

# Awareness of glaucoma among the urban and rural population in North Karnataka, India: A comparative study.

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## Abstract

**Background:** Glaucoma is a chronic progressive optic neuropathy with a characteristic appearance of the optic disc and a specific pattern of the visual field defects that is associated frequently but not invariably with the raised intra-ocular pressure.

**Objective:** To compare the awareness of glaucoma among the urban population and the rural population of Bagalkot district in North Karnataka, India.

**Methods:** A total of 200 subjects, >20 yrs old, 100 among the urban population of Vidyagiri and Navanagar areas in Bagalkot, in North Karnataka and 100 subjects who attended an eye camp at Anwal village, in Bagalkot district, North Karnataka, India were enrolled into the study. The responses of the subjects (N=200) who completed a structured questionnaire regarding the awareness (heard of glaucoma) and knowledge (understanding glaucoma) of glaucoma, formed the basis of the study.

**Results:** The awareness on glaucoma was better in the urban population that is in vidyagiri and navanagar areas of Bagalkot (n=35, 35 %) compared to rural population that is in anwal eye camp (n=13, 13%). Significant difference was noted between the different age-groups among urban and rural population (p=0.035) and different education levels among urban and rural population (p=0.0005).

**Conclusion:** The awareness is better in the urban population owing to higher literacy rate and increased exposure to mass medias like television, radio, magazines and so on. Improvement in the health care services over the years, do contribute to the increased awareness about glaucoma. Community based health education programs go a long way in increasing the level of awareness and knowledge about glaucoma.

**Keywords:** Glaucoma prevalence, awareness, population based epidemiological study.

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## **Introduction**

Glaucoma is a chronic progressive optic neuropathy with a characteristic appearance of the optic disc and a specific pattern of the visual field defects that is associated frequently but not invariably with the raised intra-ocular pressure [1]. The magnitude of the global blindness is 45 million, out of which 9 million blind people are in India (1/5th of the total blind people in the world) [2]. As per the national survey on blindness (1999-2001, Government of India Report 2002) [3], glaucoma is responsible for 5.8% cases of blindness in the 50+ population and as per the RAAB (Rapid Assessment of Avoidable Blindness) which was conducted in 2006-07, the corresponding figure is 4.4%[4]. Failure of the early detection of the disease poses a management problem towards controlling the glaucomatous blindness.

Glaucoma is considered as the “sneak thief of sight”; an early detection and treatment can prevent the progression of the disease. The implementation of health education programs that encourage the people in the community to get an ocular examination may identify those who are otherwise unaware or not willing to seek an examination and treatment.

The aim of this article was to compare the level of awareness regarding glaucoma in the urban areas of Bagalkot district, north Karnataka and in the rural population, eye camp at the anwal village of the Bagalkot district in north Karnataka, India.

## **Material and Methods**

After obtaining the institutional ethical committee’s clearance, a total of 200 subjects of which 100 from the urban population of vidyagiri and navanagar areas of Bagalkot, north Karnataka were enrolled into the study and 100 subjects who attended the anwal eye camp, were enrolled into the study. Anwal is a village which is situated 25kms from Bagalkot, (north Karnataka, India), with a population of 2000.

The questionnaire was initially developed in English and it was translated into the local language, Kannada for the target population. Its reliability was tested among the field investigators for its administration [5].

The subjects were asked whether they had heard of the eye disease, “glaucoma”. Further questions were asked about the particular eye disease, only if the subject responded positively. The awareness was defined as “having heard of glaucoma”. The knowledge was defined as “when the subject had some understanding of glaucoma”, for example “it is an increase in the pressure in the eye”, “it is a disease where the nerve of the eye becomes weak”, “it is an age related process which leads to a loss of the vision” and so on.

The statistical analysis was done by using the open epi software for Chi square test and SPSS software version 20 for Fisher’s exact test. The Chi-square test and fisher’s exact test were applied.

## Results

A total of 200 subjects, 100 subjects from the urban population of vidyagiri and navanagar areas of Bagalkot district, north Karnataka and 100 subjects from the annual eye camp, Bagalkot district, north Karnataka, India participated in the study. The subjects who were older than 20 years responded to a structured questionnaire which was on the awareness of glaucoma. Among these, in the urban population 60 were males and 40 were females and in the rural population 58 were males and 42 were females. A total of 48 subjects, 35 among the urban group and 13 among the rural group were aware of glaucoma.

There was statistically significant difference in the different age groups regarding the awareness of glaucoma ( $p=0.035$ ) and highly significant difference with regards to different education levels among the two groups ( $p=0.0005$ ). There was no significant difference in the gender adjusted prevalence of the awareness of glaucoma ( $p=0.3507$ ) and similarly, in the different socio-economic groups ( $p=0.254$ ) among the two groups.

The responses to the questionnaire on glaucoma have been presented in Table 2. Of the 48 subjects who were aware of glaucoma, 10 felt that glaucoma was a high

pressure in the eye, 6 felt that it was a weakening of the nerve of the eye, 10 felt that it was an ageing process which led to a loss of vision, 1 felt that it is damage to the nerve of eye due to high pressure and 21 had other opinions about it, like retinal disease, halos around the eye and pain in the eye.

The sources of information for the awareness on glaucoma were:

Doctors - 9 (18.75%)

Ophthalmologists- 9 (18.75%)

Opticians-2 (4.1%)

TV/Magazines/Mass media - 21 (43.75%)

Family members, relatives and friends who suffered from the disease- 6 (12.5%)

Eye camp- 1(2.08%)

A total of 19 subjects said that the visual loss which was caused by glaucoma was permanent. A total of 9 subjects said that the visual loss was reversible. A total of 20 subjects said that they did not know whether the visual loss which was caused by glaucoma was permanent or reversible.

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**Table 1. Association of awareness of glaucoma with age, sex, education and socioeconomic status**

	Aware of glaucoma		Not aware of glaucoma		Total		p value
	urban	rural	urban	Rural	Urban	rural	
<b>AGE GROUP</b>							
20-29	6	1	12	15	18	16	
30-39	13	4	13	18	26	22	p=0.035 <sub>a</sub>
40-49	13	2	21	11	34	13	
50 AND ABOVE	3	6	19	43	22	49	
<b>SEX</b>							
MALE	19	9	41	49	60	58	p=0.3507 <sub>b</sub>
FEMALE	16	4	24	38	40	42	
<b>EDUCATION</b>							
1.	0	1	6	40	6	41	
2.	9	10	32	45	41	55	p=0.0005 <sub>a</sub>
3.	26	2	27	2	53	4	
<b>SOCIOECONOMIC STATUS</b>							
1.	27	7	29	8	56	15	
2.	5	4	11	10	16	14	
3.	1	0	13	7	14	7	p=0.254 <sub>a</sub>
4.	2	2	9	21	11	23	
5.	0	0	3	41	3	41	

a-Fisher's exact test, b-Chi square test.

**Education categories:**

Category 1 consists of Illiterate.category 2 consists of people who have studied upto 10<sup>th</sup> standard,or have completed technical courses,diploma or undergraduate course.Category 3 consists of postgraduates and professionals.

**Socioeconomic categories: - (Modified B.G Prasad classification for year 2009 July).**

Category 1 consists of people with per capita monthly income Rs 3653 and above, category 2 of people with per capita monthly income between Rs 3652 to 1826, category 3 of people with per capita income between Rs 1825 to 1096, category 4 of people with per capita income between Rs 1095 to 548 and category 5 consists of people with per capita income below Rs 547.

**Table 2: Response of 48 subjects who were aware of glaucoma**

	URBAN	RURAL
<b>What is glaucoma?</b>		
High pressure in eye	8	2
A disease where nerve of the eye becomes weak	3	3
An age related process leading to decrease in peripheral pressure	7	3
Damage to the nerve of eye due to high pressure	1	0
Others	16	5
<b>How did you come to know about glaucoma?</b>		
Doctors	4	5
Ophthalmologists	7	2
Opticians	1	1
TV /magazines/ other media	17	4
Family members/ relatives/friends suffering from it	5	1
Eye camps	1	0
<b>Is visual loss due to glaucoma, permanent or reversible?</b>		
Permanent	14	5
Reversible	7	2
Don't know	6	14

## **Discussion**

Glaucoma is a sight threatening disease of the eye; it is one of the leading causes of irreversible blindness in the developing and the developed countries. Approximately 15% of all the blindness is due to glaucoma and it has been estimated that around 6, 00,000 people per year go blind due to glaucoma worldwide. The awareness of glaucoma was better among the urban community compared to the rural community. Increased exposure to Mass

Communication Medias like Television, Radio, Magazines and so on have created a greater awareness among the Urban Population. Even among the rural people who were aware of glaucoma, the knowledge about it was poor. Adequate access to and the proper utilization of the eye care services can create a greater awareness on glaucoma. Level of education was found to play a significant role in the level of awareness of glaucoma in both the populations.

The following table compares the present study and the past studies which were done on glaucoma awareness.

Author (year)	Country	Study population	Awareness of glaucoma
Present study (2012)	Urban population of Bagalkot District , North Karnataka, India and Anwal village, bagalkot district, Karnataka, India	Urban community and rural community, >20 yrs of Age and	35% in urban community and 13% in rural community
Krishniah <i>et al.</i> (2005)[6].	India	Rural community > 15 yrs of age	0.27%
Saw <i>et al.</i> (2003)[7].	Singapore	Adults above 35 yrs	23%
Dandona <i>et al.</i> (2001)[8].	India	Urban community above 15 yrs	2.3%
Gasch <i>et al.</i> (2000)[9].	United States	General eye service Patients, All ages	72%

While many complicated eye diseases can be treated in hospitals, the public awareness on the eye care issues remains low. An effective eye health education may influence individuals to consider eye screening and eye care. This may lead to an early detection of glaucoma

and it may prevent blindness. Educating the community on the consequences of a delayed treatment of glaucoma will be an important component in the promotion of the preventive ophthalmic care. The mass media and word of mouth can be effective tools for generating an awareness on regular

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and timely eye checkups, particularly for those who are above 40 years of age and those who are the blood relatives of glaucoma patients. The strategy should be to increase the awareness on glaucoma in the selected high-risk target audience in the community.

**Conclusion:** Awareness of glaucoma was comparatively higher among the urban population of vidyagiri and navanagar areas of Bagalkot district, in north Karnataka compared to the rural area of the anwal eye camp in Bagalkot district in north Karnataka, India. The awareness is better in the urban population owing to higher literacy rate and increased exposure to mass medias like television, radio, magazines and so on. Improvement in the health care services over the years, do contribute to the increased awareness about glaucoma. Community based health education programs go a long way in increasing the level of awareness and knowledge about glaucoma

## References

1. Kanski JJ, Bowling B. Clinical Ophthalmology systemic approach, 6th edition. Butterworth & Heinmann Elsevier Saunders publisher, 2007; 372-439.
2. Foster A, Gilbert C, Johnson G. Changing Patterns in Global Blindness 1988-2008. Community Eye Health September 2008; 21 (67): 37-9.
3. National survey of blindness 1999-2001—India. NPCB-WHO report. New Delhi: Minsitry of Health and Family Welfare, Government of India, 2002.
4. Neena J, Rachel J, Praveen V, Murty VS and Rapid assessment of avoidable blindness india study group. Rapid Assessment of Avoidable Blindness (RAAB) in India. *PLoS One*. 2008 Aug 6;3(8):e2867.
5. Dandona R, Dandona L, Naduvibta T J, Nanda A, Mcgarty CA. Design of a population based study of visual impairment in India. The Andhra Pradesh eye disease study. *Indian J Ophthalmol* 1997; 45: 251-7.
6. Sannapaneni K, Vilas K, Marmamula S, Bindiganavale R S, Gullapalli N R, Thomas R, *et al.* Awareness of glaucoma in rural population in southern India. *Indian J Ophthalmol* 2005; 53:205-08.
7. Saw SM, Gazzard G, Friedman D, Foster PJ, Devereux JG, Wong ML, *et al.* Awareness of glaucoma and health beliefs of patients suffering primary acute angle closure glaucoma. *Br J Ophthalmol* 2003;87:446-9.
8. Dandona R, Dandona L, John RK, McCarthy CA, Gullapalli N Rao. Awareness of eye diseases in an urban population in southern India. *Bull World Health Organ* 2001; 79:96-102.
9. Gasch AT, Wang P, Pasquale LR. Determinants of glaucoma awareness in a general eye clinic. *Ophthalmology* 2000; 107:303-8.

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