Journal of Psychology & Psychotherapy

Research Article   **OMICS International**

Prevalence of Smart Phone Users at Risk for Developing Cell Phone Vision Syndrome among College Students

Aswitha Priya Sadagopan, Rajajeyakumar Manivel*, Anushuya Marimuthu, Hariesh Nagaraj, Krithikka Ratnam, Taherakumar, Lakshmi Selvarajan and Genickson Jeyaraj

Chennai Medical College Hospital and Research Centre, (SRM Group), Irungalur, Trichy, India

Abstract

The universe dependence on electronics has confirmed that in several approaches create a problem in the eyes. There is a shortage of literature survey to find out the high exposure to young college students in developing the cell phone vision syndrome. This study was carried out in 30 medical students aged between 18–25 years. This is part of the previous study on impact of self-esteem, personality and behavior among WhatsApp user and non-user. They were selected by using simple random sampling and informed consent was obtained. A pretested well organized questionnaire was used to gather the research information. The mean age was 19.17 years. The acceptable sample size was 30. Most of the students were used smart phone 2 h/day (80% or 26/30) and for texting, browsing, (25/30, 83%). Background of white screen were used (22/30, 73%), black letter (21/20, 70%) and viewing radius was more than 25 cm (20/30, 66%). Symptoms were noted for mostly (25/30, 83%), students out of which (11/25, 44%) had eye strain. Use of smart phone devices for many hours, at near functioning distances, has become familiar among college students. Digital tools will emerge in coming years, it may hold more apps and our eyes will spend more time on that. We need to learn how to interact safely with this tool and create awareness on healthy eye habits.

Keywords: Cell phone vision syndrome; College students; Digital technology; Smart phone; WhatsApp user

Introduction

Mobile phone overuse is an addiction notice among certain mobile phone users. Overuse is often defined as a "dependence syndrome," which is the term used by the World Health Organization (WHO Expert Committee, 1964) to displace addiction or habituation [1]. This is classified under ICD-10, as a behavioral problem (mobile phone addiction). In India, over use is started at 39-44% of young age group [2]. The prevalence ranges from 0 to 38%, with self-direction of mobile phone addiction outstrip the prevalence estimated in the previous studies [3]. Nature associated with mobile-phone overuse variance between genders.

Women are more likely to increase an overuse mobile phone behavior than men. Male exposed less social stress than female and rare mobile phones for social purposes [4]. Aged populations are very rarely developing addictive mobile phone behavior because of greater self-regulation [5]. Mobile devices used for noticing and reply to emails, looking for the climate, reading news, and posting status updates on Facebook, smartphones may be causing vision problems. Visualizing the smaller screens can accelerate a pattern of ophthalmic problem such as headaches, blurred vision, sore eyes, dry eye and muscle strain [6].

Normal blinking rate about 15 times per minute, but this rate reduced the person who was staring at smartphone. The person is quint to read the smaller screens, facial, neck and shoulder muscles are contracted, eyes become fatigued and vision can be blurred or strained. The iPhone's latest update likely to be disturbs equilibrium with the new icons zooming in and out. Main complications are dizziness. Reading in bed can affect sleep cycle due to the blue light radiate from the screen and lead to decrease levels of melatonin and produce sleep disturbance. There is a shortage of literature survey to find out the high exposure to young college students in developing the cell phone vision syndrome.

Aims and Objectives

1. To learn what percentage of all smartphone usage is specific to what's App.

2. To find out the high risk to young college students in developing the cell phone vision syndrome.

3. To correlate perceive stress pattern and quality of sleep with cell phone vision syndrome.

Materials and Methods

The present study was carried out in 30 medical students after getting ethical clearance from the institutional Human Ethics Committee. This cross sectional study was the part of our previous study on Impact of Self Esteem, Personality and Behavior among WhatsApp User and Non-User, their age group between 18-25 years. The mean age was (19.17 ± 1.15), body weight between 46-65 kg (53.72 ± 2.28) and height between 146-173 cm (168.5 ± 1.12). They were selected by using simple random sampling and informed consent was obtained.

Methodology

Type of study design: Cross-sectional study

Study place: The study was conducted among the medical students

Sample size: Total sample size was 30

Sampling unit: Students between the age group 18-25 years

Sampling frame: Attendance registers containing the students list

Sampling technique: Simple random technique

*Corresponding author: Rajajeyakumar Manivel, Assistant Professor, Department of Physiology, Chennai Medical College Hospital and Research Centre, (SRM Group), Trichy-621105, India, Tel: 97513-82650; E-mail: rajakumar60@gmail.com

Period of study

The study period was between May–August 2016.

Inclusion criteria

1. Age 18-25 years
2. Both gender (M=15, F=15)
3. Volunteers

Exclusion criteria

1. History of chronic systemic illness
2. Subjects currently on medication against systemic diseases
3. Smokers, Alcoholics
4. Psychoactive substance use
5. Known psychiatric illness

The following parameters were studied:

Prestructured questionnaire were used to assess the status of the individual Perceive Stress Scale (PSS) [7].

PSS is the most extensively used psychological tool for grading the stress. PSS questionnaire is commonly used to different group of population and study about reactions and reflections to calculate the "degree to which position in one's life is audited as stressful" particularly, over the duration of past one month. It consists of 10 components, four of which are reverse-scored, calculated on a 5-point scale from 0 to 4. PSS scores are retrieved by inverse responses (e.g. 0=4, 1=3, 2=2, 3=1 and 4=0) to the four positively mentioned components (4, 5, 7 and 8) and summation of all components. Total score ranges from 0 to 40.

Data analysis: Data was analyzed using the SPSS statistical program (IBM SPSS statistics 21). An independent t-test was done to compare parameters between men and women volunteers and dependent t test to compare values at the beginning and the end of the study period. P value less than 0.05 was considered as statistical significant.

Results

The average age was 19.17. The convenient sample size was 30. Perceived stress scale of male and female students were 20.40 (5.65) and 15.73 (4.78). These difference were being statically significant (p<0.01). Most of the students were used smart phone 2 h/daily (80% or 26/30) and for texting/browsing/social media 25/30 83%. Background of white screen (22/30, 73%), black letter 21/30, 70% were being used and viewing distance was more than 25 cm (20/30, 66%). Symptoms were noted for mostly 25/30, 83%, students out of which 11/25, 44% had eye strain (Figures 1-6 and Table 1).

Discussion

This cross sectional study was conducted among 30 medical students. The prevalence of cell phone vision syndrome in the study population was found to be 83%. The prevalence was almost similar between the male and female students. Our results concordance with the previous studies [8] have reported that males were at a higher risk of developing symptoms of stress, redness, burning sensation, blurred vision and dry eyes. Females were at a significantly higher risk of developing headache and neck and shoulder pain as compared to males. Few studies have reported that the proportion of females with computer vision syndrome was more compared to males [9].
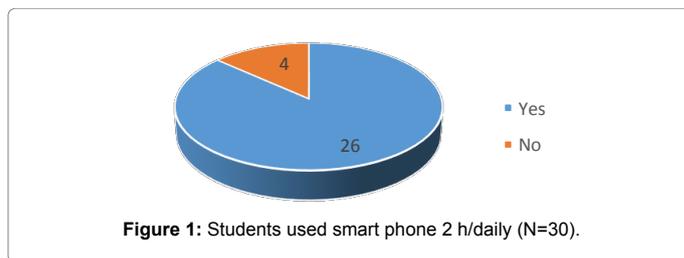
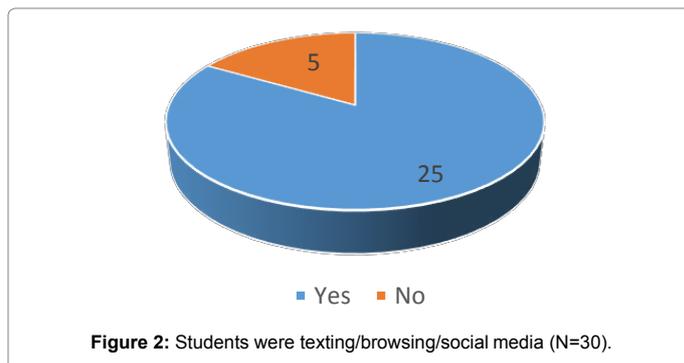

Figure 1: Students used smart phone 2 h/daily (N=30).

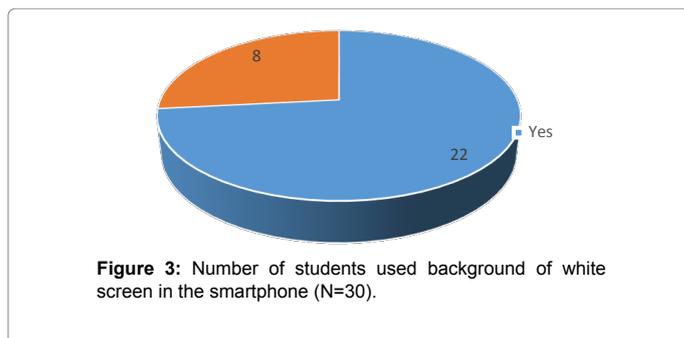**Figure 2:** Students were texting/browsing/social media (N=30).

Figure 3: Number of students used background of white screen in the smartphone (N=30).
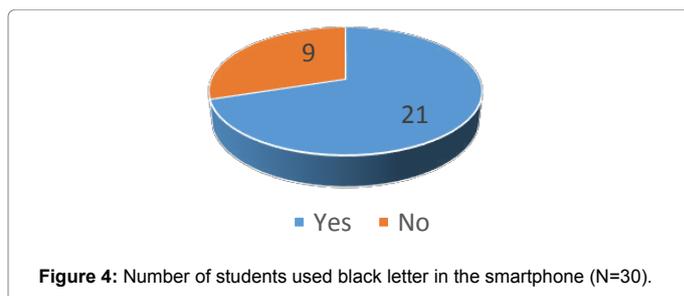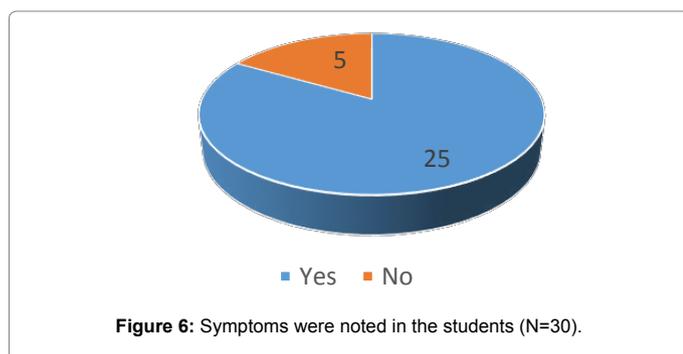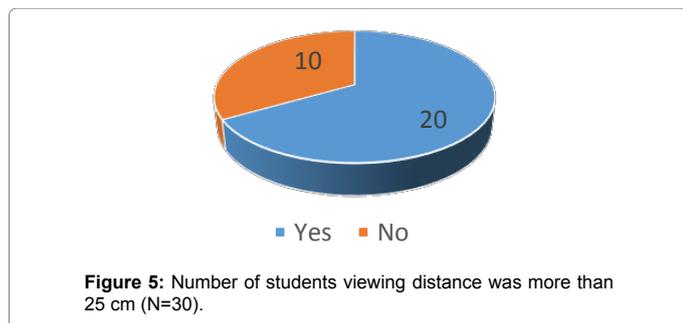

Figure 4: Number of students used black letter in the smartphone (N=30).

Shorter sleep hours produced by delayed bedtime may cause increased frequency of "doze" during daytime [10]. Recent studies have shown by an experiment that electromagnetic wave emitted from mobile phone reduced the concentration of blood melatonin in humans. In addition to that, psychological stress very high during the usage of mobile phone in the late evening or midnight [11].

Some important factors in preventing or reducing the symptoms of vision syndrome have to do smart phone and how it is used. This includes lighting condition and the use of rest breaks. Implement a setup to take regular interval about every 20 min. This is known as the 20-20-20 rule. Every 20 min, fix at some object at least 20 feet far for at least 20 s. This will give rest for eyes, reduce fatigue and strain. This technique very useful for young children who may be new to use a phone. Cell

Figure 5: Number of students viewing distance was more than 25 cm (N=30).

Figure 6: Symptoms were noted in the students (N=30).

Parameter	Male (N=15)	Female (N=15)	95% confidence interval	P value
PSS	20.40 (5.65)	15.73 (4.78)**	0.7558 to 8.5842	0.02

Student's unpaired t-test; *p<0.05, **p<0.01, ***p<0.001

Table 1: Comparison of perceived stress scale among male and female medical students, value expressed as (Mean ± SD).

phone vision syndrome should be temporary. It is necessary to screen early for eye examination to keep the vision clear and healthy. Routine Opthalmic examinations and appropriate vision habits can help to prevent or decrease the progress of the symptoms associated with cell phone vision [12].

Conclusion

The present study revealed most of the students complained of any one of the symptoms of vision syndrome while working on smart cell phone. Use of smart phone devices for many hours, at close working distances, has become common among college students. Digital technology will evolve in coming years, it will have more apps, and our eyes will spend more staring at screens for work. We need to learn how to interact safely with this technology, to learn develop healthy eye habits.

Limitation

Nevertheless, the male and female students were equally distributed but small sample size. Since this study was done only on healthy participants, future studies should broaden the current research and include other populations. The study fails to record and analyze the resting short term HRV (Heart rate variability) and quality of sleep which may help to support the study finding.

Recommendation

Our findings recommend the future researcher to investigate influence of sleep pattern among smart phone user on cognitive, behavioral and academic performance (e.g. attention, working memory and other executive functions).

References

1. WHO (1964) Management of substance abuse: Dependence syndrome.

2. Davey S, Davey A (2014) Assessment of smartphone addiction in Indian adolescents: A mixed method study by systematic-review and meta-analysis approach. J Prev Med 5: 1500-1511.

3. Pedrero Pérez EJ, Rodríguez Monje MT, Ruiz Sánchez De León JM (2012) Mobile phone abuse or addiction: A review of the literature. Addictions 24: 139-152.

4. Roberts JA, Yaya LH, Manolis C (2014) The invisible addiction: Cell-phone activities and addiction among male and female college students. J Behav Addict 3: 254-265.

5. AJAM Van Deursen, Bolle CL, Hegner SM, Kommers PAM (2015) Modeling habitual and addictive smartphone behaviour: The role of smartphone usage types, emotional intelligence, social stress, self-regulation, age and gender. Comput Human Behav 45: 411-420.

6. Palm P, Risberg EH, Mortimer M, Palmerud G, Toomingas A, et al. (2007) Computer use neck and upper extremity symptoms, eye strain and headache among female and male upper secondary school students. SJWEH Suppl 3: 33-41.

7. Cohen S (1988) Perceived stress in a probability sample of United States. In: Spacapan Shirlynn, Oskamp Stuart, editors. The social psychology of health. The Claremont Symposium on Applied Social Psychology. Sage Publications, Thousand Oaks, CA, US.

8. Barker F (2016) Effect of smartphones on vision and health of service members Military Health System, Communications Office.

9. Toama Z, Mohamed AA, Hussein NA (2012) Impact of a guideline application on the prevent ion of occupational overuse syndrome for computer users. J Am Sc 8: 265-282.

10. Tetsuo Harada DS, Mami Morikuni BE, Sato Yoshii BE, Yasuhiro Yamashita BA, Hitomi Takeuchi ME (2002) Usage of mobile phone in the evening or at night makes Japanese students evening-typed and night sleep uncomfortable. Sleep Hypn 4: 149-153.

11. Jarupat S, Kawabata A, Tokura H, Borkiewicz A (2003) Effect of the 1900 MHz electromagnetic field emitted from cellular phone on nocturnal melatonin secretion. J Physiol Anthropol Appl Human Sci 22: 61-63.

12. Logaraj M, Madhupriya V, Hegde SK (2014) Computer vision syndrome and associated factors among medical and engineering students in Chennai. Ann Med Health Sci Res 4: 179-185.