

## A Survey of Glaucoma Awareness and Clinical Presentation among Glaucoma Patients Presented to the Westphalian Eye Clinic, Oyoko, Ashanti Region

**Tschiakpe Michel Pascal, Ernest Kyei Nkansah\*, Eric Cobblah, Joseph Adjei-Anang, Oppong Acheampong and Kwadwo Ofori Boateng**

*Department of Optometry and Visual Science, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana*

**\*Corresponding Author:** Ernest Kyei Nkansah, Department of Optometry and Visual Science. Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana.

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### Abstract

**Background:** Glaucoma is the second leading cause of preventable blindness in the world. The purpose of this study was to determine the awareness and presentation of Glaucoma among Glaucoma patients at the Westphalian Eye Clinic, Oyoko, Ashanti Region, Ghana.

**Methods:** The study population comprised all patients presenting to the Oyoko Westphalian Eye Clinic who were diagnosed by the Ophthalmologist to have Glaucoma and of ages 15 years and above. A total of 61 patients were involved in the study. Respondents were interviewed using a structured questionnaire. Examinations were carried out to obtain further information for analysis. Using descriptive statistics, data collected was analyzed using IBM SPSS Statistics version 23.

**Results:** The results of the study indicated that, out of the 61 glaucoma patients, 59% of them were not aware of glaucoma until they were diagnosed as glaucomatous. Forty-one percent of the study sample admitted they had accessed prior eye care examination to be screened for any ocular disease; 36% had accessed prior eye care examination only because they experienced ocular symptoms. Among the 61 patients interviewed during the study, 36% of the participants had visual acuities worse than 6/60 in the worse eye. About 60% of the glaucoma patients who were interviewed had eyes with extensive neuroretinal rim thinning at diagnosis. About fifty-six percent of the patients knew that glaucoma could be detected before glaucomatous symptoms set in.

**Conclusion:** The results of the study indicated that, quite a large number of patients were not aware of glaucoma until they were diagnosed as glaucomatous. Even though patients with negative family history of Glaucoma had severe and moderated Neuroretinal rim (NRR) thinning, positive family history of Glaucoma was significant as a few patients with severe thinning of NRR had positive family history.

**Keywords:** Disease; Examination; Glaucoma; Neuroretinal Rim; Symptoms

### Background

Glaucoma is the second leading cause of preventable blindness in the world [1]. A study by Quigley and Broman [2] estimated that 60.5 million people had glaucoma globally, with 8.4 million bilaterally blind. These numbers are expected to reach 79.6 and 11.1 million respectively in 2020. In Ghana, it is only second to cataract in terms of preventable blindness [3]. The prevalence of glaucoma is on the rise, partly due to the increase in the population at risk, and that Africa would have the highest ratio of glaucoma-to adult population in some years to come [2]. Glaucoma differs from the other causes of preventable blindness because of the irreversibility of its damage [2].

In its early stages, approximately one in two people who have the condition may have been unaware of it because it is asymptomatic at that point [4]. Tenkir, Solomon [5] in their research to determine glaucoma awareness among people attending an outreach service in Ethiopia stated that, up to 50% of glaucoma patients are already blind in one eye at presentation in Africa [5]. In an earlier study done in a clinical setting by Ntim-Amponsah, Winfried [6] in Ghana, it was indicated that most glaucoma patients lacked awareness of glaucoma, let alone relevant information concerning the condition.

While other conditions may be potentially blinding, glaucoma is unique. Unlike other conditions such as cataract, vision loss due to glaucoma is irreversible and timely detection as well as proper management is very vital in the prevention of blindness [7]. In diagnosing glaucoma, accurate assessment of the optic disc structure and retinal function is required [8]. The study was undertaken to determine the presentation of Glaucoma at the Westphalian Eye Clinic, Oyoko, Ashanti Region, Ghana.

## **Methods**

### **Study area and design**

A population-based descriptive cross-sectional study was carried out in the Oyoko Westphalian Eye Clinic, Ashanti Region, Ghana.

### **Study population and participant selection**

The study population comprised all patients presenting to the Oyoko Westphalian Eye Clinic who were diagnosed by the Ophthalmologist to have Glaucoma and of ages 15 years and above. These patients were mentally sound and able to give responses on their own. Convenient sampling method was employed to select participants willing to partake in the study. Participants included in the study were those diagnosed of Glaucoma at least two (2) months before the data collection began. A total of 61 patients were involved in the study.

### **Data collection**

Respondents were interviewed using a structured questionnaire. The questionnaire was used to obtain demographic information. The questionnaire further elicited data relating to awareness of glaucoma among the participants before diagnosis, patients' family history of glaucoma, reasons for seeking eye health examination as well as the level of knowledge of glaucoma after diagnosis. Examinations were carried out to obtain further information for analysis.

### **Ethical consideration**

Approval was sought from the authorities of the Westphalian Eye Clinic to carry out the study. The nature and purpose of the study was explained to the participants and consent acquired. No probable risks were anticipated for those who chose to participate in the study. The information gathered was treated with confidentiality. The study was also carried out in accordance with the tenets of Declaration of Helsinki.

### **Data processing and analysis**

Using descriptive statistics, data collected was analyzed using IBM SPSS Statistics version 23 (IBM Corp., Armonk, New York, USA). Descriptive statistics were employed to compare the variables and p-values less than 0.05 at confidence interval of 95% were considered significant.

## **Results**

Out of the 61 participants, 29 (47.5%) were males and 32 (52.5%) were females. Some of the participants had knowledge of the condition (Glaucoma) before they were diagnosed. Twenty-five (41%) were aware of glaucoma before they were diagnosed as glaucomatous while the remaining 36 (59%) were unaware of the condition. With regards to the patients' family history of glaucoma, 15 (24.6%) of the patients reported that, they had a family history of glaucoma, 33 (54.6%) had no family history of glaucoma and the remaining 13 (21.3%)

participants are unaware about the status of their family history of glaucoma.

Out of the total 61 patients interviewed, 77% of them had had prior eye care examination before they were diagnosed of glaucoma. Their reasons for accessing ocular examination varied. Twenty-two (46.8%) out of the 47 patients had prior eye care examination because they experienced ocular symptoms. The remaining 25 (53.2%) had only undergone eye screening exercises.

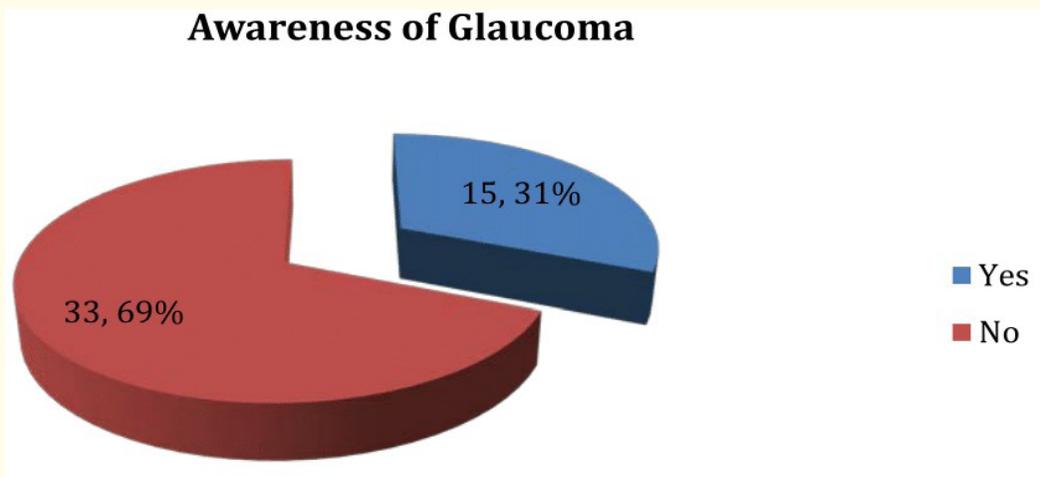


Figure 1: Patients' awareness of Glaucoma before diagnosis.

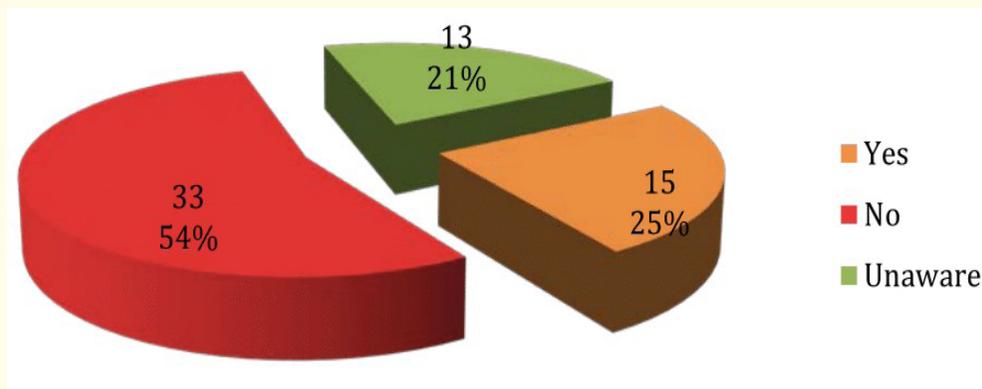


Figure 2: Patients' awareness of family history of Glaucoma.

**Awareness of chronicity of Glaucoma in Glaucoma Patients**

Patient awareness of the chronicity of glaucoma was sought for and the outcome showed majority (85.2%) of the participants, were unaware that glaucoma was a chronic condition. The remaining 14.8% of the participants knew that glaucoma was a chronic condition.

**Patient awareness of possible detection of Glaucoma before symptoms set in**

As part of finding out patient knowledge of glaucoma, they were asked if they knew that the condition could be detected before symptoms set in. The study revealed that 55.7% of the glaucoma patients were aware could be detected before symptoms set in. About forty-four percent (44.3%) did not know glaucoma could be detected before glaucoma patients experienced symptoms. More than one third (36.1%) of the patients presented with best corrected visual acuity worse than 6/60 at clinic, while 23% of the patients had visual acuity between 6/24 and 6/60. Further details are shown in table 1 below.

Visual acuity	N (%)
Better than 6/9	5 (8.2)
6/9 - 6/18	20 (32.8)
6/24 - 6/60	14 (23.0)
Worse than 6/60	22 (36.1)

**Table 1:** Best corrected visual acuity of patients.

Out of the 61 participants who took part in the study, 50.8% of the sample presented with extensive neuroretinal rim thinning while 21.3% and 27.9% of the participants presented with focal notching and moderate thinning of the neuroretinal rim respectively (Table 2).

Neuroretinal thinning	N (%)
Focal notching	13 (21.3)
Moderate thinning	17 (27.9)
Extensive thinning	31 (50.8)

**Table 2:** Neuroretinal changes presented by patients.

Based on family history of glaucoma, three groups comprising of those who had family history of glaucoma, no family history of glaucoma and those who did not know the glaucoma status of their family were interviewed. As well as interviewing the patients, the neuroretinal rim changes were also assessed. About five percent of the interviewees had a family history of glaucoma and they presented with eyes that had extensive neuroretinal rim thinning; nineteen (31.2%) patients who admitted they had no family history of glaucoma, also presented with extensive neuroretinal rim thinning. Table 3 shows details.

Status of family history of glaucoma	Focal notching	Moderate thinning	Severe thinning	Total
	N (%)	N (%)	N (%)	N (%)
Positive	6 (9.8)	6 (9.8)	3 (4.9)	15 (24.5)
Negative	5 (8.2)	9 (14.8)	19 (31.2)	33 (54.2)
Unaware	2 (3.3)	2 (3.3)	9 (14.8)	13 (21.3)
Total	13 (21.3)	17 (27.9)	31 (50.9)	61 (100.0)

**Table 3:** Neuroretinal rim appearance and patients' family history of Glaucoma.

On awareness and its relation to neuroretinal rim changes, 8 (13.1%) patients of those who had ever heard of glaucoma presented with extensive neuroretinal thinning. Among those who were not aware of glaucoma till diagnosis, 23 participants (37.7%) of the group showed extensive thinning of the neuroretinal rim. Details are shown in table 4.

Neuroretinal thinning	Awareness of Glaucoma		Total
	Yes [N (%)]	No [N (%)]	N (%)
Focal notching	7 (11.5)	6 (9.8)	13 (21.3)
Moderate thinning	10 (16.4)	7 (11.5)	17 (27.9)
Extensive thinning	8 (13.1)	23 (37.7)	31 (50.8)
Total	25 (41.0)	36 (89.0)	61 (100.0)

**Table 4:** Distribution of Glaucoma awareness and neuroretinal rim appearance.

### Discussion

With regards to the awareness of glaucoma before being diagnosed of the condition, the finding from this study was quite higher than other studies; in a study in South-western Ethiopia Tenkir, Solomon [5] using a population attending an ophthalmic outreach program recorded 2.4% of the sample not being aware of glaucoma. However, in this research glaucoma patients were isolated and questioned for awareness of glaucoma whereas in Tenkir, Solomon [5] study, all people attending an ophthalmic outreach program were questioned; specifically their study never targeted only glaucoma patients hence the disparity between the percentages stated in this paper.

Though no previous study on glaucoma patients and their family history at the Westphalian Eye Clinic was chanced upon during the researcher’s study, 24% of the participants had a positive family history of glaucoma, 54% had no family with the remaining 21.3% not being sure of the glaucoma status of their family. In the study, 24% of the sample confirmed a positive family history of glaucoma and family history of glaucoma increases a person’s chances of getting glaucoma [8]. It is therefore important that a screening regime in the eye clinic must be instituted to target the family members of such patients.

About fifteen percent (14.8%) of the study sample knew about the chronicity of glaucoma. A majority (85.2%) did not know about the chronicity, thus a greater proportion of the interviewees did not know glaucoma was chronic. This could be the reason why most glaucoma patients presented to the eye clinic very late with advanced stage of glaucoma. With quite a number being aware that there was a possible detection of glaucoma before symptoms set in. The remaining 44.3% did not know about the possible detection of glaucoma before symptoms set in. From the interview, patients indicted even though they did not have any symptoms of glaucoma but took the advice of family and other acquaintances to go in for ocular screening.

About thirty-six percent (36.1%) of the study sample presented with visual acuity worse than 6/60; it was reported by Gyasi, Amoako [9] in a study in Northern Ghana that, 34.1% of glaucoma patients presented to eye clinics with visual acuity worse than 3/60. Though the percentages mentioned in this study and that of Gyasi, Amoako [9] study were quite similar, accurate comparison could not be made because the visual acuity (VA) mentioned in this study was VA worse than 6/60 compared to the VA worse than 3/60 mentioned in Gyasi, Amoako [9] work. However in both studies glaucoma patients presented poor vision at eye clinics before confirmation of their condition.

About sixty percent of the study sample presented with extensive thinning of the neuroretinal rim. This percentage was less than that reported in other studies. Gyasi, Amoako [9], in a paper, reported that 70.4% of glaucoma patients involved in a study in Northern Ghana presented with cupping between 0.8 - 1 [extensive thinning of the neuroretinal rim (NRR)] with 54.7% having a cupping of I. Probably, the percentage variation could be linked to the different population sizes studied by the different groups of researchers. However, in terms of population sampled, there seemed to be a trend in the two studies; very high proportion of the sampled patients had extensive thinning of the neuroretinal rim at presentation of their cases to the clinics.

In finding the relationship between participants' awareness before diagnosis and the extent of NRR thinning at presentation, 13.1% of the study sample though had heard about glaucoma before diagnosis; they presented with extensive neuroretinal rim thinning. The majority (37.7%) of the participants who presented with extensive thinning of the NRR were not aware of glaucoma until they were diagnosed of glaucoma.

About 5% of the participants who presented with extensive thinning had a positive family history of glaucoma. This represented 20% of those with family history of glaucoma. A report by [10], established that, most relatives of glaucoma patients did not access regular eye screening. This could be the reason why some patients with family history of glaucoma still presented with extensive neuroretinal rim thinning at diagnosis.

### **Conclusion**

The results of the study indicated that, quite a large proportion of patients were not aware of glaucoma until they were diagnosed as glaucomatous. Even though patients with negative family history of Glaucoma had severe and moderated NRR thinning, positive family history of Glaucoma was significant as a few patients with severe thinning of NRR had positive family history. Quite a few patients never had eye examination before that may have had an influence in the extent of NRR thinning. Among the 61 patients interviewed during the study, 36% of the participants had visual acuities worse than 6/60 in the worse eye which indicated glaucoma causes gradual loss of vision. It is recommended that for an increase in the knowledge of Glaucoma in Ghana, more education is needed on the condition among the Ghanaian populace. It is further recommended that Clinicians assess the quality of life of their patients on a regular basis to be able to ascertain how well they fit into society or go about their day to day activities.

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