BMC Nursing

RESEARCH Open Access

Exploring nurses' experiences and challenges in managing diabetic amputations: a qualitative study

Ba-Etilayoo Atinga[1*], Albert Henyo[1], Christiana Asospae Ayamga[1], Tulukuu Perekuu[2] and Rosemary Braimah[1]

Abstract

Background Amputation resulting from diabetes remains a significant public health challenge in Ghana, often culminating in morbidity and mortality. Nurses are the frontline health workers that often manage these patients.

Aim This qualitative study explores nurses' experiences and challenges in the care and management of patients undergone amputation due to diabetic complications at the Sunyani Teaching Hospital in Ghana.

Methods Using a phenomenological approach, semistructured interviews were conducted with nurses working in diabetic and surgical units across the Sunyani Teaching Hospital (STH) between April 2024 and July 2024.

Results This study showed that nurses face emotional burdens, resource constraints, patient–nurse relationships, and coping mechanisms in the bid to care for patient with diabetic related amputation.

Conclusion The findings provide invaluable insights into the challenges faced by nurses and suggest strategies for improving care delivery and outcomes for individuals with diabetic amputation.

Clinical trial number Not applicable.

Keywords Diabetic amputation, Nursing experiences, Healthcare challenges, Phenomenology, Qualitative study

Introduction

Diabetes mellitus is a global health concern, with a rising prevalence in Ghana, where diabetic foot ulcers and amputations remain severe complications [1]. Poorly managed diabetes often leads to chronic ulcers and infections, necessitating amputation, particularly in low- and middle-income countries (LMICs) with limited healthcare resources [2]. In contrast, high-income countries benefit from advanced wound care techniques and multidisciplinary approaches that optimize patient outcomes [3].

In Ghana, late diagnosis, inadequate management, and restricted access to specialized care exacerbate the burden of diabetes [4]. Nurses, as frontline caregivers, play a critical role in managing diabetic complications, yet they face challenges such as inadequate training, resource constraints, and emotional burnout [5]. Similar difficulties have been reported in other LMICs, where nurses struggle with heavy workloads, limited professional development opportunities, and a lack of structured care pathways [6, 7]. These systemic issues hinder effective diabetes management and patient recovery.

*Correspondence:
Ba-Etilayoo Atinga
ba-etilayoo.atinga@uenr.edu.gh
[1]Department of Nursing, School of Sciences, University of Energy and Natural Resources, Sunyani, Ghana
[2]Nursing, Holy Family Nursing and Midwifery Training College, Berekum, Ghana

Despite existing studies on the epidemiology of diabetes and patient experiences with amputation in Ghana [8, 9], little research has focused on the specific challenges faced by nurses providing direct care. Studies in LMICs highlight common challenges, including inadequate training, resource shortages, and emotional burnout among nurses managing diabetic complications [10]. Research in Uganda and Brazil further emphasizes the impact of heavy workloads, limited professional development, and unstructured care pathways on diabetes management [11].

Despite these insights, little is known about the specific challenges faced by nurses in Ghana regarding care of patient with diabetic amputation. Existing studies have primarily focused on the epidemiology of diabetes and patient experiences with amputation [12, 13], with minimal attention to the frontline nurses providing direct care. The lack of insight into their experiences creates a gap in understanding the emotional, psychological, and logistical difficulties they encounter. Addressing this gap is crucial for developing targeted interventions that enhance nursing capacity and improve patient outcomes.

This study aims to explore the experiences and challenges of nurses managing diabetic amputees in Ghana. By examining their lived experiences, coping mechanisms, and professional obstacles, the findings will inform policies and practices to strengthen nursing care and ultimately improve outcomes for patients with diabetes-related amputations.

Materials and methods

Study setting

The study was conducted at Sunyani Teaching Hospital, a 300-bed urban hospital located in the Bono Region of Ghana. It serves as a referral facility for the Middle Belt of Ghana and neighboring Côte d'Ivoire. The hospital comprises several units, including diabetic, orthopedic, physiotherapy, and psychiatry departments. It has over 700 nurses working in various capacities within the healthcare system. The hospital has a high incidence of patients admitted with diabetes-related amputations, which are managed by nurses.

Study design and population

An exploratory qualitative study was conducted to examine nurses' experiences and challenges in the care and treatment of patients who had undergone above-the-knee or hip amputations due to diabetes. Participants were selected through purposive sampling. Data collection took place from April 2024 to July 2024, following approval from the Committee for Human Research Publication and Ethics (Reference number: CHRE/AP/178/023) at the University of Energy and Natural Resources, as well as written permission from STH. Participants provided written informed consent before data collection, and their privacy and confidentiality were maintained throughout the study. The research adhered to strict ethical principles, including voluntary participation, anonymity, and confidentiality. Participants were explicitly informed of their right to withdraw from the study at any time without repercussions.

The interview guide, reviewed by three qualitative research experts, was refined based on feedback from pilot testing to ensure its relevance to the research objectives. Participants were purposively selected based on their experience working in the orthopedic ward and caring for patients with diabetic amputations. Nurses who did not meet the inclusion criteria or declined participation were excluded. Recruitment continued until data saturation was reached with the tenth participant, with no new information emerging by the thirteenth interview.

The interview guide consisted of three major questions and eight follow-up prompts and was rated as having moderate to strong content validity. Data collection involved face-to-face interviews conducted in English by the lead researcher in the nurses' offices at the orthopedic unit of STH. Each interview lasted between 30 and 60 min and was recorded using an audio recorder (DVT4110 VoiceTracer, Philips, Amsterdam, Netherlands), with supplemental field notes. A pretest involving three nurses with similar characteristics to the study population further refined the guide for clarity and relevance. Data was collected until no new themes emerged.

The data collected from interviews with nurses managing diabetic amputations were analyzed using thematic analysis, guided by Braun and Clarke's framework [14]. This process followed six key steps: (1) familiarization with the data through repeated reading, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the final report. To ensure a systematic and rigorous approach, NVivo 14 software was used to facilitate coding and data organization.

Initially, all interviews were transcribed verbatim and imported into NVivo, where open coding was performed. These codes were then grouped into broader categories, allowing for the identification of emerging patterns that contributed to the formation of preliminary themes. To enhance data credibility and reliability, the lead researcher transcribed the interviews, verified accuracy through repeated listening, and shared the transcripts with three qualitative research experts for validation.

Trustworthiness of the study

The interpreted themes were shared with selected participants to confirm their accuracy and relevance. Additionally, an independent researcher familiar with qualitative

analysis reviewed the coding process to ensure consistency and minimize bias. Any discrepancies that arose during the analysis were resolved through discussion among the research team, ensuring consensus and analytical rigor. A reflexive journal was maintained throughout the analysis to document researcher perspectives and potential biases, ensuring transparency. Furthermore, thematic saturation was considered when no new codes or themes emerged from additional interviews.

By detailing the analytical process, including software use and validation strategies, we provide the demographic characteristics of participants (Table 1) and a transparent and rigorous account of how themes were derived, ensuring the reliability and credibility of our study. The analysis resulted in 10 categories grouped into three main themes (Fig. 1), reflecting nurses' experiences in managing patients with diabetic amputations and their efforts to meet patients' needs in clinical practice.

Results

The study identified three major themes and ten subthemes related to nurses' experiences and challenges in managing diabetic individuals with amputations. These themes included: (1) emotional and psychological challenges, (2) physical and resource constraints, and (3) recommendations for improvement. To confirm the accuracy of the qualitative findings, a literature review on the topic was conducted, and the data were analyzed. As a result, the results and discussion were combined, with relevant quotes and supporting research used to substantiate the findings.

Table 1 Demographic profile of participants

Characteristics of Nurse participants (*N* = 13)	Category	Frequency(*N*)
Gender	Male	5
	Female	8
Age	21–30	3
	31–40	5
	41–50	4
	Above 50	1
Years of practice	1–5	2
	5–10	2
	11–20	6
	21 and more	3
Level of education	Diploma	7
	Bachelors	5
	Masters and above	1
Rank	Staff nurse	2
	Senior staff nurse	5
	Nursing officer	3
	Senior nursing officer	2
	Principal nursing officer	1
	Deputy Director of Nursing Service	0

Emotional and psychological challenges

Nurses experienced feelings of empathy, helplessness, and frustration

Nurses reported significant emotional challenges in providing care to patients with amputations, including feelings of empathy, helplessness, and frustration. This may stem from the fact that Ghanaian society places great value on communal living and compassion, leading many nurses to naturally empathize with their patients' struggles and suffering. Additionally, nurses often spend significant time with patients, building rapport and emotional bonds, which makes them more sensitive to their patients' pain and challenges. This is reflected in the statement:

> *I become so helpless at times when giving care to these patients; I see myself in their worries, concerns, and pains, and this sometimes makes me break down. (N3)*

> *For how long will they (patients) continue with this sudden change in their self-image, role, and pain? Patients often place excessive confidence in me, expecting miraculous solutions to their critical conditions. However, I feel inadequate when I cannot fully meet their expectations. (N5)*

Nurses expressed the need for institutional mechanisms to support their well-being

Participants indicated that they often manage their emotional burden by relying on peer support and personal faith but expressed the need for institutional mechanisms to support their emotional well-being. This sentiment is captured in the following statements:

> *Caring for these patients often leaves me feeling down. At times, I feel the hospital should come to our aid to help us overcome this emotional trauma, as I feel my husband's support doesn't always suffice. (N1)*

> *Sometimes I get home from the hospital struggling to pull myself together. I even struggle to sleep, with these patients on my mind. Most times, I try to pray to overcome this, but to no avail. I know I need counseling myself, and the hospital must help. (N10)*

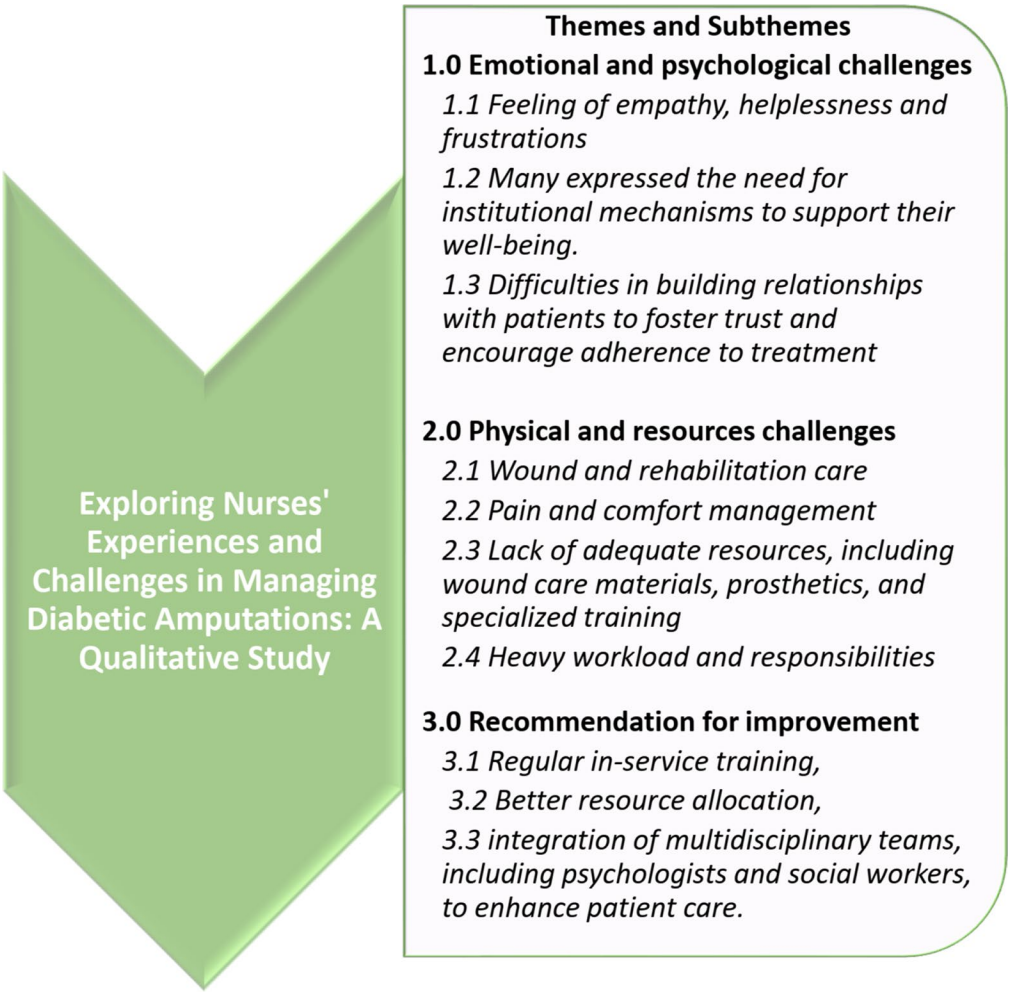

Fig. 1 Summary of emerged themes and subthemes (generated from the qualitative data)

Nurses revealed difficulties in Building relationships with patients to foster trust and encourage adherence to treatment

Nurses emphasized the importance of building strong relationships with patients but acknowledged that they often face difficulties in fostering trust. Many healthcare facilities in Ghana lack essential resources, such as medications, equipment, and infrastructure, making it challenging for nurses to provide the necessary care.

Additionally, high nurse-to-patient ratios and long working hours leave nurses overwhelmed and unable to provide adequate attention to each patient. This challenge is reflected in the following statements:

> *When I am unable to meet their heightened expectations, some patients see me as incapable of helping them and, as a result, tend to lose trust in us. Can you imagine a patient retorting, 'What help can you possibly give in my situation? I don't even see the difference between being here and at home?' (N7)*

> *It sometimes takes extra effort to convince a patient to take medication after an amputation, as they often express doubts, saying, 'If the drug could have helped, then why the amputation in the first place?' For some of these patients, it is a herculean task. (N6)*

Physical and resource challenges

Wound and rehabilitation care

Nurses stressed the need for aseptic management of diabetic stumps after amputation to prevent complications. They emphasized that the rehabilitation process should start preoperatively and continue postoperatively, requiring strong commitment from healthcare providers.

> *After an amputation, the surgical wound requires dedicated care to heal properly with minimal scarring and complications, and this truly takes time.*

One needs a combined effort from the healthcare team to ensure this. (N9)

The rehabilitation process is challenging, as some patients lack cooperation. It is truly demanding when significant effort is required to get the patient involved. (N4)

Nurses faced challenges in pain and comfort management

Almost all the nurses reported difficulties in managing the pain experienced by patients with diabetes-related amputations. They emphasized that ensuring patient comfort is a challenge due to frequent shortages of essential pain medications, including opioids and non-opioid analgesics, in many healthcare facilities in Ghana.

Additionally, many patients with diabetic neuropathy experience a loss of sensation, yet they suffer from intense and persistent pain caused by infections or ischemia, which affects their ability to sleep.

Most patients are unable to sleep at night because excruciating pain is aggravated by ischemic-related events. This puts a heavy burden on the few of us on duty, as we work tirelessly to provide some level of comfort. (N8)

Helping these patients attend to nature's call is sometimes hectic, especially for those who are stout and often soil themselves in bed. Additional effort and constant care are needed to prevent pressure ulcers. (N11)

Nurses lacked adequate resources to provide optimal care

Participants highlighted a lack of adequate resources, including wound care materials, prosthetics, and orthotic devices. This shortage often compromised the quality of care provided.

When it comes to the availability of resources, the less said, the better. We lack everything, from wound care materials to prosthetic and orthotic devices, making the commencement of rehabilitation a challenge." (N12)

It's all about improvising and patients acquiring their own materials for wound care, which is often difficult for us nurses. Sometimes, the stench during debridement and dressing in the ward is discomforting, but as nurses, we must endure it along with the other patients. (N13)

Heavy workload and responsibilities

Nurses reported that heavy workloads left them feeling that they did not spend enough time with patients and their families. Overcrowding in hospitals and understaffing meant they had little opportunity to provide individualized care, making patient-centered management difficult.

We often spend less time with our patients and their families than we would like, simply because we are unable to attend to all the patients under our care. The patients truly need us more to express their deeper feelings, and I find this inadequate. (N1)

I wish we had more time to talk with our patients and truly understand their struggles and challenges, but this seems impossible since we have to attend to them all. (N2)

Recommendations for improvement

Nurses called for regular in-service training

Nurses emphasized the need for regular in-service training, particularly regarding the care of individuals with diabetes and diabetes-related complications. They stressed that focused and specialized training is essential to improving patient care.

There is a need for us to constantly update our knowledge and skills in patient care. The care of patients with special needs is constantly evolving, and without conscious efforts, our nursing skills will always fall short. (N3)

I would say that before being assigned to this ward, one should first undergo training to acquire specialized skills, as caring for these patients differs from mainstream nursing. (N7)

Nurses called for better resource acquisition and allocation

Nurses suggested better resource allocation to enhance patient care.

The equipment we work with is mostly either obsolete or faulty. Management needs to acquire up-to-date equipment to provide the best nursing care to these patients. (N5)

Basic materials for wound care, as well as prosthetic and orthotic devices, seem to be nonexistent. Sometimes, I feel that management doesn't truly care, and this makes it difficult for us to provide proper care for these patients. (N4)

Integration and commitment of the healthcare team

Nurses suggested integrating multidisciplinary teams, including psychologists, dietitians, diabetologists, and social workers, to enhance patient care.

> *To enhance the care of individuals with diabetic amputations, we need all members of the healthcare team to be fully committed to patient care. (N6)*

Discussion

This study underscores the complex interplay of emotional, resource-related, and systemic factors affecting nurses' ability to care for patients with diabetes-related amputations. The key themes identified include emotional and psychological challenges, resource constraints, systemic inadequacies, and recommendations for improvement. These findings were analyzed in comparison with existing literature to provide a comprehensive understanding of the challenges faced by nurses in both developed and developing countries.

Emotional and psychological challenges

Nurses frequently experience empathy, helplessness, and frustration when caring for diabetic patients with amputations. Many internalize patient suffering, a phenomenon common in low-resource settings [15]. In Ghana, where communal living and compassion are highly valued, nurses form strong emotional bonds with patients, heightening emotional distress when expectations cannot be met. Similar findings were reported by [16], who noted that unrealistic patient expectations contribute to nurses' psychological burden in LMICs.

In contrast, structured interventions such as counseling services, peer support groups, and employee assistance programs (EAPs) help mitigate emotional distress in developed countries [17]. For example, the UK's NHS provides mental health support for nurses to reduce burnout [18]. Establishing counseling units in public hospitals could offer crucial psychological support, as recommended by [19], who emphasized the need for structured mental health interventions.

Trust and communication barriers

A major challenge identified was the difficulty in building trust with patients. Many nurses struggle to manage patient expectations, leading to strained relationships. This aligns with [20], who highlighted that unmet expectations in chronic care settings undermine trust. In developed countries, structured communication strategies and patient education programs reinforce trust [21]. Specialized training in breaking bad news, managing expectations, and fostering therapeutic relationships improves patient compliance and satisfaction [22]. Addressing trust issues requires targeted training in effective communication, patient education, and cultural competence, which should be incorporated into nursing education.

Resource constraints in amputation care

The management of diabetic stumps and rehabilitation is resource-intensive. Proper wound care is essential for healing, as supported by [23], who emphasized multidisciplinary collaboration in rehabilitation. Pain management emerged as a significant hurdle, with nurses describing severe patient discomfort due to ischemia and infection. Some noted that patients struggled to sleep due to excruciating pain, a challenge echoed by [24], who identified inadequate pain relief options in low-resource settings as a critical issue.

Developed countries have access to advanced wound care technologies, prosthetic devices, and specialized pain management options [25]. Conversely, nurses in developing countries face shortages of essential supplies, including wound care materials, prosthetics, and orthotic devices. They often resort to improvisation, mirroring findings in [26], which showed that resource limitations in sub-Saharan Africa compromise healthcare quality. Addressing these gaps requires policy interventions prioritizing improved resource allocation and increased funding for diabetic care programs.

Continuous professional development

Participants strongly advocated for ongoing training to enhance their knowledge and skills. This aligns with [27], who emphasized the role of in-service training in improving care for complex patients. Integrating specialized courses on diabetic wound care and rehabilitation into nursing education, alongside hands-on simulation-based training, could bridge existing knowledge gaps.

In developed countries, continuous professional development is often mandatory, requiring nurses to update their skills through workshops, certification programs, and clinical training [28]. However, in many developing countries, financial constraints and institutional limitations hinder access to such training [29]. Governments and healthcare institutions should invest in continuous education programs to ensure nurses receive ongoing training in diabetic wound care, pain management, and rehabilitation.

Multidisciplinary collaboration

Nurses emphasized the need for better resource availability and integrated multidisciplinary teams to improve patient care. A collaborative approach involving nurses, physicians, psychologists, dietitians, and social workers would enhance diabetic amputation management. This aligns with [30], who highlighted the importance of team-based approaches in chronic condition management.

Multidisciplinary collaboration is well established in developed healthcare systems, where coordinated input from various professionals ensures comprehensive care. However, in developing countries, fragmented teamwork and poor communication hinder effective care. Implementing structured care pathways that foster teamwork among healthcare professionals is essential for holistic diabetic care.

Limitations

This study was conducted at a public hospital, which may differ in organizational structure and resources compared to private or rural hospitals. This context may influence the applicability of findings to other settings providing care to patients with diabetic amputations. The participants included general nurses from various surgical units, which may mean their knowledge and experiences are broad but not necessarily specific to the care of patients with diabetic amputations. The qualitative approach relies on subjective accounts, which may reflect individual experiences rather than universally applicable patterns. Additionally, the small and relatively homogenous sample size could limit the range of perspectives represented.

The cultural and systemic context in Ghana likely shaped the findings, which may require careful consideration or adaptation when applied to different sociocultural and healthcare environments. Finally, resource constraints during the study may have restricted the depth of exploration into some aspects of care and challenges faced by nurses. Future research could address these limitations by conducting comparative studies across multiple healthcare settings, including private and rural hospitals, to explore variations in organizational structure, resources, and patient outcomes. Incorporating a mixed-methods approach with both qualitative and quantitative data could enhance the reliability of findings, balancing subjective experiences with measurable trends. Additionally, longitudinal studies could capture evolving trends in nursing care, resource availability, and systemic influences over time, offering a more nuanced and transferable understanding of the findings.

Conclusion

Implementing structured mental health support programs for nurses facing emotionally taxing situations is essential for their well-being and professional effectiveness. Additionally, advocating for the inclusion of specialized diabetic wound care training in national nursing curricula can enhance patient outcomes and reduce diabetes-related complications. Prioritizing these initiatives will not only support nurses in their demanding roles but also improve overall healthcare quality.

Implications for practice and education

There is a need to establish national guidelines to standardize diabetic foot care and amputation management, ensuring consistency in treatment and resource availability. Additionally, integrating mental health education into nursing curricula can equip nurses with coping strategies for the emotional challenges associated with chronic patient care. By addressing these implications, healthcare facilities can create an enabling environment for nurses to deliver quality care, thus improving patient outcomes and overall healthcare delivery in Ghana and similar settings.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12912-025-03143-4.

Supplementary Material 1

Acknowledgements

Not applicable.

Author contributions

BEA: Conceptualization, original draft, investigation, data collection, analysis, AH: Conceptualization, analysis, validation, writing critical review and editing, CAA: Data collection, validation, review of the manuscript, TP: Validation, review and editing of the manuscript, RB: Data collection, validation, manuscript review and editing.

Funding

The research had no funding. All cost was borne by the authors.

Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

The research was conducted in accordance with the Declaration of Helsinki. Data collection was done after obtaining approval from the Committee for Human Research Publication and Ethics (Ref: CHRE/AP/178/023) of the University of Energy and Natural Resources and a written permit from the Sunyani Teaching Hospital. An informed consent was obtained from all participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 23 January 2025 / Accepted: 29 April 2025
Published online: 08 May 2025

References

1. Boateng D, Ayellah BB, Adjei DN, Agyemang C. Contribution of diabetes to amputations in sub-Sahara Africa: A systematic review and meta-analysis. Prim Care Diabetes. 2022;16(3):341–9. https://doi.org/10.1016/j.pcd.2022.01.011.
2. Arokiasamy P, Salvi S, Selvamani Y. Global burden of diabetes mellitus. Handbook of global health. Cham: Springer International Publishing; 2021. pp. 1–44. https://doi.org/10.1007/978-3-030-05325-3_28-2.

3. Yachmaneni A Jr, Jajoo S, Mahakalkar C, Kshirsagar S, Dhole S. A comprehensive review of the vascular consequences of diabetes in the lower extremities: current approaches to management and evaluation of clinical outcomes. Cureus. 2023;15(10):e47525. https://doi.org/10.7759/cureus.47525.
4. Bobga Billa JK. Challenges and opportunities in managing Type 2 Diabetes Mellitus in Sub-Saharan Africa: The cases of Nigeria and South Africa [dissertation]. Hamburg: Hochschule für Angewandte Wissenschaften Hamburg; 2023 http://hdl.handle.net/20.500.12738/13741
5. Swaminathan N, Awuah WA, Bharadwaj HR, Roy S, Ferreira T, Adebusoye FT, Ismail IF, Azeem S, Abdul-Rahman T, Papadakis M. Early intervention and care for diabetic foot ulcers in Low- and Middle-Income countries: addressing challenges and exploring future strategies: A narrative review. Health Sci Rep. 2024;7(5):e2075. https://doi.org/10.1002/hsr2.2075.
6. Shambhaw K, Sharma CR, Sah RK. Multidisciplinary Team Approaches in the Management of Diabetic Foot Complications: Integration of Emergency Medicine, General Surgery, and Orthopedics. 2023. https://doi.org/10.5281/zenodo.6569909
7. Malm CP. Scholarly project report-Ghana: A health system's response to diabetes [dissertation]. 2019.
8. Miri S, Rashtiani S, Zabihi MR, Akhoondian M, Farzan R. Role of exercise in nursing care for burn wound patients: A narrative review from a nursing perspective. J Nurs Rep Clin Pract. 2024;2(2):101–9. https://doi.org/10.32598/JNRCP.23.101.
9. Castro B, Dela Hostria L, Rimando MJ. Nurses' role in the coping process of amputation: A literature review. 2024. https://urn.fi/URN:NBN:fi:amk-2024051713066
10. Abdul-Samed AB, Jahan Y, Reichenberger V, Peprah EB, Agyekum MP, Lawson H et al. Improving type II diabetes care in West Africa: A scoping review of barriers, facilitators and the way forward. MedRxiv. 2024 Aug. https://doi.org/10.1101/2024.08.30.24312843
11. Kamvura TT, Dambi JM, Chiriseri E, Turner J, Verhey R, Chibanda D. Barriers to the provision of non-communicable disease care in Zimbabwe: A qualitative study of primary health care nurses. BMC Nurs. 2022;21(1):64. https://doi.org/10.1186/s12912-022-00841-1.
12. Lubega M, Ogwok J, Nabunya B, Mbalinda SN. Role of community-based health clubs in promoting patients' health education for diabetes self-care management: an interventional qualitative study in a Ugandan urban setting. BMJ Open Qual. 2023;12(4):e002473. https://doi.org/10.1136/bmjoq-2023-002473.
13. Asamoah-Boaheng M, Sarfo-Kantanka O, Tuffour AB, Eghan B, Mbanya JC. Prevalence and risk factors for diabetes mellitus among adults in Ghana: A systematic review and meta-analysis. Int Health. 2019;11(2):83–92. https://doi.org/10.1093/inthealth/ihy067.
14. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Res Psychol. 2006;3(2):77–101.
15. Mukuve P, Nuuyoma V. Critical care nursing in a resource-constrained setting: A qualitative study of critical care nurses' experiences caring for patients on mechanical ventilation. SAGE Open Nurs. 2023;9:23779608231205691. https://doi.org/10.1177/23779608231205691.
16. Samwiri Nkambule E, Msiska G. Chronic illness experience in the context of resource-limited settings: A concept analysis. Int J Qual Stud Health Well-being. 2024;19(1):2378912. https://doi.org/10.1080/17482631.2024.2378912.
17. Dubale BW, Friedman LE, Chemali Z, Denninger JW, Mehta DH, Alem A, et al. Systematic review of burnout among healthcare providers in sub-Saharan Africa. BMC Public Health. 2019;19:1–20. https://doi.org/10.1186/s12889-019-7566-7.
18. Tian L, Yang S, Suya L, Wenyan Z, Mingfeng Y, Liu Y. The feasibility of nurse employee assistance programs in China among nurse administrators: A qualitative research. Nurs Health Sci. 2025;27(1):e70064. https://doi.org/10.1111/nhs.70064.
19. Johnson J, Hall LH, Berzins K, Baker J, Melling K, Thompson C. Mental healthcare staff well-being and burnout: A narrative review of trends, causes, implications, and recommendations for future interventions. Int J Ment Health Nurs. 2018;27(1):20–32. https://doi.org/10.1111/inm.12416.
20. Harri BI, Ogunboye I, Okonkwo A, Yakubu A, Kung JY, Fofah J, Massey ferguson OT, Eboreime E. Addressing the mental health needs of healthcare professionals in Africa: a scoping review of workplace interventions. Cambridge Prisms: Global Mental Health. 2025;12: e31 https://doi.org/10.1017/gmh.2025.19
21. Bagnasco A, Dasso N, Rossi S, Galanti C, Varone G, Catania G, Zanini M, Aleo G, Watson R, Hayter M, Sasso L. Unmet nursing care needs on medical and surgical wards: A scoping review of patients' perspectives. J Clin Nurs. 2020;29(3–4):347–69. https://doi.org/10.1111/jocn.15089.
22. Rodrigues CF. Communicative trust in therapeutic encounters: users' experiences in public healthcare facilities and community pharmacies in Maputo. Mozambique Social Sci Med. 2021;291:114512. https://doi.org/10.1016/j.socscimed.2021.114512.
23. Nnate DA, Nashwan AJ, Nnate D. Emotional intelligence and delivering bad news in professional nursing practice. Cureus. 2023;15(6). https://doi.org/10.7759/cureus.40353.
24. Moe A, Brataas HV. Interdisciplinary collaboration experiences in creating an everyday rehabilitation model: a pilot study. J Multidisciplinary Healthc 2016 Apr 18:173–82. https://doi.org/10.2147/JMDH.S103696
25. Goucke CR, Chaudakshetrin P. Pain: a neglected problem in the low-resource setting. Anesth Analgesia. 2018;126(4):1283–6. https://doi.org/10.1213/ANE.0000000000002736.
26. Niyonkuru E, Iqbal MA, Zeng R, Zhang X, Ma P. Nerve blocks for post-surgical pain management: a narrative review of current research. J Pain Res 2024 Dec 31:3217–39. https://doi.org/10.2147/JPR.S476563
27. Mlambo M, Silén C, McGrath C. Lifelong learning and nurses' continuing professional development, a metasynthesis of the literature. BMC Nurs. 2021;20:62. https://doi.org/10.1186/s12912-021-00579-2.
28. Ashu JT, Mwangi J, Subramani S, Kaseje D, Ashuntantang G, Luyckx VA. Challenges to the right to health in sub-Saharan Africa: reflections on inequities in access to dialysis for patients with end-stage kidney failure. Int J Equity Health. 2022;21(1):126. https://doi.org/10.1186/s12939-022-01715-3.
29. Aalaa M, Sanjari M, Shahbazi S, Shayeganmehr Z, Abooeirad M, Amini MR, Adibi H, Mehrdad N. Diabetic foot workshop: improving technical and educational skills for nurses. Med J Islamic Repub Iran. 2017;31:8. https://doi.org/10.18869/mjiri.31.8.
30. Tandan M, Dunlea S, Cullen W, Bury G. Teamwork and its impact on chronic disease clinical outcomes in primary care: a systematic review and meta-analysis. Public Health. 2024;229:88–115. https://doi.org/10.1016/j.puhe.2024.01.019. Epub 2024 Feb 26. PMID: 38412699.

Publisher's note