

# Awareness And Knowledge About Glaucoma Among Patients Visiting Tertiary Eyecare Centre

Anuj Kumar<sup>1</sup>, Krishna Kumar Gupta<sup>2</sup>

<sup>1</sup>M. Optometry Student, School of Healthcare and Allied Sciences, GD Goenka University, Gurgaon, Haryana  
Email: kanuj938670[at]gmail.com

<sup>2</sup>PhD Scholar, School of Healthcare and Allied Sciences, GD Goenka University, Gurgaon, Haryana  
Email: krishnakumar.gupta[at]gdgu.org

**Abstract:** ***Background:** Increasing the general public's knowledge and comprehension of glaucoma is essential for the early detection and prevention of blindness. The degree to which the general public is aware of and comprehends glaucoma is not extensively documented. **Aim:** The purpose of this study was to assess people's awareness and understanding of glaucoma. **Objectives:** Assessing the patients' awareness and knowledge of glaucoma while they are in a tertiary eye care center **Methods:** A literature search was conducted on PubMed using the keywords 'awareness AND knowledge AND glaucoma.' This search yielded a total of 150 papers. Among these, most were clinical studies or reviews. Seventeen selected articles were thoroughly reviewed and summarized. **Results:** A total of 57 papers were found and assessed for this review. In the end, 17 papers that matched the inclusion criteria made it into the analysis. The analysis revealed that adults in India and around the world had a low level of knowledge and awareness of glaucoma. Key factors contributing to better knowledge and awareness about glaucoma included educational background, family history of the disease, occupation, and having had an eye examination. **Conclusion:** It was discovered that adults worldwide had a low degree of glaucoma knowledge and awareness. Higher educational attainment, a family history of glaucoma, occupation, being male, and a history of the condition were all significant predictors of greater awareness about glaucoma. eye examinations. It is recommended to implement educational campaigns and promote eye exams as strategies to enhance glaucoma knowledge among the adult population.*

**Keywords:** Awareness, Knowledge, Tertiary eye care, Glaucoma

## 1. Introduction

Over time, glaucoma develops as a chronic optic neuropathy characterized by irreversible loss of vision and optic disc cupping, usually associated with elevated intraocular pressure [1]. It is the second most common cause of blindness. Based on where it originates, glaucoma is commonly classified into three primary categories: open - angle, angle - closure (or closed - angle), and developmental. Open - angle glaucoma (OAG) and closed - angle glaucoma (CAG) are the two most common types. Primary angle - closure glaucoma (PACG) is the most prevalent type of glaucoma in Asia. Age, sex, ethnicity, and refractive error are risk factors for PAG. Additionally, it is the most common form of glaucoma in Australia, Europe, Africa, and the United States [2]. According to statistics, 3.54% of people in the world between the ages of 40 and 80 suffer from glaucoma [2]. In 2013, around 64.3 million people in this age group had glaucoma, according to predictions, this number will rise to 111.8 million by 2040 and 76.0 million by 2020 [2]. A meta - analysis of regional studies predicts a 16.0% rise to 59.51 million cases in Asia by 2020 and a 57.6% increase to 80.87 million by 2040 [3]. Additionally, in our country, India reported over 11 million individuals were affected by the condition [3]. Every 2 - 4 years for those under 40, every 2 - 3 years for people 40-60, and every 1 - 2 years for people over 60, according to the World Health Organization, glaucoma screenings should be performed. Still, there are differences in the knowledge of glaucoma screening among African nations [4]. Blindness resulting from glaucoma cannot currently be cured, but it can be prevented if the disease is detected early and treated swiftly. Research has shown that a late diagnosis of glaucoma significantly increases the risk of blindness [5].

The decline in visual acuity and the loss of the visual field caused by the disease affects all daily activities, including walking, driving, reading, and household tasks like cooking and sewing. Additionally, these visual impairments are often linked to other severe outcomes such as falls and road accidents. The extent of the impact varies greatly depending on the disease's stage and the individual patient [6]. Advanced age, elevated intraocular pressure (IOP) in relation to the pressure sensitivity of the optic nerve head, family history, and ethnicity are the main risk factors for glaucoma. There are several treatment options for glaucoma, including various classes of anti - glaucoma drugs, laser procedures, and surgical methods. The primary approach is typically the use of topical medications, which are generally effective in controlling intraocular pressure (IOP) for most patients. However, these medications must be used for life, which can be a concern for some patients due to cost and adherence issues [7] In our review of articles from diverse countries, we observed a significant gap in the literature concerning the assessment of glaucoma awareness and knowledge. None of the reviewed studies specifically measured the level of awareness and understanding of glaucoma among populations. Furthermore, there was no evidence of studies that implemented interventions to raise awareness about glaucoma before evaluating the participants' knowledge of the condition. This approach could be crucial in understanding the baseline knowledge and the impact of educational efforts. Another notable finding was the demographic focus of the studies: all research included in our review targeted only the adult population. There was a conspicuous absence of studies involving children, which suggests a lack of attention to younger populations in glaucoma awareness and education efforts.

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## 2. Methodology

A PubMed literature search used the keywords 'awareness AND knowledge AND glaucoma.' This search yielded a total of 57 papers. Among these, most were clinical studies or reviews. Seventeen selected articles were thoroughly reviewed and summarized.

## 3. Results

This review included seventeen articles in the final review, spanning four countries and involving 13,684 study participants. Five studies were from India, five studies from Ethiopia and Nigeria, two from Saudi Arabia, and one each from the Maldives, Mexico, Jordan, Ghana, and Syria. Out of the seventeen studies, six were published between 2013 and 2017, while the remaining twelve were published between 2021 and 2024. Six of the studies included a sample size greater than 500 individuals, while twelve of the studies had a sample size of less than 500. One study in Ghana had a small sample size of 117 [8], whereas another study involving rural residents in North India had a large sample size of 5000 [9]

### 5.1 Awareness, Knowledge and Source of Information about glaucoma in India \

A cross-sectional study was conducted at a hospital, involving 504 patients aged 40 and above at Department of Ophthalmology & Optometry at Narayana Medical College and Hospital (NMC) in Kanpur Nagar, Uttar Pradesh. The study revealed that among them, only 25 individuals (4.8%) were aware of glaucoma, and 16 individuals (3.1%) had some knowledge about the condition. Factors contributing to glaucoma awareness included higher education levels, diabetes, a history of glaucoma, and a family history of the disease [10]. In this cross-sectional study, interviews were conducted with 350 participants aged over 15 using a structured, validated questionnaire at a tertiary eye care center in western India. Among those interviewed, only 3.15% had excellent awareness of glaucoma, while 22.28% had moderate knowledge and 74.57% had poor knowledge. Awareness was positively correlated with higher levels of education and socioeconomic status. The primary information sources included handouts, family, friends, and relatives [11]. Another survey study was carried out in central India, targeting individuals aged 18 and older who were visiting the ophthalmology outpatient department. A total of 1,400 individuals took part in the study. The average age of the participants was 43 years, with a standard deviation of 15 years, ranging from 18 to 85 years. Only 27% (380 out of 1,400) of the participants were aware of glaucoma. Factors such as age, sex, and presence or type of refractive error did not affect glaucoma awareness. However, awareness was higher among those with higher education levels and those from an upper socioeconomic class. This study concluded that in India, awareness of glaucoma is insufficiently low. Limited education and lower socioeconomic status are significant risk factors contributing to the late diagnosis of glaucoma [12]. In another study, two hundred individuals over 20 years old participated where 100 from the urban areas of Vidyagiri and Navanagar in Bagalkot, North Karnataka, and 100 who attended an eye camp in Anwal village, Bagalkot district, North Karnataka, India were included. Glaucoma awareness

was higher in the urban areas (n=35, 35%) compared to the rural population in the eye camp (n=13, 13%). Source of information about glaucoma was obtained from TV/Magazines/Mass media - 21 (43.75%), Doctors - 9 (18.75%) and Ophthalmologists - 9 (18.75%) [13]. Another study whose purpose was to evaluate the degree of glaucoma awareness among North Indian rural residents. Using random sampling methods, a questionnaire-based survey was administered to a group of 5,000 rural residents aged 20 and above. Out of the 5,000 individuals enrolled in the survey, responses from 4,927 participants—comprising 3,104 males and 1,823 females—were evaluated. A total of 409 respondents were aware of glaucoma, and only 93 were deemed to know about glaucoma according to the questionnaire criteria. Education was the only variable significantly associated with awareness and knowledge of glaucoma (P value < 0.001) among the parameters considered in this study. This study concluded that rural residents in North India demonstrate a low level of awareness regarding glaucoma

### 5.2 Awareness, knowledge, and sources of information about glaucoma in other Countries

Research carried out in Ethiopia Adult patients at the ophthalmic outpatient department of Hawassa University Comprehensive Specialized Hospital in Sidama, Ethiopia are aware of glaucoma. The study included 284 participants who were 35 years of age or older. Of the 111 participants, only 111 (39.09%) were aware that they had glaucoma. Of those, 66 (59.5%) said it was caused by high eye pressure, 18 (16.21%) said it was damage to the eye nerve, 14 (12.61%) said it resulted in irreversible blindness, and 13 (11.71%) said it was a loss of visual field. Another cross-sectional study conducted on a community of 701 individuals in Gondar, Northwest Ethiopia, who were 35 years of age or older. The survey attracted 701 participants 35 years of age and older, yielding a 99.3% response rate. The ratio of men to women was 1:1.6. Awareness of glaucoma was observed in 35.1% of the participants, and 49.6% of those aware of glaucoma demonstrated good knowledge about it. Higher education levels (primary, secondary, college, and above) and having undergone an eye examination were positively linked to increased awareness of glaucoma, while older age was negatively associated. The study concluded that Fifty-eight percent of clinical professionals at Butajira Hospital were either completely unaware of or had poor knowledge about glaucoma [14]. Another cross-sectional descriptive study of glaucoma patients in a community setting was carried out in Nigeria. In 24 outreach events in South West Nigeria, a total of 1881 patients were screened, leading to the discovery of 120 cases or suspicions of glaucoma. Of them, 120 were found to be either suspects or cases of glaucoma. Of these individuals, 39 (32.5%) could properly answer at least one knowledge question, whereas 56 (46.7%) were aware that they had glaucoma. Subjects with secondary education are eight times more aware than no education. Patients who had previously had an eye exam were five times more likely to be aware of glaucoma than those who had not, even after controlling for other variables. [15] In Osogbo Local Government Area (LGA), a six-month descriptive cross-sectional study was carried out to assess the degree of glaucoma knowledge following five years of screening and

public health education programs during the state's yearly World Glaucoma Week. Of the 279 participants in the study, 192 (68.8%) had some information regarding glaucoma. Of the individuals, thirty - nine (14.0%) had a family history of glaucoma, and sixty - six (22.6%) believed that the ailment was a divine intervention. The majority, 201 participants (72.0%), had tertiary education, which was significantly linked to glaucoma awareness. Among those with a family history of glaucoma, 33 (84.6%) knew that it could lead to blindness. Eight (5.3%) of the people who claimed to know how to treat glaucoma thought it should be treated conservatively without any help [16].

Another study utilized a cross - sectional survey approach conducted in Nigeria. Data were gathered through a structured questionnaire, encompassing participants' demographic information, as well as their eye health, awareness, and knowledge about glaucoma. The outreach initiative was published using a variety of platforms, such as churches, radio, television, handbills, posters, and various hospital employees. Out of 513, only 478 subjects were given consent to participate. In the study population, 65.5% were aware of glaucoma, 36.8% knew about it, and 14.5% were diagnosed with the condition. Awareness was strongly associated with having some formal education, being aware of a positive family history, and having undergone an eye exam before the outreach. The primary source of information was the mass media. Significant correlations were found between high knowledge levels and greater degrees of schooling and occupation, while the prevalence of glaucoma significantly increased according to age. In the Jazan region Saudi Arabia, a cross - sectional study with 384 people aged 40 years or older was carried out in a community setting. According to the report, 57.7% of people living in cities and 58.7% of people living in rural had inadequate knowledge. Only 10.5% of the village and 8.8% of the city residents had good awareness. The differences in knowledge levels between village and city residents were not statistically significant ( $p = 0.387$ ). Additionally, no statistically significant differences were found between participants' knowledge levels and their education levels ( $p = 0.387$ ). Notably, 82.2% ( $n = 318$ ) of the participants had heard of glaucoma [2] In another study there were 383 participants in this cross - sectional study, which included adult patients from Jeddah Eye Hospital in Saudi Arabia. With a mean age of 38.5 years ( $\pm 12.94$  years), they were 38.1% female and 61.9% male. Thirty percent ( $n=115$ ) of the subjects had no idea what glaucoma was. Sixty - one percent of the respondents held a bachelor's degree or above. Furthermore, 23.2% of respondents had a family history of glaucoma, and 6.3% of respondents had a personal history of the illness. Information about glaucoma was most frequently obtained from doctors (24.8%), other glaucoma sufferers (28.2%), and television (19.6%). 5.91 was the average knowledge score [15]. This cross - sectional, descriptive investigation was carried out at

a central hospital. and included 488 subjects aged over 16 years. The sample consisted of 163 females (33.4%) and 325 males (66.6%). Among the participants, 81.6% had heard of glaucoma, but only 34.2% could accurately define it. Furthermore, 52.4% of the individuals knew very little about glaucoma. Family, friends, and relatives made up the majority of the information source (66.6%), but their contribution to the degree of knowledge was detrimental [16]. A web - based survey questionnaire was utilized to perform a cross - sectional investigation in maldives. A total of 410 participants took part in the study, but 20 were excluded due to incomplete responses. Among the 390 valid participants, 273 (70%) were female and 117 (30%) were male. Only 129 participants (33.1%) were aware of the subject matter, while 261 (66.9%) were not aware. The study found that 4.9% ( $n=19$ ) had good knowledge, 21.5% ( $n=84$ ) had average knowledge, and 73.6% ( $n=287$ ) had poor knowledge [3]. In another study in Mexico, a questionnaire was used in this cross - sectional study to collect data and compare findings amongst three different groups: people with glaucoma, people who are related to people with glaucoma, and people who do not have glaucoma. There were 394 volunteers in all, and their median age was 61. Of them, 152 (38.6%) were people without glaucoma, 134 (34%) were glaucoma patients, and 108 (27.4%) were glaucoma patients' families. 73.9 percent of the 291 participants said they were familiar with the term "glaucoma." In terms of knowledge, 15.5% had excellent knowledge, 37.8% had bad knowledge, and 46.7% had moderate knowledge. In general, those without glaucoma had the lowest ratings, while those who were related to glaucoma sufferers received the highest results. [14] Another cross - sectional questionnaire - based study was conducted with 500 participants at Al - Mouwasat University Hospital in Damascus, Syria. Of those interviewed, 33.6% (168 individuals) were aware of glaucoma, while 66.4% (332 individuals) were not. The average score for glaucoma knowledge was 1.62 out of 11, and only 8% (40 individuals) showed a good understanding of the disease. Knowledge levels were significantly influenced by education level, governorate, and the hospital department visited. Information from family, friends, and relatives was less effective than information from hospitals, ophthalmologists' clinics, and healthcare personnel ( $M=5.45$ ). The Internet and social media were the least effective information sources ( $M=1.23$ ) [1]. Another descriptive cross - sectional study was conducted in Ghana on 117 glaucoma patients, mostly between the ages of 50 and 59, was carried out using a questionnaire. Of the participants, 61 were male and 56 were female. Of them, 74% knew what glaucoma was. Age, gender, race, or religion did not significantly affect glaucoma awareness ( $P>0.05$ ). Nonetheless, a noteworthy distinction in consciousness was discovered between individuals possessing advanced education and those lacking it ( $P<0.001$ ). Despite this, just 27 percent of participants knew enough information regarding glaucoma.

**Table 1:** Characteristics of selected studies

Authors	Publication Year	Study Design	Study Setting	Country/ Area Study	Participants (age) (years)	Sample Size	Sampling Technique	Aware (n)	Knowledge (n)
Namrata Srivastava, et. al.	2024	CS	Hospital Based	India	$\geq 40$ Years	504	Simple random Sampling	25	16
Balcha Negese Kebede, et al.	2024	CS	Hospital Based	Ethiopia	$\geq 35$ Years	284	Systematic random Sampling	111	Not clear data

Jameel Soqia, et al.	2023	CS	Hospital Based	Syria	≥ 20 Years	500	Simple random Sampling	168	40
Ismail Abuallut, et al.	2023	CS	Community Based	Saudi Arabia	≥ 40 Years	384	Convenience Sampling Technique	318	Not clear data
Zainudheen Faroog, et al.	2023	CS	Population Based	Maldives	≥ 18 Years	385	Convenience Sampling Technique	129	19
Olusola Olawoye, et al.	2022	CS	Community Based	Nigeria	Not mention	120	Not mention	56	Not clear data
Valeria Becerril-Ledezma, et al.	2022	CS	Hospital Based	Maxico	≥ 18 Years	374	Not mention	291	45
Saleh M. Alqahtani, et al.	2021	CS	Hospital Based	Saudi Arabia	Not mention	383	Not mention	268	Not clear data
Diala W. Abu Hassan, et al.	2021	CS	Hospital Based	Jordan	≥ 16 Years	488	Convenience Sampling Technique	398	136
C. O. Adeoti, et al.	2021	CS	Community Based	Nigeria	≥ 18 Years	279	Multistage Sampling	192	Not clear data
Purvi R. Bhagat, et al.	2021	CS	Hospital Based	India	≥ 15 Years	350	Simple random Sampling	112	Not clear data
Destaye Shiferaw Alemu, et al.	2017	CS	Community Based	Ethiopia	≥ 35 Years	701	Multistage Sampling Technique	249	Not clear data
Prafulla K Maharana, et al.	2017	CS	Hospital Based	India	≥ 18 Years	1400	Not mention	380	Not clear data
Nkiru N Kizor-Akaraiwe, et al.	2017	CS	Hospital Based	Nigeria	≥ 18 Years	478	Not mention	293	176
G. Nkum, et al.	2015	CS	Hospital Based	Ghana	≥ 40 Years	117	Simple random Sampling	87	Not clear data
Chaitra pujar, et al.	2015	CS	Community Based	India	≥ 20 Years	200	Not mention	48	Not clear data
Parveen Rewri, et al.	2014	CS	Community Based	India	≥ 20 Years	5000	Random Sampling	409	93

#### 4. Discussion

Worldwide, 76 million people suffer from glaucoma; estimates suggest that as the population ages, this figure could increase to 111.8 million by 2040. With greater prevalence rates among individuals over 60, the disease primarily affects elderly adults. To the best of our knowledge, this is the first comprehensive analysis and evaluation of the combined proportion of accurate information regarding glaucoma. 13, 684 adult individuals from 17 studies were included in this review. According to the studies, there is a wide variation in the global level of good knowledge on glaucoma, ranging from roughly 1.88% to 42%. Overall, glaucoma awareness and knowledge are quite low, according to our review. Among the 17 studies reviewed, the highest proportion of knowledge about glaucoma was reported in a study from South Ethiopia (42%) [10]. In contrast, the lowest level of knowledge was observed among rural residents in North India, at 1.88% [11]. This review found that adults generally have a poor degree of good understanding of glaucoma. This discrepancy could be caused by variations in national educational systems, healthcare access, ophthalmology facility availability, and sociocultural variables. These results emphasize how critical it is for medical practitioners to back educational programs and campaigns to raise adult awareness of glaucoma. Key factors positively associated with glaucoma knowledge among adults globally include educational attainment, prior eye examinations, income level, glaucoma in the family history, and masculine gender. Greater knowledge of glaucoma was connected with higher wealth, youth, male gender, better education, and a family history of glaucoma., likely due to increased literacy, which facilitates access to glaucoma information. Prior eye examinations were also associated with better glaucoma knowledge, possibly due

to the information provided by healthcare workers during visits to medical facilities. These findings suggest that healthcare workers should encourage regular eye exams to enhance glaucoma awareness among adults.

#### 5. Conclusion

It was discovered that adults worldwide had a low degree of glaucoma knowledge and awareness. The following were significant predictors of increased awareness of glaucoma: occupation, gender, glaucoma in the family history, educational achievement, and previous eye exams. Promoting eye exams and running educational programs are suggested tactics to increase adult population awareness of glaucoma.

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