Research Article

Awareness of Presence of Refractive error among Rural North Indian population

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Abstract

Introduction: Visual Impairment due to uncorrected refractive error affects 200-250 million people in the world. Correction of uncorrected refractive errors is a priority of Vision 2020-The Right to Sight. Awareness about the Refractive error its associated symptoms along with its treatment can play an important role in prevention of blindness.

Results: Self Designed Survey questionnaire had been distributed to 4177 randomly selected people of the Age group 15-45 attending Rural Health Centre in North India. Out of enrolled individual maximum 24.6% were in age group 41-45 yrs, followed by 22.5% in age group 15-20 yrs. According to Kuppu Swami scale maximum 35.5% of study population was of Lower class followed by 32.9% of upper lower class. Study had (38.3%) males and (61.6%) females, 26.6% of enrolled participants wore spectacles. 23.2% were aware about the refractive error and 5.5% had knowledge about its symptoms. 21.6% of the spectacle users and 2.3% of non-spectacle users were aware of the importance of wearing spectacles. 3.1% of all were aware about urgency for seeking eye care help. 19.4% prefer

spectacles as optical correction and 1.6% prefer contact lens over spectacle use. 2 % among spectacle users were aware about photorefractive surgery but only 0.6% preferred surgeries over spectacles and contact lenses.

Conclusion: In order to reduce the impact of visual problems related to refractive errors like amblyopia, blurring of vision, headache, eye strain, redness of eyes etc. Certain steps in society should be undertaken towards the general public, such as information through media and publicity, public education, screenings for ametropia in schools and at work place and government subsidies of optical equipments.

Keywords: Spectacle; Contact lens; Refractive Error; Myopia; Presbyopia

Introduction

Refractive error is the most common cause of visual impairment and the second most common cause of blindness in the world. Refractive error has been recognized as a public health problem in many countries including India as well as by the WHO in its global initiative VISION 2020 – the right to sight [1].

The World Health Organization (WHO), in its latest global statistics has revealed that, there are 37 million blind people, including 1.4 million children under the age of 15, and 125 million with severely impaired vision, resulting in a total of over 160 million visually impaired people [2]. The prevalence of astigmatism was 25.64% [3].

Slataper [4] reported on ‘‘age norms’’ of refraction of ~18,000 patients ranging in age from birth to 80+ years. His data showed a steady shift from hyperopia toward myopia from birth until 30 years of age when there was a shift back to hyperopia with increasing age until 65 years of age.

In adolescents and young adult population there is more Prevalence of Myopia. Higher magnitudes of myopia are more likely (10-40 times depending on the study) than the lower mag-nitudes to cause sight threatening visual consequences [5-7].

Uncorrected refractive errors are a major cause of visual impairment and blindness, globally.

Refractive eye conditions like astigmatism, phoria and accommodative dysfunctions can cause a reduction in the visual performance of the child and lead to ocular symptoms like eyestrain, headaches, blurred vision, intermittent double vision etc.

The high prevalence of significant refractive error and the costs associated with its correction, with spectacles, contact lenses or surgery, pose significant public health and economic concerns [8-10].

The global cost of correcting vision impairment from uncorrected refractive error has been estimated to be 2800 million US dollars [11]. Similarly, the potential productivity loss resulting from the global burden of uncorrected refractive error has been estimated to be 121.4 billion international dollars [12].

So, refractive errors do not only impose a heavy financial burden on the society but if left uncorrected may lead to a loss of education and employment opportunities, lower productivity, and impaired quality of life [13-14].

How-ever, prevalence is not the only important parameter when evaluating the societal impact of

diseases; severity also plays a significant role. In rural settings, stigmatization associated with eyeglasses may also prevent potential beneficiaries from using them even when they are given free of charge.

Awareness about the Refractive error, its associated symptoms along with different treatment modalities can play an important role in prevention of blindness. An Informed public is more likely to be focused to prevention programmes.

To our knowledge, there is no complete and documented survey on the perception and insight of the people about the awareness of Refractive Errors and its correction methods in North Indian population.

Therefore, we decided to perform this study for a better understanding about the level of awareness and attitude of the general population toward refractive error correction.

India being developing country with such a huge population the burden of refractive error corrective methods will also be larger. Our study will help in little way to know about what is the exact attitude of general population towards the eye care health.

Materials and methods

The present study was conducted on young – adult general population aged 15-40 years, over a period of 8 months from April 2018 till November 2018. 4177 enrolled participants were patients attending rural health centre of a tertiary hospital. Prior to commencement of the study, from all the participants verbal and written consent was also obtained. A structured questionnaire was designed to gather information related to awareness of the general population on refractive errors and its correction modalities. The questionnaire used by Yousuf Aldebasi, Young Public Awareness to Refractive Error Deficiency guided us to formulate our questionnaire and adjustments were made accordingly. The set of questionnaire had been upgraded and standardized and explained to the patient in common language. Participants were asked to answer all the questions in the survey.

The first section of the questionarre contained questions according to demographic data such as gender, age, educational status and occupation. The remaining sections were arranged to assess respondents, knowledge of refractive error, its symptoms and their attitude toward spectacles, contact lenses and refractive eye surgery.

Questionnaire:

Awareness about ocular symptoms related to refractive error
Awareness about the different types of refractive error
Importance of wearing spectacles if pescribed • Among Spectacle users • Among Non Spectacle users
Knowledge of what might aggravate refractive errors
Do you have knowledge about presbyopia
Do You prefer spectacles as form of correction • Spectacle wearers • Non Spectacle wearers
Are you aware of contact lens usage instead of spectacles as a form of optical correction • Spectacle wearers • Non Spectacle wearers
Awareness of existence of refractive surgery In order to correct refractive error as an alternative to spectacle and contact lenses
Awareness of the urgency to seek eye care help
Prefer Refractive Surgeries

Data Analysis

Statistical data analysis was conducted using spss software. The Chi- square test was applied to identify differences between the studied variables as well as simple frequency tables to establish the frequency distribution of the responses. The threshold for statistical significance was set at a P- value less than 0.05.

Results:

Four thousand one hundred seventy – seven participants were enrolled, including 1601 (38.3%) males and 2576 (61.6%) females (Table 1).

Table 1: Distribution of Patients according to Age and Gender

		Number {N- 4177}	Percentage %
Gender	**Male**	1601	38.3
	Female	2576	61.6
Age Group ↓			
15-20		941	22.5
21-25		768	18.3
26-30		227	5.4
31-35		469	11.2
36-40		741	17.7
41-45		1031	24.6
Wears Correction Glasses			
Yes		1113	26.6
No		3064	73.3

15-45 yrs of young adult population was enrolled in the study out of which 24.6% were in age group (41-45) yrs followed by 22.5% belonging to age group of (15-20) yrs, and 5.4% in the age group of (26-30) yrs. Out of enrolled participants 26.6% were wearing correction glasses (Table1).

Table 2: Distribution of Participants according to Kuppu Swami scale

Socio-Economic status (Acc to Kuppu Swami scale)	Number {N- 4177}	Percentage %
Upper	211	5
Middle	468	11.2
Lower Middle	637	15.2
Upper Lower	1377	32.9
Lower	1484	35.5

According to Kuppu Swami scale maximum number of enrolled patients were of Lower class followed by upper lower class (32.9%) with the least 5% belonging to upper class (Table 2).

Table 3: Questionnare

Questionnare	Enrolled Participants (4177)	Percentage %
Awareness about ocular symptoms related to refractive error	233	5.5
Awareness about the different types of refractive error	972	23.2
Do You prefer spectacles as form of correction Spectacle wearers Non spectacle wearers	 812 153	 19.4 3.6
Importance of wearing spectacles if pescribed Among Spectacle users Among Non Spectacle users	 904 101	 21.6 2.3
Knowledge of what might aggravate refractive errors	132	3.1
Do you have knowledge about presbyopia	153	3.6
Are you aware of contact lens usage instead of spectacles as a form of optical correction Spectacle wearers Non spectacle wearers	 206 73	 4.9 1.7
Prefer contact lens Spectacle wearers Non spectacle wearers	 78 27	 1.6 0.6
Awareness of existence of refractive surgery in order to correct refractive error as an alternative to spectacle and contact lenses Spectacle wearers Non spectacle wearers	 87 29	 2 0.6
Prefer Refractive surgeries	26	0.6
Awareness of the urgency to seek eye care help	131	3.1

According to the responses received in the questionnaire (Table 3) following interpretations were withdrawn: 23.2% were aware regarding different types of refractive erros and only 5.5% were aware of its sypmtoms such as diminution of vision for far and near, headache, ocular strain on reading, watering etc.

About 3.1% had knowledge of aggravating factors of symptoms (reading, watching Television, playing video games, bad illumination, etc) and 3.6% had knowledge about presbyopia.

21.6% of the spectacle users and 2.4% of non spectacle users were aware of the importance of wearing spectacles. 3.1% of all were aware about urgency for seeking eye care help. 19.4% prefer spectacles as optical correction and 1.8% prefer contact lens over spectacle use. 2% amongst spectacle users were aware about photorefractive surgery but only 0.6% preferred surgeries.

Table 4: Distribution of the participants according to Education

Education levels attained	Percentage %
Tertiary	1005 (24.0)
Secondary	1082 (25.9)
Primary	917 (21.9)

Table 5: Associations of Education, Awareness of and Willingness to use alternatives to eyeglasses.

Education Level	Awareness of alternatives to corrective eyeglasses					
	Contact Lens			Refractive Eye Surgery		
	Yes	No	Total	Yes	No	Total
None	27	1146	1173	38	1135	1173
Primary	319	598	917	413	504	917
Secondary	566	516	1082	587	495	1082
Tertiary	765	240	1005	883	122	1005
Total	1676	2500	4177	1921	2256	4177
	Pearson Chi-square = 1317.944, df = 3, P<0.001			Pearson Chi-square = 1602.457, df = 3, P<0.001		
Education Level	Willingness to use alternatives to corrective eyeglasses					
	Contact Lens			Refractive Eye Surgery		
	Yes	No	Total	Yes	No	Total
None	16	1157	1173	23	1150	1173
Primary	237	681	917	352	565	917
Secondary	361	720	1082	501	581	1082
Tertiary	358	647	1005	319	686	1005
Total	972	3205	4177	1195	2982	4177
	Pearson Chi-square = 466.278, df = 1, p<0.001			Pearson Chi-square = 621.443, df = 3, p<0.001		

Higher education was significantly associated with participants' awareness of alternatives to eyeglasses like contact lens (P = 0.001), refractive eye surgery (P = 0.001) and also with willingness to use contact lens (P = 0.001) or underlying refractive eye surgery (P = 0.001) (Table 5).

Discussion

As the standard of living is increasing, people are becoming more aware of the health concerns in their day to day living still for many Reasons patients would suffer in silence with uncorrected refractive

errors fearing 'social stigma' of wearing glasses or enmeshed in 'unfounded belief' that eyeglasses damage eyes as reported across societies [15,16].

In the present study 21.6% among spectacle users knew the importance of wearing correction glasses and of all the enrolled participants, 2.2% were willing to use contact lens where as 1.3% were willing to go for surgeries and to improve their eyesight. The Respondents poor attitude to possible uptake of both contact lenses and refractive eye surgeries as alternative to corrective refractive glasses were borne out of fact that most participants had very little information and also fear of its expenses and complications associated with it.

Higher education groups were more aware of the visual problems and its treatment modalities, however remained confined to 21.9% only. In the present study the education level play an important role in correlation with the degree of awareness of uncorrected refractive errors and willingness to use various treatment modalities.

A report by WHO states that simple sight testing and eyeglasses or contact lenses could make a dramatic difference to lives of more than 150 million people worldwide, who are suffering from poor vision.

In our study we found that despite the fact that uncorrected refractive errors are a major cause of visual impairment and blindness globally, the level of knowledge about this issue and its correction methods is low in our region.

Communicating visual prognosis by primary health care practitioners would help to increase knowledge and compliance among patients [17] because needless to say, health promotion and communication is a key public health strategy [18-20]. These findings emphasize the crucial role of ophthalmologists and optometrists in bringing the general ocular health information to the public attention.

Further, primary care physicians and health workers can help in spreading awareness about the need for proper correction of refractive errors and screening of eye ailments in the community including the schools. Even vision screening by trained teachers is also an effective way for early detection of refractive errors [21]. Being aware of the visual symptoms related to refractive error will cut short the suffering and distress. Effective health education in eye care may influence the behavior of individuals towards considering regular ocular care.

After the questions being asked participants were happy to know about the new knowledge regarding the health care. Getting participants informed about available services could enhance positive attitude to such services [22]. Strategies such as vision screening and eye health promotion programmes need to be implemented, the quality of refractive services should be monitored and the cost of spectacles be regulated if the substantial burden of visual impairement due to refractive error in this is to be reduced.

Informed Consent: Informed consent was obtained from all individual participants included in the study.

Ethical Approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the Era's Lucknow Medical College and Hospital and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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Conflict of Interest: Both the authors declare that they have no conflict of interest.

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