Original Research Paper

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" TO EVALUATE THE OCULAR SURFACE DISEASE INDEX (OSDI) IN RESIDENTS OF SKNMC AND GH DURING LOCKDOWN PERIOD OF COVID-19 PANDEMIC."

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ABSTRACT

BACKGROUND : The novel coronavirus, named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was identified for first time in December 2019 in Wuhan china, The modifications of digital devices like mobile phones, tablets, computer screens were made to make life smarter and simpler but the rise in the dependency rate to these digital gadgets especially in this lockdown period of pandemic has induced digital eye strain, residents have moved on to new lifestyles, sudden overexposure to screen leads to increased Dry eye symptoms.

AIM- The aim of this study was to study the prevalence of dry eye symptoms (DES) among resident doctors during lockdown period COVID-19 outbreak.

METHOD- Study design – Retrospective study

Sample size – 100-120

INCLUSION CRITERIA – Resident without any ocular pathology

EXCLUSION CRITERIA - Residents not willing to fill consent form

STATISTICAL ANALYSIS – Descriptive statistics were used to describe difference variable .The data were analysed using SPSS22.0 package software. The Pearson's Chi-squared test was used to analysed categorical variable $P<0.05$ were considered statistically significant.

RESULT - The study consisted of 100 subjects, among which 50% were males and 50% were females. Their average age were 28.55 years old, Total OSDI mean score was 19.9327, According to OSDI scoring system for DES 86% were suffering from mild cases, 2% were moderate cases, 11% were severe cases, and 1% were normal cases of Dry eye symptoms. There is significant difference among OSDI score categories, in terms of spectacle use, mobile phone, screen time, frequency of using screen, binge watching and level of brightness detected with significant $p < 0.05$

CONCLUSION - continuous use of digital devices like smartphone for longer time during lockdown of COVID-19 increased symptoms of Dry eye disease in Residents. Also there was harmful effect of excess screen time on ocular surface of resident doctors

KEYWORDS : Covid-19 pandemic ; OSDI ; dry eye symptom; Lockdown

INTRODUCTION

The novel coronavirus, named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was identified for the first time in December 2019 after a series of acute atypical pneumonia cases occurred in Wuhan, Chin[.[1] Following this outbreak, SARS-CoV-2 quickly spread worldwide, became a public health emergency, and a pandemic was declared by the World Health Organization (WHO). SARS-CoV-2 presents characteristics similar to those of severe acute respiratory syndrome coronavirus (SARS-CoV), which was responsible for the SARS outbreak that occurred in 2002−2003[2]. In the growing era staying digitally smart, isolation lives us with no choice than digital quarantine. The growing innovations and modifications of digital devices like mobile phones, tablets, computer screens and televisions were made to make our life easier, smarter and simpler but the rise in the dependency rate to these digital gadgets especially in this pandemic has induced digital eye strains. Since COVID 19 hindered the world and everyone's life with lockdown, residents have moved on to new lifestyles and continued to thrive in the Pandemic. The sudden overexposure to screen leads to dryness and stinging sensation in the eyes, blurry vision, a slight headache, Dry eye disease (DED) is a common and multifactorial disease in ocular surface, which is characterized by a loss of homeostasis in the tear film, accompanying with a variable clinical presentation, including tear film instability and hyperosmolarity , ocular surface inflammation and damage, and neurosensory abnormalities.[3]According to the 2017 Dry Eye workshop (DEWS) II,[4] DED is becoming a severe health issue worldwide with a global prevalence ranging from 20% to 50%, which affects the patient's ocular health, general health and well-being, quality of life, and brings socioeconomic burden at a certain extent as well. Through clinical research studies, it is suggested that multiple relative factors, such as age, gender, race, prolonged computer and smartphone usage, use of contact lens, low humidity, and environmental pollution contribute significantly to the increased prevalence of DES, Dry eye can induce various ocular symptoms, such as pain, irritation, and poor vision. These symptoms could be targeted and included for the preliminary self-evaluate screening test of DES, which is mainly based on questionnaires,[5] such as Short Form 12-Health Survey(SF-12), the National Eye Institute's Visual Function Questionnaire(NEI VFQ-25), Dry Eye Questionnaire (DEQ-5), McMonnies Questionnaire(MQ), Ocular Surface Disease Index (OSDI) and Saliabury Eye Evaluation Questionnaire(SEEQ), In this study, we designed a questionnaire based on OSDI, developed by the Outcomes Research Group at Allergan Inc,[6] to evaluate the incidence of DES among residents during lockdown period. Residents are spending more time in front of mobile, computer screens and for TV and video games during lockdown period. This combination – more screen time and less outdoor time – may actually harm residents vision and put them at higher risk of developing Ocular surface disease, myopia, or nearsightedness. That can lead to serious eye problems in the future, including some potentially blinding diseases. So there is a concern regarding harmful effects of excess screen time on ocular surface of residents during the COVID-19 pandemic.

2. MATERIAL AND METHODS

This study was conducted after approval from Ethical committee of Smt. Kashibai Navale Medical College and General Hospital, This study was conducted in resident doctors at SMT kashibai navale medical college narhe, pune. All resident doctors were analysed for age, gender, using spectacles, previous refractive surgery, using of digital devices like mobile phone, tablet, screen time, frequency of using screen, binge watching with questionnaire developed based on OSDI, Also ophthalmologic assessment comprising a Ocular surface disease index questionnaire The OSDI is a questionnaire including 12 questions, which are subdivided into three groups. The first group contains questions about the ocular symptoms of DES, the second about the ocular symptoms while watching television or reading a book, and the third group contains the questions about ocular symptoms induced by environmental factors, The OSDI questionnaire is graded on a scale from 0 to 4, where 0 indicates none of the time; 1, some of the time; 2, half of the time; 3, most of the time; 4, all of the time. The total score of OSDI is calculated on the basis of the following formula: OSDI = [(sum of scores for all questions answered) × 100] / [(total number of questions answered) × 4 also the OSDI was assessed on a scale ranging from 0 to 100, with higher scores representing greater disability. Scores ≥13 indicate symptomatic dry eye, in which 13 to 22, 23 to 32, and 33 to 100 indicate mild, moderate, and severe presence of DES, respectively.[7]

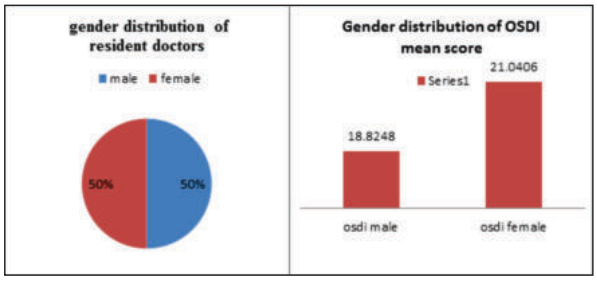
Study site – SMT kashibai navale medical college and GH
Study design – Retrospective study
Sample size – 100-120
Inclusion criteria – Resident without any ocular pathology
Exclusion criteria -Residents not willing to fill consent form

STATISTICALANALYSIS –
Descriptive statistics were used to describe the difference variable in the study. Mean and standard deviation were reported for continuous variables. Frequencies with proportion were reported for categorical variables. The data were analysed using SPSS22.0 software. The Pearson's Chi-squared test was used to analysed categorical variable. P<0.05 were considered statistically significant.

RESULTS - The study included 100 subjects, among which 50% were males and 50% were females. Their average age was 28.55 years old with SD of 1.076 (table no. 1), According to OSDI scoring system for DES 86% were suffering from mild cases, 2% were moderate cases, 11% were severe cases, and 1% were normal cases of Dry eye symptoms. Total OSDI mean score was 19.9327 with SD of 10.29 (table no 2), Male OSDI mean score was 18.8248, female OSDI mean score was 21.0406 ,The distribution characteristics according to OSDI score are shown in the(table no 3)

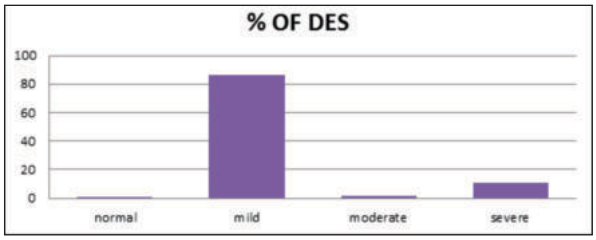
Descriptive Statistics (table. no 1)					
	N	Minimum	Maximum	Mean	Std. Deviation
AGE	100	26.00	31.00	28.5500	1.07661
Valid N	100				

Descriptive Statistics (table no 2)					
	N	Minimum	Maximum	Mean	Std. Deviation
OSDI INDEX	100	11.66	86.47	19.9327	10.29686
Valid N	100				



Distribution of characters according to OSDI score (table no 3)

variable	OSDI SCORE		P value (Chi square test)
	Normal (0-12 POINTS)	Symptomatic (>13 POINTS)	
Age			0.215
<28	6	41	
>29	3	50	
Gender			0.727
Male	4	46	
Female	5	45	
Spectacle use			0.031
Yes	2	4	
No	7	87	
Previous refractive surgery			0.354
Yes	0	8	
No	9	83	
Mobile phone/I pad/ Tab Use			0.0057
Never	4	10	
Several times a day	5	81	
Computer Use			0.580
Once	9	88	
Never	0	03	
Screen Time			0.03
1-3 hrs	3	9	
3-5 hrs	6	82	
Interact with device			0.954
Within sec.	2	21	
After several min.	7	70	
Frequency of using screen			0.0074
Day time	3	06	
Night time	6	85	
Binge watching			0.0095
Yes	5	80	
No	4	11	
Level of brightness			0.013
Low	0	4	
Medium	6	20	
High	3	67	



DISCUSSION
The prevalence of DED has become higher with the popularization of electronic devices recently. The questionnaire is an important self-evaluate way for the preliminary screening of DED which can evaluate the DES for screening and diagnosis, as well as assess the severity, related factors, and feasible treatment. The OSDI questionnaire is commonly used in clinical studies, which includes 6 questions on visual function, 3 questions on ocular symptoms, and 3 questions on environmental factors. OSDI questionnaire has relatively higher sensitivity of 60% and specificity of 79% [8]. In our study, we found that there were significant difference among OSDI score categories, in terms of spectacle use, mobile phone, screen time, frequency of using screen, binge watching and level of brightness detected with significant p value less than 0.05 , A large number of studies[9-16] have shown that the major risk factors for DED increases with prolonged using of visual display, corneal refractive surgery, and the use of contact lens. One survey found that the number of people working remotely with digital devices during the Covid-19 pandemic increased by up to 30 percent , Increasing screen-time due to continuous usage of smartphones, laptops, computers and other digital devices has profound effects on residents eyes. It may result in a significant rise in complaints of eye issues. In our study, we revealed that use of mobile phone, laptop, i-pad and binge watching, 3-5hrs screen time and high level of screen brightness was significantly associated with a higher risk of DES in residents during lockdown period of COVID 19.

CONCLUSION – Our results suggest that digital devices simpler but continuous use of this devices for longer time during COVID-19 Lockdown increased the symptoms of Dry eye disease in resident doctors and that the duration of exposure to screen plays an important role in the severity of these symptoms.

ABBREVIATIONS - COVID-19 = 2019 Novel coronavirus, DED = Dry eye disease, DES = Dry eye symptoms, OSDI = Ocular Surface Disease Index.

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