

World Union of Wound Healing Societies regional overview: Africa region

Africa is the world's second-largest continent, with 54 nations and 1,000 unique ethnic groups speaking more than 1,000 languages. The current African population of 1.5 billion is anticipated to increase to 2.4 billion by 2050. Africa's population accounts for 18.3% of the world population. The largest expansion will occur in sub-Saharan Africa (SSA), which includes 46 of Africa's 54 countries, the majority of which are classified as low-income countries (Abbas and Boulton, 2022; Abbas and Gangji, 2025).

The most recent edition of the International Diabetes Federation (IDF) Atlas 2025, predicts that diabetes will affect approximately 588.7 million people in 2024, increasing to 852.5 million by 2050 (IDF, 2025). Diabetes prevalence rates are predicted to increase primarily in Africa (IDF, 2025).

Diabetes has become an epidemic in many recently industrialised and lower-middle-income countries, and it is expected to become a serious health problem in developing nations (Abbas and Boulton, 2022; Abbas and Gangji, 2025; IDF, 2025). In 2024, it was projected that 24.6 million people in SSA had diabetes; by 2050, this figure is expected to rise by 59.5 million, a 142% increase (IDF, 2025).

SSA countries are at various stages of epidemiological transition, dealing with a wide range of illnesses. The African continent is growing rapidly, with increased prosperity as a result of urbanisation. Resultantly, lifestyle alterations, demographic transition to an older population and raised risk factors, such as obesity and physical inactivity, are linked to the rising incidence of diabetes (Abbas and Boulton, 2022; Abbas and Gangji, 2025; IDF, 2025).

Diabetic foot ulcers (DFUs) are associated with the highest morbidity and death rate of any complications, particularly severe and horrific ones (Abbas and Boulton, 2022; Abbas and Gangji, 2025). Effective management and prevention strategies are crucial in addressing the growing burden of DFUs. By focusing on aspects such as enhancing public awareness, improving access to healthcare services and promoting lifestyle changes, the risk factors associated with diabetes can be mitigated. DFU has resulted in significant impairment, a decrease in life expectancy and expensive healthcare costs for the SSA

region, which already has limited resources (Abbas and Boulton, 2022; Abbas and Gangji, 2025; Dhatariya et al, 2025). According to one estimate, diabetes is thought to be the cause of 40–60% of all non-traumatic lower-limb amputations globally (Abbas and Boulton, 2022; Abbas and Gangji, 2025; Dhatariya et al, 2025). Approximately 19–34% of people with diabetes will develop a foot ulcer at some time in their lives (Abbas and Boulton, 2022; Abbas and Gangji, 2025).

Healthcare delivery challenges

The complexity of DFUs is sometimes difficult to navigate in SSA's healthcare systems. There are few specialised healthcare professionals (HCPs), such as diabetic foot specialists, wound care specialists, vascular surgeons and podiatrists. Diagnostic tools needed to detect illnesses such as peripheral arterial disease are sometimes insufficient. The scarcity of such expertise can lead to delayed diagnoses and inadequate treatment, resulting in a higher likelihood of severe complications.

Together, the above variables increase the risk of amputation by delaying the diagnosis and treatment of diabetic foot ulcers. The cost of managing a diabetic foot ulcer is an additional challenge. A global cost study conducted by 51 centres from 36 countries in seven global regions (SSA, South and Central America, Middle East and North Africa, South East Asia, Europe, North America and Caribbean and Western Pacific) highlighted in countries like Tanzania, the average patient's DFU therapy costs 2 years' salary, posing a considerable financial burden (Dhatariya et al, 2025).

While specific DFU treatment costs in South Africa are unknown, in the public healthcare system the downstream amputation costs (i.e. excluding ulcer management from early-stage treatment onwards) were estimated to cost \$5,996 in 2019 (Erzse et al, 2019). The impact of these costs extends beyond patients, to families, since many people with DFU are primary earners.

The lack of comprehensive health insurance systems exacerbates this burden, frequently causing patients to carry their own costs (Dhatariya et al, 2025). Addressing these difficulties requires a reinforced healthcare infrastructure, including investment in HCP educational training at all levels, and more

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resources for diabetic foot ulcer management, particularly in rural regions. This will result in early identification of DFUs by HCPs (Abbas et al, 2011; Abbas and Nair, 2025)

Advancement in preventive and therapeutic strategies

The importance of education

Foot care education continues to be the most effective and accessible intervention in the SSA region – offered at no cost to patients and potentially beneficial when delivered appropriately. As such, it should be a clear and consistent element within preventative care strategies. Educational efforts must be prioritised for both individuals living with diabetes and the healthcare professionals who support them.

One of these initiatives is the Step-by-Step Foot project, which was originally developed and implemented in 2003 in Dar es Salaam, Tanzania, and is one of the notable interventions (Abbas et al, 2011; Abbas and Nair, 2025). The project was initiated to train HCPs in diabetic foot management, facilitate transfer of knowledge and expertise, and improve patient education. The project comprised a 3-day basic course, with an interim 1-year period for screening, followed by an advanced course and evaluation of activities.

Several Step-by-Step education projects have been successfully implemented in low- and lower-middle-income countries with subsequent adoption in high-income countries (Abbas et al, 2011; Abbas and Nair, 2025)

The Step-by-Step Foot project has demonstrated that organised foot care programmes and approaches that incorporate comprehensive preventive strategies, such as patient and staff education, medical and surgical management of foot ulcers, and regular follow-up, have the potential to prevent infection, ulceration, and limb amputation (Abbas et al, 2011; Abbas and Nair, 2025). Importantly, the initiative was linked to a reduction in amputation rates of about 46.4% (Abbas et al, 2011).

Upon returning to their home countries, healthcare professionals apply the Step-by-Step Foot project framework to disseminate the knowledge and skills acquired during training (Abbas et al, 2011; Abbas and Nair, 2025).

In 2023, the Step-by-Step Foot project was replaced by Train the Foot Healthcare Professionals. The course targeted all HCPs working in diabetes, not only those dealing with DFUs. The most recent Train the Foot Healthcare Professionals DFU course was held in August 2024 in Zanzibar, Tanzania. Delegates represented 16 centres across 11 English-

speaking countries in SSA. This marked the first large-scale training initiative in the region involving all 11 countries from 16 centres (Abbas and Nair, 2025).

The aim was for HCPs from several countries in the region to gather under one roof and then utilise the Step-by-Step Foot model to disseminate knowledge after they returned home. We encourage them to have cascading effect initially in their own centre, followed by city and country.

In attendance were pairs of doctors and nurses from the same centres, representing 11 countries – Tanzania (3 centres), Kenya (2), Uganda (1), Rwanda (1), Ethiopia (1), Zambia (1), Zimbabwe (1), Nigeria (3), Ghana (1), Libya (1) and Tunisia (1). The cascading impact of knowledge gained in preventing DFU, will lead to positive outcomes in SSA.

Training was conducted for 5 days by renowned faculty, including Prof Dr Harikrishna, President of WUWHS; Prof Frances Game, Chair of IWGDF; Prof Zahid Miyan, Chair of MENA region D-Foot International; Dr Faraja Simon Chiwanga, Assistant Director of Medical Services of Muhimbili National Hospital; and Prof Zulfiqarali G Abbas, Honorary President of D-Foot International (Abbas and Nair, 2025).

The Step-by-Step Foot project is an innovative effort that originated in a low-income country (Dar es Salaam, Tanzania) and has now moved to lower-middle-, higher-middle- and high-income countries. Since its start in 2003, the project has been implemented in 128 nations, as of August 2024 (Abbas et al, 2011, 2025; Abbas and Nair, 2025).

A 2024 study conducted in South Africa's predominantly rural Northern Cape province highlighted the need for targeted diabetic foot education (Mafusi et al, 2024). A total of 128 professionals, enrolled and auxiliary nurses who are providing primary care to patients within the 14 clinics in the Sol-Plaatje sub-district were recruited for the study. Hundred and five participants completed the self-administered questionnaires. Investigation revealed that 57% of participants were unfamiliar with the 60-second diabetic foot screening tool, 67% were unaware of the 10 g monofilament test, and 85.6% expressed a need for training in diabetic foot care. Despite this, most respondents demonstrated adequate knowledge of diabetic foot complications and associated risk factors. These findings demonstrate the critical role of educational initiatives for those involved in diabetic foot management (Mafusi et al, 2024).

Regional non-governmental organisations, such as the Wound Healing Association of Southern Africa, in collaboration with industry

partners, play an important role in providing such educational updates.

The impact of digital health technologies

Digital health technologies have tremendous potential for assessing and managing DFUs in SSA. In terms of improving patient care and reducing the risk of amputation, technology has had, and will continue to have, a significant influence on DFU management in SSA.

Digital health technologies are a growing field that may enhance access to care for people with diabetes. This is especially important as an option to improve DFU management for those living in rural regions or who have limited physical access to medical treatment. Technology may also be utilised to deliver DFU education. Moreover, it may overcome mobility barriers for patients with disabilities or those living in underprivileged areas.

Telemedicine is the remote exchange of medical information or services between patients and experts using electronic communication equipment (Abbas and Gangji, 2025).

Telemedicine platforms now allow patients to share images of DFUs with specialists, facilitating earlier diagnosis and timely intervention significantly reducing the risk of severe outcomes, such as amputation. Additionally, telemedicine enables healthcare professionals to consult with experts in real time, enhancing the management of complex cases while alleviating pressure on overstretched healthcare systems. In SSA, the following DFU-related services are already provided in some countries: virtual visits, remote biometric data monitoring, secure electronic messaging between patients and HCPs, a telemonitoring programme, and patient coaching.

Bridging the division

To begin, programmes such as Step-by-Step and Train the Foot Health Care Professionals have provided HCPs and patients with the necessary skills and information to successfully prevent and manage DFU. These efforts, combined with the implementation of standardised treatment protocols and targeted training programmes, such as the MSc in diabetes education for HCPs programme at the University of Abuja (Nigeria), will significantly improve early detection, patient education, and clinical interventions. Resultantly, lower rates of severe complications, including amputations, will follow.

Secondly, the use of digital health technology strengthens these gains

by increasing access to treatment in disadvantaged areas. Telemedicine systems provide remote consultations and fast professional input, whilst mobile health applications provide practical advice for self-care and routine foot monitoring.

Thirdly, public health campaigns and cooperation with non-governmental organisations strengthen these efforts, ensuring that knowledge and access to excellent treatment reach even the most isolated populations.

Finally, these projects demonstrate the combined influence of governments, HCPs, and technological innovations in creating a more robust and responsive system for DFU care across SSA.

Conclusion

While it may not be possible to entirely prevent DFUs, early intervention can effectively reduce progression of minor ulcers to serious complications such as infection, sepsis, osteomyelitis, or gangrene. In SSA, education remains the most effective preventive strategy and should form a foundational element of all prevention programmes. Educational efforts must be simple, consistent and directed toward both patients and HCPs. Individuals living with diabetes should be taught the importance of proper foot care and encouraged to seek medical attention promptly at the first sign of foot-related symptoms. Ultimately, success will depend on healthcare professionals' ability to foster self-care behaviours and empower patients to take an active role in maintaining their foot health.

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References

- Abbas ZG, Boulton AJM (2022) Diabetic foot ulcer disease in African continent: 'From clinical care to implementation' – Review of diabetic foot in last 60 years – 1960 to 2020. *Diabetes Res Clin Pract* 183: 109155. doi: 10.1016/j.diabres.2021.109155
- Abbas ZG, Gangji RR (2025) The diabetic foot: progress in sub-Saharan Africa. *Diabetes Res Clin Pract* 225: 112264. doi: 10.1016/j.diabres.2025.112264
- Abbas ZG, Lutale JK, Bakker K et al (2011) The 'Step by Step' Diabetic Foot Project in Tanzania: a model for improving patient outcomes in less-developed countries. *Int Wound*

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- J 8(2): 169–75 doi: 10.1111/j.1742-481X.2010.00764.x
- Abbas ZG, Nair, HKR (2025) Journey from the Step-by-Step Diabetic Foot programme to Train the Foot Healthcare Professionals: 22 years of preventing amputation globally. *Global Wound Care J* 1(1): 42–9. doi: 10.63896/gwcj.1.1.42
- Dhatariya K, Abbas ZG, 7 Regions Foot Ulcer Costs Study Group (2025) Estimated costs of treating two standardised diabetes-related foot ulcers of different severity – a comparison of 7 global regions. *Diabetes Res Clin Pract* 221: 112036. doi: 10.1016/j.diabres.2025.112036
- Erzse A, Stacey N, Chola L et al (2019) The direct medical cost of type 2 diabetes mellitus in South Africa: a cost of illness study. *Glob Health Action* 12(1): 1636611. doi: 10.1080/16549716.2019.1636611
- International Diabetes Federation (2025) *Diabetes Atlas 11th edition* (2025) Available at: <https://diabetesatlas.org/resources/idf-diabetes-atlas-2025/> (accessed 11.09.2025)
- Mafusi L, Egenasi CK, Steinberg WJ et al (2024) Knowledge, attitudes and practices on diabetic foot care among nurses in Kimberley, South Africa. *S Afr Fam Pract* (2004) 66(1): e1–10. doi: 10.4102/safp.v66i1.5935