

Objective

Outreach foot care in the community can be used as a tool for engagement with older adults, enabling healthcare professionals to gain entry to older adults' home to facilitate care and support in aging.

Background

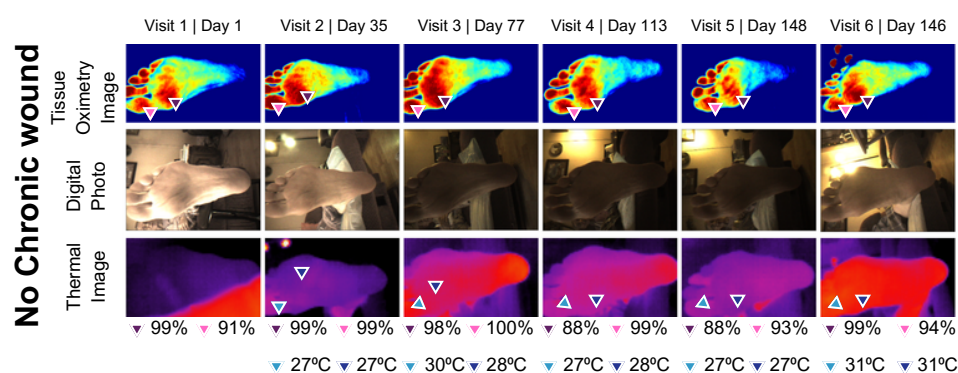
Diabetes is related to numerous comorbidities, including the severe complications of wound healing, often resulting in chronic ulceration and consequent limb amputation. Diabetic foot ulcers (DFUs) represent a significant global health challenge, affecting 166 million individuals (Armstrong et al., 2020) and 1 in 6 patients with a DFU may confront lower limb amputation (Boulton et al., 2020). This not only has consequences for the affected individuals but also imposes a substantial annual cost for the healthcare system (Rice et al., 2014; Barshes et al., 2013). The study was designed to incorporate and assess the potential of mobile multispectral near-infrared spectroscopy (NIRS) imaging technology into nurse-led outreach diabetic foot care initiatives for older adults residing in remote areas (Rickards et al., 2023).



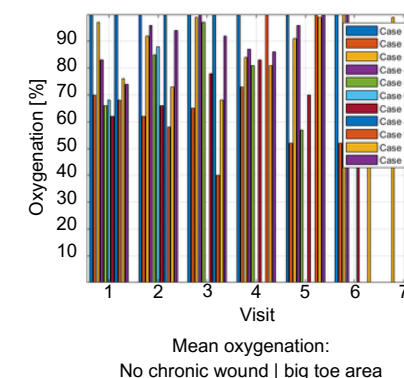
Methods

The Mobile Seniors' Wellness Network (MSWN) conducted an intervention study between November 2020 and December 2022. The study enrolled 366 seniors living within a 90-minute radius of the city's community health center, visited by foot care trained nurses and a Registered Social Worker. A subset of 16 high-risk participants was analyzed. NIRS and thermal imaging device (MIMOSA Pro, MIMOSA Diagnostics Inc., Canada) was integrated into the foot care workflow. This study was reviewed by Research Ethics Board (#2020-026, #2020-2916). The study comprised (subset of 16 participants) individuals with an average age of 72 ± 9 years and included individuals with healthy feet and with wounds of various etiologies, including diabetic foot ulcers (DFUs). The collected data included patient demographics, clinical characteristics, imaging findings.

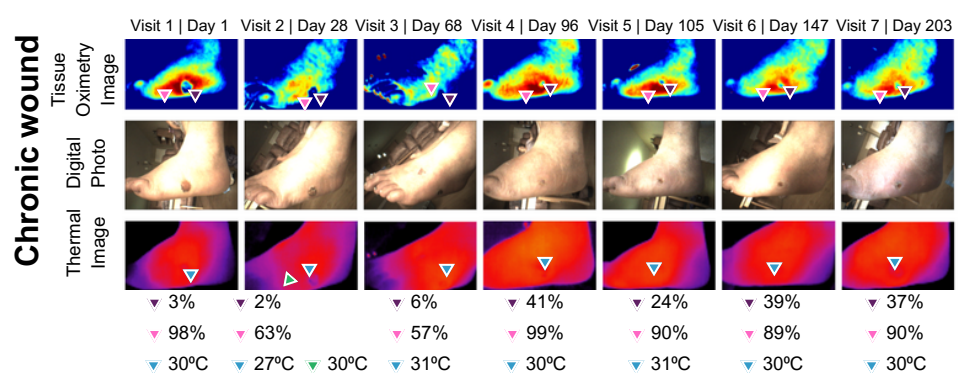
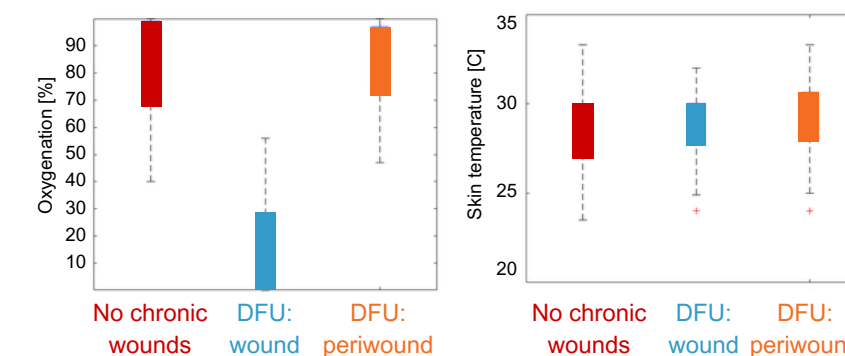
Results



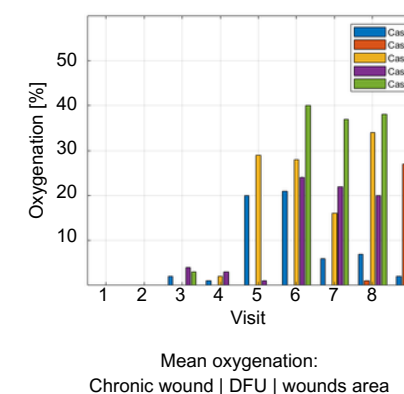
This group included a total of 11 patients without chronic wounds. The mean feet temperature (big toe area) was found to be 28°C with a standard deviation of $\pm 2^\circ\text{C}$, while the mean tissue oxygenation level was 83% with a standard deviation of $\pm 16\%$.



While no statistically significant difference in temperature was observed, the difference between tissue oxygenation levels is statistically significant ($p < 0.05$).



The chronic wound group included 5 participants diagnosed with DFUs. On average, the tissue oxygenation levels in the wound area for all visits and patients were 15% +/- 16%, with the temperature averaging 29 +/- 2°C. Upon examining the periwound area adjacent to the ulcer, a mean tissue oxygenation was 82% +/- 15% and a mean temperature was 29°C +/- 2°C



Conclusion

A compact imaging tool can accurately and non-invasively evaluate tissue health at the point of care to identify early intervention opportunities and collaborate towards improved outcomes. With these imaging insights readily accessible, healthcare professionals can assess healing progression. This study demonstrates how an innovative device can equip healthcare professionals with a more comprehensive understanding of wound healing potential. Implementing a widespread diabetic foot screening strategy in Canada such as CFCNs being deployed to the homes of older adults has the potential to save healthcare resources while preventing DFUs.

Bibliography

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