

Self perceived ocular morbidities among geriatric subjects of urban Varanasi

Priya Keshari^{1,*}, Hari Shankar²

¹Research Scholar, ²Associate Professor, Dept. of Community Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh

***Corresponding Author:**

Email: priya.bhu2010@gmail.com

Abstract

Introduction: Older population is at higher risk of ocular problems. One of the significant reasons for this phenomenon could be ageing which leads to degenerative changes. With this background this study was conducted on geriatric subjects in urban Varanasi.

Objectives: To assess self perceived ocular morbidities in geriatric subjects and their associates.

Materials and Method: This cross sectional study was conducted on 616 subjects (≥ 60 years) selected by multistage sampling procedure from urban Varanasi adopting inclusion and exclusion criteria. After obtaining ethical approval and prior consent of subjects each study subject was specifically interviewed about socio economic and demographic characteristics, self reported ocular morbidities and selected parameters of study subjects with the help of appropriate tools. They were subjected to weight and height recording following standard techniques.

Analysis of Data: For analysis of data SPSS version 21.0 was used. For inferential purpose χ^2 test was used.

Results: Overall prevalence of self perceived ocular morbidities was 13.1%. Of all cases with self perceived ocular morbidities cataract (81.4%) was most common morbidity. There existed significant ($p < 0.01$) association of self perceived ocular morbidities with age, ADL involvement and depression status of the study subjects.

Conclusion: One out of eight geriatric subjects had self reported ocular morbidities. Health promotion can reduce unmet need of eye diseases and will ultimately limit avoidable cause of blindness and vision.

Keywords: Cataract, Community based, Geriatric subjects, Ocular morbidities, Visual impairment

Introduction

In most of the countries of the world, people who are 60 years of age or more are increasing. Although old age is not a disease itself, the elderly are vulnerable to chronic diseases.⁽¹⁾ Age-related eye diseases and associated visual impairment are estimated to affect over 372 million older adults globally, or 27.8% of older adults and this number is expected to rise with projected increases in the aging population.⁽²⁾ With increased life expectancy in different countries, an upward trend in the prevalence of age-related eye diseases is expected in the future unless appropriate modifications are made in both eyes.⁽³⁾

Even in countries having optimal services there is evidence of unrecognized tractable vision loss among older people. It has been observed that individuals without known ophthalmological diagnosis have self reported vision loss. Those with limited education, depressed mood, need for help with Instrumental and Basic Activities of Daily Living (IADL, BADL) and subjective memory complaints had increased risk of fair and poor self perceived vision.⁽⁴⁾

In a study conducted in Pune one quarter of subjects had un-operated cataract.⁽⁵⁾ Cataract is the commonest cause of age related blindness in India. From public health point of view cataract cases where corrective measures have been instituted need to be excluded from self reported ocular morbidities. Problem of near vision due to uncorrected presbyopia as the cause of visual impairment may contribute to

high prevalence of visual impairment. On the contrary geriatric subjects may attribute many ocular morbidities due to ageing process and may not consider as an independent phenomenon during traditional surveys. It is important to collect objective data on ocular morbidities in general and perceived morbidities in particular in order to plan for eye care needs and identify areas for further research.⁽⁶⁾ With this background this study was conducted in urban Varanasi to assess self perceived ocular morbidities among geriatric subjects and their associates.

Materials and Methods

This study was conducted in urban Varanasi. A community based cross sectional study design was adopted for this study. Urban subjects having age ≥ 60 years were considered as study subjects.

Sample Size: Considering Socio Economic Deprivation (SED) as critical factor responsible for adverse health condition or huge number of morbidity in geriatric subjects, this was considered as the basis for estimation of sample size. Taking a prevalence of 40% for SED, 5% permissible error (absolute) and design effect of 1.5 the required sample size was 554. Accounting for the non response rate allowance (10% of estimated sample size), the final estimated sample size worked out to be 616.

Sampling Methodology: Following steps were involved in selection of subjects of study:

[A]: Out of 90 census enumeration wards in the Varanasi city, 9 wards were selected by simple random sampling; [B]: In the selected census enumeration wards households were selected according to probability proportion to size adopting systematic random sampling method; [C]: In the selected households one family was selected randomly using lottery method and [D]: In the selected family one study subject was selected randomly using lottery method. In case of non availability of geriatric subject in the selected family, a geriatric person was selected from the adjoining family using same procedure.

Inclusion criteria: All those in the sample consenting for the study were considered as study subjects.

Exclusion criteria: Subjects with terminal illness or having serious mental abnormality were excluded from the study. If the duration of stay in the study area was less than six months he/ she was excluded from the study.

Ethical Approval: Ethical approval was obtained from the Institute Ethical Committee, Institute of Medical Sciences, Banaras Hindu University and prior consent was taken from the participants of the study and necessary support and counseling was extended to them.

Tools and Technique of the study: The tools of the study were predesigned and pretested proforma, Household Food Insecurity Access Scale, Barthel Activity of Daily Living, Mini Mental Status Examination and Geriatric Depression Scale. Socio economic and demographic characteristics along with self reported ocular morbidities of the study subjects were assessed by interviewing them using predesigned and pretested proforma. Each subject was subjected to weight and height recording with the help of weighing machine and steel anthropometric rod following standard technique. The remaining tools were administered on them to assess selected parameters of study subjects.

Analysis of Data: Data thus obtained were entered in personal computer; appropriate tables and figure were generated using SPSS version 21.0. Chi square was applied for inferential purpose.

Results

The results of the study are given in the following sub headings:

1. **Extent of self perceived ocular morbidities:** Out of 616 subjects 81 (13.1%) stated self perceived ocular morbidities, whereas 66 (10.71%) subjects had cataract. In remaining 15(2.43%) cases visual

impairment was present. Self perceived ocular morbidities mentioned here, were cases with unmet health needs such as un-operated cataract and cases of visual impairment without any corrective measures. Of the 81 cases of self perceived ocular morbidities, 66 (81.4%) and 15 (18.52%) subjects had cataract and visual impairment, respectively (**Fig. 1**).

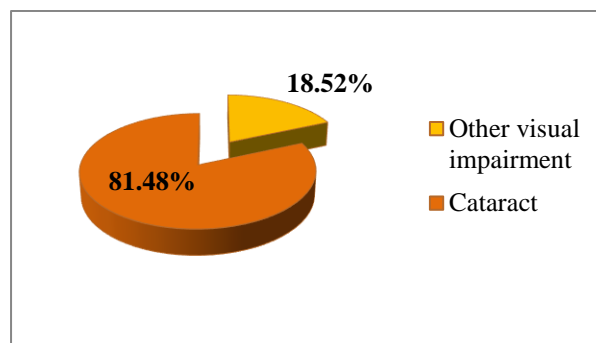


Fig. 1: Distribution of self perceived ocular morbidities in study subjects (N=81)

2. **Association of self perceived ocular morbidities with socio demographic variables:** Association of self perceived ocular morbidities with socio demographic variables is given in Table 1. As much as 7.7%, 17.9% and 39.2% subjects belonging to age group 60-69, 70-79 and ≥ 80 years, respectively, had self perceived ocular morbidities. There existed significant ($p < 0.01$) association between age of study subjects and their self perceived ocular morbidity status. There existed no significant ($p > 0.05$) association between gender, marital status, religion, caste, type and size of family of study subjects and their self perceived ocular morbidities. As much as 14.0% male and 12.5% female subjects reported self perceived ocular morbidities. Of 398 married geriatric subjects 12.8% had ocular morbidities while 14.3% widower and 13.4% widowed subjects had ocular problems. In case of 13.6% Hindu and 11.2% Muslim subjects ocular morbidities were present whereas 16.5% geriatric subjects from joint family reported ocular morbidities; corresponding values were 12.4% and 11.1% for subjects from nuclear and three generation families, respectively. Prevalence of ocular morbidities were maximum (16.2%) in subjects with family size < 3 .

Table 1: Association of self perceived ocular morbidities with Socio demographic variables

Particulars	With morbidities		Without morbidities		Total		Test of significance
	No	(%)	No	(%)	No	(%)	
Age (Years)							
60-69	30	7.7	362	92.3	392	100	$\chi^2: 69.87$ df: 2 p <0.01
70-79	31	17.9	142	82.1	173	100	
≥ 80	20	39.2	31	60.8	51	100	
Gender							
Male	39	14.0	240	86.0	279	100	$\chi^2:0.31;df:1; p:$ >0.05
Female	42	12.5	295	87.5	337	100	
Marital status							
Married	51	12.8	347	87.2	398	100	$\chi^2:0.15$ df:2 p: >0.05
Widower	13	14.3	78	85.7	91	100	
Widowed	17	13.4	110	86.6	127	100	
Religion							
Hindu	69	13.6	440	86.4	509	100	$\chi^2:0.42 df:1; p:$ >0.05
Muslim	12	11.2	95	88.8	107	100	
Caste							
SC/ST	11	11.2	87	88.8	98	100	$\chi^2:0.38$ df:2 p: >0.05
OBC	43	13.5	275	86.5	318	100	
Others	27	13.5	173	86.5	200	100	
Type of Family							
Nuclear	27	12.4	190	87.6	217	100	$\chi^2:2.70$ df:2 p: >0.05
Joint	30	16.5	152	83.5	182	100	
Three generation	24	11.1	193	88.9	217	100	
Size of Family							
< 3	13	16.2	67	83.8	80	100	$\chi^2:0.79$ df: 2 p: >0.05
3-6	28	12.4	197	87.6	225	100	
> 6	40	12.9	271	87.1	311	100	

3. **Self perceived ocular morbidities and educational status of study subjects:** There existed no significant ($p>0.05$) association between self perceived ocular morbidities and educational status of study subjects. As much as 13.2% illiterate plus just literate, 13.8% primary plus middle, 13.6% high school plus intermediate and 10.9% graduate and above subjects had perceived ocular morbidities. In comparison to highly educated (graduate and above) subjects (10.9%) the reported perceived ocular morbidities were high in subjects with low educational level (Table 2).

Table 2: Literacy status and ocular morbidities in subjects

Literacy status	With morbidities		Without morbidities		Total	
	No	(%)	No	(%)	No	(%)
Illiterate + just literate	41	13.2	270	86.8	311	100
Primary + Middle	22	13.8	138	86.2	160	100
High school + intermediate	11	13.6	70	86.4	81	100
Graduate & above	7	10.9	57	89.1	64	100
Total	81	13.1	535	86.9	616	100
Test of significance	$\chi^2:0.34; df:3; p:>0.05$					

4. **Occupational status and self perceived ocular morbidities in subjects:** Occupational status and self reported ocular morbidities of study subjects is given in Table 3. Subjects with ocular morbidities were maximum in self employed + service + retired (14.5%) followed by those engaged in domestic work (13.7%) and unemployed (11.8%) subjects. Subjects involved in skilled and unskilled work had least (8.3%) ocular morbidities ($p>0.05$).

Table 3: Occupational status and self perceived ocular morbidities in subjects

Occupation	With morbidities		Without morbidities		Total	
	No	(%)	No	(%)	No	(%)
Self employed + service + retired	25	14.5	148	85.5	173	100
Skilled + unskilled worker	4	8.3	44	91.7	48	100
Housewife	39	13.7	246	86.3	285	100
Unemployed	13	11.8	97	88.2	110	100
Total	81	13.1	535	86.9	616	100
Test of significance	$\chi^2:1.47; df:3; p:>0.05$					

5. **Association of self perceived ocular morbidities with socio economic variables in subjects:** None of the socio economic variables exerted significant ($p > 0.05$) influence on morbidity status of study subjects (Table 4). In case of 7.1% upper, 14.7% upper middle, 14.4% lower middle 13.8% upper lower and 4.9% lower SES subjects (on the basis of Kuppaswamy classification) perceived ocular morbidities were present. Subjects were also categorized in social class I, II, III, IV, and V on the basis of modified B G Prasad classification. It was observed that 9.7%, 15.0%, 12.2%, 18.4% and 8.6%, subjects belonging to class I, II, III, IV and V, respectively, perceived ocular morbidities ($p > 0.05$). Subjects were categorized as per Rangrajan Committee; 11.1% and 14.4% subjects having per capita monthly income Rs < 1410 and Rs \geq 1410 had ocular morbidities. As much as 13.8%, 9.9% and 21.4%, subjects having yellow, white and Red/Pink card, respectively, reported ocular morbidities. Morbidity status of subjects having per capita per day income < 1 dollar and \geq 1 dollar had been almost similar. As much as 13.7 % subjects having income < 1.25 dollar per capita per day and 12.4% subjects with \geq 1.25 dollar per capita per day perceived ocular morbidities.

Table 4: Association of self perceived ocular morbidities with socio economic variables in subjects

Particulars	With morbidities		Without morbidities		Total		Test of significance
	No	(%)	No	(%)	No	(%)	
Socio Economic Class							
Upper class	3	7.1	39	92.9	42	100	$\chi^2:4.43$ df: 4 p:>0.05
Upper middle	23	14.7	133	85.3	156	100	
Lower middle	23	14.4	137	85.6	160	100	
Upper lower	30	13.8	187	86.2	217	100	
Lower class	2	4.9	39	95.1	41	100	
Social Class							
I	9	9.7	84	90.3	93	100	$\chi^2:7.46$ df: 4 p: >0.05
II	18	15.0	102	85.0	120	100	
III	15	12.2	108	87.8	123	100	
IV	28	18.4	124	81.	152	100	
V	11	8.6	117	91.4	128	100	
Rangrajan Committee							
< 1410	26	11.1	208	88.9	234	100	$\chi^2:1.37;df:1$ p: >0.05
\geq 1410	55	14.4	327	85.6	382	100	
Type of Card							
Yellow	71	13.8	442	86.2	513	100	$\chi^2: 4.45$ df: 3 p:>0.05
White	7	9.9	64	90.1	71	100	
Red/Pink	3	21.4	11	78.6	14	100	
No card	0	0.0	18	100	18	100	
1 dollar per day							
< 1dollar	42	13.4	272	86.6	314	100	$\chi^2:.002$ df:1 p: >0.05
\geq 1 dollar	39	12.9	263	87.1	302	100	
1.25 dollar per day							
< 1.25dollar	49	13.7	308	86.3	357	100	$\chi^2:0.25;df:1;$ p:>0.05
\geq 1.25 dollar	32	12.4	227	87.6	259	100	

6. **Association of self perceived ocular morbidities with selected parameters of study subjects:** There existed no significant association between household food security and ocular morbidities in study subjects (Table 5). As much as 46.8% subjects with ocular morbidities had Chronic Energy Deficiency (CED) whereas this figure was 44.5% in subjects without morbidities. Out of 81 subjects with perceived ocular morbidities 60 (74.1%) subjects had Activity of Daily Living (ADL) affection whereas in 535 subjects without ocular morbidity ADL affection was to the extent of 50.5%. There existed significant ($p < 0.01$) association between ocular morbidities and ADL status. Cognitive impairment was 29.6% and 21.3% in subjects with and without morbidities, respectively ($p > 0.05$). As much as 49.4% subjects with ocular morbidities and 26.7% subjects without ocular morbidities had depression ($p < 0.01$). Self perceived ocular morbidities status has been similar ($p > 0.05$) in different financial categories of subjects (viz., dependent, semi-dependent and independent).

Table 5: Association of self perceived ocular morbidities with selected parameters of study subjects

Particulars	With morbidities		Without morbidities		Total		Test of significance
	No	(%)	No	(%)	No	(%)	
Household food security							
Food secure	23	28.4	173	32.3	196	31.8	$\chi^2: 3.08$ df: 3 p: >0.05
Mild food security	28	34.6	151	28.2	179	29.1	
Moderate food security	21	25.9	121	22.6	142	23.1	
Severe food security	9	11.1	90	16.8	99	16.1	
Nutritional Status							
CED	36	46.8	238	44.5	274	44.8	$\chi^2: 0.66$ df: 2 p: >0.05
Normal	31	40.3	208	38.9	239	39.1	
Over weight/Obese	10	13.0	89	16.6	99	16.2	
ADL Status							
No ADL involvement	21	25.9	265	49.5	286	46.4	$\chi^2: 17.92$ df: 2 p: <0.01
Assisted ADL	41	50.6	206	38.5	247	40.1	
ADL involvement with maximum severity	19	23.5	64	12.0	83	13.5	
Cognitive impairment							
With cognitive impairment	24	29.6	114	21.3	138	22.4	$\chi^2: 2.80$ df: 1 p: >0.05
Without cognitive impairment	57	70.4	421	78.7	478	77.6	
Depression							
Normal	41	50.6	392	73.3	433	70.3	$\chi^2: 18.57$ df: 2 p: <0.01
Mild	24	29.6	97	18.1	121	19.6	
Moderate + Severe	16	19.8	46	8.6	62	10.1	

Discussion

There exists considerable variation in the extent of ocular morbidities in different settings. As far as cataract is concerned the finding of the present study has been similar to the figure (one out of ten) reported in a study conducted in a old age home of Hyderabad.⁽⁷⁾ In contrast to this higher figures were reported in a study conducted in Pune (four out of ten)⁽⁸⁾ and in Chandigarh, India (nearly one out of five).⁽⁹⁾ Even in United Kingdom where established ophthalmic services are available, unmet need for eye care exists. A study conducted in London on subjects > 65 years two out of ten individual without known ophthalmic diagnosis had self reported severe eye problem.⁽⁴⁾ In the present observation this figure has been lower (one out of eight). This difference could be attributed to the non inclusion of operated cataract cases with restored vision

in the prevalence estimate. Some of the cases may not have reported ocular morbidities on the consideration that visual impairment happens in the old age. These factors may also be responsible for very low prevalence of visual impairment in the present study. In contrast to findings of the present study higher prevalence of visual impairment (eight out of ten) prevailed in a study conducted in Pune, India.⁽⁵⁾

Of the several demographic variables only age exerted significant influence on occurrence of visual morbidities. With advancing age higher prevalence of ocular morbidities is understandable as commonest ocular morbidity in the study subjects was cataract. Higher prevalence of cataract with increasing age and highest self reported lifetime prevalence in persons 75 years and older has been reported in National Health Interview survey.⁽¹⁰⁾

The significant association between ocular morbidities with ADL involvement and depression in study subjects reflect that once vision of the subjects are affected due to cataract or any other condition their Activity of Daily Living is likely to be jeopardized and presence of ocular morbidities may directly as well as indirectly (through ADL affection) may lead to depression. However, cause and effect relationship cannot be established by this study as it is cross sectional in nature.

Although scientific evidences establish linkages between physical morbidities with ADL involvement⁽¹¹⁻¹²⁾ as well as depression,^(4,13-19) there is paucity of information signifying significant association, as observed in this study, of perceived ocular morbidities with ADL affection and depression in geriatric subjects.

Conclusion

Non consideration of ill health and having perception of ageing factors widely influences the report of any morbidity by geriatric subjects and this is also true in case of ocular morbidities as well. Geriatric subjects do not consider ocular problems as serious morbidity rather taking it as a natural phenomenon of ageing often leads to underreporting of the problem. Therefore wide variations exists in the extent of reported morbidities. In this study (one out of eight) geriatric subjects had self perceived ocular morbidities. Cataract was the most common (eight out of ten) ocular morbidity in geriatric subjects. Health promotion can reduce the unmet need of eye diseases and will ultimately limit avoidable causes of blindness and low vision.

References

1. Sekhon H, Minhas S. A study of activities of daily living of elderly in an urban community of north India. *Sch J App Med Sci*, 2014;2:1450-1454.
2. World Health Organization (2012). Global data on visual impairments 2010; Geneva: WHO/NMH/PBD.1201.
3. Ruiz-Moreno, JM, Coco, RM, Garcia-Arumi, J, Xu, X, and Zlateva, G. Burden of illness of bilateral neovascular age-related macular degeneration in Spain, 7th European-Society-of-Retina-Specialists Congress (*EURETINA*), (Monte Carlo: Librapharm/Informa Healthcare), 2007;2103–2111.
4. I liffe S, Kharicha K, Harari D, Swift C, Gillman G, Stuck A E. Health risk appraisal in older people: 6 factors associated with self reported poor vision and uptake of eye tests in older people. *BMC Family Practice* 2013;130:1-12.
5. Thakur RP, Banerjee A, Nikumb VB. Health problems among elderly: A cross sectional study. *Ann Med Health Sci Res*. 2013;3(1):19-25.
6. Klein R, Klein BEK. The prevalence of age related eye diseases and visual impairment in ageing: Current estimate. *IOVS*. 2013;54(14):5-13.
7. Rao SS., Chennamsetty SK, Kuna SR. A cross sectional study of Cognitive impairment and morbidity profile of inmates of old age home. *Sch J App Med Sci* 2014;2(4E):1506-1513.
8. Seby K, Chaudhary S, Chakraborty R. Prevalence of psychiatric and physical morbidity in an urban geriatric population. *Indian Journal of Psychiatry* 2011;53(2):121-127.
9. Bhatia SPS, Swami HM, Thakur JS, Bhatia V. A study of Health problems and loneliness among the elderly in Chandigarh. *Indian Journal of Community Medicine*.2007;32(4):255-258.
10. Ryskulova A, Turcyn K, Makuc DM, Cotch MF, Klein RJ, Janiszewski R. Self reported age relate eye diseases and visual impairment in United States: results of the 2002 National Health Interview Survey. *AM J Public Health* 2008;98:454-461.
11. Srinivasan K, Vaz M, Thomas T. Prevalence of health related disability among community dwelling urban elderly from middle socioeconomic strata in Bangaluru, India. *Indian J Med Res* 2010;131:515-21.
12. Gureje O, Ogunniyi A, Kola L, Afolabi E. Functional disability among elderly Nigerians: results from the Ibadan study of ageing. *J Am Geriatr Soc*. 2006;54(11):1784-1789.
13. Patil KS, Kulkarni MV, Dharmadhikari PP. Depression among elderly people in an urban slum of Central India. *Panacea Journal of medical sciences*. 2016;6(3):128-133.
14. Sharma KD, Kadeangadi DM, Mallapur MDM. Community based cross sectional study to determine depression among elderly persons residing in urban area of north Karnataka. *International journal of medical sciences and public health*.2016;5(11):1-5.
15. Sanjay TV, Jahnavi R, Gangaboraiah B, Lakshmi P, Jayanthi S. Prevalence and factors influencing depression among elderly living in the urban poor locality of Bengaluru city. *International journal of health and allied sciences*. 2014;3(2):105-109.
16. Anand A. Understanding depression among older adults in six low middle income countries using WHO-SAGE survey. *Behavioral health* 2014;1(2):1-11.
17. Saika AM, Mahanta N. A Study of nutritional status of elderly in terms of body mass index in urban slums of Guwahati City. *Journal of the Indian Academy of Geriatrics*, 2013;9:11-14.
18. Manjubhashini S, Krishnababu G, Krishneveni A. Epidemiological study of depression among population above 60 years in Visakhapatnam, India. *International journal of medical sciences and public health*, 2013;2:659-702.
19. Singh AK, Singh TB, Gupta S, Yadav JS. Association of depression and gender with mortality in old age. *Br J Psychiatry*. 2011;177:336-42.