Developing a questionnaire for mobile phone usage pattern among university students using the Delphi method

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Article Info

Article type:
Research

Article History:
Received: 2020-09-12
Accepted: 2020-11-26
Published: 2021-01-02

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Keywords:
Mobile Phone Use
Technology
Complication
Advantage
Pattern

ABSTRACT

Introduction: The rate of mobile phone use among people, especially young people is increasing. The proper use of mobile phone for utilizing the advantages and stay away from its complications is essential. To obtain a model and how to use mobile phone will facilitate planning for preventing complications. So, in this article, questionnaire development with aimed at examining the pattern of mobile phone use among students of Iranian universities.

Material and Methods: In this study a self-administered questionnaire was designed based on a literature review in PubMed, EMBASE, Science Direct, and Google Scholar database and using 2 rounds of the Delphi method with the presence of 10 experts from different fields.

Results: In the first Delphi round 6 questions were obtained and in the second round 15 questions were confirmed. The mean of Content Validity Ratio and Content Validity Index for the questionnaire was 93.32 and 92.70, respectively. A questionnaire was designed and developed according to the purpose.

Conclusion: Using the designed questionnaire, the mobile usage pattern among student universities can be examined and solutions can be considered for them. This can prevent further consequence.

Cite this paper as:

Nazari E, Asgari P, Aghemiri M, Shahriari MH, Zangeneh A, Tabesh H. Developing a Questionnaire for Mobile Phone Usage Pattern Among University Students Using the Delphi Method. Front Health Inform. 2021; 10: 52. DOI: [10.30699/fhi.v10i1.241](https://doi.org/10.30699/fhi.v10i1.241)

INTRODUCTION

In today's world, mobile phones have become an indispensable part of life. In 2020, the number of mobile phone users in the world is 3.5 Billion and this number is expected to increase in the coming years [1]. Most mobile users are young people and teenagers [2]. Mobile use has many applications among various industries such as business, education and health care [3-5]. Mobile usage has attracted a lot of attention due to its many benefits. Mobile phones enhance communication for individuals and provide closer contact with any geographical area [6]. Promotes effective learning, and improves knowledge and increase academic performance [7-10]. Mobile apps and games are also used to access

remote physicians and lifestyle controls [11, 12]. In addition to the many benefits of using a mobile phone, misusing it can have consequences. Side effects of misuse include insomnia, addiction, fatigue, anxiety, distress, stress, lack of concentration, physical and mental illness, reduced family relationships and accidents [13-22]. Therefore, due to the complications among mobile phone users, and especially students and the lack of awareness of the factors that cause it, the study was designed to examine the pattern of mobile phone users in the community of students in Iran. The present study is questionnaire development for this purpose.

MATERIAL AND METHODS

This study was conducted in two rounds of Delphi for developing a questionnaire. The technique is an iterative process, and first aims to get a wide range of

opinions from the group of experts. The results of the first round, create the basis for the second round of questions. Results from the second round of questions feed into final round. Steps to run a Delphi method is observed in Fig 1.

Fig 1: Steps to run a Delphi method

RESULTS

Step 1: Define the problem

Problem or issue that are sought to understand for commenting by experts related to mobile usage among universities' students, it means that the mobile phone When, where, What, why and with whom is used the most among universities' students.

Step 2: Experts' characteristics

Ten experts were medical informatics in two rounds of Delphi, social medicine, psychiatry, occupational medicine, and biological statistics fields. Characteristic of the Delphi expert panels can be seen in Table 1.

Table 1: Characteristic of the Delphi expert panels.

Characteristic		Round 1 (n=10)	Round 2 (n=10)
Gender, n(%)	Male	3(30)	3(30)
	Female	7(70)	7(70)
Work experience (year)	< 5	2(20)	2(20)
	> 5	8(80)	8(80)

Step 3: Prepare initial questionnaire

In this step Literature review was used to find the initial items of the questionnaire. The search was conducted on PubMed, Science Direct, EMBASE and Google scholar databases based on published articles

in English from the last ten years. Keywords included mobile phone, Cell phone, phone, smartphone, which was then combined with the use, usage, pattern and university student. These keywords were used in related studies in this field for the description of the mobile usage pattern. In the published article (583 articles), the duplicates were removed, and then the articles that were not related to the title of the study were filtered. Eventually, full-text articles that could not be accessed or whose full-text had not been included in the study criteria were screened. The 21 final articles items in the case of the pattern of mobile use that was fully agreed between the two researchers were extracted and the kappa coefficient was 85%. In cases where there was disagreement in the third person for final approval. The summary of the research process illustrated in Fig 2. In this way, the initial questions of the questionnaire were designed. The first 10 items in the questionnaire were obtained. These items can be seen in Table 2.

Fig 2: The process of implementing the study in the literature review

Table 2: Initial proposed items for mobile phone usage in student universities

Dimensions	Items	Description
What	Q1	What do you use the mobile phone?
Why	Q2	Why do you use the mobile phone?
When	Q3	How long do you use your mobile phone?
	Q4	When do you have the most mobile phone usage?
Where	Q5	Where do you have the most mobile phone usage?
Who	Q6	Who do you have the most mobile calls to?

Step 4: Distribute initial questionnaire and responses, analyze (Round 1)

In this step, the initial questionnaire was distributed among 10 experts and their opinions and responses were collected and analyzed. The questionnaire is sent to each member who anonymously and independently answers the questions and sends it back to the central coordinator.

The percentage of their agreement with each question in initial questionnaire can be seen in Table 3. The experts expressed their views on the questions and their suggestions on removing some questions and adding new questions and changing existing questions were examined. And the proposed items of the questionnaire were obtained according to Table 3.

Table 3: Proposed items for mobile phone usage in student universities in round1

Dimensions	Items	Description	Agreement(%)
What	Q1	What is the most common sound mode on your mobile phone?	75
Why	Q2	For what purpose do you use mobile ?(Such as connecting)	80
When	Q3	How long do you use your mobile phone?	85
When	Q4	At what hours of the day, you are more likely to use mobile phone?	90
When Where	Q5	How much do you use mobile phones in different places (For example, in public place)?	90
Who	Q6	Who do you have the most mobile calls to?	80

Step 5: Prepare the second round questionnaire

The above process is repeated until a consensus is obtained. Then the final report is prepared. In this step the members are asked again to comment, suggest and answer the questions, possibly generating new ideas and solutions.

The responses to this second questionnaire are compiled and analyzed and consensus has been reached, then final questionnaire was developed. In

this step final item of Table 4 created.

The final version of the questionnaire items includes 14 questions and agreed percentage with each question can be seen in Table 4. In this round, the validity and reliability were assessed. The minimum value for each item was at least 0.9. The mean of CVR (Content Validity Ratio) and CVI (Content Validity Index) for the questionnaire was 93.32 and 92.70, respectively.

Table 4: The final items for mobile phone usage in student universities in round 2

Dimensions	Items	Description	Agreement(%)
What	Q1	What is the most common sound mode on your mobile phone?	90
	Q2	If you are contacted at any of the locations (For example, in residence), do you answer the call?	92
	Q3	What is the number of SMS messages you send and receive on average over a day?	100
Why	Q4	For what purpose do you use a mobile phone ?(Such as connecting)	90
When	Q5	How long do you use your mobile phone?	90
	Q6	How many minutes a day do you spend on your call option on your mobile phone?	100
	Q7	How many minutes a day do you spend on your social network option on your mobile phone?	100
	Q8	How many minutes a day do you spend on your messaging options on your mobile phone?	100
	Q9	How many minutes a day do you spend on scientific activity option on your mobile phone?	90
	Q10	How many minutes a day do you spend on games option on your mobile phone?	95
When	Q11	At what hours of the day, you are more likely to use mobile phone?	90
	Q12	What is the average duration of each call?	100
When where	Q13	How much do you use mobile phones in different places (For example in public place)?	90
who	Q14	Who do you have the most mobile calls to?	92
	Q15	Who do you receive the most mobile calls from?	92

6: Report final questionnaire

After reaching a consensus in the round of Delphi, the final items of the questionnaire were approved. Variables such as age, gender, field of study, city of

education, city of family habitat, degree and Residence status also considered. The final questionnaire was closed-ended and can be seen in the appendix.

CONCLUSION

The questionnaire will be used for discovering the mobile phone usage among universities' students and solutions can be considered for them. It can be used for the people of Iran. The designed questionnaire can be customized to do research in this regard in other countries.

AUTHOR'S CONTRIBUTION

The authors agree on this final form of the manuscript, and attested that all authors contributed

in the final draft of the manuscript.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest regarding the publication of this study.

FINANCIAL DISCLOSURE

The present study was approved by the Medical Ethics Committee of the Research Affairs at Mashhad University of Medical Science, Mashhad, Iran (grant number 980247).

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