

QUALITATIVE EVALUATION OF A SELF-MANAGEMENT SYSTEM FOR SHIFT WORKERS

Fraunhofer developed a self-management system to improve the circadian rhythms of middle-aged to older shift workers. This thesis evaluates its impacts

Problem

Shift work has increased substantially in the European economy, having raised about 0.2% each year since 2009. The latest values in Eurostat, of 2016, indicate a percentage of 18% of the European population working in shifts.

Shift work exists due to the need for 24-hour coverage in areas like health and security, which require the work to be continued day after day, night included.

However, shiftwork is associated with several diseases, including sleep disorders, cancer, as well as gastrointestinal and neuropsychological pathologies.

Beyond the negative health outcomes, shift work also interferes with one's personal and social life. A concern about the health and safety of professionals who engage in rotating shifts – especially night shifts – led us to think about what might be done to diminish its harmful effects.

Description

Since it is not possible to completely avoid shifts, Clockwork will shape technology to support and improve the lives of shift workers.

To do so, Clockwork is using mobile devices and sensors to collect parameters about daily life (sleep, activity and light exposure) to increase self-awareness and, consequently, to promote the reflection about existing habits.

The developed solution targets the healthcare sector, as it is the industry where shift work is most prevailing, counting with 40% of its professionals working in shifts.

Objectives

The goal of this thesis was to perform a qualitative evaluation of the system developed in the Clockwork project, contributing to the existing knowledge about the solution. To do so, we gathered useful insights of participants' experience with the system and recommendations for improvement.

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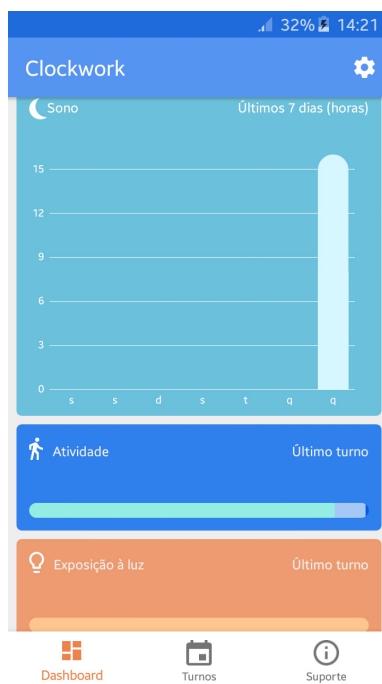
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- 1 An interview being conducted with a participant.
- 2 Clockwork system components.
- 3 Clockwork application home screen.

Methodology

To understand the context of healthcare shift workers, interviews were held focusing on their issues and challenges. Results helped to identify participants' practices and desires, enabling the possibility of understanding their own concerns, needs and perspectives regarding the potential of the developed solution.

Following these contextual interviews, a set of iterative semi-structured interviews were planned and conducted with five participants who engaged in a 8-week pilot. Participants were interviewed at least three times during the trial, to understand their perspectives at different points during the two month period. The participants of the pilot were professionals working in healthcare, at CUF Hospitals (Porto and Lisbon). The interviews aimed at understanding what these professionals' expectations about the system were, their motivation and how they appropriated the system. System logs constituted a secondary target of analysis, as it provided some hints of the participants' interaction with the system.

For analysing the interviews, elements of the Grounded Theory methodology were used. In particular iterative coding, constant comparison, and analysis concurrent with data collection. This methodology enabled an in-depth understanding of the context of shift workers, before and after introducing the developed solution.

Findings

Results are still being analysed and the pilot study is still running; therefore, final interviews

are missing for most participants. Nevertheless, there are already some useful insights.

Expectations. Although participants (5) do not expect much from the application, most of them are motivated to participate in the trials as they feel it will be useful to others in the future.

Sleep. Despite an initial idea of being aware of their sleeping hours, two of the participants learned more about themselves by looking at the provided sleep plots; in fact, one of them is trying to change his behaviour regarding sleep hours.

Activity. One aspect gathering consensus among participants is the need to improve activity records, as most of them did not feel they matched the reality. Besides this issue, the way that information is displayed is also something participants complain about.

Light. A problem regarding sensor orientation was found, which skews the collected data to almost nonexistent light.

Future Work

A last set of interviews is currently in progress for gathering a final feedback of the experience with the developed solution. In parallel, previous interviews still require to be analysed for further conclusions.

Future work will focus on developing a set of recommendations for improvement in a way that allows to increase self-awareness in shift workers and promote their engagement with the system.