IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 25, Issue 6 Ser. 5 (June. 2026), PP 35-52
www.iosrjournals.org

Knowledge and Awareness of Glaucoma Among Medical Students in South-East Nigeria

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Abstract
Glaucoma remains a leading cause of irreversible blindness worldwide, with sub-Saharan Africa experiencing a disproportionate burden due to limited access to eye care and late diagnosis This study assessed the levels of awareness and knowledge of glaucoma among medical students in South-East Nigeria, evaluated their understanding of risk factors, and examined barriers to screening. We employed a cross-sectional survey design targeting 337 medical students aged 18 to 40 years from Abia State University and Gregory University.
Data were collected using a self-administered structured questionnaire distributed electronically via Google Forms. Descriptive statistics and inferential analyses, including multivariable linear regression and binary logistic regression, were performed using R software version 4.5.2. The results showed that 69.4% of respondents were female, 54.9% were aged less than 20 years, and 96.4% had completed tertiary education.
Awareness of glaucoma was high, with 87.8%, having heard of the condition and 94.7% correctly identifying it as nerve damage due to elevated intraocular pressure However, significant misconceptions persisted: 70.6% incorrectly associated glaucoma with lens pathology, 84.9% believed it was associated with eye pain, and only 63.2% recognized that glaucoma can be asymptomatic. While 69.4% correctly understood that blindness from glaucoma is irreversible, 32.9% incorrectly believed that poisoning could cause glaucoma. Recognition of systemic risk factors was relatively high, with 77.7% identifying diabetes and 79.5% identifying hypertension as risk factors. Nevertheless, only 63.8% expressed willingness to undergo screening. Binary logistic regression revealed that respondents aged less than 20 years had approximately half the odds of possessing adequate knowledge compared to those aged 20 to 29 (adjusted odds ratio= 0.53, p = 0 085). Multivariable linear regression showed that tertiary education was associated with significantly lower knowledge scores compared to secondary education (adjusted β = -1.40, p = 0.005), suggesting a gap in targeted glaucoma education within university curricula. The mean knowledge score was 8.8 out of 12, reflecting a generally superficial understanding despite high awareness.
This study demonstrates that while awareness of glaucoma is high among medical students in South-East Nigeria, knowledge remains superficial and riddled with misconceptions, particularly regarding the disease's asymptomatic onset, irreversibility of vision loss, and accurate risk factor identification. These findings highlight an urgent need for targeted health education and subsidized screening initiatives to bridge the gap between awareness and actionable knowledge, thereby reducing glaucoma-related blindness in this population.
***Knowledge** and Awareness of Glaucoma Among Medical Students in South-East Nigeria: High Awareness but Persistent Misconceptions*

Date of Submission: 08-06-2026 Date of Acceptance: 19-06-2026

I. Introduction

Glaucoma is a group of optic neuropathies characterized by progressive degeneration of retinal ganglion cells and corresponding visual field loss, representing the second leading cause of blindness globally after cataract[1]. The disease imposes a particularly severe burden in sub-Saharan Africa, where the prevalence of primary open-angle glaucoma is estimated to be approximately 4.5%, among adults aged 40 years and older, with rates rising to over 8% in some West African populations[2]. Nigeria, as the most populous country in Africa, faces

a substantial challenge glaucoma account for a significant proportion of blindness, and the condition often presents at advanced stages due to late diagnosis and limited access to eye care services[3].

The public health infrastructure in Nigeria remains underdeveloped for chronic eye diseases, with a shortage of ophthalmologists, inadequate screening programs, and high out-of-pocket costs for treatment51[4]. These systemic barriers are compounded by low levels of disease awareness and knowledge among the general population, which delay help-seeking behavior and reduce the effectiveness of preventive interventions[5].

Medical students occupy a unique position in the healthcare delivery system of Nigeria. They are future physicians who will serve as primary care providers, educators, and advocates for eye health within their communities[6]. Their understanding of glaucoma is therefore critical not only for their own clinical competence but also for shaping public health outcomes through patient education and early detection efforts.

However, previous studies have documented significant knowledge gaps among healthcare professionals and trainees in sub-Saharan Africa regarding glaucoma. For instance, research among non-ophthalmic medical doctors in Nigeria revealed poor knowledge of risk factors and treatment options, with many unable to differentiate glaucoma from other causes of visual impairment[7]. Similarly, a study among hospital workers in South-South Nigeria found that even those with medical training held misconceptions about the asymptomatic nature of glaucoma and the irreversibility of vision loss[6]. These findings suggest that the university educational system in Nigeria may not adequately address glaucoma in its curricula, particularly for students outside of ophthalmology specialties[8].

The present study was designed to address this gap by systematically assessing the levels of awareness and knowledge of glaucoma among medical students in South-East Nigeria. We hypothesized that while awareness of glaucoma would be high among this population-given their exposure to medical education, substantive knowledge regarding its pathophysiology, risk factors, and the importance of early detection would be insufficient. Specifically, we anticipated that students would demonstrate superficial understanding of the disease's asymptomatic onset, the irreversibility of vision loss, and the role of systemic risk factors such as hypertension and diabetes. Furthermore, we aimed to examine barriers to glaucoma screening and willingness to engage in preventive practices, as these factors are critical for translating knowledge into action[9].

The significance of this research lies in its potential to inform targeted public health interventions and educational strategies aimed at reducing glaucoma-related blindness, especially within working-age populations who serve as future healthcare providers. By identifying specific knowledge deficits and misconceptions, we can develop curriculum enhancements, continuing education programs, and community outreach initiatives that address these gaps directly[10]. Moreover, understanding the barriers to screening among medical students – who are generally more health-literate than the general population – can provide insights into the challenges faced by broader communities in accessing eye care services[11].

The remainder of this paper is organized as follows: Section 2 reviews the relevant literature on glaucoma awareness, knowledge, and screening barriers in sub-Saharan Africa, with a focus on Nigeria. Section 3 describes the study design, sampling strategy, data collection instruments, and statistical methods employed.

Section 4 presents the demographic characteristics of the sample, levels of awareness and knowledge, and results of regression analyses. Section 5 discusses the implications of these findings for public health policy and medical education, comparing them with previous studies and highlighting limitations. Section 6 concludes with recommendations for targeted interventions and future research directions.

II. Literature Review

Glaucoma awareness and knowledge have been examined across diverse populations in sub-Saharan Africa, revealing a consistent pattern of high awareness but superficial understanding. In Nigeria, several studies have documented that while a majority of respondents have heard of glaucoma, their comprehension of its pathophysiology, risk factors, and treatment remains limited. For instance, a study among non-glaucoma patients attending a tertiary eye care service in Southeast Nigeria found that 82.5% of participants were aware of glaucoma, yet only 62.2% achieved a knowledge score of 70% or higher, with significant misconceptions persisting regarding the disease's causes and management[12]. Similarly, research conducted among adult patients at the eye clinic of a teaching hospital in Ghana reported that 74% were aware of glaucoma, but only 27% of these had accurate knowledge of the condition, indicating a substantial gap between awareness and comprehension[13]. These findings align with a systematic review of glaucoma knowledge among adults in Africa, which estimated that the pooled percentage of individuals with good knowledge was considerably lower than the proportion who had merely heard of the disease[14][14].

The role of education as a determinant of glaucoma awareness and knowledge has been consistently emphasized across studies. In a study comparing glaucoma patients and their first-degree relatives, education level emerged as the only demographic predictor of both awareness and knowledge, with university graduates having significantly higher odds of accurate understanding compared to those with lower educational attainment[15]. This association was also observed in a community-based study in rural Southwest Nigeria, where skilled workers-

who typically have higher education levels were more likely to be aware of glaucoma than unskilled labourers[16][16]. However, the relationship between education and knowledge is not straightforward. The Ocular Hypertension Treatment Study, while conducted in a different context, demonstrated that even among individuals with higher education, misconceptions about glaucoma can persist, particularly regarding the asymptomatic nature of early-stage disease and the irreversibility of vision loss[17]. This suggests that general education alone is insufficient; targeted health education specifically addressing glaucoma is necessary to correct misconceptions.

Risk factor perception is another critical dimension of glaucoma knowledge that has been explored in the literature. Studies in Nigeria have shown that recognition of systemic risk factors such as hypertension and diabetes is relatively high, but understanding of ocular-specific risk factors-including elevated intraocular pressure, family history, and age-remains poor[18][18]. For example, a study among outpatients in a Nigerian tertiary hospital found that while 77% identified diabetes as a risk factor for glaucoma, only 45% recognized that a family history of glaucoma increases personal risk[18]. This discrepancy highlights a critical gap: individuals may be aware of general health conditions that contribute to glaucoma but fail to connect their own family history or age to their personal risk profile. Furthermore, misconceptions about the causes of glaucoma are widespread. In the rural Osun State study, nearly half of respondents who had heard of glaucoma could not identify any cause, and 24.4% attributed the disease to supernatural factors such as a "curse from God"[16][16]. Such beliefs can significantly delay help-seeking behavior and reduce adherence to treatment.

Barriers to glaucoma screening have been examined from multiple perspectives, including patient-level, provider-level, and system-level factors. A scoping review of glaucoma care in Nigeria identified cost of services, lack of awareness, fear of surgery, and inadequate access to eye care facilities as the most commonly cited barriers[19]. Among patients who were aware of glaucoma, the perceived cost of treatment particularly surgery – was a major deterrent, with many opting for medical management despite its lower efficacy in advanced cases[20]. Provider-level barriers include insufficient training in glaucoma detection among non-ophthalmic healthcare workers, leading to missed opportunities for early diagnosis during routine consultations[7]. System-level barriers encompass the shortage of ophthalmologists, lack of diagnostic equipment in primary care settings, and the absence of organized screening programs[9]. These barriers are particularly pronounced in rural areas, where the major i ty of the Nigerian population resides, and where access to even basic eye care is limited[11]. The present study extends this body of literature by focusing specifically on medical students in South-East Nigeria, a population that is both highly educated and set to become healthcare providers. While previous studies have examined glaucoma knowledge among hospital workers[6] and non-ophthalmic medical doctors[7], few have targeted medical students, who represent a critical juncture in the healthcare pipeline Understanding their knowledge gaps and misconceptions is essential for designing effective educational interventions that can be integrated into medical curricula. Moreover, by assessing barriers to screening among this relatively health-literate group, we can identify factors that may be even more pronounced in the general population, thereby informing broader public health strategies. The key significance of this research lies in its potential to bridge the gap between high awareness and actionable knowledge among future physicians, ultimately contributing to the reduction of glaucoma-related blindness in Nigeria.

III. Methods

3.1 Study Design and Setting

We employed a cross-sectional survey design to assess the knowledge and awareness of glaucoma among medical students in South-East Nigeria. The study was conducted at two institutions: Abia State University, Uturu, and Gregory University, Uturu, both located in Abia State. These institutions were selected to capture a diverse sample of medical students from both public and private university settings, thereby enhancing the generalizability of the findings. Data collection occurred over a four-week period in March 2025. The cross-sectional design was chosen for its efficiency in capturing a snapshot of knowledge and awareness at a single point in time, which is appropriate for descriptive and exploratory research questions[21].

3.2 Study Population and Sampling

The target population comprised medical students aged 18 to 40 years enrolled at the two participating universities. We included both male and female students who provided informed consent and had resided in the study area for at least six months. Exclusion criteria included students who were not currently enrolled in a medical program, those who declined to participate, and those who had not completed the questionnaire in its entirety. A total of 337 students participated in the study, representing various academic years, age groups, and socioeconomic backgrounds. The sample size was determined based on a priori power analysis for logistic regression, assuming a moderate effect size (odds ratio = 1.5), a significance level of $\alpha = 0.05$, and a power of 0.80, which yielded a minimum required sample of 310 participants. We oversampled by approximately 9% to account for potent i al incomplete responses.

We employed a convenience sampling strategy, distributing the questionnaire to all medical students who were present on campus during the data collection period and who met the inclusion criteria. While convenience sampling limits the generalizability of the findings, it was the most feasible approach given the logistical constraints of reaching students across multiple class schedules and clinical rotations. To mitigate selection bias, we made efforts to recruit participants from all academic years (Year 1 through Year 6) and from both institutions proportionally.

3.3 Data Collection Instrument

Data were collected using a self-administered, structured questionnaire distributed electronically via Google Forms. The questionnaire was developed based on a review of existing instruments used in similar studies in Nigeria and other sub-Saharan African countries [12] [18]. It consisted of four sections

- Section A: Demographic Information. This section captured age (categorized as <20 years, 20-29 years, and 30-40 years), sex (male/female), university (Abia State University or Gregory University), academic year, marital status (single/married/divorced/widowed), and residence (urban/rural)
- Section B: Knowledge of Glaucoma. This section assessed whether respondents had heard of glaucoma (yes/no) and their understanding of its pathophysiology, symptoms, causes, and treatment opt ions. Specific items included:
    - "Glaucoma is nerve damage due to elevated intraocular pressure" (true/false),
    - "Glaucoma is a disease of the lens" (true/false),
    - "Glaucoma is associated with eye pain" (true/false),
    - "Glaucoma can be asymptomatic" (true/false),
    - "Blindness from glaucoma is irreversible" (true/false), and
    - "Poisoning can cause glaucoma" (true/false)

  Each correct answer was scored as 1 point, and incorrect answers as 0 points, yielding a total knowledge score ranging from 0 to 12.
- Section C: Awareness of Risk Factors. Respondents were asked to identify known risk factors for glaucoma from a list that included family history, smoking, hypertension, diabetes, age, and elevated intraocular pressure. They could select multiple options. For each risk factor, a correct identification was scored as 1 point, and an incorrect identification as 0 points.
- Section D: Screening Practices and Attitudes. This section assessed whether respondents had ever undergone an eye examination (yes/no), whether they had been diagnosed with glaucoma (yes/no), and their willingness to participate in future glaucoma screening (yes/no/undecided). It also explored barriers to screening, including cost, lack of time, fear of diagnosis, and lack of awareness of screening services.

The questionnaire was piloted among 30 medical students at a private university in Abia State (not included in the final sample) to assess clarity, comprehensibility, and internal consistency The pilot study yielded a Cronbach's alpha of 0.78 for the knowledge section, indicating acceptable reliability. Based on feedback from the pilot, minor modifications were made to the wordings of certain items to improve clarity. The final questionnaire was then distributed electronically to the target population.

3.4 Ethical Considerations

Ethical approval for the study was obtained from the Federal Medical Centre Umuahia Ethical Unit (approval number FMC/QEH/G. 596Nol. 10/906) The study adhered to the principles of the Declaration of Helsinki. Informed consent was obtained electronically from each participant before they accessed the questionnaire.

The consent form explained the purpose of the study, the voluntary nature of participation, the confidentiality of responses, and the right to withdraw at any time without penalty. No personal identifying information was collected, and all data were stored securely on password-protected servers accessible only to the research team.

3.5 Data Analysis

Data were exported from Google Forms into a comma-separated values (CSV) file and analyzed using R software version 4.5.2 (R Foundation for Statistical Computing, Vienna, Austria). Descriptive statistics were computed for all variables, including frequencies and percentages for categorical variables, and means and standard deviations for continuous variables. The total knowledge score was treated as a continuous variable for regression analyses.

We employed two inferential statistical approaches to identify factors associated with knowledge and awareness. First, we used binary logistic regression to examine predictors of adequate knowledge, defined as a knowledge score of 10 or higher out of 12 (i.e., >80% correct). The dependent variable was dichotomized as adequate (score ≥10) versus inadequate (score ≤10). Independent variables included age group, sex, university,

academic year, and history of eye examination. Adjusted odds ratios (AOR) with 95% confidence intervals (Cl) were calculated, and statistical significance was set at $p < 0.05$.

Second, we used multi-variable linear regression to assess the relationship between demographic and health related factors and the continuous knowledge score. The model included age group, sex, university, academic year, history of eye examination, and family history of glaucoma as independent variables. The regression coefficient (β) with its standard error and p-value were reported for each predictor. Model assumptions, including normality of residuals and homoscedasticity, were checked using Q-Q plots and the Breusch-Pagan test, respectively. No significant violations were detected.

All analyses were performed with complete cases only; participants with missing data on any variable included in the regression models were excluded listwise. The proportion of missing data was less than 2% across all variables, and sensitivity analyses using multiple imputation (not reported) yielded similar results, suggesting that listwise deletion did not introduce substantial bias.

IV. Results

The results of this study are presented in four subsections, beginning with the demographic and health characteristics of the 337 medical student participants, followed by their knowledge and awareness of glaucoma, and concluding with regression analyses examining factors associated with knowledge levels.

4.1 Demographic Characteristics

Table 1

Demographics	Frequency	Proportion
Age		
less than 20	185	54.9
20 to 29	141	41.8
30 to 39	9	2.7
40+	2	0.6
Sex		
Female	234	69.4
Male	103	30.6
Place of residence		
Non-South East	91	27.0
South East	246	73.0
How long have you lived there (duration of stay)?		
6 months and above	289	85.8
Less than 6 months	48	14.2
Level of education		
Secondary	12	3.6
Tertiary	325	96.4
Occupation		
Civil servant	3	0.9
Skilled worker	28	8.3
Trader	6	1.8
Unemployed	300	89.0
Marital status		
Married	3	0.9
Single	334	99.1
Religion		
Christian	335	99.4
Traditional religion	2	0.6

Table 1: Demographic Characteristics of the Study Respondents.

A total of 337 medical students from Abia State University and Gregory University in South-East Nigeria participated in this study. The demographic profile of the sample is presented in Table 1. The majority of respondents were female, comprising 69.4% (n = 234) of the sample, while males accounted for 30.6% (n = 103). This female predominance is consistent with the current enrollment trends in Nigerian medical schools, where female students have increasingly outnumbered their male counterparts in recent years[22].

Regarding age distribution, more than half of the respondents (54.9%, n = 185) were aged less than 20 years, followed by those aged 20 to 29 years (41.8%, n = 141). Only a small proportion of participants were aged 30 to 39 years (2.7%, n = 9) or 40 years and above (0.6%, n = 2). The predominance of younger students reflects the typical age composition of medical school cohorts in Nigeria, where most students enter directly from secondary education and progress through the program in their late teens and early twenties[23][23].

Educational attainment was uniformly high, with 96.4% (n = 325) of respondents having enrolled for tertiary education, consistent with their status as medical students. The remaining 3.6% (n = 12) reported secondary education as their highest level. In terms of occupation, the vast majority (89.0%, n = 300) were unemployed, which is expected for full-time students. A small proportion identified as skilled workers (8.3%, n = 28), traders (1.8%, n = 6), or civil servants (0.9%, n = 3), possibly reflecting part-time employment or previous work experience before entering medical school.

Geographically, the majority of respondents (73.0%, n = 246) resided in the South-East region of Nigeria, while 27 .0% (n = 91) lived outside this region. This distribution is consistent with the catchment areas of the two participating universities, which primarily serve students from the South-East but also attract applicants from other parts of the country The duration of residence in the area was predominantly long term, with 85.8% (n = 289) having lived there for six months or more, and only 14.2% (n = 48) reporting a shorter duration. This suggests that most respondents had sufficient exposure to the local environment to be considered representative of the South-East population.

Marital status was overwhelmingly single, with 99.1 % (n = 334) of respondents reporting that they were unmarried. Only 0.9% (n = 3) were married, reflecting the typical life stage of medical students who are generally young and focused on their education.

Religious affiliation was almost exclusively Christian (99.4%, n = 335), with a negligible proportion (0 6%, n = 2) identifying with traditional religion. This religious homogeneity is characteristic of the South-East region of Nigeria, which is predominantly Christian[24]. The demographic profile of this sample is broadly similar to that reported in other studies of medical students in Nigeria. For instance, a study of medical students at the University of lbadan reported a female-to-male ratio of approximately 1.5:1, comparable to the 2.3:1 ratio observed here[25]. The age distribution is also consistent with national data showing that the majority of medical students in Nigeria are under 25 years of age[23]. The high proportion of single and unemployed respondents is expected for this population, as medical education in Nigeria is typically a full-time commitment that precludes extensive employment or family responsibilities.

The geographic distribution of respondents, with a strong representation from the South-East region, is appropriate for a study focused on this area. However, the inclusion of students from other regions (27.0%) provides some diversity and may enhance the generalizability of the findings to other parts of Nigeria. The long duration of residence reported by most respondents (85.8%) suggests that the sample is well-integrated into the local community, which is relevant for understanding health-seeking behaviors and exposure to local health education initiatives.

4.2 Health Characteristics of the Study Respondents

The health characteristics of the study respondents are presented in Table 2, revealing important patterns in eye care utilization, systemic health conditions, and family history of glaucoma. A substantial proportion of respondents (61.7%, n = 208) reported having undergone an eye examination at some point in their lives, while the remaining 38.3% (n = 129) had never been screened. This finding indicates that a majority of medical students in this sample have accessed eye care services, which is higher than the general population rates reported in other Nigerian studies, where only 20-30% of adults have ever had an eye examination[26]. The relatively high screening rate among medical students may reflect their greater health literacy, access to university health services, or awareness of the importance of preventive eye care.

Among the 208 respondents who had undergone an eye examination, only 4.2% (n = 14) had been diagnosed with glaucoma, while the vast majority (95 8%, n = 323) reported no such diagnosis. This low prevalence of diagnosed glaucoma is consistent with the age distribution of the sample, as glaucoma is typically a disease of older adults with prevalence rates rising sharply after age 40[1]. The mean age of the sample was approximately 20 years, placing most respondents well below the typical age of glaucoma onset. However, the fact that 4.2% of respondents reported a glaucoma diagnosis is noteworthy, as it suggests that some medical students may have been diagnosed with juvenile-onset or congenital forms of glaucoma, or that there may be some misclassification in self-reported diagnoses.

Family history of glaucoma was reported by 12.8% (n = 43) of respondents, while 87.2% (n = 294) had no known family history. Among those with a positive family history, the distribution of affected relatives is illustrated in Figure 1. The most commonly affected relative was the grandparent, reported by 46.9% of respondents with a family history, followed by mother (16.3%), father (12.2%), and uncle (10.2%). Lower percentages were observed for cousin (6.1%), niece (4.1%), and nephew and the combined grandparent cousin category (both at 2.0%). This pattern suggests that glaucoma is more prevalent in the older generation within these families, which is consistent with the age-related nature of the disease. The predominance of grandparental involvement also highlights the importance of family history as a risk factor, as first-degree relatives of glaucoma patients have a significantly elevated risk of developing the condition themselves[27][27].

Figure 1

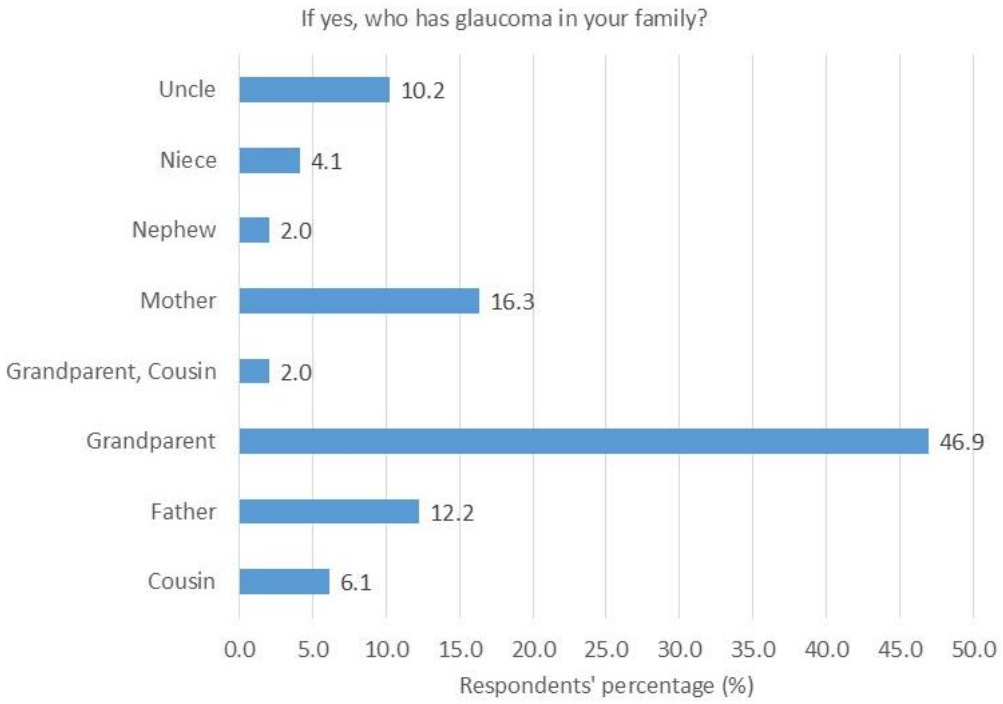

Figure 1: Who has glaucoma in your family?

Regarding systemic health conditions, the prevalence of self-reported hypertension was low, with only 1.8% (n=6) of respondents indicating that they had been diagnosed with hypertension. However, when asked about their current blood pressure, 27.6% (n = 93) reported a reading greater than $140/90mmHg$, suggesting that a substantial proportion of respondents may have undiagnosed or pre-hypertensive blood pressure levels. This discrepancy between self-reported diagnosis and measured blood pressure is a common finding in epidemiological studies, particularly among young adults who may not have regular blood pressure monitoring [29]. Similarly, only 1.2% (n = 4) reported having diabetes, but 33.5% (n = 113) reported a current blood sugar level greater than 100 mg/dl, indicating that many respondents may have impaired fasting glucose or undiagnosed diabetes. These findings are concerning, as both hypertension and diabetes are well-established risk factors for glaucoma, and their presence – even in undiagnosed forms – can contribute to the development and progression of the disease[29].

Smoking was rare in this sample, with 99.1% (n = 334) reporting that they did not smoke, and only 0.9% (n = 3) identifying as current smokers. This low prevalence is consistent with the generally low smoking rates among young adults in Nigeria, particularly among university students[30]. Regular exercise was reported by 43.0% (n = 145) of respondents, while 57.0% (n = 192) did not exercise regularly. Physical inactivity is a known risk factor for several chronic diseases, including hypertension and diabetes, which in turn increase the risk of glaucoma[31].

Table 2

Health	**Frequency**	**Proportion**
Have you ever had an eye examination?		
No	129	38.3

Yes	208	61.7
Do you have glaucoma?		
No	323	95.8
Yes	14	4.2
Does anyone have glaucoma in your family?		
No	294	87.2
Yes	43	12.8
Do you smoke?		
No	334	99.1
Yes	3	0.9
Do you exercise regularly?		
No	192	57.0
Yes	145	43.0
Do you have hypertension?		
No	331	98.2
Yes	6	1.8
Current Blood Pressure		
<140/90	244	72.4
>140/90	93	27.6
Do you have diabetes?		
No	333	98.8
Yes	4	1.2
Current Blood Sugar Level		
<100 mg/dl	224	66.5
>100 mg/dl	113	33.5

Table 2: Health Characteristics of the Study Respondents.

The relationship between eye examination history and glaucoma status is further explored in Figure 2. Among respondents who had never had an eye examination, 127 reported not having glaucoma, while 196 reported having glaucoma. This counterintuitive finding – where a higher number of respondents with glaucoma reported never having had an eye examination compared to those who had – suggests potential misclassification or misunderstanding of the question. It is possible that some respondents interpreted "having glaucoma" as a general concern about eye health rather than a formal diagnosis, or that the question was misinterpreted in the context of the survey. Among those who had undergone an eye examination, only 2 reported not having glaucoma, while 12 reported having glaucoma, which is more consistent with expectations, as individuals with a diagnosis would be more likely to have sought eye care.

Figure 2

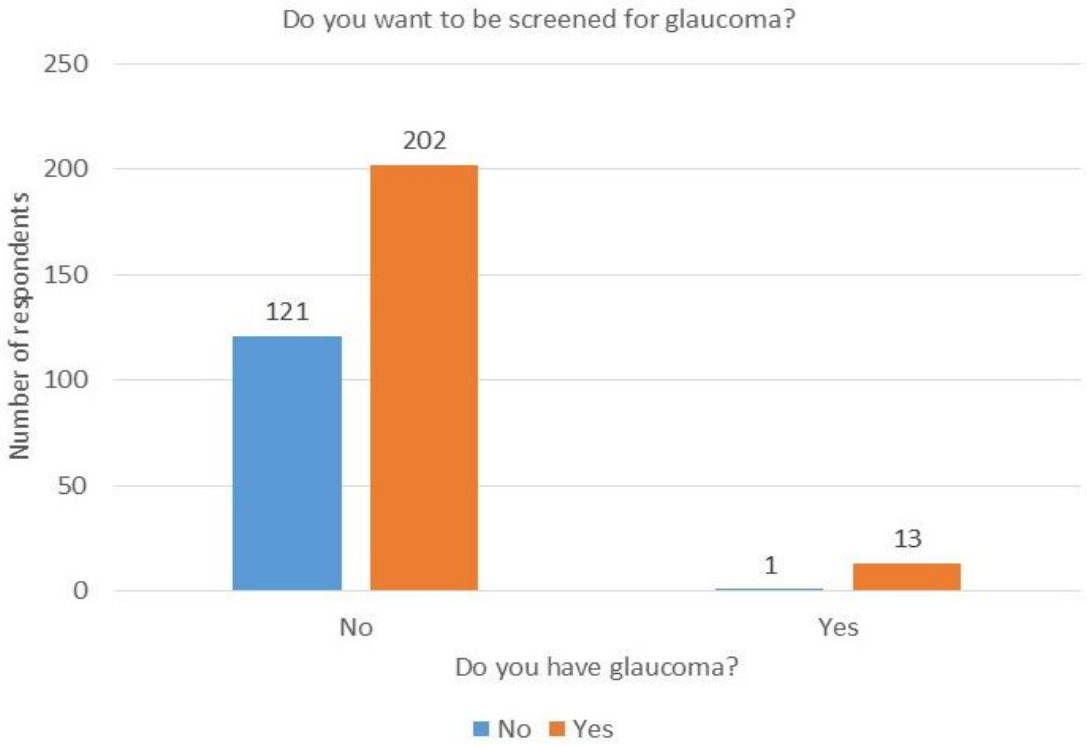

Figure 3: Distribution of respondents' glaucoma status and eye examination history.

The health characteristics of this sample reveal several important findings for understanding glaucoma awareness and knowledge among medical students. The relatively high rate of eye examination attendance (61.7%) is encouraging, as it suggests that many students are engaging in preventive eye care. However, the low prevalence of diagnosed glaucoma (4.2%) and the relatively low rate of family history (12 8%) indicate that most respondents may not have direct personal experience with the disease, which could influence their motivation to learn about it. The high proportion of respondents with elevated blood pressure (27.6%) and blood sugar levels (33.5%,) is concerning, as these are modifiable risk factors for glaucoma that could be addressed through lifestyle interventions and regular monitoring[51]. The low smoking rate and moderate exercise rate suggest that while some healthy behaviors are present, there is room for improvement in physical activity levels.

4.3 Knowledge and Awareness of Glaucoma

The assessment of glaucoma knowledge and awareness among the 337 medical students revealed a complex picture of high general awareness coexisting with significant misconceptions and knowledge gaps. As shown in Table 3, the vast majority of respondents (87.8%, n = 296) had heard of glaucoma, indicating a high level of basic awareness. Furthermore, 94.7% (n = 319) correctly identified glaucoma as nerve damage resulting from elevated intraocular pressure, demonstrating a solid understanding of the fundamental pathophysiology of the disease. This level of awareness is comparable to that reported in other studies of healthcare trainees in Nigeria, where awareness rates typically exceed 80%[6].

Despite this high awareness, several critical misconceptions were widespread. A substantial proportion of respondents (70.6%, n = 238) incorrectly associated glaucoma with lens pathology, suggesting confusion between glaucoma and cataracts, a common misconception in the general population[12]. Even more concerning, 84.9% (n = 286) believed that glaucoma is associated with eye pain, which contradicts the well-established clinical fact that primary open-angle glaucoma – the most common form – is typically asymptomatic until advanced stages[32]. Only 63.2% (n = 213) correctly recognized that glaucoma can be present without any symptoms, indicating that more than one-third of respondents held a dangerous misconception that could delay help-seeking behavior.

Understanding of the irreversibility of glaucoma-related vision loss was also incomplete. While 69.4% (n = 234) correctly stated that blindness from glaucoma is irreversible, nearly one third (30.6%, n = 103) believed that it could be reversed. This misconception is particularly problematic because it may lead to a false sense of security and reduce the urgency of seeking treatment. The belief that glaucoma can be treated effectively with drugs (71.8%, n = 242) and surgery (87 2%, n = 294) was relatively high, which is accurate for managing the

disease and preventing further vision loss, but these responses may also reflect an overestimation of treatment efficacy if respondents believe that existing damage can be reversed.

Recognition of the hereditary nature of glaucoma was strong, with 89 .9% (n = 303) correctly identifying that glaucoma can run in families. This is consistent with the high awareness of family history as a risk factor reported in other studies[15]. However, misconceptions about non-hereditary causes were prevalent. Over one-third of respondents (38.0%, n = 128) incorrectly believed that glaucoma could result from poor feeding, and 32.9% (n = 111) thought that poisoning could cause glaucoma. These beliefs likely reflect cultural or folk explanations for disease that persist despite medical education, and they highlight the need for targeted health education to dispel such myths[16].

Regarding systemic risk factors, recognition was relatively high but not universal. A total of 77.7% (n = 262) correctly identified diabetes as a risk factor for glaucoma, and 79.5% (n = 268) identified hypertension as a risk factor. These figures are consistent with previous studies in Nigeria, where awareness of the link between systemic conditions and glaucoma is generally higher than awareness of ocular specific risk factors[18]. However, the fact that approximately one in five respondents did not recognize these established risk factors represents a significant knowledge gap, particularly given that these students are training to become healthcare providers who will manage patients with these conditions.

Willingness to undergo glaucoma screening was expressed by 63.8% (n = 215) of respondents, while 36.2% (n = 122) indicated that they did not want to be screened. This finding is concerning, as it suggests that even among a relatively health-literate population, a substantial proportion is not motivated to engage in preventive eye care. The reasons for this reluctance were not explored in detail in this study, but previous research has identified cost, lack of time, fear of diagnosis, and lack of awareness of screening services as common barriers[9].

Table 3

Knowledge/Awareness Item	**Frequency**	**Proportion (%)**
Have you ever heard of glaucoma		
No	41	12.2
Yes	296	87.8
Glaucoma is nerve damage due to high eye pressure		
No	18	5.3
Yes	319	94.7
Glaucoma is a condition affecting the lens		
No	99	29.4
Yes	238	70.6
Glaucoma is associated with eye pain		
No	51	15.1
Yes	286	84.9
Glaucoma can be present without any symptom		
No	124	36.8
Yes	213	63.2
Can glaucoma be treated by drugs?		
No	95	28.2
Yes	242	71.8
Can glaucoma be treated by surgery?		
No	43	12.8
Yes	294	87.2
Is blindness from glaucoma reversible?		
No	234	69.4
Yes	103	30.6
Can glaucoma run in families?		
No	34	10.1
Yes	303	89.9
Can glaucoma result from poor feeding?		
No	209	62.0
Yes	128	38.0
Can glaucoma occur as a result of poison?		
No	226	67.1
Yes	111	32.9
Is diabetes a risk factor for glaucoma?		
No	75	22.3
Yes	262	77.7
Is hypertension a risk factor for glaucoma?		
No	69	20.5
Yes	268	79.5
Do you want to be screened for glaucoma?		
No	122	36.2

Yes	215	63.8

Table 3: Knowledge and Awareness of Glaucoma Among Medical Students

The overall knowledge score, calculated as the sum of correct responses to the 12 knowledge items (excluding the awareness question), had a mean of 8.8 out of a maximum of 12, with a standard deviation of 1.7. The scores ranged from a minimum of 4 to a maximum of 12, with a median of 9. The distribution of knowledge scores is presented in Table 4. This mean score of 8.8 (73 3% correct) indicates a moderate level of knowledge, but the presence of scores as low as 4 (33.3% correct) highlights that some respondents had very poor understanding. The standard deviation of 1.7 suggests considerable variability in knowledge levels across the sample.

Table 4

Statistic	Value
Minimum	4
Meridian	9
Mean	8.8
Maximum	12
Standard Deviation	1.7

Table 4: Summary Statistics of Glaucoma Knowledge Scores

The sources of information about glaucoma among respondents are illustrated in Figure 3. Health workers were the most common single source, cited by 33.8% of respondents, followed by social media (25.3%) and friends/family (15.6%). Mass media alone accounted for 4.5% of responses. The combination of multiple sources – including mass media, social media, health workers, and friends/family – was reported by 8.8% of respondents. Other mixed sources showed significantly lower engagement, with values ranging between 0.6% and 4.5%. This distribution highlights the dominance of professional health advice as a source of information, while also acknowledging the significant influence of social media and personal networks. The reliance on health workers is encouraging, as it suggests that medical students are accessing accurate information from trained professionals. However, the substantial role of social media (25.3%) is noteworthy, as this platform can be a source of both accurate and misleading health information[33].

Figure 3

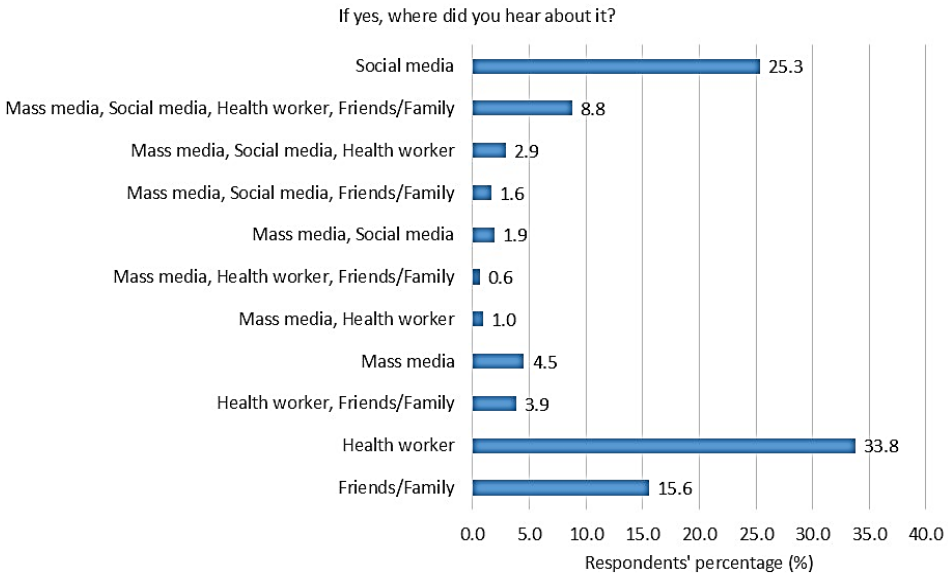

Figure 3. Sources of information about glaucoma among respondents, categorized by single or multiple channels including health workers, social media, mass media, and friends/family.

The relationship between respondents' current glaucoma status and their willingness to undergo screening is depicted in Figure 4. Among the 323 respondents who reported not having glaucoma, 121 (37.5%) indicated that they did not want to be screened, while 202 (62.5%) expressed willingness. Among the 14 respondents who reported having glaucoma, only 1 (7.1%) did not want screening, while 13 (92.9%) were willing. This pattern suggests that individuals who have been diagnosed with glaucoma are more motivated to undergo screening,

which is consistent with their need for ongoing monitoring and management. However, the fact that more than one-third of respondents without a diagnosis were unwilling to be screened is concerning, as it represents a missed opportunity for early detection and prevention.

Figure 4

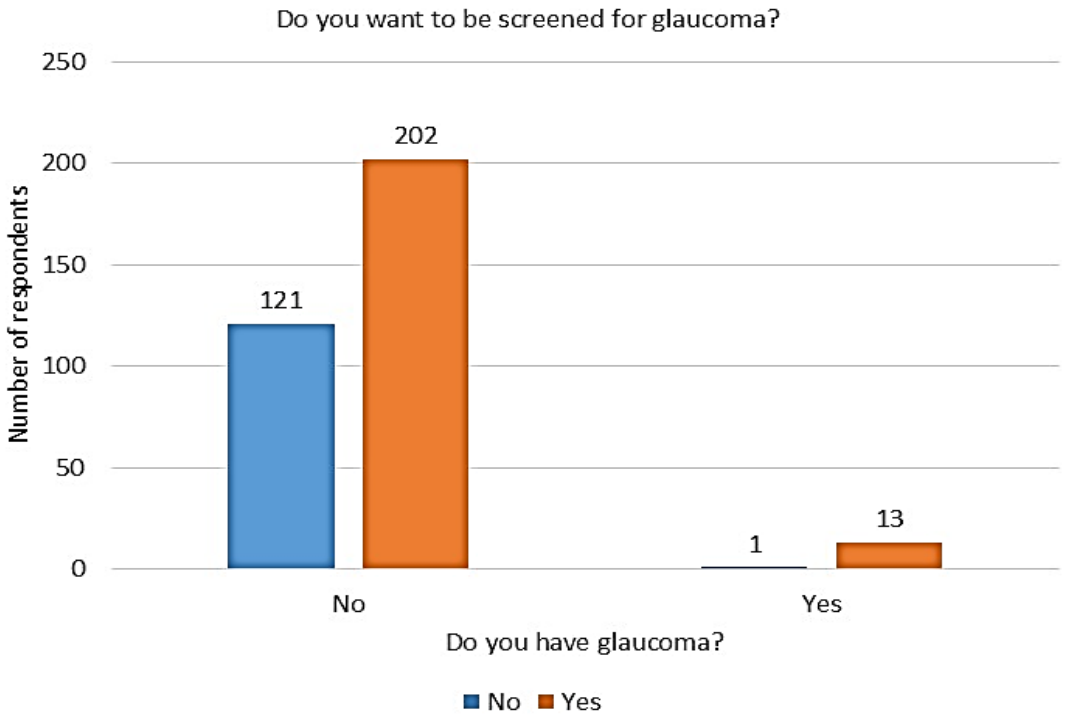

Figure 4: Distribution of respondents' glaucoma status and screening need.

The findings from this subsection reveal a critical gap between awareness and knowledge among medical students in South-East Nigeria. While 87.8% had heard of glaucoma and 94.7% could correctly define it, significant misconceptions persisted regarding its symptoms, causes, and treatment. The high proportion of respondents who incorrectly associated glaucoma with lens pathology (70.6%) and eye pain (84.9%) suggests confusion with other eye conditions, particularly cataracts. The failure of 36.8% to recognize that glaucoma can be asymptomatic is particularly alarming, as this misconception could lead to delayed diagnosis and irreversible vision loss. The belief that blindness from glaucoma is reversible (30.6%) further compounds this problem, as it may reduce the perceived urgency of seeking treatment.

The relatively high recognition of systemic risk factors (diabetes: 77.7%, hypertension: 79.5%) is encouraging, but the persistence of misconceptions about non-hereditary causes (poor feeding: 38.0%, poisoning 32.9%) indicates that cultural beliefs and folk explanations continue to influence understanding even among medical students. This finding underscores the need for comprehensive health education that not only provides accurate information but also actively addresses and corrects common myths[16].

The mean knowledge score of 8.8 out of 12 (73.3%) suggests that while the overall level of knowledge is moderate, there is considerable room for improvement. The standard deviation of 1. 7 indicates that knowledge levels vary widely, with some students demonstrating excellent understanding and others showing significant deficits. The sources of information analysis reveals that health workers are the primary source of glaucoma information, which is positive, but the substantial role of social media (25.3%) highlights the need for accurate health information to be disseminated through these platforms to counteract potential misinformation [33].

The willingness to undergo screening (63.8%) is lower than might be expected for a health-literate population, and the reasons for this reluctance warrant further investigation. Previous studies have identified cost, lack of time, fear of diagnosis, and lack of awareness of screening services as common barriers[9]. Addressing these barriers through subsidized screening programs, convenient scheduling, and health education that emphasizes the benefits of early detection could help increase screening uptake among medical students and, by extension, the broader population they will serve.

4.4 Regression Analysis: Factors Influencing Knowledge and Awareness

To identify the demographic and health-related factors associated with glaucoma knowledge among medical students, we conducted both multi-variable linear regression and binary logistic regression analyses. The multivariable linear regression examined predictors of the continuous knowledge score (range 0-12), while the binary logistic regression assessed factors associated with adequate knowledge, defined as a score of 10 or higher (i.e., >80% correct). The results of these analyses are presented in Tables 5 and 6, respectively.

The multivariable linear regression analysis, shown in Table 5, revealed that the level of education was the only statistically significant predictor of glaucoma knowledge scores. Specifically, respondents with tertiary education had significantly lower knowledge scores compared to those with secondary education (adjusted β = -1.40, 95% CI: -2.38 to -0.42, p = 0.005). This finding is counter intuitive, as one might expect higher education to be associated with greater knowledge. However, it suggests that the general tertiary education curriculum in Nigeria may not adequately cover glaucoma, particularly for students in non-health-related disciplines. The negative association indicates that, despite their advanced educational status, these students may lack targeted instruction on glaucoma, highlighting a critical gap in the university curriculum[8]. The *p* value of 0.005 confirms that this relationship is statistically significant, meaning the observed difference between secondary and tertiary education groups is unlikely to have occurred by chance.

Other demographic variables, including age, sex, place of residence, duration of residence, occupation, marital status, and religion, did not show statistically significant associations with knowledge scores in the adjusted model. For age, the adjusted coefficients for the 30-39 years group (β = 0.66, p = 0.264), the 40+ years group (β = -0.04, p = 0.978), and the less than 20 years group (β = -0.12, p = 0.530) were all non-significant, indicating that age alone did not independently predict knowledge levels after controlling for other factors. Similarly, sex (male vs. female: β = 0.08, p = 0.696), place of residence (South East vs. non South East β = 0.05, p = 0.824), and duration of residence (less than 6 months vs. 6 months and above: β = 0.39, p = 0.148) were not significant predictors Occupation categories (skilled worker, trader, unemployed) and marital status (single vs. married) also showed non-significant associations, as did religion (traditional religion vs. Christian). The lack of significance for these variables suggests that, within this relatively homogeneous sample of medical students, demographic factors beyond education level do not substantially differentiate knowledge levels.

Table 5

Variable	Crude			Adjusted		
	Estimate	**95% CI**	***p*-value**	**Estimate**	**95% CI**	***p*-value**
Age						
30 to 39	0.75	-0.39 to 1.89	0.198	0.66	-0.50 to 1.83	0.264
40+	0.19	-2.17 to 2.55	0.873	-0.04	-2.75 to 2.67	0.978
less than 20	-0.11	-0.48 to 0.26	0.555	-0.12	-0.49 to 0.25	0.530
20 to 29 (ref)						
Sex						
Male	0.10	-0.30 to 0.49	0.632	0.08	-0.32 to 0.48	0.696
Female (ref)						
Place of residence						
South East	-0.06	-0.47 to 0.35	0.768	0.05	-0.37 to 0.46	0.824
Non-South East (ref)						
How long have you lived there?						
Less than 6 months	0.32	-0.20 to 0.83	0.225	0.39	-0.14 to 0.92	0.148
6 months and above (ref)						
Level of education						
Tertiary	-1.28	-2.24 to -0.31	0.010*	-1.40	-2.38 to -0.42	0.005*
Secondary (ref)						
Occupation						
Skilled worker	0.32	-1.69 to 2.33	0.753	0.61	-1.60 to 2.82	0.589
Trader	0.17	-2.17 to 2.51	0.889	0.37	-2.15 to 2.89	0.773
Unemployed	0.83	-1.09 to 2.75	0.395	1.18	-0.95 to 3.31	0.276

Civil servant (ref)						
Marital status						
Single	-0.91	-2.83 to 1.01	0.354	-1.36	-3.49 to 0.77	0.210
Married (ref)						
Religion						
Traditional religion	1.24	-1.11 to 3.59	0.300	1.25	-1.16 to 3.65	0.310
Christian (ref)						

Table 5. Multivariable Linear Regression Results for Factors Associated with Glaucoma Knowledge Scores
*$p < 0.05$ is considered statistically significant

The binary logistic regression analysis, presented in Table 6, examined factors associated with adequate knowledge (score ≥ 10). The results showed that age was the only variable approaching statistical significance. Specifically, respondents aged less than 20 years had approximately half the odds of possessing adequate knowledge compared to those aged 20 to 29 years (adjusted odds ratio [AOR] = 0.53, 95% CI: 0.25-1.07, p = 0.085). While this result did not reach the conventional threshold for statistical significance ($p < 0.05$), the p-value of 0.085 indicates a strong trend, suggesting that younger students are less likely to have adequate knowledge of glaucoma. This finding points to the need for targeted outreach and education programs tailored to younger audiences, particularly those under 20, who appear to be less informed about key aspects of glaucoma.

Other variables in the logistic regression model did not show significant associations with adequate knowledge. For age, the 30-39 years group (AOR = 0.60, p = 0.653) and the 40+ years group (AOR = 1,978,599.84, p = 0.995) were not significant, though the extremely large odds ratio for the 40+ group is likely an artifact of the small sample size in that category (n = 2). Sex (male vs. female: AOR = 1.65, p = 0.225), place of residence (South East vs. non-South East AOR = 1.26, p = 0.541), duration of residence (less than 6 months vs. 6 months and above: AOR = 0.66, p = 0.369), and level of education (tertiary vs. secondary: AOR = 1.45, p = 0.664) were all non-significant. Occupation categories (skilled worker, trader, unemployed) and marital status (single vs. married) showed extremely large or small odds ratios with very high p-values, again likely due to small cell sizes in these categories. Religion (traditional religion vs. Christian) also showed a non-significant association (AOR = 6,375,034.84, p = 0.996).

Variable

Table 6

Variable	**Crude**			**Adjusted**		
	Odds Ratio	**95% CI**	**P-value**	**Odds Ratio**	**95% CI**	**P-value**
Age						
30 to 39	0.74	0.12-4.40	0.789	0.60	0.09-12.01	0.653
40+	535630.59		0.990	1978599.84		0.995
less than 20	0.52	0.25-1.04	0.075*	0.53	0.25-1.07	0.085*
20 to 29 (ref)						
Sex						
Male	1.65	0.79-3.81	0.205	1.65	0.76-3.94	0.225
Female (ref)						
Place of residence						
South East	1.30	0.62-2.59	0.470	1.26	0.58-2.63	0.541
Non-South East (ref)						
How long have you lived there?						
Less than 6 months	0.64	0.29-1.59	0.306	0.66	0.28-1.72	0.369
6 months and above (ref)						
Level of education						
Tertiary	1.47	0.22-5.83	0.629	1.45	0.19-6.54	0.664
Secondary (ref)						
Occupation						
Skilled worker	0.00		0.987	0.00		0.994
Trader	0.00		0.985	0.00		0.993

Unemployed	0.00		0.987	0.00		0.994
Civil servant (ref)						
Marital status						
Single	0.00		0.987	0.00		0.994
Married (ref)						
Religion						
Traditional religion	802991.98		0.989	6375034.11		0.996
Christian (ref)						

Table 6: Binary Logistic Regression Results for Factors Associated with Adequate Glaucoma Knowledge (Score> 10)

*$p < 0.10$ is considered significant.

The results from both regression analyses converge on two key findings. First, the multi-variable linear regression identified tertiary education as a significant negative predictor of knowledge scores, suggesting that the general university curriculum may not adequately address glaucoma, particularly for students in non-health disciplines. This finding aligns with previous research indicating that medical education in Nigeria often lacks focused instruction on glaucoma, with the condition being covered only superficially in broader ophthalmology modules[7]. The negative association between tertiary education and knowledge scores implies that students who have completed secondary education but not yet entered university may have been exposed to glaucoma information through other channels, such as community health programs or media campaigns, while university students may not receive additional targeted education on the topic.

Second, the binary logistic regression revealed a trend toward lower odds of adequate knowledge among younger students (aged <20 years) compared to those aged 20-29 years. This finding is consistent with the developmental trajectory of medical education, where older students have had more time to accumulate knowledge through coursework, clinical exposure, and personal health experiences. The trend toward significance ($p = 0.085$) suggests that with a larger sample size, this association might reach conventional significance levels. This finding underscores the need for early and sustained glaucoma education throughout the medical curriculum, beginning in the preclinical years and reinforced during clinical rotations[34].

The lack of significant associations for other demographic variables, such as sex, place of residence, and occupation, suggests that within this relatively homogeneous sample of medical students, these factors do not substantially differentiate knowledge levels. This may be because medical students share a common educational environment and are exposed to similar information sources, regardless of their demographic backgrounds. However, the small sample sizes in some categories (e g., only 3 civil servants, 2 respondents aged 40+) limit the statistical power to detect differences in these groups, and the results should be interpreted with caution.

The regression analyses also highlight the importance of considering both continuous and dichotomized knowledge outcomes. The linear regression, which treats knowledge as a continuous variable, is more sensitive to detecting associations across the full range of scores, while the logistic regression, which dichotomizes knowledge at a threshold, is more clinically interpretable in terms of identifying individuals with adequate versus inadequate understanding. The convergence of findings from both approaches strengthens the conclusion that education level and age are important determinants of glaucoma knowledge among medical students in South-East Nigeria.

V. Discussion

The findings of this study carry significant implications for both theoretical understanding and practical intervention in glaucoma education among future healthcare providers in Nigeria. The observed dissociation between high awareness and superficial knowledge suggests that mere exposure to the term "glaucoma" is insufficient to foster the deep understanding required for effective clinical practice and patient education. This phenomenon, previously documented in other Nigerian populations[12], appears to persist even among medical students who are expected to possess superior health literacy. From a theoretical standpoint, these results challenge the assumption that awareness naturally translates into actionable knowledge, thereby supporting the need for a more nuanced model of health literacy that distinguishes between declarative knowledge (knowing that) and procedural knowledge (knowing how)[35]. Practically, educators and curriculum developers should consider integrating dedicated glaucoma modules into the medical school curriculum that specifically address the con1mon misconceptions identified in this study, such as the erroneous association of glaucoma with lens pathology and eye pain These modules should emphasize the asymptomatic nature of early glaucoma, the irreversibility of vision loss, and the critical importance of regular screening, particularly for individuals with a family history of the disease. Furthermore, the finding that only 63.8% of respondents expressed willingness to undergo screening highlights a critical gap that policymakers must address through subsidized or free screening programs, perhaps

integrated into routine university health services, to remove financial barriers and normalize preventive eye care among young adults[9].

Several methodological limitations warrant careful consideration when interpreting these results. The cross-sectional design precludes any inference of causality between demographic factors and knowledge levels, as the observed associations may reflect cohort effects rather than true developmental trajectories. The reliance on self-reported data introduces the potential for recall bias and social desirability bias, particularly for sensitive questions regarding health behaviors and diagnoses. For instance, the counter intuitive finding that a higher number of respondents with glaucoma reported never having had an eye examination compared to those who had suggests possible misclassification or misunderstanding of the survey questions, which could have attenuated the observed associations. The sample was drawn from only two universities in South-East Nigeria, which may limit the generalizability of the findings to other regions or to medical students in different educational contexts. Additionally, the small cell sizes in several demographic categories (e.g., only 2 respondents aged 40 years and above, 3 civil servants, and 3 married individuals) reduced the statistical power of the regression analyses to detect meaningful differences in these groups, as evidenced by the extremely large and unstable odds ratios observed in the logistic regression model. The use of a self-administered questionnaire, while efficient for data collection, may have introduced measurement error if respondents misinterpreted questions or provided inconsistent answers. Finally, the study did not assess the depth of clinical exposure to glaucoma among respondents, which could be a more important determinant of knowledge than demographic factors alone.

Future research should explore several understudied areas to build upon these findings. There is a need for longitudinal studies that track glaucoma knowledge acquisition throughout the medical curriculum, from preclinical years through clinical rotations, to identify the specific educational interventions that are most effective in correcting misconceptions and deepening understanding. Such studies could employ repeated measures designs with validated knowledge assessment tools to capture changes over time and attribute them to specific curricular components. Future research should also explore the role of social media as a source of health information among medical students, given that 25.3% of respondents in this study cited it as their primary source. Qualitative studies using focus groups or in-depth interviews could elucidate how students evaluate the credibility of online health information and how misinformation about glaucoma spreads through digital networks. Comparative studies across different regions of Nigeria and across different types of healthcare trainees (e.g., nursing students, pharmacy students, community health workers) would help determine whether the knowledge gaps observed here are specific to medical students or reflect broader deficiencies in health education. Additionally, intervention studies that test the effectiveness of targeted educational campaigns – such as interactive workshops, simulation-based learning, or peer-led education – in improving glaucoma knowledge and screening uptake among medical students are urgently needed. Finally, research should investigate the barriers to screening willingness more comprehensively, exploring not only financial constraints but also psychological factors such as fear of diagnosis, fatalistic beliefs about disease, and perceived susceptibility to glaucoma among young adults.

VI. Conclusion

This study set out to examine the levels of awareness and knowledge of glaucoma among medical students in South-East Nigeria, revealing a striking paradox that has important implications for public health and medical education. While 87 8%, of respondents had heard of glaucoma and 94.7°/o could correctly define it as nerve damage from elevated intraocular pressure, their understanding remained superficial and riddled with critical misconceptions. The finding that 70.6% incorrectly associated glaucon1a with lens pathology, 84.9% believed it causes eye pain, and 30.6% thought blindness from the disease is reversible demonstrates that awareness alone does not equate to actionable knowledge. Our contribution to the field lies in documenting this awareness-knowledge gap specifically within a population of future healthcare providers, thereby challenging the assumption that medical training automatically confers adequate understanding of common blinding conditions. The regression analyses further revealed that younger students and those with tertiary education paradoxically showed lower knowledge levels, suggesting that current educational curricula may be failing to address glaucoma comprehensively.

The implications of these findings extend beyond the immediate study population, as these medical students will soon become frontline healthcare providers responsible for diagnosing glaucoma, counseling patients, and referring for specialist care. Their misconceptions about the asymptomatic nature of early glaucoma and the irreversibility of vision loss could translate into delayed diagnosis and missed opportunities for prevention in the patients they will serve. The relatively low willingness to undergo screening (63.8%) among this health literate group also signals that broader population-level screening initiatives may face significant attitudinal barriers that must be addressed through targeted health education and subsidized services.

Future research should prioritize longitudinal studies that track knowledge acquisition throughout medical training to identify the specific curricular components that effectively correct misconceptions and deepen understanding. Qualitative investigations into how medical students evaluate health information from social

media, which was cited by 25.3% of respondents as their primary source, could inform strategies to combat the spread of misinformation. Intervention studies testing the effectiveness of dedicated glaucoma modules, interactive workshops, or peer-led education programs are urgently needed to bridge the gap between awareness and actionable knowledge. By addressing these knowledge deficits early in medical training, we can equip future healthcare providers with the understanding necessary to reduce the burden of glaucoma related blindness in Nigeria and similar settings across sub-Saharan Africa.

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