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Demographic and Clinical Profile of Patients with Low Vision: A Hospital Based Study

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Abstract

Background: Vision impairment is a significant problem in our country. The purpose of this study was to evaluate the causes and to record the demographic profile of patients with low vision. **Material & Methods:** After taking permission from ethical committee, the study was conducted on 250 patients presenting in low vision clinic of Regional Institute of Ophthalmology punjab in north India .A detailed examination and information regarding the demographic and clinical characteristics of the patients were recorded .the visual acuity of all the patients were determined using Snellen chart followed by anterior and posterior segment examination using a slit-lamp bio microscope and direct and /or indirect ophthalmoscope.Refraction was done in all the subjects and Best corrected visual acuity was recorded. Their demographic and clinical profile were analyzed using SPSS software. **Results:** Majority of the patients presenting with low vision were found to be above 56 years of age with higher prevalence in rural (54.40%) than in urban (45.60%) population. Male (65.60%)were predominant than females(34.40%) .Major etiological causes were Diabetic retinopathy 76 (30 .40%) followed by Pathological Myopia (21.20%), ARMD (14.80%), Retinitis pigmentosa (6.80%) and Glaucoma (6.00%). **Conclusion:** Diabetic retinopathy and pathological myopia were the predominant causes of low vision. Patients from rural background were more affected than urban areas.

Keywords:- Diabetic Retinopathy, Low vision, myopia, Retinitis pigmentosa

INTRODUCTION

Low vision is an important public health problem and remains a global health issue and India alone accounts for a major portion of it. With 8 million blind people and 62 million people with visual impairment, India contributes to almost a quarter of the entire global burden of blindness and vision impairment.[1] Visual Impairment can have tragic and far reaching social implication and costs community billions of dollars in terms of productivity, rehabilitation and special education.[2] Low Vision can affect personal, professional, and social life. In children it can

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cause serious barriers to the development at a formative stage.

As per WHO, LOW VISION is defined as "A person with low vision is one who has impairment of visual functioning even after treatment and / or standard refractive correction, and has a visual acuity of less than 6/18 to light perception in the better eye or a visual field of less than 10° from the point of fixation , but who uses , or is potentially able to use , vision for the planning and or execution of a task.[3]

Being an important public health problem, there are very few low vision centers available to cater the needs of these people in India. Reliable Hospital-based epidemiological data regarding vision and ocular morbidity are lacking for the most part in the developing world including India. There is significant burden of low vision in India suggesting the need for increased low vision services. Data regarding low vision is the basis on which effective low-vision eye care services can be developed but the accurate data regarding demographic profile and etiology of low vision in this border area of punjab is lacking, therefore the present study was conducted to find the demographic profile and causes of low vision in patients more than 5 years of age.

Aims

To evaluate the demographic profile of patients with low vision as well as to evaluate the causes of low vision in patients visiting directly or referred to low vision clinic of Regional Institute of Ophthalmology ,Punjab.

MATERIAL AND METHODS

A cross-sectional study was conducted on all patients visiting the low vision clinic of Regional Institute of Ophthalmology, Amritsar, Punjab between May 2021 and May 2022. Patients of both sexes and age more than 5 years were included in the study. After taking written informed consent in vernacular language, a detailed history of onset and duration of the presenting symptom, past visual and ocular history and ocular history of family members was taken and demographic profile was recorded. A detailed examination including Visual acuity assessment, Best Corrected visual acuity (BCVA) using Snellan's chart, refraction,intraocular pressure measurement using Applanation tonometry,Slit lamp biomicroscopy examination and fundus examination with both direct and/or indirect ophthalmoscopy was done. After examination, the causes of low vision was assigned . Ethical approval was obtained from institutional ethical committee of the hospital.

Exclusion criteria

1. Patients with BCVA more than 6/18 or less than 3/60.
2. Patients who have low vision due to any cause which can be treated medically, surgically and/or with correction of refractive error.

All patients presenting to low vision clinic were seen by an ophthalmologist and a single optometrist.

Statistical analysis

The recorded data on various aspects of the present study were analyzed by using the statistical package for social sciences (SPSS)

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version 21, IBM. Simple statistical tools such as frequency, averages, and percentages were worked out to present the results of the present study. Some empirical tests such as chi-square were also applied to draw some significant outcomes of the present study. The results of the study have been interpreted by considering the significance level at five percent of probability ($p < 0.05$).

RESULTS

A total of 250 patients presented and were seen at the low vision clinic of tertiary eye care center during the study period from May 2021-May 2022.The mean age of the study population was 51.3±17.39 years,164(65.60%) were male and 86(35.40%) were females .Demographic characteristics of the study population are shown in [Table 1].

Table 1: Demographic characteristics of the study population

Chracterstics	**Number**	**Percentage**
AGE		
5-15 years	9	3.60
16-25 years	21	8.40
26-35 years	19	7.60
36-45 years	37	14.80
46-55 years	42	16.80
56-65 years	68	27.20
66-75 years	44	17.60
>75 years	10	4.00
SEX		
MALE	164	65.60
FEMALE	86	35.40
AREA		
RURAL	136	54.40
URBAN	114	45.60
EDUCATION		
ILLITERATE	75	30.00
PRIMARY	69	27.60
SECONDARY	70	28.00
GRADUATE	36	14.40
PERSONAL HABITS		
ONLY SMOKING	7	2.80
ONLY ALCOHOL	35	14.00
BOTH	10	4.00
NO SMOKING/ALCOHOL	198	79.20

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Table 2: Distribution of Patients According To Bcva In Better Eye

Best Corrected Visual Acuity	Number	Percentage
6/60	78	31.20
6/36	72	28.80
6/24	63	25.20
6/18	27	10.80
3/60	10	4.00
Total	250	100.00

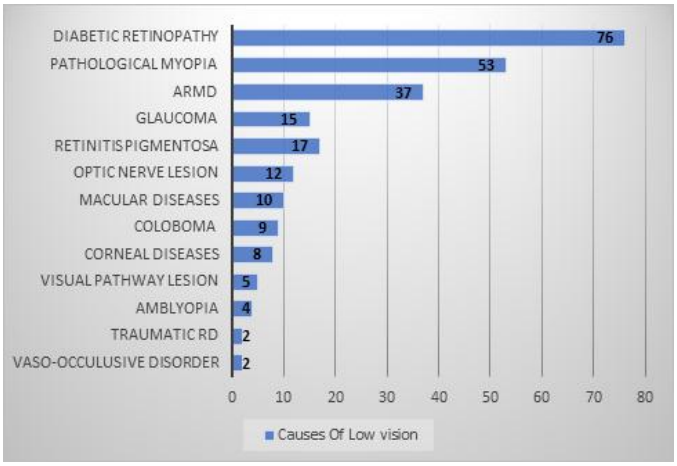

Figure 1: Causes Of Low vision

[Figure 1] shows the causes of low vision.The predominant cause was Diabetic retinopathy (30.40%) followed by Pathological myopia (21.20%).

DISCUSSION

This study described the demographic and clinical characteristics of patients presenting to the low vision clinic of tertiary care center in state of punjab. A total of two hundred and fifty patients were seen at our low vision clinic during the study period. The mean age of patients presenting with low vision was 51.3±17.39 years of age. The maximum number of patients 68 (27.20%) belonged to 56-65 years age group followed by 44 (17.60%) in 66-75 years age group. Minimum number of patients 9 (3.60%) were seen in age group of 5-15 years. Similar to this study, a cross-sectional observational study done at the low vision clinic of a tertiary eye care facility in Kerala in 2016 showed that 33%of the patients were above 60 years.[4] This was in accordance with study conducted by Frick KD, Foster A. who found that majority of people with visual impairment are aged 50 years and older.[5] A study was conducted by Leat and Rumney in the United Kingdom,[6] and in Australia by Wolffsohn and Cochrane to find the causes of low vision impairment which found that majority of their patients were aged 60 years and above.[7] Another study done by Elliot et al. in Canada on patients visiting the low vision clinic reported that 66% of patients in their study of low vision were 70 years or older.[8,9] This is in contrast to a study conducted by Olusanya et. Al in patients ranging from 6 and 90 years and found that the majority (58%)of patients were aged below 50 years.[10]

Male preponderance was seen in our study group with 65.6 % males and 34.4% females. The mean age of males was 52.39 ± 17.86 whereas of females mean age was 49.22 ± 16.37. Similar male preponderance was seen in study conducted in kerala4 and another study conducted in low vision clinic of Nepal eye hospital.[11] The relatively high male to female

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ratio (1.9:1) is also similar to that of other studies conducted in Korea- 1.8:1,[12] Malaysia- 2.2:1,[13] and Nepal- 2.3:1.11 Whereas,a study done at Vision Rehabilitation Center (VRC) in Germany in 2021 found no significant influence of gender and age on ocular pathology distribution.[14]

In our study most of the patients belonged to rural population (54%) while only 46% belonged to urban population. Similar to our study, Z. Alotaibi, A. in 2015 in Riyadh reported in their study that rural population is more affected by vision impairment as compared to that of urban population.[15] Similarly Braithwaite T et al, also conducted National Eye Survey of Trinidad and Tobago (NESTT) and reported that rural population are more prone to vision impairment than urban population.[16]

In our study housewives (24.80%) and farmers (24.00%) contributed maximum to the presence of low vision this high prevalence in them may be due to the lack of resources and transport facilities. In 2015, A study was done by Ibrahim N, Pozo-Martin F, Gilbert C. showed that the Use of home-Remedies and Desi Medicines contributes to much more prevalence of low vision in Farmers and labourers category of patients.[17] Mganga H, Lewallen S, Courtright P also reported that the women especially housewives were more commonly affected with low vision impairment.[18] Whereas, Congdon N et al reported that occupations and recreational activities, such as farming or mining and contact sports, are linked consistently to greater risk of ocular trauma leading to vision impairment.[19]

23.60% (59) patients had a positive ocular family history whereas 76.40% (191) patients had no related ocular family history.Presence of a positive family history of similar cause was seen maximum in case of pathological myopia in 35.59% (21) patients followed by 20.34% (12) in case of Retinitis Pigmentosa . Ibrahim N, Pozo-Martin F, Gilbert C. in their study reported that genetics also play a role in the development of some eye conditions including glaucoma, refractive error and retinal degenerations such as Retinitis pigmentosa.[17] A study conducted by He M, Huang W, Zheng Y, Huang L, Ellwein LB. also reported similar findings.[20] Negative family history rules out certain genetic relations which suggest that most causes are sporadic, which can have higher chances for prevention by certain measures.

Diabetic Retinopathy was the major cause of low vision in 76 (30.40%) patients ,followed by Pathological myopia in 53 (21.20%) patients, Age related macular degeneration (ARMD) in 37 (14.80%) patients, Retinitis Pigmentosa (RP) in 17 (6.80%) patients, Optic nerve disorders in 12 (4.80%),macular disorders in 10 (4.00%), colobomas in 9 (3.60%), Corneal diseases 8 (3.20%), Visual Pathway lesions 5 (2.00%) Amblyopia in 4 (1.60%) Traumatic RD and Vaso-occlusive disorder in 2 (0.80%) patients each.

Posterior segment disease accounted for the majority of causes of low vision in this study. This correlates with findings of most low vision clinic studies.[7,21-23] One difference, however, is that some previous reports found age related macular degeneration (ARMD) to be the commonest cause. The highest frequency of diabetic retinopathy as a cause of low vision in our study is in contrast to findings from most of the previous reports from both developing and developed countries in which DR usually featured as the second or third commonest

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cause.[7-9,21] Diabetic retinopathy is relatively unnoticed micro-vascular complication in developing countries, especially India,where largest number of type 2 diabetes mellitus (T2DM) patients are living.[24] The results of our study may be due to the explosive increase in the prevalence of diabetes mellitus in India over the past four decades and lack of awareness about their diabetic status which is supported by study conducted by Thakur JS and Nangia R in 2022 in Punjab who found that only 34.2% of diabetics were aware of their condition, out of them 28.2% were on treatment while diabetes were under control in only 14.2% of them.[25]

Myopic macular degeneration/Pathological myopia was found to be one the leading cause of low vision in Japanese participants. The prevalence of myopia is higher in Japanese individuals.[26] In our study, myopia was second leading cause of low vision accounting for about 21.20% of total patients. In diagnosing myopic macular degeneration, ARMD patients were carefully excluded, and all eyes which were found to have myopic macular degeneration as the cause of low vision were associated with high myopia, tessellated fundus, myopic peri-papillary atrophy, and diffuse or local chorio-retinal atrophy, or both. Rotterdam study also reported myopic macular degeneration as one of the major causes of low vision before age 75 years.[27] Similar finding were reported for Chinese persons in developed countries, 20 suggesting that there may be some ethnic or cultural factor or both might be responsible for the higher prevalence of high myopia and consequently myopic macular degeneration.

Age Related Macular Degeneration was seen in 11% of our patients and was the third leading cause of low vision .Similar to our study ,Nigerian National blindness survey also found ARMD as the third most common cause of low vision, accounting for 11.0% of subjects with low vision.[28] In contrast to this some other studies conducted in developing countries did not find ARMD as the commonest cause of low vision.[7-9] Possible reasons for lower prevalence of ARMD in these studies may include nutritional factors, less cigarette smoking, and lower body mass index (BMI).[29]

CONCLUSIONS

The present study revealed diabetic retinopathy as commonest cause of low vision,which is higher than seen in other studies.There is need to develop more number of low vision clinics for the early detection and management of ophthalmic conditions associated with low vision .To minimize the burden of low vision more emphasis is needed towards strengthening the awareness programs and screening campaigns for recognizing the diseases associated with low vision.

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