

ORIGINAL ARTICLE

Prevalence of Ocular Morbidities and its Socio-demographic correlates in an urban slum of western Uttar Pradesh, IndiaSumeet Chadha¹, Shailendra Kumar², Jai Veer Singh³, Shruti Sehgal⁴, Vijay Baijal⁵, Santosh Kumar Raghav⁶¹Post Graduate Resident, ²Professor, ^{3,5}Professor & Head, ⁴Assistant Professor, ⁶Lecturer-cum-Statistician, ^{1,2,3,4,6}Department of Community Medicine, ⁵Department of Ophthalmology, ^{1,2,3,4,5,6}Muzaffarnagar Medical College, Muzaffarnagar, Uttar Pradesh

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Abstract

Background: Ocular Morbidities with its economic and social consequences, represents an important public health problem in various parts of the world. **Aims & Objective:** 1. To find out the prevalence of Ocular Morbidities in relation to socio-demographic correlates in an Urban Slum of District Muzaffarnagar of Uttar Pradesh. **Material & Methods:** This community based cross – sectional study was carried out among 1603 individuals from 341 families selected by simple random technique in field practice area of Urban Health Training Centre, Makkinagar, Khalapar, Muzaffarnagar. The present study focuses on ocular examinations and diagnosis of ocular morbid conditions which were prevalent in that selected area. The information was collected on a pre-designed and pretested questionnaire. **Results:** The prevalence of ocular morbidities in the study group was found to be 50.0% with significantly much higher in the age group 60 years and above. The major cause ocular morbidities were refractive errors (84.8%), followed by cataract (19.8%). The prevalence was significantly more in widows/widower (73.7%) than other groups of marital status (48.5%); upper socio – economic status (74.4%) than other groups of socio-economic status (48.7%), joint family (56.3%) than nuclear family (40.7%) and Muslim community (52.1%) than Hindu community (42.6). **Conclusion:** In this present study the prevalence of ocular morbidities was found to be 50.0% in the population with a marginal higher prevalence in females (52.4%) as compared to the males (47.8%). The most common cause was refractive errors followed by cataract. The ocular morbidities were significantly associated with age, marital status and socio-economic status. There was no significant correlation with educational status and occupations of the patients.

Keywords

Ocular Morbidity; Socio-Demographic Correlates; Refractive Error; Cataract; Urban Slum

Introduction

Ocular morbid conditions are responsible for partial or total blindness. Blindness due to ocular morbidities with its economic and social consequences represents a serious public health problem in different region of the world. (1) In 2010,

an estimated (2) 285 million persons were having ocular morbidities worldwide of whom about 39 million persons were blind and 246 million were having low vision. About 80% of all ocular morbidities can be treated or cured and also prevented. It is expected by 2020 the number of persons with partial visual sight to get doubled. (3)

More than 90% of the total world's population live in developing countries with visual impairment. As far as South-East Asia Region is concerned over 48 thousand per million population with ocular morbidities live in this particular region excluding India according to the very recent available estimate released by World Health Organization in 2010. (4) In India alone 53 thousand per million population are living with visual impairment. The estimate before 2001 was 12.1 million persons were suffering from blindness in this region. (5,6)

Aims & Objective

1. To study the prevalence of ocular morbidities in different age groups in an Urban Slum of Muzaffarnagar.
2. To study the distribution patterns of ocular morbidities among different socio-demographic conditions and factors affecting it in an Urban Slum of Muzaffarnagar.

Material & Methods

The present cross sectional study was planned to carry out a baseline survey to assess the prevalence of ocular morbidities in different age groups in an urban slum of Muzaffarnagar City, to study its distribution in various socio-demographic conditions and factors affecting it.

Study Population and Sampling Techniques: Sample Size was determined as follows:

1. Prevalence (p) of ocular morbidities in the general population taken 20% because the health conditions has improved over the years and to get the real picture we have assumed less prevalence {20%} than the actual.
2. Confidence Limits = 95%
3. Relative Precision (L)= 10%
4. Formula for Sample size (n)= $Z^2 pq/L^2$
Where $Z=2$, $q=(1-p) = 100-20=80\%$ and $L=$ permissible error in the estimate of "p"= 10% of 20= 2
5. Hence Sample size = $2 \times 2 \times 20 \times 80 / 2 \times 2 = 1600$

Taking the study unit as the family (since individuals of all age groups were to be studied) and the average family size is about five, (7) the number of families to be studied was calculated to be $1600/5=$ minimum 320.

The urban slum of Muzaffarnagar City is an urban field practice area of Department of Community Medicine, Muzaffarnagar Medical College, Muzaffarnagar. The slum has 12,180 families,

registered at Urban Health and Training Centre and distributed over 11 colonies, namely – Jamia Nagar, Makki Nagar, Ram Puram, Yogindra Puri, Amba Vihar, Rainbow Vihar, Rehmat Nagar, Khalapar, Kidwai Nagar, Krishna Puri and Prem Puri. So, to cover a minimum sample size of 320 families, 31 families from each of these eleven colonies were selected by simple random sampling techniques using simple random number tables.

Period of Study: This study was done in a period of 12 months starting from March, 2014 to February, 2015.

Methodology: A house to house survey was done for 31 randomly selected families in each colony of the area of Urban Slum.

Consent: Consent for information and examination was sought from head of the family in all cases. In case of children below 14 years' information was obtained from parents.

Modified Kuppaswamy classification was used for socioeconomic classification. Each member of the family was interviewed using oral questionnaire method. The information from each family was collected on a pre-designed and pre-tested schedule covering the socio-demographic characteristics and any complaint pertaining to eye problems in any of the family members. Each of the family members was examined for visual acuity [Snellen chart for children more than 6 years], for color blindness [Ishihara chart for children more than 6 years], for Glaucoma [Intra – Ocular Pressure (IOP) was measured digitally and was a subjective finding. If an individual had a high IOP in any of the eyes along with other symptoms of pain and redness in the eye and photophobia, he was termed a probable case of glaucoma]. The torch examination was done for any sign of ocular morbidities in the anterior segment of the eye. The suspected cases were then confirmed by examination by an expert of the Department of Ophthalmology, Muzaffarnagar Medical College, and Muzaffarnagar.

Ethical Clearance: Approval from Institutional Ethics Committee was obtained.

Data Processing and Analysis: The data thus collected was first coded and then transferred to a master chart, analyzed and statistically evaluated by Chi-Square test.

Results

Of the total 1,603 individuals were examined during study, 802 (50.0%) suffered ocular morbidities. A

total of 966 ocular morbidities were present in these individuals (Multiple Responses). The major cause of morbidities was refractive errors (84.8%), followed by cataract (19.8%), conjunctivitis (7.2%), blepharitis (2.2%), pterygium (2.0%), squint (1.7%), dacrocystitis, trachoma and entropion comprises 0.2% each. ([Table 1](#))

As seen in [Table 2](#) the prevalence of ocular morbidities in the age group 0-4 year was 2.9%, then it increases significantly ($p < 0.01$) with advancing age to 99.6% in the age group of ≥ 60 years. As far as sex distribution of ocular morbidities, 47.8% males and 52.4% females had ocular morbidities, but the prevalence of morbidities in relation to different sexes was not found to be significant statistically ($p > 0.05$).

The prevalence of ocular morbidities according to marital status. The result was significantly more in widow/widower group (73.7%) and minimum (24.4%) in unmarried. ([Table 3](#))

[Table 3](#) shows the prevalence of ocular morbidities was maximum (74.4%) in upper socio-economic group as compared to other groups and the result was statistically significant.

In the present study there was no significant ($p > 0.05$) difference in the prevalence of ocular morbidities in relation to the educational status ([Table 3](#)).

Similarly, there was no significant ($p > 0.05$) relation between the ocular morbidities and the occupation of the individuals as revealed in [Table 3](#).

Ocular morbidities were more (56.3%) in joint families as compared to nuclear families (40.7%). This difference in the prevalence of ocular morbidities in relation to family type was found to be statistically significant. ([Table 3](#))

The prevalence of ocular morbidities was found significantly higher among Muslims (52.1%) in comparison to Hindus (42.6%). ([Table 3](#))

Discussion

In this study, the prevalence of ocular morbidities was found to be 50.0%, which is comparable to 47.28% reported by Gulati *et al* (8) and by Agrawal *et al* (9). In the present study, the prevalence of ocular morbidities was found to be significantly associated with age being minimum (13.1%) in 0-14 years' age group and maximum (99.6%) in ≥ 60 years old. Similar patterns of results were observed by Titiyal *et al* (10), Asole *et al* (11).

Ocular morbidities were found to be higher in females (52.4%) than in males (47.8%), but the

relation was not statistically significant in both genders. Similar marginal difference was observed by Sehgal *et al* (12) in Delhi. However, Khurana *et al* (13) reported significantly higher prevalence of ocular morbidities in females (73.5%) as compared to males (49.4%) in Haryana. Refractive errors were the major causes of morbidities in all the ages above 5 years of age. Similar results were obtained by Agrawal *et al* (9).

In this study widows/widower had the maximum prevalence of ocular morbidities (73.7%) while unmarried people had the least prevalence (24.4%) and this association was significant ($p < 0.1$). Similar results were obtained by Agrawal *et al* (9).

There was significant association of ocular morbidities with socio-economic status being highest (74.4%) in the upper socio-economic group (class-1). However, Asole *et al* (11) observed it with lower socio-economic status (class-V).

In this study there was no association in the prevalence of ocular morbidities with literacy status and occupation of the individuals. Similar results were obtained by Kumar *et al* (14). However, Gulati *et al* (8) observed significant morbidities in the clerk/shop owner/farm owner group and professional.

Ocular morbidities were found significantly more in joint families and Muslims as compared to nuclear families and Hindu community.

Conclusion

In this present study the prevalence of ocular morbidities was found to be 50.0% in the population with a marginal higher prevalence in females (52.4%) as compared to the males (47.8%). The most common cause was refractive errors followed by cataract. The ocular morbidities were significantly associated with age, marital status and socio-economic status. There was no significant correlation with educational status and occupations of the patients.

Recommendation

As both the common causes of ocular morbidities, the Refractive Errors and Cataract are treatable, the emphasis should be on earlier recognition and treatment of these problems. Visual impairment remains a public health problem in Uttar Pradesh most of which can be simply addressed with relatively straight forward interventions like cataract surgery and school health programme and provision of spectacles.

Authors Contribution

All the authors had made substantial contributions to conception, design, data collection, analysis and interpretation of data; drafting the article, revising it critically for important intellectual content; and final approval of the version to be published.

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Tables

TABLE 1 CAUSE WISE DISTRIBUTION OF OCULAR MORBIDITIES [1603] (MULTIPLE RESPONSE)

Cause of Morbidities	No. of Individuals	Percentage
Refractive Error	680	84.8
Cataract	159	19.8
Conjunctivitis	58	7.2
Blepharitis	18	2.2
Pterygium	16	2.0
Squint	14	1.7
Stye	5	0.6
Glaucoma	4	0.5
Corneal Opacity	3	0.4
Colour Blindness	3	0.4
Dacryocystitis	2	0.2
Trachoma	2	0.2
Entropion	2	0.2
Individuals having ocular morbidity	802	

TABLE 2 AGE AND SEX WISE DISTRIBUTION OCULAR MORBIDITIES

Age group	Males		Females		Total		
	Morbidity	Population	Morbidity	Population	Morbidity	Population	percent
0-4a	3(11.9)	72	1(1.6)	64	4	136	2.9
5-14b	22(15.8)	139	26(21.3)	122	48	261	18.4
15-59	263(51.5)	511	236(53.3)	443	499	954	52.3
≥ 60	111(99.1)	112	140(100.0)	140	251	252	99.6
Total	399 (47.8)	834	403(52.4)	769	802	1603	50.0

For age $\chi^2=72.033$ at $df=2$ The P-Value is <0.00001 .

For sex $\chi^2=3.33$ at $df=1$. The P-Value is 0.06928.

For the purpose of calculation, a and b have been merged.

TABLE 3 PREVALENCE OF OCULAR MORBIDITIES ACCORDING TO SOCIO-DEMOGRAPHIC FACTORS

Socio-demographic factor	Ocular Morbidities No. (%)	Population (1603)	Test
Marital Status {1603}			
Married	541(71.4)	758	x ² =353.41 at df=3. The P-Value is < 0.00001.
Unmarried	178(24.4)	730	
Widow/Widower	73(73.3)	99	
Separated/Divorced	10(62.5)	16	
Socio economic Status {1603}			
Upper	61(74.4)	82	x ² =30.86 at df=4. The P-Value is < 0.00001.
Upper Middle	148(56.5)	262	
Lower Middle	190(47.6)	399	
Upper Lower	223(44.5)	501	
Lower	180(50.1)	359	
Education* {total Sample=1391}			
Illiterate	102(61.8)	165	x ² =11.15 at df=6, The P-Value is 0.08385.
Primary	144(53.3)	270	
Middle	132(57.9)	228	
High School	149(63.4)	235	
Intermediate	130(53.9)	241	
Graduate	92(55.4)	166	
PG/Professional	41(47.7)	86	
Occupation# {Total sample= 1206}			
Unemployed	311(63.3)	491	x ² =9.22 at df=6. The P-Value is 0.161578.
Non skilled Worker	114(57.9)	197	
Semi-skilled Worker	73(63.5)	115	
Skilled Worker	118(60.8)	194	
Clerk/Shop Owner/Farm owner	73(62.9)	116	
Semi Professional	42(64.4)	65	
Professional	19(67.9)	28	
Family Type {1603}			
Nuclear	262(40.7)	643	x ² = 37.42, df=1. The P-Value is 0.00001.
Joint	540(56.3)	960	
Religion {1603}			
Hindu	150(42.6)	352	x ² = 9.92, df=1. The P-Value is 0.001635.
Muslim	652(52.1)	1251	
*The number of children below 7 years was 212 and hence they were not considered for this table. Out of them 12 had ocular morbidities.			
#The number of children below the age group of 14 years was 397 and hence they were not considered for this table. Out of them, 52 had ocular morbidities.			