Original Research Article

Nurse led intervention on the self-management of glaucoma among patients at federal medical center Idi Aba, Abeokuta, Ogun State, Nigeria

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ABSTRACT

Background: The damaging and insidious nature of glaucoma make it spread gradually without being noticed but causes serious harm. In support to this, failure to have adequate knowledge leads to late detection and poses management problem in preventing blindness from glaucoma among glaucoma patients. This study tends to fill such gap by assessing the effect of nurse-led intervention on the self-management of glaucoma among glaucoma patients at Federal Medical Center Idi Aba Abeokuta, Ogun State, Nigeria.

Methods: The study utilized one group pre-test, posttest quasi experimental research design with 97 glaucoma patients. Two research instruments were used to collect data. Data were collected over six weeks in three phases. Descriptive statistics were used to analyze the data for the research questions.

Results: Mean score of knowledge level of participants on glaucoma increased from 8.13±3.14 (pre intervention) to 15.91±1.68 (post intervention). Pre intervention knowledge mean score level of participants on glaucoma self-management increased from 9.28±3.76 to post intervention mean score of 18.12±1.09; pre intervention skills' mean score of participants on the effective eye drop instillation increased from 4.23±0.88 to 8.47±0.53 at post intervention mean score.

Conclusions: The training package enhanced the general knowledge and self-management of glaucoma, as well as skills in eye drop instillation. It is therefore recommended that there is need for nurses to provide clear and detailed instructions on how glaucoma medication must be effectively instilled.

Keywords: Federal Medical Center, Glaucoma patients, Knowledge, Self-management, Training programme

INTRODUCTION

Millions of people living in underdeveloped and developing countries like Nigeria are often times cut off from the mainstream of economic and social development due to heavy burden of diseases. Among these diseases is glaucoma which is the result of too much pressure in the eye. It is usually believed to begin after the age of 40 years and is a common cause of blindness.[1-3]

Glaucoma is the second leading cause of blindness in Nigeria and in the world.[4] Open-angle glaucoma (OAG) is the most prevalent type of glaucoma in Africa and a leading cause of blindness and visual impairment.[2,3,5]

The glaucoma-specific blindness prevalence in Nigeria (0.7%, 95% confidence interval 0.6-0.9%) among those aged 40 years and above is one of the highest ever reported, and glaucoma is the second-leading cause of blindness after cataract.[6] The all glaucoma prevalence in

Nigeria in this age-group was 5.02% (95% CI 4.60-5.47%), with 86% being OAG.

Glaucoma is a chronic, asymptomatic slowly progressive eye disease in which the optic nerve is damaged due to elevated intraocular pressure (IOP). This elevated IOP results in a severe and irreversible pattern of visual field (VF) defects and blindness. Visual impairment and the perspective of visual impairment have a significant impact on health- and vision-related quality of life, daily wellbeing and functioning.[4,7] First-line therapy takes the form of ocular hypotensive eye drops and relies on achieving a reduction in IOP.[8] Consistent IOP lowering is associated with reduced risks of developing optic nerve damage and preventing its progression.[9,10] However, achieving sufficient IOP rates can be hindered by poor adherence to therapy.

Self-management of glaucoma by the patients in this study is seen as the extent at which the patients adhere to their medication. Adherence is therefore defined as the degree to which a patient follows the instructions to take a prescribed treatment during a defined period of time while persistence describes the time from initiation of therapy to its discontinuance by the patient. Adherence and persistence have largely replaced the term compliance although adherence and compliance are sometimes used interchangeably. Low rates of adherence or compliance to glaucoma medications have been reported in Nigeria and other countries.[11,12]

Previous studies have reported that adherence fluctuates between 23% and 60%, due to a wide scope of definitions and various assessment methods that have been used.[11, 13] Some patients have a tendency not to use their eye drops prior to attending clinic visits as they do not want the drugs to interfere with the results of tests done during the visit. The morning dose of eye drops due for application on the appointment day is often omitted.[11,13] Currently, during medical visits at an outpatient ophthalmology clinic of a Federal Medical Centre, some patients cannot name their medication nor frequency of instillation correctly.

Also, adequate knowledge of medication has been recognized as one of the determinants of treatment compliance glaucoma self management among glaucoma patients. Besides, adequate recall of prescribed drugs as a reflection of understanding of the treatment regimen.[14] The percentage of patients able to accurately identify their drugs varies from 10.9% to 85%.[15] Age, sex, household income, use of multiple medications, level of education, and first-time prescription of medication for glaucoma patients were associated with deficient knowledge about medication.[11,15]

Specifically, improving education has been seen as a key aspect in changing adherence behaviour did not find an overall improvement in adherence with better education, but found certain factors to positively correlate with adherence, including knowledge of glaucoma and fulfilled information needs.[16-18] In general, studies using multifaceted interventions including education and behavioural change were effective to improve adherence.[19]

In particular self-management support has been applied in a variety of settings and in various chronic diseases. The content of self-management support might differ across conditions, yet the key feature is to increase patients' ability to deal with daily consequences of their disease to maintain quality of life. Although, self-management support has been proven to be effective in chronic diseases, it remains unexamined in glaucoma. Therefore effective nurse-led training or intervention and counselling is essential for the self-management of glaucoma among glaucoma patients.[20]

METHODS

The pretest-posttest one group quasi-experimental design was used for this study.

Sample size and sampling technique

The eye clinic of Federal Medical Centre (FMC) Abeokuta, Ogun State has approximately forty-nine (49) to fifty-five (55) glaucoma cases needing treatment in a week, hence total enumeration will be used. A total of 103 were recruited among the patients. However, 97 patients were actively involved in the study from pre to post test level.

Research instrument

Data was collected using a self-developed questionnaire on the self-management of glaucoma among glaucoma patients (S-MoGQ). It is a 50 item questionnaire. The reliability test results yielded Cronbach's alpha coefficient of 0.779 which was accepted to be reliable for the study.

Data collection

The training as well as the collection of the data were done for 4 weeks. The consent of the participants were obtained and the structured test paper will be used to collect data in person from the participants after 4 weeks of training. The intervention lasted for 50 minutes each day.

Data analysis

Descriptive statistics such as frequency counts, percentages, tables, mean scores, and standard deviation was used to analyze demographic data of participants and the research questions.

Ethical approval was given by the Babcock University Health Research Ethics Committee. Authorization to

RESULTS

Table 1 shows the response of the participants to the question on knowledge of glaucoma both at pre and post intervention level. The pre-intervention has an overall percentage score of 40.63% while the post intervention has an overall percentage score of 79.6%. This shows a difference in pre and post intervention level on knowledge of glaucoma. Other implications that can be deduced from table 4.3 is that majority (50.5%) of the participants at pre-level do not know what glaucoma is all about while after nurse-led education all the participants were able to explain what glaucoma is. Also, only 19.6% of the participants were able to understand that most

patients with glaucoma cannot tell that they have an eye problem before the intervention while at intervention all of them got to know that anyone can have glaucoma without knowing it. Table 2 presents the pre and post intervention knowledge mean score level of participants on knowledge of glaucoma. At the pre-intervention stage, 50 (51.6%) participants had low knowledge, 26 (26.8%) and 21 (21.6%) had average and high knowledge respectively on the knowledge of glaucoma. At the post intervention, 59 (60.8%) had high knowledge and the remaining 38 (39.2%) had average knowledge. The glaucoma patients' knowledge mean score of glaucoma at pre-intervention was 8.13 which is equivalent to 40.63%. Thus, it could be said that the glaucoma patients' knowledge before intervention was very low. After the intervention, the study revealed that glaucoma patients' knowledge mean score of glaucoma was 15.91, this translates to 79.6% knowledge at the post intervention level.

Table 1: Pre and post intervention knowledge mean score of participants on knowledge of glaucoma.

	Pre intervention Post intervention							
	Correct		**Incorrect**		**Correct**		**Incorrect**	
	F	**Percentage**	**F**	**Percentage**	**F**	**Percentage**	**F**	**Percentage**
What is glaucoma?	48	49.5	49	50.5	97	100.0	-	-
Can most patients with glaucoma tell that they have an eye problem?	19	19.6	78	80.4	97	100.0	-	-
The most common symptom of glaucoma	51	52.6	46	47.4	90	92.8	7	7.2
Important risk factors for glaucoma	47	48.5	50	51.5	88	90.7	9	9.3
Important history for glaucoma	49	50.5	48	49.5	97	100.0	-	-
The normal intra-ocular pressure is	11	11.3	86	88.7	78			
Diagnosis of glaucoma includes a combination of two diagnosis	40	41.2	57	58.8	90	92.8	7	7.2
Untreated glaucoma leads to	67	69.1	30	30.9	97	100.0	-	-
Treatment of glaucoma is directed at	49	50.5	48	49.5	93	95.9	4	4.1
Treatment options include all the following except one	55	56.7	42	43.3	91	93.8	6	6.2
Treatment of glaucoma is usually	55	56.7	42	43.3	93	95.9	4	4.1
Which of the following eye care professionals can best diagnose and treat glaucoma	48	49.5	49	50.5	97	100.0	-	-
Is visual loss due to glaucoma permanent or reversible	61	62.9	36	37.1	97	100.0	-	-
How often should one normally have an eye examination	34	35.1	63	64.9	89	91.8	8	8.2
What is the most common cause of blindness worldwide	53	54.6	44	45.4	97	100.0	-	-
Glaucoma is characterized by damage to the lens of the eye	44	45.4	53	54.6	90	92.8	7	7.2
Glaucoma is usually associated with high eye pressures	49	50.5	48	49.5	93	95.9	4	4.1
Glaucoma can be associated with low eye pressures	47	48.5	50	51.5	93	95.9	4	4.1
Glaucoma is not a common cause of blindness	49	50.5	48	49.5	91	93.8	6	6.2
Most patients with glaucoma have no symptoms	37	38.1	60	61.9	97	100.0	-	-
Weighted percentage score	40.63%				79.6%			

Table 2: Pre and post intervention knowledge mean score level of participants on knowledge of glaucoma.

The knowledge of glaucoma	Category of scores	Pre- intervention		Post- intervention	
		Frequency	Percentage	Frequency	Percentage
Low	0-6	50	51.6	-	-
Average	7-13	26	26.8	38	39.2
High	14-20	21	21.6	59	60.8
Total		97	100.0	97	100.0
Mean		8.13 (40.63%)		15.91 (79.6%)	
Standard dev.		3.139		1.682	
Mean difference		7.78			

Table 3: Pre and post intervention mean score of participants' knowledge of self-management of glaucoma.

	Pre intervention				Post intervention			
	Yes		No		Yes		No	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage
OMEGA-3 rich foods like Sardines, mackerel, rainbow trout, wild salmon	37	38.1	60	61.9	80	82.5	17	17.5
Lutein-rich foods like egg, spinach, kale, rapini, peas, green beans, brussel sprouts	67	69.1	30	30.9	97	100.0	-	-
Beta-carotene rich foods like Carrots, squash, sweet potatoes, canned pumpkin	30	30.9	67	69.1	97	100.0	-	-
Antioxidant rich foods (vitamin C, vitamin E, anthocyanins, catechins, flavanoids) like peppers, green tea, berries, kiwi, citrus, other fruit	71	73.2	26	26.8	93	95.9	4	4.1
Zeaxanthin-rich foods like dark leafy greens, peas, summer squash, pumpkin, broccoli, asparagus, lettuce, carrots, and pistachios	29	29.9	68	70.1	78	80.4	19	19.6
I ever forget to take my medication	50	51.5	47	48.5	37	38.1	60	61.9
At times, I am careless about taking my medication	47	48.5	50	51.5	44	45.4	53	54.6
When I feel better, I sometimes stop taking my medication	70	72.2	27	27.8	19	19.6	78	80.4
Sometimes I feel worse when I take the medication, then I stop taking it	56	57.7	41	42.3	27	27.8	70	72.2
I take my medication only when I am sick/feel sick	44	45.4	53	54.6	-	-	97	100.0
It is unnatural for my mind and body to be controlled by medication	37	38.1	60	61.9	67	69.1	30	30.9
My thoughts are clearer on medication	50	51.5	47	48.5	97	100.0	-	-
By staying on medication, I can prevent getting sick	67	69.1	30	30.9	97	100.0	-	-
I feel weird, like a 'zombie' on medication	47	48.5	50	51.5	44	45.4	53	54.6
Medication makes me feel tired and sluggish	56	57.7	41	42.3	50	51.5	47	48.5
Regarding instillation of eye drops, I consider it difficult	51	52.6	46	47.4	37	38.1	60	61.9
About the topical administration of eye drops, do you have any difficulty?	49	50.5	48	49.5	27	27.8	70	72.2
In relation to the eye drops, did the drop instilled fall in the eye all the time?	33	34.0	64	66.0	65	67.0	32	33.0
Is it necessary to repeat instillation so that it fall in the eye?	50	51.5	47	48.5	97	100.0	-	-
Did the tip of the bottle touch the eyelashes or the eyelid or the eye?	77	79.4	20	20.6	-	-	97	100.0
Weighted percentage score	46.4%				90.6%			

Table 3 shows the response of the participants' knowledge of self-management of glaucoma at pre and post intervention knowledge level. The pre-intervention has an overall percentage score of 46.4% while the post intervention has an overall percentage score of 90.6%. This shows a difference in pre and post intervention mean score of participants' knowledge of self-management of glaucoma. Table 4 presents the pre and post intervention knowledge mean score level of participants on glaucoma self-management. The outcome of this study showed that the participants' pre intervention knowledge weighted

percentage score level of glaucoma self-management was 46.4%, which means they have not had adequate knowledge on appropriate self management of glaucoma but after they were exposed to nurse-led intervention in form of training the mean on knowledge of glaucoma self-management score increased to 90.6%. This implies that the nurse led training has been able to add to their knowledge about glaucoma self-management which will not only influence the management of glaucoma but will also enhance treatment seeking behaviour and application of this management.

Table 4: Pre and post intervention mean score of participants knowledge level of self-management of glaucoma.

Participants knowledge level of self-management of glaucoma	Category of scores	Pre- intervention		Post- intervention	
		Frequency	Percentage	Frequency	Percentage
Low	0-6	39	40.2	7	7.2
Average	7-13	37	38.1	29	29.9
High	14-20	21	21.7	61	62.9
Total		97	100.0	97	100.0
Mean		9.28 (46.4%)		18.12 (90.6%)	
Standard deviation		3.76		1.09	
Mean difference		8.84			

Table 5: Pre and post intervention skills' mean score of participants on the effective eye drop instillation.

Effective eye drop instillation	Category of scores	Pre intervention		Post intervention	
		Frequency	Percentage	Frequency	Percentage
Below average	0-3	22	22.7	-	-
Average	4-6	51	52.6	16	16.5
Above average	7-10	24	24.7	83	85.5
Total		97	100.0	97	100.0
Mean (%)		4.23 (42.3%)		8.47 (84.7%)	
Standard deviation		0.88		0.53	
Mean Difference		4.24			

Results from Table 5 shows that the intervention skills' mean score of participants on the effective eye drop instillation at pre-test was 4.23 (42.3%). Thus, it could be said that the participants skills' mean score on the effective eye drop instillation before intervention was poor while after the intervention was 18.12 (90.6%). Pre intervention skills' mean score of participants on the effective eye drop instillation was 42.3% while it increased to 90.6% at post intervention. The difference in the pre and post mean scores was due to nurse-led training on the effective eye drop instillation, therefore the intervention has been able to add to the knowledge of these participants on effective eye drop instillation among participants.

DISCUSSION

The outcome of this study revealed that at the pre-intervention stage the glaucoma patients had low

knowledge of glaucoma. This is in support with the study of Kyari et al that patients with inadequate health literacy have difficulty in understanding and interpreting most health texts and instructions compared to those with good knowledge.[21] Hence, the nurse-led training on glaucoma has added to the knowledge of these patients. This finding agrees with studies by Konstas et al that more than 90% of the study participants had good knowledge about glaucoma.[22] They asserted that the high level of knowledge was partly attributed to the type of study population the patients represented were well-informed groups. This may be due to a connection between the knowledge on instructions and practice of instruction.

The outcome of the poor knowledge of glaucoma self-management at pre intervention among the participants of this study is in line with the previous study of Maake and Oduntan reported a low knowledge of 15.8% among 259 respondents.[23] Their primary sources of information were

visits to eye clinics and knowing someone with glaucoma. This seems to underscore the need to provide clear and detailed health education on the condition to improve parents/guardians understanding of the condition. In a related study by Ashaye et al, they reported that knowledge of all the eye diseases assessed was poor.[5] The outcome of the post intervention revealed the participants' knowledge of glaucoma self-management to be good. This indicates the effectiveness of the nurse-led training on glaucoma self-management. This is consistent with the previous study conducted that improving education has been seen as a key aspect in changing adherence and self-management behaviour.[16-18] Also, Akinlabi reported an overall improvement in self-management with better knowledge of glaucoma and fulfilled information needs.[24]

The poor knowledge of glaucoma self-management observed at the pre intervention among the participants of this study is in line with the previous study of Taylor et al. who stated that a barrier to self-management was the difficulty with the proper administration of drops by patients due to lack of requisite knowledge about the diseases.[25] Also, administration issues included getting the proper number of drops into the eye and difficulty squeezing the bottle was also reported as major barriers. Konstas et al observed in a study conducted in Pakistan among glaucoma patients that patients administer their eye drops less often due to inadequate knowledge about glaucoma.[22] Comparatively, this study is in line with the report of Sotirios et al in glaucoma patients in Greece on medication adherence and effective eye drop instillation, the results showed that individuals with lower levels of knowledge were less likely to adhere to medication instructions and skilful on eye drop instillation compared to those that were highly informed and trained by medical practitioners themselves.[26]

CONCLUSION

This study achieved its initial objectives of assessing the effect of nurse-led intervention on the patients' self-management of glaucoma at Federal Medical Center Idi Aba Abeokuta, Ogun State, Nigeria. Glaucoma is a chronic optic nerve diseases, often asymptomatic, associated with distraction of the retinal nerve fibres which presently is the main determining factor for permanent blindness globally. It is a chronic disease with no symptoms initially, and is therefore susceptible to patient's non-adherence to prescribed treatment.

Recommendations

Glaucoma is a complex disease to manage and addressing it as a public health problem is a challenge. The following recommendations are made:

- Nurse must provide clear and detailed instructions on how glaucoma medication must be effectively instilled.

- There must be reliable alternative source of information on further clarification of instructions provided on glaucoma medication.
- More eye health care practitioners must be trained by the government as a policy especially ophthalmic nurse to educate the general public on the importance of medication adherence in glaucoma.

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