

Development of the Smartphone Addiction Scale (SAS) For Bangladeshi Students



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Abstract

Smartphones are very useful and popular devices. They are used for various purposes. The excessive use of smartphones can interfere with our daily lives, especially for students. When such interference occurs, it is termed 'addiction'. Students are more vulnerable to smartphone addiction than other groups. There is no culturally appropriate scale to measure Bangladeshi students' smartphone addiction. The purpose of this study was to develop a culturally appropriate scale to measure Bangladeshi students' smartphone addiction. This was a cross-sectional study. The participants were 30 nursing students (aged 20 to 24) who were asked about various aspects of their smartphone usage. The proposed 20-item scale was found to be a reliable smartphone addiction scale for Bangladeshi students with an internal consistency reliability of 0.83 (Cronbach's Alpha Coefficient). The study's findings are considered transferable to other developing countries. The scale can be used to measure students' smartphone addiction in Bangladesh and other developing countries and can help to reduce smartphone addiction.

Keywords: Smartphone addiction; Students; Back-translation method; Reliability; Smartphone addiction scale

Introduction

Smartphones are commonly used and very useful devices. Globally, 83.72% of the population uses smartphones [1]. Young people are the most common users [2] and are vulnerable to smartphone addiction [3]. Smartphone addiction is the excessive use of smartphones which interferes with users' daily lives [4]. Smartphones make our lives easier by providing various services, including gaming, social media, online banking, digital photography, social networks, global positioning system (GPS) navigation, portable media players, and shopping [5]. Problems from excessive use of smartphones cannot be ignored. Smartphone addiction is related to various socio-demographic factors. Young people are at higher risk of developing smartphone addiction [6,7]. It was found that excessive smartphone use can cause problems such as insomnia [8]; musculoskeletal pain [9]; difficulties with physical activity [10]; dry eyes and diplopia [11]; anxiety, stress and negative emotions [12]; conflicts with family members or friends; inferior academic performance; suicide attempts [13]; and increased risk of traffic accidents [14]. Bangladesh is a developing country with a population of 172.1 million, of which 117.25 million are mobile internet users (as

of May 2023) [15]. Smartphone addiction exists in Bangladesh. A survey revealed that children aged 3–5 years had access to smartphones, 92% of children used a parent's smartphone, and 8% had their own smartphone. Moreover, 86% of preschool children were problematic smartphone users [16]. In addition, an online survey measuring smartphone addiction using the Smartphone Addiction Scale (SAS-SV) found that 61.4% of young adults were smartphone addicted [17]. Furthermore, a study conducted among university students to measure their smartphone addiction using the Smartphone Addiction Proneness Scale (SAPS) revealed that 28% of university students were smartphone addicted [18].

The studies cited above used different instruments to measure smartphone addiction, such as the Smartphone Addiction Scale (SAS-SV) and the Smartphone Addiction Proneness Scale (SAPS). The Smartphone Addiction Scale (SAS-SV) consists of 10 items with a six-point Likert scale. This is a short version of the Smartphone Addiction Scale of 33 items developed for adolescents in South Korea [19]. The Smartphone Addiction Proneness Scale (SAPS) is a 15-item scale with a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The participants

were 795 Korean elementary, middle, and high school students [20]. In addition, the Smartphone Addiction Inventory (SPAII) was developed to measure Chinese university students' smartphone addiction [21] and the Smartphone Addiction Scale (SAS) was developed to measure Arabian university students' smartphone addiction [22]. There are cultural differences between the above areas and Bangladesh. Therefore, the purpose of this study was to develop a culturally appropriate scale to measure Bangladeshi students' smartphone addiction.

Methods

Smartphone addiction refers to excessive use of smartphones that interfere with users' daily lives [4]. Several scales exist to measure smartphone addiction [18-22]. In the context of Bangladesh, there is no culturally appropriate scale to measure students' smartphone addiction. Literature about smartphone addiction [18-22] has been analyzed and Bangladeshi cultural contexts have been considered in the development of the present study's Smartphone Addiction Scale (SAS) for Bangladeshi students. Descriptive and reliability statistics were used to analyze the data.

Sample and data collection

The sample of this study was 30 male and female BSc nursing students. They were recruited from Dhaka Nursing College, Bangladesh. Before data collection, formal permission was obtained from the college authorities. Participants were informed about the aims of the study and that participation was voluntary. Written consent was obtained from those willing to participate. Students who did not use smartphones were excluded. The data were collected by a research assistant (a nursing teacher working at Dhaka Nursing College). The completeness of the questionnaire was checked by the research assistant. Data were analyzed using the SPSS program.

Validity of the Smartphone Addiction Scale

The Smartphone Addiction Scale for Bangladeshi Students was developed from an English version which was translated using the back-translation method [23]. The original English questionnaire was translated into Bengali by a translator. Then, the Bengali questionnaire was translated back to English by another translator. Later, a third translator compared the two English versions and identified any inconsistencies. These were then rectified. 'Content validity' refers to the accuracy of an assessment tool. The investigator asked three experts to review the questionnaire to determine its content validity and cultural appropriateness. Two experts were from the National Institute of Advanced Nursing Education and Research, Dhaka, and one was from Faujdarhat Nursing College, Chittagong, Bangladesh. The final version of the questionnaire was revised based on the experts' opinions.

Instruments

This study used a self-administered questionnaire, developed by the investigator, based on existing literature about Smartphone

addiction and considerate of cultural context. The questionnaire had two parts. Part 1 was Demographic Data with five items: age, gender, religion, study year, and reasons for using a smartphone. Part 2 was the Smartphone Addiction Scale, in which the participant assessed their level of addiction across 20 elements: 7 about feelings (amount of time spent, unease, companionship, pleasure, shortening smartphone use, urge to use smartphones, boredom); 7 about usage habits (use of smartphones while eating, walking, during class, immediately before sleep, after waking up, in family and social situations, and when time is available); 1 about tolerance (spending time without a smartphone); 4 about disturbance to daily life and health (study, daily activities, eyes, and head); and 1 about peoples' reactions to smartphone use. Each item was measured via a 5-point, Likert-style scale (0 = never, 1 = rarely, 2 = sometimes, 3 = often, 4 = always). Total possible scores were between 0 and 80. Higher scores reflect greater Smartphone addiction.

Results

Demographic Profile

The participants' mean age was 21.77 years. The minimum age was 20 years, and the maximum age was 24 years. Most (80.00%) were female and Muslim (80.00%). There was an equal distribution of students in the 1st, 2nd, and 4th years of their degrees. All participants used a smartphone for communication, researching study topics, entertainment, and social media (Table 1).

Reliability of the Smartphone Addiction Scale

The Smartphone Addiction Scale for the students was tested for internal consistency reliability. The SPSS program was used to analyze the data. The completeness of the data was checked after it was entered. All 20 items were entered into the program and analyzed. The result was a Cronbach's Alpha Coefficient of 0.84 (Tables 2-4).

Discussion

A reliable scale is useful to collect appropriate research data. Internal consistency reliability is a test which confirms scale reliability. The Smartphone Addiction Scale for the students was tested for internal consistency reliability. The result was Cronbach's Alpha Coefficient of 0.84. This is a good level of reliability value. The usual range of internal consistency reliability of a scale is to be equal to or larger than 0.70. A value of 0.80 is often considered to be a good level of reliability. The internal-consistency reliability value of Smartphone addiction scale (SAS) was found in Cronbach's Alpha Coefficient of 0.97 [19]. In addition, the internal-consistency reliability value of the Smartphone Addiction Proneness Scale (SAPS) scale was found in Cronbach's Alpha Coefficient of .88 [20]. Moreover, the internal-consistency reliability value of the Korean self-reporting internet addiction scale short-form scale (KS-scale) was found in Cronbach's Alpha Coefficient of .91 [25]. The variation of these scale reliability may be due to scale items, sample size and cultural contexts.

Table 1: Demographic characteristics of the Sample (n = 30).

Characteristics	Frequency	Percentage
Age Mean= 21.77 years (minimum 20 years and maximum 24 years)		
Gender		
Male	6	20
Female	24	80
Religion		
Islam	24	80
Hindu	6	20
Study year		
1 st year	10	33.3
2 nd year	10	33.3
4 th year	10	33.3
Purposes of using a smartphone		
Communication	30	100%
Researching study topics	30	100%
Entertainment	30	100%
Social media	30	100%

Table 2: Reliability of the Smartphone Addiction Scale.

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.828	0.836	20

Table 3: Items Analysis of the Smartphone Addiction Scale.

	Mean	Std. Deviation	N
1	2.3667	1.03335	30
2	1.5	1.4081	30
3	0.9	0.99481	30
4	1.1	1.18467	30
5	1.2667	1.25762	30
6	2.2667	1.04826	30
7	1.8	1.27035	30
8	1.2333	1.30472	30
9	1.3333	1.26854	30
10	1.7	0.91539	30
11	1.8	0.92476	30
12	3.2667	0.73968	30
13	2.2	1.37465	30
14	2.4333	0.89763	30
15	1.9	0.95953	30
16	1.9333	1.04826	30
17	1.5333	1.22428	30
18	1.3333	1.18419	30
19	0.8667	1.13664	30
20	2.3333	1.18419	30

Table 4: The 20-item Smartphone Addiction Scale.

No	Item	Never	Rarely	Sometimes	Often	Always
1.	I spend a lot of time using a smartphone.	0	1	2	3	4
2.	I feel uneasy when I'm not using a smartphone.	0	1	2	3	4
3.	A smartphone is my best companion.	0	1	2	3	4
4.	I feel an urge to use a smartphone again after stopping using one.	0	1	2	3	4
5.	I feel pleasure using a smartphone.	0	1	2	3	4
6.	I think that I should reduce my smartphone use.	0	1	2	3	4
7.	The people I live with are bored by my smartphone use.	0	1	2	3	4
8.	I use a smartphone while eating.	0	1	2	3	4
9.	I use a smartphone while walking.	0	1	2	3	4
10.	I use a smartphone during classes.	0	1	2	3	4
11.	I fall asleep using a smartphone.	0	1	2	3	4
12.	I use a smartphone immediately after waking up.	0	1	2	3	4
13.	I use a smartphone in family and social situations.	0	1	2	3	4
14.	I use a smartphone when I have time.	0	1	2	3	4
15.	I can happily spend a few hours a day not using a smartphone.	0	1	2	3	4
16.	My studies are undermined by my smartphone use.	0	1	2	3	4
17.	My daily activities are undermined by my smartphone use.	0	1	2	3	4
18.	My eyes hurt after using a smartphone.	0	1	2	3	4
19.	I experience headaches because of my smartphone use.	0	1	2	3	4
20.	The people I live with tell me that I use a smartphone too much.	0	1	2	3	4

Conclusion

The 20-item SAS is a self-reporting questionnaire which measured Bangladeshi students' expressed smartphone addiction. The investigators used an adequate number of samples to collect data. The psychometric properties of the scale were confirmed through back-translation, consideration of cultural context, assessment of content validity, and confirmation of internal consistency reliability using the SPSS program. The SAS is a reliable scale to measure students' smartphone addiction. Reliability was above the acceptable level [24].

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Directions: These are the questions about your smartphone addiction. Please tick (☐) the one opinion that is most suitable for you.

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