

Utilization of Eye Care Services in an Underserved Community in Enugu State, Nigeria

NE Ezinne^{1,2,3}, KK Ekemiri^{1,2}, I Chukwuma², CS Ojukwu², KP Mashige³, AA Ilechie⁴, G Moyo³

¹Optometry Unit, Department of Clinical Surgical Sciences, University of the West Indies, Saint Augustine Campus, Trinidad and Tobago, ²Department of Optometry, Madonna University, Elele Campus, Rivers, State Nigeria, ³Discipline of Optometry, University of KwaZulu-Natal, Westville, Durban, South Africa, ⁴Department of Optometry and Vision Science, University of Cape Coast, Ghana

Received: 11-Jun-2022;
Revision: 24-Jul-2022;
Accepted: 08-Dec-2022;
Published: 31-Jan-2023

INTRODUCTION

Recent data suggests that at least 2.2 billion people around the world are visually impaired, 1.1 billion of whom are living with refractive error, glaucoma, and cataract.^[1] This is mainly because many do not receive appropriate eye care services.^[2] Half of the global population is expected to have vision impairment by 2050 due to factors such as population growth, changes in lifestyle, aging, and limited access to eye care services, particularly in developing countries.^[3] There is inequality in the distribution, access, and utilization of eye care services globally, which could be due to a shortage of trained eye care service providers, and poor integration of eye care services into health systems, among others.

ABSTRACT

Background and Aim: To determine the utilization of eye care services in an underserved community in Enugu State, Nigeria. **Materials and Methods:** A community-based cross-sectional study was conducted among adults aged 18 years and older. A structured questionnaire was used to collect information on the utilization of eye care services within the last two years. **Result:** A total of 500 adults with a mean age of 48 ± 10 years participated in the study, the majority (65.6%) of whom were females. The utilization rate within the last two years was 18% (40/500). Utilization of eye care services was associated with age, religion, occupation, marital status, monthly income, education, family history, and history of ocular disease (all *P* < 0.05). The major barrier to the utilization of eye care services was cost (30%), distance (22.6%), and bad road infrastructure (15.2%). **Conclusion:** There is a low rate of eye care service utilization in the Ugbawka community of Enugu State, Nigeria. The cost of eye care services, distance, and bad road infrastructure were the major barriers to the use of eye care services. These suggest the need for the provision of affordable and accessible eye care services in this community to reduce the burden of visual impairment and blindness.

KEYWORDS: Enugu State, eye care services, Nigeria, rural area, utilization

Visual impairment and blindness have remained significant public health problems in developing countries. It produces significant human and economic burdens to society which can negatively impact on the individual's quality of life. The burden of visual impairment has been reported to be higher among women, ethnic minorities, indigenous populations, people with low incomes, older people, and those with disabilities.^[4]

The World Health Organization (WHO) estimated that globally, only about one-quarter of persons with vision

Address for correspondence: Dr. NE Ezinne, Optometry Unit, Department of Clinical Surgical Sciences, University of the West Indies, Saint Augustine Campus, Trinidad and Tobago.
 E-mail: ezinne.ngozi@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Ezinne NE, Ekemiri KK, Chukwuma I, Ojukwu CS, Mashige KP, Ilechie AA, et al. Utilization of eye care services in an underserved community in Enugu State, Nigeria. Niger J Clin Pract 2023;26:81-9.

Access this article online	
Quick Response Code: 	Website: www.njcponline.com
	DOI: 10.4103/njcp.njcp_398_22

problems use eye care services.^[1,4] In many parts of the developing world, eye care services are scarce, and where such services are available, they are often underutilized due to a variety of reasons.^[1,5] These reasons include cost/lack of insurance, access to timely care, no perceived need, fear of pain from examination, perception of threats to sight, lack of awareness, cultural beliefs, and overshadowing of eye disease by systemic diseases burden.^[6-8]

Utilization of eye care services is influenced by availability, affordability, and accessibility^[7-9] which are all important for the prevention of visual impairment. Most eye care service providers in Nigeria are in the urban areas, thereby leaving many rural areas underserved.^[10] Unavailability of eye care services in the rural areas of Nigeria has resulted in many rural communities resorting to traditional healers, patent medicine sellers (drug stores), and prayer houses for eye care services.^[7,11]

Previous studies^[12-15] on the utilization of eye care services in Nigeria reported varying rates results. The variations were reported to be due to tribal, geographical, and socioeconomical differences which may impact the utilization of eye care services. There is a paucity of studies that have assessed utilization of eye care services in rural communities in Enugu State, Southeast part of Nigeria. This study, therefore, aims to determine the utilization of eye care services in an underserved community in Enugu State. The findings of this study will help in developing the planning and provision of eye care services in this region.

MATERIALS AND METHODS

Study design

This was a descriptive cross-sectional study to determine the utilization of eye care services among the inhabitants of Ugbawka in Enugu State, Nigeria.

Study setting

The study was conducted in Ugbawka, a rural community in Nkanu East Local Government Area of Enugu State in the Southeast of Nigeria. Ugbawka is a clan with seven rural communities including Isigwe, Ovuorie, Amuzam, Amafor, Imeama, Akpaa, and Umuisu. The close proximity of Ugbawka to Enugu town made the migration to Enugu town minimal, hence similar population size in the seven communities. The Igbos are the major ethnic group, and the predominant religion is Christianity (90%), but there are a sizable number of traditionalists as well as Muslims, making up about 5% each of the population. The communities have an agriculture-based economy with farming, fishing, and wine tapping as their main

occupations.^[16] It is also known as the food basket of Enugu State for their palm oil, rice, and cassava. There are infrastructural development challenges including poor access to roads electricity supply, and poor healthcare facilities. There is only one healthcare service facility that provides basic medical and eye care services to the inhabitants of Ugbawka community. The facility is manned by a visiting nurse, and patients who require secondary care are referred to the University of Nigeria Teaching Hospital Enugu (UNTH) which is about 28.1 km from Ugbawka. There are few alternative/traditional medicine practitioners and patent medicine dealers (drug stores). There is no privately owned eye care facility in Ugbawka.

Study population

Adults aged 18 years and older who reside in Ugbawka.

Inclusion and exclusion criteria

The participants included males and females, aged 18 years and older, who had resided continuously in the communities for at least 6 months, and who voluntarily consented to participate in the study.

Sample size calculation

The sample size was calculated using a single-proportion population formula. After considering the proportion of utilization of eye care services of 32% obtained as the average eye care service utilization rate from other studies conducted in Nigeria^[12-15] 95% confidence interval, 5% marginal error, design effect of 2 and 5% non-response rate, the final sample size was calculated to be 700.

Data collection procedure

The seven communities in the Ugbawka clan were included in the study. All the households in each selected community in Ugbawka were first identified. The sampling frame for the survey was derived from the 2006 census figures and compiled a list of all the households in the Ugbawka community. Using a multistage sampling technique, 700 individuals were enumerated for the study, which consisted of 100 participants from each of the seven communities. The 100 participants were randomly selected from each community because the communities have similar population sizes. The first household in each selected community was determined by spinning a bottle at the center of the community to determine the direction to go; thereafter, every second house in the direction of the spanned bottle was selected to participate in the study. A face-to-face interview was performed by trained research assistants using a structured questionnaire. The information included in the questionnaire was demographic data; medical history; utilization of eye care services; and barriers to their use.

The questionnaire was prepared first in the English language after reviewing studies on the utilization of eye care services to identify and include all factors which had an association with previous studies. Then, it was translated to Igbo and re-translated back to English to check for consistency in meaning. In addition, the research assistants were trained in data collection procedures, sampling techniques, and how to administer the questionnaires to participants. There was supervision during data collection and the collected data was evaluated for its completeness daily.

Ethical considerations

The study adhered to the tenets of the Declaration of Helsinki and the study protocol was approved by the Institutional Review Board of Madonna University, Elele campus Nigeria (MAU/SREC/A/19). Prior to data collection, consent was obtained from the Local Government Authority, community heads, household heads, and all participants after explaining the purpose of the study. Information about the importance of regular eye check-ups was given for each study subject at the end of data collection. The advice was given for those with self-reported eye problems to visit eye care service providing centers for eye examination and management.

Operational definition

Awareness of regular eye check-up importance

Participants who have heard of the importance of regular eye check-ups or examinations were considered as they had awareness of regular eye check-up importance.

Utilization of eye care services

Defined as any previous consultation with an orthodox medical facility for an eye or vision problem at least once, within the past 2 years.^[13,17]

Eye care service providing centers

Health institution with at least one eye care service provider (ophthalmologist, optometrist).

Has escort

Participants who had someone who will help them to visit eye care service providing centers for their eye check-ups.

Household

Household was defined as a group of people (such as a family) eating from a common kitchen.^[4]

Data analysis

The data collected was captured in Microsoft Excel and exported to the Statistical Package for Social Sciences (SPSS) software version 24 for windows. Descriptive statistics were used to generate means and standard deviation. Pearson Chi-square test was used to

test associations between variables. A *P* value of less than 0.05 was considered statistically significant.

RESULTS

Socio-demographic characteristics of the participants

Of the 700 people that were enumerated, 500 participated, giving a response rate of 71.4%. Three hundred and twenty-eight (65.6%) were females and 149 (29.8%) were between 18 and 30 years of age. Nearly 35% (34.8%) attended secondary schools, 43.2% were farmers, and the majority (*n* = 88.6%) were Christians Table 1.

Medical characteristics of the participants

One hundred and sixty-five participants (33%) reported a history of the ocular problem. Of this number,

Table 1: Sociodemographic and economic characteristics of study participants (*n*=500)

Variables	<i>n</i> (%)
Gender	
Males	172 (34.4)
Females	328 (65.6)
Age	
18-30	149 (29.8)
31-50	137 (27.4)
51-70	145 (29.0)
>70	69 (13.8)
Religion	
Christianity	443 (88.6)
Islamic	27 (5.4)
African traditional religion	30 (6.0)
Marital status	
Single	133 (26.6)
Married	259 (51.8)
Divorced	63 (12.6)
Widowed	45 (9.0)
Educational level	
No formal education	50 (10)
Primary school	113 (22.6)
High/secondary school	163 (32.6)
Higher institution/tertiary education	174 (34.8)
Occupation	
Farmers	216 (43.2)
Civil servants	123 (24.6)
Student	71 (14.2)
Entrepreneur	64 (12.8)
Unemployed	26 (5.2)
Monthly income (naira)	
<₦10,000	149 (29.8)
₦10,000-₦30,000	203 (40.6)
₦31,000-₦50,000	9 (1.8)
₦51,000-₦100,000	82 (16.4)
>₦100,000	57 (11.4)

Table 2: Utilization of eye care services

Variables	n (%)
Ever done eye check-ups before in an eye care service providing centers	
Yes	222 (44.4)
No	278 (55.6)
If yes, when (n=222)	
Within the last 2 years	40 (18)
3 years ago	20 (9)
4 years ago	42 (18.9)
5 years ago	62 (27.9)
>5 years ago	58 (26.1)
Reason for testing your eye (n=222)	
Blurring of vision at far	33 (14.9)
Not able to read tiny prints	65 (29.3)
Had an eye injury/trauma	50 (22.5)
Itching	35 (15.8)
Eye pain	39 (17.6)
Regular eye check-up	0
Aware of regular eye check-ups	
Yes	233 (46.6)
No	267 (53.4)
How often should one visit an eye clinic?	
Every month	82 (16.4)
Once in 1 year	136 (27.2)
Once in 2 years	65 (13.0)
Once in 3 years	64 (12.8)
Once in 5 years	69 (13.8)
No idea	84 (16.8)
Should you go for an eye check-up only when you have an eye problem?	
Yes	243 (48.6)
No	222 (44.4)
Don't know	35 (7)
Whom should you visit when you have an eye problem?	
Optometrist/ophthalmologist	197 (39.4)
Pharmacist	74 (14.8)
Herbalist	67 (13.4)
Nurse	67 (13.4)
No response	95 (19)
Which of the following places would you visit when you have an eye problem?	
Drug store/Pharmacy	110 (22)
Herbal home or center	74 (14.8)
Eye clinic	215 (43)
Church/prayer house	79 (15.8)
No response	22 (4.4)
Have an escort	
Yes	259 (51.8)
No	241 (48.2)
Would you accept glasses when prescribed?	
Yes	327 (65.4)
No	173 (34.6)
If no, what reasons do you have for not accepting glasses if prescribed?	

Contd...

Table 2: Contd...

Variables	n (%)
Cost	60 (34.7)
Cosmetic purpose	31 (17.9)
Glasses will damage my eyes	46 (26.6)
Glasses will sink my eyes	31 (17.9)
People will laugh at me	5 (2.9)

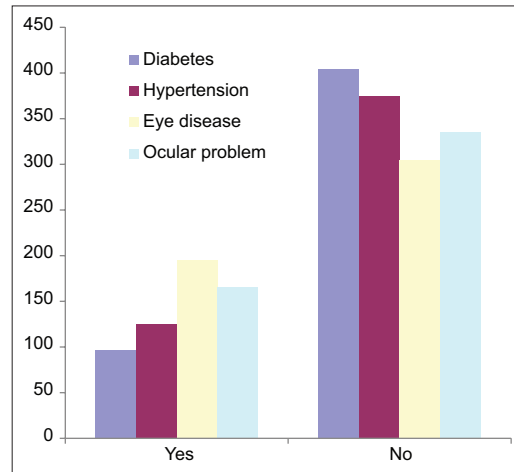


Figure 1: Medical characteristics of the participants

120 (72.7%) reported that the eye problem affected their activity of daily living and 65 (39.4% vs 60.6%) wear spectacles. Ninety-six (19.2%) had diabetics and 125 (25%) had hypertension [Figure 1].

Utilization of eye care services

Two hundred and twenty-two (44.4%) participants reported using eye care services in the past and 40 (18%) had utilized eye care services within the last 2 years. More females (68.5%) used eye care services than males (31.5%). The most reported reasons for eye check-ups or utilization of eye care services were eye injury/trauma (29.3%). A total of 243 (48.6%) participants were aware that they should not only go for eye check-ups when they experience eye problems. A significant proportion (43%, n = 215) reported that they would go to an eye clinic when they have an eye problem, while 74 (14.8%) and 79 (15.8%), respectively, preferred going to herbal centers (traditional healers) and prayer house or church (spiritual healers) when they have an eye problem. Sixty (34.7%) participants reported that they did not get spectacles due to unaffordability [Table 2].

Barriers to utilization of eye care services

The major barrier to utilization of eye care services was cost (30.8%) followed by distance or unavailability of eye care service provider (22.6%) and bad roads (15.2%) [Figure 2].

Table 3: Factors associated with the utilization of eye care services

Variables	Utilization		P
	Yes (%)	No (%)	
Gender (n=222)			
Males	70 (31.5)	102 (36.6)	0.07
Females	152 (68.5)	176 (63.3)	
Age			
18-30	29 (13.1)	120 (43.2)	0.08
31-50	45 (20.3)	92 (33.1)	0.06
51-70	117 (52.7)	28 (10.1)	0.03
>70	31 (13.9)	38 (17.1)	0.09
Religion			
Christianity	209 (94.1)	234 (84.2)	0.04
Islamic	5 (2.3)	22 (7.9)	0.08
African traditional religion	8 (2.7)	22 (7.9)	0.07
Marital status			
Single	27 (12.2)	106 (38.1)	0.06
Married	149 (67.1)	110 (39.6)	0.05
Divorced	19 (8.6)	44 (15.8)	0.09
Widowed	27 (12.2)	18 (6.5)	0.08
Educational level			
No formal education	15 (6.8)	35 (12.6)	0.07
Primary school	53 (23.9)	60 (21.6)	0.07
High/secondary school	61 (27.5)	102 (36.7)	0.06
Higher institution/tertiary education	93 (41.9)	71 (25.5)	0.05
Occupation			
Farmers	117 (52.7)	99 (35.6)	0.05
Civil servants	59 (26.6)	64 (23.0)	0.08
Student	17 (7.7)	54 (24.3)	0.09
Entrepreneur	24 (10.8)	40 (14.4)	0.09
Unemployed	5 (2.3)	21 (7.6)	0.68
Monthly income (naira)			
<₦10,000	34 (15.2)	115 (41.4)	0.87
₦10,000-₦30,000	57 (25.7)	146 (52.5)	0.06
₦31,000-₦50,000	4 (1.8)	5 (1.8)	0.9
₦51,000-₦100,000	77 (34.7)	5 (1.8)	0.04
>₦100,000	50 (22.5)	7 (2.5)	0.07
History of diabetes			
Yes	86 (38.7)	10 (3.6)	0.79
No	136 (61.3)	268 (96.4)	0.08
History of hypertension			
Yes	59 (26.6)	66 (23.7)	0.67
No	163 (73.4)	212 (76.3)	0.58
Family history of eye diseases			
Yes	172 (77.5)	23 (8.3)	0.004
No	50 (22.5)	255 (91.7)	0.07
History of ocular problem			
Yes	135 (60.8)	30 (10.8)	0.001
No	57 (25.7)	248 (89.2)	0.30
Eye problems affect daily activities (n=165)			
Yes	111 (50.0)	9 (3.2)	0.46
No	102 (45.9)	269 (96.8)	0.59
Aware of regular eye check-up			
Yes	133 (59.9)	100 (36)	0.35
No	89 (40.1)	178 (64)	0.58

Contd...

Table 3: Contd...

Variables	Utilization		P
	Yes (%)	No (%)	
Have an escort			
Yes	117 (52.7)	40 (14.4)	0.79
No	105 (47.3)	238 (85.6)	0.83

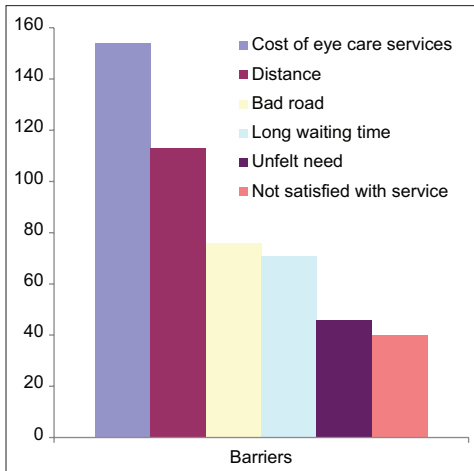


Figure 2: Barriers to utilization of eye care services

Factors associated with utilization and barriers to the use of eye care services

Utilization of eye care services was associated with age, religion, marital status, occupation, monthly income, family history, and history of ocular diseases (all $P < 0.05$) [Table 3].

DISCUSSION

An assessment of the utilization of eye care services is important for planning effective eye care services in a community. To the best of our knowledge, this is the first study to report on the utilization of eye care services in Ugbawka, one of the rural and agrarian communities in Enugu State.

The preponderance of females in this study could be related to the fact that in the southeastern parts of Nigeria, working-age males (≥ 18 years) are in cities for employment and women are left in the rural communities to take care of domestic chores for their families. A similar finding was reported in a rural area in Anambra State, Nigeria.^[18]

Utilization of eye services in this study was low, which implies that the burden of visual impairment and blindness in this community could increase if appropriate interventions are not taken to improve utilization. Other studies in rural settings in developing countries^[12,13,19-26] recorded similar findings. However, high eye care utilization rates (60–70%) were recorded in developed

countries such as Australia,^[27] the USA,^[28,29] Canada,^[30] and South Korea.^[31] Variations in these findings could be because the majority of the population in rural areas in developing countries are of low socioeconomic backgrounds, therefore cannot afford eye care services.

Also, in Nigeria, there are few health insurances that are affordable and most of them are not readily available in rural areas like in most developed countries. In addition, there is limited access to information on the importance of regular eye checks in rural areas in developing countries including Nigeria.

It is important to note that the definition of “eye care service utilization” used in the current study could have influenced the results obtained. For example, visiting an eye care facility at least once in a lifetime was used in some past studies^[27,28] while visiting an eye care facility for an eye examination within the last two years was used in the current study. More people are more likely to have visited an eye care facility once in their lifetime than in the last two years and this was evidenced in our study findings as the majority of our study participants visited an eye care facility 5 years ago ($n = 62$, 27.9%) and more than 5 years ago ($n = 56$, 26.1%) [Table 2].

The utilization of eye care services was influenced by eye symptoms experienced by participants. This is consistent with findings from other studies in developing countries,^[17,18,20,32] but contrary to findings from studies in developed countries.^[3,27,31] Socioeconomic status and the availability of affordable health insurance in developed countries may encourage patients to routinely go for eye examinations/check-ups even in the absence of signs and symptoms of eye problems. Awareness campaigns focusing on the importance of regular eye examinations in rural areas such as the Ugbawka community are therefore recommended.

Studies have reported higher utilization of eye care services among females compared with males.^[12,14,33,34] However, other studies in Nigeria^[13] and India^[23] reported higher utilization of eye care services among males, while Robin *et al.*^[34] reported no significant gender difference in the utilization of eye care services in India. This study found higher utilization of eye care services among males. Longevity in females could put them more at risk of visual impairment and blindness

which could prompt the need for more eye care utilization among them.

There was high utilization of eye care services among older adults in this study. Similar findings were recorded in previous studies.^[7-9,30-34] Older adults have a higher risk of visual impairment due to age-related eye diseases and conditions like cataracts, glaucoma, presbyopia, diabetic retinopathy, and age-related macular degeneration.^[13] Therefore, an increase in the utilization of eye care services among the older age groups will be expected. Contrary to our findings, other studies in Nigeria^[18,35] recorded high eye care services utilization among younger age groups. The high number of older age groups (≥ 40 years) included in our study could be the reason for the different variations in the findings of the results recorded.

The cost was a major barrier to the utilization of eye care services, which is consistent with findings from other studies in a rural setting in developing nations.^[18,36] There is, therefore, a need to provide low-cost or free eye screening centers in the Ugbawka community taking advantage of the available resources including eye care practitioners. Also, the government could give incentives to eye care practitioners to encourage practice in the Ugbawka community.

A good number of our participants (30.6%) reported that they would use alternative methods of treatment when they have an eye problem. The proximity and affordability of alternative eye care service providers in this community could have influenced this finding. The provision of accessible and affordable eye care service facilities is highly recommended in this rural community to encourage utilization. There is a great need for education of members of this community on the importance of visiting eye care facilities for ophthalmic care to avoid and prevent complications from the use of herbal remedies. On the other hand, alternative eye care providers can be incorporated into the community healthcare system by training them as screeners for eye problems since they are community-based and more accessible to people.

Previous studies^[12-14,17] reported an association between the utilization of eye care services and high monthly income, which is consistent with our findings. High-income earners (₦51,000–₦100,000) are expected to be able to afford eye care services. In addition, high income is considered one of the determining factors for eye care service utilization in developing countries.

Farming occupation or being a farmer was another factor found to be significantly associated with the utilization of eye care services in this study. Farmers

are more prone or exposed to injury and therefore are more likely to seek eye care services compared to other professionals in the community.

Various studies^[26-28,30] recorded an association of education or higher education with the utilization of eye care services similar to our study findings. This could be because people who are educated are more knowledgeable, aware of the important eye care, and are more likely to perform visually demanding tasks that could make them seek eye care services if changes are noticed in their vision. Also, they are more likely to be in higher socioeconomic classes in society and therefore can afford and access eye care services. On the other hand, those with lower education levels might not understand the importance of regular eye care and thus might not utilize eye care services.

Limitations

Limitations of this study include:

1. The possibility of recall bias, which could affect the accuracy of a respondent's report with respect to self-reported utilization of eye care services.
2. Use of alternative modes of healthcare was not accessed in our study as it is usually a common practice in Nigeria for people to first seek help from alternative sources such as traditional and spiritual healers before going for orthodox treatment.
3. The actual treatment received from the eye care service providers was not studied. Thus, subjects who had accessed the services may not have utilized them.
4. The study was carried out only in the Ugbawka community, the results cannot be generalized to all those living in other parts of Nigeria. It is, therefore, recommended for further studies be done to assess the utilization of eye care services in other parts of Nigeria.

Nonetheless, our study gave an insight into eye care service utilization in this region which can be used to inform policy in this region and similar settings in Nigeria.

CONCLUSION

Utilization of eye care services in this community was low and females utilized eye care services more than males. Financial constraints, distance, and bad road infrastructure were the major barriers to eye care service utilization. More eye care facilities that are affordable are highly recommended to be established in this community to reduce socioeconomic cost of blindness.

Availability of data and material

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Abbreviations

WHO: World Health Organization.

UNTH: University of Nigeria Teaching Hospital Enugu.

SPSS: Statistical Package for Social Sciences.

Ethics approval and consent to participate

The study was approved by the Institutional Review Board of Madonna University Elele Campus, Nigeria (MAU/SREC/A/19). Informed consent was obtained from all participants in the study prior to data collection.

Acknowledgement

This study was supported by the Department of Optometry, Madonna University Elele campus, Nigeria. The authors would like to thank the late Prof Oduntan for his assistance during the data collection. The authors are also grateful to the chairman and the entire Ugbawka community for participating in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- World Health Organization. Blindness and Vision impairment. Report. 2021.
- Vision Loss Expert Group of the Global Burden of Disease Study. Causes of blindness and vision impairment in 2020 and trends over 30 years: Evaluating the prevalence of avoidable blindness in relation to "VISION 2020: The Right to Sight". *Lancet Glob Health* 2020. doi: 10.1016/S2214-109X(20)30489-7.
- Vision Loss Expert Group of the Global Burden of Disease Study. Trends in prevalence of blindness and distance and near vision impairment over 30 years: An analysis for the Global Burden of Disease Study. *Lancet Glob Health* 2020. doi: 10.1016/S2214-109X(20)30425-3.
- du Toit R, Ramke J, Naduvilath T, Brian G. Awareness and use of eye care services in Fiji. *Ophthalmic Epidemiol* 2006;13:309–20.
- Abdullah KN, Al-Sharqi OZ, Abdullah MT. Barriers to the uptake of eye care services in developing countries: A systematic review of interventions. *Health Edu J* 2013;72:742–54.
- Palagyi A, Ramke J, du Toit R, Brian G. Eye care in Timor-Leste: A population-based study of utilization and barriers. *Clin Exp Ophthalmol* 2008;36:47–53.
- Ntosane MD, Oduntan OA. A review of factors influencing the utilization of eye care services. *S Afr Optom* 2010;69:182–92.
- Elam AR, Lee PP. Barriers to and suggestions on improving utilization of eye care in high-risk individuals: Focus group results. *Int Sch Res Notices* 2014;2014:527831.
- Mashige K, Martin C. Utilization of eye care services by elderly persons in the northern Ethekeini district of Kwa-Zulu-Natal province, South Africa. *AVEH* 2011;70:175–81.
- Ashaye A, Ajuwon A, Adeoti C. Perceptions of blindness and blinding conditions in rural communities. *J Nat Med Assoc* 2006;98:887–93.
- Ntsoane MD, Oduntan OA, Mpolokeng BL. Utilisation of public eye care services by the rural community residents in the Capricorn district, Limpopo Province, South Africa. *Afr J Prim Health Care Fam Med* 2012;4:412.
- Ebeigbe JA, Ovenseri-Ogbomo GO. Barriers to utilization of eye care services in rural communities in Edo State, Nigeria. *Bo Med J* 2014;11:98–104.
- Olusanya BA, Ashaye AO, Owoaje ET, Baiyerolu AM, Ajayi BG. Determinants of utilization of eye care services in a rural adult population of a developing country. *Middle East Afr J Ophthalmol* 2016;23:96–103.
- Ibeneche H, Ekpenyong B, Ebri A. Barriers to accessing eye care services in the federal capital territory, Abuja, Nigeria. *JNOA* 2018;20:64–9.
- Majekodunmi OI, Olusanya BA, Oluleye TS. Utilization of eye care services among students attending schools for the hearing impaired in Oyo State, South-West Nigeria. *Ann Ib Postgrad Med* 2019;17:181–6.
- Isiguzo C. "Nkanu-East: Cut Off From Modernity". This Day Live. Archived from the original on August 8, 2014. Retrieved 12 October 2018.
- Morka ED, Yibekal BT, Tegegne MM. Eye care service utilization and associated factors among older adults in Hawassa city, South Ethiopia. *PLoS One* 2020;15:e0231616. doi: 10.1371/journal.pone.0231616.
- Arinze OC, Eze BI, Ude NN, Onwubiko SN, Ezisi CN, Chuka-Okosa CM. Determinants of eye care utilization in rural South-Eastern Nigeria. *J Community Health* 2015;40:881–90.
- Ilechie AA, Otchere H, Darko-Takyi C, Halladay AC. Access to and utilization of eye care services in Ghana. *Int J Health Res* 2013;6:7–14.
- Ocansey S, Kumi-Kyereme A, Awusabo-Asare K, Ilechie A, Boadi-Kusi S, Abraham C. Utilization of eye care services among Ghanaian elderly population: Evidence from a peri-urban community. *Ophthal Res: An Int J* 2013;89–101.
- Koomson NY, Hayford A, Nkansah EK, Amponsah JK, Larbi D, Odotei SO. Accessibility and barriers to uptake of ophthalmic services among rural communities in the upper Denkyira West District, Ghana. *J Ophthal Sci* 2019;2:24–34.
- Akuffo KO, Sewpaul R, Dukhi N, Asare AK, Kumah DB, Addo EK, *et al.* Eye care utilization pattern in South Africa: Results from SANHANES-1. *BMC Health Serv Res* 2020;20:756.
- Rono M, Med HK, Macleod D, Bastawrous A, Wanjala E, Gichangi M, *et al.* Utilization of secondary eye care services in Western Kenya. *Int J Environ Res Public Health* 2019;16:3371. doi: 10.3390/ijerph16183371.
- Fletcher AE, Donoghue M, Devavaram J, Thulasiraj RD, Scott S, Abdalla M, *et al.* Low uptake of eye services in rural India: A challenge for programs of blindness prevention. *Arch Ophthalmol* 1999;117:1393–9.
- Marmamula S, Giridhar P, Khanna RC. Utilization of eye care services among those with unilateral visual impairment in rural South India: Andhra Pradesh Eye Disease Study (APEDS). *Int J Ophthalmol* 2017;10:473–9.
- Lee L, Ramke J, Blignault I, Casson RJ. Changing barriers to use of eye care services in Timor-Leste: 2005 to 2010. *Ophthalmic Epidemiol* 2013;20:45–51.

27. Wang JJ, Mitchell P, Smith W. Use of eye care services by older Australians: The blue mountains eye study. *Aust N Z J Ophthalmol* 1999;27:294–300.
28. Orr P, Barron Y, Schein OD, Rubin GS, West SK. Eye care utilization by older Americans: The SEE project. *Ophthalmology* 1999;106:904–9.
29. McGwin G, Khoury R, Cross J, Owsley C. Vision impairment and eye care utilization among Americans 50 and older. *Curr Eye Res* 2010;35:451–8.
30. Jin YP, Trope GE. Eye care utilization in Canada: Disparity in the publicly funded health care system. *Can J Ophthalmol* 2011;46:133–8.
31. Park YS, Heo H, Ye BI, Suh YW, Kim SH, Park SH, *et al.* Prevalence and factors associated with the use of eye care services in South Korea: Korea National Health and Nutrition Examination Survey 2010–2012. *KJO* 2017;31:58–70.
32. Lewallen S, Courtright SP. Recognising and reducing barriers to cataract surgery. *Com Eye Health* 2000;13:20–1.
33. Foreman J, Xie J, Keel S, Taylor HR, Dirani M. Utilization of eye health-care services in Australia: The National Eye Health Survey. *Clin Exp Ophthalmol* 2018;46:213–21.
34. Fotouhi A, Hashemi H, Mohammed K. Eye care utilization patterns in Tehran population: A population based cross-sectional study. *Br J Ophthalmol* 2006;6:4–12.
35. Ekpenyong BN, Ikpeme BM. Uptake of eye care services in University of Calabar Teaching Hospital, Cross River State, Nigeria. *JNOA* 2009;15:24–7.
36. Gyasi ME, Amoaku WMK, Asamany DK. Barriers to cataract surgical uptake in upper east region of Ghana. *Ghana Med J* 2007;41:167–70.