

Use of Complementary and Alternative Therapies among Adult Glaucoma Patients Attending a Tertiary Hospital in Nigeria

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ABSTRACT

Background: The use of complementary and alternative medicine has increased over the years with people worldwide relying on them for the prevention and treatment of various ailments. Glaucoma is one of the leading causes of blindness worldwide. This study aimed to determine the prevalence, types of complementary and alternative therapies used by glaucoma patients and effects of these medications on the purchase of anti-glaucoma medication. **Methodology:** A descriptive cross-sectional study. A total of 102 consecutive patients attending the glaucoma clinic at the University of Calabar Teaching Hospital were surveyed on the use of CAM. Standardized data collection sheet was used to gather information included demographic variables, ophthalmic history, glaucoma treatment history, and details of CAM use. **Result:** Of the 102 studied participants, only 16(15.7%) used CAM. The commonest CAM used was eye capsules 7(43.8%) followed by supplements 5(31.3%) and herbal concoction 4(25.0%) respectively. People of age group 51-70 were the predominant users of CAM and majority of them 12(75%) reported that their ophthalmologist did not know about their use of CAM. **Conclusion:** Approximately 1 in 6 glaucoma patients used CAM for their disease. The majority reported that they still took conventional glaucoma medications as prescribed. Many of these patients did not disclose the use of CAM to their ophthalmologist.

Keyword: Glaucoma, Complementary, Alternative, Therapies

INTRODUCTION

Glaucoma is a major cause of irreversible blindness in the world. ^[1] It is the second most common cause of blindness after cataracts and accounts for about 30% of blindness globally.

^[2] The Nigerian National Blindness and Low

Vision Survey reported a prevalence of 16.7% of blindness from glaucoma. ^[3] Glaucomatous optic neuropathy is characterized by changes in the optic disc and visual field defects. ^[4] It is characterized by loss of retinal ganglion cells (RGC) and their axons

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over many years. The pathophysiology of glaucoma is not well understood but different pathophysiological mechanisms, including oxidative stress have been implicated.^[5]

Current treatment of glaucoma aims at lowering intraocular pressure (IOP), which has been identified as the only modifiable risk factor. IOP reduction can be achieved by the use of either topical and/or systemic anti-glaucoma medications, laser, or surgery.^[6] Medications include prostaglandin analogs, beta-blockers, cholinergic agonists, alpha-2 adrenoceptor agonists, and carbonic anhydrase inhibitors.^[6] These medications through different mechanisms lower the IOP.^[6] Some like the alpha-agonist (Brimonidine)^[7] and beta-blocker (betaxolol)^[8] are said to offer some form of neuroprotection. Elevated IOP plays a vital role in glaucomatous RGCs damage, though glaucomatous changes have been observed in persons with normal IOP as well.^[5] Control of IOP therapeutically in some patients is not sufficient to arrest the disease progression or improve the visual function.^[9] This suggests a critical role of other factors and mechanisms in the initiation/progression of glaucomatous changes.^[5] In the view that the deterioration of vision seen in glaucoma arises from retinal nerve fibre layer loss resulting in optic nerve degeneration, the possibility remains that neuromodulation / neuroprotective / neuroregeneration approaches could be an excellent effective means of slowing or even stopping the progression of glaucoma.^[10]

There is a global rise in the use of complementary and alternative therapies (CAT).^{[11], [12]} These are beginning to form an important component in our health care; although some of these treatment alternatives have no proven clinical effects.^{[13],[14]} CAT is a term that encompasses products, procedures, and specific medical and health systems not usually regarded as part of orthodox medicine.^{[14],[15]}

The concept “alternative” refers to interventions that are used instead of conventional medical treatments, and the concept “complementary” refers to interventions that are used along with conventional medical treatments.^[16]

An antioxidant is defined as a substance that, when present at low concentrations compared with those of an oxidizable substrate, significantly delays or prevents oxidation of that substrate.^[15] They come mostly in the form of oral supplements. It could be in the form of Vitamins A, C, or E, essential polyunsaturated fatty acids. It could also come as compounds like Korean Red Ginseng,^[18] Saffron- a carotenoid derivative.^[17] It has been suggested that marijuana can have a profound lowering of IOP, but the low response rate, short half-life, and significant toxicity are strong indicators that it is not an appropriate therapeutic agent.^[18]

The effect of antioxidants on glaucoma pathogenesis or prevalence has been studied.^{[16],[19], [21],[22], [23],[24],[25]} All antioxidants studied except one^[25] were said to have a beneficial effect on the pathogenesis of glaucoma. Bonyadi et al found that a carotenoid-based supplement *Saffron* also had ocular hypotensive effects.^[19] Most of the studies did not state whether the supplements were prescribed by a physician or not.

The majority of the studies were done in Asia or Europe. There is a dearth of similar studies in Africa. Literature is limited on the use of complementary and alternative medications among glaucoma patients in Nigeria.

METHODOLOGY

A descriptive, cross-sectional study was conducted in the eye clinic of the University of Calabar Teaching Hospital between the periods of October 2019 to May 2021. Patients aged 18 years and above who

had been on CAM treatment for at least 6 months and consented were recruited into the study. Participants were enrolled through convenience sampling. Data were collected using an interviewer-administered structured questionnaire. This included information such as socio-demographic data, knowledge of glaucoma, use of conventional glaucoma medications, use of CAM for glaucoma, effects of these medications on the purchase of anti-glaucoma medication.

Data were analyzed with International Business Machines (IBM) Statistical Package for Social Sciences (SPSS Inc, version 25 Chicago, IL, USA) for presentation as frequencies and tables. The level of significance was derived with the Chi-square test, confidence interval set at 95%, and P-value < 0.05.

Ethical considerations

Approval for the study was obtained from the Health Research Ethics Committee (HREC) of the University of Calabar Teaching Hospital. Informed consent was obtained from participants with an assurance that their names or locations will not be used but rather code numbers.

RESULTS

One hundred and two participants with glaucoma were enrolled in the study. There were 65 (63.7%) males with a male to female ratio of 1.8:1. The mean age was 55yrs with an age range of 18 years -85 years.

Income of Study Participants, cost of CAM and Effect of Buying CAM

The average monthly income was N 26, 833.00 with a vast majority 79, (77.5%) earning less than the national minimum wage which is N30,000.00. The income level of study participants and information on

the amount 16 of the respondents spent monthly purchasing CAM is shown in table 2. The average cost of purchasing CAM was N11,455 only; which is about 50% of the average monthly income.

Nine (56.3%) participants were able to afford CAM

Table 1: Distribution of participants' demographic data

| Gender: | Frequency | Percentage % |
|------------------------------|------------|--------------|
| Male | 65 | 63.7 |
| Female | 37 | 36.3 |
| Total | 102 | 100 |
| Marital status: | | |
| Single | 21 | 20.6 |
| Married | 71 | 69.6 |
| Widow/Widower | 9 | 8.8 |
| Separated / Divorced | 1 | 1 |
| Total | 102 | 100 |
| Religion: | | |
| Christianity | 101 | 99 |
| African traditional religion | 1 | 1 |
| Total | 102 | 100 |
| Education: | | |
| Primary | 25 | 24.5 |
| Secondary | 50 | 49 |
| Tertiary | 25 | 24.5 |
| None | 2 | 2 |
| Total | 102 | 100 |
| Tribe | | |
| Efik | 19 | 18.6 |
| Ibibio | 15 | 14.7 |
| Igbo | 16 | 15.7 |
| Ejagham | 10 | 9.8 |
| Anang | 9 | 8.8 |
| Others | 33 | 32.4 |
| Total | 102 | 100 |

as well as anti-glaucoma drugs; while 7(43.8%) participants were not able to afford CAM and antiglaucoma medications at the same time. Of those that used CAM, 5 (31.3%) said that it improved their glaucoma. CAM use did not constitute an absolute barrier to the regular purchase and use of anti-

glaucoma medication.

Duration of glaucoma amongst study participants

Table 2: Income Distribution of participants and Cost of purchasing CAM

| Amount (Naira) | Frequency | Percentage % |
|-------------------|-----------|--------------|
| 00.00-25,000 | 79 | 77.5 |
| 26,000 – 50,000 | 8 | 7.8 |
| 51,000 – 100,000 | 10 | 9.8 |
| 101,000 – 150,000 | 3 | 2.9 |
| ≥ 151,000 | 2 | 2.0 |
| Total | 102 | 100 |

| Cost of medication | Frequency | Percentage (%) |
|--------------------|-----------|----------------|
| < 2,500 | 11 | 68.75 |
| 2600 - 5000 | 1 | 6.25 |
| 5100 - 7500 | 1 | 6.25 |
| 7600 – 10,000 | 0 | 0 |
| 10,100 – 12,500 | 0 | 0 |
| > 12,500 | 3 | 18 |
| Total | 16 | 100 |

Average Cost of purchasing CAM = N11,455

The mean duration of glaucoma among participants was 1.9 years (Table 3). The majority of participants 78 (76.5%) were on medical treatment; none indicated surgical treatment. Up to 10% of the participants were not on any treatment for glaucoma at the time of the interview.

Use of CAM

The majority 79(77.5%) of participants did not use CAM. Sixteen (15.7%) participants used CAM while 7(6.9%) did not respond at all. CAM was commonly

used amongst people aged 51-70 years with mean age been 58.6±14.

The use of CAM was frequent among males 9

Table 3: Duration of glaucoma

| Duration of glaucoma | Frequency | Percentage % |
|----------------------|-----------|--------------|
| < 1 year | 34 | 34.7 |
| 1-5 years | 35 | 35.7 |
| 6-10 years | 22 | 22.4 |
| > 10 years | 7 | 7.1 |
| Total | 98 | 100 |

(13.8%). Of those that used CAM 4(25.0%) used herbal concoction, 7(43.8%) eye capsules, 5 (31.3%) supplements; Twelve (75%) reported that their ophthalmologist did not know about their use of CAM.

Relationship between gender, education, and use of alternative medicine

There was no significant relationship between gender, educational qualification, and the use of alternative medicine with a chi-square value of 4.91; a p-value of 0.18, and chi-square value of 0.459, and a p-value of 0.5.

Table 4: Chi-square test of the relationship between gender, education, and use of alternative medicine

| Educational Qualification | Use of alternative medicine | | |
|---------------------------|-----------------------------|-------------------|-------------------|
| | Yes | No | Total |
| None | 1 (50%) | 1 (50%) | 2 (100%) |
| Primary | 5 (20%) | 20 (80%) | 25 (100%) |
| Secondary | 9 (18%) | 41 (82%) | 50 (100%) |
| Tertiary | 1 (4%) | 24 (96%) | 25 (100%) |
| Total | 16 (15.7%) | 86 (84.3%) | 102 (100%) |
| Gender | Use of alternative medicine | | |
| | Yes | No | Total |
| Male | 9 (13.8%) | 56 (86.2%) | 65 (100%) |
| Female | 7 (18.9%) | 30 (81.1%) | 37 (100%) |
| Total | 16 (15.7%) | 86 (84.3%) | 102 (100%) |

DISCUSSION

Ophthalmologists have been faced with challenging questions from patients about the availability of complementary and alternative medicine (CAM) for glaucoma to either cure or prevent blindness.^[26] This can be attributed to improvement in patient awareness and easy access to the internet and other sources of information. Literature has shown glaucoma patients receiving CAM show a better ocular blood flow parameter, such as increases in supratemporal and inferotemporal retinal capillary mean blood flow and decreases in retinal vessel resistance when compared to placebo.^[9]

In this cross-sectional study, we observed the use of complementary and alternative medicine amongst glaucoma patients. Other studies have discussed the use of CAM by patients with various types of eye diseases.^{[13], [27],[28]} About two-thirds of study participants had glaucoma for a little under 2 years. About sixteen percent reported the use of CAM, this prevalence is in contrast to previous studies in the United States (5.4%) and Canada (10.9%).^{[29],[30]} The index study revealed that male and older participants were most likely to use CAM; similar studies did not report on this finding.^{[29],[30]} There was no significant relationship between gender ($p=0.18$) and the use of CAM, this was similar to the study done in the United

States.^[29] However, a difference was noted between the index study and that done in the United States;^[29] in which the relationship between educational qualification ($p=0.5$) and the use of CAM was at variance; the latter reported that patients who were educated beyond high school were more likely to use CAM ($P=0.0014$).^[26]

The most common CAM use by participants observed in the study was supplemented, this was comparable to that noted by Rhee et al.^[29] but differed from the studies done in Palestine and Canada which reported herbal medications as the most common type of CAM used amongst their study participants.^{[11],[30]} The reason proffered for this observation in these studies was that herbs were inexpensive and readily available. It was discovered that 75% of the study participants using CAM did not inform their ophthalmologist; this is higher than what was reported in Canada.^[27] Although this was not the case in the United States where it was noted that 72% of participants did inform their ophthalmologist about CAM use.^[26] 56.3% of the participants on CAM still bought and used their anti-glaucoma medications; this is in contrast to findings by Wan et al.^[30] This study showed that 31.3% of those using CAM believed that it had improved their glaucoma; this is

in variance to findings by Wan et al^[30] and Rhee et al^[29] who reported that 40.5% and 52% of participants in those studies believed that using CAM was helpful in the treatment of their glaucoma.

In conclusion, the prevalence of CAM use among patients with glaucoma in our study population was low. The majority of CAM users failed to inform their ophthalmologist. There is a need for the ophthalmologist to be aware that their patients might be using or may have used CAM; so, needs to address their probable benefits and risks.

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