Original Article

Visual Impairment and Blindness in 5 Communities in IMO State, South East Nigeria

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Abstract

Background: The burden of avoidable blindness in Nigeria and in Sub-Saharan Africa is huge. The socioeconomic implications in the face of the present economic crisis cannot be overlooked. Recent estimates in Sub-Saharan Africa showed that 21.4 million people are visually impaired with 4.8 million of these blind. Approximately 80% of these are preventable or curable through the delivery of cost-effective eye care services. **Aim**: This study aims to determine the burden of visual impairment and blindness in Imo State with a view to make recommendations to the Ministry of Health for effective intervention and distribution of the available resources using the vision 2020 targets. **Materials and Method:** This was a retrospective review of data generated during the free eye screening organized in 5 communities in Imo State, Nigeria by Federal Medical Centre, Owerri, Imo State, Nigeria. **Results:** Two hundred and fifty respondents with a male to female ratio of 1: 1.36 participated in the free eye screening outreach. The 41-60 years age group was highly represented at 42.8% (107/250). Approximately 39% (98/250) were visually impaired and 6.4% (16/250) were blind. In descending order, the 3 most common causes of visual impairment and blindness were cataract, glaucoma and uncorrected refractive error. Living in the rural area was significantly associated with higher degrees of visual impairment and blindness. **Conclusion:** The prevalence of visual impairment and blindness in Imo State is significant and the most common causes are avoidable and treatable. The Health authorities in collaboration with Eye Care personnel have a lot to do to eliminate avoidable blindness.

Keywords: Visual impairment, Blindness, Burden, Outreach, Vision 2020

Introduction

To eliminate avoidable blindness, the Vision 2020 initiative targets four ophthalmic surgeons to a million population[1] supported by three to five mid-level personnel including ophthalmic nurses and ophthalmic clinical officers at an estimate of at least one worker to a typical district population of 100,000.[2] The latter and other allied eye health cadres are to provide the bulk of eye care in most rural and remote areas and refer appropriately.[3,4] This is in a bid to provide eye care services to all and sundry and reduce the burden of avoidable blindness and its attendant consequences However, in a recent estimate of the burden of visual impairment in 48 countries in sub-Saharan Africa for 2010;21.4 million people were reported visually impaired with 4.8 million of these blind.[5] Globally, 191 million people were estimated to be moderately or severely visually impaired also in 2010.[6] Of these, approximately 80% are thought to be preventable or curable through the delivery of cost-effective eye care services.[6]

In Nigeria, according to the results of the National blindness survey, the prevalence of blindness in the sample using presenting vision of <3/60 in the better eye was 4.2% (95% CI: 3.8 to 4.6%) and the prevalence of severe visual impairment (SVI) was 1.5% (95% CI: 1.3 to 1.7%).[7]

Cataract was the commonest cause of severe visual impairment and blindness being responsible for 45.3% and 43.0% respectively. Glaucoma was the second commonest cause of blindness (16.7%) and corneal scarring from all causes was responsible for 7.9% of blindness. Uncorrected refractive errors were the commonest cause of mild and moderate VI (77.9% and 57.1% respectively) being responsible for visual impairment in 2.46 million adults in Nigeria.[7]

Uncorrected refractive errors and cataract, the leading causes of blindness and visual impairment[8] are most commonly found in rural, often remote, underdeveloped areas.[9] Unfortunately, access to eye care services is limited, especially in rural areas and amongst the urban poor,[7] due to inadequacy of trained personnel or due to the fact that eye care practitioners are usually concentrated in the urban area.[10,11] Where available, poor uptake of services in spite of deterioration of vision were due to personal, economic and social challenges.[12]

Visual impairment and blindness due to ocular diseases is a significant public health problem. Most cases of blindness can be prevented, treated and or corrected with the use of spectacles.[10,13] Unfortunately, the available resources are insufficient to meet the demands for eye care.

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In addition, the assessment of causes of visual impairment, their pattern, and the effect of any intervention can be determined when repeat surveys are carried out within the same population. This study took place after the initiation of Vision 2020 and the National Prevalence of blindness study in Nigeria.

It aims at determining the present burden of visual impairment and blindness in Imo state, Nigeria. This is with a view to make recommendations to the State ministry of Health for a wider assessment of the burden of ocular morbidity in the state in order to plan more effective intervention and distribution of the available resources in the state using the vision 2020 targets.

Methods

This study was carried out in 5 communities in Imo State namely Owerri, Ehime Mbano, Ngor-Okpala, Ezinihitte Mbaise, and Izombe. Imo State is one of the 5 states in the south-eastern part of Nigeria. It has a population of over 4.8 million from the 2006 census and the population density varies from 230-1400 people per square kilometer. Owerri is an urban area while the other communities are rural.

Study design

This was a retrospective review of data collected from respondents who attended the free eye screening organized in each of the communities by the Federal Medical Centre Owerri, Imo state in 2012.

Entry into the community

Permission to carry out the eye screening exercise in the communities was obtained from the traditional rulers and elders. During this visit, the date and sites for the proposed outreach was decided on. Information on the dates and purpose of the eye screening was communicated to the villagers through the village town criers and announcement in churches, market, and town hall meetings at least a week prior to the visit. The outreach was carried out over 4 weeks (October to November) in 2012.

Data collection and management

Information was collected on the bio data of the participants, visual acuity, and types of ocular disorders

The unaided and aided visual acuity of the participants was assessed using a Snellen's visual acuity chart (literate and illiterate). The anterior and posterior segment examination was carried out with a pen torch and direct ophthalmoscope respectively. Gutt tropicamide was used for pupil dilatation in participants where necessary.

Data generated were analysed with SPSS version 20 (2012. Chicago IL, USA) and presented in Tables 1 to 4 and Figure 1 and 2. Chi square was used to compare variables. A p-value of <0.05 was considered significant.

Ethical considerations

This study was approved by the Ethics Committee of Federal Medical Centre, Owerri, Imo State, Nigeria.

Table 1: Age group of the Respondents

Age Group	Frequency	Percent
1-20 years	20	8.0
21-40 years	44	17.6
41-60 years	107	42.8
61-80 years	71	28.4
> 80 years	8	3.2
Total	250	100.0

Table 2: Presenting Visual Acuity in the Better eye of the Respondents

	VA	Frequency	Percent
Normal	(6/6-6/9)	136	54.4
Mild VI	(6/12-6/18)	31	12.4
Moderate VI	(<6/18->6/60)	61	24.4
Severe VI	(6/60- 3/60)	6	2.4
Blindness	(3/60-NPL)	16	6.4
Total		250	100.0

Ninety eight respondents (39.2%, 98/250) had different degrees of visual impairment

Table 3: Most common Causes of Visual Impairment among the Respondents

Diagnosis	Mild VI	Moderate VI	Severe VI	Blindness
Cataract	13/31	18/61	4/6	8/16
Percentage	41.9%	29.5%	66.7%	50.0%
Glaucoma	1/31	9/61	0	1/16
Percentage	3.2%	14.8%	0.0%	6.3%
Uncorrected Refractive Error	4/31	5/61	0	1/16
Percentage	12.9%	8.2%	0.0%	6.3%
Pseudophakia	0	2/61	0	1/16
Percentage	0.00%	3.3%	0.0%	6.3%
Aphakia	0	0	0	1/16
Percentage	0.0%	0.0%	0.0%	6.3%

Table 4: Relationship between Age and Visual Impairment

	Degree of Visual Impairment				
Age Group	Mild VI	Moderate VI	Severe VI	Blindness	Total
1-20 years	2	6	1	2	11
	6.5%	9.8%	16.7%	12.5%	9.6%
21-40 years	1	2	0	1	4
	3.2%	3.3%	0.0%	6.3%	3.5%
41-60 years	16	19	2	3	40
	51.6%	31.1%	33.3%	18.8%	35.1%
61-80 years	12	30	2	8	52
	38.7%	49.2%	33.3%	50.0%	45.6%
> 80 years	0	4	1	2	7
	0.0%	6.6%	16.7%	12.5%	6.1%
Total	31	61	6	16	114
	100.0%	100.0%	100.0%	100.0%	100.0%

There was no positive relationship between age, visual impairment and blindness with P= 0.61

Participants with treatable medical ocular conditions were given the requisite treatment while those requiring surgical intervention were referred to the Federal Medical Centre, Owerri were their surgeries were carried out at no extra cost to them.

Results

Two hundred and fifty people participated in the outreach. Of these, 57.6% (144/250) were females and 42.4% (106/250)

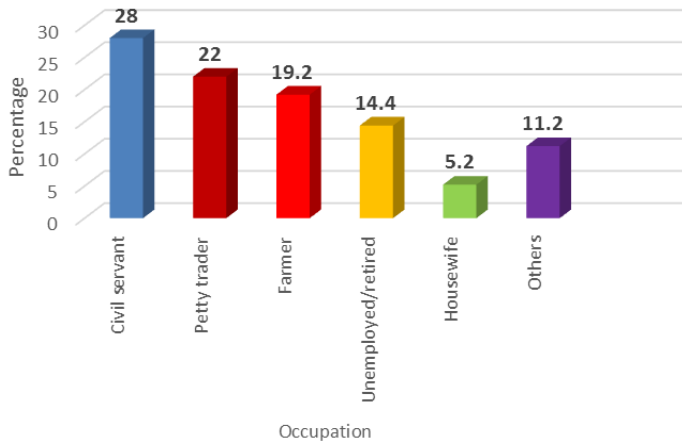

Figure 1: Occupation of the 250 respondents.

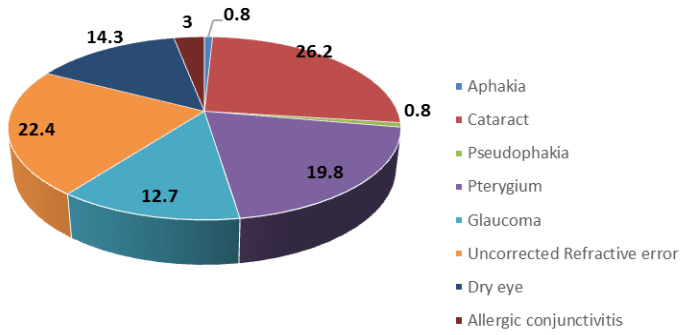

Figure 2: Ocular disorders among the respondents.

were males. One hundred and twenty four (124/250: 49.6%) were from Owerri, 10.8% (27/250) from Ehime Mbano, 8.8% (22/250) from Izombe, 20.4% (51/250) from Ngor Okpala and 10.4% (26/250) from Ezinihitte Mbaise.

The 41-60 years age group was most commonly represented. The Mean(SD) for age is 53.02(16.11) years at a 95% confidence interval of 50.95-55.08.

Cataract was the commonest cause of mild, moderate, severe visual impairment and blindness.

The gender and occupation of the respondents were also not positively associated with visual impairment and blindness at P=0.12 and P=0.16 respectively.

Living in the rural area was significantly associated with a higher degree of visual impairment and blindness than living in the urban area at P<0.01.

Discussion

There were more females than males with a female to male ratio of 1.36: 1. Majority (42.8%) of the respondents were in the 41-60 years age group followed by the 61-80 years age group (28.4%). This is not surprising as age related ocular disorders begin to manifest in the 5th decade. Similar findings were reported in other studies carried out in other parts of the country and Africa.[14-16]

Seventy (28%) respondents were civil servants who work for the government (their cadre were however not determined), 55(22%) were traders while 48 (19.2%) were farmers.

According to the WHO classification of visual impairment and the presenting visual acuity in the better eye of the respondents, 39.2% were visually impaired. Of these, 12.4% had mild visual impairment, while 24.4% and 2.4% were moderately and severely visually impaired. The National Blindness survey[7] reported a 2.05% prevalence of severe visual impairment and 13.12% for moderate visual impairment in the South East Zone for ages 40 years and above. The present study was also in the South-East zone of Nigeria and the findings are similar. This result however, was at variance with that of the studies done in Osogbo, Osun State[15] and Ogun State[17] of Nigeria. While the study in Osun State was a hospital based study limited to adults aged 40 years and above, the present study cut across all age groups. This may have resulted in a lower prevalence for visual impairment. In addition the latter studies were done in South West Nigeria and this zone has been reported to have lower values for visual impairment and blindness unlike the South East.[7] The Ophthalmologists practicing in the South Eastern part of Nigeria have a role to play in reducing the prevalence of visual impairment in the region.

Blindness was noted in 6.4% of the respondents similar to a Benin City study in Nigeria(7.5%)[18] and 4.63% of adults 40 years and above in SE Nigeria but higher than the 0.78% for all age groups in Nigeria.[7] The study in Benin City was a hospital based study. This may account for it slightly higher value than the present study. Other studies reported lower values 1.22%,[17] 2.2% in Ogun State[19] 0.9% in Anambra state,[20] and 0.6% in Kaduna states.[21] Higher values were noted in other studies.[15] The high values in this study and in Benin City and the lower values in the SW zone corroborate the results of the National study[7] that reported high blindness prevalence in the SE and South zones and lower values in the SW zone of Nigeria.[7] Higher values were recorded in hospital based studies. This is not surprising as only those who have ocular ailments will present in the clinic. The lower value in Anambra State also in SE, Nigeria may be attributed to the fact that the study was limited to only one local Government Area unlike the present study. In addition, the Anambra State study was done over 20 years ago.

Cataract (26.2%) followed by uncorrected refractive error (22.4%) and pterygium (19.8%) were the most common causes of ocular morbidity. Other studies have reported, glaucoma, allergic conjunctivitis and cataract;[14] Refractive error, cataract, conjunctivitis;[22] refractive error, cataract, allergic conjunctivitis;[23] cataract, refractive error, corneal opacity[24] in that order as the 3 most common causes. It is pertinent to note that cataract and refractive error more often than not top the list as causes of ocular morbidity in most studies. They are both treatable causes of blindness and should ideally not constitute significant causes of visual impairment in the country if eye care services were optimal.

Cataract was also the most common cause of all categories of visual impairment and half of all the cases of blindness noted in this study were due to cataract as in other studies.[17] Cataract is still the leading cause of blindness in the middle and low income countries.[6]

Uncorrected refractive error followed by glaucoma was the 2nd most common cause of mild visual impairment. The converse was the case for moderate visual impairment. Regarding blindness, both refractive error and glaucoma contributed equally to the prevalence at the rate of 6.3% respectively. Similar results were noted in other studies also in Nigeria.[7,15,16,25]

Contrary to our study, Age related macular degeneration (ARMD) is the leading cause of blindness and low vision in high income countries.[26,27] The causes of visual impairment and blindness noted in our study as in most studies in developing countries are avoidable. This calls for a concerted effort by the Eye Care givers, governmental and non-governmental organizations to reduce the burden of avoidable/treatable causes of visual impairment and blindness in Nigeria.

Age specific prevalence for mild visual impairment was highest in the 41-60 years age group (51.6%) followed by the 61-80 years age group (38.7%). Moderate visual impairment and blindness were highest for the 61-80 years age group (49.2% and 50.0%) followed by the 41-60 years age group(31.1% and 18.8%). Severe visual impairment was equally represented in the two age groups at 33.3%. Similar results were reported in the National survey with mild /moderate visual impairment higher in the 60-69 age group and severe visual impairment and blindness highly represented in the 70-79 years age group followed by the age group above 80 years[7] The studies done in Ogun State, Nigeria[17] and in India[22] also reported blindness to be highest in the age group above 60 years. Age related ocular disorders such as cataract usually start manifesting in the 5th decade with visual impairment and gradually get worse as the cataract matures or with additional ocular disorders. With an effective National Health Insurance Programme, these avoidable causes of visual impairment can be reduced markedly.

There was however, no relationship between age, visual impairment and blindness as well as gender and occupation with visual impairment. The National survey in Nigeria found the female gender, illiteracy and geographical location to be associated with blindness in the univariate analysis and age, gender, illiteracy and administrative zone to be associated with blindness in the multivariate analysis.

Rural dwellers significantly had higher levels of moderate visual impairment, severe visual impairment and blindness than the urban dwellers in this study. Urbanization associated with higher socioeconomic class, affluence, literacy is associated with a decline in the preventable causes of blindness such as cataract and corneal opacity with an increase in the causes such as ARMD and diabetic retinopathy.[27]

Conclusion

The prevalence of visual impairment (39.2%) and blindness (6.4%) in this study are significant. In addition, the most common causes are avoidable and treatable. The fact that the causes of visual impairment and blindness in Imo state and by extension Nigeria is still an image of what it was in the past decade is worrisome. It implies that there is still a wide gap between what has been done and what is expected in order to accomplish the Vision 2020 goal of eliminating avoidable blindness.

Recommendation

The Eye care team in collaboration with the Ministry of Health and the Non-Governmental Organizations need to rise to the challenge of meeting the eye care needs of the teeming population living with poor vision and set up a proper frame work that intervenes in time to prevent and or treat avoidable causes of visual impairment and blindness.

Limitation of the Study

The relatively small sample size may have affected the results of the study.

Conflict of Interest

There is no conflict of interest.

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