Health and Wellness Self-Management for Older Adults

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Abstract

This position paper describes our ongoing work in the design of health and wellness applications that support older adults in managing their wellbeing. Specifically, this involves older adults self-reporting on various aspects of their wellbeing and receiving feedback on such, to increase their awareness of their health and to support them in maintaining or returning to a healthy state of being. In designing this application, it was critical to involve older adults, to understand their attitudes towards wellness, as well as assessing the effectiveness of various types of input and feedback visualisations.

Author Keywords

Older adults; health monitoring; health promotion

Introduction

The world is experiencing a demographic change and population projections estimate a significant increase in the number of older adults in the near future [3]. As a result there has been an elevated interest in understanding the factors that may support the maintenance of independent living and quality of life of older adults. There is a large role for innovative technology to support older adults in self-managing their wellness at home. This can potentially result in

Fig.1 The feedback wheel with each segment representing a parameter of wellbeing

Fig.2 Weekly trend data for a person's self-reported quality of sleep
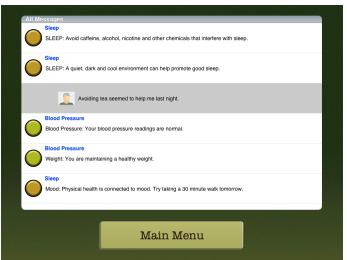
Fig.3 educational/interventional messages

early detection and ultimately in the prevention of illness.

However, there are a number of challenges in designing personal informatics applications for older adults, including: (1) Are this cohort interested in self-managing wellness and if so what aspects or parameters of wellbeing do they feel are important to look after as you age? (2) Is emotional wellbeing important to overall health? (3) How do they feel about answering potentially sensitive questions on health and wellbeing? (4) What type of feedback would they like to receive? (5) Who would they be willing to share their own wellbeing information with? (6) What would motivate this cohort to use this type of application daily? (7) What are the preferred or most intuitive interaction methods for self-reporting? (8) What are the preferred or most intuitive visualisations to provide feedback.

As part of the design process for these applications, we have held a number of interviews, workshops and focus groups with older adults. Some of this work is described elsewhere [1][2]. This paper describes feedback on the above eight questions from three focus groups held with older adults. Focus group 1 had 5 participants consisting of 2 men and 3 women aged between 61 and 82; focus group 2 had 2 men and 4 women aged between 64 and 86; focus group 3 had 5 participants, aged between 61 and 78. For the purposes of this paper we consider 4 themes that emerged from these focus groups including, what older adults feel are important parameters of wellbeing that they would like to monitor; who they would be willing to share health information with; what might motivate them to use such an application and the type of feedback they

would like. We also highlight designs for two of our applications – YourWellness that supports older adults in self-reporting on their emotional wellbeing, sleep quality and their satisfaction with their social interactions, as well as recording their blood pressure and weight and our Falls Prevention application that asks people to report on their fear of falling and their confidence in performing activities of daily living. Both of these applications have a very strong feedback element to support older adults in becoming aware of their health and wellbeing, as well as providing clinically-based feedback on how to remain healthy.

Important Measures of Wellbeing to Monitor
Social interaction and sleep were extensively discussed as important parameters of wellbeing. One participant noted: "*That's* (social interaction) *I'd say as essential to us as breathing and eating and stuff like that, we are social beings*". The majority of participants spoke of their poor sleep patterns and how it can negatively affect them the following day. However, all agreed that it wasn't the number of hours you slept that was important, but the quality of that sleep and in particular how rested you feel the next day. One participant stated: "*I'd rather have four hours where I slept well, than 12 hours in bed, but with regular waking up.*" This is consistent with research that suggests sleep quality is more important than sleep quantity [4]. Interestingly, none of the participants mentioned emotional or mental wellbeing as important to their overall wellbeing. However, once this topic was introduced by the facilitator, participants began to discuss the role it plays in one's health – "*I think sadness would drag you right down. And the consequence of that would be, ultimately, bad health. `Cos if you're depressed or down you neglect yourself*
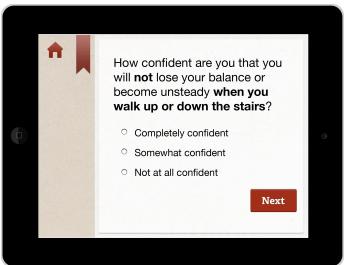
Fig.4 The Falls application that supports self-monitoring of falls and fear of falling
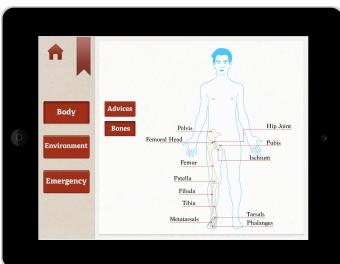

Fig.5 Informative and educational feedback including body advice
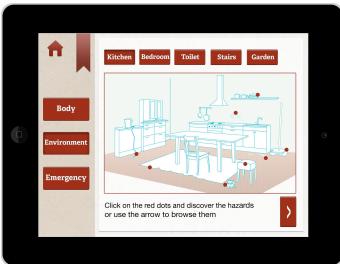
Fig.6 Informative and educational feedback including avoiding falls hazards around the house

and you stop doing the things you liked to do." Maintaining a good social life was considered important to ensuring positive emotional wellbeing – "A good social life is a tonic. It is, isn't it?" Thus, while participants spoke about actively trying to improve their physical wellbeing or their social interactions, emotional wellbeing was not something they actively thought about improving. It was felt that including this topic in a wellness self-management application would help people to become more aware of their emotional wellbeing and to `look after it' as they do other aspects of their wellbeing.

However, it was highlighted that if the aim of the application is to support self-monitoring and self-management, potential issues could arise from this that might cause more harm than good. We piloted the acceptability of answering questions on emotional or mental wellbeing. It was felt that some words might cause a negative emotional response. For example, one of the questions piloted asked people 'How upset are you feeling right now?' It was felt that unless there was someone available to talk to the older person immediately, if they so needed, this question should not be asked as it could do more harm than good i.e. it might trigger a memory or a feeling that could cause the person to become upset. Participants also commented on how context was important: "It would depend on the time of day, or you know if you were writing (answering the questions) in the morning versus at night – `cos I perk up at night, but I'm really kinda dozy around 5." Thus supporting context annotation is important for increased awareness of factors that affect wellbeing.

Sharing Wellbeing Information
Participants across all 3 focus groups felt that if they

were to use such an application to monitor their wellbeing, they would like to see, own and manage the feedback. All participants stated they would have no problem sharing their information with a health professional, but most said they would not necessarily share with a family member. One participant noted: "*The person might not want to feed it back to anyone else*". Another said: "*I think families would worry unnecessarily*". However, a cautionary note was again made on self-awareness and self-management of emotional wellbeing: "*Here we're talking about moods and emotional wellbeing, a person in that state might not be in the mood or able to ring someone for help `cos they are kinda lethargic and that*." This again highlights the sensitive nature of monitoring emotional wellbeing. Thus, any feedback provided must be appropriate to the type of wellness being monitored.

Motivation
The focus group asked participants to think about how they would feel about self-managing their wellbeing on a regular basis - how regularly would they be willing to self-report; what might entice them to do it? It was felt that flexibility would be most important: "*As long as you weren't tied in to answer in the morning, you could answer it in the evening if you wanted, you know*". Another participant commented: "*As long as you could fit it around your own routine*". In terms of reasons why they might fill in the survey, one participant commented: "*Well it could keep an update on your own health*". Participants generally felt that the fact the application was for their benefit health-wise would be a motivator. However, some felt they would be more motivated if a health professional were involved in reviewing their data: "*Well that's* (keeping tabs on yourself) *not sufficient because if you're not well you'd like to get a ring back* (phone call) *from your doctor or someone*".

Feedback

Detail on the design process used to gauge preferred methods of input and visualisations can be found in previous work [2]. Feedback was a major theme that emerged from our interactions with older adults. It was felt that informative and educational feedback that increased your awareness of your health and that supported you in improving your health, should be very clear and easy to interpret. For example, when some visualizations of metaphors were discussed it was felt that they might require too much thought to interpret. Figures 1-3 represent feedback in the YourWellness application. At the highest level, feedback is provided as a quick-glance overview of wellbeing. Based on feedback from participants, we have designed a feedback wheel to support this (Fig 1). The wheel is divided into categories representing the parameters of wellness being monitored. The interior part of the segment is coloured green if the individual is considered healthy, meaning they don't need to take any action regarding behaviour change. If the individual is scoring relatively low in a particular area of wellbeing, the segment is coloured amber - indicating an orange alert and that some action should be undertaken to address this. A red segment means immediate action is required. An individual can also click a particular segment of the overview feedback wheel to get further information, including their trending/historical data presented as a graph, that will be made viewable as weekly or monthly data (Fig. 2). Educational and interventional content is also provided (Fig. 3). Such content has been defined for each type of alert in each category of wellbeing, in collaboration with clinicians and by examining existing guidelines.

Our Falls application is depicted in Figures 4-6. Similar to YourWellness, older adults can self-report on their wellbeing – in this case whether they have had a recent fall or whether they are fearful of falling. Where necessary, information and interventions can be suggested to prevent falling or to address fear of falling. For example, Figure 5 provides advice on maintaining healthy bone structure while Figure 6 highlights potential trip/fall hazards in the home. Another intervention might be simply informing the person of falls clinics and falls prevention physiotherapy classes in their area. Promoting awareness is a critical part of supporting self-management of health and wellbeing.

Discussion

This paper highlights some of our work in designing personal informatics applications to support older adults in self-managing their wellbeing. In designing this application, it was critical to involve older adults, to understand their attitudes towards wellness, as well as assessing the effectiveness of various types of input and feedback visualisations. The feedback we have gathered will help to ensure that applications of this type will assess appropriate aspects of wellbeing as well as deliver useful and beneficial feedback that is easy for the older adult to interpret. In terms of on-going and future work, we are currently usability testing the Falls application with older adults and plan to deploy the application as part of an ongoing study into falls prevention. The YourWellness application is currently deployed as part of two longitudinal field studies. One involves 16 older adults living in aware homes who are using the application over the course of one year. The second study involves deployment as part of a larger telehealth trial that will be deployed to over 100 homes around Ireland over a period of 3 months. During such longitudinal deployments, we will assess the effectiveness of YourWellness in helping older adults to

manage and improve their wellbeing, as well as examining issues around motivation and compliance.

References and Citations

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