

Harsukh Educational Charitable Society

International Journal of Community Health and Medical Research

Journal home page: www.ijchmr.com

doi: 10.21276/ijchmr

ISSN E: 2457-0117 ISSN P: 2581-5040

Index Copernicus ICV 2018=62.61

ORIGINAL ARTICLE

An Epidemiological Study of Some Environmental Factors and Awareness Levels for Common Ocular Morbidities in a Population

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ABSTRACT:

Background: Human beings have been bestowed with several gifts of nature, the best among them is vision. Globally, around 285 million people suffer from any form of ocular morbidities, of them 90% live in developing countries and 85% of them can be prevented, treated or cured. **Aims and Objective:** To study some environmental factors as determinants and to assess the awareness level of community for ocular morbidities. **Material and Methods:** The present community based cross-sectional study was carried out in an urban slum area of Muzaffarnagar City. The study was carried out in 341 families with 1603 study subjects selected by simple random technique. **Results:** Ocular morbidities were quite prevalent among the study subjects (50.0%). Most important cause of morbidities was refractive errors (84.8%) followed by cataract (19.8%). There was a significant association of ocular morbidities in relation to location of kitchen, environmental status, the infectious causes of ocular morbidities with personal hygiene of an individual and prevalence of ocular morbidities with awareness of eye health care facilities. The relationship of ocular morbidities with dietary awareness and eye care service seeking behavior was not significantly related. **Conclusion:** In the present study the prevalence of ocular morbidities was found to be 50.0%. The most common cause was refractive error followed by cataract. The ocular morbidities were significantly associated with location of kitchen, environmental status, personal hygiene and with awareness of eye health care facilities. There was no significant correlation with dietary awareness and eye care service seeking behavior.

Keywords: Ocular morbidities, refractive errors, health care facilities and personal hygiene.

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This article may be cited as: Chadha S, Chadha SC An Epidemiological Study of Some Environmental Factors and Awareness Levels for Common Ocular Morbidities in a Population. HECS Int J Comm Health Med Res 2020; 6(2)43-53.

INTRODUCTION

An ocular morbid condition is defined as “a condition in subjects, recognized or suspected, ocular or vision abnormality which requires treatment or surveillance.¹ As estimated 272.4 million people are having low vision globally and among them 42.7 million are blind.² 90% of the visually impaired people live in developing countries. . The common ocular morbidities worldwide include in order of frequency are: Cataract, Uncorrected refractive errors, Glaucoma, Age related macular degeneration. Other major causes include Corneal opacities,

Diabetic retinopathy, Trachoma, Vitamin A deficiency, ocular trauma and ocular malignancies.³ About 65% of all people who are visually impaired are aged 50 years and older, while this age group comprises about 20% of world’s population. With an increasing elderly population in many countries, more people will be at age-related visual impairment.⁴ As far as South-East Asian Region is concerned over 48 thousand per million population with visual impairment live in Region outside India according to the most recent estimates released by World Health Organization in 2010.⁵

In India, the prevalence of blindness according to rapid national survey on blindness 2006-2007 was 1.0 percent. In the current survey (2015-2018) the projected prevalence rate is 0.45 percent.⁶The principal cause of blindness in India today is Cataract, responsible for 62.6 percent of all cases. Uncorrected refractive error are responsible for about 19.7 percent of blindness; overall prevalence of Glaucoma was about 5.8 percent, posterior segment pathology accounts for about 4.7 percent cases.⁷

The eye morbidity is multifactorial: infection, poor nutrition, socio-economic and certain cultural factors are important in its causation. Poor hygiene and sanitation are important predisposing factors and climatic condition can further aggravate the eye problems.^{8,9} Therefore there is a need to control the above mentioned factors for checking ocular diseases in early stages. Necessary treatment if given in early stages, many times, prevents permanent visual disability:

In a study done on urban population of Hyderabad in southern India, to assess the utilization of eyecare services; it was found that 59% of the visually impaired subjects did not seek any treatment.¹⁰

In South India on subjects from three districts, it was found that 35.5% people gave a history of previous eye examinations, primarily from a general hospital. Increasing age and education were associated with increased utilization of eye care services. Among the 3323 people who had never sought eye care, 27.4% had felt the need to have an eye examination but did not do so. Only one third of individuals with vision impairment, cataracts, refractive errors, and glaucoma had previously utilized services.¹¹ In a 24 focus group discussions for parents and grandparents as part of a population-based survey of ocular morbidity to determine awareness and perception of eye diseases in children among parents and guardians of children in south Indian population, the discussions brought out that eye doctors were approached last for eye care, after traditional healers and general physicians.¹²

In order to draw conclusions regarding some important contributing environmental factors in the etiology of these diseases and awareness levels about them in the population, the present study was carried out.

AIMS AND OBJECTIVES:

This study has been designed with the following aims and objectives:-

- To study some environmental factors as determinants of ocular morbidities and
- To assess the awareness level of community for ocular morbidities

MATERIAL AND METHODS:

The present cross sectional study was planned to know some environmental factors as determinants of ocular morbidities and to assess the awareness level as well as the utilization of eye health care services of the community in an urban slum of Muzaffarnagar City. The sample size was calculated to be 1600, keeping in view the estimated prevalence of ocular morbidities in the

general population as 20%, Confidence Limits as 95%, and Relative Precision (L) as 10%.

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,¹³ the number of families to be studied was calculated to be minimum 320.

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. Approval from Institutional Ethics Committee was obtained. A house to house survey was done for 31 randomly selected families in each colony of the area. 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. 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 proforma. Each of the family members was examined for visual acuity and then a 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, Muzaffarnagar.

Data Processing and Analysis:

The data thus collected was first coded and then transferred to a master chart from which simple and correlation tables were prepared, analysed and statistically evaluated.

Limitations of the Study:

1. Only the anterior segment eye problems were considered as these could be easily recognized under torch light examination.
2. Examination by sophisticated instruments, even of the anterior segment, could not be done due to the patients being reluctant to visit the medical college for these examinations.

Definitions of the Terms used in the Study:

Case: Any person having any symptom or sign of ocular morbidities was termed a case
Norman Vision¹⁴ Individuals more than 6 years were tested for vision.

An individual was said to possess normal distant vision if-

-Could read till 6/6 in the Snellen's chart.

Low vision¹⁴

A person was said to have low vision if-
His distant vision was <6/18 on the Snellen's chart in daylight in the better eye or, Persistent impairment of visual function after treatment and/or refractive correction

Blindness¹⁴

A person was said to be blind if his vision in the better eye was <3/60 in the Snellen chart or he could not count fingers from a distance of 3 metres in daylight from his better eye.

Glaucoma¹⁵

Intra ocular pressure was measured digitally and was a subjective finding. If an individual had a high intraocular pressure in any of the eyes along with other symptoms of pain and redness in the eye and photophobia, he was termed a suspect case of glaucoma.

Cataract¹⁵

Opacity in the lens along with diminished vision was called Cataract.

Corneal Opacity¹⁵

Any opacity on the cornea was termed as Corneal Opacity.

Corneal Ulcer¹⁵

Any painful abrasion or ulceration on the cornea with photophobia constituted a case of Corneal Ulcer.

Environmental Status:

Housing and Environmental Status by Garget al¹⁶ was used in the study and findings categorized as-

Poor	score 0-9
Satisfactory	score 10-24
Good	≥25

Dietary Habits:

Dietary habits were classified arbitrary to
 -Vegetarian – a person who never ate animal products other than dairy milk products.
 -Non-vegetarian- a person who ate animal products other than dairy milk products at least once in a while.

OBSERVATIONS:

The present study was conducted on 341 families distributed over 11 colonies in the study area. From each of these colonies, 31 families were studied. Of the total 1720 individuals from these 341 families, 1603 individuals could be examined for ocular morbidities.

AGE AND SEX DISTRIBUTION:

Age and sex distribution of the population covered in this study have been shown in Table 1. It is seen that maximum number of individuals (57.7%) were in the age group of 15-59 years and minimum (2.3%) in the age group of 0-1 year. The same was the case in male and female distribution.

PREVALENCE OF OCULAR MORBIDITIES:

Out of the total 1720 individuals, 1603 could be examined for the purpose of this study. Table 2 depicts the prevalence of ocular

morbidity in the study population. As can be seen, 802 (50.0%) of individuals had one or the other eye problem and the remaining 801 (50.0%) had no ocular morbidities. The maximum prevalence of ocular morbidities (99.6%) was present in the people aged ≥60 years and minimum morbidities (2.0%) was seen in the age group of 2-4 years. 5.9% of individuals in the age group 0-1 year, 18.4% in the age group 5-14 years and 52.3% in the age group of 15-59 years had ocular morbidities.

ENVIRONMENTAL FACTORS IN THE POPULATION AND OCULAR MORBIDITIES:

LOCATION OF KITCHEN AND OCULAR MORBIDITIES:

As shown in Table 3, maximum number of people had separate kitchen (61.5%), while people having kitchen in verandah were 28.2% and kitchen in living room were the least i.e., 10.3%.

The ocular morbidities were maximum (55.1%) among individuals having kitchen in verandah, followed by those having kitchen in living room (50.9%) and in 47.6% in those having separate kitchen. This difference in the prevalence of ocular morbidities in relation to location of kitchen was found to be statistically significant (p<0.05).

LOCATION OF KITCHEN AND CAUSES OF OCULAR MORBIDITIES:

Table 4 shows the relationship between the location of kitchen and the different causes of ocular morbidities. Cataract was maximum (17.0%) in individuals with kitchen in living room and minimum (7.8%) in individuals with separate kitchen. Refractive errors were maximum (44.6%) in people with separate kitchen and minimum (31.5%) when the kitchen was in living room. Infective causes were maximum when kitchen was in living room (24.2%) and minimum with separate kitchen (1.8%). Pterygium was more (5.5%) when kitchen was in living room than with a separate kitchen (0.1%). The difference in the prevalence of different ocular morbidities with location of kitchen was found to be statistically significant (p<0.01).

NATURAL LIGHT IN LIVING ROOM AND OCULAR MORBIDITIES:

Table 5 shows that 40.0% individuals had adequate natural light in their living room as compared to 60.0% people with an inadequate natural light in their living rooms. The prevalence of ocular morbidities was 50.6% among people with inadequate natural light in their living rooms as compared to 49.2% in people having adequate natural light in their living room. However, this difference in prevalence of ocular morbidities in relation to natural light in the living room was not found to be statistically significant (p>0.05).

ENVIRONMENTAL STATUS AND OCULAR MORBIDITIES:

Table 6 shows that the environmental status was satisfactory in 48.3% of the population studied, followed by good in 33.3% and the least by poor (18.4%). The prevalence of ocular morbidities with good environmental status was 62.9% followed by satisfactory (47.0%) and 34.6% with poor environmental status. This

difference in prevalence of ocular morbidities in relation to environmental status was found to be statistically significant ($p < 0.01$).

PERSONAL HYGIENE AND INFECTIOUS CAUSES OF OCULAR MORBIDITIES:

Table 7 shows that infective causes were more common (8.2%) in individuals with poor personal hygiene, followed by people with good personal hygiene (4.3%) as can be seen in the above table. This difference in the prevalence of infective causes of ocular morbidities in relation to personal hygiene was found to be statistically significant ($p < 0.01$).

DIETARY AWARENESS AND OCULAR MORBIDITIES:

Table 8 shows that 33.7% of people had some dietary awareness regarding ocular morbidities while the rest, 66.3% were not aware of the dietary benefits. People who were aware of the importance of diet for prevention of ocular morbidities had a morbidities prevalence of 47.1% as compared to people who were not aware (51.5%). However, this difference in the prevalence of ocular morbidities and the status of dietary awareness was not found to be statistically significant ($p > 0.05$).

AWARENESS FOR EYE HEALTH CARE FACILITIES AND OCULAR MORBIDITIES:

Table 9 shows that 46.2% of the people were aware of eye health care facilities in their area and 53.8% were not aware of it. Out of the people who were aware of the eye health care facilities, 54.5% had eye problems as compared to those who were not aware of it (46.2%). There was a significant ($p < 0.01$) difference between the prevalence of ocular morbidities in relation to the awareness regarding eye health care facilities in the individuals as can be seen in the table above.

EYE CARE SERVICE SEEKING BEHAVIOR AND OCULAR MORBIDITIES:

Table 10 shows that of the people who sought eye care services, 51.6% had ocular morbidities as compared to people who did not seek eye care services (48.6%). However, this relationship between ocular morbidities and eye care seeking behavior was not statistically significant as can be seen in the table ($p > 0.05$).

AWARENESS REGARDING FIRST EYE CHECK UP FOR CHILDREN:

Table 11 shows that only 6.1% people were aware that they should take their children for a routine check up at approximately 7 years of age while the rest (93.9%) were not aware of it.

Table 1. Age and Sex Distribution of Study Population:

Age	Males		Females		Total	
	Number	Percent	Number	Percent	Number	Percent
0-1 Year	23	2.6	16	1.9	39	2.3
2-4 Years	60	6.7	58	7.1	118	6.9
5-14 Years	152	16.9	149	18.1	301	17.5
15-59 Years	541	60.2	452	55.1	993	57.7
≥ 60 Years	123	13.7	146	17.8	269	15.6
Total	899	100.0	821	100.0	1720	100.0

Table 2 : Prevalence of Ocular Morbidities in Study Population

Age group	Males			Females			Total		
	Population	Morbidities	%	Population	Morbidities	%	Population	Morbidities	%
0-1 ^a	20	2	10.0	14	0	0.0	34	2	5.9
2-4 ^b	52	1	1.9	50	1	2.0	102	2	2.0
5-14 ^c	139	22	15.8	122	26	21.3	261	48	18.4
15-59	511	263	51.5	443	236	53.3	954	499	52.3
≥ 60	112	111	99.1	140	140	100.0	252	251	99.6
Total	834	399	47.8	769	403	52.4	1603	802	50.0
For age $\chi^2=72.033$ at $df=2$ The P-Value is <0.00001 . The result is significant ($p < 0.01$)									
For sex $\chi^2=3.33$ at $df=1$. The P-Value is 0.06928. The result is not significant ($p > 0.05$)									
For the purpose of calculation, a,b,c have been merged .									

Table 3 : Relationship of Ocular Morbidities with location of Kitchen.

Kitchen Hygiene	Population		Ocular Morbidities	
	No.	Percentage	No.	Percentage
Kitchen in Living Room	165	10.3	84	50.9
Kitchen in Verandah	452	28.2	249	55.1
Separate Kitchen	986	61.5	469	47.6
Total	1603	100.0	802	50.0
$\chi^2=7.07$ at $df=2$. The P-Value is 0.029159. The result is significant ($p < 0.05$)				

Table 4 : Relationship of the Causes of Ocular Morbidities with location of Kitchen

Kitchen Hygiene	Total No.	Cataract		Refractive Error		Infection(Blepharitis+ Conjunctivitis + Stye+Trachoma+ Trichiasis)		Pterygium	
		No	%	No	%	No	%	No	%
Kitchen in living room	165	28	17.0	52	31.5	40	24.2	9	5.5
Kitchen in verandah ^a	452	54	11.9	188	41.6	27	6.0	6	1.3
Separate kitchen ^b	986	77	7.8	440	44.6	18	1.8	1	0.1
Total	1603	159	9.9	680	42.4	85	5.3	16	1.0
χ^2 (Cataract)=11.073 at df=2 . The P-Value is 0.00394. The result is significant (p < 0.01)									
χ^2 (Refractor Error)=55.53 at df=2. The P-Value is < 0.00001. The result is significant (p < 0.01)									
χ^2 (Infection)=210.77 at df=2. The P-Value is < 0.00001. The result is significant (p < 0.01)									
χ^2 (Pterygium)=41.68 at df=2 The P-Value is < 0.00001. The result is significant (p < 0.01)									
For the purpose of calculation, a and b have been merged for infective causes and pterygium.									

Table 5 : Relationship of Ocular Morbidities with Natural Light in Living Room.

Natural Light in Living Room	Population		Ocular Morbidities	
	No.	Percentage	No.	Percentage
Inadequate	961	60.0	486	50.6
Adequate	642	40.0	316	49.2
Total	1603	100.0	802	50.0
$\chi^2=0.28$ at df=1 The P-Value is 0.596701. The result is not significant (p > 0.05)				

Table 6 : Relationship of Ocular Morbidities with Environmental Status of an Individual

Environmental Status	Population		Ocular Morbidities	
	No.	Percentage	No.	Percentage
Poor	295	18.4	102	34.6
Satisfactory	774	48.3	364	47.0
Good	534	33.3	336	62.9
Total	1603	100.0	802	50.0

$\chi^2=66.46$ at $df=2$
 The P-Value is < 0.00001 . The result is significant ($p < 0.01$).

Table 7 : Relationship of Infectious Causes of Ocular Morbidities with Personal Hygiene of an Individual

Personal Hygiene	Total no.	Infection(Blepharitis+ Conjunctivitis+ Styte+Trachoma+Trichiasis)	Percentage
Good	396	17	4.3
Fair	658	23	3.5
Poor	549	45	8.2
Total	1603	85	5.3

$\chi^2=14.24$ at $df=2$
 The P-Value is 0.000809. The result is significant ($p < 0.01$).

Table 8: Prevalence of Ocular Morbidities in relation to Dietary Awareness

Dietary Awareness	Population		Ocular Morbidities	
	No.	Percentage	No.	Percentage
Present	541	33.7	255	47.1
Absent	1062	66.3	547	51.5
Total	1603	100.0	802	50.0

$\chi^2= 2.73$ at $df=1$
 The P-Value is 0.098479. The result is not significant ($p > 0.05$)

Table 9: Prevalence of Ocular Morbidities with Awareness of Eye Health Care Facilities

Awareness Regarding Eye Health Care Facilities	Population		Ocular Morbidities	
	No.	Percentage	No.	Percentage
Present	741	46.2	404	54.5
Absent	862	53.8	398	46.2
Total	1603	100.0	802	50.0
$\chi^2=11.11$ at $df=1$ The P-Value is 0.000859. The result is significant ($p < 0.01$)				

Table 10 : Relationship of Ocular Morbidities with Eye Care Service Seeking Behaviour

Sought Services	Total no.	Ocular Morbidities	Percentage
Yes	763	394	51.6
No	840	408	48.6
Total	1603	802	50.0
$\chi^2=1.504$ at $df=1$ The P-Value is 0.214618. The result is not significant ($p > 0.05$)			

Table 11 : Awareness Regarding First Eye Check up In Children

Awareness	No. of Individuals	Percentage
Yes	98	6.1
No	1505	93.9
Total	1603	100

DISCUSSION

The present study was conducted on 341 families distributed over 11 colonies in the study area, which is registered under the Urban Health and Training Centre of the Department of Community Medicine, Muzaffarnagar Medical College, Muzaffarnagar. From each of these colonies, 31 families were studied. These families had 1720 individuals out of which 1603 were available and examined for ocular morbidities and the various socio-demographic factors related to ocular morbidities were studied in details. In India, very few studies have been carried out on this topic in such elaborate details, particularly in urban slums and therefore, all the findings of this study may not be comparable to other studies.

In the present study, out of the total 1720 individuals, 899 (52.7%) were males and 821 (47.3%) were females. So, the sex ratio was 913/1000, which is comparable (908/1000) to our study state of Uttar Pradesh.¹⁷ However, this ratio is much lower as compared to the National sex ratio of 940/1000 (Census of India, 2011).¹⁷ In this study, the maximum number of individuals i.e. 993 (57.7%) belonged to the age group of 15-59 years. The proportion of population in the 0-4 years age group, 5-14 age group, in the 15-59 years age group and ≥ 60 years age group was 9.2%, 17.5%, 57.7% and 15.6% respectively, which is comparable to 9.7%, 19.4%, 62.6% and 8.3% respectively as reported in the Sample

Registration System Statistical Report, 2010 by Government of India.¹⁸

In the present study, the prevalence of ocular morbidities was found to be significantly associated with age ($p < 0.01$) being minimum (26.3%) in 0-14 years age group and maximum (99.6%) in ≥ 60 years old and this relationship with age was similar to the findings of Gulati et al¹⁹ (1987, Delhi) and Asole et al²⁰ (2002, Aurangabad).

A significant high prevalence ($p < 0.05$) was seen in individuals having kitchen in their Verandah (55.1%) as compared to those either with kitchen in the living room or a separate kitchen (50.9% and 47.6% respectively). However, Agrawal et al²¹ (2011, Meerut) observed this difference more when kitchen was in living rooms (69.3%) as compared to either separate kitchen or kitchen in verandah (52.2% and 47.3% respectively).

In the present study cataract, infections and pterygium were found to be significantly more prevalent ($p < 0.01$) in individuals with kitchen in living rooms (17.0%, 24.2% and 5.5% respectively) as compared to those with kitchen in verandah (11.9%, 6.0% and 1.3% respectively) and separate kitchen (7.8%, 1.8% and 0.1% respectively). However, refractive errors were significantly more prevalent ($p < 0.01$) in individuals with separate kitchen (44.6%) as compared to those with kitchen in verandah (41.6%) and those with kitchen in living room (31.5%). Similar, significant results were obtained by Agrawal et al²¹ (2011, Meerut).

No significant relationship ($p > 0.05$) was observed between the prevalence of ocular morbidities and the amount of natural light in the living room. Similarly no relationship with natural light in the living room was observed by Agrawal et al²¹ (2011, Meerut).

There was a significant ($p < 0.01$) relationship between ocular morbidities and environmental status of an individual. Highest (62.9%) ocular morbidities were observed in good environmental status as compared to satisfactory (47.0%) and poor (34.6%). However, Agrawal et al²¹ (2011, Meerut) observed no significant correlation in the ocular morbidities with environmental status of individuals.

Infections were found to be significantly ($p < 0.01$) more prevalent in people with poor hygiene (8.2%) as compared with good (4.3%) and fair (3.5%), personal hygiene. These findings were similar to those observed by Gupta et al²² (1982, Delhi) and Gulati et al¹⁹ (1987, Delhi).

There was no relationship found between the prevalence of ocular morbidities and dietary habits of the people. Similar results were obtained by Sharma et al²³ (1975, Haryana).

No significant relationship was found between the prevalence of ocular morbidities and awareness regarding dietary intake for prevention of eye problems in the population, in this study ($p > 0.05$). Similar results were observed by Agrawal et al²¹ (2011).

In the present study, ocular morbidities were found to be significantly more prevalent ($p < 0.01$) in people who were aware regarding the eye health care facilities in their area (54.5%) as compared to those who were not aware (46.2%). Also, it was found that 51.6% of the subjects had ocular morbidities among the subjects who had utilized some eye care services as compared to 48.6% subjects with ocular morbidities who had not utilized any

eye care services. But this relationship was not found to be significant ($p > 0.05$). These results may be due to the fact that the people who were suffering from various ocular problems had sought the services of government and private health care facilities in their area and were therefore more concerned for their ocular problems.

In the present study, it was observed that a high percentage of population (93.9%) had no awareness regarding the time of first eye check up in their children. Similarly, Agrawal et al²¹ (2011), found no awareness in 97.5% of people regarding first eye check up in their children.

Conclusion:

The present study was conducted in an urban slum of Muzaffarnagar City. The aim was to study some environmental factors as determinants of ocular morbidities and to assess the awareness level of community for ocular morbidities

A total of 341 families distributed over 11 colonies were studied having 1720 individuals of whom 1603 individuals could be examined for ocular morbidities.

The following conclusions were drawn based on the present study:-

The age and sex distribution of the population was typical of the developing countries with 26.7% of the population was below 15 years of age, 57.7% were between 15-59 years of age and 15.6% of the individuals were ≥ 60 years of age.

The sex ratio was found to be 913 females for every 1000 males and the average family size was 5.4. The prevalence of ocular morbidities was found to be 50.03% in the population. Among 802 (50.03%) individuals having ocular morbidities (Multiple Response), the refractive errors were the major cause (84.8%) followed by cataract (19.8%), infections (10.4%), pterygium (2.0%), squint (1.7%), glaucoma (0.5%), colour blindness and corneal opacities (each 0.4%) and the least was entropion (0.2%).

The ocular morbidities were found to be most prevalent in people aged ≥ 60 years old (99.6%), followed by 52.3% in 15-59 years old, 18.4% in 5-14 years old, 5.9% in 0-1 year of age and 2.0% in the age group of 2-4 years old individuals and the difference in the prevalence of ocular morbidities in different age groups was found to be statistically significant ($p < 0.01$).

A significantly high prevalence of ocular morbidities was seen in individuals having kitchen in their verandah (55.1%) as compared to those with kitchen in living room and a separate kitchen (50.9% and 47.6% respectively).

Cataract, refractive errors, infections and pterygium were found to be significantly more prevalent in individuals with kitchen in living rooms (17.0%, 31.5%, 24.2% and 5.5% respectively) as compared with those having kitchen in verandah (11.9%, 41.6%, 6.0% and 1.3% respectively) and with separate kitchen (7.8%, 44.6%, 1.8% and 0.1% respectively).

No significant relationship was observed between the prevalence of ocular morbidities and the amount of natural light in the living room.

There was a significant relationship observed between the ocular morbidities and the environmental status of individuals. It was 62.9%, 47.0% and 34.6% in individuals with good, satisfactory and poor environmental statuses respectively.

Infections were found to be significantly more prevalent in people with poor personal hygiene (8.2%) as compared to those with fair and good hygiene (3.5% and 4.3% respectively).

No relationship was found between the prevalence of ocular morbidities and awareness regarding dietary intake for prevention of eye problems in the population.

Ocular morbidities were found to be significantly more prevalent in people who were aware regarding the eye health care facilities in their area (54.5%) as compared to those who were not aware (46.2%).

No relationship was observed between ocular morbidities and eye care service seeking behavior of individuals.

It was found that high percentage of population had no awareness regarding the time of first eye check up in their children.

RECOMMENDATIONS:

On the basis of this study, the following suggestions and recommendations are being made: Infections and refractive errors were found to be the major causes of ocular morbidity in children less than 15 years of age and related to poor personal hygiene and kitchen in the living rooms and so, it is necessary to children as well their parents for maintaining a good personal hygiene by simple measures like washing of eyes at least twice daily, cessation of any medicinal applications to the eye without proper consultation and maintaining proper ventilation of the area where kitchen is located through the use of exhaust fan etc. The level of awareness in the community regarding proper diet and the time of first eye check up for their children along with the eye health care seeking behavior was found to be low and measures should be undertaken to render eye health education, awareness creation and motivation programmes in the community including parents, senior school students and the primary school teachers with active participation and involvement of community organizations like youth clubs, women organizations, religious leaders etc. the importance of first eye check up in the children at the age of 5 years should be emphasized to the parents as that will be helpful in the prevention of amblyopia and childhood blindness. Timely screening and treatment of refractive errors and cataract is strongly recommended.

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