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Impact of Dry Eye Diseases in Daily Life: A Review Study in a Tertiary Care Hospital in Dhaka

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Abstract **Original Research Article**

Background: Now a day, dry eye disease (DED) is one of most common ocular disease and reason for primary eye care visit worldwide. Dry eye disease should be considered as an important public health problem deserving increased attention. As a rising public health concern, dry eye disease causing ocular distress, fatigue and visual disturbance that obstructs with quality of life, including aspects of physical, social, psychological functioning, daily activities as well as workplace productivity. ***Objective:*** The objective of this study was to assess the effect of dry eye disease on daily life and activities of the patients with dry eye diseases. ***Materials and Methods:*** This was a prospective observational study, conducted at the National Institute of Ophthalmology and Hospital (NIO & H), Dhaka, Bangladesh during the period from January 2003 to December 2004. In total 43 patients of dry eye diseases of several ages with proper documents were finalized as the study population. The study was approved by the ethical committee of the mentioned hospital. The proper written consents were taken from all the participants before starting the main part of intervention. Data were collected by predesigned questioner and analyzed by SPSS program. ***Results:*** We found the highest 30.23% (n=13) participants felt difficulties in driving at night. Besides this 27.91%(n=12), 25.58% (n=11), 20.93% (n=9), 18.60% (n=8), 11.63%(n=5), 9.30%(n=4), 6.98%(n=3), 4.65%(n=2), 4.65% (n=2), participants felt difficulties in reading small print out, reading newspaper, fill-up printed forms, viewing road signs, watching television, navigating stairs, cooking, playing chess/cards and driving at daytime respectively. In this study we found, among all the participants 3(6.98%) felt major difficulties, 8(18.60%) felt minor difficulties and 32(74.42%) felt no difficulty in reading newspaper. ***Conclusion:*** In this study, we found that symptomatic dry eye was significantly associated with a reduced ability in performing several important vision-related daily tasks, independent of the actual visual acuity level. Characteristic dry eye, therefore, has a significant impact on quality of life in people with good vision.

Keywords: Dry eye diseases, daily life, ophthalmology, ocular, quality of life.

INTRODUCTION

Now a day, dry eye disease (DED) is one of most common ocular disease and reason for primary eye care visit worldwide. Dry eye disease (DED) is a growing public health concern causing ocular discomfort, fatigue and visual disturbance that interferes with quality of life, including aspects of physical, social, psychological functioning, daily activities and workplace productivity. According to the International Dry Eye Work Shop in 2007 “it is a multifactorial disease of the tears and ocular surface that results in signs of discomfort, visual disturbance, and tear film uncertainty with possible damage to the ocular surface’ [1]. The prevalence of DED has been reported to occur in the range from approximately 4.4% to as high as 50% [2] among middle-aged and older people throughout the world. In the USA, estimates from the largest studies suggest that DED affects around five million people aged 50 years older [3]. People with DED often report visual disturbances such as blurry or foggy vision, changingvision and glare; frequently in

spite of normal visual insight using standard testing techniques. The resulting reductions in visual function can be measured by questionnaires [4], contrast sensitivity tests [5], functional visual acuity (FVA) tests [6] and measurement of higher-order optical aberrations [7]. The Ocular Surface Disease Index (OSDI) [4] consists of 12 questions and has been frequently usedto measure the severity of DED, including in the setting of clinical trials. The OSDI contains three subscales: ocular discomfort symptoms, vision- related function, and environmental triggers, which are all queried by three or more questions whichdirect patients to their experience over the past week.The OSDI was shown to validly distinguish among patients with no DED and patients with mild, moderate, and severe DED [4]. A study with 40 participants with clinical confirmation of DED showed that the OSDI total score was significantly greater in patients with DED than in normal participant [8]. The Dry Eye Questionnaire (DEQ)
[9] includes 21 items developed to evaluate the prevalence, frequency, diurnal severity, and intrusiveness of dry eye symptoms for use in epidemiologic and clinical studies. Dry eye is a common eye condition due to diminished tear production or increased tear evaporation, which results in ocular surface dysfunction [10] and a typical spectrum of symptoms including scorching or harsh, tearing, foreign-body sensation, photophobia and blurry vision [11]. The prevalence of symptomatic dry eye has been estimated to be between 15–33% in adult populations and is thought to be more common in elder and female patients possibly Asians [12]. In the USA, the treatment cost of dry eye patients is $700 000 per million patients [12]. Dry eye is known to affect the quality of vision because of the irregularity of the tear picture and the optical diverting surfaces associated with this condition [13]. Some studies suggest that severe characteristic dry eye could result in a declined ability to perform daily activities, having impact of quality life passing [14]. However, these studies have been largely restrained to clinical trials involving comparatively small sample sizes and selected patient groups [13] and the impact of dry eye on specific daily tasks and visual function in the general population remains unclear. In this study, we report the impact of symptomatic dry eye on vision-related daily activities in a large population-based study of Southwestern Asian Malay adults in Singapore.

OBJECTIVE

The general objective of this study was to assess the effect of dry eye disease on daily life and activities of the patients with dry eye diseases.

MATERIALS AND METHOD

This was a prospective observational study, conducted at the National Institute of Ophthalmology and Hospital (NIO & H), Dhaka, Bangladesh during the period from January 2003 to December 2004. In total 43 patients of dry eye diseases of several ages with proper documents were finalized as the study population. The study was approved by the ethical committee of the mentioned hospital. The proper written consents were taken from all the participants before starting the main part of intervention. Participant answered a questionnaire on the symptoms of dry eyes. All the participants were involved questions on feeling of dryness, grittiness, burning sensation, redness, crusting of lashes, and tendency to shut the eyes. The answers were classified into five categories. Such as ‘never’, ‘rarely’ (at least once in 3 months), ‘sometimes’ (at least once in 2-4 weeks), ‘often’ (at least once aweek), and ‘all the time’ (at least once daily). Symptomatic dry eye or tear dysfunction were defined as the presence of at least one symptom ranked with ‘often’ or ‘all the time present’. The frequency rates of symptomatic dry eye in this study population have been reported recently; suffered from dryness, grittiness, burning sensation, redness, crusting and tendency to shut eyes. All the participants assigned an interview using a supplementary questionnaire contained 11 questions on vision-related daily living activities that are relevant to the local population of both genders, intermediate and distance visual acuity and contrast sensitivity. These questions were validated and published elsewhere previously. We assessed difficulties in activities such as navigating stairs, reading road signs viewing, watching television, reading newspapers, reading small printout, driving at night, driving during daytime, cooking, playing game (chess/cards), and fill-upping printed forms. The response options were ‘no difficulty’, ‘a little difficulty’, and ‘more than a little difficulty’. Participants were assigned a detailed questionnaire and they underwent a physical examination. Data collected included socioeconomic factors, systemic medical history (thyroid eye disease, use medications), ocular history (previous ocular surgery, chemical injury to eye) and lifestyle factors. Presenting and best-corrected visual acuity for each eye were measured. In cases where the two eyes had different presenting visual acuities, the visual function score for the better eye was chosen. We performed the analysis by comparing the difficulty in performing vision-related daily life activities in persons with and without symptomatic dry eyes, bothbefore (crude associations) and after adjusting

for various factors. Data were collected by predesigned questioner and analyzed by SPSS program.

RESULTS

In this study, the highest 41.86% participants were found from 20-40 years' age group. Then 25.58%, 20.93% and 11.63% participants were found from <20 years', 41-60 years', and >60 years' age group respectively. The mean (±SD) age of the study people was 38.50(±2.25) years. Among all the participants, 53% (n=23) were male and the rest 47% (n=20) were female. So the male female ratio was 1.15:1 and male were dominating in number. In analyzing the suffering of difficulties we found the highest 30.23% (n=13) participants felt difficulties in driving at night. Besides this, 9.30%(n=4) participants felt difficulties to navigate stairs, 18.60% (n=8) participants felt difficulties in viewing road signs, 20.93%(n=9) participants felt difficulties in recognizing friends, 11.63%(n=5) participants felt difficulties in watching television, 4.65% (n=2) participants felt difficulties in cooking, 6.98% (n=3) participants felt difficulties in playing chess/cards, 25.58% (n=11) participants felt difficulties in reading newspaper, 20.93% (n=9) participants felt difficulties in filling lottery forms, 27.91% (n=12) participants felt difficulties in reading small print and 4.65%(n=2) participants felt difficulties in driving at daytime. Among all the participants 2(4.65%) felt great difficulties, 6(13.95%) felt some difficulties and 35(81.40%) felt no difficulty in recognizing road signs. On the other hand, among all the participants 4(9.30%) felt great difficulties, 9(20.93%) felt some difficulties and 30(69.77%) felt no difficulty in driving at night. In this study we found, among all the participants 3(6.98%) felt great difficulties, 8(18.60%) felt some difficulties and 32(74.42%) felt no difficulty in reading newspaper.

Table-1: Age distribution of participants (n=43)

Age	n	%
<20 Years	11	25.58
20-40 Years	18	41.86
41-60 Years	9	20.93
>60 Years	5	11.63

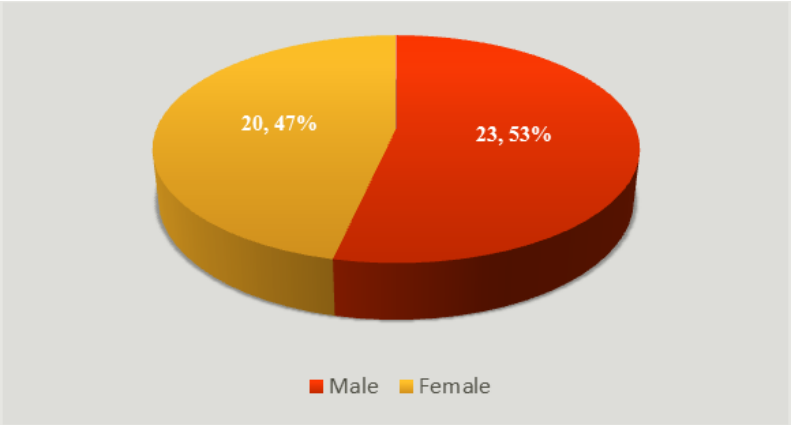

Fig-1: Gender distribution of participants (n=43)

Table-2: Distribution of difficulties facing by the participants (n=43)

Daily activities	Difficulties Faced	
	n	%
Driving at night	13	30.23
Reading small print out	12	27.91
Reading newspaper	11	25.58
Fill-upping printed forms	9	20.93
Viewing road signs	8	18.60
Watching television	5	11.63
Navigate stairs	4	9.30
Playing chess/cards	3	6.98
Cooking	2	4.65
Driving at daytime	2	4.65

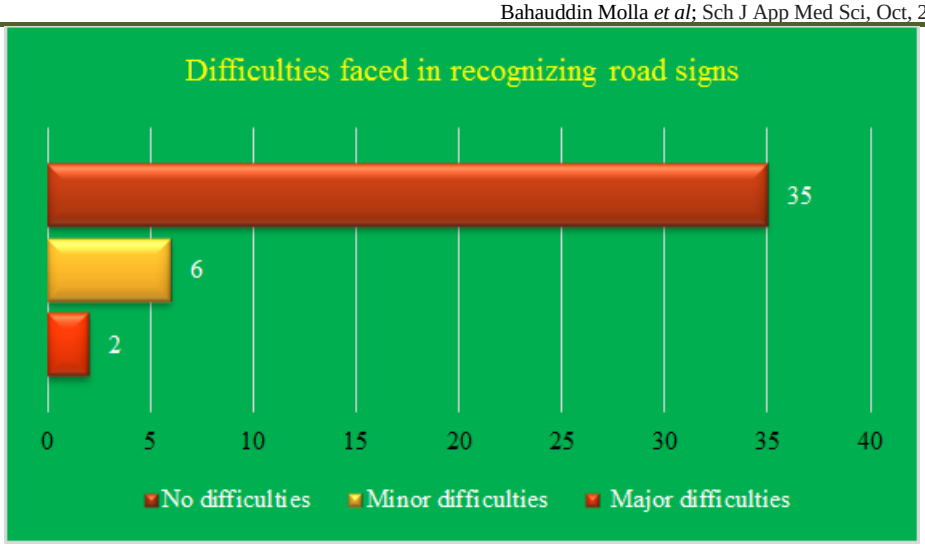

Fig-2: Difficulties faced in recognizing road signs among participants (n=43)

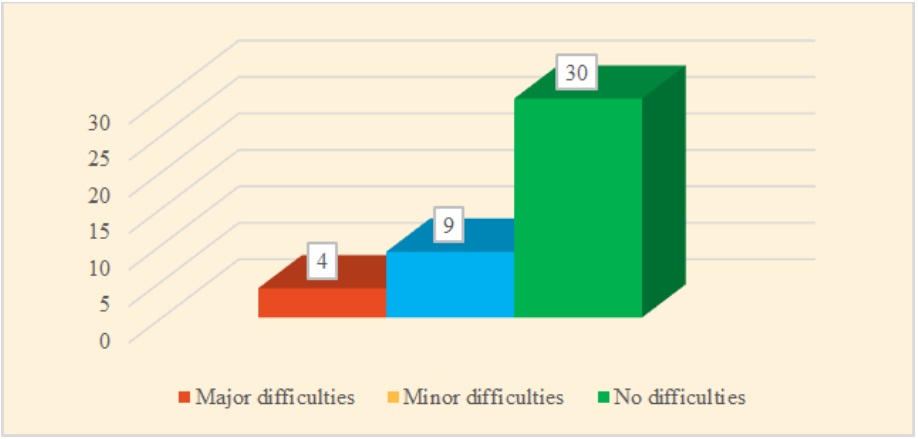

Fig-3: Difficulties faced in driving at night among participants (n=43)

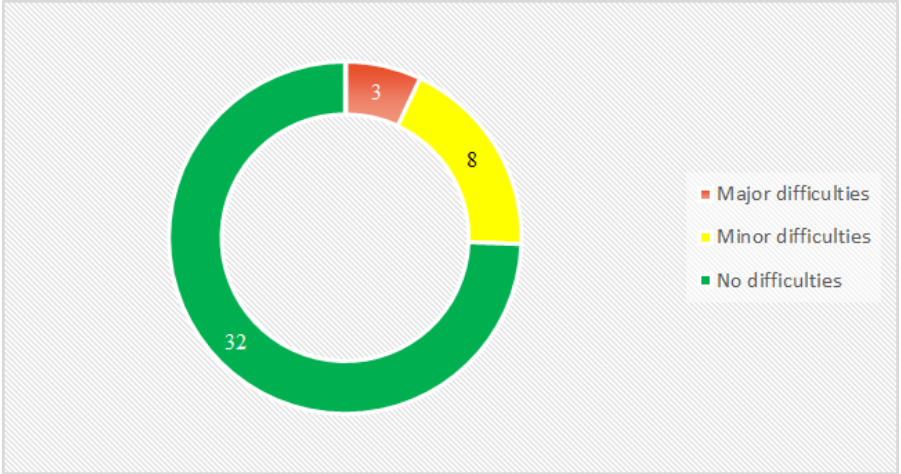

Fig-4: Difficulties faced in reading newspaper among participants (n=43)

DISCUSSION

The objective of this study was to assess the effect of dry eye disease on daily life and activities of the patients with dry eye diseases. The specific activities that persons with symptomatic dry eye were having difficulty with included navigating stairs, reading road signs, reading newspaper, recognizing friends, watching television, cooking, and driving at night [15] previous studies, largely in clinic samples or trials [11]. For activities in which relatively few persons participated in our sample (n=43), the sample size may not be sufficient to enable us to detect statistically significant differences. Besides this, differences in some of the daily activities performed by the participants and study methodology could explain some discrepancy in findings across studies [11]. According to women's health and the physicians' study in USA, with 690 participants showed that symptomatic dry eye was significantly associated with difficulty in reading, carrying out work at work station, watching television, and driving during the day and at night, after controlling, diabetes, hypertension and other factors [11]. However, in that study, only three questions, instead of six, were used to assess dry eye symptoms. Difficulty in performing the daily life activities may be prolonged and reduced blinkingdue to greater visual demands in performing activities to air- conditioning and low-humidity environments, which can result instability by increased evaporation of the tear film leading to irregularity of the optical refracting surfaces. Previous studies have reported a significant reduction in the blinking rate associated with visual display terminal work [16], reading and increased driving speed which can further result in instability of the tear film. Surface irregularity index, a measure of tear film irregularity due to tear instability, increased after sustained eye opening [17]. In our study, the highest 41.86% participants were found from 20-40 years' age group. Then 25.58%, 20.93% and 11.63% participants were found from <20 years', 41-60 years', and >60 years' age group respectively. The mean (±SD) age of the study people was 38.50(±2.25) years. Basically, in particular, self- reported dry symptoms may not only lack of specificity, but are also subject to variability in responses because of different subjective tolerance thresholds. In addition, some symptoms evaluated could be because of ocular surface conditions rather than dry eye, such as Meibomian gland diseases and/or allergic conjunctivitis. We did not assess certain factors such as wearing of contact lens, LASIK surgery [18], keratoplasty eyelid and conjunctival disease, allergic conjunctivitis, seventh nerve palsy, gout, total body irradiation, Sjogren's syndrome [19], and participants' compliance with dry eye treatment, which might be associated with symptomatic dry eye and diminished visual function. In our study we found,30.23% participants felt difficulties driving at night was highest, followed by 27.91%(n=12) participants reading small print out, 25.58%(n=11) reading newspaper, 20.93%(n=9) fill- upping printed forms, 18.60%(n=8) viewing road signs, 11.63%(n=5) participants felt difficulties in watching television, 9.30%(n=4) navigate stairs, 6.98% (n=3) playing chess/cards, 4.65%(n=2) in cooking and finally 4.65%(n=2) participants felt difficulties in driving at daytime. In fact, symptomatic dry eye was significantly associated with a reduced ability in performing several important vision-related daily tasks, independent of the actual visual acuity level. Symptomatic dry eye has a significant impact on quality of life with goodvision.

CONCLUSION AND RECOMMENDATIONS

Dry eye disease significantly associated with a reduced ability in performing important vision- related daily tasks with actual visual acuity level.Symptomatic dry eye has a significant impact on quality life with good vision. The findings of this study may be helpful in further similar studies. But due to single centered study with a small sized sample, it might not reflect the exact scenario of the whole country. For getting more specific findings we would like to recommend for conducting more studies regarding the same issue with larger sample size.

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