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Effectiveness of Educational Training on the Negative Impact of Mobile Phones among Undergraduate Students

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Abstract: ***Background: Now-a-days, Cell phones are going to be an integral part of our daily life but harmful uses of mobile phones can lead to physical, psychological, and social health issues. Aim: This study aimed to assess the effectiveness of educational training regarding knowledge on the negative impact of mobile phones among undergraduate students and to find out various factors associated with it. Materials & methods: A quantitative research approach with Quasi Experimental, Non-randomized Control group Design and Non-probability purposive sampling technique was used to select 60 undergraduate students (30 experimental and 30 control groups) from Lucknow, Uttar Pradesh, India. A Self-structured knowledge questionnaire was used for assessing the knowledge among the subjects. SPSS version 25 was used for data analysis. Results: The pre and posttest knowledge score regarding negative impact of mobile phones in the experimental group was significant (t=13.8, p=0.001), but it was not significant (t=0.25, p=0.81) in the control group. There was a significant difference (t=10.4, p=0.001) in the posttest knowledge scores between experimental and control groups. There was no association between knowledge score about negative impact of mobile phones among undergraduate students with the demographic variables (p>0.05). Conclusion: Educational training was effective to improve the knowledge regarding negative impact of mobile phones among undergraduate students.***

Keywords: Knowledge, Negative impact of mobile phone, Educational training, Undergraduate students

1. Introduction

Mobile phones have become progressively more required electronic media devices in everyday life exclusively the features of internet access.[1]At present, everyone enjoys a highly mobile surroundings so that mobile technology is now a essential part of the modern life.[2] The current statistics of the mobile phone users in the world is 4.78 billion, which marks 61.43% of people becomes a cell phone owner. Among them 3.5 billion people uses smartphones.[3]According to market research, India had 502.2 million smartphone users as of December 2019, which means through smartphones above 77 % of Indians are now gain access to wireless broadband.[4]

Even though smartphones have become an important part of social life, being broadly accepted in a variety of professions[5], Smartphone addiction can leads to physical, psychological, and social health issues.[6] The mobile phone operates through emission of radio signals, and the exposure to radiofrequency electromagnetic fields has been proposed to be a health danger.[7] Some of the adverse effects of mobile phones are strain, visual problems, Cervical vertebrae reverse arch, Damage skin, Numbness of fingers, allergy, thumb arthritis accident, neck pain and spasm, Risk Of Cancer, Cyber Bullying and also influence our biological clock.[8,9,10]

Acharya JP et al noticed that college students harmful usage of cell phones is at risk for health hazards like headache (51.5%), irritability/anger (50.8%), lack of concentration (47.4%) ,anxiety (38.5%), lack of sleep (35.4%), body aches (32.2%), eye strain (36.5%), digital thumb (13.8%) and exhaustion (32.7%).[11]Visnjic et al suggested that the intensity and modality of mobile phone use could affect the mental health of university students.[12] National Safety Council found that 26 % of all car accidents were due to using a cell phone while driving.[13]

Nikhita CS et al concluded that there is an early need to implement any interventional modules like awareness programs, educational or treatment interventions as certain precautionary measures to prevent unnecessary excessive exposure to mobile phones and its harmful effects mainly targeted for vulnerable groups like children and adolescents.[14]

Very few interventional studies have been conducted to improve knowledge of undergraduate students about the negative impact of mobile phone usages in particular areas. This is the main reason researchers conduct the present study. The objectives of the study were to assess the effectiveness of educational training regarding knowledge on the negative impact of mobile phones among undergraduate students and determine the association with their selected demographic variables.

2. Methodology

A quantitative research approach with Quasi Experimental, Nonrandomized Control group Design with non-probability purposive sampling method was used for the selection of 60 undergraduate students (30 experimental and 30 control groups) from Lucknow, Uttar Pradesh, India. The study setting was St. Mary College of Nursing, Lucknow for experimental group and Bora College of Nursing, Lucknow for control group. The tool used for data collection consisted of 2 parts: Part 1: Socio-demographic data and Part II: self-

structured knowledge questionnaire which consists of 30 items were used to assess the knowledge of undergraduate students regarding negative impact on mobile phones. Every item was of multiple choice types with one correct answer carrying 1 mark remaining options 0 marks. The minimum score 0 and maximum score was 30. The scores were graded as 21-30 good knowledge, 11-20 average knowledge and 0-10 poor knowledge. Content validity of the tool was determined by experts in the field of nursing. The reliability of the knowledge questionnaires was tested by using a test-retest method and score was found to be r = 0.74. The tool was prepared in English and Hindi to facilitate better comprehension. Interventional module, an educational training was prepared based on the review of literature which consists of areas such as introduction, definition, causes, positive and negative impacts, and prevention of mobile phone usages. The study was approved by the Institutional Ethical Committee. Informed consent was obtained and the confidentiality and anonymity of the participants were maintained. Pretest was conducted to know the knowledge regarding negative impacts of mobile phones among experimental and control groups and educational training was administered to undergraduate students in the experimental group and the post test was done after a gap of 2 weeks for the both groups. The collected data were analysed using descriptive and inferential statistics. SPSS version 25 was used for data analysis and 0.05 was the level of significance.

3. Results

The major findings of the study were as follows:

Table 1: Frequency and percentage distribution of demographic variables of subjects (n=60)

Demographic variables	Frequency (%)		
	Experimental group (n=30)	Control group (n=30)	Total (n=60)
1. Age (years)			
17-18	2 (6.7%)	5 (16.7%)	7 (11.7%)
19-20	21 (70%)	21 (70%)	42 (70%)
21-22	6 (20%)	3 (10%)	9 (15%)
23-25	1 (3.3%)	1 (3.3%)	2 (3.3%)
2. Gender			
Male	4 (13.3%)	2 (6.7%)	6 (10%)
Female	26 (86.7%)	28 (93.3%)	54 (90%)
3. Type of family			
Nuclear	13 (43.3%)	23 (76.7%)	36 (60%)
Joint	17 (56.7%)	7 (23.2%)	24 (40%)
4. Family's monthly income			
< 10,000 INR	8 (26.7%)	9 (30%)	17 (28.3%)
10,000 - 20,000 INR	9 (30%)	10 (33.3%)	19 (31.7%)
20,001 - 30,000 INR	8 (26.7%)	7 (23.3%)	15 (25%)
> 30,000 INR	5 (16.7%)	4 (13.3%)	9 (15%)
5. Type of mobile phone			
Android	23 (76.7%)	27 (90%)	50 (83.3%)
i-phone	2 (6.7%)	2 (6.7%)	4 (6.7%)
Keypad	4 (13.3%)	1 (3.3%)	5 (8.3%)
Others	1 (3.3%)	0 (0%)	1 (1.7%)
6. Average time spent on mobile phone in a day			
< 1 hrs	2 (6.7%)	5 (16.7%)	7 (11.7%)
1 - 3 hrs	9 (30%)	12 (40%)	21 (35%)
3 - 5 hrs	15 (50%)	7 (23.3%)	22 (36.7%)
> 5 hrs	4 (13.3%)	6 (20%)	10 (16.7%)
7. Duration of mobile phone usage			
< 1 year	6 (20%)	6 (20%)	12 (20%)
1 - 2 year	11 (36.7%)	14 (46.7%)	25 (41.7%)
2 - 3 year	5 (16.7%)	5 (16.7%)	10 (16.7%)
> 3 years	8 (26.7%)	5 (16.7%)	13 (21.7%)
8. Spent majority of time with			
Camera	4 (13.3%)	2 (6.7%)	6 (10%)
Internet browsing	5 (16.7%)	2 (6.7%)	7 (11.7%)
Gaming	1 (3.3%)	3 (10%)	4 (6.7%)
Chatting	20 (66.7%)	20 (66.7%)	40 (66.7%)
Others	0 (0%)	3 (10%)	3 (5%)

The table 1 displays that frequency and percentage distribution of demographic profile, the majority of the undergraduate students 70% were in the age group of 19 to 20, 90% were female, 60% belonged to a nuclear family, 31.7% were having family monthly income between 10001 to 20000 Indian rupees, 83.3% were using android phones, 36.7% were using mobile phone 3-5 hours per day, 41.7% were using a mobile phone by 1-2 years, and 66.7% of were spent their majority of time for chatting .

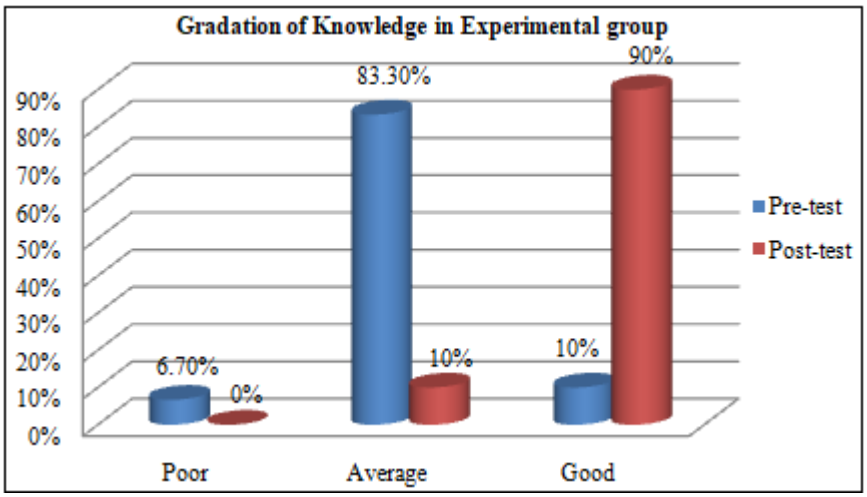

Figure 1: Percentage distribution of overall knowledge score gradation in experimental group

Figure 1 describes that percentage distribution of knowledge level regarding knowledge on negative impact of mobile phone among undergraduate students in experimental group, in the pretest majority 83.3% had average knowledge, remaining 10% good knowledge and 6.7% poor knowledge but in the post-test, the majority 90% had good knowledge followed by 10% average knowledge and none of them had poor knowledge. There was an improvement in the knowledge in the experimental group after the intervention.

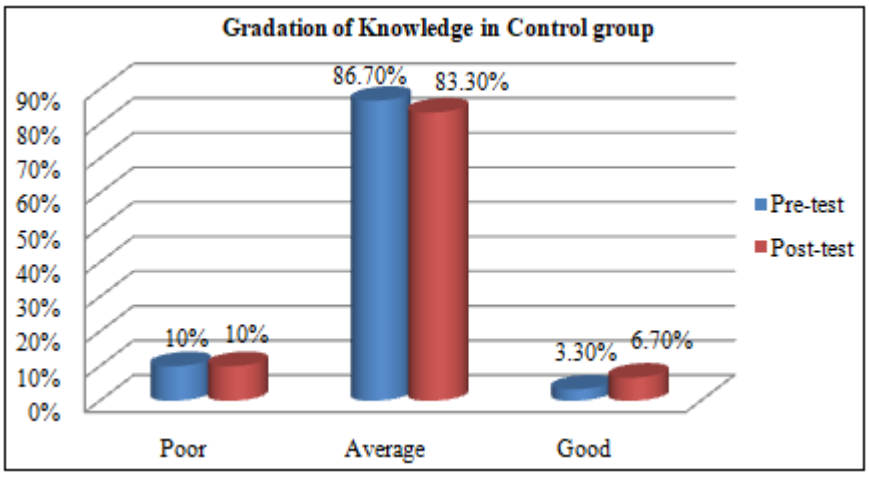

Figure 2: Percentage distribution of overall knowledge score gradation in control group

Figure 2 illustrates that percentage distribution of knowledge level regarding knowledge on negative impact of mobile phone among undergraduate students in control group, in the pretest majority 86.7% had average knowledge, remaining 10% poor knowledge and 3.3% good knowledge similarly in the post-test, the majority 83.3% had average knowledge followed by 10% poor knowledge and 6.7% had good knowledge. There was no improvement in the knowledge in the control group.

Table 2: Comparison of Knowledge score regarding negative impact of mobile phones between pretest and posttest

Group	Test	Mean	sd	t	df	p
Experimental (n=30)	Pre-test	16.03	3.9	13.8	29	0.001**
	Post-test	25.4	3.1			
Control (n=30)	Pre-test	15.1	3.3	0.25	29	0.81
	Post-test	15.2	4.4			

**Significant (p<0.01)

Table 3: Comparison of posttest knowledge score regarding negative impact of mobile phones between experimental and control group

Group	Mean	sd	t	df	p
Experimental (n=30)	25.4	3.1	10.4	58	0.001**
Control (n-30)	15.2	4.4			

**Significant (p<0.01)

The table 2 illustrates that comparison of pretest and posttest knowledge score regarding negative impact of mobile phones among undergraduate students by using paired t-test, in experimental group the mean score in the pretest was 16.03±3.9 and in the posttest 25.4±3.1, which was significant (t=13.8, p=0.001). But in the control group the mean score of the pretest and posttest were 15.1±3.3 and 15.2±4.4 respectively, which was not significant (t=0.25, p=0.81). Table 3 shows that comparison of posttest knowledge score between experimental and control groups regarding negative impact of mobile phones among undergraduate students by using independent t-test, the posttest mean score in the experimental and control groups were 25.4±3.1 and 15.2±4.4 respectively, which was significant (t=10.4, p=0.001). So educational training was effective to improve the level of knowledge regarding knowledge on the negative impact of mobile phones among undergraduate students.

Table 4: Association between pretest knowledge score with the demographic variables

Demographic variables	Experimental group		Control group	
	x^2	*p*	x^2	*p*
1) Age (years)	3.4	0.76	3.1	0.78
2) Gender	1.6	0.46	0.6	0.74
3) Type of family	2.9	0.23	2.3	0.32
4) Family's monthly income	7.1	0.32	8.1	0.23
5) Type of mobile phone	2.9	0.82	0.9	0.92
6) Average time spent on mobile phone in a day	4.2	0.66	8.1	23
7) Duration of mobile phone usage	6.9	0.33	3.4	0.76
8) Spent majority of time with	4.3	0.64	4.6	0.80

The results in table-4 exhibits that there was no significant association between pretest knowledge score about negative impact of mobile phones among undergraduate students with their demographic variables both in experimental and control groups (p>0.05).

4. Discussion

The present study found that the educational training was very effective in cultivating knowledge regarding the negative impact of mobile phones among undergraduate students. These results were supported by Khan SA [15] which displays that the international modules like structured Teaching Programme was greatly effective in improving the knowledge regarding side effects of smartphone usage among children (p<0.05). Another study by Ramu K et al[16] also found that organised teaching programmes was effective (p<0.05) in improving knowledge regarding

hazards of using mobile phones, among high school students.

Present study revealed that there was no association between knowledge of undergraduate students about the negative impact of mobile phones with their demographic variables. These results were consistent by Studies of Shettigar D et al [17] and Benny AC et al[18] which found that there was no association between the knowledge levels of adolescence with their selected demographic variables.

5. Implication and Recommendations

This study finding helps teachers and parents to adopt the use of this training technique to overcome harmful effects of mobile phone usages. This study also benefits many reputed organizations to conduct awareness programs, seminars, workshops etc. for preparing teachers, parents, students, health workers, counselors and other significant others to contribute to the sound health of the present generations. A similar study can be replicated for a longer period and large scale for more reliability and effectiveness. A mixed-method approach can be used to explore widespread findings in future studies.

6. Conclusion

Educational training was effective to improve knowledge regarding the negative impact of mobile phones among undergraduate students. This study also noticed that there was no association between undergraduate student's levels of knowledge regarding the negative impact of mobile phones with their demographic variables. The study is limited to B.Sc. Nursing first year students who are studying in selected nursing colleges in Lucknow, Uttar Pradesh, India. It is necessary to implement any sort of educational and teaching packages to reduce the problems associated with over usage of mobile phones.

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Conflicts of interest
There are no conflicts of interest

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