

Learning from Health Professionals: A User-Centred Approach to Design a Wound Monitoring Platform

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Abstract. Health professionals are able to improve the care quality of chronic wounds by monitoring and reporting the wound status. Resorting to visual representations of wound status enhances comprehension by facilitating knowledge transfer to all stakeholders. However, selecting appropriate healthcare data visualisations is a critical challenge and healthcare platforms must be designed to meet their users' needs and constraints. This article describes the methods used to identify the design requirements and inform the development of a wound monitoring platform through a user-centred approach.

Keywords. Wounds and Injuries, User-Centred Design, Data Visualisation, eHealth

1. Introduction

Chronic wounds are a global problem that impact both healthcare and people's quality of life [1]. Characterization and reporting of wound condition are required to make the right diagnosis, gather and compare data, monitor healing progress, and determine therapy effectiveness [2]. To optimise comprehension, data should be presented as visual information [3]. But choosing visualisations for health professionals can be a challenge since they need simple and efficient data organisation to enable pattern detection [4].

As such, we followed a user-centred approach to learn about best practices and key metrics for wound treatment and monitoring, as well as to understand the users, their roles, and their needs. The end goal of this ongoing work is to create a management dashboard platform for health professionals, that aggregates and displays data retrieved from a wound-monitoring mobile application. Through applying these user-centred methods we are able to design a platform that fits the users' real-world requirements.

2. Methods

Our approach began with conducting semi-structured interviews. We inquired participants about their work methods and practices. This was followed by two assessment sessions of a dashboard from an available product that served as the basis for

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our work. Following these activities, we prototyped visualisations and integrated them into a new dashboard. Subsequently, we conducted guerrilla tests, where participants were given a tour of the prototype and requested to provide qualitative feedback. Finally, we conducted 5 usability tests, including a System Usability Survey where participants were given three tasks to complete in the prototype. All activities were conducted remotely, and all participants provided written informed consent.

Table 1. Methods, participants, and goals of each user research activity.

Method	Participants	Goal
Interviews	2 nurses, 2 clinical managers, 1 informal caregiver	Identify system actors, guidelines, and best practices in wound monitoring.
Evaluation sessions	2 head-nurses, 1 clinical manager	Understand the application's issues and assess the clarity and usability of each visualization.
Guerilla tests	2 homecare nurses, 2 clinical nurses, 1 head-nurse, 1 clinical manager	Identify main usability issues in the prototype.
Usability tests + SUS	1 homecare nurse, 1 clinical nurse, 1 head-nurse, 2 clinical managers	Test the prototype and assess self-perceived usability and satisfaction.

3. Preliminary Findings and Future Work

As preliminary findings of this exploratory phase of the work, we identified that health professionals require a platform that allows for personalised profiles as well as adding or modifying said profiles. We also found that information should be changed to account for diverse clinical contexts, as failing to do so can lead to low system adoption. Additionally, information should be current, relevant, and applicable to real-world practice. As for limitations, we could not observe in-person users' interaction with the platform. This will be addressed in future work, with the development of the platform and its assessment with representative users.

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