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Evaluation of Prevalence of Glaucoma: An Institutional Based Study

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ABSTRACT

Background: Glaucoma is the leading cause of irreversible blindness and second leading cause of blindness, leading to a huge burden of the world. The present study was conducted to assess the prevalence of glaucoma.

Materials and Methods: A cross-sectional study was conducted in the Department of Ophthalmology, Kamineni Institute of Medical Sciences, Narketpally, Nalgonda, AP (India) for a period of one year among middle age and elderly population to assess the prevalence of glaucoma. The total sample included in the study was 800. A predesigned & pretested questionnaire was used to collect data from the study population.

Results: The total 800 patients were included in the study in which 381 were urban and 420 were rural participants. Among the total study participants, 38.75% were males and 61.25% were females. The majority of participants were in the age group 40-49 years (35%). The prevalence of glaucoma was 7.5% in our study participants. The Primary Open Angle Glaucoma (POAG) was found in 2.5% study participants, Primary Angle Closure Glaucoma (PACG) and Normotensive Glaucoma (NTG) was found in 1.87% study participants respectively and secondary glaucoma was found in 1.25% of the patients.

Conclusion: The present study concluded that the prevalence of glaucoma was 7.5% in our study participants. The Primary Open Angle Glaucoma (POAG) was found in 2.5% study participants, Primary Angle Closure Glaucoma (PACG) and Normotensive Glaucoma (NTG) was found in 1.87% study participants respectively and secondary glaucoma was found in 1.25% of the patients.

Key words: Glaucoma, The Primary Open Angle Glaucoma, Primary Angle Closure Glaucoma and Normotensive Glaucoma.

INTRODUCTION

Glaucoma is the leading cause of global irreversible blindness. It has been estimated that 60.5 million people will be affected by primary open-angle glaucoma (POAG) and primary angle-closure glaucoma (PACG) globally in 2010.[1-3] It is estimated that the global burden of glaucoma to be 60 million and it would be 79.6 million by 2020, with almost half of them Asian.[4] Glaucoma is a multifactorial condition resulting from progressive optic neuropathy and visual field loss. These changes are often slow, and many glaucoma patients do not know about their underlying glaucomatous eye. Chennai Glaucoma Study as well as Aravind comprehensive eye survey, observed that more than 90% cases of glaucoma were undiagnosed and were

identified only at the time of study. They have proposed periodic screening of high-risk population for diagnosing the disease at an early stage.[5,6] The World Health Organization (WHO) included glaucoma as the priority blinding eye disease. The WHO has recommended data collection on visual impairment (VI) and the epidemiological trends on eye diseases including glaucoma.7 The present study was conducted to assess the prevalence of glaucoma in a known area.

MATERIALS AND METHODS

A cross-sectional study was conducted in the Department of Ophthalmology, Kamineni Institute of Medical Sciences, Narketpally, Nalgonda, AP (India) for a period of one year among middle age and elderly population to assess the prevalence of glaucoma. Informed consent was taken from the patients. People aged 40 years and above and who gave consent for interview and examination were included in the study. Those who were severely ill or who did not give the consent were excluded from the study. The total sample included in the study was 800 middle age and elderly population. A predesigned & pretested questionnaire was used to collect data from the study population. A preliminary eye examination was done at home and those in whom glaucoma was suspected or whose uncorrected visual acuity was <3/60, were referred to ophthalmology OPD for further evaluation.

Operational Definition

1. High Intraocular pressure:
   - Pressure > 21mm of Hg in either eye.
   - Difference of more than 6 mm Hg in both eyes.
2. Significant Disc changes:
   - Vertical cup disc ratio > 0.6 in either eye.
   - Asymmetry of cup disc ratio > 0.2.
   - Other disc changes like polar notch, hemorrhages on or near the disc, thinning of neuroretinal rim.
3. Glaucoma diagnosis

   Any two of the three features
   - High Intraocular pressure
   - Significant Disc changes
   - Glaucomatous field defect (Anderson criteria)

Data were tabulated and analysed by using SPSS. Descriptive data were presented as frequency, graph, mean and percentage. p-value of < 0.05 was considered significant.

RESULTS

The total 800 patients were included in the study in which 381 were urban and 420 were rural participants.

Among the total study participants, 38.75% were males and 61.25% were females. The majority of participants were in the age group 40-49 years (35%). The prevalence of glaucoma was 7.5% in our study participants. The Primary Open Angle Glaucoma (POAG) was found in 2.5% study participants, Primary Angle Closure Glaucoma (PACG) and Normotensive Glaucoma (NTG) was found in 1.87% study participants respectively and secondary glaucoma was found in 1.25% of the patients.).

Table 1: Demographic factors

Variables	N(%)
Gender	
Male	310(38.75%)
Female	490(61.25%)
Age (yrs)	
40-49	280(35%)
50-59	200(25%)
60-69	180(22.5%)
>70	140(17.5%)
Residence	
Urban	381(47.62%)
Rural	420(52.5%)

Table 2: Prevalence of glaucoma

Prevalence of glaucoma	N(%)
Glaucoma present	60(7.5%)
Primary Open Angle Glaucoma (POAG)	20(2.5%)
Primary Angle Closure Glaucoma (PACG)	15(1.87%)
Normotensive Glaucoma (NTG)	15(1.87%)
Secondary glaucoma	10(1.25%)
Glaucoma absent	740(92.5%)
Total	800(100%)

DISCUSSION

The total 800 patients were included in the study in which 381 were urban and 420 were rural participants. Among the total study participants, 38.75% were males and 61.25% were females. The majority of participants were in the age group 40-49 years (35%). The prevalence of glaucoma was 7.5% in our study participants. The Primary Open Angle Glaucoma (POAG) was found in 2.5% study participants, Primary Angle Closure Glaucoma (PACG) and Normotensive Glaucoma (NTG) was found in 1.87% study participants respectively and secondary glaucoma was found in 1.25% of the patients. International studies have a wide range of rates of glaucoma, varied from 0.94% in Nepal to 13.8% among US citizen.[8] Among subtypes of glaucoma, in India the POAG is a predominant subtype, with a prevalence of POAG varying from 1.26 – 4.32% and PACG in 0.15 – 1.11% among various Indian subpopulation.[9] The glaucoma prevalence of 3.8% reported in the Liwan Eye Study in Guangzhou/South China.[10] Among all the socio-demographic factors, apart from the age of the

patients, higher prevalence of glaucoma was observed in urban population, females, and lower socio-economic class, but it was not found to be statistically significant. These findings found in previous studies done across various part of India and other countries.[11,12]

CONCLUSION

The present study concluded that the prevalence of glaucoma was 7.5% in our study participants. The Primary Open Angle Glaucoma (POAG) was found in 2.5% study participants, Primary Angle Closure Glaucoma (PACG) and Normotensive Glaucoma (NTG) was found in 1.87% study participants respectively and secondary glaucoma was found in 1.25% of the patients.

REFERENCES

1. Kingman S. Glaucoma is second leading cause of blindness globally. Bull World Health Organ 2004;82:887–8.
2. Quigley HA, Broman AT. The number of people with glaucoma worldwide in 2010 and 2020. Br J Ophthalmol 2006;90:262–7.
3. Wong TY, Loon SC, Saw SM. The epidemiology of age related eye diseases in Asia. Br J Ophthalmol 2006;90:506–11.
4. Quigley HA, Broman AT. The number of people with glaucoma worldwide in 2010 and 2020. The British journal of ophthalmology. 2006 Mar 1;90(3):262–7.
5. Vijaya L, George R, Paul PG, Baskaran M, Arvind H, Raju P, et al. Prevalence of Open-Angle Glaucoma in a Rural South Indian Population. Investigative Opthalmology & Visual Science. 2005 Dec 1;46(12):4461.
6. Ramakrishnan R, Nirmalan PK, Krishnadas R, Thulasiraj R., Tielsch JM, Katz J, et al. Glaucoma in a rural population of southern India: The Aravind comprehensive eye survey. Ophthalmology. 2003 Aug 1;110(8):1484–90.
7. World Health Organization. Glaucoma: Disease control and prevention of visual impairment in Global initiative for the elimination of avoidable blindness. Action Plan 2006–2011. Geneva, Switzerland. World Health Organization; 2007. p. 37–9.
8. Lee PP, Feldman ZW, Ostermann J, Brown DS, Sloan FA. Longitudinal Prevalence of Major Eye Diseases. Archives of Ophthalmology. 2003 Sep 1;121(9):1303.
9. Raychaudhuri A, Lahiri SK, Bandyopadhyay M, Foster PJ, Reeves BC, Johnson GJ. A population based survey of the prevalence and types of glaucoma in rural West Bengal: the West Bengal Glaucoma Study. The British journal of ophthalmology. 2005 Dec 1;89(12):1559–64.
10. He M, Foster PJ, Ge J, Huang W, Zheng Y, et al. Prevalence and clinical characteristics of glaucoma in adult Chinese: a population-based study in Liwan District, Guangzhou. Invest Ophthalmol Vis Sci 2006; 47: 2782–88.
11. Leske MC, Connell AMS, Schachat AP. The Barbados Eye Study: Prevalence of Open Angle Glaucoma. Archives of Ophthalmology. 1994;112(6):821–9.
12. EGPS Group, Miglior S, Pfeiffer N, Torri V, Zeyen T, Cunha-Vaz J, et al. Predictive Factors for Open-Angle Glaucoma among Patients with Ocular Hypertension in the European Glaucoma Prevention Study. Ophthalmology. 2007 Jan;114(1):3–9.