International Journal of Community Medicine and Public Health
Kolla A et al. Int J Community Med Public Health. 2019 Sep;6(9):3768-3770
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20193967

Original Research Article

Prevalence of dry eye in college students at Uparwara community in Raipur

Andrea Kolla, Devesh Dahariya, Male Shiva Ram, Varaprasad Kolla*

School of Life and Allied Science, ITM University, Atal Nagar, Raipur, Chhattisgarh, India

Received: 13 May 2019
Revised: 04 July 2019
Accepted: 06 July 2019

***Correspondence:**
Dr. Varaprasad Kolla,
E-mail: varaprasadk@itmuniversity.org

ABSTRACT

Background: The study aims to investigate the prevalence of dry eye in college students in the Uparwara community.
Methods: This pilot study was conducted tenure to declaration of Helsinki rules with n=240 (males 200 and females 40) with in the age group of 18-25 years, OSDI questionnaire was used to assess the prevalence among the college students of Uparwara community at Raipur.
Results: Data from 240 subjects were analyzed with a mean age group of 19.41±0.70 mean±SD. This OSDI questionnaire study with subscales for dry eye symptoms were measured in both the genders males 213 (89%), females 27 (11%). The percentage distributions among the subjects showed that 116 (48.3%) participants reported dry eye symptoms and 124 (51.6%) was normal.
Conclusions: This study emphasized on the prolonged usage of VDT and electronic devices i.e., >4 hours as a compliance factor for dry eye, our data suggest that VDT usage less than 4 hours also can be a risk factor for dry eye since all our 116 participants with dry eye symptoms are VDT users and interestingly 78% (90) of them are <4 hours VDT users but still have dry eye symptoms.

Keywords: Dry eye, Ocular surface disease index, Adolescents, Visual display units

INTRODUCTION

Dry eye is a chronic, multi-factorial condition characterized by physiological changes in the tear film and ocular surface of the cornea. It can be caused by deficiency of the tear film component or can be a component of systemic diseases, including Jorgen's syndrome, Lupus and Stevens-Johnson's Syndrome.[1] Factors such as excess exposure to VDT display lighting, reduced blink rate, meibomian gland dysfunction, contact lens usage and exposures to adverse environmental conditions can increase the symptoms of dry eye. Since we all are exposed to such adverse conditions, dry eye affects nearly everyone at one time or another.[2] Dry eye is the most frequent disorder in ophthalmology practice. The prevalence of dry eyes varies from 10.8% to 57.1%.[3] Several factors could cause this variation. These include no standardization of the type of patients selected for the study, dry eye questionnaires, objective tests and dry eye diagnostic criteria. In literature there are various risk factors for dry eye which include air pollution, smoking, low humidity, high temperature, sunlight exposure and drugs.[4] The current paper focuses on assessing the prevalence of dry eye in college students with VDT and electronic usage as a risk factor for the same, at Uparwara community in Raipur.

METHODS

Participants

This prospective cohort study was conducted for a period of 1 year (14/01/2017 to 15/01/2018) and with tenure to Declaration of Helsinki rules and Institutional Ethics

Committee, ITM university [IEC/SLAS/17-03] approval with m=240 (male-200 and female-40) with in the age group of 18-25 years, OSDI questionnaire were used to assess the prevalence among the college students of Uparwara community at Naya Raipur. No, monetary award was given to the participants. The sample size was calculated using single population proportion formula: $n = \frac{(Z\alpha/2)^2 p(1-p)}{d^2}$, by considering the following assumptions: Zα/2=1.96 (standard score value for 90% confidence level), p=0.5 (since there is no similar study conducted in the study setting) at Raipur , and d (tolerated margin of error)=5.6%. Then finite population correction formula was applied for the study population size is 10.1 lakhs (2017) Raipur population and finally 80% response rate was added and the total number of study participants became suggested is 240 and we took 240 to avoid bias and error. Sample size calculated by using the Raosoft software**.**

Inclusion criteria

The participants with good general and ocular health were included.

Exclusion criteria

The participants with refractive errors, history of contact lens and refractive surgery, history of corneal scars and with history of systemic diseases were excluded.

Dry eye symptoms were diagnosed in accordance with the OSDI (ocular surface disease) index questionnaire used for the study. A co-investigator approached all the participants by taking their ocular, systemic history followed by comphrensive eye examination and asked to fill the questionnaire and noted the responses from the participants. The questionnaire was used in English language and translated to patient by Hindi.

RESULTS

Data collection and statistical analysis

All the data was collected, stored and analyzed using Microsoft excel version 2007. Percentage distribution was used to assess the prevalence of dry eye.

Total 240 participants with mean age group (19.41±0.70) mean±SD. OSDI questionnaire with subscales for dry eye symptoms were measured in both the genders males=213 (89%), females=27 (11%). The percentage distributions among the collected data showed us that 116 (48.3%) participants reported dry eye symptoms and 124 (51.6%) were normal (Tables 1 and 2, Figures 1 and Figure 2). Previous studies reported a significant risk of dry eye especially in more than 4 hour per day VDT users (reference), however in our study out of 116 dry eye symptom participants all are VDT users, interestingly 26 (22%) are those with more than 4 hours VDT exposure per day and 90 (78%) are those with less than 4 hour VDT usage per day.

Table 1: Age and gender distribution of participants (n=240).

Variables	Mean±SD	Gender	
		Male	Female
		N (%)	N (%)
Age (in years)	19.41±0.70	213 (89)	27 (11)
Range	18-25 years		

Table 2: Dry eye prevalence among the participants (n=240).

Dry eye symptoms	Prevalence % among the participants (n=240)		
		N	%
Dryness Grittiness	Participants diagnosed	116	48.3
Burning sensation Redness Crusting on eye lashes	Participants without dry eye symptoms	124	51.7
Discharge	Total	240	100

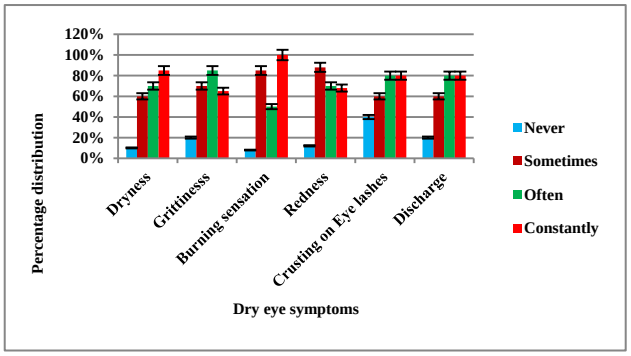

Figure 1: Distribution of dry eye symptoms among the participants (n=116).

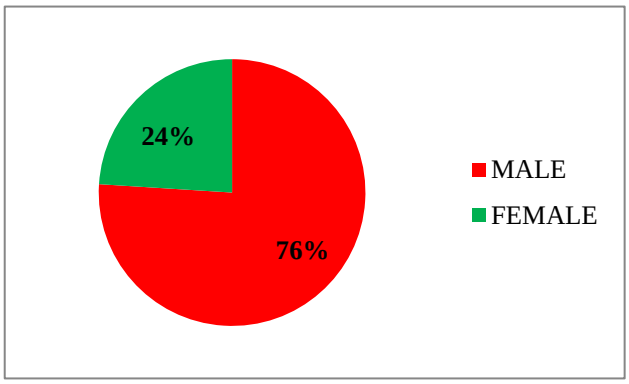

Figure 2: Gender wise distribution in dry eye participants who are VDT users (n=116).

DISCUSSION

This current study emphasized that the prevalence among the dry eye in adolescents in uparwara community, Raipur a central India region. Our study findings showed a significance risk especially in VDT users not only more than 4 hours in a day but interestingly in less than 4 hours per day users too. However our results 116 participants (11%) showed severe dry eye symptoms in the survey which is also supported by the Titiyal et al study.[3] Prolonged usage of handheld digital devices, like smart phones, computers, may adversely impact tear stability and this can lead do adverse complications such as dry eye.[5] Literature from Asian countries like Japan studies reported that nearly (18.6%) of the females and (30%) of the males reported dry eyes following computer use. In contrast, to observed symptoms of dry eyes in (10.1%) of male and (21.5%) of female Japanese workers using VDTs at office work.[6]

In Gwalior, Central India a previous study (7%) incidence reported as dry eye a major cause for corneal related disorders these findings also supported by current study findings to measure the prevalence rate.[7]

In the previous studies published on moderate dry eye was it stated that less than 60% of subjects with other objective evidence of dry eye are symptomatic.[8] Vision screening of patients in the preclinical phase when symptomatic without any sign of dry eye is important for its early diagnosis and use of symptoms alone will result in missing a significant percentage of dry eye patients so combined approach with symptoms and signs of dry eye is important tool for diagnosis of dry eye in community.[9] Recent studies also reported that diabetes also a complication for dry eye due to micro vascular damage in lacrimal glands and that might lead to the dry eye.[10] However, as in India the prevalence of diabetes is higher it is hence important to periodically screen for dry eye symptoms in diabetic patients. There were certain limitations in this survey like the sample size and geographical locations. Further in the future working on geographical areas and occupation and its relation to dry eye will give us better understanding on the prevalence of dry eye in Central India.

CONCLUSION

We found that usage of VDT and electronic devices even less than 4 hours per day in adolescents is a risk factor for dry eye and it was a first Central India study where the prevalence was measured and it was found that (43%) to have dry eye. Periodic vision testing could help to avoid dry eye in these geographical regions.

ACKNOWLEDGEMENTS

All the authors would like to acknowledge participants for their patience in this study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Katz J. Clinical Ophthalmology. 1985.
2. Murube J, Wilson S, Ramos-Esteban J. New horizons in the relief and control of dry eye. Highlights of Ophthalol. 2001;29:55-64.
3. Hikichi T, Yoshida A, Fukui Y, Hamano T, Ri M, Araki K, et al. Prevalence of dry eye in Japanese eye centers. Graefes Arch Clin Exp Ophthalmol. 1995;233:555-8.
4. Titiyal JS, Falera RC, Kaur M, Sharma V, Sharma N. Prevalence and risk factors of dry eye disease in North India: Ocular surface disease index-based cross-sectional hospital study. Indian J Ophthalmol. 2018;66:207-11.
5. Jaiswal S, Asper L, Long J, Lee A, Harrison K, Golebiowski B. Ocular and visual discomfort associated with smartphones, tablets and computers: what we do and do not know. Clin Exp Optom. 2019. doi: 10.1111/cxo.12851.
6. Uchino M, Schaumberg DA, Dogru M, Uchino Y, Fukagawa K, Shimmura S, et al. Prevalence of dry eye disease among Japanese visual display terminal users. Ophthalmol 2008;115:1982 98.
7. Ram MS, Majumder C. Incidence of eye disorders in petroleum industry of Central India: a prospective study. Ann Health Sci. 2017;4(1):35-9.
8. Gupta N, Prasad I, Jain R, D'Souza P. Estimating the prevalence of dry eye among Indian patients attending a tertiary ophthalmology clinic. Annal Trop Med Parasitol. 2010;104(3):247-55.
9. Bhatnagar KR, Sapovadia A, Gupta D, Kumar P, Jasani H. Dry eye syndrome: A rising occupational hazard in tropical countries. Med J Dr. DY Patil Univ. 2014;7(1):13.
10. Burda N, Mema V, Mahmudi E, Selimi B, Zhugli S, Lenajni B, et al. Prevalence of dry eye syndrome at patients with diabetus melitus TIP 2. J Acute Dis. 2013;2(1):48-51.

Cite this article as: Kolla A, Dahariya D, Ram MS, Kolla V. Prevalence of dry eye in college students at Uparwara community in Raipur. Int J Community Med Public Health 2019;6:3768-70.