Adoption and Use of a Mobile Health Application in Older Adults for Cognitive Stimulation

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Ageing population and Mobile Health:

• Senior population is rising every year
  (1.6 billion seniors with more 65 years in 2050)

• New requirements in terms of healthcare and wellbeing

• Interest in serious games (pedagogic and ludic games with serious interest) and mobile health by seniors
Introduction

Serious games:

• Many serious games in the field of health and wellbeing
• A developing field in relation to Mobile Health
• Significant role to improve healthcare quality & efficiency with regular practice
• Result of cooperation between health professional and seniors

Examples of serious games on app:

• Memory games like knowledges test
• Visio-spatial games
• Puzzle
Introduction

General remarks:

• Cognitive impairment has a negative effect on psychosocial functioning, affects the medical treatment and worsens the dementia

• Cognitive impairment is a major problem both for the elderly and for their family members and caregivers

• Cognitive stimulation is an intervention for people with dementia offering activities and providing general stimulation

Why this study?

• To Evaluate the adoption of a new application dedicated to cognitive stimulation in the older adults
Method

- Using a judicious app (Stim’art) which allows through various exercises to work different functions of the memory

- Observation of apps’s adoption by different seniors

- Analysis of this data

- Assessment of the wellbeing of each user and its evolution

- Score elaboration with range from 1 to 6. Average score is calculated at the end of the first and the sixth month of the study
Results

- The average time of use per day for the sixth month is significantly higher than the average time during the first month (ex: Average spent time: M1: 5 min/day/person VS M6: 13 min/day/person in the difficult level)

- The average number of game launches per day during the sixth month is significantly higher than the average number of launches during the first month

- The success rate during the sixth months is significantly higher than the rate at the end of the first month

- Apart from one user, all seniors had improvement in their perceived well-being score
Discussion & Conclusion

Positive impacts:

• Mobile health app providing memory games adapted for seniors improve their cognitive functions
• Average daily time spent on games increases with time and the number of launched games also
• Good acceptability of the app’s games

New perspectives:

• Interesting future study on the mood of the elderly and their participation in life
• Greater participation of healthcare professionals in the conception and development of serious game and more reliability and tools providing rigorous evaluation
Other problem positioning

m-Health Apps:

• It is not easy for the user to find the right application according to his/her needs
• The contents of stores might be used more effectively with a rigorous classification

Goal:

• Develop and evaluate the health related apps based on a model derived from an analysis of their use cases
• Develop a seal to ascertain the quality of mhealth apps
m-Health Apps certification program:

- Result of a long evaluation process
- Creation of the label m-Health Quality Seal
- A reference label in connected health
- Free and collaborative
- Certification process is being launched and many health related apps are being qualified
mHealth Quality method

In order to identify various criteria to determine the validity of a mHealth app, we first defined three content axes:

- Medical aspects and content validity
- Legal consistency
- Ethical issues

Two technical axes were then added:

- IT security aspects
- Usability
mHealth-Quality assessment process

1. Detection of use cases
2. Adapted questionnaire
3. Automatic report
4. Usability check
5. Security check

The editor solves the problems and re-evaluates the app.

At least ten target users (including health professionals and/or patients) evaluate the app’s usability.

Report
Discussion

• Smartphone is a fast growing sector in the technology industry

• The adherence to health related apps improve the quality of life & healthcare

• The user must be able to search for the necessary app rapidly and to find it in a non-ambiguous context

• Who say health and healthcare quality, says the potential risks and dangers → Need to a certification program
  • Certification is not easy
    - Many aspects (security, medical, privacy, ethics, etc.)
    - Fast paced nature of technology
Conclusion

• Model of use cases \( \rightarrow \) Concise overview of the contents of the apps
• Validation by an expert panel in each axis evaluation

Perspectives

• Publishing apps in a store with associated model-based information \( \rightarrow \) More visibility for the apps & app providers (mHealth Quality store)

• Creation of new and useful applications

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Thank you for your attention