



Original Research Article

## Awareness of Glaucoma amongst the Rural and Urban Population of North India

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### ABSTRACT

**Aim of the study:** To compare awareness levels of glaucoma amongst the rural and urban population of North India.

**Methods:** Subjects were randomly selected from the patients and their attendants visiting the outreach camps and the outpatient department of a tertiary centre. A structured and validated questionnaire was administered to all subjects. The response 'heard of glaucoma' was defined as awareness. Knowledge was graded independently by two ophthalmologists. Levels of awareness and knowledge were compared for the two groups. Demographic factors like age, gender, literacy levels and history of glaucoma were analysed for any association with awareness of glaucoma.

**Results:** The study included 129 rural and 124 urban subjects. Awareness was significantly higher in the urban (35.4%) as compared to rural population (24.8%) ( $p=0.03$ ). Knowledge of the disease was seen in 8.5% of rural and 21.7% of urban population ( $p<0.001$ ). Of all the demographic factors analysed, only higher education was significantly associated with awareness of glaucoma ( $p<0.02$ ).

**Discussion & Conclusion:** Awareness of glaucoma is low in both rural and urban populations more so in the rural population. There is need for awareness campaigns as lack of knowledge is a major factor for blindness due to glaucoma.

**Keywords:** Awareness, Glaucoma, North India.

### INTRODUCTION

Glaucoma is estimated to affect 12 million Indians; it causes 12.8% of the total blindness in the country and is considered to be the third most common cause of blindness in India. [1] Glaucoma causes irreversible blindness and many (50%) of the affected people are unaware of their condition. [2] Late diagnosis of glaucoma is an important risk factor for subsequent

blindness and is associated with poor knowledge about the condition. [3] One third of the patients who become blind due to glaucoma had become visually impaired even before they had sought medical attention for their eyes. [4]

Blindness due to glaucoma can be curbed to a certain extent by educating the masses about the condition, and thereby influencing at risk individuals to participate

in regular ophthalmic care. Increased awareness about glaucoma will increase case detection and will thereby reduce blindness due to glaucoma.

The data available on the awareness status about glaucoma in India is limited. Most of the studies have been done in the urban and rural populations of southern India. [5,6] There is also a vast difference in the socioeconomic, educational and occupational profile of the urban and rural populations of India. The disparity between accessibility of health services in the rural and urban areas is also marked.

This study was undertaken to determine the awareness levels of glaucoma in the urban and rural populations of North India so that appropriate strategies could be developed to educate the masses about this potentially vision threatening disease.

**Purpose:** The purpose of this study was to assess and compare the awareness and knowledge about glaucoma in the urban and rural populations of North India.

## **MATERIALS AND METHODS**

This prospective study was conducted on the patients and their relatives aged 18 years and above attending the outreach camps. The subjects from the camps organized within the limits of the Ludhiana Municipal Corporation constituted the urban population and those from the surrounding villages formed the rural population. There were 124 subjects from the urban population and 129 from the rural population. Demographic details and literacy levels of all subjects were obtained. Medical history of the subjects including history of glaucoma, diabetes mellitus and family history of glaucoma was recorded. A brief structured open ended questionnaire was design to collect information about the subject's awareness and knowledge about glaucoma. The questionnaire was administered by the same ophthalmologist to

all the subjects in their vernacular language. The responses were recorded after back translating to English. Details on the knowledge about glaucoma were obtained only for subjects who were aware of glaucoma

### ***Awareness and knowledge – Definition:***

The response having heard of glaucoma even before being recruited for the study was defined as awareness and having some understanding of the disease was defined as knowledge. Subjects were asked questions pertaining to the description of glaucoma, symptoms, treatment options and risk factors for glaucoma as mentioned in the protocol.

Knowledge was graded as good, fair and poor by two ophthalmologists independently based on the subject's collective responses to questions regarding the description, treatment and risk factors for glaucoma.

A subject was considered to have good knowledge if he could describe the disease as 'rise in pressure' or 'damage to the nerve' and could name any two risk factor and treatment options as drugs, surgery or laser. Fair knowledge was considered if they could describe the condition and name at least one treatment option. Subjects were graded as having poor knowledge if they could either just describe the disease or name one risk factor or anyone treatment option. Subjects who could not answer any questions were considered to have no knowledge of glaucoma.

Awareness and knowledge were compared for the rural and urban population using chi square test. The influence of age, gender and literacy levels on the awareness and knowledge of the disease was also determined.

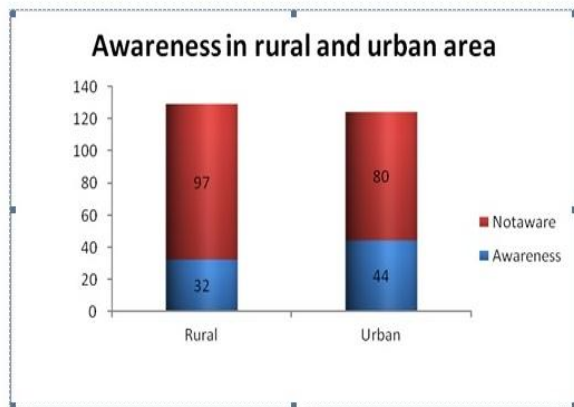
## **RESULTS**

A total of 253 subjects participated in the present study, of which 129 were from the rural areas and 124 from the urban areas

of Ludhiana. Among the rural population 39.5% (51/129) were males and 60.4% (78/129) were females and in the urban group there were 48.3% (60/124) males and 51.6% (64/124) females. The mean age of participants in the rural group was 46.34 years (range 18 years to 80 years) and in the urban group it was 46.9 years (range 18 years to 78 years). There was no statistically significant difference in the age and gender distribution in the two groups (*p value - 0.72 & 0.19*).

**Awareness and knowledge:** Awareness of glaucoma was seen in 24.8% (32/129) subjects among the rural population and 35.4% (44/124) subjects in the urban group and the difference was statistically significant (*p - 0.03*) (figure 1).

Figure 1: Awareness levels in rural and urban population

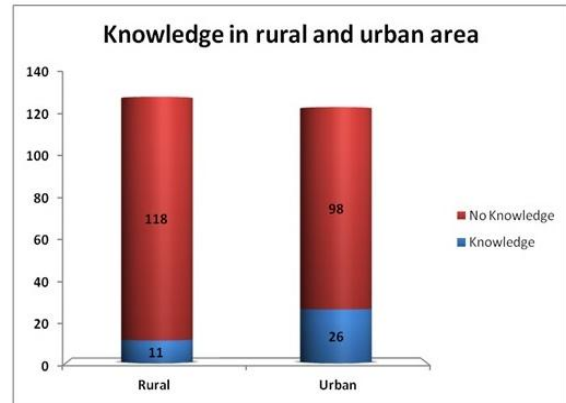


Knowledge of glaucoma was present in only 8.5% (11/129) subjects in the rural population. Out of the 11 subjects who had knowledge of glaucoma, 7 subjects had poor knowledge, 2 had fair knowledge and only 2 had good knowledge of glaucoma. The remaining 21 subjects who were aware of the disease had just heard about glaucoma but had no knowledge about its risk factors, signs and symptoms or treatment options.

In the urban population, 20.96% (26/124) had some knowledge of the disease as compared to 8.5% (11/129) in the rural population and the difference was

statistically significant (*p < 0.004*). On further division, 7 subjects had poor knowledge, 12 had fair knowledge and only 7 had good knowledge of glaucoma. In the urban population also 18 subjects had only heard about glaucoma but had no knowledge about the disease (figure 2).

Figure 2: Level of Knowledge in rural and urban population



Knowledge about the risk factors and treatment options for glaucoma among the study participants in the two groups is presented in table 1.

Table 1: Frequency distribution of awareness and knowledge

Variable	Rural population n = 129 (yes %)	Urban Population n = 124 (yes %)
Awareness		
Have you heard about glaucoma	32(24.8)	44(35.4)
Knowledge		
Key words- IOP, eye pressure	1(0.77)	4(3.2)
Risk factors		
Obesity	1(0.77)	2(1.6)
Increased pressure	0	6(4.8)
Steroids	0	3(2.4)
Chronic smoking and alcohol	2(1.5)	1(0.80)
Family history of diabetes	2(1.5)	5(4.0)
Diabetes	6(4.6)	16(12.9)
Treatment		
Medicines	1(0.77)	7(5.6)
Surgery	11(8.5)	14(11.2)
Lasers	1(0.77)	1(0.80)
Medicines+ surgery	10(7.75)	5(4)
Medicine+surgery+lasers	0	6(4.8)
Medicines +lasers	0	3(2.4)

**Determinants of Awareness: Age & gender:** There was no association between age group and awareness in either of the

groups (*p value 0.88 & 0.80, chi square 0.32 & 0.06*). There was no difference in the awareness levels between the two groups based on gender (*p value 0.32 & 0.14*) i.e.

the awareness levels were comparable amongst the males and females in the two groups (**table 2**).

**Table 2: Determinants of awareness about Glaucoma**

Variants of glaucoma	Rural population		Urban population		
	Total number	Number aware	Total number	Number aware	
<b>Awareness</b>	129	32 (24.8%)	124	44 (35.4%)	<b>p value 0.03</b>
<b>Age</b>					
18-29	19	4	11	2	
30-39	20	4	30	15	
40-49	32	13	34	8	
50-59	29	3	19	8	
60-69	18	4	20	7	
>70	11	4	10	4	
<b>p value</b>		<b>0.88</b>		<b>0.80</b>	<b>0.06</b>
<b>Chi square</b>		<b>0.32</b>		<b>0.14</b>	
<b>Sex</b>					
Male	51	15	60	23	
Female	78	17	64	21	
<b>p value</b>		<b>0.32</b>		<b>0.14</b>	
<b>Literacy levels</b>					
Illiterate	61	11	24	4	
Literate	68	21	100	40	
<b>P value</b>		<b>0.09</b>		<b>0.03</b>	
<b>Chi square</b>		<b>0.49</b>		<b>4.6</b>	

**Literacy levels: Patients** with primary, secondary and tertiary levels of education were considered as literate population. On comparing the awareness levels amongst the illiterate and literate rural population there was no statistically significant difference (*p value 0.09 & chi square 0.49*). However in the urban population the awareness was significantly more among the literate subjects as compared to the illiterate subjects (*p 0.03 & chi square 4.6*). Thus the education levels significantly influenced the awareness levels in the urban population but not in the rural population.

**History of glaucoma/diabetes or family history of glaucoma:** In the rural population 3.1% (4/129) had history of glaucoma, 3.1% (4/129) had history of diabetes mellitus and 6.2% (8/129) had family history of glaucoma. In the urban population none of the patients had history of glaucoma, 2.4% (3/124) had history of diabetes and 6.4% (8/124) patients had family history of glaucoma.

In the rural population all the subjects with glaucoma or having a family member diagnosed with glaucoma were aware of the disease however only 5 out of the 9 diabetic subjects were aware of glaucoma.

In the urban population also all subjects with family history of glaucoma were aware and 2 out of the three diabetic subjects were aware of the disease. Statistical analysis between these groups was not performed as the numbers in each group were too small.

## DISCUSSION

Glaucoma is now increasingly being recognized as a major cause of ocular morbidity that requires urgent attention. [7] It is an irreversible and asymptomatic condition until the advanced stage. Early detection and treatment plays a pivotal role in preventing blindness due to glaucoma.

The glaucoma awareness among the urban population of Chennai in South India was 13.3% which was significantly less as compared to our study where it was 35.4%.

[6] Knowledge of glaucoma also was

significantly more in our population at 20.94% as compared to 8.5% amongst Chennai residents. In another study from Andhra Pradesh in South India the awareness of glaucoma among the rural population was as low as 0.32% whereas in our population it was 24.8% with knowledge of glaucoma seen in 8.5% subjects.

Thus the awareness and knowledge of glaucoma was seen to be significantly higher in our population. On comparing the rural and urban populations also there was a significant difference in the awareness levels in both the groups. However, though most subjects claimed to be aware of the condition very few could answer even a single question on the risk factor, symptoms and treatment options for glaucoma. The knowledge about the disease is considered to be more useful as it influences their ocular health seeking pattern.<sup>[7]</sup> The urban population again had a better knowledge of glaucoma as compared to the rural population. Limited access to medical and diagnostic care in the rural areas may have contributed to the relatively poor knowledge and awareness about glaucoma. Adequate access and proper utilization of eye care services can create awareness and exposure to information about various diseases including glaucoma.<sup>[8]</sup>

In our study we observed that age and gender did not influence the awareness levels of glaucoma in either of the populations. Illiterates were more likely to be unaware in the urban population though in the rural population awareness was same in amongst both illiterates and literates. This could be due to lack of exposure to information on eye diseases in the rural areas. Patients with glaucoma or those with family history of glaucoma were more aware of the disease though statistical significance could not be determined due to the relatively small numbers.

Health promotion and communicating risk is a key public health strategy. Public awareness of vision care especially glaucoma is very low. Effective health education about eye care may influence the behavior of individuals to consider regular ocular care.<sup>[9]</sup> The aims of education should focus not only on modifying individual's perception of risk of vision loss, but also on providing information regarding the benefits of early detection and treatment.

In summary, awareness levels and knowledge of glaucoma were much lower in the rural as compared to the urban population. Subjects with lower levels of education were less aware and knew less about glaucoma than their counterparts.

## CONCLUSION

The study findings stress the need for health education especially among the rural population to effectively prevent blindness due to glaucoma.

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