

GATHERING REQUIREMENTS WITH USERS FOR THE DEVELOPMENT OF AN ASSISTIVE MOBILE PHONE APPLICATION TO SUPPORT BLADDER TRAINING.

Hypothesis / aims of study

The main purpose of the study was to gather requirements for the development of a mobile phone application from all stakeholders (medical and healthcare staff and end-users). Furthermore, the study focused on collecting feedback on how successful current treatment approaches are in the UK from the patients' perspective and the ongoing and longer term issues with current Overactive Bladder (OAB) treatment.

Study design, materials and methods

The requirements gathering phase was divided into two studies, as follows:

Study 1

The first stage consisted of four semi-structured, in-depth design interviews with healthcare practitioners with OAB expertise. The purpose of these interviews was to collect feedback on how successful current treatment approaches are in the UK and the ongoing and longer term issues with OAB treatment. A secondary aim was to gather design ideas for the mobile phone application that could support bladder training.

1. Participants Information: The healthcare practitioners taking part in the interviews were two medical consultants (one urologist and one urogyneacologist) and two urinary continence specialist nurses.

2. Recruitment: Medical staff were recruited by an OAB expert through personal contacts.

3. Procedure: An in-depth interview, lasting approximately one hour, consisted of three topics. The first part investigated how patients manage the condition and what problems they face in the UK when seeking medical care. The second part of the interview focused on the treatment and diagnostic and the third part focused on a discussion about the mobile phone application features.

Study 2

The second part of the requirements gathering phase consisted of eight single and one paired end-user interviews. The purpose of these interviews was to identify current issues in the treatment process of the OAB condition from the end-users' perspective and to gather design ideas for the mobile phone application.

1. Participants Information: In total two males, seven females and one family member of a person with OAB symptoms were interviewed. Age range was between 23 and 80 years old, mean age 48. Most participants (8/10) answered with agree or strongly agree when asked if they are confident with using a smartphone.

2. Recruitment: Information was provided to patients attending group sessions in Glasgow, UK with the purpose of recruiting participants for the user interviews. Invitations via email were sent to Glasgow Caledonian University, UK staff and via newsletter to Heriot Watt University, UK staff.

3. Procedure: Each interview lasted for approximately two hours and was divided into three main parts. The first part consisted of a discussion about the participants' experiences to gain a deep understanding about the treatment. The current state of the treatment and how people cope with the condition were the main focuses of the discussion. In the second part participants were presented with screenshots of potential mobile phone app functionalities and scenarios and asked to comment on them. In the third part participants were asked to design their own version of functionalities or to propose new ones. A demographic questionnaire was also completed prior to the interview to collect demographic information about the participants and their smartphone familiarity and usage.

Outcome

The following features, based upon literature review and discussions with clinicians, were presented to the end-users:

1. A map indicating the closest toilet from the user's current location.
2. Methods of tracking progress and providing feedback.
3. Methods of providing pelvic floor muscle exercise reminders.
4. Different distraction techniques.
5. Ways of providing quick access and disguising the application.
6. Bladder Diary layout.

The back-end of the application will apply a Machine Learning engine to help in the decision-making process and provide a high level of personalization. The user's daily routine and location will be the input to the Machine Learning and the algorithm will then determine what distraction technique to send and for how long, will show progress and decide when is appropriate to send reminders.

Results

Based upon the interviews and the subsequent proposed features, the following outcomes were recognized:

With respect to the mapping functionality, both medical consultants and end-users agreed with this feature. However, the nurses did not settle upon it arguing that, since the purpose of bladder training is to avoid going to the bathroom, such a map would only ease toilet access. Regarding the progress feature, users would like to set up a personal goal regarding the daily number of voids and leakages and to have feedback provided regarding their progress. As a distraction technique, both stakeholder categories agreed that games would help in diverting attention from the urge sensation. As this application targets an embarrassing condition, users would like to disguise the icon of the app and the alerts they receive from it. An extra new functionality arose from one of the end-users, who suggested a feature that would help the user to gain quick access to toilets in unknown locations. Additionally, the feedback collected from the staff interviews highlighted that treatment descriptions should be an important feature for this mobile health application.

Interpretation of results

Both end-users and healthcare staff agreed with the proposed functionalities which confirms literature findings from people with OAB. However, slight contradictions were noticed between what healthcare practitioners would suggest and what end-users desire. Moreover, new functionalities were proposed during the interviews that are not covered in the literature.

Concluding message

During the requirements gathering phase of mobile phone app design it is important to include stakeholder views and opinions. Design features should take account of real-world challenges and reflect expressed views of all users; patients as well as healthcare staff.

Disclosures

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Informed Consent: Yes