

**Research Article****Prevalence of Awareness and Knowledge of Glaucoma in Urban Puducherry****Dr. V. Muthu Krishnan, Dr. D. Baba, Dr. Rathna Kumar, Dr. Swati Natarajan, Dr. Divya Swaminathan**

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**Abstract:** Glaucoma represents a major public health challenge in ageing population. Glaucoma is the second leading cause of avoidable blindness globally and third cause in India. The aim of the study is to assess the awareness and knowledge of glaucoma in south Indian urban population of Puducherry. 1780 subjects above 30 years were recruited in the cross sectional study of 5 months duration. This study assesses the awareness and knowledge about glaucoma. Respondents to “having heard of glaucoma” were recruited as “aware” and from those who were aware, respondents who had some knowledge were defined as “knowledgeable”. The questionnaire was marked for 10 points and knowledge levels were classified as good, fair and poor. Among the 1780 respondents, a total of 45.45% (CI: 43.13 to 47.76) were aware of glaucoma. Among 5.28% respondents with positive family history, 34.04% people had a good knowledge about glaucoma. Also among the 38.20% respondents with co-morbidity (diabetes or hypertension or both), 28.16% people had good knowledge. Literate subjects had comparatively more knowledge about glaucoma with 27.72% people having good knowledge, 59.24% people with fair knowledge and 13.04% people with poor knowledge. Among illiterates, only 5.26% people had good knowledge, 42.11% had a fair knowledge and 52.63% had a poor knowledge. In a large representative sample of urban population, awareness of glaucoma is not high. Knowledge was good among males, those with higher education and older people. The study stresses the need for awareness among younger population for effective prevention of blindness due to glaucoma.

**Keywords:** Glaucoma, awareness, knowledge, south India, urban population, blindness

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**INTRODUCTION:**

Glaucoma represents a major public health challenge in ageing population as it is the second largest cause of preventable blindness in the world [1]. Out of several causes of avoidable blindness, glaucoma is the second leading cause globally and third cause in India [1, 2]. Glaucoma is a group of diseases characterised by progressive optic neuropathy which may be asymptomatic in the majority or may result in symptoms like diminished vision and loss in visual field. It was previously thought to be caused as a result from increased intraocular pressure as a sole trigger. According to recent evidences, there are several interacting pathogenic mechanisms, including mechanical stress due to raised intraocular pressure, decreased neurotrophin supply, hypoxia, excitotoxicity, oxidative stress and the involvement of autoimmune processes [3]. Irrespective of the pathogenesis involved, the end result is always the same. The consequences are the establishment of extensive degenerative processes in the optic nerve head and retinal ganglion cells. When the loss of retinal nerve fibres extend beyond the normal physiological limit till which there can occur a functional overlap, the characteristic optic disc changes

and specific irreversible visual field defects become apparent. Since most cases occur without noticeable warning symptoms, a cognizance of glaucoma is essential not only to prevent blindness but also to reduce the economic burden of disease [4]. Increased awareness can change the social perceptions of ocular health and influence people to participate in regular ophthalmic screening. Published evidence indicates that the late diagnosis of glaucoma is an important risk factor for subsequent blindness and it is associated with poor knowledge about the condition [1]. Assessment of awareness is thus the first step of planning the disease management [5]. There is a global change in the perception of health with the increased availability of preventive measures. To create awareness among the public and to enlighten them about the consequences of late presentation, several governmental and non-governmental associations have joined hands [1,6]. These organisations act by referring the subjects to the ophthalmologists for glaucoma screening [1, 7]. But their role has not become entirely fruitful because of the economic condition of our country and also because of the lack of awareness among the majority of the population. Unlike the Western countries, the current

scenario prevailing in India is that one- third of the people referred by these organisations have already reached the irreversible stage of the disease [1, 8, 9, 10]. To substantiate this finding, only few studies have been reported till today proving the Western countries to be more aware than the Indian population [1, 11, 12]. This study is thus aimed to assess the awareness and knowledge of glaucoma among the south Indian urban population of Pondicherry.

**MATERIALS AND METHODS:**

This study is a population based study conducted on the urban population of the south Indian state, Pondicherry, to assess the level of awareness and knowledge of glaucoma. The questionnaire that was devised for this purpose is briefed elsewhere (Annexure). A total of 1780 subjects formed the basis for this study. The questionnaire was put into the vernacular language, i.e., Tamil, and then was back translated into English. The questions were dictated verbatim to the subjects during the process of collection of responses. The duration of the study was from 25<sup>th</sup> February 2015 to 3<sup>rd</sup> August 2015.

Definitions of awareness and knowledge: People were labelled as “aware” when they have heard about glaucoma. “Knowledgeable” people were those who had some understanding about the disease, namely its aetiology, risk factors, asymptomatic course, irreversible nature and treatment modalities.

Out of the sample population, only 809 claimed to have heard about the disease. Ten questions on knowledge were put forth to these subjects and each correct response was awarded one point. Thus, the questionnaire carried 10 points. Scores ranging 7-10 were grouped as ‘good knowledge’, 4-6 as ‘fair’ and scores less than 4 as ‘poor knowledge’. The questionnaire was fully answered by forty-five percent (45%) of the sample population who were considered to be ‘aware’ of glaucoma. The remaining fifty-five

percent (55%) of the subjects have not heard about the disease condition.

Before assessing the awareness, all subjects were enquired about their age, educational status, occupation, economic status and their religions. The awareness part of the questionnaire consisted of questions including- whether they are aware of ‘glaucoma’; source of awareness which had choices including doctors/optometrists, mass media, family members/friends and lectures/seminars; whether they suffer from the disease; family history of glaucoma; whether they belong to the medical field (medical & paramedical) and finally if they have undergone screening for glaucoma.

After this, questions were put forth to gauge their knowledge about glaucoma which included its prevalence; cause; age of onset; inheritable nature; risk factors; difference from cataract; asymptomatic course; irreversible nature; the possibility of early diagnosis and finally its treatment. The subjects, who felt that the disease course is symptomatic, were asked to choose between the list of symptoms which included eye pain, redness, visual impairment and others. Finally the subjects were asked about the treatment of glaucoma after having been given the options – medical & surgical.

The questions enquiring the symptoms of glaucoma and its irreversible loss of vision were considered important. Subjects who gave correct response for these questions were found to have good knowledge of the disease. These two questions were tagged important because these are the main factors which determine the time of presentation of patients to the health care centre. The results were tabulated to analyse the influence of age, gender, educational status and economic status on the awareness and knowledge of the subjects about glaucoma.

**RESULTS:**

**Table 1: Proportion of correct responders to the glaucoma knowledge questionnaire**

QUESTIONS ON GLAUCOMA KNOWLEDGE	NO OF CORRECT RESPONDERS ( OUT OF TOTAL 809)	%
Respondents knowing about its wide prevalence	348	43.02
Knowledge of its aetiology	634	78.37
Knowledge about its onset above 40 years	674	83.31
Knowledge about its inheritable nature	345	42.65
Knowledge that diabetic & hypertensive people are more prone to it	658	81.33
Cataract is different from glaucoma	699	86.40
It is asymptomatic	153	18.91
It causes an irreversible loss of vision	199	24.60
Blindness can be prevented by early diagnosis	724	89.49
It is treatable	751	92.83

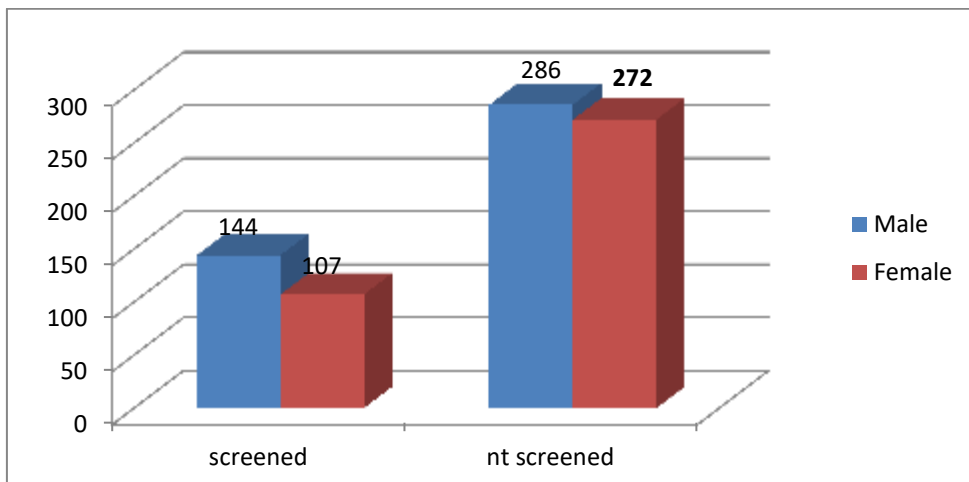


Fig-1: Proportion of total subjects screened for glaucoma (Gender based)

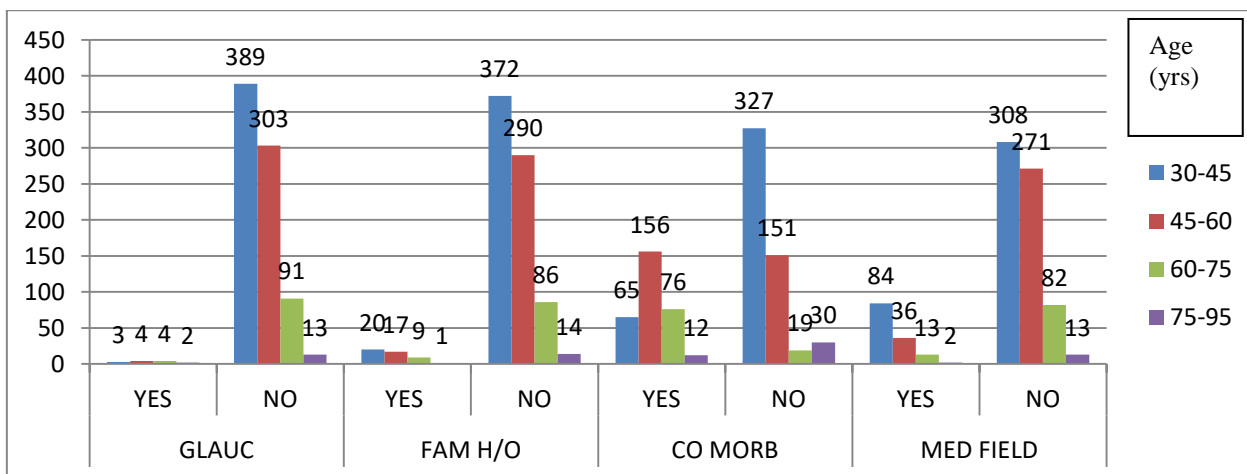


Fig- 2: Demographic comparison of subjects.(Age based)

GLAUC- Subjects with glaucoma  
 FAM H/O – subjects with positive family history  
 CO MORB- subjects with co-morbidities (diabetes/ hypertension/both)  
 MED FIELD – subjects belonging to medical field.

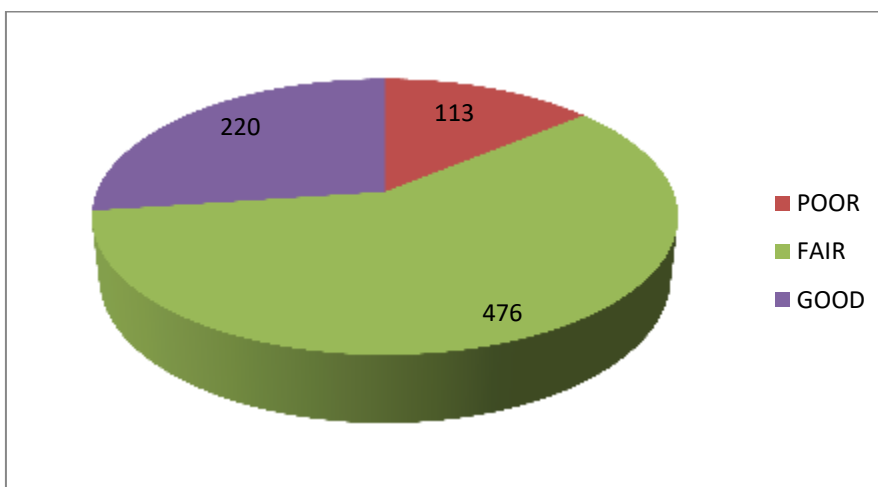


Fig 3: Comparison of knowledge levels of total subjects

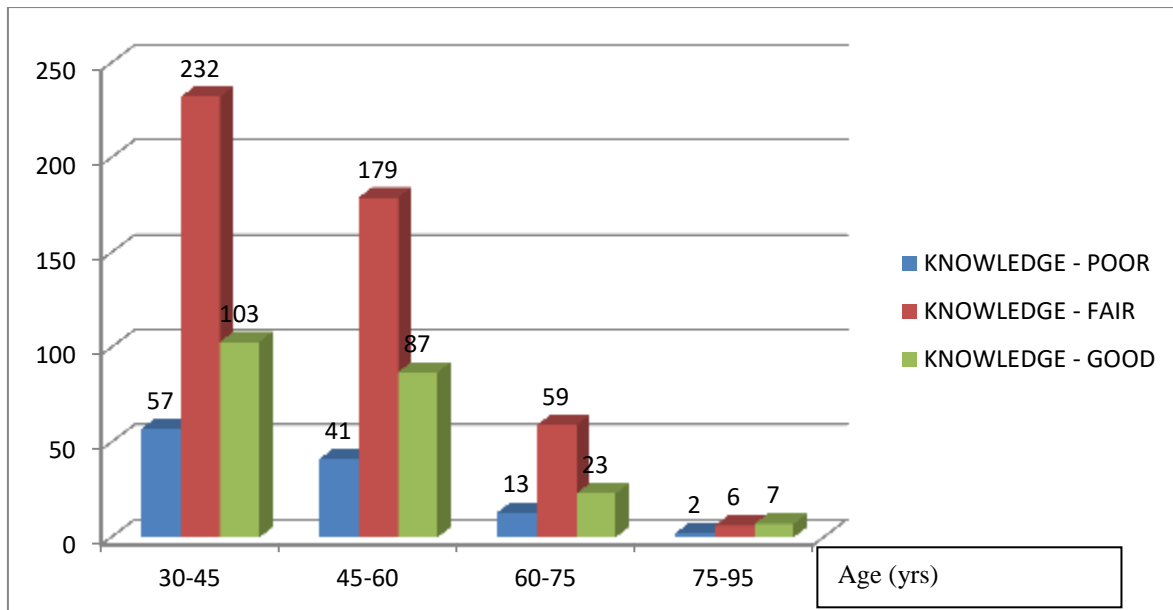


Fig 4: Comparison of knowledge levels based on different age groups

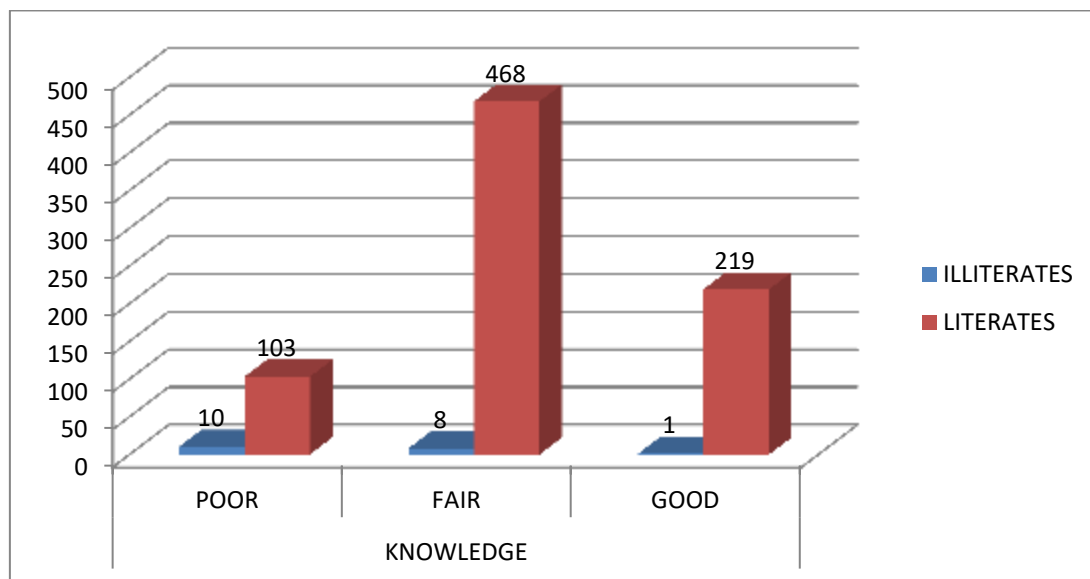


Fig. 5: Comparison of knowledge levels based on literacy

**DISCUSSION**

Glaucoma causes irreversible blindness, though it is preventable. It is estimated that over 65 million people throughout the world are affected by glaucoma [1]. Blindness could be due to lack of awareness, and more than just awareness, it is due to lack of knowledge because awareness does not mean that the subject knows everything about the disease. It just means that they have heard about the condition. Previous studies have shown that even though most people claim to be aware of the condition, not more than 1% could describe its symptoms or Pathophysiology correctly [13]. But in our study, the awareness was better (45.45%). An adequate

knowledge about the disease would be more useful as it is presumed to influence the ocular health seeking pattern. Though there are treatment options available for various ocular conditions, the awareness of the public regarding these modalities remains low [2]. Thus, access and utilization are closely interrelated, that it is difficult to disentangle the evidence for any discrepancies and to verify a focus that can be reflected on practice [6]. This directs the attention of mass media and NGOs towards the rural community whose education about the disease will be an important first component in the promotion of effective preventive ophthalmic care [2]. The intent of this study was to evaluate mainly the understanding about the irreversible

nature and asymptomatic course, as this plays an important role in detecting this sneak- thief of sight [7,8,9]. Though the knowledge level of this study was fairly high, unfortunately, people remain ignorant about the irreversible nature and asymptomatic course of the disease. However, degree of improvement depends on how well the health care system is explained and understood, as well as on service providers themselves.

Considering the awareness in a sample size of 1780, men were more likely to be aware. Awareness increases with increase in age group of the sample population. Literates were found to be more aware than the illiterates, similar to previous studies. Subjects with middle economic status had relatively better awareness in our study than lower socio- economic status. 251 (fourteen percent- 14%) had undergone ophthalmic screening for glaucoma, out of which 59 of them (twenty- four percent -24%) belonged to the medical field.

The comparison of knowledge among study participants revealed that most of the people (43.02%; CI: 39.6 to 46.4) did not know that glaucoma is widely prevalent. 78.37% (CI: 75.5 to 81.2) considered glaucoma was due to increase in intra- ocular pressure. 83.31% (CI: 80.7 to 85.9) knew that it affects people above the age of 40 years. 42.65% (CI: 39.2 to 46.1) knew it was hereditary compared to 21% in a survey conducted on north Indian rural population [5]. 81.33% (CI: 78.7 to 84) knew about the association of glaucoma with hypertension and diabetes mellitus. 86.40% (CI: 84 to 88.8) were correct in understanding that glaucoma and cataract were two different entities, whereas in the north Indian survey, it was believed by 46% of the population that glaucoma results from mature cataract [5]. 18.91% (CI: 16.4 to 21.8) of the subjects knew about its asymptomatic course, which was only 0.7% in the north Indian survey. 24.6% (CI: 21.6 to 27.6) were aware about its irreversible loss of vision in contrast to only 4.6% in a north Indian survey[5]. 89.49% (CI: 87.4 to 91.6) believed that, blindness can be prevented by early diagnosis of the condition. Most of them 92.83% (CI: 91.1 to 94.6) thought the condition is treatable either medically or surgically.

There were a few limitations in our study. There existed an access barrier and therefore, only samples within our access were recruited for the study. There also exists a gender- bias as equity between the genders could not be attained in the sample. Moreover, the study was not extended into the rural areas and there was no follow- up screening programme.

In our study, we observe that the mass media had an important role in promoting public awareness of people, whereas in previous studies, awareness was contributed by close acquaintances of family members

[14,15,16,17]. Studies from UK have reported successful role of media in increasing the awareness about glaucoma [12].

The causes for the ignorance of the population are several. Firstly, glaucoma has an insidious onset and causes little impact on vision in early stages, accounting for late presentation to the ophthalmologists. Though there is advancement in technology, primary prevention of glaucoma is literally impossible as ophthalmologists still rely on optic disc and visual field changes for confirming the diagnosis. It is not uncommon for the doctor to see structural damage inside the eye before functional loss becomes measurable. Newer accurate diagnostic modalities like Optical Coherence Tomography (OCT) are not yet widely available to the majority of the population.

## CONCLUSION

India has divisions at many levels which includes variability in the inherent attitude towards health. This creates reluctance among the population in not appearing for early screening though they had a good awareness about the disease. There is a tendency even for those who belong to the medical field to procrastinate screening. From this study, it is evident that mass media has done its role in increasing the awareness in the urban people. But it has to enhance its role to reach the rural population and to enlighten them about the seriousness of glaucoma and its deleterious effect of irreversible loss of vision. Without the initiation from the people themselves, the efforts of mass media could be futile.

We conclude that the awareness and knowledge of glaucoma in urban Puducherry is not high. Those with lower levels of education had an equivalent lower knowledge about glaucoma. It is imperative that these people should be the target for the efforts of the mass media in the forthcoming decades. Improving awareness about this silent “sneak thief” of sight plays a substantial role in reducing the prevalence of avoidable blindness due to glaucoma.

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**ANNEXURE:**

**STUDY ON GLAUCOMA AWARENESS& KNOWLEDGE**

Age: Sex: Educational status:

Economic status: Address:

Religion: Occupation:

**AWARENESS** Yes No

Are you aware of glaucoma?

If yes, your source of awareness:

Doctor/Ophthalmologist -

TV/Media

Newspapers/ magazine

Family member/ friends

Lecture, seminar

Do you suffer from glaucoma?

Do you have any family history of glaucoma?

Do you have any co-morbidity?

Do you work in medical field? (Medical/ paramedical)

Have you ever been screened for glaucoma?

**KNOWLEDGE** Yes No Don't know

1. Glaucoma is widely prevalent
2. Glaucoma results from pressure damage to optic nerve
3. People above 40 years are at risk of glaucoma
4. Family members are more prone to develop glaucoma

5. Diabetes mellitus & hypertension predispose to glaucoma
6. Cataract & glaucoma are two different diseases of the eye
7. Glaucoma has an asymptomatic course  
If no, then what could be the symptoms?
  - Pain
  - Redness
  - Vision impairment
  - Other
8. The loss of vision produced in glaucoma is reversible
9. Early diagnosis can prevent blindness due to glaucoma
10. Glaucoma is treatable  
If yes, medical or surgical?