

Better Supporting Human Aspects in Mobile eHealth Apps: Development and Validation of Enhanced Guidelines

Survey Questionnaires

This survey is designed to get feedback from mobile app developers and related stakeholders on our recently developed guidelines to better support human aspects in mobile eHealth apps. The survey starts with the explanatory statements followed by consent form. Then the questionnaire will appear only if consent is given. The questionnaire is divided into two sections. The first section collects some demographic information of the participants. No identifying information is collected in this questionnaire. Then, the third fourth section collects their views on our recently developed guidelines to better support human aspects in mobile eHealth apps.

Section 1: Demographic Information

1. Country of residence:
2. Age group:
 - a. 18-25
 - b. 26-35
 - c. 36-45
 - d. 46-55
 - e. 55-65
 - f. 65+
 - g. Prefer not to say.
3. Gender:

☐ Male

☐ Female

☐ Non-binary/ Gender diverse

☐ My gender identity isn't listed. I identify as:

Self-entered option

☐ Prefer not to say
4. Highest qualification (e.g., PhD, Masters, Bachelor, Diploma etc.):
5. Area of qualification (e.g., IT, Computer Science, Software Engineering etc.):
6. Experience (in years) in mobile app development:
7. Size of company you work for (number of employees):
 - a. Less than 10.
 - b. 10-50.
 - c. 51-100

- d. 100-200
- e. 200-500
- f. 500-1000
- g. Over 1000
- h. Prefer not to say.

8. Current role in development team (tick all that apply):

- a. Project manager
- b. Business consultant/Marketing manager/Sales personnel
- c. Requirements analyst
- d. Software architect
- e. Programmer
- f. User interface or Graphical User interface designer/developer/engineer
- g. App animator or operations developer/engineer
- h. QA engineer
- i. Tester
- j. Other:

Please write here

9. Do you ever work on an eHealth app development project?

- ☐ Yes (go to next question i.e., question 10)
- ☐ No (go to next section i.e., question 11)

10. What sub-domain of an eHealth app have you worked on (tick all that apply):

- a. Telehealth and telemedicine
- b. Health and Fitness tracking
- c. Mental health
- d. Mobile games to improve health issues
- e. App based solution for a health issue
- f. Electronic Health Records (EHR)
- g. Electronic Medical Records (EMR)
- h. Health IT systems
- i. Consumer health IT data
- j. Virtual healthcare
- k. Mobile health decision making
- l. Big data systems used in digital health
- m. Other:

Please write here

Section 2: Views on the proposed guidelines to help better incorporate human aspects in eHealth apps

Here is a link to our proposed guidelines <URL for survey>. Please read over these briefly and imagine you are developing an eHealth app that is likely to be used by diverse end users.

The following questions ask about your opinion on and understanding of our proposed guideline as follows:

11. Do our proposed guidelines assist mobile app developers in addressing key end-user issues (listed below) in eHealth apps?

Human aspects	Strongly Agree	Agree	Undecided (neither agree)	Disagree	Strongly Disagree
Elderly users e.g. > 60 years of age					
Very young users e.g. < 16 years of age					
Users with accessibility issues					
Users with physical challenges					
Users with mental health issues					
Users with cognitive challenges					
Users whose language proficiency may be low					
Users uncomfortable with technology					
Users having different socio-economic status					
Different gender, gender identity of users					
Users with diverse cultural backgrounds					
Other vulnerable users					
Other Aspects (please provide detail in the other options below)					

- Others – please list and indicate other issues, including those that need to be added, edited, and removed from the proposed guidelines, and key reason for this, if any:

Please write here

12. Do our proposed guidelines facilitate developers in managing key human aspects at different phases of eHealth app development? (Numeric value 1-to-5: 1-Extremely helpful; 2-Very helpful; 3-Somewhat helpful; 4-Not very helpful; 5-Not at all helpful)

Human Aspects Related to:	Requirements - elicitation	Solution	Implementatio n – coding in	Testing and Evaluation	App Deployment, Bug fixing and Maintenance
Usability: Taps, landscape mode, platforms, OS versions, resolution, auto-filled customer data, unresponsiveness (for gestures), content, navigation etc.					
Accessibilities: Text contrast, alternate text vs images, links, navigation, form, labels, table, time-outs, use of sitemap etc.					
Reliability and end-user experience: Trustworthiness, correctness, data source, theory and practice, feedback, performance, security, privacy.					
Versatility and relative end-user issues: Variety of health information or communication services at different levels in the user community domain. End-users age, physical challenges (such as adaptive interface for the visually impaired), Mental health issues, Cognitive challenges, Language and technology proficiency, Gender variability, Socioeconomic status and Cultural backgrounds.					
Other (please provide detail in the other options below)					

- Others – Please list and indicate other human aspects, including those that need to be added, edited, and removed from the proposed guidelines, and key reason for this, if any:

Please write here

13. Do our proposed eHealth guidelines make it easy to use in line with current mobile app development and software engineering best practices to address key human aspects in eHealth applications? (Numeric value 1-to-5: 1 – Very easy; 2 – Easy; 3 – Neutral i.e., Neither easy nor difficult; 4 – Difficult; 5 – Very difficult;) Please explain the key reason for your choice.

Please specify key related key reason for your answer.

14. Do you feel confident about using our proposed guidelines? Would you prefer using them over existing, standalone guidelines to manage key human aspects in eHealth apps? (Numeric value 1-to-4: 1 - highly confident; 2 - moderately confident; 3 - slightly confident; 4 - not confident). Please explain the key reason for your choice.

Please specify key related key reason for your answer.

15. What are our proposed guidelines' primary advantages (if any) to support human aspects in mobile eHealth applications development and ultimately produce more effective eHealth apps for the diverse end-users?

Please write here

16. Are there any limitations or threats to the proposed guidelines (if they exist) for supporting diverse human aspects in eHealth apps? What do you think could be done to accommodate these limitations/threats in the next version?

Please write here

17. Please provide any other feedback or suggestions that you may have, e.g., about this research project, human aspects in eHealth apps, the developed guidelines etc.

Please write here

Thank you for your participation in the survey.