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AS THE VISION 2020 INITIAVE ENDS, WHAT BARRIERS TO UPTAKE OF EYE SURGERIES STILL REMAIN IN EBONYI STATE, NIGERIA?

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ABSTRACT

Background: **The WHO/IAPB Vision 2020 initiative for the elimination of avoidable blindness ends in year 2020. Yet barriers remain towards uptake of eye surgeries.**

Objectives: **To identify persisting barriers to acceptance of cataract surgery and other eye surgeries in a sub- urban community in Ebonyi State Nigeria.**

Methodology: **This was a cross-sectional descriptive study of participants of an eye camp at Nkwagu, Izzi; a sub-urban community about 10Km from Abakaliki, the capital of Ebonyi state. Relevant data was collected using a structured questionnaire, and analysed using SPSS software package Version 22, and reported in simple tables showing frequencies, percentages and proportions. Barriers to uptake of cataract and other eye surgeries were identified and discussed.**

Results: **There was high (91.2%) awareness of and (86.1%) willingness to take up eye surgery. Relationship between awareness and education was statistically significant ($p < 0.05$). The commonest barriers to uptake of surgeries were direct cost of surgery (53.9%), ignorance about location of surgical services (52.5%) and indirect cost of surgery 43.3% (distance to the hospital [15.7%], nobody to look after my business [15.2%], and no care-taker [12.4%]) .**

Conclusion: **As the Vision 2020 initiative ends, the two most important barriers reported in this study are cost of eye surgery (direct and indirect) and ignorance of location of facilities offering surgical eye care services. It is recommended that a systems' thinking approach be adopted in formulating and implementing measures to eliminate the barriers.**

INTRODUCTION

Cataract surgery is the most common eye surgical procedure performed in the world[1]. This is understandable since cataract is the commonest cause of blindness in low income countries and a lot of programmes have focused on elimination of cataract blindness. [2] Globally, cataract accounts for moderate to severe visual impairment or blindness in about 65.2 million people, while glaucoma and corneal opacity accounts for same in 7.0 and 4.2 million people respectively.[3] In Nigeria, cataract is the commonest cause of blindness with a prevalence rate of 1.8% followed by glaucoma with a prevalence rate of 0.7%.[2] Cataract surgeries with insertion of intraocular lens have been proven to be highly effective in immediate vision restoration.[4.] Surgeries for glaucoma, which is the commonest cause of irreversible blindness; have also been found to be very effective in the treatment of glaucoma; but sadly not performed in large numbers in Nigeria, despite its effectiveness.[5,6]The global initiative captioned '*VISION 2020: The right to Sight'*, was launched by WHO and the International Agency for the Prevention of Blindness (IAPB) in 1999, to eliminate causes of avoidable blindness through disease control, human resource development and provision of appropriate technology for eye care.[7]This initiative has succeeded in increasing public awareness of, and professional and political commitment to prevention of blindness and achieved global partnership with all stakeholders including UN agencies.[7]

With regards to combating the huge cataract backlog, the programme recommended that communities and individual member countries should promote services that are affordable and accessible to patients; develop and mobilize local manpower and resources to provide cataract services; and promote high quality surgery with a good visual outcome.[5,7] Most national plans for the prevention of blindness added free cataract programmes,[8] which have become a regular practice in low income counties, including Nigeria.[4]

Despite these interventions, the uptake of cataract surgical services in low-income countries has remained low. Major barriers include lack of awareness, poor quality of service, high cost of treatment and limited access.[4,9,10,11]

Some older studies had reported poverty, lack of transportation, no felt need, gender inequality, lack of awareness, difficult access, no escort, cost, fear and socio-cultural beliefs among others.[11–16]

Factors such as transportation and taking time off work even when the surgeries were provided at no cost, were also noted as major barriers to eye surgeries in a South African population.[11] Midway into the Vision 2020 project, reports from Nigeria highlighted poverty, high cost of surgery, fear of surgery, distance and poor surgical outcome as the most common barriers to the uptake of cataract surgery[4,10] Now that Vision 2020 end date has come, it is important to re-assess what barriers to uptake of cataract and other eye surgeries still remain in Nigeria. This study, conducted in a sub-urban community in Ebonyi State, southeast Nigeria, therefore aims to identify persisting barriers to uptake of cataract and other forms of eye surgeries.

METHODOLOGY

Background of the study area:

This study was conducted in Nkwagu, a sub-urban community in Abakalilki Local Government Area of Ebonyi State. Nkwagu is about 10Km from Abakaliki the capital of Ebonyi state. It is located along the Abakaliki-Afikpo road, and hosts a military cantonment, (the 135 Battalion, 82 Division of the Nigerian Army). It is the township part of *Anmegu* community, the ancestral

homeland of Izzi clan, one of the four clans that make up Abakaliki as a dialectical group of the Igbos in Ebonyi State. Apart from the military cantonment, Nkwagu hosts a moderately sized market, a primary school and the Ebonyi North zonal office of the State's Universal Basic Education Board. The community is predominantly Christian with the Roman Catholics in the majority. Their main occupation is farming. There is no data on uptake of eye surgeries by this community.

Study design:

This was a cross-sectional descriptive study of the barriers affecting uptake of eye surgeries in Ebonyi State.

Sample size and sampling technique:

The setting was a screening eye-camp organized by Hope Restored Eye Centre, a private for profit eye care clinic in collaboration with a non-governmental organization *Kachem Young Initiative* (KYI) for the purposes of identifying those who could benefit from subsidised eye surgeries for Cataract and Glaucoma. The sample size was the total population of all those who attended the screening eye camp who consented to participate in the study. Of the 249 adults who could give consent, only 217 consented to participate and therefore were recruited into the study.

Data collection:

Data was collected using a pre-tested structured questionnaire designed by the researchers to elicit information on the socio-demographic characteristics of participants, willingness to take up eye surgery and barriers to the uptake of eye surgery, as perceived by the participants.

Data management:

Data was analysed using the Statistical Package for Social Sciences (IBM SPSS^R, Ilinnois, USA) version 22. Results were presented in frequency tables with simple percentages and proportions. Associations between the main outcome variable, (uptake of eye surgeries) and socio-demographic variables and known barriers to uptake of surgeries were assessed using the Chi Square Statistic. Statistical significance was set at $P < 0.05$ and a confidence interval of 95%.

Ethical issues:

Ethical clearance for this study was obtained from the research ethics committee of Alex Ekwueme Federal University Teaching Hospital, Abakaliki. Permission was granted by the leadership of the community. The study employed the highest and global best practice ethical principles. Thus, written informed consent was obtained from every participant before data collection; participation in the study was entirely voluntary, and participants were free to withdraw consent even after granting it at any stage of the study without any adverse consequences; participants were free to decline answering any question with which they felt uncomfortable; information elicited was used only for research purposes; all personal identifiers were removed from the questionnaires in order to ensure confidentiality; and all efforts were enforced to ensure the data was handled only by those involved in the research.

As part of the ethical considerations, all the people who responded to the invitation for the screening eye camp with minor eye diseases were treated free of charge; reading glasses were distributed; and subsidized surgeries were offered for cataract and glaucoma.

RESULTS

Socio-demographic characteristics of participants

Of the 217 respondents, majority (48.6%) were in the 40-59 year age group; females constituted 51.9%; 35.9% had tertiary education; 90.8% were Christians; 32.2% were farmers; and 87.6% were married. See Table 1.

Table 1

Socio-demographic characteristics of participants

Variable	Frequency	Percentage
Age group (n =210):		
<20 years	9	4.3
20-39 years	54	25.7
40-59 years	102	48.6
≥ 60 years	45	21.4
Gender (n = 216):		
Male	104	48.1
Female	112	51.9
Education (n = 217):		
No formal education	33	15.2
Primary education	49	22.6
Secondary education	57	26.2
Tertiary education	78	35.9
Religion (n = 217):		
Christianity	197	90.8
Traditionalist	18	8.3
Islam	2	0.9
Occupation:		
Farmer	70	32.2
Civil servant	51	23.5
Teacher	36	16.6
Artisan	19	8.8
Trader	16	7.4
Pensioner	13	6.0
Student	10	4.6
Clergy	2	0.9
Marital Status:		
Married	190	87.6
Single	27	12.4

Awareness of participants to eye surgery

Majority 198 (91.2%) were aware that an eye could be operated upon. There was a statistically significant relationship between educational status (χ^2 = 9.123; P = 0.003), knowing someone who has had eye surgery (χ^2 = 4.049.

P = 0.04) and awareness that an eye could be operated upon.. See Table 2

Table 2

Awareness of eye surgery and factors associated with it.

Variable	**Yes (%)**	**No (%)**	**Total**	
Are you aware that an eye can be operated upon	198 (91.2)	19 (8.8)	217 (100)	
Do you know someone who has had eye surgery?	147 (67.7)	70 (32.3)	217 (100)	
Factors associated with awareness of eye surgery				
Variable	**Aware of eye surgery**		**Total**	**χ^2; P value**
	Yes	**No**		
Sex of participant:				
Male	92	11	103	$\chi^2 = 0.193$.
Female	97	14	111	P = 0.66
Educational status:				
Primary education	38	11	49	$\chi^2 = 9.248$.
Secondary education	51	3	54	P = 0.01
Tertiary education	74	6	80	
Age:				
≤ 50 years	124	14	138	$\chi^2 = 1.362$.
>50 years	59	11	70	P = 0.24
Occupation:				
Civil servant	81	6	87	$\chi^2 = 3.552$.
Others	104	19	123	P = 0.059
Know someone who has had surgery:				
Yes	128	11	139	$\chi^2 = 4.049$.
No	58	12	70	P = 0.04

Willingness to take up eye surgery

Majority (81.6%) were willing to accept eye surgery if recommended. Being aware that an eye could be operated upon ($\chi^2 = 7.397$; P = 0.025); male gender ($\chi^2 = 9.736$; P =0.008); and being married had a statistically significant relationship with willingness to take up eye surgery.

Slightly more than 10% have had an eye surgery in the past, and about 73.3% of them perceive the outcome as good.

Table 3

Willingness and factors associated with willingness to accept eye surgery

Variable	**Frequency**		**Total**	
	Yes (%)	**No (%)**		
Are you willing to have surgery for present eye problem if recommended?	177 (81.6)	40 (18.4)	217	
Have you had an eye surgery before?	25 (11.5)	192 (88.5)	217	
Perception of outcome of eye surgery on you and others (n = 172):				
Good	126 (73.3)	46 (26.7)		
Fair/Poor	46 (26.7)	126 (73.3)		
Factors associated with willingness to accept eye surgery				
Variable	Are you willing to take up eye? Surgery if recommended		Total	χ^2; P value
	Yes	No		
Sex:				
Male	93	10	103	χ^2= 9.736.
Female	83	28	112	P = 0.008
Marital Status:				
Married	158	31	189	χ^2 = 5.212.
Single	14	8	22	P = 0.02
Educational status:				
≤ Primary education	69	15	84	χ^2 = 0.02
≥ Secondary education	109	25	134	P = 0.88
Occupation:				χ^2 = 0.159.
Civil Servant	69	17	86	P = 0.69
Others	103	22	125	
Aware that an eye could be operated:				
Yes	43	4	47	χ^2 = 7.397.
No	89	24	113	P = 0.025
Know someone who had surgery				
Yes	119	20	139	χ^2 = 2.96.
No	54	17	71	P – 0.086
Opinion of outcome of the surgery:				
Good	96	14	110	χ^2 = 1.91.
Fair/Bad	28	8	36	P = 0.17

Barriers to uptake of eye surgery

The commonest barrier identified by the participants was cost of surgery (53.9%). Others include lack of awareness of eye surgical services in one's locality (52.5%), distance to the hospital (15.7%), nobody to look after their business (15.2%), nobody to look after them while in the hospital (12.4%) and poor outcome 8.8%. See Table 4.

Table 4

*Barriers to uptake of eye surgeries**

Variable	Frequency	Percentage
High cost of surgery	117	53.9
Ignorance about location of surgical eye services in one's locality	114	52.5
Distance to the hospital	34	15.7
Nobody to look after my business	33	15.2
Nobody to look after me in the hospital (caretaker)	27	12.4
Poor outcome	19	8.8
Fear of unknown	15	6.9
No felt need	9	4.1
Religious beliefs	6	2.8
Family opinion	4	1.8
Cultural belief (surgery will affect my eyes in my next life)	2	0.9

**Multiple responses allowed*

How much are you willing to pay for eye Surgery?

The amount ranged from one thousand Nairas (~$3) to Fifty thousand Nairas (~$129). Table 5 below show that majority (72.8%) were willing to pay less than or equal to ten thousand Naira (approximately $26) for cataract or glaucoma surgery. In fact, some were only willing to pay one thousand Nairas only. About 10 persons (10.9%) were willing to pay more than thirty thousand Nairas.

Table 5

Amount participants were willing to pay for eye surgery

Amount willing to pay for eye surgery	Frequency (n = 92)	Percentage
≤ N10,000.00	67	72.8
N11,000-20,000.00	11	11.9
N21,000-30,000.00	4	4.4
>N30,000.00	10	10.9

DISCUSSION

Many barriers capable of militating against uptake of eye surgeries were identified in this study include:

Direct cost of surgery

In this study, cost of eye surgery as a barrier was the commonest finding (53.9%). This is however, lower than reports from earlier studies.[4,12,15] For example, Gyasi et al reported that 91% of participants had cost as a barrier for not taking up surgery in the upper East region of Ghana.[15] A study from Nigeria had 81% of participants citing cost as reason for not taking up cataract surgery.[4] Positive correlation has been reported between cost reduction and uptake of cataract services in some situations.[11,15] In Nigeria, the cost of cataract surgery varies widely and may not be affordable to many poor people, especially because there is serious inequity in the coverage of health insurance. In this study, some participants were willing to pay only one thousand Naira (~ $3), and very few were willing to pay up to thirty thousand Naira (~$77). In our environment, the direct cost of cataract surgery far exceeds this amount, even in public sector hospitals. It might be that some participants are truly unable and therefore totally unwilling to bear any cost for their surgery, no matter how little while others might be able to bear some affordable cost. This therefore means that innovative funding mechanisms must be established to ensure that paying for cataract and other eye surgery will not remain a catastrophic expenditure for the poor. Such innovative funding mechanisms recommended in the past include:

a) differential pricing mechanism to make sure that the poor can receive surgery even if they cannot pay, while providing extra amenity services for the rich at higher cost;[13]

b) Free cataract surgeries sponsored by politicians and NGOs.[4,15] However, this approach is precarious and unsustainable;

c) Mandatory universal health insurance. Any country that seeks to achieve universal health coverage must implement mandatory health insurance as a policy tool. Out of pocket expenditure for health care is always a catastrophic expenditure for the poor.

Indirect cost of eye surgery

Indirect costs in this study include distance to the hospital (transportation cost), 'no body to look after my business' (loss of work/income), nobody to look after me in hospital (loss of work / income for caretaker). When combined together, these three indirect costs were reported by 40.3% of the respondents. In Nepal, indirect cost was estimated to be one-fifth of the annual income of rural patients.[12] Some eye institutions have mitigated this barrier by providing transportation and living expenses for both care-takers and patients. In their study in Enugu Nigeria, Okoye et al[17] found that removal of direct surgical fee caused only a modest increase in surgical uptake[17] Considering the fact that in our environment, majority of the facilities offering surgical eye care services in Ebonyi State are located in and around the capital city , indirect cost for surgical eye services in the State will be high especially for patients coming from the hinterlands where majority of the populace live.

Ignorance about the location of surgical eye care services in one's locality

This was the second most common barrier reported by 52.5% of the participants. Ebonyi State with a population of about three million people has very few health facilities offering surgical eye services. It is therefore not surprising for a sizable proportion of the residents not to know where a facility that offers surgical eye services is located. Moreover, most ophthalmologists live in urban areas while most cataract blind live in rural areas.[13] People tend to use services available to them and often the quacks and traditional healers are the available options in rural areas.

There is a need to increase screening eye camp services to the rural areas as well as health education on eye care in the State.

Awareness of and willingness to accept eye surgery

Awareness of, and willingness to accept eye surgery were not major barriers to uptake of eye surgeries in this study. This is probably because of the many cataract surgical outreach eye camps organized by non-governmental organizations (NGOs) and the increased skill and better outcome for cataract surgery by many government and private hospitals. [4,10,13,18] Positive testimonies from satisfied cataract surgery recipients could have contributed to this as our findings show that 75.5% of the participants who know someone that has had cataract surgery perceived the outcome as good. Fear of bad outcome is a known major barrier to uptake of surgery [13,19] while satisfied cataract patients serve as excellent motivators for others to have surgery.[13]The lower willingness to accept surgery for glaucoma management might be a reflection of the poor knowledge of glaucoma as a cause of irreversible blindness by the general population leading to late presentation to hospitals and the low performance of trabeculectomy by Ophthalmologists in our environment.[6] This further emphasizes the need for public enlightenment of the dangers of glaucoma, the need for routine eye check in order to diagnose it earlier, the place of surgery in the management of glaucoma and the offer of trabeculectomy to patients by Ophthalmologists.

The increasing trust in good outcome for eye surgeries may be as a result of huge efforts in human resource development and appropriate infrastructure which are all policy objectives of the Vision 2020 project. Many eye surgeons have benefitted from skill enhancement in the evolving newer and safer surgical techniques with better visual outcome as a result of sponsored trainings from global health philanthropists such as the Community Eye Health Consortium (CEHC) of the United Kingdom. Vision 2020 project has indeed resulted in more political and professional commitment towards the elimination of avoidable blindness,[7,13]

Despite the changing trends of increased awareness and willingness to take up services on the part of patients, cataract surgical rate (CSR) has remained relatively low in Nigeria as in other developing countries.[20] Whereas developed countries perform about 4000 to 6000 cataract surgeries per million per year, most parts of Africa and other developing countries perform 400-500 surgeries per million per year.[20] It has been suggested that even when services are available, there are other barriers that keep patients from utilising the services.[13] This implies that any intervention proffered to increase the CSR in our environment must take 'Systems thinking approach' if it will produce the desired outcome.

The preponderance of the older age group (40 years and above), who came for eye screening in this study, reflects the strong association between vision impairment and ageing.[18] This trend is the case in most free eye screening outreaches.[4,10] Chronic eye diseases, the incidence of which increases with age, are the major causes of visual impairment, and its magnitude and public health relevance is expected to grow in the future because of the global ageing of the world population.[7] This therefore demands that a country like Nigeria should speed up its health systems strengthening programmes to accommodate the expected increased demand for cataract and glaucoma surgery load in the near future.

The educational level of our participants suggests a fairly informed population as 62.1 % had at least secondary education. This finding may be explained by the nearness of the community to the State capital, and also by the presence of the military cantonment

in the community. Anecdotal evidence shows that many civil servants who work in the state capital reside in this community. The high level of educational status may also explain the high level of awareness and willingness to accept eye surgery in this study. This is unlike in older reports which revealed high level of ignorance, as part of the barriers to uptake of surgical eye services.[11]

CONCLUSION AND RECOMMENDATION

The two most important barriers reported in this study are cost of eye surgery (direct and indirect) and ignorance of location of facilities offering surgical eye care services. Other less important barriers unravelled included fear of poor outcome, fear of unknown, no felt need, religious beliefs, family opinion and cultural beliefs. Happily, there was a high level of awareness and willingness to accept eye surgery in this population. These are opportunities that the health and political policy makers should exploit in weaving policies that would increase cataract surgery rate (and other eye surgeries) in an innovative way.

Strengthening the Primary Health Care system in the State to include primary eye care, training of middle level ophthalmic personnel to man these primary eye care services, and strengthening the State Health Insurance Agency to cover for eye surgical services especially cataract and glaucoma could help to address these barriers.

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