The Effects of a Smartphone Addiction Education Program for Young Adult Females

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Abstract

This study investigated the development of an educational prevention program for smartphone addiction and how it can affect smartphone addiction, knowledge and attitudes after education for nursing students and staff comprising of experimental groups (26 nursing students) and control group (27 nursing students) in a university. The experimental group was given prevention education, while the control group was given nothing. SPSS 21.0 program was used to compare the before and after smartphone addiction, knowledge and attitude scores along with the t-test to analyze the differences. The average smartphone addiction (t=-2.41, p=.016) and knowledge scores (t=4.56, p=0.002) of the experimental group statistically significantly increased, while the attitude score (t=1.24, p=.321) of experimental group did not significantly increase. This study demonstrates that a prevention education program can be effective for smartphone addiction and knowledge of nursing students and staff in a university.

Keywords: Smartphone addiction, Prevention, Education, Young, female

1. Introduction

1.1. Necessity of Study

In the past decades, the growth of digital devices and applications has been continuous. It affects the way people act, work, communicate, consume media, interact, and gather information [1]. The use of smartphone devices is a daily task nowadays. Mobile devices are available in a wide variety of types, including laptops, tablets, PDAs and smartphones. These devices differ in screen sizes, usage, and other characteristics, which leads to differences in use and usage experience [2]. Among all these, the smartphone is the most popular mobile device, because most people own a smartphone, it is commonly used, and it is more affordable than a tablet. Smartphones are carried everywhere: in bed, at the restroom, at work, at restaurants, *etc*. Therefore, smartphone devices are different from other mobile or technical devices, as they are extensions of the human being [3].

Because with a smartphone, one has access to the Internet for information, business, communication, shopping *etc.*, in 2014 at the end of May, the number of registered smartphone users was reported to have increased to an estimated thirty million six hundred thousand users [1]. Among those users, young adults in their early twenties had a smartphone usage rate of 99.2 percent and the rate was significantly higher than the rate of smartphone usage among other age groups [4]. Thus, from this statistic, it can be stated that young adult females are the premier age group targets for smartphone addiction prevention.

Smartphone addiction is closely related to Internet addictions because the features are similar [5]. Internet addiction mostly begins with habits such as the checking habit; digital addictions are often the result of using habits to relieve pain or escape from reality [6]. Therefore, there is frequently an undesirable situation with certain habits that become

problematic, such as playing games, or visiting social media or forums [7]. Some characteristics, such as stress, loneliness, or isolation, could play a role as well [7].

People often do not turn off their smartphones, do not go out without them, and use them for business, relaxation, and socializing. Smartphone usage can lead to addictive behavior [8]. The relationship between people and their smartphone is much more developed than expected compared to the fixed telephone, and even with their desktop or laptop computer [9].

Smartphones have different gratifications or features that can make a strong positive reinforcement for it users. Carbonell, Oberst, and Beranuy [9] collected the gratifications of smartphones that can cause positive reinforcement by its users, namely: euphoria (getting text messages, calls, or social media response creates a feeling of being valued or loved). To overcome this problem of smartphone addiction, a measure to provide healthy and safe smartphone usage is required.

Research on digital addictions suggests that online addicts share the same personal factors [7]. Some personal factors, such as stress, are common among addicts. Addicts often want to relieve stress and escape from the reality [7]. There have been several studies about smart phone addiction among adolescents [7]. However, related studies regarding smart phone addiction among young adults are hardly found both domestically and abroad. Because these phenomena have only recently spread, there are a few articles about it [10] [11].

Therefore, this study is to test if the developing prevention education program for smartphone addiction is capable of having a significant effect on preventing young adult females from becoming addicted to using smartphones.

1.2. Purpose of Study

This study is to identify if developing of prevention education programs for smartphone addiction can affect a smartphone addiction score, knowledge, and attitude of young adults after administering prevention education programs for smartphone addiction in a university.

1.3. Hypothesis

1.3.1. Hypothesis 1

There will be more differences in the degrees of pre-test and post-test smartphone addiction of the experimental group treated with prevention education program than the control group treated with nothing in young adult females.

1.3.2. Hypothesis 2

There will be more differences in the degrees of pre-test and post-test knowledge of the experimental group treated with prevention education program than the control group treated with nothing in young adult females.

1.3.3. Hypothesis 3

There will be more differences in the degrees of pre-test and post-test attitude of the experimental group treated with prevention education program than the control group treated with nothing in young adult females.

1.4. Definition of Terms

Smartphone addiction is a behavioral addiction that negatively interferes with a person's life. Smartphone addictive behavior can include an intense focus on the

smartphone or a specific application, for example, checking, posting, or interacting on social media platforms [7]. If the smartphone or application will be removed from the addicted person, panic attacks or feelings of discomfort emerge [6].

2. Research Method

2.1. Research Design

After obtaining IRB approval of K University in 2013, the participants of this education program signed and submitted a consent form. The experimental group then began a four-week eight-session education program. The control group was treated with nothing and the members of the control group were measured at the beginning and end of the six weeks with a smartphone addiction score along with a knowledge and attitude score.

Table 1. Research Design

	Pre-test	Treatment	Post-test
Experimental group	O_{11}	X_{11}	O_{12}
Control group	O_{21}	-	O_{22}

X_{11}= Prevention education program
O_{11}, O_{21} = smartphone addiction, knowledge and attitude in the pre-test
O_{12}, O_{22}= smartphone addiction, knowledge and attitude in the post-test

2.2. Selection of Research Subject

The research was conducted from April 1st 2013 to May 10th 2013 at City W, targeted at a certain university's young female student and young female staff with a significance level of 0.05, test power calculation of 0.80, and an effect size of 0.70. The G*Power 3.1 program was also used in this experiment for statistical power analysis. Although the minimum sample size was calculated to be at twenty six people for the independent t-test, subject dropouts were considered to be likely to be in the experimental and control group. Therefore, the participants who
    1) were from 20 to 28 years old,
    2) have not received coping education to smartphone addiction,
    3) and can communicate, understand the study, and voluntarily agree to it
were assigned in at thirty in the experimental group and thirty in the control group. At the end of the experiment, there were fifty-three total subjects.

2.3. Measurements

2.3.1. Smartphone Addiction

To measure smartphone addiction, a test with 15 questions of standardized smartphone addiction diagnosis scale (S-scale) for adults was developed by the National Information Society Agency [12]. These facts of scale are composed of difficulty of daily living, withdrawal and tolerance. A score of one is 'not at all' and a score of four is 'very right'. The Cronbac's α was .92 in the current study.

2.3.2. Knowledge

To measure knowledge of smartphone addiction, a test with 20 questions was developed by the investigator by referring to books and journals on smartphones. The

validity of the test was verified by two professors of nursing and two physicians. If the answer to a question was correct, one point was given, and if the answer was wrong, zero points were given; the scores ranged from 0 to 20, with higher scores representing greater knowledge. The Cronbach's α was .91 in the current study.

2.3.3. Attitude

To measure the attitude of smartphone users, a test with 15 questions was developed by the investigator by referring to the attitude that was developed by the investigator by referring to books on attitude of addiction. The validity of the test was verified by two professors of nursing and two physicians, with lower scores representing greater attitude. The Cronbach's α was .89 in the current study.

2.4. Research Procedure

The smartphone addiction program was separated into eight sessions of fifty minutes each. The topics explained at such sessions included self-discipline for smartphone usage, the physical, emotional and social effects that smartphones can have on the user, the deleterious effects of smartphones and how users can reduce smartphone usage - all of which were communicated and conducted through video lectures and group discussions.

At the measurement instruments development session, twenty questions intended to measure the knowledge of smartphones and fifteen questions intended to measure attitude were developed and proofread by two nursing professors and a doctor to confirm its validity.

At the implementation session of the program, the test subjects were measured in smartphone addiction, smartphone knowledge and attitude with scores for each. The scores for each subject were then compared to the scores before the addiction prevention program was implemented.

2.5. Analysis of Data

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 21.0. Descriptive statistics for mean and standard deviation were used. Comparisons between pre and post smartphone addiction, knowledge, and attitude were undertaken. Before and after prevention education program, an average of smartphone addiction, knowledge and skill taken per time period was calculated to get symmetric data then compared over the two time periods with t-test.

3. Result

3.1. General Characteristics of Subjects

This study targeted students and staff in a university who were divided into 2 groups: the experimental group, where the participants were treated with prevention education program and the control group, where the participants were treated with nothing. The general characteristics of subjects were as follows (Table 2).

Table 2. General Characteristics of Subjects

(*N*=53)

Characteristics	Categories	Total (*N*=53)	Experiment group (n=26)	Control group (n=27)
		n(%)	n(%)	n(%)
Age(year)	≤ 22	26(70.2)	14(70.8)	12(69.6)
	23~24	17(23.4)	8(20.8)	9(26.1)
	≥25	10(6.4)	4(8.3)	6(4.3)
Purpose of using smartphone	Searching	15(28.3)	7(26.9)	8(29.6)
	Shopping	11(20.7)	5(19.2)	6(22.2)
	Learning	10(18.9)	6(23.1)	4(14.8)
	Game	10(18.9)	4(15.4)	6(22.2)
	Others	7(13.2)	4(15.4)	3(11.1)
Time of using smartphone per day (hours)	≤ 1	16(30.2)	9(34.6)	7(25.9)
	2~3	29(54.7)	14(53.9)	15(55.6)
	≥4	8(15.1)	3(11.5)	5(18.5)

3.2. Test of Hypothesis

3.2.1. Hypothesis 1

'There will be more differences in the degrees of pre-test and post-test smartphone addiction of the experimental group treated with prevention education program than the control group treated with nothing in young adult females.' [14]

The mean of smartphone addiction score from the experimental group treated with prevention education program were 39.32 in the Pre-test and 37.71 in the Post-test. The mean of the smartphone addiction score from the control group treated with nothing were 39.75 in the Pre-test and 39.63 in the Post-test. Since there was a significant difference in the experimental group (t=-2.41, *p*=.016) and no significant difference in the control group (t=-0.38, *p*=.689), hypothesis 1 was adopted(Table 3) [14].

3.2.2. Hypothesis 2

'There will be more differences in the degrees of pre-test and post-test knowledge of the experimental group treated with prevention education program than the control group treated with nothing in young adult females.' [14]

The mean of knowledge from the experimental group treated with prevention education program were 11.17 in the Pre-test and 15.13 in the Post-test. The mean of knowledge from the control group treated with nothing were 11.89 in the Pre-test and 12.04 in the Post-test. Since there was a significant difference in the experimental group (t=4.56, *p*=.002) and no significant difference in the control group (t=0.77, *p*=.378), hypothesis 2 was adopted (Table 3) [14].

3.2.3. Hypothesis 3

'There will be more differences in the degrees of pre-test and post-test attitude of the experimental group treated with prevention education program than the control group treated with nothing in young adult females.' [14]

The mean of attitude from the experimental group treated with prevention education program were 9.36 in the Pre-test and 10.73 in the Post-test. The mean of attitude from the control group treated with nothing were 9.71 in the Pre-test and 9.83 in the Post-test. Since there was no significant difference in the experimental group (t=1.24, p=.321) and no significant difference in the control group (t=0.69, p=.407), hypothesis 3 was rejected (Table 3) [14].

Table 3. The Comparison of Smartphone Addiction, Knowledge and Attitude of Smartphone Addiction on Pre-test and Post-test

(N=53)

Group	Variables	Pre-test (M±SD)	Post-test (M±SD)	t	p
Exp. Group (n=26)	Smartphone addiction	39.32±3.15	37.71±2.86	-2.41	.016
	Knowledge	11.17±4.28	15.13±3.21	4.56	.002
	Attitude	9.36±4.21	10.73±2.63	1.24	.321
Cont. Group (n=27)	Smartphone addiction	39.75±4.26	39.63±3.27	-0.38	.689
	Knowledge	11.89±3.62	12.04±2.94	0.77	.378
	Attitude	9.71±3.93	9.83±2.72	0.69	.407

Exp.=Experimental, Cont.=Control

4. Discussion

The research was conducted to examine if a smartphone addiction prevention education program could have an educational effect on young adult females. In the research results, it was observed that the smartphone addiction score (t=-2.41, p=0.016) and the smartphone addiction knowledge score (t=4.56, p=0.002) of experimental group had a statistically significant effect, however the attitude toward smartphone addiction score (t=1.24, p=0.321) of experimental group did not have a significant effect [14].

In other words, the pre-test addiction score of the experimental group that received the prevention education program was 39.32 and it decreased to 37.71 for the post-test. On the other hand, the knowledge score increased significantly, going from 11.17 to 15.13. These data indicate that the prevention education had a significant effect regarding smartphone addiction and knowledge. These results were consistent with Jeong et al [13]'s data tested on adolescents by utilizing a group-counseling program. Therefore, there is significance in this research of smartphone addiction education program for young adult females.

However, the attitude toward smartphones of the experimental group did not seem to be significantly affected. Thus, it can be inferred that to change the attitudes of young

adult females towards smartphones, more research is needed so that a long-term intervention program can induce a change in attitude and its effect can be thoroughly verified.

This study demonstrates that a prevention education program can be effective for smartphone addiction and knowledge of nursing students and staff in a university [14].

Therefore, a long term smartphone addiction prevention program is required to actively change the attitudes toward smartphone addiction among young adult females and in the future, more research is necessary for such a program to be developed.

5. Conclusion and Suggestion

This study is to identify if an education program can prevent smartphone addiction and increase knowledge and attitude of young adult females in a university.

Subjects are a total of 53 from a university and were randomly assigned to two groups (26 to experimental group, 27 to control group). Period of collecting data was from April 1st 2013 to May 10th 2013. For the data analysis, we used SPSS WIN VER. 21.0.

The results of this study were as follows.

The hypothesis 1: "There will be more differences in the degrees of pre-test and post-test smartphone addiction of the experimental group treated with prevention education program than the control group treated with nothing in young adult females." was adopted (t=-2.41, p=.016)

The hypothesis 2: "There will be more differences in the degrees of pre-test and post-test knowledge of the experimental group treated with prevention education program than the control group treated with nothing in young adult females." was adopted (t=4.56, p=.002).

The hypothesis 3: "There will be more differences in the degrees of pre-test and post-test attitude of the experimental group treated with prevention education program than the control group treated with nothing in young adult females." was rejected (t=1.24, p=.321).

These results confirmed that prevention programs for smartphone addiction are effective measures for preventing smartphone addiction and obtaining knowledge about young adult females in a university [14].

Based on the above results, we propose the following:

First, studies should be conducted in the future using a variety of tools and examining the effectiveness of these therapies on anxiety among the elderly.

Second, studies with larger numbers of participants should be conducted in order to better generalize the results.

Third, studies with longer times should be conducted in order to better generalize the results

Acknowledgments

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