Group 2
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Sömn i vardagen

A research project in collaboration with KTH and Stockholms University

Introduction

It is said that we on average spend about a third of our life sleeping. A good night's sleep is vital for every human being to survive and function properly. Experimental research has clearly shown the negative impacts of sleep deprivation. However, there is none to little research showing how the variations in our sleep that arise in our daily life affects well-being and general performance. Therefore, Stockholm University is performing a study called “Sömn i vardagen” (everyday sleep) where they are going to study how length and quality of the sleep changes on a day to day basis as well as if there is a difference between young and older people. This will then be used to study how it affects mood and performance of the users participating. This project will focus on developing an application that is going to be used as an inspiration for the actual application used in the study.[1]

Definition of the course project proposal

1. Common themes and outline

The aim of our app is to collect data from people that participate in the official study asking them to answer some questionnaires per day, mainly in the morning and before going to sleep. The researchers in the area can then use this data in order to study user behaviour and draw meaningful conclusions that hopefully leads to a better understanding of the problem. This is the basic requirement for our project. However, in addition to this we are going to implement more interesting features, like enter what type of exercise the user has performed during the day, notify the user to do the questionnaires, and many more.

Our app is based on researching area so we can relate it with the common sleeping apps that monitor sleep, such as Sleep Cycle. This type of study is usually done in real life with a lot of sensors to study widely how the person’s behaviour changes throughout the night, but due to the Covid-19 pandemic it is really difficult to do it. A similar research, that is a bit different but it can fit is *Daily Collection of Self-Reporting Sleep Disturbance Data via a Smartphone App in Breast Cancer Patients Receiving Chemotherapy: A Feasibility Study* [2] where they use a app to collect data of sleep disturbance in breast cancer patients. They also arrived at a good conclusion determining that a 90 days period of collecting data was enough.

2. Brainstorm

Due to that this project is part of an existing research project we were given the basic outlines and functionality of the application, therefore no basic brainstorming of the idea was performed.

3. Prototype

A low-fidelity prototype was created using Figma, shown in Fig. 1. The main screen of the prototype shows surveys represented as cards that the user has to complete, clicking on one of the surveys will enlarge it so the user can answer.
The settings page will allow the user to set up and change their sleep schedule.
The profile page will allow the user to see their profile and potentially statistics regarding their sleeping habit.
Lastly, there is an information page where the user will be notified about vital information regarding the research study and the application.

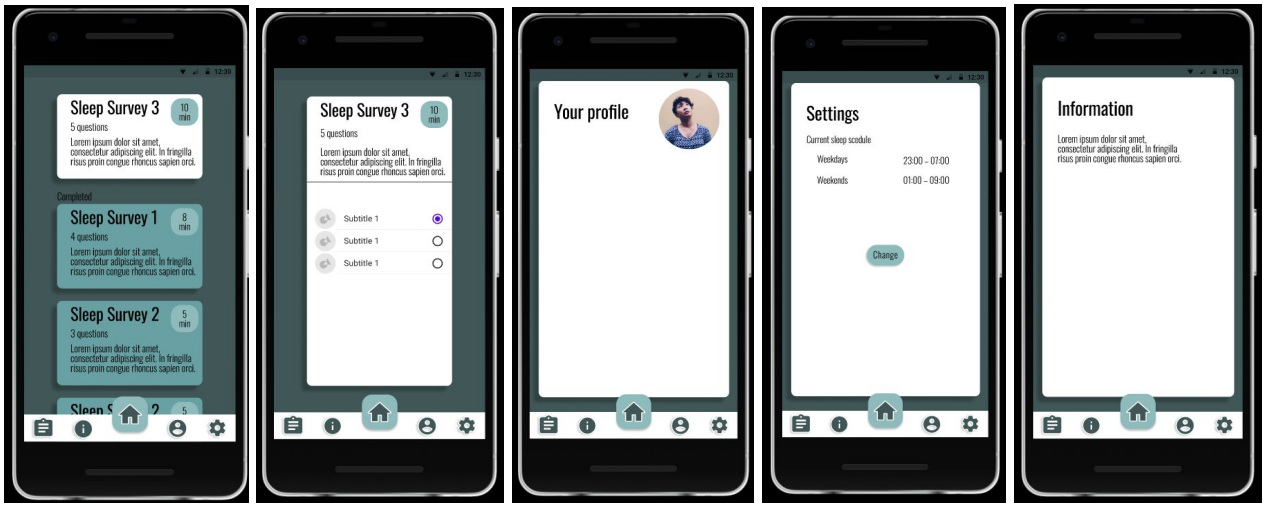

Fig 1. The different pages in the prototype

Observation and field study

1. Google form

Since the chosen topic for this project was pre-determined by the research project, we chose to focus our field study on firstly, people's motivation for using sleep tracking apps and secondly, the usability and design of our prototype. For the first part we asked questions concerning their previous usage of sleep tracking apps and their attitude towards them. The outcome of this will have an effect on how we chose to design our application. If people in general have a bad attitude towards these kinds of applications, we might have to design and implement more functionality to make the users keep using our application. However, if their attitude is good, they might come back even with the basic functionality. We also added a question about people's attitude towards joining a research project by using a sleep tracking application, for the same reason.

The other part of the survey was more focused on the design of our prototype. We asked the participants to perform a simple task in the prototype, namly to change their wake up time and then rate the difficulty from 1-5, low numbers being easy and high numbers being difficult. They were also asked to rate the overall design from 1-5, where the higher the number represented how enjoyable they thought it was. Since our application will be used by a wide variety of ages it is important that it is simple to use by all ages.

2. Results

The following section is a summary of our results from the survey. There were 18 answers in total and the largest age group were 18-29 (11 people). The other age groups that were represented in the answers were 30-39 (4 people), 65+ (2 people) and 40-49 (1 person).

The diagram below shows the answers to the first question about sleep tracking applications, seen in Fig. 2. There was an introduction and our definition of Sleep tracking application provided in this question.

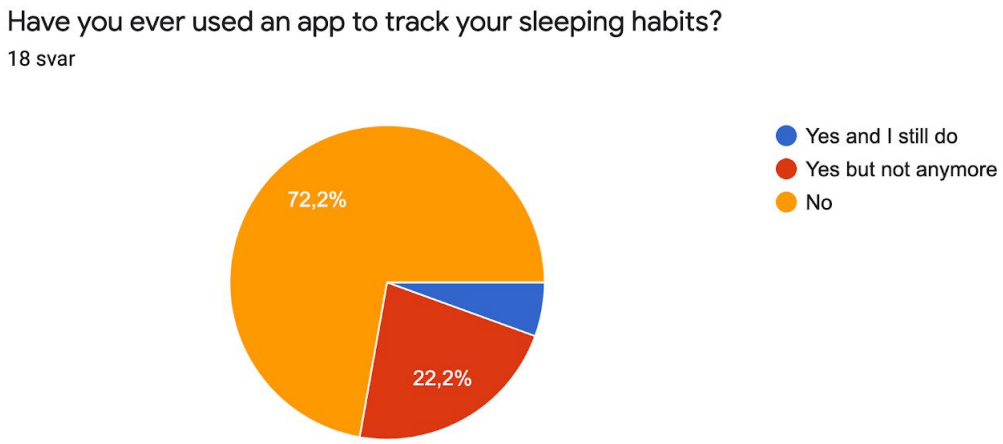

Fig 2. Answers to first question about sleep tracking applications

A majority of the persons answering this survey had never used a sleep tracking application. A more interesting result is that out of the 5 persons that had used these apps, 4 of them had stopped. The four people giving this answer were spread out over the age groups. …..This might be indicating that the apps available on the market today, are having a hard time keeping their users. The next question was directed to those people that have answered that they had stopped using these apps, asking them to write the reason why they stopped. We got the following answers:

1. “I did not think it helped me”
2. “Did not feel like it gave me anything”
3. “I am very forgetful and did not remember to use it and it was not very intuitive to use”
4. “Stressed me”

The two first answers concerns if the app is fulfilling its purpose for the user, which in these cases they did not feel like it did. They felt that the app did not help and give them anything.

For the third question, we wanted to look into their attitudes towards using a sleep tracking app for research purposes. The majority of the people we asked answered that they would be willing to participate in such study, only three answered that they would not. An interesting result is that everyone that stopped using these apps answered that they would be willing to participate.

The following graph displays the outcome of our questions about the design, see Fig. 3 and 4.

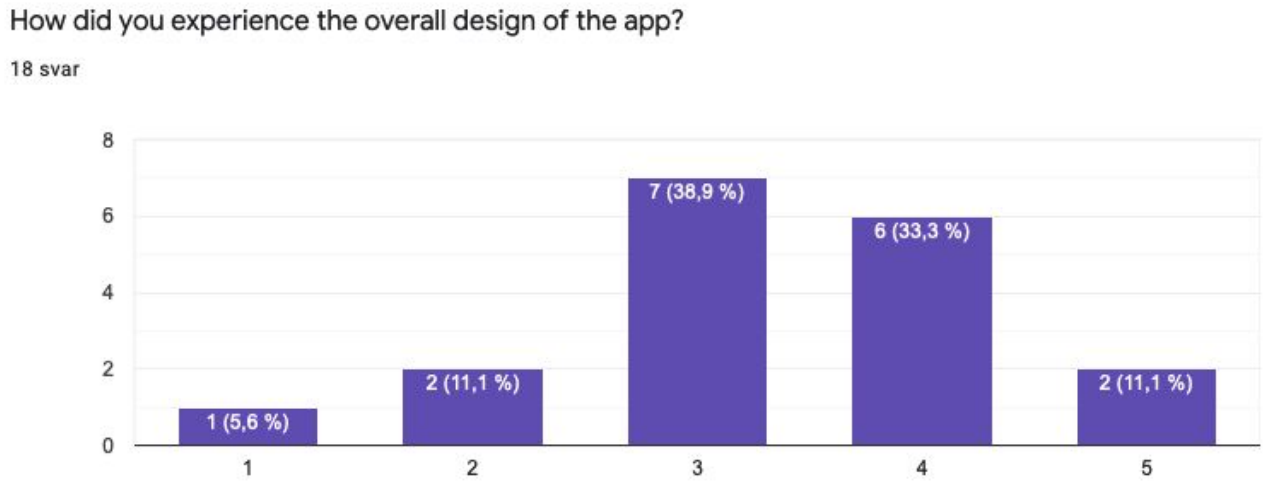

Fig 3. 1 represents terrible *and 5 represents* perfect.

What is interesting is that the average experience of the design was lower for people over 30 than under 30 with an average of 2.85/5 compared to 3.63/5. This might suggest that the current design is somewhat more catered towards the younger demographics which is something that needs to be considered and looked into since the application will be used by other demographics as well.

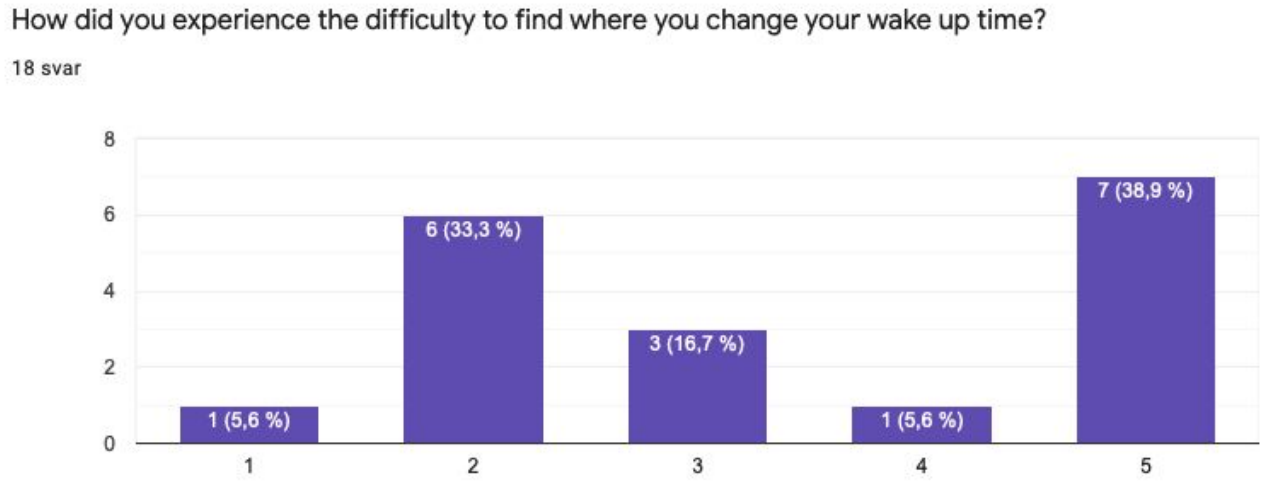

Fig 4. *1 represents* very easy *and 5 represents* very hard.

The results were pretty similar regarding the difficulty when navigating. However, it is important to mention that after the answers had come in it came to our attention that the prototype did not work for Iphone users, making these results unreliable.

References

[1] Stressforskningsinstitutet, “Anslag till projekt om sömn i vardagen,” *Stressforskningsinstitutet*, 2019. Available: https://www.stressforskning.su.se/om-oss/press-nyheter/nyheter/anslag-till-projekt-om-sömn-i-vardagen-1.460592 [Accessed: Jan. 26, 2021].

[2] Min YH, Lee JW, Shin YW, Jo MW, Sohn G, Lee JH, Lee G, Jung KH, Sung J, Ko BS, Yu JH, Kim HJ, Son BH, and Ahn SH, “Daily Collection of Self-Reporting Sleep Disturbance Data via a Smartphone App in Breast Cancer Patients Receiving Chemotherapy: A Feasibility Study,” *Journal of Medical Internet Research,* vol. 16, no. 5, May, 2014.