Original Research Article

Major Causes of Low Vision and Blindness in Southeast Nigeria

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ABSTRACT

People with low vision find it difficult to perform their visual tasks and would require low vision aids to carry out these tasks effectively. In developing countries and especially the rural areas, lack of adequate health care results in preventable eye problems that lead to low vision and blindness.This study was carried out to determine the major causes of low vision among people living in rural communities of Southeast Nigeria. A total of 446 subjects (186 males and 260 females) with a mean age of 58.70±15.57were examined for ocular problems. Tests conducted include visual acuity, ophthalmoscopy, retinoscopy, subjective refraction, external examination with pen light and visual field tests.The major causes of low vision and blindness was cataract (6.95%), glaucoma (4.26%), macular degeneration (1.56%), cornea opacity (1.35%), diabetic retinopathy (1.12%), uveitis (0.90%), retinal detachment (0.90%), retinitis pigmentosa (0.67%), pterygium (0.45%) and hypertensive retinopathy (0.45%). Most of these ocular problems causing low vision and blindness are preventable but are present due to unavailability of adequate eye care in the rural areas and lack of proper health education. The use of optical and non-optical low vision devices will help in the rehabilitation of these patients to enable them perform their visual tasks.

Keywords: Cataract, Glaucoma, Low vision, Blindness, Visual acuity

INTRODUCTION

Low vision describes a serious loss of vision that cannot be corrected by medical or surgical procedures, or with conventional eye glasses. It may also describe the functional vision remaining after such a loss. A person with low vision may find it difficult or impossible to accomplish activities such as reading, writing, shopping, watching television, driving a car or recognizing faces. The World Health Organization [1] defines low vision as visual acuity less than 6/18 and equal or better than 6/36 in the better eye with best correction. The World Health Organization [1] also defines a person with low vision as one who has a visual acuity of less than 6/18 to light perception or a visual field of less than 10^0 from the point of fixation, but who uses, or is potentially able

to use vision for planning and/or execution of a task for which vision is essential. Blindness is a visual acuity of less than 3/60 or a corresponding visual field of 10^0 or less in the better eye and with the best possible correction. [1] Low vision devices are used to improve the vision of people with low vision. There are optical and non-optical devices. The optical low vision devices include spectacle magnifiers, hand-held and stand magnifiers, monocular and spectacle mounted telescopes, bioptic telescopes and telemicroscopes. The non-optical low vision devices have the capacity to enhance vision and they include lamps, reading stands, filters, large print books, optical electronic devices like Closed Circuit Television (CCTV) and non-optical electronic devices which can convert text into speech systems such as Zoom test, JAWS and the Open Book scanning and reading software. [2] Factors that influence success with low vision magnification aids include age, motivation, level of education, if the causative disease process has stabilized, if the loss of vision was sudden or gradual and the level of visual acuity and visual field remaining. [3] Vision is the most important means of communication and visual impairment leading to blindness is a major problem. In Nigeria, many people with visual impairment have poor visual acuity and visual field leading to low vision and blindness. A study on the major causes of low vision and blindness in Nigeria found cataract to be the most frequent cause. [4] Other causes were glaucoma, retinal degeneration, cornea opacity, high myopia, hypertensive retinopathy, diabetic retinopathy, aphakia and retinitis pigmentosa. Most of the people who have these low vision problems reside in the rural communities. They do not have access to adequate health care facilities as those in the urban centers. Over 90% of the world's blind people live in developing countries where poverty and lack of adequate health care are contributing factors. In developed countries, low vision and blindness is mainly due to metabolic and degenerative disorders related to ageing. [4] This study was carried out to identify the major eye disorders leading to low vision and blindness in the rural parts of Southeast Nigeria and enlighten eye care practitioners and major stakeholders to give adequate attention to the rural parts of the country.

MATERIALS AND METHODS

This research was a cross sectional study carried out in the rural part of Southeast Nigeria. Four hundred and forty six subjects (186 males and 260 females) from various communities were assembled at two different outreach clinics each located in a different state in southeast Nigeria. An informed consent was obtained from all the subjects used for this study. Examination of subjects involved taking of case history, external examination using pen light, visual acuity using the Snellen visual acuity chart, retinoscopy with the Keeler retinoscope, ophthalmoscopy with the Keeler ophthalmoscope, subjective refraction and visual field test. Subjects who had refractive errors were corrected with ophthalmic lenses before obtaining their best corrected visual acuity.

Statistical Methods

The Statistical Package for Social Sciences (SPSS Version 17) was used for analysis. Descriptive statistics was used to obtain the mean, standard deviation, range, minimum and maximum values of the data.

RESULTS

The mean age ($\pm$S.D) of the subjects was 58.70$\pm$15.57. The age range was 12-93 years. Out of the 446 subjects examined, 83 (18.61%) had either low vision or blindness. According to WHO definition, 13subjects

(2.92%) examined were blind while 70 subjects (15.69%) had low vision. Table 2 shows distribution of the stages of the low vision according to the WHO definition of corrected visual acuity. The major causes of low vision and blindness among the subjects examined were cataract (6.95%), glaucoma (4.26%), macular degeneration (1.56%), cornea opacity (1.35%), diabetic retinopathy (1.12%), uveitis (0.90%), retinal detachment (0.90%), retinitis pigmentosa (0.67%), pterygium (0.45%) and hypertensive retinopathy (0.45%).

Table 1: Distribution of subjects with low vision and blindness according to age group.

Age group	No. of subjects	No. with Low vision	%
10-19	13	0	0
20-29	27	0	0
30-39	45	1	0.22
40-49	76	9	2.02
50-59	88	16	3.59
60-69	108	30	6.73
≥70	89	27	6.05
Total	446	83	18.61

Table 3: Distribution of the causes of low vision and blindness.

Causes of low vision	No. of cases	%
Cataract	31	6.95
Glaucoma	19	4.26
Cornea Opacity	6	1.35
Uveitis	4	0.90
Pterygium	2	0.45
Macular Degeneration	7	1.56
Diabetic Retinopathy	5	1.12
Hypertensive Retinopathy	2	0.45
Retinitis Pigmentosa	3	0.67
Retinal Detachment	4	0.90
Total	83	18.61

Table 2: Distribution of the best correctable visual acuity of Subjects.

Category	Corrected Visual Acuity	WHO Definition	Frequency	%
5	NPL	Blind	2	0.45
4	<1/60 - PL	Blind	5	1.12
3	<3/60 – 1/60	Blind	6	1.35
2	<6/60 – 3/60	Severe visual impairment	23	5.15
1	<6/18 – 6/60	Visual impairment	47	10.54
0	6/6 – 6/18	Normal	363	81.39
Total			446	100

DISCUSSION

Out of the 83 subjects with low vision and blindness, cataract (31, 6.95%) was the major cause followed by glaucoma (19, 4.26%). In related studies, [4-9] cataract and glaucoma was also the major causes of low vision and blindness. These eye problems were seen more among subjects above 50 years. Age related cataract is very common in Nigeria and the rest of the world. Glaucoma also manifests within this age among many patients. Other causes of low vision and blindness seen among subjects of this age group include cornea opacity, macular degeneration, diabetic retinopathy, hypertensive retinopathy, retinitis pigmentosa, uveitis, retinal detachment and pterygium. These ocular problems have been seen to be prevalent in many studies.[9-12] Most people especially those above 50 years of age experience deterioration in vision and general health. Age is a major factor among low vision cases as seen in many studies. [4, 9-11] Lack of adequate health care in the rural areas also makes it difficult for them to get the proper medical attention they need. Some of the subjects had systemic diseases like diabetes mellitus and hypertension as the primary cause of retinopathy leading to low vision. A study [13] on the impact of diabetic retinopathy on low vision in a rural village in Nigeria showed that 8.33% of the people with diabetes mellitus had low vision. Another study [14] on hypertensive retinopathy leading to low vision showed that 20.67% of patients with hypertensive retinopathy attending a community eye health programme in Nigeria had low vision. Most of the low vision problems identified

in this study cannot be reversed but can only be managed and this requires regular visits to the eye clinic. Most of the subjects in this study with low vision admitted that they have not seen an eye care practitioner in over 12 months. Some have not been to a hospital or eye clinic in their life and result to folk or self-medication which may worsen their condition. While surgery may prove helpful in some cases like cataract, most of these low vision patients will require rehabilitation with low vision devices. The optical aids like spectacle magnifiers and telescopes will help the patients to read fine prints and focus on their visual tasks. The non-optical aids such as large print books will enhance their vision and ability to communicate. Majority of low vision patients reside in the rural areas, while most eye care practitioners practice in the urban centers. The challenge is how to ensure that adequate and regular eye care is provided to patients in the rural areas. Eye care practitioners and non-governmental organizations involved in outreach programs are reaching out to the rural dwellers to come out and receive proper treatment. Health education is another important tool necessary to improve the current situation as many patients still rely on folk medication which has been practiced by their ancestors but is not helpful in the management of blinding eye diseases like cataract and glaucoma. Studies carried out in rural parts of Africa and Asia [15-19] have shown that prevalence of avoidable blindness is high due to ignorance and unavailability of proper eye care services to rural dwellers. Regular outreach programs, establishment of mobile clinics and the presence of Optometrists and Ophthalmologists in the rural areas will help in bringing the much needed eye care to the rural dwellers.

CONCLUSION

Cataract and glaucoma are the two major causes of low vision and blindness in Southeast Nigeria. These ocular problems are age-related and are seen more among the elderly above 50 years. Rehabilitation for the severely impaired involves the use of low vision devices to help them perform their visual tasks. Regular check-ups to the eye care practitioner are also very important to manage and prevent further deterioration of vision.

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