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Original Article

Ophthalmology Section

Awareness of Presbyopia among Rural Female Population in North Karnataka

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ABSTRACT

Introduction: Presbyopia is an age related loss of lens accommodation resulting in inability to read and/write or to do near work. Though literacy level may be low in rural female population of South India, but household works like sewing, sorting grains and operating mobile phones must be difficult due to presbyopia.

Aim: To determine the awareness of presbyopia in rural females; also, to determine the knowledge levels regarding presbyopia, spectacle coverage and reasons for not wearing spectacles.

Materials and Methods: A hospital based cross-sectional study was conducted at SDM College of Medical Sciences, Dharwad, Karnataka, India, on 1000 female subjects of age group 35 years and above coming from rural area (around Dharwad). They were examined and open-ended questionnaire was used to record subject's awareness and knowledge about presbyopia and their responses were analysed.

Results: More than 2/3rd of 1000 (66.7%) subjects were not aware about presbyopia. More than 50% subjects had difficulty in cleaning grains, threading needles and reading fine newspaper print. About 86.5% thought presbyopia is age related and 92.2% thought it could be treated with spectacles. In spite of high prevalence, almost 98% of the population were not willing to wear glasses among which majority (60.2%) felt that spectacles were difficult to be maintained while working. In the present study, no statistical significance between literacy and awareness was noted (p=0.46).

Conclusion: High prevalence of presbyopia was seen with majority of them uncorrected due to lack of awareness or unwillingness to wear glasses. We need to provide better health education regarding presbyopia among both literate and illiterate individuals. Thus, there is a need to create awareness and to provide affordable, accessible and compatible optical services to the affected population.

Keywords: Emmetropia, Near vision, Reading glasses, Visual acuity

INTRODUCTION

Presbyopia (literally, an old eye) is the most common ocular problem worldwide. Presbyopia is defined as progressive decrease in the accommodative amplitude leading to discomfort and difficulty for near work [1]. It is due to the progressive decrease in the accommodative amplitude [2]. The changes in accommodation are related to changes in the ciliary muscles, lens, and its capsule and/or changes in the vitreous. The onset of presbyopia varies between 40 and 45 years of age however, some individual and geographic variations are present [3,4]. Women from rural area are more likely to report difficulty with near tasks than men because they are more occupied with near work such as sewing and cleaning grains [2]. Symptoms of presbyopia are characterized by complaints of requiring more light to read, difficulty in reading fine print of newspaper and eyes taking too long to focus at near point. Uncorrected near vision will have negative impact on activities of daily living like reading newspaper, seeing mobile numbers and also upon self esteem [4, 5].

There exists a high prevalence of uncorrected refractive errors and presbyopia; especially in developing countries [5]. Even though presbyopia affects a large number of individuals and is treated easily, it has not gained recognition as a major cause of vision impairment. Those with refractive error in addition to presbyopia need bifocals which depends on the nature of his/her work [6].

The present study was conducted to assess the awareness among rural females regarding presbyopia. To the best of our knowledge, there is no past report on awareness of presbyopia among the community of rural female population from India.

MATERIALS AND METHODS

A hospital based cross-sectional study was conducted among female subjects aged 35 years and above. A total of 1000 subjects were examined. The study was conducted from April 2015 to May 2016. Written informed consent was obtained from each patient in their local language (Kannada). SDM Medical College Hospital Institutional Ethics Board approval was obtained before the conduct of the study, which adhered to the tenets of the Declaration of Helsinki. A questionnaire was used to capture all demographic data and assessment findings [Table/Fig-1].

We included all the females >35 years of age, coming from rural area (around Dharwad), who attended Ophthalmology OPD. We excluded subjects with best corrected visual acuity less than 20/40 due to cataract or other causes.

Sample Size

There are no surveys in study population which give us an indication of the prevalence of knowledge of presbyopia among the general population.

We started with survey and analysed the proportion of awareness of presbyopia among the first 100 subjects in our study. We found 20% proportion of awareness of presbyopia.

The sample size for the proportion for a population survey was found out by CDC-statcalc software. The optimum sample size at alpha error of 5% and power of 80% works out to be 164 subjects at prevalence of 50% and 145 subjects at prevalence of 67% awareness.

We were comfortable in collecting data from a larger sample of out patients. Hence, we continued up to an arbitrary number of

1000 subjects which was much more than what we required for the parameter of awareness of presbyopia. There was an additional advantage of using a larger population sample in the analysis of the lesser important parameters like causes of presbyopia.

Ocular examination included measurement of Best Corrected Visual Acuity (BCVA) for distant vision with Snellen's charts or illiterate E chart at 6 m in a well-lit room. Refraction was done on all subjects who presented with a visual acuity worse than 6/6 in either eye. Objective refraction was performed with a streak retinoscopy and further refined with subjective refraction. Near vision was assessed in all subjects using a Snellen's near vision chart or illiterate E near chart at working distance of 33 cm after correcting their distance vision. Each person who could not read N8 vision after best distance correction was checked for improvement by adding appropriate increments. Slit lamp examination of anterior segment and posterior segment, pupillary reaction and Intraocular Pressures (IOP) was performed in all study subjects and was within normal limits in all the subjects.

Demographic details and literacy levels of all the subjects was obtained. A brief structured, open ended questionnaire was designed to record subjects' awareness and knowledge about presbyopia [Table/Fig-1]. The questionnaire was initially developed in English and all the questions were translated into commonly used language in study area, that is Kannada. The questionnaire was administered by the interviewer.

Development of Questionnaire

Knowledge Attitudes and Practices (KAP) questionnaire was developed and validated by Ophthalmologists colleagues, language and public health experts. None of the questions in final Kannada version were unacceptable by patients and no questions seemed to upset or distress any of the patients.

Reliability of Questionnaire

Initial 250 subject's responses were analysed. Out of 250, 44 subjects said, they had knowledge of presbyopia. Among them, 40 knew that wearing glasses was the treatment of this condition and four subjects said, 'they don't know' whereas, 206 had not heard of near vision loss.

Reliability of the questionnaire collected was tested by comparing the collected data by two readers. The initial data pertaining to 250 subjects was repeated in respect of question number 2 and 5 which pertained to the perception of what will cure the condition. The data collected was tabulated and Cohen's Kappa coefficient was measured which is a measure of interrelated agreement of categorical questionnaire. The obtained kappa of 0.68, suggests a 'substantial' grade of agreement as per Cohen (0.61-0.80) [7].

STATISTICAL ANALYSIS

Social parameters related to presbyopia like age group, literacy were described in terms of rates and ratios. Refractive status was similarly described. Various symptoms of presbyopia were elucidated and tabulated according to responses and enumerated in terms of rates and percentages. Same questions changed into attitude and practice and the responses were classified according to questionnaire, elicitation of KAP.

The presence of awareness according to literacy status has been cross tabulated. The cross tabulations was analysed by Chi-square test for the association of the attributes.

RESULTS

In this study, 1000 female subjects were examined. [Table/Fig-2] shows the demographic characteristics of the subjects. More than one third of subjects were in the age group of 40-44 years and 45-49 years, each with 373 subjects (37.3%) and 360 subjects (36%)

Name : age:
Place:
Level of literacy: primary/middle/high/pre-university
University
House hold income: <10,000 /10,000-25000/>25000

Visual Acuity:

Refraction:

Questionnaire :

Are you having difficulty in?
Reading news print [ ] Seeing small objects in food [ ]
Cleaning the grains [ ] Threading the needle [ ]
Headache [ ] Other household work [ ]
Recognising the denomination of coins [ ]

Ashamed/distressed/embarrassed with your problem

Have you heard of near vision loss – [ ]
Duration between onset of symptom and first consultation?-
Why people may lose their near vision after 35 years?
Cataract /nerve problem/glaucoma /age related/ curse from god/ don't know
What treatment do you think will correct near vision loss?
Glasses/ surgery/ tablets/drops/not correctable/
Don't know
Reason for not using glasses?
Lack of awareness/felt ashamed to wear/ lack of
felt need /not affordable/difficult to access/lack of compliance/ difficult to maintain while working/image distortion while walking/ headache/lack of accompanying person/laziness
How often have you been following up with ophthalmologist after you were once diagnosed as having near vision problem?
As and when required /not necessary/once in a year/every month

[Table/Fig-1]: Questionnaire used for demographic data and assessment findings.

Age group in years	Number	Percentage%
35-39	23	2.3
40-44	373	37.3
45-49	360	36.0
50-54	127	12.7
55-59	92	9.2
60-69	25	2.5
Literacy status		
Illiterate	495	49.5
Primary school	115	11.5
Middle school	142	14.2
High school	155	15.5
Pre university	79	7.9
University	14	1.4

[Table/Fig-2]: Age group and level of literacy in study subjects.

Visual acuity	Number	Percentage
Near vision, N8	684	68.4
Reduced near and distant vision	136	13.6
Normal distance and near vision	180	18

[Table/Fig-3]: Refractive status.

Questions	Responses					
	Yes		No		Sometimes	
	Number	%	Number	%	Number	%
Reading news print	492	49.2	430	43	77	7.7
Small font in mobile	604	60.4	306	30.6	90	9.0
Cleaning the grains	570	57	250	25	180	18
Threading the needle	690	69	231	23.1	79	7.9
Recognizing the denomination of coins	245	24.5	605	60.5	150	15
Head ache	330	33	318	31.8	352	35.2
Other household work	318	31.8	491	49.1	191	19.1
Distressed/embarrassed with your problem	242	24.2	637	63.7	121	12.1

[Table/Fig-4]: Response of the questionnaire eliciting response symptoms of presbyopia.

respectively. The remaining age groups were 35-39, 50-54, 55-59 and 60-69 years, constitute 2.3%, 12.70%, 9.2%, and 2.5% cases respectively [Table/Fig-2].

KAP	Questions	Responses	
		Number	Percent %
Knowledge	**Have you heard of near vision Loss?**		
	Yes	323	32.3
	No	677	67.7
Practice	**Duration between onset of symptoms and first consultation in Months**		
	1-6 months	111	11.1
	7-12 months	237	23.7
	13-18 months	320	32.0
	19-24 months	235	23.5
	25-30 months	22	2.2
	31-36 months	75	7.5
Knowledge	**Why people may lose near vision after 35 years**		
	Cataract	15	1.5
	Nerve problem	28	2.8
	Age related	865	86.5
	Curse of god	1	1
	Don't know	91	9.1
Knowledge	**What treatment do you think will correct near vision loss?**		
	Glasses	929	92.9
	Surgery	10	1
	Tablets	2	0.2
	Eye drops	2	0.2
	Not correctable	13	1.3
	Don't know	44	4.4
Attitude	**Reason for not wearing glasses?**		
	Lack of awareness	101	10.1
	Felt ashamed to wear	30	3
	Lack of felt need	109	10.9
	Not affordable	23	2.3
	Difficult to access	5	0.5
	Lack of compliance/ image distortion while walking	83	8.3
	Difficult to maintain while working	602	60.2
	Headache	7	0.7
	Laziness	30	3
Attitude	**How often do you recheck once diagnosed as having near vision problem?**		
	As and when required	541	54.1
	Not necessary	125	12.5
	Once in a year	322	32.2
	Every month	12	1.2

[Table/Fig-5]: Response of the questionnaire regarding Knowledge, Attitude and Practice (KAP) of presbyopia.

Literacy status	Awareness					
	Present		Absent		Total	
	Number	%	Number	%	Number	%
Illiterates	131	13.1	364	36.4	495	49.5
Literates	144	14.4	361	36.1	505	50.5
Total	275	27.5	725	72.5	1000	100

[Table/Fig-6]: Level of awareness of presbyopia with literacy status.
Chi sq = 0.53, DF=1, p= 0.46 > 0.05 Not Significant
Literacy has not affected the knowledge of Presbyopia

Level of literacy among the study subjects showed that illiterates constituted 495(49.5%) whereas literates constituted 505(50.5%) subjects [Table/Fig-2].

Out of 1000 study subjects as many as 820 subjects had diminution of vision. Near vision was diminished in 68.4% (684) subjects while both near vision and distant vision were impaired in 13.6% (136) subjects. Remaining 180 subjects were emmetropic [Table/Fig-3].

Barriers limit rural females to access the spectacles. Accordingly, the KAP questionnaire was employed to know the level of KAP about presbyopia of our subjects and also to improve our basic understanding of some of the barriers. Our cohorts had problems in threading the needle (69%), the cleaning the grains (57%), seeing digits in mobile phone (60.4%), recognizing denomination of coins (24.5%) and other household work (31.8%) whereas, 24.2% were ashamed or distressed with the problem [Table/Fig-4].

Among our cohorts, 66.7% subjects had not heard about near vision

loss, however, 86.5% of individuals thought loss of vision was age related. They approached an ophthalmologist in 7-24 months of commencement of the symptoms. Although, they thought glasses were the treatment for this condition (92.9%), while 60.2% did not prefer to use spectacles because they felt spectacles were difficult to maintain while doing household chores [Table/Fig-5].

Willingness to Wear Spectacles

Among our cohorts, 86.5% knew that presbyopia is age related and 92.9% were aware that treatment of presbyopia is glasses. Despite this knowledge, they were not willing to wear the spectacles. The main reasons provided were embarrassment or feeling ashamed (3%), didn't feel need (10.9%), distortion of images while walking (8.3%) due to glasses [Table/Fig-5].

Cost of spectacles was a factor for only 2.3% of the individuals.

In our study population, literacy was not found to be associated with the awareness of presbyopia (p=0.46) [Table/Fig-6].

DISCUSSION

In rural female population, presbyopia affects near work like sewing, picking rice and winnowing grain. Presently in rural areas there is an increase in use of mobiles. According to recent studies, presbyopia affects women more than men, both in prevalence and severity due to the differences in tasks performed and viewing distances [8,9]. Literacy levels among the subjects did not have significant influence on the awareness of presbyopia. Similar findings were observed in studies conducted at Ghana [10], Zanzibar [11] and Indonesia [12] among high school teachers. In their study, the major barriers for the use of glasses were poor quality of glasses [10,11,13], cost of spectacles and perception that their vision was normal. The barriers that contributed to not wearing spectacles were mainly due to lack of awareness and the modality of correction in the form of glasses as reported by Ramke J et al., from Timor Leste [8]. Lack of felt need to wear spectacles was the cause in one study from South India for not wearing spectacles [14]. Whereas spectacles was not a priority for the people from Zanzibar [11], even though spectacles are the simplest and cheapest way to correct presbyopia [15,16]. In our study, 10.9% subjects felt lack of need to wear glasses whereas 3% were ashamed of wearing glasses. Prevalence of presbyopia in our study is 82% which is higher than in African study by (63.4%) Patel IP et al., and Marmamula S et al., (63.7%) [3,14]. The higher prevalence may be attributed to the fact that our cohorts are from tertiary eye care hospital unlike the other two studies which were examined in the community.

Presentation of presbyopia is higher in 40-50 years age group, which is comparable to other studies like Andhra Pradesh Eye disease study [5] and African studies [3].

In our study, average time taken to consult an ophthalmologist was 7-24 months. The time taken to consult an ophthalmologist was delayed because of the poor literacy among females and subjects did not feel it was necessary to treat such a trivial condition. Awareness of presbyopia will ensure availability of treatment which will have a positive impact on the quality of life and productivity. It is important to educate females about the need for re-examination of visual acuity in the future even after obtaining a pair of spectacles. This would also reduce the burden of uncorrected presbyopia and promote the realization of the objectives of Vision 2020; 'The Right to Sight'.

Marmamula S et al., from South India reports that lack of awareness and lack of need were the reasons that contributed for not wearing glasses which is similar to our study [14]. In our study, 10.9 % individuals felt lack of need to wear spectacles, however only 2.3% were unable to afford to buy spectacles. Hence, there is a need to increase the level of awareness by increasing the literacy levels and provision of affordable and high quality spectacles at the nearest place i.e., primary vision centers.

In our study, the major reason for not wearing spectacles was difficulty in maintaining glasses while working (60.2%) which is similar to a study done at Timor-Leste [8]. In other studies (African and Andhra Pradesh Eye Disease Study) [3,14], the barriers were high cost, low priority and lack of awareness. Nowadays, mobile phone is increasingly used in rural India and it requires good near vision to use them. Among our cohorts, there was statistically not significant effect of literacy and awareness of presbyopia (p=0.46). Provision of low cost, high quality reading glasses, with education about their use can be given during our regular cataract screening camps [3,10,16].

LIMITATION

In the present study, we have done visual acuity testing and refraction, later we employed the questionnaire before prescribing spectacles. We have not checked for the compliance and compatibility among the subjects.

Here we have only performed a questionnaire based study.

CONCLUSION

Prevalence of presbyopia is high among rural females. Most of the women do not wear spectacles because of poor quality glasses and difficulty in maintaining spectacles while working. There is a need for health education among rural female population about presbyopia and also provision for high quality, low cost spectacles.

RECOMMENDATIONS

There is a need to create health awareness in the community about presbyopia which is easily corrected by spectacles. Optometrists/ Ophthalmic Technicians need to examine and correct presbyopia among population in their mid-30's and older age groups. Additionaly, policy makers should actively include detection and management of presbyopia as a part of national eye care programmes with the provision of durable and affordable reading glasses.

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