Effects of Smartphone Usage on Health and Education of School Students

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Abstract

In this cross-sectional study on 80 students, of classes 9 to 12, it was revealed that excessive use of smart phone had ill effects on mental and physical health of users. Only a suitable intervention by school nurse by way of counselling to students, parents and teachers appears to be an appropriate measure to restrain the smart phone usage by students.

Smartphone appears to be a distraction to significant number of new generation. This cross-sectional study was undertaken to assess the effects of smart phone on health and education of students attending higher secondary school of urban community, Lucknow.

Objectives

The objectives of the study were:

1. To describe the effects of smartphone usage on health and education of higher secondary school students.
2. To find the relationship of effect of smart phone usage on select socio-demographic variables.

Smartphone and internet usage in India is set to massively swell in the next four years. Despite the convenience and several benefits, it brings many ill effects (Bhattacharya, 2018). Earlier people had no access to mobile phones; they used to play together, share their toys, and were much interested in group activities also. They had no addiction, no health problem related to internet or smart phone. The scenario has completely changed. The accessibility to internet and smartphone has increased. Children, specially adolescents are more prone to this as per various studies. Smart phone affects education, health and social behaviour also. It has become an enemy to our sleep in terms of quality and reduced time spend for outing, exercises etc. Gazing into phone for long time with neck bent and arms in a fixed position results in pain, muscle spasms, and restlessness. In the long run permanent and chronic diseases like cervical spondilitis, golfer elbow, dry eye syndrome, stiffness in thumbs, neck and back etc. may occur (WHO, 2008). Various studies have brought out the increased risk for cancers, tumours and radiations. So, the need was felt to conduct a study to assess the knowledge about the effects of smartphone on students.

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Review of Literature

Many studies have shown that there is negative impact of smartphone on students due to high usage, in terms of health and education.

A descriptive co-relational study by Young-Soon Choi, (2018) revealed that degree of addiction to smart phone was 32.10 percent and 39.1 percent had physical pain.

A cross-sectional study was conducted by Rai et al (2016) to assess the effects of excessive use of smartphones among professional college going students among professional MGM medical college, Indore in 2016. A total of 300 randomly selected students of different streams having smart phones were selected for the study. A structured questionnaire was used to elicit the responses. It was found that 32.67 percent students used less than 2 hour on smart phone daily, 40 percent used smartphone for 24 hours, 23.33 percent students used smartphone 4-6 hours and only 4 percent students used it for more than 6 hours; 52.67 percent students used smartphone for communication and social networking, 39.33 percent students agreed on that they often used smart phone while walking; 33 percent students used smart phone while having meal; 56 percent students felt uncomfortable without their smart phone. Almost 40 percent students had sleep disturbance and 42.6 percent felt dryness of eyes & headache.

Subrahmanian & Sindhuja (2015) conducted an analytical study on Impact of smart phone usage among 115 college students of Chennai by using questionnaire. Results found that out of 74 percent

of female participants, 45 percent were using smart phone for more than 3 years, 77 percent of subjects were using daily for 5 years and 60 percent had habit of checking the smart phone while sleeping; 72 percent of the participants had used smart phones for academic purposes, while 79 percent had headache, 54 percent with eye pain, 43 percent had neck pain and arm pain.

In a cross-sectional study by Ifeanyi Peter Ifeanyi & Chukwuere to assess the impact of using smartphones on the academic performance of 375 undergraduate students in North-West University, South Africa in January 2018, data was collected using questionnaires. It was found that most undergraduate students were using their smartphones to engage with fellow students and lecturers. It was also found that using smartphones distracts students from their studies in certain aspects. The results also showed the impact of using smartphones on students' academic capabilities and progression.

Methodology

A cross sectional descriptive approach was used in this study conducted in a selected school of urban community, Alambagh, Lucknow (UP). Eighty students from 9 to 12 classes (aged 13- 19 years) possessing smartphone and who agreed to give the written informed consent were considered as respondents to collect information. Ethical clearance was taken from the concerned authorities. Written informed consent was taken from the respondents for the data collection. Students were selected by two-way sampling method among which 40 were girls and 40 were boys. The proportionate stratified sampling was used to select proportionate sample number from each strata (class) accordingly. Samples were collected by systemic random sampling. Once the sample, a semi-structured questionnaire was prepared, it was administered to students of different strata in school. The data collected were presented in table formats, pie charts and histograms using Excel and SPSS.

Inclusion criteria

All 9 to 12 standard students using smartphone on a regular basis in age group 13 years to 19 years.

Exclusion criteria:

- Not willing to participate
- Not using smartphone

Tool: The research questionnaire used for the study consisted of: Section A, with demographic variables such as gender, age, class of students, occupation, type of family, education of parents, income, religion, money expenditure on smart phone; it included 11 questions.

Section B: It had two parts: Part 1: Effects of smart phone on health: This part included 10 questions, where five-point likert was used. The questions related to health effects of phone like skipping meal due to excessive phone usage, headaches, blurred vision, and pain in ears, muscle pain, finger pain back pain due to excessive phone usage and feeling of anxiety and depression due to excessive phone usage.

Part 2: Effects of smart phone on education - included 11 questions, in which both positive and a negative aspects of smart phone on education were included. Positive questions were on completion of assignment with help of smart phone, updating of education with help of smart phone, improvement in learning skills with help of smart phone. Negative questions includes distraction from studies due to usage of phone, poor academic performance due to smart phone usage, sleepiness, inattentiveness in class due to phone usage.

Results

A total of 80 students who were having smartphone of age group 13 -19 years of higher secondary school of urban community Alambagh were included in the study.

The analysis of the sociodemographic profile: It was seen that out of 80 respondents, 40 (50%) respondents were female, 38 (47%) were male remaining 2 (3%) were transgender. Majority of the respondents were from age group of 15-16 years, 36 (45%) followed by 27 (33%) from age group of 17 -18 years, 16 (20%) from 13-14. Further, according to the class of respondents maximum respondents i.e. 30 (38%) were from class 11, 25 (31%) were from 9, 13 (16%) were from class 10 and minimum respondents were from class 12 i.e. 12 (15%). Most of the respondents 47 (58%) were living with both parents,16 (20%) were living with joint family,10 (13%) were living with relative and only 7 (9%) were living with single parent.

Overall usage of smartphone: Out of 80 respondents 47 (59%) were having high usage of smartphone and 33 (41%) were having low usage of smartphone. The overall usage of smartphone was calculated on the basis of the availability of smartphone, use of other's smartphone, frequency of usage of smartphone and duration of smartphone.

Overall Effects on Health due to smartphone usage: Based on the data collected 39 (49%) were having no ill effects on health, 40 (50%) were having moderate ill effects and 1 (1%) were having poor health due to smart phone usage. The data was collected by questionnaire based on 5 point Likerts scale containing 10 questions pertaining to effects of smart phone usage on health and grading was done as 50 being maximum score and 10 being the least score. Overall Effects on Education due to

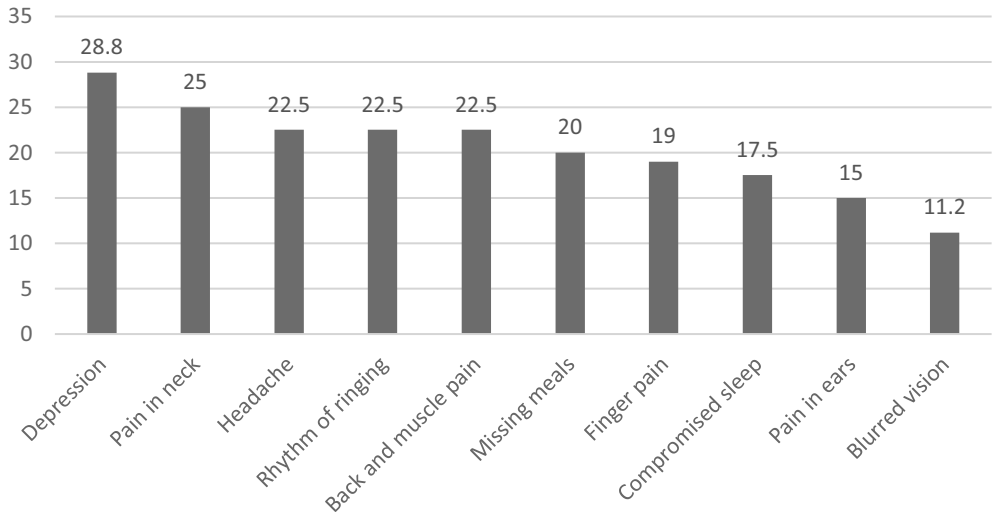

Figure 1: Effects on health due to smartphone usages (n=80).

smartphone: Based on data collected out of 80 respondents 55 (69 %) had no ill effect while 25 (31%) had ill effects on education. The overall effect on education was graded as No ill effect and Ill effects . A 5-point likerts scale questionnaire was prepared containing 11 questions for all the respondents, the data was analysed.

Figure 1 depicts the effects of smartphone usage on health. Among 80 respondents 23 (28.8%) often felt anxious or depressed when they were away from their smartphone, 20 (25%) experienced pain in neck muscles, 18 (22.5%) had headache, experienced back and muscle pain and had rhythm of ringing in ears due to smartphone use, 16 (20%) often used to miss their meals due to smartphone usage, 15 (19%) experienced finger pain, 14 (17.5%) compromised sleep due to smartphone use, 12 (15%) had pain in ears and 9 (11.2%) had blurred vision due to smartphone use. Hence maximum ill effect among the respondents were feeling depressed followed by neck pain, headache, ringing of ears, muscle pain and back pain.

Excessive use of smartphone can impair students cognitive capacity and distractions in learning. Figure 2 explains about various educational effects on respondents due to high usage of smartphone. Out of 80 respondents 21 (26%) respondent's academic performance was suffering due to smartphone use, 18 (22%) were having discipline issues related to smart phone usage, 17 (21%) respondents were getting distracted from studies and 12 (15%) respondents were feeling sleepy in class due to excessive use of smartphone at night.

With regards to health, the effects were found to be statistically highly significant at a chi square value of 10.11 and p value of <0.001 (Table 1). The health effects were graded mainly into three categories: no ill effects, moderate ill effects and poor effects. It was found out that there were moderate ill effects (37.5%) with the high usage of smartphone whereas there were no ill effects (28.75%) with the low usage of smartphone. The usage of smartphones and its effects on education of respondents was analysed and found to be statistically significant at a chi square value of 23.11 and p value of <0.001.

The educational effects were graded mainly into two categories: those not affecting education and adversely affecting education . It was found out that education was effected adversely (31.25%) due to high usage of smartphone whereas it was not affected when the usage was low.

Discussion

Mobile phones have become an indispensable part of life today. The use of mobile phones among young children and adolescents is particularly increasing dramatically. But because of the overuse of mobile phones many adverse effects are getting

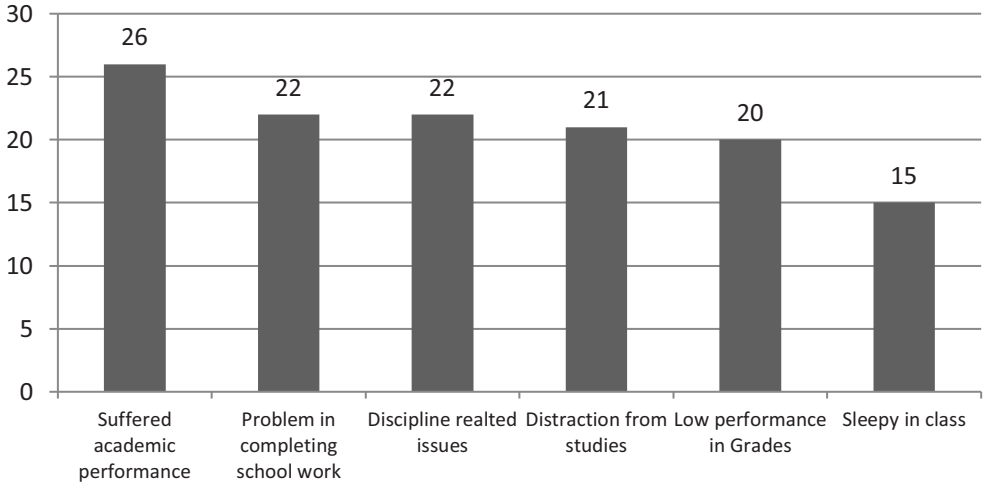

Figure 2: Adverse effect on education due to high smartphone usage (n=80).

Table 1: Association of overall effects on health and education of respondents with usage of smartphone (n=80)

Effects	High usage	Low usage	Total	Chi-square	p value	Inference
On health						
No ill effects	16 (20.00)	23 (28.75)	39 (48.75)	10.11	<0.001 *df=2*	Highly significant
Moderate ill effects	30 (37.50)	10 (12.50)	40 (50.00)			
Poor effects	1 (1.25)	0	1 (1.25)			
Total	47 (58.75)	33 (41.25)	80			
On education						
Not affecting education	22 (27.50)	33 (41.25)	55 (68.75)	23.11	<0.001 *df=1*	Highly significant
Adversely affecting education	25 (31.25)	0	25 (31.25)			
Total	47 (58.75)	33 (41.25)	80			

Data in parenthesis denote percentage.

reported nowadays specially in school children on their health, education and social behaviour. This study brings about the knowledge of effects of smartphone on students health and education. The effects of high usage of smartphone on the health of respondents was found to be adversely affecting their health: 28.8 percent had anxiety, 25 percent complained of pain in the neck and 22 percent complained of ringing of the smartphone, headache and muscle pain .

It was found to be co-related in the study conducted by Subrahmaniam & Sindhuja (2015). An analytical study on 'Impact of smart phone usage among college students' in 115 college students of Chennai on 2016, by using questionnaire was done. Results showed that 60 percent had habit of checking the smart phone while sleeping, while 79 percent had headache, 54 percent developed eye pain and 43 percent had neck and arm pain.

Another study conducted by Bhaskar Medical College, Hyderabad on some of the common health effects of cell phone amongst students in 2013 revealed that headache was the commonest symptom (51.47%) followed by irritability/anger (50.79%). Other common mental symptoms included lack of concentration and poor academic performance, insomnia, anxiety etc. Among physical symptoms body aches (32.19%) and eye strain (36.51%) were found to be frequent.

In our study findings were similar; majority of students had depression (28.8%), pain in neck (25%), headache (22.5%), rhythm of ringing (22.5%), back and muscle pain (22.5%), missing meals due to smartphone usage (20%) and others like finger pain, pain in ears , compromised sleep and blurred vision. Also, 31 percent respondents had ill effects on education and 26 percent agreed that their academic performance got affected, 22 percent had problems in completing their school work and faced discipline-related issues, 21 percent respondent grades were adversely affected. This study resembles the study of Rai et al (2016) who conducted a cross sectional study to assess the effects of excessive use of smart phone among professional courses students of MGM Medical College Indore in 2016 where it was found that 55.6 percent experienced lack of concentration on studies .

Recommendations

The rapid advancement in technology has made many gadgets, a smartphone is one of them. The smartphone is 24/7 accessible with applications that stimulate its continuous usage among school going children. On the basis of our findings, following recommendations are made.

Nursing Administration

At national level, NCERT should have guidelines strictly restricting the students from using smartphones in school premises and school timings. Standarised disciplinary guidelines should be also included. Student-friendly smartphones can be introduced which do not consist of certain software that divert the mind of the students. According to our study the smartphone are having ill effects on the health and education of the students. As the students are the future of the nation, so to develop a better future of the country it is necessary to take such steps.

At institutional level the school and college administration should have rules & regulations on the usage of smartphone in the campus. The school health nurse should actively get involved in making policies of school related to smartphone usage and restrictions imposed. Adequate infrastructure should be made for restricting the child and abiding themselves by the rules of the campus. School curriculum should be so planned that the students will not have free time to spend on smartphone and get addicted to it.

Nursing Practice

Module for Students: School health nurse should conduct monthly physical and mental health check up of students. She should be responsible for counselling and guidance to the students about the ill effects of smartphone and self discipline in its usage besides teaching the students about the range of motion exercises and right posture to combat the ill effects of smartphone on health. She should also monitor the health of the students especially for depression as 28.8 percent of respondents in our

study felt anxious and depressed when away from their smartphone followed by ear and eye screening.

Module for Parents: School health nurse should conduct awareness programmes for the parents and guardians regarding the ill effects of smartphone usage as according to our study, respondents from the family with both parents have higher use of smartphone. Our study found the positive effects of parental involvement in low usage, so monthly meeting with parents to encourage positive health behaviour in the students related to smartphone usage should be encouraged.

Module for Teachers: School health nurse should also be responsible for educating and guiding the teachers about maintaining strict rules and regulations in the school for restricting the use of smartphone by the students. The Teacher should be made responsible for keeping up the health record of the students.

Nursing Research

Our study was limited to one school, it can be done for larger population. The effectiveness of health education module on usage of smartphone can be administered and evaluated. Quasi experimental studies can be done for parents education about how to deal with addiction of children's about smartphone.

Implications in nursing

Our research study is based on Health belief model which helps the nurses to prevent the patient from chronic diseases and improves the quality of life by applying different strategies for behavioural change and life style modifications.

1. School Health Nurse: The school health nurse of every school should play a vital role in behaviour modification of the students. As our study has revealed various ill effects of smartphone on health the role of the school health nurse takes a major role, she should be able to screen the school children for ill effects of use of smart phone, and counsel & guide the students.
2. Community Health Nurse: Identifying the high risk cases of smart phone usage or addiction during her home visits and sensitise and the parents and the adolescents regarding the ill effects of smartphone on health education and social behaviour.
3. Nurse as an Administrator: She should emphasise on the importance of restriction of smartphone in school premises and formulation of strict rules for the same.
4. Nurse as a researcher: Nurse as a researcher should conduct further studies on smartphone and the different coping strategies for behaviour modification on a wider basis and on people from different strata of the society. Adolescent health should be given a priority. Better means has to be chosen to make a smartphone as a useful tool. The adolescents should be motivated to utilise smartphone for learning purposes through mobile learning.

Conclusion

This was a cross sectional descriptive study to assess the effects of smartphone on health and education among 80 adolescent of 9 to 12 classes 9 to 12 attending higher secondary school of urban community, Lucknow.

Findings revealed that students had various health-related issues related to usage of smart phones like depression (28.8%), pain in neck (25%), headache (22.5%), rhthym of ringing (22.5%), back and muscle pain (22.5%), missing meals due to smartphone usage (20%), finger pain, pain in ears , compromised sleep and blurred vision. Hence, the role of school health nurse is to be revisited and revamped to include the issues raised by modern technology that is a double edged weapon and can be a source of concern for teachers and parents. It is essential to streamline the usage of smartphone in school going children and find appropriate ways to make it as a useful academic and social tool. Therefore, nurses need to keep in mind that use of smartphone can only be beneficial if used in limits.

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