COMPUTER VISION SYNDROME AND ITS PREVENTION AMONG MOTHERS OF CHILDREN ATTENDING ONLINE CLASSES DURING COVID-19 PANDEMIC

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ABSTRACT

Purpose: The aim of this study was to assess the level of knowledge regarding computer vision syndrome and its prevention among mothers of children attending online classes during COVID-19 pandemic. Methods: The online electronic survey form was prepared on the Google app. The mothers were asked to respond to the questions asked, which had 2 part, part 1 consist of socio demographic variables, part 2 consist of questions related to CVS and its prevention. Total number of 100 samples was participated in this study; their responses were recorded in Google sheet. The analysis has done by using descriptive and inferential statistics. Results: One hundred mothers responded to the questionnaire. The minimum score out of 20 was two and maximum score was 15, the mean value is 8.12, SD was 2.520. Out of 100 samples, approximately 25 percentages of mothers alone had more than 50% of knowledge on CVS and its prevention, the majority of 75 percentages of mothers had less than 50% of knowledge on CVS and its prevention. The most common digital device used were smartphone (n = 86, 86%). Conclusion: Majority of the mothers do not have even 50% of knowledge about CVS and its prevention.

Keywords: CVS, Covid-19 pandemic, variables

Introduction

In this modern generation, the use of computers became an essential tool to perform everyday tasks at work and at home. This holds true regardless of the user's profession or occupation. The development of technology in education made a noticeable transformation in the methods of teaching, presenting information, and sources for studying. However, this convenient lifestyle still raised a health-related concern. Among the health-related aspects is a condition known as computer vision syndrome (CVS). The American Optometric Association (AOA) defined computer vision syndrome as "a complex of eye and vision problems related to near work experienced during computer use."

Computer, Smart phones and tablets have become an important source in our day to day life as they provide a convenient and mobile means to seek access and share information faster. This convenience carries a downside in the rising concern with health problems like computer vision syndrome. Computer use has become a routine part of kids' lives. About 90% of school-aged children in the U.S. have access to a computer. And kids are starting to use computers at a younger age. Among college students who were interviewed, 20% said they began using a computer before they were 9 years old. In fact, the use of computers and other digital devices has become so common during childhood that a 2015 report by The Vision Council revealed that nearly one in four children spend more than three hours a day using digital devices.

CVS symptoms occur when there is a need to increase the visual demand to the extent it exceeds the person's visual ability. The image on the screen is produced by thousands of pixels combined to form an image, in which the margins are not sharp and is dependent on the resolution, the contrast of the background, and glare or reflection from the screen. These factors in contrary to printed documents increase the visual demand in order

to perceive good images. In addition, CVS can also be explained by decreased blinking reflex while staring at the screen, leading to exaggerating dry eyes. Dry eyes have been proved to play as a major contributor to CVS symptoms. The underlying cause of dryness needs to be diagnosed and treated accordingly. Users who are known to have dry eyes are recommended to use lubricating eye drops to minimize the symptoms of CVS. Other factors such as the duration of usage, taking breaks, distance from the screen, screen brightness, and sitting posture were discussed in previous studies and were considered as known risk factors of CVS.

In this study, the mothers are our primary concern to assess their level of knowledge on CVS and its prevention, thereby create awareness and reduce use of computer/mobile among children, also it is mainly focus on assessing their knowledge on prevention of computer vision syndrome by adaptive methods while using computer for online classes.

Materials & Methods

A cross-sectional descriptive study conducted included 100 mothers of children those who are attending online classes. Bangalore. Participants were enrolled by non-probability convenience sampling. The investigators developed online structured questionnaire. With the consent of mothers, an electronic survey adapted for data collection. The questionnaire consists of 2 sections such as socio demographic data and questions related to CVS and its prevention. All participants were explained about purpose of the study and directed to complete the online survey. Data were analysed using descriptive and inferential statistics. Descriptive analysis was applied to calculate frequencies and means. The chi-square test was used to study the significance of associations. Value <0.05 was considered statistically significant.

Results

Computers has became a part and parcel of our modern life, but many people are experiencing a variety of ocular symptoms related to extensive use of computers, such as eyestrain, tired eyes, irritation, redness, blurred vision, and double vision. More and more people are now using different types of gadgets, especially smart phones. With the unprecedented growth of users of handheld devices, it is estimated that almost 84% of the world's population will use these by the end of 2030. In this study, mobile phones, computers were the most frequently used gadgets by the school children. The overall study result shows that, out of 100 mothers, 75 percentage of the sample have less than 50% of knowledge on CVS and its prevention. Only 25 percentages of the mothers have more than 50% of knowledge on CVS and its prevention.

S.N	Variable	Frequency	Percentage
Table - 1 : (Frequency distribution on demographic variables of mothers of children attending online classes) N = 100
1	**Age in years**		
	20-25	3	3
	26-30	25	25
	> 30	72	72
2	**Occupation**		
	House wife	30	30
	Staff nurse	21	21
	Nursing lecturer	23	23
	Teacher	10	10
	Clerical staff	10	10

	Own business	3	3
	Class four workers	2	2
	Quality manager	1	1
3.	**Electronic gadgets used most of time**		
	Mobiles	86	86
	Tablets	-	-
	Computers	12	12
	Laptops	2	2

Table - 2 : Knowledge on Computer Vision Syndrome					N = 100
S.N	**Knowledge**	**Min**	**Max**	**Mean**	**SD**
1	Knowledge score	2	15	8.12	2.520

Table - 3 : Level of knowledge on computer vision syndrome			N = 100
S.N	**Level of Knowledge**	**Frequency**	**Percentage**
1	< 50%	75	75
2	≥ 50%	25	25

Table - 4 : Association between level of knowledge and socio-demographic variables				N = 100
S.N	**Characteristics**	**Chi-square**	**P value**	**Levels of significant**
1	Age in Years	15.547	< 0.001	Significant
2	Education	9.471	< 0.009	Significant
3	Occupation	10.457	0.164	Not significant
4	Source of information	7.254	0.064	Not significant

P< 0.05 level   *Significant

There was no significant association found between knowledge with occupation, no. of children in family, previous knowledge on CVS and source of information

Discussion

Among the 100 mothers enrolled in the study 75 percentage of the sample have less than 50% of knowledge on CVS and its prevention. Only 25 percentages of the mothers have more than 50% of knowledge on CVS and its prevention. This is in accordance with a study by Hassan et al. who reported a prevalence of 90.5% among medical students in Pakistan. Reddy et al. also provided a prevalence of 89.9% among university students in Malaysia. However, a lower prevalence was observed in other studies among engineering and medical students (67.2% and 77.4%, respectively), since the mothers are playing important role in child health, the level of knowledge regarding CVS is very less.

In regard to parental knowledge, the children who are attending online classes continuously by using electronic gadgets are at risk of getting CVS. In addition, Straker et al. studied the association between gender and posture during computer use, which concluded that females had greater prevalence of neck/shoulder pain.

The most statistically significant risk factors were duration of studying, followed by distance from the screen and brightness of the screen. Duration of studying using computers was the most significant risk factor, in which the longer the time spent, the more prevalent and extent are symptoms. This finding is consistent with the findings of Hassan et al. and a report by the American Optometric Association

Furthermore, Noreen et al. and Logaraj et al. reported that among CVS-positive group, students who spent more than four hours were at significantly at higher risk of CVS than who spent less than four hours. Strengthening the fact, Reddy et al. found a significantly higher CVS among students who used computers for more than two hours. It was also observed that the longer the duration, the longer the complaint last even after work. Hassan et al. found that taking short breaks every 30 minutes every hour decreases visual discomfort. Students who were not taking breaks at all during studying (8.8%) (52) Associated significantly with tearing, and neck, shoulder, or back pain. Strengthening the fact, visual symptoms reported significantly among users who were not taking frequent breaks in previous studies

Upon assessing the knowledge on preventive measures taken by students to prevent CVS-related symptoms, a significant association was noted among students who applied the 20-20-20 rule and the reduced risk of CVS. Similarly, a study showed that taking frequent breaks every hour for five minutes decreases the discomfort associated with CVS. Reddy et al. added that looking at far objects frequently during work associated significantly with less frequent CVS symptoms. Applying this rule showed improvement in work efficiency in previous studies. Proper location of the screen is another measure that showed significant correlation with reduced risk of CVS. Other measure showed no significant association. Noticeably, most of the students neglected the frequent blinking and using screen filters. Hassan et al. found that most of engineering students were not aware of the correct sitting position. Ranasinghe et al. also provided that knowledge of ergonomics practice was higher among the mild-moderate CVS group than those reported sever CVS symptoms.

Conclusion:

There is a strong need to create awareness on Computer Vision Syndrome among mothers to update their knowledge on CVS and its prevention, so that, we can minimize the usage of e-gadgets by children and ensure safe use of e-gadgets with more precaution to safeguard the children from computer vision syndrome.

Conflict of Interest: None

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