



**International Journal of Biological
&
Pharmaceutical Research**
Journal homepage: www.ijbpr.com

IJBPR

GLAUCOMA – A SOCIO ECONOMIC PERSPECTIVE

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ABSTRACT

To identify the socio-economic risk factors for advanced presentation of primary glaucoma. 30 consecutive cases each of early and advanced glaucoma patients (late presenters) visiting R.L. Jalappa Hospital, Tamaka, Kolar were selected for the study. Advanced presenters: no perception of light or with severe field loss within 20 degrees of fixation or C: D ratio >0.8. Patients underwent detailed ocular examinations family and social history, occupation, education, and socioeconomic status was graded accordingly. Primary glaucoma was most common in low socio-economic groups. Less educated patients were more likely to have a late presentation. Skilled and semi-skilled workers are most likely to present early. Increased travel expenditure also contributed to late presentation. The lack of knowledge about family history of glaucoma contributed to late presentation.

Key Words: Glaucoma, Socio-economic, Awareness.

INTRODUCTION

World Health Organization (WHO) surveys on blindness and low vision in 2002 showed that there are 37 million blind people worldwide, with 12.3% (4.4 million) attributable to glaucoma which is second only to cataract (48%). (Bourne R, 2006). Quigley predicted that 8.4 million people will be blind as a result of primary glaucoma by 2010, rising to 11.1 million by 2020 (Quigley *et al.*, 1996).

Visual impairment due to glaucoma is a growing problem worldwide, although the majority of patients with this disease are successfully treated with either eye drops or surgery and retains good vision throughout the remainder of their years, still about 15% progress to blindness. (Chen PP, 2003)

Despite new medical and surgical strategies to control intraocular pressure (IOP), glaucoma remains the

second or the third most common cause of blindness in the world (Quigley *et al.*, 2003, Grant WM *et al.*, 1982). As glaucoma is a disease with few symptoms in initial stages, late presentation is common. (Wilson R *et al.*, 1982). One of the major risk factors for future visual impairment from glaucoma is late presentation with advanced visual field loss.

One likely association for late presentation is low socioeconomic status. Fraser *et al.*, 2001 have shown a direct relationship between socioeconomic status and late presentation in glaucoma. Delayed response to visual loss has also been reported for other eye conditions such as amblyopia and cataract. (Tielsch JM *et al.*, 1991). In addition, poor compliance, late presentation, and poor care regimes have been reported in glaucoma patients with lower socioeconomic status. (Tsai JC *et al.*, 2001)

The Andhra Pradesh Eye Disease Study (APEDS) showed that awareness of glaucoma was very limited in the rural areas of southern India. (Krishnaiah . S *et al* 2005). In Barbados Eye Study (BES), about half of the total numbers of persons with prevalent primary open

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angle glaucoma (POAG, 51%) were unaware of their diagnosis. (Hennis A *et al* 2007). Fraser *et al.*, 2001 showed that deprivation is associated with the presentation of advanced glaucomatous optic neuropathy to hospital clinics, which represents an important risk factor for blindness from glaucoma.

Till date, very few studies have been conducted on the socio-economic perspective of glaucoma in India, thus we undertook the study to identify the social economic risk factors for advanced presentation of primary glaucoma.

MATERIALS AND METHODS

30 consecutive cases each of early and advanced glaucoma patients (late presenters) visiting R.L. Jalappa Hospital, were selected for the study, a detailed history was taken including optical history, family history followed by detailed clinical examinations.

Visual acuity was recorded using a Snellen's distance vision chart and near vision chart. Family and social history, occupation, education, and socioeconomic status were graded according to Prasad's classification. The patients were asked to report their level of education and their occupation.

Retinoscopy and recording the best corrected visual acuity were done. Examinations under slit lamp were done routinely. Tonometry was performed using Applanation tonometer; three readings were taken and the mean (the nearest whole number) was recorded as the IOP. Examinations of fundus with Direct Ophthalmoscope and with +90D lens were done. Gonioscopy was carried out using a Goldmann two mirror gonioscopes in all the cases.

The angle of the anterior chamber was graded according to Shaffer's angle grading system. Visual field examination using Humphrey's field analyzer was carried out and documented in all the selected cases.

Patients were classified as advanced (late) presenters using the following criteria: no perception of light or severe visual field loss affecting an area within 20° of fixation or a C: D ratio > 0.8.

The awareness of glaucoma was determined by asking the patient if he/she knew or had heard about glaucoma and if he/she was aware about the possibility of visual field loss and irreversible optic nerve damage, and the need for compliance of treatment, and family history.

Exclusion Criteria

Patients with:

1. Secondary Glaucoma.
2. Congenital glaucoma / Developmental Glaucoma.

RESULTS

There were 35 cases of POAG and 25 of PACG. There were 28 male (80%) patients with POAG and 9 (36%) with PACG. (FIGURE 1A, 1B).

Among the early presenters, 8 cases (4%) were under 40 years, 17 (42%) were 41–60 years, and 5 (54%) were 61–80 years. The average age was 55 years (SD 10.5), whereas among late presenters it was 1 case under 40 years, 15 cases were 41–60 years, and 15 cases were 71–80 years old. (Figure 2).

The level of education (Figure 3): 16% of early presenters were illiterate / primary school educated, 27% were middle and high school educated and 60% were graduate / post graduate, while in the late presenters 27% was illiterate / primary school educated, 53% middle and high school educated, and 20% were graduate/postgraduate/diploma (P value = 0.009)

The occupations of late presenters (Figure 4): 42% were unemployed and unskilled workers, 32% were semiskilled and skilled workers, and 26% were semi-professionals and professionals (P value = 0.03) Thus poor education and unemployment contributed to majority of late presentation.

9 early presenters had positive family history of glaucoma, 6 cases were POAG and 3 cases were PACG, whereas 5 late presenters had family history of glaucoma in which 3 cases were POAG and 2 cases PACG.

Most of the late presenters belonged to the lower social classes, almost 50% of the late presenters belonged to social class III to V. (P = 0.0257) (Figure 5).

In 10 patients with advanced disease, glaucoma was not diagnosed in the last 1 year by ophthalmologists (2 patients) or optometrists (8 patients). Distance from the hospital (Figure 6) was also the contributing factor for late presentation. And 20 late presenters lived >30 kms away from the hospital. (P value = 0.032)

Only 8 late presenters were aware of glaucoma and all 8 were semi-skilled and skilled workers. Awareness of glaucoma was poor in all uneducated class patients.

15 patients (50%) with late presentation were ignorant that glaucoma causes irreversible blindness. The primary source of knowledge about glaucoma for the remaining 15 patients was mainly the ophthalmologists, followed by friends and relatives. (Figure 7). Newspapers, TV and non-ophthalmic doctors played a smaller role, whereas radio, movies, and the Internet had very little contribution, mostly due to low socio-economic profile of the group and lack of accessibility to these media, whereas 24 patients (80%) with early presentation were aware of the disease and its potential to cause irreversible blindness.

DISCUSSION

PACG was more common in women than men. This corroborated with the findings of two population-based studies from India, the APEDS (Dandona L *et al.*, 2000) and the Chennai Glaucoma Study. (Vijay L *et al.*, 2008).

Socioeconomic status was a risk factor for late presentation of glaucoma. A study in Scotland, UK, showed that areas with high index of deprivation had more severe glaucoma on presentation to the health system. (Agarwal PK *et al.*, 2010)

Owen *et al* 2006 showed that most of the patients in the hard-pressed group (ACORN index) received less treatment than those in the affluent group, and trend towards poor compliance. In this study, patients with poor socioeconomic status had lower educational attainment. Most of them were unaware of glaucoma in the family, often presenting to the clinic with a much advanced/late stage of the disease. In Moorefield’s Eye Hospital Study, it was observed that stronger the patient’s family history, the lower the odds of late attendance. [Fraser S *et al.*, 1999] But in our study, the results were insignificant.

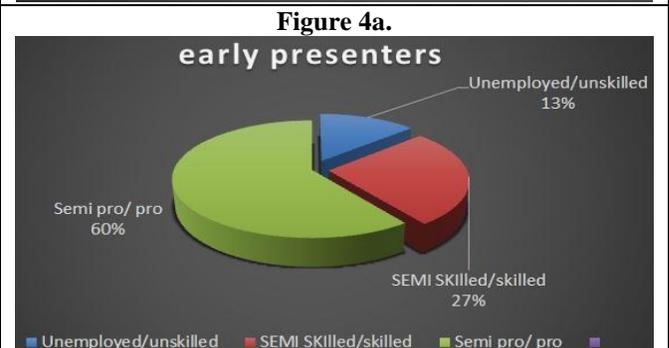
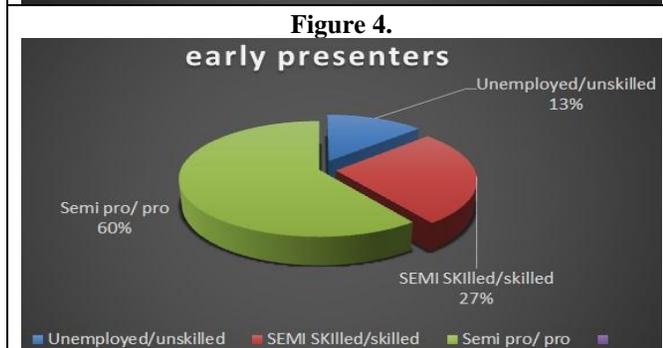
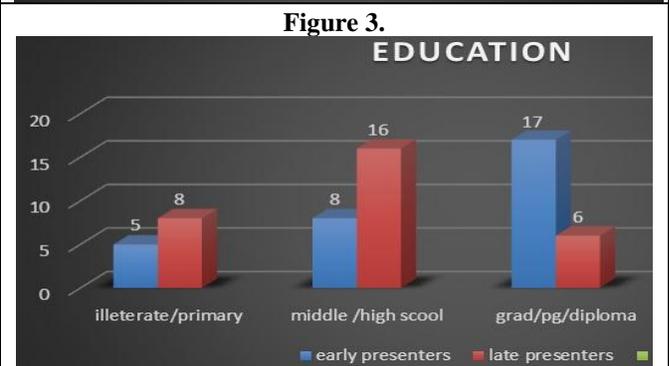
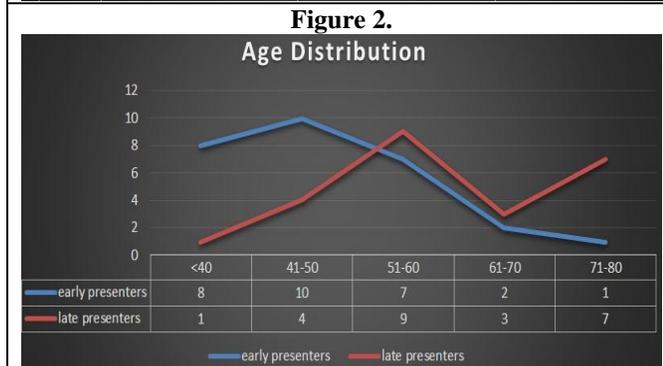
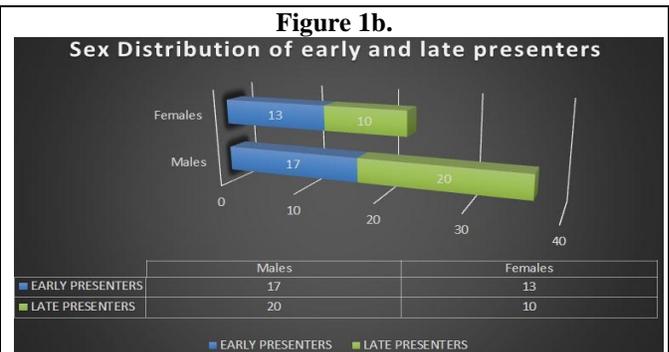
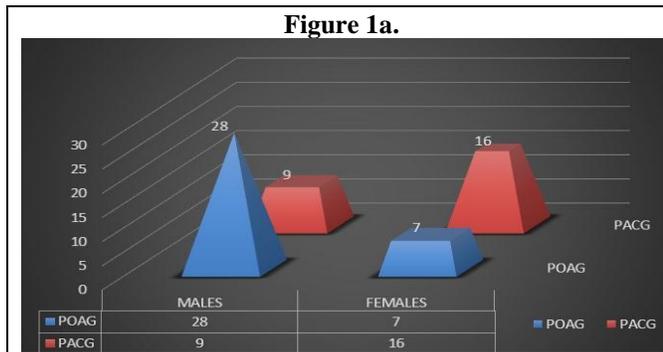
According to APEDS, illiterate and poor socioeconomic class in rural India were less aware of

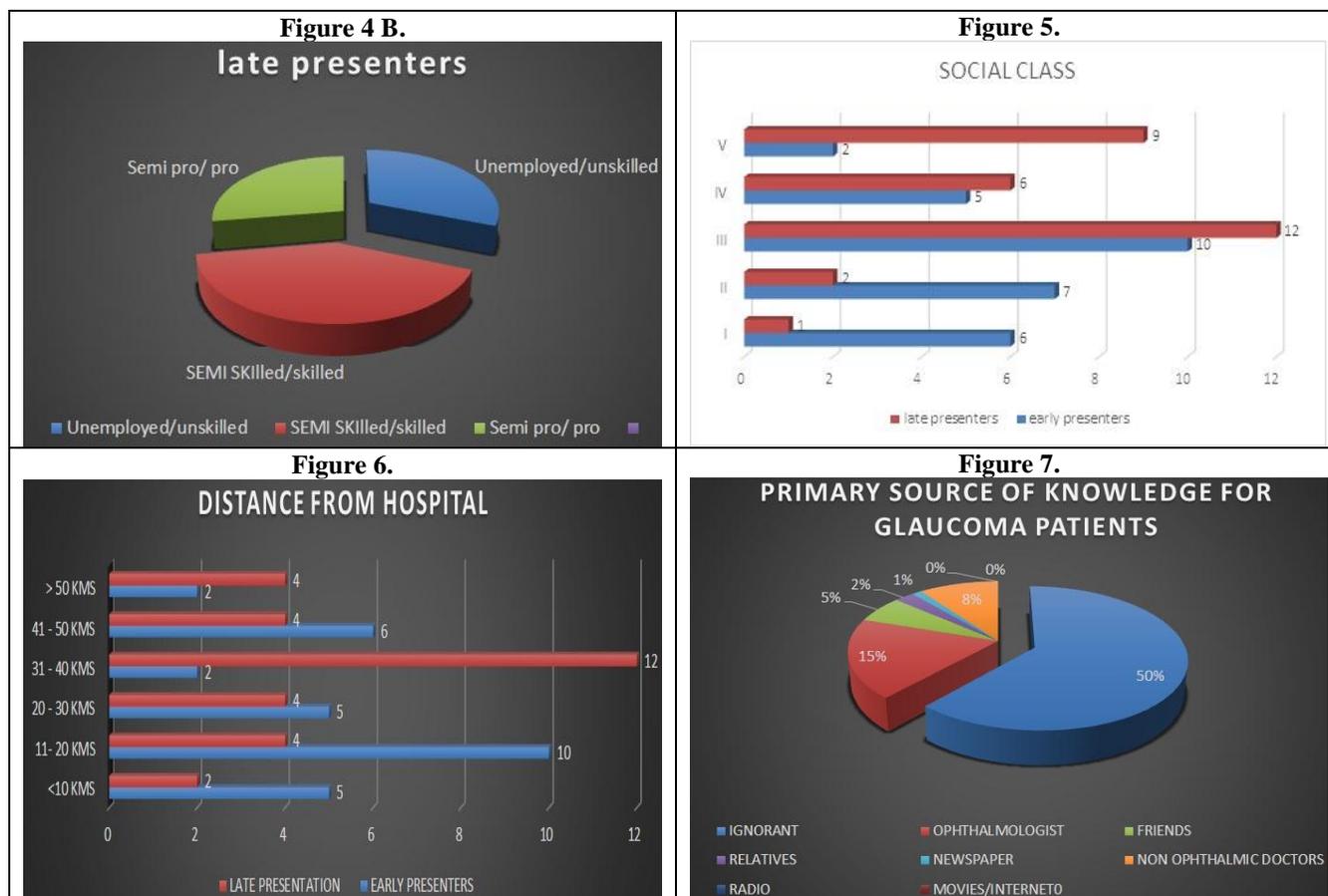
glaucoma, (Krishnaiah S *et al.*, 2005) as in the Chennai Glaucoma Study

Another study done in Australia showed that the lack of awareness of glaucoma was a major risk for late presentation, rather than the lack of access to care. (Attebo K *et al.*, 1997). Thus, improving education and increasing awareness of glaucoma can go a long way in decreasing the late presentation of the disease.

Table 1. Prasad Method of Social Classification (Rural)

Social Class	Per Capia Income Per Month (Rs)
I	2504
II	1253 – 2503
III	277 – 1252
IV	250 – 276
V	< 250





CONCLUSION

This study provided some insight into the socio economic risks factors of late presentation of glaucoma. Poor socioeconomic status, education level, lack of awareness and old age show a strong association with

advance /late presentation especially in our country. This socio-economic perspective can be used to target populations who are at risk of late presentation and of becoming blind due to glaucoma.

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