wound care knowledge and self-management practice are independent, potentially modifiable determinants of wound healing outcomes.

2.3 Empirical Review

A growing body of research has examined patient-level determinants of wound healing, though comparatively little originates in sub-Saharan Africa. Studies of diabetic foot ulceration consistently identify inadequate foot care knowledge and practice as correlates of ulcer development, recurrence and delayed healing, and interventional studies of structured education report improved self-care behaviour and reduced ulcer incidence; research on venous leg ulceration similarly identifies non-adherence to compression, itself predicted by patients' understanding of its rationale, as a principal determinant of delayed closure. Clinical determinants are better established than behavioural ones: comorbid diabetes, longer wound duration, infection, larger wound area, peripheral vascular disease and poor nutrition each predict delayed healing, with protein-calorie deficits and deficiencies of vitamins A and C and zinc implicated in impaired collagen synthesis and immune function (Seth et al., 2024).

The evidence base underlying routine wound practice is, however, uneven: tap water cleanses as effectively as saline (Holman, 2023), honey confers only modest benefit with moderate-certainty evidence (Tang, Chen & Ran, 2024), and adjunctive modalities such as electrical stimulation remain insufficiently supported for routine recommendation (Mayer, Tettelbach, Ciprandi et al., 2024). Patient education must therefore concentrate on well-established elements: hygiene, moisture balance, peri-wound protection, dressing and offloading adherence, and early recognition of infection.

Within Nigeria, research has documented clinical and socio-demographic correlates of poor outcomes among patients with diabetes without systematically measuring wound care knowledge or self-management practice (Habibu, Uloko, Gezawa, Ramalan, Muhammad, Abubakar & Muhammad, 2022), an omission characteristic of the regional literature. Overall, the empirical evidence points to a positive but moderate relationship between knowledge, practice and healing, mediated through infection control, moisture balance and adherence; the

concentration of studies in high-income settings and the scarcity of African evidence leave a gap this study addresses.

More recent evidence reinforces this picture. A 2024 meta-analysis of twenty-nine trials found structured education roughly halved the odds of subsequent foot ulceration and amputation among people with diabetes-related foot disease (Drovandi, Seng & Golledge, 2024), while a parallel review found foot-care knowledge and practice remain inconsistent across settings, with gaps in inspection, footwear use and early recognition (Untari, Andayani, Yasin & Asdie, 2024). Qualitative work from Tanzania described delayed treatment-seeking, reliance on traditional remedies, and financial constraint as barriers to self-management (Dawer, Msengi, Magili & Lusingu, 2026), and Nigerian facility data found roughly two in five patients self-discharged before healing was complete, principally over cost and distance (Iyun & Iyun, 2022).

3.0 METHODOLOGY

Study design and setting

This was a facility-based, analytical cross-sectional study conducted over a four-month period at selected secondary and tertiary health facilities in Southwest Nigeria. The facilities operate structured wound care, surgical outpatient and diabetes clinics serving both urban and semi-urban populations, and are broadly representative of the tiers of care at which most adults with chronic wounds in the zone are managed. A cross-sectional analytical design was appropriate because the study sought to estimate the distribution of wound care knowledge, self-management practice and healing outcome levels, and to examine their association at a single point in time.

Study population and eligibility

The study population comprised adults aged 18 years and older presenting with a wound of at least four weeks' duration, the conventional threshold for delayed progression. Eligible participants had received treatment for at least

two weeks, were responsible (personally or through a resident caregiver) for wound care between visits, and could communicate in English or Yoruba. Patients who were critically ill, cognitively impaired, pregnant, receiving wholly inpatient care with no self-care component, or presenting with malignant wounds were excluded, since these would confound measurement of self-management practice or fall outside the model's explanatory scope.

Sample size and sampling

The minimum sample size was estimated using the Cochran formula for cross-sectional studies. Assuming a 25% proportion of patients with adequate wound care knowledge, a 95% confidence level and a 5% margin of error, the calculation yielded a minimum of 288 participants:

$$n = z^2 pq / d^2 = (1.96)^2 \times 0.25 \times 0.75 / (0.05)^2 \approx 288$$

An allowance of approximately 10% for non-response gave a target of 317, of whom 302 provided complete data and were retained for analysis. Participants were recruited by systematic random sampling: the clinic register was used to determine a sampling interval, and every *k*th eligible patient presenting on clinic days was approached until the sample size was reached. This procedure was designed to give each eligible patient an approximately equal probability of selection and to limit selection bias.

Data collection instruments

Data were collected using a structured, interviewer-administered questionnaire together with a clinician-completed wound assessment form, in four sections:

- Section A — Socio-demographic characteristics: age, sex, marital status, educational attainment, occupation, monthly income and place of residence.
- Section B — Clinical characteristics: wound type, wound duration at assessment,

presence of comorbid diabetes mellitus, other comorbidities, treatment modality and most recent glycaemic status where applicable.

- Section C — Wound care knowledge and self-management practice: knowledge was assessed across four domains covering the nature of the wound, the rationale for the prescribed regimen, recognition of signs of infection and deterioration, and indications for re-presentation. Self-management practice was assessed across seven behavioural domains covering hand hygiene, dressing change frequency, cleansing method, protection of the wound from soaking, offloading or compression adherence, nutritional adherence and help-seeking behaviour.
- Section D — Wound healing outcome: assessed by the attending clinician using a structured instrument aggregating wound surface area, exudate volume and character, wound bed tissue type, condition of the wound edges and condition of the peri-wound skin, following the domains of the TIME framework. Scores were transformed to a 0–100 scale, with higher scores indicating more favourable healing progress.

Instruments were pre-tested on a small sample of patients at a non-participating facility; internal consistency was acceptable, with Cronbach's alpha exceeding 0.70 for the knowledge, practice and healing outcome scales, and inter-rater reliability for the clinician-completed healing instrument was assessed on a subsample. For analysis, knowledge and practice were each categorised as inadequate, marginal or adequate using established cut-off points.

Variables and model specification

The dependent variable was the wound healing outcome score, measured on the 0–100 scale. The two principal independent variables were wound care knowledge and self-management practice, each entered both as a categorical variable (inadequate, marginal, and adequate) and, in the regression model, as a binary

indicator for the adequate category. Covariates comprised age, sex, educational attainment, monthly income, wound type, wound duration and the presence of comorbid diabetes mellitus. The association between the independent variables and healing outcome was modelled using multiple linear regression, specified as:

$$WHO_i = \beta_0 + \beta_1KNW_i + \beta_2PRA_i + \beta_3DUR_i + \beta_4DM_i + \beta_5EDU_i + \beta_kX_i + \varepsilon_i$$

where WHO_i is the wound healing outcome score of participant i ; KNW_i and PRA_i denote adequate wound care knowledge and adequate self-management practice respectively; DUR_i , DM_i and EDU_i represent wound duration, presence of comorbid diabetes mellitus and educational attainment; X_i is a vector of remaining covariates comprising age, sex, income and wound type; and ε_i is the stochastic error term.

Data analysis

Data were analysed with statistical software. Continuous variables were summarised as means and standard deviations, and categorical variables as frequencies and percentages. Chi-square tested associations between categorical variables; Pearson correlation assessed linear relationships between knowledge, practice and healing scores; one-way ANOVA compared mean healing scores across knowledge and practice categories; and multiple linear regression identified independent predictors, adjusting for socio-demographic and clinical covariates, with regression assumptions and variance inflation factors checked prior to

interpretation. Significance was set at $p < 0.05$.

Ethical considerations

Ethical approval was obtained from the relevant institutional health research ethics committee, with administrative permission from each participating facility. Written informed consent was obtained from every participant in their preferred language, with assurance that refusal or withdrawal would not affect care received. Questionnaires were anonymised and coded, data were stored securely with access restricted to the research team, and wound assessment was integrated into routine consultation to impose no additional procedure; findings suggesting infection or deterioration were communicated to the attending clinician for immediate action.

4.0 RESULTS AND DISCUSSION

4.1 Socio-demographic and clinical characteristics

A total of 302 participants completed the study. Their mean age was 56.8 ± 12.4 years, and slightly more than half were women (54.0%). A little over one third had at most primary education (35.8%), and diabetic foot ulcer was the single commonest wound type (31.1%). Almost half of the sample had comorbid diabetes mellitus (47.4%), and approximately three in ten presented with a wound of more than twelve weeks' duration (30.8%). Table 4.1 summarises the socio-demographic and clinical profile of respondents.

Table 4.1: Socio-demographic and clinical characteristics of participants (N = 302)

Variable	Category	Frequency (n)	Percentage (%)
Age group (years)	≤ 40	44	14.6
	41–60	132	43.7
	> 60	126	41.7
Sex	Male	139	46.0
	Female	163	54.0

Educational level	No formal / Primary	108	35.8
	Secondary	112	37.1
	Tertiary	82	27.2
Residence	Urban	181	59.9
	Semi-urban / Rural	121	40.1
Wound type	Diabetic foot ulcer	94	31.1
	Venous leg ulcer	61	20.2
	Pressure ulcer	55	18.2
	Traumatic / surgical	92	30.5
Wound duration	4–8 weeks	88	29.1
	9–12 weeks	121	40.1
	> 12 weeks	93	30.8
Comorbid diabetes	Yes	143	47.4
	No	159	52.6

Source: Field data, 2026 (illustrative; replace with your own field data).

4.2 Levels of wound care knowledge and self-management practice

Wound care knowledge was adequate in 39.1% of respondents, marginal in 35.1% and inadequate in 25.8%. Self-management practice was adequate in a smaller proportion, 34.4%, with 37.4% marginal and 28.1% inadequate. Taken together, approximately three in five

respondents fell below the threshold for adequate knowledge, and approximately two in three below the threshold for adequate practice. The mean wound healing outcome score for the sample was 58.6 ± 15.2 on the 0–100 scale, indicating a moderate level of healing progress. Table 4.2 presents the distribution of the two exposure variables.

Table 4.2: Distribution of wound care knowledge and self-management practice levels (N = 302)

Construct	Level	Frequency (n)	Percentage (%)
Wound care knowledge	Inadequate	78	25.8
	Marginal	106	35.1
	Adequate	118	39.1
Self-management practice	Inadequate	85	28.1
	Marginal	113	37.4
	Adequate	104	34.4

Source: Field data, 2026 (illustrative; replace with your own field data).

A chi-square analysis indicated a significant association between educational attainment and wound care knowledge level ($\chi^2 = 34.7$, $df = 4$, $p < 0.001$), adequate knowledge being more common among those with tertiary education. The association with self-management practice was weaker though still significant ($\chi^2 = 18.2$, $df = 4$, $p = 0.001$), consistent with practice depending on material and situational factors beyond understanding.

4.3 Association between knowledge, practice and wound healing outcomes

Both exposure variables showed moderate, statistically significant positive correlations with

the healing outcome score: $r = 0.47$ ($p < 0.001$) for knowledge and $r = 0.52$ ($p < 0.001$) for practice; the two were themselves moderately correlated ($r = 0.58$, $p < 0.001$), confirming they are related but not interchangeable.

Mean healing outcome scores rose consistently across categories of both variables, from 47.9 to 67.3 for knowledge and from 46.5 to 69.1 for practice (ANOVA $p < 0.001$ in both cases, with each category differing significantly from the others on post-hoc comparison). These gradients support rejecting the first null hypothesis, and the steeper gradient for practice is consistent with it acting more proximately on the wound bed. Table 4.3 presents these results.

Table 4.3: Mean wound healing outcome score by level of wound care knowledge and self-management practice

Construct and level	n	Mean score $\pm$ SD	F	p-value
Wound care knowledge				
Inadequate	78	47.9 $\pm$ 13.6	38.42	< 0.001
Marginal	106	56.8 $\pm$ 14.1		
Adequate	118	67.3 $\pm$ 13.4		
Self-management practice				
Inadequate	85	46.5 $\pm$ 13.9	52.16	< 0.001
Marginal	113	57.9 $\pm$ 13.7		
Adequate	104	69.1 $\pm$ 12.8		

Source: Field data, 2026 (illustrative). F and p-values from one-way ANOVA across levels of each construct; SD = standard deviation.

4.4 Predictors of wound healing outcomes

In the multiple linear regression model, five variables were independently associated with better healing outcomes: adequate self-management practice, adequate wound care knowledge, absence of comorbid diabetes, wound duration of twelve weeks or less, and tertiary education (Table 4.4). Practice was the

strongest predictor ($\beta = 0.34$, $p < 0.001$), followed by knowledge ($\beta = 0.22$, $p = 0.001$). The model explained 41% of variance ($R^2 = 0.41$, adjusted $R^2 = 0.39$, $p < 0.001$), with variance inflation factors below 2.5, indicating multicollinearity did not compromise the estimates. Retention of significance for both variables after adjustment supports rejection of the second null hypothesis.

Table 4.4: Independent predictors of wound healing outcome (multiple linear regression)

Predictor	β (standardised)	95% CI	p-value
Adequate self-management practice	0.34	0.24 – 0.44	< 0.001
Adequate wound care knowledge	0.22	0.12 – 0.32	0.001
Absence of comorbid diabetes	0.18	0.08 – 0.28	0.003
Wound duration $\leq$ 12 weeks	0.16	0.06 – 0.26	0.006
Tertiary education	0.11	0.01 – 0.21	0.031

Source: Author's computation, 2026 (illustrative). CI = confidence interval; model adjusted for age, sex, income and wound type. $R^2 = 0.41$; adjusted $R^2 = 0.39$.

Discussion of findings

This study set out to examine wound care knowledge, self-management practice and wound healing outcomes among adults with chronic wounds in Southwest Nigeria, and the relationship between them. Three findings stand out: a substantial majority of patients fell below the threshold for adequate knowledge and, more markedly, for adequate practice; healing outcomes were only moderate; and both knowledge and practice were independently and positively associated with healing outcomes, with practice the stronger predictor.

The finding that roughly three in five participants had marginal or inadequate wound care knowledge, and two in three marginal or inadequate self-management practice, is consistent with evidence from other low- and middle-income settings, where limited health knowledge among patients with chronic conditions is common and linked to poorer outcomes. Given that national type 2 diabetes prevalence appears substantially higher than earlier estimates suggested (Olamoyegun, Alare, Afolabi, Aderinto & Adeyemi, 2024), and diabetic foot ulceration accounted for the largest share of wounds in this sample, this knowledge and practice gap has important implications for care that depends on patient execution between clinic visits.

That practice scores were lower than knowledge

scores, and the education-practice association weaker than the education-knowledge association, suggests the barrier to adequate self-management is not solely informational, consistent with Orem's distinction between therapeutic self-care demand and self-care agency (Orem, 2001): agency comprises skill, motivation and material resources as well as knowledge, and a patient may understand the need for daily dressing changes yet be unable to afford consumables. Interventions confined to information transfer are therefore unlikely to close the practice gap alone.

The moderate correlations between the exposure variables and healing outcomes are coherent with the framework adopted here: knowledge and practice act on healing through proximate wound bed variables, tissue type, infection status, moisture balance and edge advancement, rather than directly (Alam, 2024). Self-Efficacy Theory (Bandura, 1977) explains the ordering, knowledge operates partly through practice and partly through the vigilance that sustains earlier help-seeking, consistent with both variables' retention in the adjusted model.

That knowledge and practice remained independent predictors after adjustment for education is notable: neither is merely a proxy for schooling, and unlike education, both are potentially modifiable through targeted, structured patient education delivered within routine care.

The clinical predictors identified, comorbid diabetes and longer wound duration, are consistent with established literature and serve as a validity check on the model; their retention alongside the behavioural variables indicates that self-management supplements rather than substitutes for clinical management.

Taken together, the results support embedding structured, culturally and linguistically appropriate wound self-management education into routine outpatient wound care in Southwest Nigeria, using simplified visual materials and teach-back counselling, and addressing material barriers to adherence alongside informational ones. Prioritising patients with comorbid diabetes, wounds of longer duration and lower educational attainment may offer the greatest gains in healing outcomes.

Strengths and limitations

Strengths of this study include validated instruments, an adequate sample size, separate measurement of knowledge and practice, a clinician-completed rather than self-reported outcome measure, and a multivariable approach isolating each exposure's contribution. Limitations include the cross-sectional design, which precludes causal inference and leaves open the possibility of reverse causation, since a well-healing wound is easier to care for; facility-based recruitment, which may under-represent patients outside formal care; recall/social-desirability bias in self-reported practice; and the absence of direct measurement of material barriers such as consumable affordability, an omission the findings suggest is important. Longitudinal, community-based and interventional studies are needed to confirm and extend these findings.

5.0 Conclusion and Recommendations

Among adults with chronic wounds in Southwest Nigeria, a considerable majority had less than adequate wound care knowledge and, more markedly, less than adequate self-management practice, with only moderate overall healing progress. Both knowledge and practice were

independently and positively associated with healing outcomes, above the effects of educational attainment, comorbid diabetes and wound duration, with practice the stronger predictor. These findings argue for routine integration of structured, culturally appropriate self-management education into chronic wound care, and for attention to material as well as informational barriers to adherence. Strengthening patients' capacity to care for their own wounds between clinical encounters is a practical, high-yield strategy for shortening healing trajectories among people living with chronic wounds in Nigeria and comparable settings.

Based on the findings, the study recommends that:

- iii. wound care knowledge and self-management practice should be assessed routinely at the first wound clinic visit, so that patients with deficits can be identified and supported early rather than after healing has stalled;
- iv. structured, culturally and linguistically appropriate self-management education — incorporating teach-back counselling, demonstration of dressing technique and simplified visual materials — should be integrated into routine wound clinic practice rather than delivered opportunistically;
- v. interventions should address material barriers to adherence alongside informational ones, since the weaker association between education and practice suggests that knowledge alone does not determine behaviour; the affordability and availability of dressing consumables warrant explicit attention;
- vi. interventions should prioritise high-risk groups, particularly patients with comorbid diabetes mellitus, those presenting with wounds of more than twelve weeks' duration and those with low educational attainment;
- vii. health facilities and policymakers should invest in provider training on wound self-management counselling, so that the

supportive-educative role identified in Orem's framework is discharged consistently rather than left to individual initiative; and

- viii. longitudinal and interventional studies should be undertaken to confirm the direction of the association and to evaluate the effectiveness of structured self-management education on measurable healing outcomes.

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