



## **Development And Implementation Of Self-Instructional Cue Cards On Secondary-Prevention Of Glaucoma Among Patients Attending Eye Clinic At Federal Medical Center Abeokuta, Ogun State, Nigeria**

**Samson-Akpan Patience**

School Of Nursing, Babcock University Ilishan-Remo, Ogun State, Nigeria.

**Bankole Adelola Mojisola**

School Of Nursing, Babcock University Ilishan-Remo, Ogun State, Nigeria.

**Ayodele Kolawole Olanrewaju\***

Research, Innovation And Int. Coop., Babcock University Ilishan-Remo, Ogun State, Nigeria.

\*corresponding author email: [ayodelek@babcock.edu.ng](mailto:ayodelek@babcock.edu.ng)

### **Abstract**

The damaging and insidious nature of glaucoma makes it easily complicated without being noticed. Current patient education methods used in most hospitals rely heavily on direct interaction with healthcare providers, which may not be sustainable due to high patient loads and limited healthcare personnel. Therefore, there was an urgent need for self-instructional materials tailored to the specific educational needs of glaucoma patients to enhance their self-management capabilities. This study developed and implemented of cue cards on secondary prevention of glaucoma among patients attending eye clinic at federal medical centre (fmc), abeokuta, ogun state, nigeria. This study adopted exploratory sequential mixed method research design. Leslie kish formula was used in calculating 12 experts who participated in the delphi phase of the study. The data were analysed using descriptive and inferential statistics at 0.05 level of significance. The developed cue card improved the knowledge of glaucoma prevention and attitudinal disposition of patients attending the eye clinic at federal medical centre abeokuta, ogun state. It was recommended that health professionals across the nation should utilize the cue card to enhance patients' education on glaucoma.

**Keywords:** cue card, glaucoma, glaucoma secondary prevention, self-instructional material

### **Introduction**

Glaucoma prevention is a continuum, with different interventions being indicated at different stages of the disease. No single therapy or approach is a cure-all, and each one comes with its own risks and benefits. A tempered and evidence-based approach should be taken to implement the best care possible for any given patient and for any given disease stage. Thus, the interventional and traditional approaches do not represent two discrete or opposing strategies; and maintaining patients' visual function is paramount, no matter which treatment modalities are chosen.

An interventional treatment approach has demonstrable benefits for patients (such as more consistent iop control, increased compliance, lower medication burden, faster recovery time); physicians (such as fewer intraoperative complications, easier follow-up care, and adequate tissue preservation in case another future surgery is needed); and society (such as lower costs, decreased disease severity and blindness care, and faster return of patients to the workforce)



(gallardo et al., 2024; micheletti et al., 2024; ahmed, 2023) despite their promise, however, some related challenges emerge to adopting minimally invasive interventions into practice. For example, diagnosis may be delayed, especially when patients are asymptomatic and disease presentation is asymmetric; and late diagnosis and referral may require more aggressive intervention(s).

Additionally, radcliffe et al. (2023) asserted that a large issue in many practices is hesitancy around departing from the topical-medications-first default paradigm, even though eyedrops cause undesirable side effects and diminished quality of life for patients. These challenges may be especially prevalent in resource-poor settings, where the ratio of provider to patient is lower and where diagnostic and educational tools may be strained. For each of these challenges, it is critical to educate not only patients, but also patients' support networks, ophthalmologists, optometrists, third-party payers, and policy-makers regarding the importance of glaucoma diagnosis and treatment, as well as the various treatment modalities available. Such education can motivate a fresh consideration of the evidence and lead to accepting a newer (and perhaps more effective) treatment approach. As will be discussed in this article, the challenges to glaucoma diagnosis and treatment may be ameliorated by the diverse educational modalities that have emerged in recent years: these constitute state of the art tactics in patient education. These methods can apply to all aspects of glaucoma care including, for example, education regarding eye drop instillation technique, need for regular and lifelong follow ups, warning signs, importance of family screening, identification of drug reactions, and postoperative care.

However, the importance of patient education is indisputable increasing patients' understanding of glaucoma and its treatments has been shown to lead to better clinical outcomes, higher treatment adherence, and higher patient engagement (cheng et al., 2022). Conversely, the lack of health literacy is stated by the world health organization to be associated with lower participation in disease detection activities, diminished adherence to medication, and lower management of chronic diseases. Unfortunately, bedrood et al (2022) noted that patient understanding of their disease is often lacking, such as in a real-world study of glaucoma patients which found approximately one-third of american adults and two-thirds of brazilian patients had insufficient understanding of their condition. The truth is, patients still go blind from glaucoma, despite the existence of effective diagnostic technologies and treatments. This discrepancy according to ogba et al. (2020) has been attributed to glaucoma under-diagnosis, inadequate treatment, and treatment noncompliance. Insufficient or ineffective patient education is known to exacerbate the other three causes. Glaucoma education is also important among a patient's support network, such as relatives or friends.

In addition, it is understandably difficult for patients to understand and remember everything that occurs during a clinic visit (allison et al., 2020) this issue may be especially true for older patients or those with visual or functional limitations. In these cases, family or friends could provide an additional level of support. Thus, educating these individuals could be a powerful way to promote better care and adherence to treatment (bankole et al., 2025)

The damaging and insidious nature of glaucoma make it spread gradually without being noticed but causes serious harm.given the high prevalence of glaucoma and the limited healthcare resources in nigeria, innovative approaches such as self-instructional materials (cue cards) can provide patients with continuous access to essential information. This initiative aims to bridge



the educational gap and empower patients to take an active role in managing their condition, ultimately reducing the burden on healthcare providers and improving patient outcomes. Additionally, this research aligns with global public health goals of reducing blindness caused by glaucoma through effective secondary prevention strategies.

This study tends to fill such gap by developing and validating self-instructional materials (cue cards) on secondary prevention glaucoma among patients attending eye clinic at federal medical center abeokuta, ogun state, Nigeria.

### **Research questions**

1. What is the expert panel consensus rating of the developed health education material (cue-card) on glaucoma prevention?
2. What is the level of appropriateness of the developed self-instructional material (cue-card) among glaucoma patients on glaucoma prevention?
3. What is the efficacy of developed cue cards in the secondary prevention of glaucoma among glaucoma patients?

### **Material and methods**

**Sampling method:** purposive sampling technique was used in selecting the experts in various related fields needed for the study. The experts used in this study were ophthalmologists, optometrists consultants, opticians, ophthalmic nurses and health educators.

**Method of data collection:** the data were collected in two phases namely:

**Phase i: development of cue cards:** this phase involved the development of the cue cards by collecting qualitative data from the participants in the focus group discussion in relation to their experience on glaucoma prevention and putting into consideration, their level of knowledge, perception and practices. This was followed by analysis of the qualitative data, obtain findings from the analysed data and then finally develop a cue card putting inculcating their cultural believes as well (polit& becks, 2018).

**Phase ii: the experts/professionals:** delphi procedure was employed for data collection whereby it involved three series of rounds where information was passed back to members of the panel of experts using questionnaire sent and allow contact experts of 12 members. For consultation by and opinions of the judges, the following materials were given: a letter invitation, concept brief and a folder with the cue cards and the protocol for educational material, and a tool to characterize the profile of the professional experts. This is a group facilitation approach which involve a repetitive process aimed at transforming individual expert opinion into a group consensus. This technique involved a survey design that consist of gathering the view of panel of experts on an area of interest through a process of seeking consensus on the issue (twin, 2022). Delphi procedure involve series of rounds where information will be passed back to members of the panel of experts using questionnaire sent through email addresses and allow contact experts of six to twelve member (polit& beck, 2018). The experts used in this study were three (3) ophthalmologists, three (3) optometrists, three (3) opticians and three (3) ophthalmic nurses. This made a total number of twelve (12) members.

It is noteworthy that in the selection of judges, this study considered ophthalmic nurses with experience in primary eye care, vision examinations, and lens prescriptions, and who at one time or the other have helped the medical consultants with advanced medical and surgical treatments. However, the pursuit of experts occurred purposively, via indication of experts in the field of eye care. Thus, it was possible to identify experts, and a total of 12 experts were invited to participate



in the study and also given a concept brief. They were required to sign the informed consent form.

**Method of data analysis:** in order to analyze that the data collected from the experts, statistical analysis of agreement according to each item of the instrument was performed using the adequacy of proportions adjustments of judges who agreed with the relevance of the educational material. For this analysis, a binomial test was used and the significance level ( $\alpha$ ) was set at 5%,  $p$ -values  $< 0.05$ , which indicated the proportion of judges who agreed with relevance of the cue-card. The content validity index (cvi) followed three approaches: 1) i-cvi (level content validity index): for each one of the items, the i-cvi will be calculated by the number of judges that evaluated the item as relevant or very relevant. 2) s-cvi/ave (scale-level content validity index, average calculation method): the proportion of scale items rated as relevant and very relevant by each judge. 3) s-cvi (scale-level content validity index): mean of the proportion of items evaluated as relevant and very relevant by the judges. An index of  $> 0.80$  was accepted as adequate for the content validity (polit & beck, 2006).

**Ethical consideration:** ethical approval for this study was obtained from babcock university health research ethics committee (buhrec). A letter of introduction will be presented to federal medical centre (fmc) abeokuta, the prospective participants were fully informed about the nature of the study and that their participation is voluntary. The ethical principle of respect for persons, beneficence, non-maleficence and justice was employed. Participants' anonymity was ensured. Participants were encouraged to ask questions while all questions were answered with all sincerity. The outcome of the research will benefit the participants and federal medical centre (fmc) abeokuta regarding how to adequately helped the glaucoma patients on the self-management of their ailment.

## Results

**Table 1: experts socio-demographic information**

Experts	Sex	Age	Specialty	Rank
Expert 1	Female	55	Ophthalmologist	Consultant
Expert 2	Male	39	Ophthalmologist	Consultant
Expert 3	Male	47	Ophthalmologist	Consultant
Expert 4	Female	40	Optometrist	Consultant
Expert 5	Male	51	Optometrist	Consultant
Expert 6	Female	47	Optician	Consultant
Expert 7	Male	53	Optician	Snr registrar
Expert 8	Female	49	Health educator	Ass. Professor
Expert 9	Female	51	Ophthalmic nurse	Ddn
Expert 10	Female	40	Ophthalmic nurse	Ddn

The experts' socio-demographic characteristics in table revealed that the age of the participants ranged from 39 years to 55 years with a mean age of  $47.2 \pm 9.26$  years. The professional status of the respondents revealed that they are all at the peak of their chosen career.

Neuman (2014), defines validity as the process of determining the reliability of the research instrument. Face and content tests were performed on the instrument. Expert panel consensus rating of the newly developed cue cards are discussed in table 2.



**Table 2: summary of the expert panel consensus rating of the newly developed cue cards**

Cue charts	Sub-scale	S-cvi	S-cvi/ua	Significant
Round 1	Degree of relevance (figure)	1.00	1.00	Very good
	Degree of relevance (script)	0.96	0.92	Very good
Round 2	Clarity (figure)	0.97	0.83	Very good
	Clarity (script)	1.00	1.00	Very good
	Ease of understanding (figure)	1.00	1.00	Very good
Round 3	Ease of understanding (script)	0.97	0.75	Good
	Applicability to practice (figure)	0.98	0.83	Very good
	Applicability to practice (script)	1.00	1.00	Very good

From table 2 analysis, results revealed that all the experts consensually rated the developed cue charts as very good for utilization and promotion of health awareness for all ages. Feed back on the appropriateness of the newly developed self- instructional material among glaucoma patients on secondary prevention of glaucoma

**Table 3: descriptive report of the level of appropriateness of the newly developed health education material**

		Sa	A	D	Sd
1	The self-teaching material was easy to understand	15 (88.2)	2 (11.8)	-	-
2	The visuals in the cue card helped me understand glaucoma better.	17 (100.0)	-	-	-
3	The information provided was relevant to my situation.	17 (100.0)	-	-	-
4	I feel more confident in managing my glaucoma after using the cue card.	14 (82.4)	3 (17.6)	-	-
5	Overall, i am satisfied with the self-teaching material.	17 (100.0)	-	-	-

Table 3 shows the level of appropriateness of the newly developed health education material among glaucoma patients on glaucoma prevention. It was revealed that all the participants in the experimental group agreed that the self-teaching material was easy to understand, helped them understand glaucoma better, provided them with relevant information to their situations, felt more confident in managing glaucoma after using the cue card, and were satisfied with the self-teaching material. Therefore, it could be said that the level of appropriateness of the newly developed cue cards for secondary prevention of glaucoma is very good.



**Table 4: a 2 x 2 classification table for mcnemar analysis for the effect of cue cards on secondary prevention of glaucoma**

Intervention * control cross tabulation					Risk estimate			
		<u>Without cue cards</u>		Total	Mcnemar test value	Odds ratio post-test	The odds for ratio the pretest	Decision for
		Correct response	Incorrect response					
With cards	Correct response	994	468	1462	.000**	9.321	1.888	Significant
	Incorrect response	654	980	1634				
Total		1648	1448	3096				

The result presented in table 4 revealed a significant difference in the efficacy of two educational methods (with and without cue cards) among glaucoma patients. It was found that there was a difference in the level of knowledge retention on the secondary prevention of glaucoma between the group educated with cue cards and those without cue cards at federal medical center abeokuta, ogun state, nigeria. The mcnemar p-value of 0.000 is significant at less than 0.05 significant level.

### Discussion of findings

The expert panel consensus rating of the newly developed health education material on glaucoma prevention was based on degree of relevance, degree of relevance, clarity (figure), clarity (script), ease of understanding (figure), ease of understanding (script), and applicability to practice (script). The results revealed that all the experts consensually rated the developed cue cards as very good for utilization and promotion of health awareness for all ages. It was observed that the level of appropriateness of the newly developed health education material among glaucoma patients on glaucoma prevention. It was found that the cue-cards were easy to understand, helped them understand glaucoma better, provided them with relevant information to their situations, felt more confident in managing glaucoma after using the cue card, and were satisfied with the self-teaching material.

This finding is in line with the findings of abaidoo et al (2023) who developed and validated an educational handout for improving glaucoma medication adherence. Results revealed that the handout has a good content and face validity with an excellent inter-rater reliability and can be used as an educational resource to improve adherence to glaucoma medication. In another study by cole et al (2022) in a study on readability and suitability of online patient education materials for glaucoma, it was found that there was a significant impact on the content and quality of freely available, online glaucoma education material. Though, the material is generally not adequate for use. Also, crabtree and lee (2022) study demonstrated no significant difference in readability score between source type. It was concluded that the majority of online patient education materials for the medical treatment of glaucoma are written at a level too difficult for the general population and fail to meet accountability standards.





## Conclusion

The newly developed cue-card on secondary prevention of glaucoma was found to be adequate in terms of its definition, causes, prevention, and complications. It would appear from this that healthcare providers must offer excellent instructional materials to promote patients' well-being. A high-quality health education resource is necessary to effectively translate knowledge into action, and newly developed resources should be validated to guarantee optimal effectiveness. The degree of appropriateness of the recently created cue chart was adequately teased out in its content areas, including its core messages, which center on secondary prevention and management, and the images that illustrate the problems. This implies that using a health education cue card is a crucial strategy for secondary prevention of glaucoma and enhancing patients' comprehension of their vision.

## References

1. Abaidoo, b., mashige k. P., govender , p. & badasu, p. (2023). Development and validation of an educational handout for improving glaucoma medication adherence: a patient-centred approach. *Research square*. Doi: <https://doi.org/10.21203/rs.3.rs-2972352/v1>
2. Adefolarin, a. O. & gershim, a. (2022). Content validation of educational materials on maternal depression in nigeria. *Bmc pregnancy childbirth*, 22, 322. <https://doi.org/10.1186/s12884-022-04575-5>
3. Ahmed i (2023). *Prospective pivotal trial: standalone multiple trabecular micro-bypass stents (istent infinite) for uncontrolled glaucoma*. Presented at: american society of cataract and refractive surgery (ascrs); may 5-8, san diego, ca
4. Allison et al (2020) *epidemiology of glaucoma: the past. Present, and predictions for the future*: cureus 2020 nov;12(11):e11686. <https://doi.org/10.7759/cureus.11686>
5. Bankole a. M., ayodele, k o, samson-akpan p., imoluamen g t., & oyinloye m a. (2025). Lived experiences of glaucoma patients and glaucoma secondary prevention in nigeria: a qualitative approach. *Journal of xi'an shiyong university, natural sciences edition*, 68(4), 231-242. <https://doi.org/10.5281/zenodo.15259555>
6. Bedrood s, berdahl j, sheybani a, singh ip.(2023). Alternatives to topical glaucoma medication for glaucoma management. *Clin ophthalmol.*;17:3899–3913. Doi:10.2147/opth.s439457
7. Cheng b t, kim a b, & tanna a p. (2022) readability of online patient education materials for glaucoma. *J glaucoma.*; 31(6):438–442. Doi:10.1097/ijg.0000000000002012
8. Cole a., m, saima k, lee, r, do, a. T., sridhar, t., crowell, e, & bowden, c (2022). Readability and suitability of online patient education materials for glaucoma. *Ophthalmology glaucoma*, 5, 525-530
9. Crabtree, l. & lee e (2022). Assessment of the readability and quality of online patient education materials for the medical treatment of open-angle glaucoma. *Bmj open ophthalmology*, 7:e000966. Doi: 10.1136/bmjophth-2021-000966
8. Gallardo m, smith o, trubnik v, & reiss g. (2024). Interventional glaucoma and the patient perspective. *Expert rev ophthalmol.*; 19:311–318. Doi:10.1080/17469899.2024.2382149
10. Ogba, p., ekpenyong, b., osuchukwu, n., & nkanga, d. (2020). Knowledge of glaucoma amongst undergraduate students of university of calabar, nigeria. *Journal of medical and biomedical sciences*, 7(1): 24-30
11. Prasetya h, murti b, anantanyu s, & syamsulhadi m. (2018). The effect of hypnosis on adherence to antituberculosis drugs using the health belief model. *Int j clin exp hypn.*, 66:211–27. Doi: 10.1080/00207144.2018.1421361



12. Radcliffe n m, shah m, & samuelson t w. (2023). Challenging the “topical medications-first” approach to glaucoma: a treatment paradigm in evolution. *Ophthalmol ther.*, 12(6):2823–2839. Doi:10.1007/s40123-023-00831-9
13. Resnikoff, s., pascolini, d., mariotti, s. P., & pokharel, g. P. (2008). global magnitude of visual impairment caused by uncorrected refractive errors in 2004. *Bulletin of the world health organization*, 86(1), 63–70. <https://doi.org/10.2471/blt.07.041210>