

## Socioeconomic Influence of Glaucoma on Patients

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**Received:** November 13, 2017; **Published:** January 05, 2018

### Abstract

The aim of the study was to determine the socioeconomic influence of glaucoma on patients. In a descriptive cross sectional study, socio-economic data were collected from 150 glaucoma patients on treatment at Komfo Anokye Teaching Hospital (KATH) and St. Michael's Catholic Hospital, in the Ashanti region, Ghana through interviews and questionnaire. All patients interviewed gave verbal consent to participate in this study. Out of the 150 participants 77 (51.33%) were females and 73 (48.67%) were males. Majority (55.33%) of the participants were not working (unemployed, aged or retired). Majority (70.67%) of the participants either earned a monthly income of less than GH¢ 400, did not a monthly income or could not account for their monthly income. One hundred and twelve (74.67%) of the participants reported the cost of management of their condition as a form of financial burden on them, 56.67% were afraid of getting blind, 51.33% were depressed, 46.00% had their lifestyle affected, 42.67% had their work affected and 40.00% couldn't accomplish their daily task. The most significant socio-economic influence of glaucoma on the participants was the financial burden of the cost of management. The National Health Insurance Schemes (NHIS) should be restructured to cover more glaucoma medications and treatment to ease the financial burden on patients.

**Keywords:** Glaucoma; Socioeconomic; Financial; Psychological; Lifestyle

### Introduction

Glaucoma accounts for an estimated 4.5 million blindness globally, second only to cataract and is estimated to rise to 11.2 million by 2020 [1]. Glaucoma and its associated loss of vision is a problem and as such its effects cannot be overemphasized. Daily challenges such as the inability to perform normal duties or daily routines are faced by glaucoma patients [2]. Aside these challenges, psychological effects [3] such as fear of getting blind, depression and other forms of anxiety are experienced by glaucoma patients [4]. There are also the direct and indirect costs of living with glaucoma [5]. Direct costs involves money used for consulting eye care professionals, purchasing medications and transportation to eye care facilities while indirect costs involves days missed from work and low productivity at the workplace [4,6]. The economic burden of glaucoma is significant and increases as the disease worsens. This is often a neglected problem in our part of the world, especially in Sub-Saharan West Africa.

A study by Adio and Onua to determine the financial burden of glaucoma (POAG) on patients in Rivers State, Nigeria reported that the average glaucoma patient spent 49.8% of their monthly income on management of the condition [7].

The aim of the study was to determine the socioeconomic influence of glaucoma on patients.

## Materials and Methods

A descriptive cross sectional study at Komfo Anokye Teaching Hospital (KATH) and St. Michael's Catholic Hospital, both in the Ashanti Region of Ghana. Komfo Anokye Teaching Hospital (KATH) is located in Kumasi, the capital of the Ashanti region. KATH is a referral point for several hospitals across the country especially for health care facilities in the Northern, Upper West and Upper East regions, Brong Ahafo region, some parts of the Volta region and the Western region. St. Michael's Catholic Hospital is located in the small town of Pramso and is classified as a medium sized hospital serving approximately 140,000 people.

The study conformed to the Declaration of Helsinki. Permission was obtained from the authorities of the selected hospitals. Participants were purposively sampled from glaucoma patients who were on review visits at the said hospital's eye clinic during the period of data collection. Participants included in the study were strictly primary open angle patients who had being diagnosed of glaucoma for at least 6 months before the study. Verbal consents were obtained from participants after details of the study were thoroughly explained to them. Interview of participants was conducted using a close-ended questionnaire. For participants who could not answer the questionnaire personally, the questions were read out to them in a dialect they understood and their responses were recorded accordingly. The socioeconomic influence section of the questionnaire, participants were allowed to choose more than one response if it applies. For the purpose of this study, socioeconomic influence was measured under five main categories: occupation, education, lifestyle, psychology and finance. Additional information was retrieved from patient folders.

The data was analyzed using the Statistical Package for Social Scientists (SPSS) software version 20.0 and Microsoft Excel (2010).

## Results

### Participant Demographics

A total of 150 participants interviewed. Of the 150 participants, 77 (51.33%) were females and 73 (48.67%) were males. Majority (65%) of the participants were aged 50 years and above. Majority (55.33%) of the participants were not working (unemployed, aged or retired). Majority (70.67%) of the participants either earned monthly income less than GH¢ 400 or did not earned any monthly income or could not account for monthly income. Majority (82.67%) of the participants were covered by a health insurance scheme (private or government) while 26 (17.33%) paid out-of-pocket for their management (Table 1).

Demographics		Participants [N (%)]
Gender	Male	73 (48.67)
	Female	77 (51.33)
Age (years)	≤ 20	1 (0.68)
	21 – 50	51 (34.00)
	> 50	98 (65.32)
Employment status	Private	51 (34.00)
	Public	16 (10.67)
	Aged/retired	59 (39.33)
	Unemployed	24 (16.00)
Income Level	< 100	22 (14.67)
	100 - < 400	45 (30.00)
	400 - < 700	11 (7.33)
	700 - <1000	13 (8.67)
	≥ 1000	20 (13.33)
	No monthly income or could not account	39 (26.00)

**Table 1:** Age and Gender distribution of Participants.

**Socio-Economic Influence on Participants**

**Occupation and Education**

Sixty-four (42.67%) out of the 150 participants reported an effect of their condition on their work: 32 (50.00%) had to stop working because of their condition, 24 (37.50%) had to change jobs and 8 (12.50%) adapted to their work without stopping or changing jobs. Two (2, 1.33%) participants reported an effect on education and all of them had to change school (Table 2).

Effect on Occupation/Education		Yes [N (%)]
Work affected	Stopped working	32 (50.00)
	Changed job	24 (37.50)
	Adapted to job	8 (12.50)
Education affected	Changed school	2 (100.00)

**Table 2:** Influence of Glaucoma on Occupation and Education of Participants.

**Psychological**

Majority (85, 56.67%) of the participants were afraid of being blind. Seventy-seven (77, 51.34%) participants were depressed about their condition and 58 (38.67%) of the participants were afraid of their family members being diagnosed with glaucoma (Table 3).

Psychological Effects	Yes [N (%)]
Fear of blindness	85 (56.67)
Depression	77 (51.34)
Fear of family members being diagnosed	58 (38.67)

**Table 3:** Psychological Effect of Glaucoma on Participants.

**Lifestyle**

Sixty-nine (69, 46.00%) participants reported their lifestyle to be affected by their condition. Sixty (60, 40%) participants reported having difficulties in accomplishing their daily tasks: 50 (83.33%) need help of others to accomplish their daily task and 10 (16.67%) can perform task on their own despite the difficulty. Twenty-nine (29, 19.33%) reported having difficulties recognizing familiar faces (Table 4).

Social Effects		Yes [N (%)]
Difficulty performing daily task	Need help to accomplish task	50 (83.33)
	Can perform task on their own	10 (16.67)
Difficulties recognizing familiar faces		29 (19.33)

**Table 4:** Lifestyle Effect of Glaucoma on Participants.

### Financial Burden

One hundred and twelve (74.67%) of the 150 participants (21 out-of-pocket payment plan and 91 health insurance plan) reported cost of management of their condition to be having a toll on their finances (Table 5).

Cost management as financial burden		Participants [N (%)]
Health Insurance Scheme	Yes	91 (73.39)
	No	33 (26.61)
Out-of-pocket payment	Yes	21 (80.77)
	No	5 (19.23)

**Table 5:** Financial Effects of Glaucoma on Participants According to Their Health Care Financing Plan.

Twenty-one (80.77%) out of the 26 who paid out-of-pocket for their management reported cost of management to be having a toll on their finances, 4 earned a monthly income < GH¢100, 8 earned GH¢100 - < 400, 1 earned GH¢ 400 - < 700, 1 earned GH¢ 700 - < 1000, none earned ≥ GH¢1000 and 7 earned no monthly income or could not account for it.

Out of the 124 participants who were covered by a health insurance, 114 (91.93%) reported that their insurance packages did not fully cover the drugs used in the management of their conditions. Eighty-nine (78.07%) out of the 114 participants whose insurance packages did not fully cover the drugs used in the management of their condition reported the cost of treatment to be having a toll on their finances. Out of this 89 participants, 16 earned a monthly income < GH¢100, 25 earned GH¢100 - < 400, 11 earned GH¢ 400 - < 700, 11 earned GH¢ 700 - < 1000, 7 earned ≥ GH¢1000 and 19 earned no monthly income or could not account for it.

### Discussion

To the best of our knowledge, this is the first study that evaluates the socio-economic influence of glaucoma among Ghanaian glaucoma patients. Other studies evaluated glaucoma as a case of blindness but not the social and economic burden the condition leaves on patients.

Majority (51.33%) of the participants in this study were females. This is in contrast to findings in the study by Rudnicka., *et al.* which showed primary open angle glaucoma to be more common in males than in females [8]. The higher percentage of female participants in this study could be due to females in the study area having better eye care seeking behaviors than males. As a result, although the general prevalence of open angle glaucoma might be higher in males or same in both sex in the study area, more females visited the hospital during the course of the study

Over 65% of the participants were aged 50 years and above. Advancing age is a known risk factor for primary open angle glaucoma, explaining why most of the participants are advanced in age. This correlates with the study in Ghana by Ntim-Amponsah, *et al.* who reported that a greater percentage of glaucoma patients were within the ages of 61 - 100 years [9]. The study by Quigley and Broman also showed that glaucoma affects approximately 2% of adults over the age of 40 years, and the disease prevalence increases drastically with age [10].

The work of less than half (42.67%) of the participants was affected by their condition. This is probably because majority (55.33%) of participants were either unemployed or retired/aged. Of the 64 participants whose work were affected by their condition, 87.50% of them had to either change jobs or stop working. Only 8 (12.50%) were able to adapt to their work. This suggests that probably most jobs and work environments in Ghana are not friendly to the visually impaired and thus if glaucoma reaches the stage where significant visual impairments occur patients have to either change jobs to less visually demanding ones or stop working altogether.

Psychologically, a significant percentage of the participants were affected by their condition. Over 50% of the participants were either afraid of getting blind from the condition or were depressed as a result of the condition. This is similar to the study by Odberg, *et al.* [11], in which more than 80% of the participants reported negative emotions on learning that they had glaucoma, with one-third of them afraid of going blind. This is most likely due to the knowledge level of the participants about their condition. According to a study by Nkum, *et al.* in Ghana, about 75% of glaucoma patients involved in their study lacked accurate knowledge about glaucoma [12]. Costa, *et al.* [13] also reported a similar finding in their study in Brazil, in which about two-third of the participants lacked basic knowledge of glaucoma. According to the study by Kong, *et al.* [3], the more glaucoma patients comprehend their condition, the lower their level of depression. The low level of patient knowledge about glaucoma affects their perception of the condition, which produces significant psychological effects on them. Significant education and counselling of glaucoma patients is needed.

The financial burden of glaucoma management was the most significant socio-economic influence of glaucoma on the participants in this study. Majority of the participants (74.67%) of the participants reported the cost of management of their condition as source of financial burden to them. This finding is best explained by the monthly income of the participants. According to a research by Fiscella, *et al.* the average daily cost of management of glaucoma ranges from 0.38 USD to 1.25 USD depending on the drug of choice [14]. The monthly cost of management (with respect to medications only) would be in the range of GH¢ 46.39 - 152.6 (approximately 10.64 - 35 USD) or more. Taking the cost of transportation to hospitals or eye care centers for those living in localities without eye care centers into consideration, the monthly cost of treatment of glaucoma would be higher than stated before. With majority (70.67%) of the participants either earning a monthly income of less than GH¢ 400 or not earning a monthly income at all, approximately 11.60% - 38.00% or more of the monthly income of participants would be spent on just glaucoma medications.

Over 90% of the participants on health insurance schemes reported the cost of their medication not being fully supported by their insurance scheme. With the potential blinding effect of glaucoma when treatment regimens are not followed, it becomes a source of concern when the possibility of cost of medications being a barrier to treatment arises, as over 78% of the participants whose health insurance scheme didn't fully support management of their condition reported some form of financial burden on them. The National Health Insurance Scheme (NHIS) was established with the mission of providing financial risk protection against the cost of quality basic health care for all residents in Ghana [15] and this mission cannot be achieved if the cost of management of some common conditions such as glaucoma becomes a form of financial burden on patients. Restructuring of the National Health Insurance Scheme (NHIS) is needed if its mission is to be achieved. Also, public education on the importance of the NHIS is necessary to get individuals still on out-of-pocket health care financing plan onto the NHIS. This would help reduce significantly the financial burden of managing their conditions.

## Conclusion

The socio-economic influence of glaucoma on patients cannot be understated. The most significant influence of glaucoma on patients in this study was the financial burden of cost of management of the condition. Over 70% of the participants reported some sort of financial burden placed on them by the cost of their medication. A significant percentage of the participants also reported occupational, psychological and social influence of glaucoma on them.

### Recommendations

- The National Health Insurance Schemes (NHIS) should be restructured to cover more glaucoma medications and treatment to ease the financial burden on patients.
- Work environments should be created in such a way that they are friendly to individuals with visual impairment.
- Education and counselling of glaucoma patients is needed to increase the knowledge level of glaucoma patients about their conditions and to help them deal psychologically with their condition.

### Acknowledgement

A big thank you to the authorities of the Komfo Anokye Teaching Hospital (KATH) and St. Michael's Catholic Hospital for allowing us to use their facilities as a point for our study and also to the various staff members that assisted us in any form during the study.

### Conflict of Interest

The authors declare that there is no conflict of interest concerning this publication.

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**Volume 9 Issue 1 January 2018**

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