ORIGINAL ARTICLE

Ocular, Medical and Psychological Effects in Medical Students who use Smart Phones

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ABSTRACT

Aim: To observe the number of times the medical students use smart phones and find its correlation with their ocular, systemic and behavioral changes..
Methods: This study was conducted jointly at Ophthalmology and medicine departments in Pakistan Red Crescent medical and dental college w.e.f. January 2020 to December 2020. Students who were willing to participate in the study were enrolled. The students willing for study were given proformas to be filled by themselves .After words , each of them underwent complete ocular medical and psychological examination ..
Results: Out of120 students, 20(16.7%) were male and 100 (83.3%) were female. Mean age of students taking part in study was 20.8 years (Range 18-24 $\pm$1.61).Each participant on average dialed/received 2.73 calls per day (Range 0-7 $\pm$0.18).Mean number of SMS sent/ received was 76.37(Range 2- 300 $\pm$85.34).Mean age of starting use of smart phone 16.7 years (Range 12-19$\pm$1.48).Mean time spent by participants per day on smart phone was 4.63 hours (Range 0.5-12$\pm$2.61). Regarding ocular manifestations eye strain was present in 67 (55.83%) participants, redness in 89(77.5%), irritation in 48(40%), watering in 52(43.3%), photophobia in 15(12.5%) and blurred vision in 16(13.3%). Thirty students complained that they were in habit of squeezing eyes. Regarding physical manifestations headache was present in 83(69.17%), neck and shoulder pain in 68(56.7%), backache in 64(53.3%), text claw in 52(44.17%) and hearing problems in 28(23.3%). Fifty students complained of weight gain due to use of smart phones. Regarding psychological manifestations 69(57.5%) complained that they had serious addiction of smart phones. Memory loss was present in 60 (50%) of them, anxiety/depression in 67(55.83%), sleep disorders in 61(50.83%) and attention deficit in 80(66.7%).
Conclusions: the results show many health hazards in medical students and these hazards increase with increase in time the students use these devices. Students should not use these devices for longer times to avoid health problems.

INTRODUCTION

Use of these small visual device are normal part of our lives now a days. But their excessive use is hazardous to our health and may cause ophthalmic , medical behavioural problems[1,2]. Watching the small devices for longer periods may cause eye stresses and asthenopia[3,4]. Many studies show that hazardous light coming out of these phones can have deleterious effects on retina and also may cause myopia[5] As blue lights emitted from these devices disrupts the circadian rhythm of sleep by inhibiting the release of melatonin[6]. These radiation from mobiles might increase risk of developing cancer by two folds on the side of the head the patient is lying while watching these devices by increasing brain activity[7], damging nerves near to ear and the blood brain barrier[8]. The other studies also show that the people who frequently use these devices for longer periods may deteriorate their health and and also they suffer from medical and psychological effects[9]. The study has been conducted to find out the time period the medical students under study use these devices and correlate the findings with their ophthalmic, medical and behaviour changes.

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MATERIALS AND METHODS

This study was conducted at Department of Ophthalmology and medicine Pak Red Crescent Medical and Dental College Dina Nath district Kasur wef January 2020 to December 2020. One hundred and twenty students who gave their consents were enrolled. The participants with eye diseases and with some procedure on eyes and those using contact lenses were not included and also those with some chronic medical and psychological illness were not included. A performa was filled by every student regarding their presenting problems and nature and average time period they used device. Afterwords they were examined in departments of Ophthalmology and medicine where complete ocular, medical and psychological examinations were performed

RESULTS

Out of 120 participants 20(16.7%) were male and 100(83.3%) were female. Mean age of participants was 20.8 years (Range 18-24 ±1.61). Table 1 shows patterns of smart phone usage. Ocular, physical and psychological manifestations of smart phone use are shown in tables, 3 and 4 respectively.

Table 1: Patterns of smart phone usage

	Mean	Range	Std. Deviation
Number of calls dialed/ received per day	2.73	0-7	0.18
Number of SMS sent/received per day	76.37	2-300	85.34
Age of starting smart phone use in years	16.7	12-19	1.48
Daily time spent on smart phone in hours	4.63	0.5-12	2.61
Number of smart phones possessed	1.03	1-2	0.18

Table 2: Ocular manifestations

	Frequency	Percentage
Eyestrain	67	55.83 %
Redness	89	77.5 %
Irritation	48	40 %
Watering	52	43.3 %
Photophobia	15	12.5 %
Blurring of vision	74	61.67 %
Squeezing of eyes	37	30.83 %

Table 3: Physical manifestations

	Frequency	Percentage
Headache	83	69.17 %
Migraine	43	35.83 %
Weight gain	53	43.3 %
Text claw	52	44.17 %
Hearing problems	28	23.3 %
Neck and shoulder pain	68	56.7
Backache	64	53.3 %

Table 4: Psychological manifestations

	Frequency	Percentage
Serious addiction	69	57.5 %
Withdrawal is painful	53	44.17 %
Memory loss	60	50 %
Anxiety/ depression	67	55.83 %
Sleep disorders	61	50.83 %
Attention deficit	80	66.7 %
Isolation	45	37.5 %

DISCUSSION

Prevalence and association of Patterns of smart phone use and ocular systemic and behavioural effects have been noted in many studies [(10)]. The same observations were found in our study as a large percentage of medical students were found to be effected from excessive use of smart phones.

Watching smart screens for longer periods may effect accommodation, convergence by decreasing blink rate[11] and, comparatively decreased distance for smart phone use[12] may contribute to eye strain. Our results are in accordance with another study which found blurring of vision ,conjunctivitis, eye watering with mobile phone use[13]. Smart phone use has been found a risk factor for asthenopia in Chinese college students[3,4,14].

The physical symptoms as headache and migraine with increased exposure to these devices were found in our study correspond to other international studies[15,16,17]. Backache and neck and shoulder pain and claw (pain involving wrist hands due to texting, gaming and scrolling may cause tendinitis and cause aching numbness and loss of strength) found in our study probably associated with posture and duration of use of smart phones corresponds to other studies[18].

The weight gain and obesity related to screen exposure time seen in this study also corresponds to other studies[19]. The inner ear effect (due to electromagnetic radiations) causing hearing problems noted in our study also correlate with other studies[20]

The smart phone use in a large participants of study admitted loss of concentration and attention deficits Acharya JP[1]

Amnesia, stress/ depression, sleep disturbances, attention deficit and loneliness were found in large proportion of cases in our study which correspond to other international studies[21-25]

CONCLUSIONS

Smart phones use may have serious ocular medical and behavioural hazards. so the students must limit the use of their mobile phones, as these problems may not only hinder their studies but also affect their vision , physical and mental health. So they must minimize their use for good health preserve their vision and improve their academic knowledge.

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