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# Awareness and Knowledge of Glaucoma Among Secondary School Teachers in Onitsha Nigeria

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## Abstract

**Background:** Glaucoma is an optic neuropathy that causes irreversible blindness. Early detection and appropriate treatment help slow or stop the damage from glaucoma. The aim of this study is to determine glaucoma awareness and knowledge among secondary school teachers in Onitsha Nigeria.

**Method:** Three secondary schools in Onitsha North Local Government Area were randomly selected. All the teachers in the selected schools, responded to a self-administered questionnaire on glaucoma awareness and knowledge.

**Results:** One hundred and seventy-one teachers, made up of 158(92.4%) females and 13(7.6%) males with a mean age of  $45.52 \pm 10.3$  and age range of 20 to 72 years participated in the study. Glaucoma awareness in this study was 81.3%, with 14.7% having a correct knowledge of the disease. The major source of information on glaucoma was radio/television 44(31.2%). While 80(46.8%) participants had no knowledge of glaucoma treatment, 34(19.9%) felt that glaucoma had no treatment. Treatment options known by the participants included eye drops, incisional and laser surgeries.

**Conclusion:** Despite being highly educated, the glaucoma knowledge among teachers in this cohort was poor. Regular eye health education is recommended to improve awareness and knowledge of glaucoma, and also allow persons to present themselves voluntarily for screening.

**Keywords:** Glaucoma, Awareness, Knowledge, Teachers, Onitsha, Nigeria.



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## Introduction

Glaucoma is a group of eye diseases that causes progressive optic neuropathy with characteristic optic disc and visual field changes. Glaucoma is usually insidious in nature, with many of affected individuals not being aware of this eye condition until advanced disease when there is deterioration in vision. Nigeria has a high prevalence of glaucoma which is largely open-angle glaucoma and a high proportion of those with glaucoma are blind.<sup>1</sup> Glaucoma is the leading cause of irreversible vision loss and poses a significant public health challenge. It is responsible for decreased quality of life and performance of vision related activities.<sup>2-6</sup>

Awareness is an understanding that something exists. Knowledge is defined as an understanding of facts, information or skill. It also refers to the practical or theoretical understanding of a subject.<sup>7</sup> Glaucoma is a disease of significant public concern. The burden of unnecessary blindness can be reduced when persons are aware, have adequate knowledge and present themselves for voluntary screening. The early detection and commencement of appropriate treatment for glaucoma slows down or halt progression and consequently prevents the devastating consequence of visual impairment and blindness.

Glaucoma is common in southeast Nigeria of which secondary school teachers are part of the population.<sup>8</sup> The teachers' population is unique because they are a group of enlightened people whose influences extend beyond the classrooms into the society, and their opinions are highly respected and taken. If secondary school teachers have a high level of awareness and good knowledge of glaucoma, this could leverage on the society and prevent glaucoma blindness. We do not have any data on awareness and knowledge of glaucoma in this subset of population. Hence, it is necessary to use scientific methods to fill this information gap. The aim of this study is to explore glaucoma awareness and knowledge among secondary school teachers with similar educational level.

## Methodology

This was a descriptive cross-sectional study among secondary school teachers in government/mission secondary schools in Onitsha North Local Government Area of Anambra state. Three secondary schools were randomly selected out of 4 government/mission secondary schools in the local government area. The

study was carried out from March to May 2023. All consenting teachers in the secondary schools were included in the study. However, teachers who refused to give consent and those unavailable at the time of study were excluded. A minimum sample size of 162 was obtained using Leslie-Kish Formula,<sup>9</sup> at 95% confidence interval. All consecutive teachers took part in the study. The measure tool was a questionnaire. The questionnaire was pre-tested and validated through a pilot study done among secondary school teachers in Nnewi town of Anambra state, which is about 45 kilometers away from Onitsha. The internal consistency and reliability of the questionnaire were determined using Cronbach alpha test.

The pretested self-administered questionnaire was used to obtain sociodemographic information such as age, gender, and also information on glaucoma awareness and knowledge. A participant who answered "yes" to the question of having heard of glaucoma was considered to be aware of glaucoma. Those participants who answered "yes" to having heard of glaucoma, were further asked their first source of information. Five questions were used to assess knowledge of glaucoma. These questions were on 1) the part of the eye affected in glaucoma, 2) the cause of glaucoma damage and 3) the three treatment options which are eye drops, laser and surgery for glaucoma. Correct answer to questions on knowledge was graded as 1 or 0 for an incorrect answer. The total score on glaucoma knowledge was five points. Additional information was collected on family history of glaucoma, family history of blindness and previous eye screening.

Data was entered into Excel and subsequently analyzed using the Statistical Package for Social Sciences version 25.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics was used and test of significance was done with Chi-square with Yates' correction for continuity to address low cell frequencies. A *p* value  $\leq 0.05$  was considered statistically significant.

Written informed consent was obtained from all participant before commencement of this study. Ethical approval was obtained from Anambra State Ministry of Health Research Ethics Committee Awka (ASMOHREC/2023/14072023/04).

## Result

A total of 171 teachers with either bachelor's degree in education or Postgraduate diploma in education (for those with non – education degrees) participated in the study. There were 158 females (92.4%) and 13(7.6%) males. The mean age of participants was  $45.52 \pm 10.3$  with range of 20 to 72 years. The two most represented age groups were 41 to 50 years (39.2%) and 51 to 60 years (25.1%). Table 1 shows the age distribution of the participants.

**Table 1: Age range of participants.**

Age range (years)	Numbers	Percentage (%)
21 – 30	15	8.8
31 – 40	34	19.9
41 – 50	67	39.2
51 – 60	43	25.1
61 – 70	11	6.4
>70	1	0.6
Total	171	100

One hundred and thirty-nine (81.3%) respondents have heard of glaucoma, and were grouped as being aware of glaucoma. Twenty-seven (15.8%) respondents had a family history of glaucoma, and 16 (9.4%) persons had a positive family history of blindness. There was no association between glaucoma awareness and family history of glaucoma ( $X^2=10.93, p=0.27$ ). However, there was an association between glaucoma awareness and family history of blindness ( $X^2=14.8, p=0.005$ ). There was also no association between previous eye screening and glaucoma awareness ( $X^2=13.8, p=0.08$ ).

The first major source of information on glaucoma awareness was radio/television 44(31.7%). Other sources of information are as shown in Table 2. There was, however, no association between glaucoma awareness and first source of information. ( $X^2=7.10, p=0.31$ ).

**Table 2: Sources of information on glaucoma.**

Opinions on glaucoma treatment	Freq	Percent (%)
Television/Radio	44	31.7
Friends /Relatives	39	28.0
Hospital	23	16.5
School	21	15.1
Internet	6	4.3
Church	3	2.3
Outreach	2	1.4
Books	1	0.7
<b>Total</b>	<b>139</b>	<b>100</b>

Seventy-one (41.5%) participants agreed that glaucoma damages the optic nerve, 34.5% believe there is no damage to the optic nerve and 41(24%) were not sure if glaucoma affected the optic nerve. Only 14(8.2%) participants knew that intraocular pressure was an important factor in glaucomatous damage. The other causes of glaucoma given by participants is shown in table 3.

**Table 3: Participants' opinion on the causes of glaucoma**

Opinions on glaucoma	Freq	Percent (%)
Weakness of the eye muscles	4	2.3
Clouding of the eye lens	9	5.3
Rise in blood pressure	10	5.8
Rise in intraocular pressure	14	8.2
No idea	134	78.4
<b>Total</b>	<b>171</b>	<b>100</b>

Almost half of the participants 80(46.8%) had no knowledge of glaucoma treatment. Only 1(0.6%), participant knew all the three treatment options available for glaucoma care. The various treatment options given by the participants are shown in table 4.

**Table 4: Participants' knowledge of glaucoma treatment options**

Opinions on glaucoma treatment	Freq	Percent (%)
Don't know	80	46.8
None	34	19.9
Surgery	26	15.2
Eye drops	21	12.3
Eye drop, surgery	8	4.7
Eye drop, surgery, laser	1	0.6
Laser	1	0.6
<b>Total</b>	<b>171</b>	<b>100</b>

## Discussion

Overall, a total of 126 correct responses were got out of 855 expected responses, giving a glaucoma knowledge level of 14.7%. Several studies on glaucoma awareness have associated higher levels of education with better awareness of glaucoma.<sup>10-16</sup> Glaucoma awareness was high among teachers in this study within an urban setting. The glaucoma awareness was 81.3% in this study, is much higher than that obtained from some studies in Nigeria. These studies reported a moderate level of awareness of 61.3% in an urban outreach in southeast Nigeria,<sup>10</sup> 61.7% in hospital-based eye screening in Ibadan southwest Nigeria<sup>15</sup> and 46.8%, in a university community in Zaria, northern Nigeria.<sup>16</sup> These other studies were done in urban areas, among heterogeneous groups. There was an even lower glaucoma awareness level of 38% in Edo state made up of rural, semi-rural and urban people<sup>11</sup> and 21.1% in a rural community in Ebonyi state.<sup>13</sup> However, a higher level of glaucoma awareness (98.7%) was reported among final year medical and nursing students in southern Nigeria.<sup>17</sup> This study supports other studies that have shown that glaucoma awareness is influenced by educational attainment and persons with tertiary level education are more likely to have an awareness of glaucoma.

Apart from formal education, previous eye screening, family history of glaucoma and blindness have been implicated as potential triggers for glaucoma awareness.<sup>10,14,15,16</sup> In this study there was a statistically significant association between glaucoma awareness and family history of blindness. In a previous community-based study on beliefs to eye diseases and blindness in the same state, some people perceived blindness as being brought about by evil spirits and enemy machinations while others apply modern knowledge to explain eye diseases and blindness.<sup>18</sup> In this study, it may stand to reason that these participants with family history of blind relative(s), could have applied modern knowledge to understand eye diseases and blindness.

The source of information about an eye disease is important as this could influence the correct knowledge of the eye disease. The best source of information are usually from health care workers or social workers trained on the disease. This source may not be available to all except those who go to the hospitals or health facility either as patients or care givers. The main source of information on glaucoma for the final year medical

and nursing students was from school lectures (71%).<sup>17</sup> Radio/ television were the commonest source of first awareness among these cohort of teachers. Mass media as the commonest source of information on glaucoma was also reported by Kizor-Akaraibe et al<sup>10</sup> in Enugu; Oladigbolu et al<sup>16</sup> in Zaria and Abraham E and Megbelayin E<sup>19</sup> in Uyo.

Kizor-Akaraibe et al <sup>10</sup> noted that high level of awareness did not translate to high knowledge level. In this study, despite high level of awareness, the knowledge level appears low. However, a previous study on glaucoma awareness amongst final year medical and nursing students reported a high level of awareness and good knowledge of glaucoma.<sup>17</sup> In a study done in a community with urban, semi urban and rural settings in Edo state, the awareness of glaucoma was 38% and the main source of information from health show/talks/ outreach.<sup>11</sup>

Glaucoma is a disease that affects the optic nerve and has intraocular pressure as a major risk factor. Thus, in this study we sought to know if these teachers have this basic knowledge. Despite the low knowledge level, a good number of participants knew that the optic nerve was affected (41.5%) and raised intraocular pressure (8.2%) was an important feature in glaucoma. Similar to the Uyo study (1.2%) only, said glaucoma was caused by raised intraocular pressure.<sup>19</sup> The study in Edo state, showed that 23.3% identified raised intraocular and 20.9%, damage to the optic nerve<sup>11</sup> while 4.2% in Ebonyi state identified raised intraocular pressure as an important feature in glaucoma.<sup>13</sup>

It's quite worrisome that almost half of these respondents were not aware of the treatment for glaucoma and a further (19.9%) think that glaucoma has no treatment. Sarimiye et al<sup>15</sup> noted that there was an increased glaucoma knowledge after the participants had received some form of health education during a glaucoma awareness program.

The strength of this study lies in the fact that this is the first time solid information about awareness and knowledge of glaucoma among teachers has been obtained through a scientific study. The weakness is that the information was obtained as related by the teachers through self-administered questionnaire. In order to get more detailed information, a future study using the



technique of in-depth interviews and focus group discussion is advocated. The advantage is that in addition to knowledge, such information will determine the attitude of teachers.

### Conclusion

The participants in this present study are highly educated and have a high level of awareness of glaucoma. However, this did not translate to having good knowledge on glaucoma. Eye health education is required to improve awareness, knowledge of glaucoma as well as generally facilitate positive eye health-seeking behavior among teachers.

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Nwosu SN: To the concept, design, data interpretation, manuscript preparation, editing and review.

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