

Original Research Article

Prevalence of dry eye among paramedical students of Teerthankar Mahaveer University, Moradabad, Uttar Pradesh

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ABSTRACT

Background: The prevalence of dry eye is 32% in India which is higher than global prevalence. Dry eye is not a disease but a symptom complex occurring as a deficiency and abnormalities of the tear film. Dry eye infection (DED) is perhaps the most pervasive visual sickness on the planet. The point of our investigation was to acquire the pooled pervasiveness of DED in students and investigate its expected relates.

Methods: It was a cross-sectional questionnaire-based qualitative and observational study was conducted among the students of the paramedical college of Teerthankar Mahaveer university. The pre-validated questionnaire was divided into three main sections involving the demographic data including the information about gender, age, students studying stream in the second section the questions about general health and question related to dryness in the eye.

Results: Out of a total of 40 participants, 65% (26) were male and 35% (35) were female with the average age of the participants was 21.40 with the average age 21.40. During day how often feeling dryness for this we got the responses of 15% (06) for never, 82.50% (33) for some time and 2.50% (01). Further we have assessed the about dryness in their eyes by presenting the question During day how often feeling dryness for this we got the responses of 15% (06) for never, 82.50% (33) for some time and 2.50% (01).

Conclusions: The finding that dry eye symptoms are particularly common in young adults is concerning, and warrants further study.

Keywords: Dry eye, Prevalence, Gland, Tear film abnormality

INTRODUCTION

The prevalence of dry eye is 32% in India which is higher than global prevalence. Dry eye is not a disease but a symptom complex occurring as a deficiency and abnormalities of tear film.^{1,2} DED is perhaps the most pervasive visual sicknesses on the planet.³ The point of our investigation was to acquire the pooled pervasiveness of DED in students and investigate its expected relates. Dry eye illness is an ongoing state of the corneal surface

set apart by relentless side effects of disturbance or consuming that can make provocative harm the cornea and conjunctiva if untreated.¹ Regular danger factors for this condition incorporate propelling age, female sex, low dampness conditions, foundational drugs, and immune system disorders.^{4,3} The objectives of the TFOS DEWS II (tear film and ocular surface society dry eye workshop). Definition and characterization subcommittee were to make a proof-based definition and a contemporary arrangement framework for dry eye sickness (DED).^{1,5}

The new definition perceives the multifactorial idea of dry eye as a sickness where loss of homeostasis of the tear film is the focal pathophysiological idea.⁶ Visual manifestations, as a more extensive term that envelops reports of uneasiness or visual aggravation, highlight in the definition and the critical etiologies of tear film shakiness, hyperosmolarity, and visual surface irritation and harm were resolved to be significant for incorporation in the definition.⁴ In the light of new information, neurosensory irregularities were additionally remembered for the definition interestingly.⁶ In the grouping of DED, late proof backings a plan dependent on the pathophysiology where fluid insufficient and evaporative dry eye exist as a continuum, with the end goal that components of each are considered in analysis and the board.^{7,8} Key to the plan is a positive determination of DED with signs and indications, and this is guided towards the board to re-establish homeostasis.⁹ The plan additionally permits thought of different related appearances, for example, non-clear sickness including visual surface signs 2 without related side effects, including neurotrophic conditions were broken sensation exists, and situations where manifestations exist without certifiable visual surface signs, including neuropathic torment.¹⁰ Hence the objective of this study was to evaluate the association between dry eye and digital work, to evaluate the association between invasive and non-invasive test of dry eye among paramedical students and to investigate the harmful effect of electronic gadgets on students' eyes.

METHODS

Study design It was a cross sectional questionnaire based qualitative and observational study was conducted among the students of paramedical college of Teerthankar Mahaveer university engaging 40 participants including 26 were male and 14 females. A structured questionnaire was designed focusing on the dry eye related problems. The study was conducted from October 2020 to May 2021. The pre-validated questionnaire used in this study was unique and completely self-generated with the help of a guide which was later approved and validated by Paramedical research committee member Teerthankar Mahaveer university Moradabad. The pre-validated questionnaire was divided into three main sections involving the in demographic data included the information about gender, age, students studying stream in the second section the questions about general health and question related to dryness in the eye. An observation cross-sectional survey was done at Teerthankar Mahaveer university, Moradabad U.P. between paramedical students studying in paramedical college at TMU Moradabad India, through a pre-tested standardized questionnaire (Annexure-1) in English using. The questionnaire will contain open-ended questions. All paramedical students were included in the study. With non-paramedical students were excluded from this study. All participants were guaranteed anonymity and confidentiality of the information obtained. Informed

consent was signed by all the subjects who were included in the study. Subjects were informed about the duration and procedures of study, and the research was approved by the institutional review board and the ethics committee of Teerthankar Mahaveer university, Moradabad, Uttar Pradesh. All data was obtained through study; statistical analysis was done using MS-excel. Result articulated through the survey was denoting in percentile format.

RESULTS

Questions-based on analysis among studied population, (n=40) showed below in Table 1.

Table 1: Questionnaire based on analysis among studied population, (n=40).

Questionnaire	Response rate (%)	
Any abnormalities	Any systemic diseases	00
	Any medication	00
	Any ocular diseases	00
	using any ocular drug (Yes/No)	00
During day how often feeling dryness	Never	15% (06)
	Sometime	82.4% (33)
	All the time	2.50% (01)
During day how often feeling burning	Never	42.50% (17)
	Sometime	57.50% (23)
	All the time	00
Watering sensation during sun light	Never	30% (12)
	Sometime	52.50% (21)
	All the time	17.50% (07)
Time spent for digital work	Never	00
	Rarely	2.50% (1)
	Sometimes	25% (10)
	Frequently	57.50% (23)
	Constantly	15% (6)
Bothered by digital device	Yes	60% (24)
	No	40% (16)

Out of total 40 participants, 65% (26) were male and 35% (14) were female with the average age of the participants was 21.40 with the average age 21.40 (Table 2).

Table 2: Gender distribution.

Gender	Percentages (%)
Male	26 (65)
Female	14 (35)

Any abnormalities

In all the 40 participated we have assessed about having any abnormalities in the body, the we got the responses "No" for all the questions like any systemic diseases, any medication, any ocular diseases, using any ocular drug, using any contact lens which signify that all the participant were systemically healthy.

During day how often feel dryness

Further we have assessed about dryness in their eyes by presenting the question during day how often you feel dryness” for this we got responses of 15% (06) for never, 82.50% (33) for some time and 2.50% (01) for all time (Figure 1).

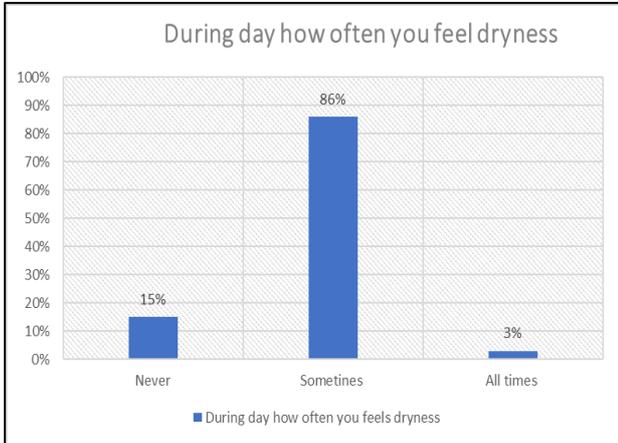


Figure 1: Feeling dryness.

During day how often feeling burning

Next, we have assessed more on dryness by presenting the question “During day how often feeling Burning Sensation”. The responses we have recorded were 42.50% (17) for Never, 57.50% (23) for some time and 0% (00) for all the time (Figure 2).

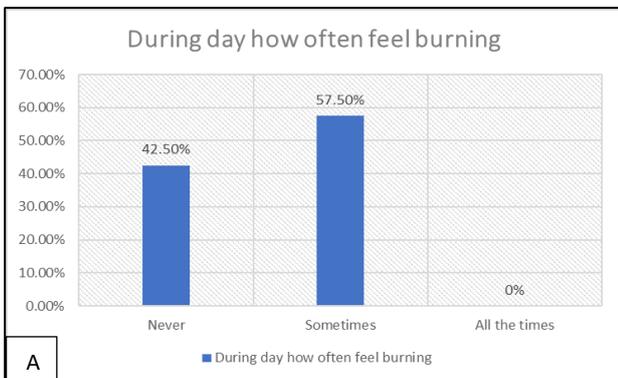


Figure 2 (A and B): Feeling burning.

Watering sensation during sun light

Further we have assessed about dryness in their eyes by presenting the question that how often watering sensation occur during sun light, the responses we have recorded was 30% (12) for never, 52.50% (21) for some times and 17.50 (07) for all the times (Figure 3).

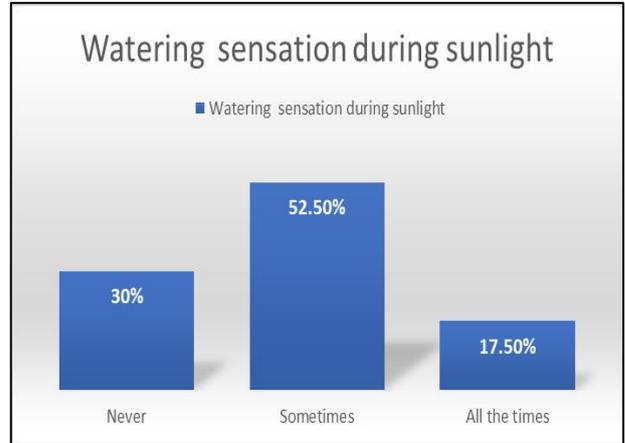


Figure 3: Watering sensation during sunlight.

Time spent for digital work

Further we have assessed “how much time you spent for digital work” for this we have recorded the responses as 0% (00) for never, 2.50% (01) for rarely, 25% (10) for some time, 57.50% (23) for frequently and 15% (06) for constantly (Figure 4).

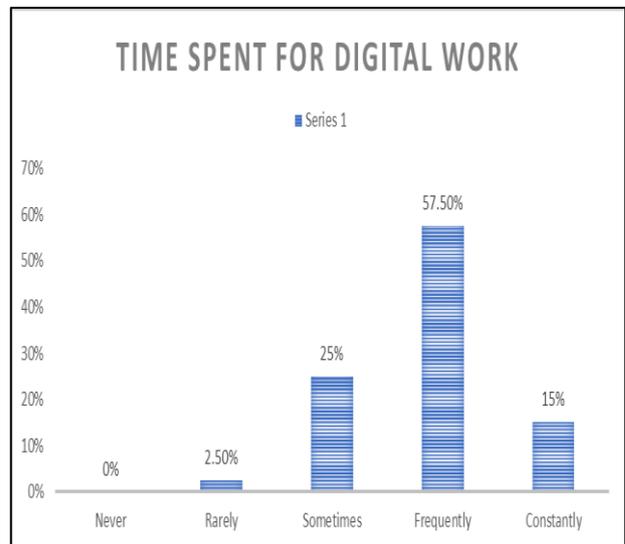


Figure 4: Time spent for digital work.

Bothered by digital device

Further we have assessed “Are you bothered by digital work” for this we have recorded the responses as 60% (24) for yes and 40% (16) for “No” (Figure 5).

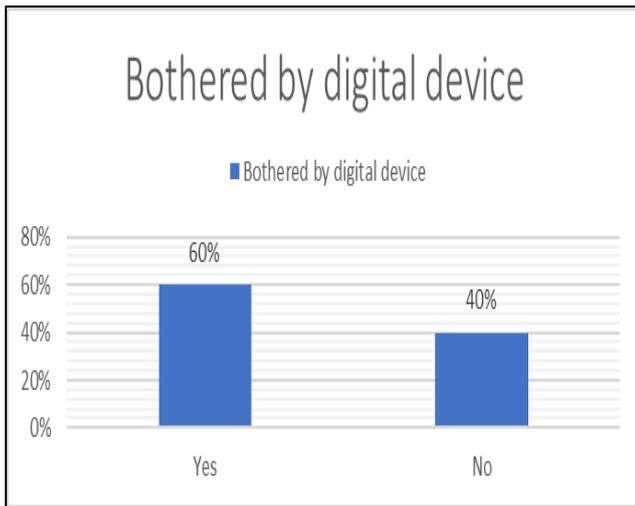


Figure 5: Bothered by digital device.

DISCUSSION

On other hand Schaumberg in his study concluded that the treatment for DED is best done by MPP technology it offers the possibility to deliver therapeutics efficiently to the ocular surface tissues.⁴ KPI-121 0.25%, recently approved for short-term treatment of signs and symptoms of DED, uses MPP to deliver a custom-engineered ocular corticosteroid, loteprednol etabonate, to the corneal and conjunctival epithelium. In clinical trials, KPI-121 0.25% reduced signs and symptoms of DED compared with vehicle when administered for 2 weeks. KPI-121 0.25% has the potential to effectively treat periodic flares of DED with a low risk of side effects. Kuo concluded that the dry eye disease is a complicated ocular disorder with several common subtypes.⁶ A comprehensive history and investigation would help ophthalmologists to identify each cause of dry eye and its subsequent management. Traditional medications such as artificial tears, gels and ointments are commonly prescribed for mild to moderate disease. Besides, other treatment modalities such as immune-modulating drugs, topical steroid, antibiotics and bandage contact lenses might be used in more severe cases. The DED epidemiology in Taiwan acquired from the NHIRD reveals that DED rate is around one fourth of the total population related to age, gender, and environmental factors. Many new therapeutic methods such as artificial solutions with anti-inflammatory agents or nanomedicine containing eye drops have been studied. This review summarizes the epidemiology, common subtypes and treatment of dry eye diseases from the clinic to the bench side, in order to clearly understand this disease and effectively manage it in the future. During a typical day 82.50% (33) students feels dryness sometimes with mild to moderate symptoms while 2.50% (01) student feel dryness all the time while 15% (06) never felt dryness. Although according to data 57.50% students feels burning sensation in eye on the other hand 42.50 (17) never felt burning sensation, students also notice watery eye in sun exposure and windy environment from

them 52.50% recorded for sometimes and 17.50% all the time and 30% (12) never. The recorded data for red eye is 5% (02) all the time, 37.50% (15) sometimes, 57.50% never. The 57.50% students work on digital platform constantly and the percentage of students who bothered by screen light of digital device is 60% as per the recorded data and analysis of results, the students who use more digital platform are showing dry eye symptoms as comparing to those who don't use. There are also 27.5% (11) students whose Schirmer test reading shows hyper lacrimation basically epiphora or hyperactivation results due to lack of lipid layer, which helps in stabilizing the tear fluid, in these students there is lack of nutrients values and essential fats like, fatty acids, omega 3, fish oil, vitamin A, Vehof in his study concluded that the dry eye confirmed but also refuted many risk factors from smaller epidemiological studies, and discovered numerous new risk factors in multiple etiological categories.^{11,12} The finding that dry eye symptoms are particularly common in young adults is concerning, and warrants further studies.

This study has limitations due to the retrospective review procedure, less sample size.

CONCLUSION

According to recorded data and analysis of sign and symptoms, and clinical investigation, the prevalence rate/percentage of dry eye in paramedical students of Teerthankar Mahaveer university is 85% (34 students out of 40 has been recorded in dry eye disease). The cause of dry eye is frequently use digital platforms; that is according to percentage rate is 72.50% (29 students out of 40). Although 27.7% (11) students found on low of nutrients/ fatty acids. whose Schirmer test reading shows hyper lacrimation most often hyperactivation results due to lack of oily layer, which helps in stabilizing the tear fluid, in these students there is lack of nutrients values and essential fats like, fatty acids, omega 3, fish oil., vitamins minerals. Jelle Vehof in 2020 in his study concluded that the dry eye confirmed but also refuted many risk factors from smaller epidemiological studies, and discovered numerous new risk factors in multiple etiological categories. The finding that dry eye symptoms are particularly common in young adults is concerning, and warrants further study.

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REFERENCES

1. Smith JA, Albenz J, Begley C, Caffery B, Nichols K, Schaumberg DA et al. The study of disease transmission of dry eye sickness: report of the Epidemiology Subcommittee of Global Dry Eye Workshop. *Ocul Surf.* 2007;5(2):93-107.
2. Lemp MA. Epidemiology and classification of dry eye. *Adv Exp Med Biol.* 1998;438:791-803.
3. Schaumberg DA, Dana R, Buring JE, Sullivan DA. Prevalence of dry eye sickness among US men: gauges from the Doctors' Wellbeing Studies. *Curve Ophthalmol.* 2009;127(6):763-8.
4. Moss SE, Klein R, Klein BEK. Long-term incidence of dry eye in an older population. *Optom Vis Sci.* 2008;85(8):668-74.
5. The study of disease transmission of dry eye illness: report of the study of disease transmission Subcommittee of the Global Dry Eye Work-Shop. *Ocul Surf.* 2007;5(2):93-107.
6. The definition and grouping of dry eye illness: report of the Definition and Arrangement Subcommittee of the Global Dry Eye WorkShop, *Ocul Surf.* 2007;5(2):75-92.
7. Viso E, Rodriguez-Ares MT, Gude F. Prevalence of and associated factors for dry eye in a Spanish adult population (the Salnes Eye Study) *Ophthalmic Epidemiol.* 2009;16(1):15-21.
8. NA. The definition and classification of dry eye disease: Report of the definition and classification subcommittee of the international dry eye workshop. *Ocul Surf.* 2007;5:75-92.
9. Stern ME, Gao J, Siemasko KF, Beuerman RW, Pflugfelder SC et al. The role of the lachrymal functional unit in the pathophysiology of dry eye. *Exp Eye Res.* 2004;78:409-16.
10. Bron JA, Abelson MB, Ousler G, Pearce E, Tomlinson A, Yokoi N et al. Diagnostic methodology of dry eye disease: Report of the diagnostic methodology subcommittee of the international dry eye workshop. *Ocul Surf.* 2007;5:108-52.
11. NA. Management and therapy of dry eye disease: Report of the manage and therapy subcommittee of the International Dry Eye Workshop. *Ocul Surf.* 2007;5:163-78.
12. Dubey G, Prabhu AV, Khan T, Pant K. Role of polyunsaturated fatty acid derivative flaxseeds in the treatment of dry eyes- an overview, *Int J Current Res Review.* 2020;12(23):35-40.

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Annexure 1

Questionnaire about dry eye

Sr. no.	Questionnaire about dry eye
1	Any abnormalities
2	During day how often feeling dryness
3	During day how often feeling burning
4	Watering sensation during sun light
5	· Time spent for digital work
6	· Bothered by digital device