Special Article

Utilization of Orthodox Eye Care Services among Visually Impaired Adults in Jos North Local Government Area of Plateau State

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Abstract

Background: Evidence shows that poor utilization of available eye care services by potential beneficiaries is a major barrier to reducing the burden of visual impairment (VI) and blindness. **Aim:** We sought to determine the extent of utilization and barriers to uptake of orthodox eye care services among adults with VI in Jos, the capital of Plateau state, Nigeria. **Materials and Methods:** A population-based cross-sectional study using cluster sampling technique was conducted. Twenty-two clusters were chosen: from each cluster, 39 persons recruited for participation were interviewed to obtain demographic data and then examined to determine the visual acuity. Individuals with visual acuity of <6/18 had detailed ocular examination. Information on access to any eye services in the locality was obtained. The data from individual subjects were collated and analyzed using the statistical package for social sciences version 20. **Results:** The study sample included 858 participants. Of the 160 participants with VI, 92 (57.5%) had sought eye care whereas 68 (42.5%) did not. It was found that utilization of eye services varied across the wards with Tafawa Balewa (100%), Vandapuye (100%), and Jenta Apata (100%) wards having the highest percentage of eye care utilization whereas Kabong (0%) and Mazah (11.1%) had the lowest eye care utilization rate. Factors associated with previous use of eye services were literacy (odds ratio = 1.41, $P = 0.10$) and blindness (odds ratio = 1.37, $P = 0.09$). Cost 39 (57.4%), being destined to be visually impaired 13 (19.1%), and old age 7 (10.3%) were found to be the most cited barriers to the use of eye services. **Conclusion:** The use of eye care services among visually impaired participants was low in this urban local council; this can be enhanced by health education and awareness campaigns. The role of community participation in eye care is important so as to improve the uptake of existing eye services.

Keywords: Adults, eye care services, utilization

Introduction

Utilization of eye care services is defined as the use of available eye services.[1] Good use of health services improves the health status of the population. Utilization of eye care services is affected by some socioeconomic factors that influence access and availability of such services.[2] Utilization of health-care services can be affected by individual, health service system, and societal factors. Individual factors include the need, enabling, and predisposing factors.[3] The ability of a person to use health services can be affected by the interaction of such factors, and this can be applied to the eye services.[3] Utilization of eye services varies globally with individuals in the developed world at greater tendency to utilize eye care services than those in the developing world.[4] The importance of utilization of eye care services cannot be overemphasized as it is a major factor in achieving the goals of "Vision 2020:" The Right to Sight. It is therefore necessary to determine the utilization of the existing eye services among people living in the study area.

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Materials and Methods

Study area

Jos North Local Government Area is one of the 17 Local Government Areas of Plateau state and had a population of

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545,000 with 22 wards, 5 of which are rural settlement. About 15% of the population are comprised of adults aged 50 years and above.[5]

There are 964 health-care centers in the state which are made up of 779 government-owned centers (of which 756 are primary health centers, 20 secondary centers, and 3 tertiary centers) and 185 privately owned health facilities, comprising 148 centers offering primary health services and 37 private secondary centers.[6] The primary health facilities offer only basic primary eye care, and patients who require a more advanced care are referred to the secondary or tertiary hospital.

There are 10 ophthalmologists in Plateau state, who are all in the state capital (1 in private and 9 in government hospitals), 6 optometrists all in Jos North (3 in government hospital and 3 in private centers), and 3 diplomates (1 in Jos North and 2 in Mangu Local Government Area) and 52 ophthalmic nurses in the state, 32 of whom are in the state capital leaving 20 in other parts of the state. Although the number of the eye care staff in the state can meet the "Vision 2020: The Right to Sight" target of eye care workers ratio to population, the distribution however is skewed in favor of urban areas. Eye care services in the state are provided by nine hospitals which include a tertiary center, specialist hospital, three missionary hospitals, and four private hospitals. Of these, it is only one of the missionary hospitals that is located outside Jos. Satellite offices of the two missionary and tertiary hospitals allow referral to the base hospitals for surgery. Ideally, any presentation at a tertiary facility should be by means of a referral letter. Surgical eye outreaches are organized periodically.

Inclusion criteria

The study participants were adults aged 50 years and above residing in selected clusters of Jos, the capital of Plateau state, for at least six months and who consented to the study.

Exclusion criteria

All participants that were not available during data collection were excluded from the study.

Sample size

The sample size of 858 was calculated using Rapid Assessment of Avoidable Blindness software based on the population of persons 50 years or more in Jos North Local Government Area of 81,750, assumed prevalence of moderate visual impairment (VI) of 10.04% from a previous study,[7] precision or degree of accuracy of 20% (0.2), noncompliance of 10% (0.1), confidence interval of 95%, and a design effect of 1.4.

The sample size above was calculated for a study that was done on barriers to utilization of eye services among adults with VI adults in Jos, the capital of Plateau state, an unpublished work submitted for the award of final fellowship of the National Postgraduate Medical College of Nigeria. The additional data that were collected during the study were on the utilization of existing eye services by the study participants.

Study definition

- VI – presenting visual acuity of worse than 6/18 in the better eye[8]
- Moderate VI – presenting visual acuity of < 6/18-6/60 in the better eye[8]
- Severe VI – presenting visual acuity of < 6/60-3/60 in the better eye[8]
- Blindness – presenting visual acuity of < 3/60 in the better eye[8]
- Household – defined as all individuals who stay under the same roof and share meal
- Cluster – defined as a settlement within a population
- Utilization of eye services – defined as the use of available eye care services.

Sampling procedure

A multistaged cluster sampling technique with 22 clusters one from each ward was used. The sampling frame for the survey was derived from the 2006 census figures and a list of all the wards in the local government area. Each ward was segmented to select households using compact segment technique. All the households in the selected segment were visited door to door until 39 individuals aged 50 years and above are identified and recruited for the study.

Recruited persons were interviewed using a structured questionnaire to obtain demographic data and then examined to determine the visual acuity using Snellen or illiterate E chart in a daylight by an ophthalmic nurse. Ocular examination was performed by an ophthalmologist. Those with visual acuity better than 6/18 had their eyes examined and were discharged. Subjects with visual acuity <6/18 had detailed eye examination and dilated fundoscopy were necessary and information on previous utilization (availability and accessibility) of the

Table 1: Age-specific prevalence of visual impairment among study participants

Age group (years)	Total, *n* (%)	No impairment, *n* (%)	Visually impaired, *n* (%)	Prevalence of VI (%)	95% CI (%)
50-59	423 (49.7)	403 (58.3)	20 (12.5)	4.7	2.7-6.7
60-69	203 (23.9)	163 (23.6)	40 (25.0)	19.7	14.3-25.3
70-79	126 (14.8)	83 (12.0)	43 (26.9)	34.1	25.8-42.4
80-89	64 (7.5)	28 (4.1)	36 (22.5)	56.3	44.1-68.5
90-99	26 (3.1)	9 (1.3)	17 (10.6)	65.4	48.5-83.0
>99	9 (1.0)	5 (0.7)	4 (2.5)	44.4	33.2-56.4
Total	851 (100)	691 (100)	160 (100)		

Fisher's exact test=105, $P<0.001$. CI: Confidence interval, VI: Visual impairment

existing orthodox health center that renders eye care as well as the barriers to utilization was obtained.

The data from individual subjects were collated and analyzed using the IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY, United States: IBM Corp.

Ethics

Ethical approval was obtained from the Ethical Review Committee of the Jos University Teaching Hospital. Informed consent was obtained from the local government chairman and ward heads where clusters are located. The purpose and nature of the study were explained to the subjects and consent for the study was obtained.

The study was done under the tenet of the principle of Declaration of Helsinki.

Results

A total of 858 participants were enrolled in the study. Seven participants were not at home at the time of data collection and hence a response rate of 99.2% was obtained. The median age was 60.0 years. There are 482 (56.6%) males and 369 (43.4%) females with a ratio of 1.3:1. A Total of 447(52.5%) respondents had no formal education while 404 (47.5%) has had at least primary school education. [Table 1] shows age-gender distribution of study participants without and with visual impairment. Of the study participants, 329 (38.7%) had sought for orthodox eye care whereas 522 (61.3%) did not seek for eye care.

One hundred and sixty (18.8%) participants had VI, of which 100 (11.8%) persons had moderate VI, 12 (1.4%) persons had severe VI, and 48 (5.6%) persons were blind. Of the 160 participants with VI, 92 (57.5%) had sought for orthodox eye care whereas 68 (42.5%) did not seek for eye care. A multivariate logistic regression analysis was performed, adjusting for age, gender, level of education, occupation, and category of VI which indicated the level of education and presenting vision of <3/60 to have statistically significant effects on the rate of utilization of eye care services [Table 2]. It was found from this study that the use of orthodox eye services varied across the wards with Tafawa Balewa (100%), Vandapuye (100%), Jenta Apata (100%), Ibrahim Katsina (85.7%), and Garba Daho (85.7%) wards having the highest percentage of eye care utilization [Table 3]. The wards with the lowest eye care utilization rate were Kabong (0%), Mazah (11.1%), Naraguta B (16.7%), and Tudun Wada (20%).

Among the 68 participants with VI who did not seek for eye care, cost was found to be the most common barrier for 39 participants (57.4%), followed by being destined to be visually impaired 13 (19.1%) and old age 7 (10.3%) [Figure 1].

Table 2: Multivariate logistic regression of effect of visually impaired participant's characteristics on utilization of eye care facilities

Utilization	OR	*P*	95% CI of OR
Age	1.00	0.76	0.97-1.02
Gender	0.70	0.31	0.35-1.39
Educational status	1.41	0.10*	0.94-2.11
Occupation	1.27	0.18	0.90-1.79
Category of VI	1.37	0.09*	0.96-1.97

*Denotes significance at 10%. OR: Odds ratio, CI: Confidence interval, VI: Visual impairment

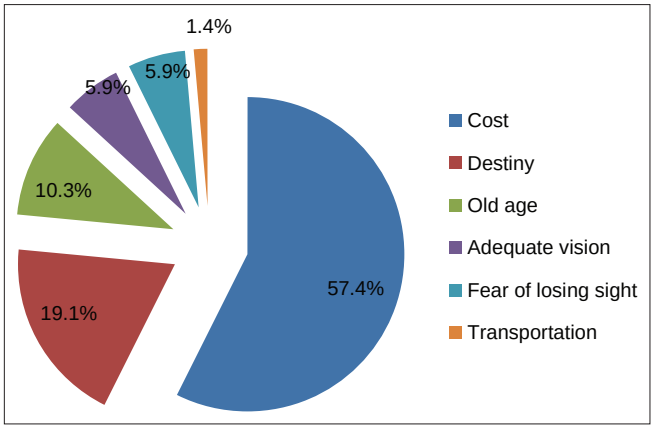

Figure 1: Barriers to utilization of eye care services

Discussion

A little over half (57.5%) of the participants with VIs have sought orthodox care in the previous one year. This is rather low in contrast to target utilization set at 90% for a setting where most residents are in an urban area and not far from primary, secondary, and tertiary levels of care.[9] Such utilization of eye services is comparable to findings of similar studies where 65–69% of adults utilize eye services in the previous year in the United States.[10] This could be due to a higher level of literacy, awareness, and a better health-seeking behavior among the studied population. In rural India, however, 50.1% of adults with glaucoma had no previous eye examination.[11] Similar studies in South-Western Nigeria and South-Eastern Nigeria revealed 24% and 46.4%, respectively, of utilization of health facilities among respondents with VI.[12,13] This low utilization could be attributed to the fact that the studies were largely in a rural settlement that lack and are far away from eye services.

Several factors were found in this study to affect the likelihood of utilizing eye services with a positive odds ratio. These include age, gender, educational status, occupation, and category of VI. Although the odds ratio was found to be positive, the association with the above variables was only statistically significant in the educational status and category of VI variables. Various studies have reported a similar association between the use of eye services and education.[1,14-18] This could be because literate people are likely to be of high socioeconomic status and so are likely to access and afford eye services. Another reason is because literate individuals are likely to be involved in visual tasking activities such as writing, drawing, and reading, which makes them aware of early changes in their vision. The finding in this study is similar to previous studies where lower eye

Table 3: Ward-specific distribution of eye care service utilization among participants with visual impairment

Ward	Number visually impaired (persons)	Previous utilization of eye care (persons)	Persons that do not utilize eye care previously (persons)	Percentage of utilization	Percentage of nonutilization
Rigiza	18	7	11	38.9	61.1
Gangare	14	9	5	64.3	35.7
Ibrahim Katsina	14	12	2	85.7	14.3
Anguwan Rogo/Anguwan Rimi	12	10	2	83.3	16.7
Sarkin Arab	10	6	4	60	40
Tudun Wada	10	2	8	20	80
Mazah	9	1	8	11.1	88.9
Nassarawa ward A	8	6	2	75	25
Ali Kazaure	7	4	3	57.1	42.9
Lamingo	7	2	5	28.6	71.4
Garba Daho	7	6	1	85.7	14.3
Jos Jarawa	6	4	2	66.7	33.3
Naraguta B	6	1	5	16.7	83.3
Jenta Adamu	6	4	2	66.7	33.3
Ahwol	5	4	1	80	20
Nassarawa ward B	5	4	1	80	20
Abba Na Shehu	4	3	1	75	25
Jenta Apata	3	3	0	100	0
Kabong	3	0	0	30	70
Targon	3	1	2	33.3	66.7
Vandapuye	2	2	0	100	0
Tafawa Balewa	1	1	0	100	0

care utilization is found among those with lower level of education.[18-20] A similar population study in South India also revealed literacy level to be a major predictor for cataract surgery, with an odds increase of 34.0% for females being operated upon.[14]

The significant association found from this study with category of VI means that the higher the degree of VI, the more likely is the use of eye services. It was found in this study that age does not statistically affect eye services use. Several studies found increasing age to be associated with increased utilization of eye service.[14,21-24] However, a number of studies found advanced age to be a barrier to the use of eye services.[24-26] This was attributed to the fact that blindness is viewed as an unavoidable aspect of growing old and also due to the neglect as well as abandonment of the old blind people because of age.

The association between gender and use of eye services was not statistically significant in logistic regression analysis. A similar result was found from previous studies.[1,12] It was found in another study that males were likely to use eye services than females.[27] This could be because males are the heads of the family and have access to the finance of the family more than females. Another reason is that females are more likely not to be as informed as males on availability of eye services because they are generally of low socioeconomic status and are less educated than males. Females usually do have to ask for and have to be granted permission to seek health care. Furthermore, females are often inundated with domestic chores and may not be accorded priority to access health-care services. Other studies, however, revealed the utilization of eye services to be lower among males.[25,28] The use of eye services among visually impaired persons was found to vary among the wards, with Tafawa Balewa, Vandapuye, and Jenta Apata wards having the highest level of utilization (though this may have a confounding effect on the use of eye services as the number of respondents with impaired vision is negligible relative to the individuals included in the study). This is not surprising as these are the wards closest to the available eye care services with the facility located within Tafawa Balewa ward. On the contrary, eye care utilization was poor in Mazah ward as this area is remote from the teaching hospital.

Cost (54.7%) was found to be the most common barrier to the use of eye services. This agrees with previous studies on factors affecting the use of eye services.[29,30] Other commonly cited barriers to the use of eye services include being destined to be visually impaired (19.1%) and old age (10.3%). Lamingo and Tudun Wada wards being the wards with the tertiary eye care services have very poor utilization of such eye care facility. This is surprising as it is generally believed that the closer a community is to a health facility, the better the utilization of such health care.

The most important limitation of the study is that fact that most participants were illiterates as such this may lead to inaccurate age estimates by the study participants.

Conclusion

A significant proportion of visually impaired persons in the study area been largely an urban local council do not utilize the available eye care services with cost as the major barrier to such utilization. Therefore, efforts have to be made to increase the utilization of available eye care services at affordable rate to the study population.

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Conflicts of interest

There are no conflicts of interest.

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