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Open Access Journal of Ophthalmology
ISSN: 2578-465X

Prevalence and Causes of Visual Impairment in Ekiti, Nigeria: A Hospital Based Study

Ajayi I*, Omotoye O J, Ajite K and Omotoso Olagoke O

Department of Ophthalmology, Faculty of Clinical Sciences, Ekiti State University Ado-Ekiti, Nigeria

Research Article

Volume 3 Issue 4

Received Date: May 30, 2018

Published Date: June 18, 2018

***Corresponding author:** Ajayi Iyiade, Department of Ophthalmology, Faculty of Clinical Sciences, Ekiti State University Ado-Ekiti, Nigeria, Tel: +2348034311540; Email: iyiseye2005@gmail.com

Abstract

Introduction: Visual impairment is a global burden. The negative impact extends from the immediate family to the society at large. The causes vary with geographic, ethnic and cultural influences. Most data used for planning eye care services are generated either from urban areas where the large eye hospitals are situated or from small focal surveys. Effective use of existing resources is mandatory in targeting the avoidable causes of blindness in order to achieve the goals of Vision 2020.

Objectives: This study was conducted to determine the prevalence, demographic profiles and causes of visual impairment in a tertiary eye care facility in a semi urban southwestern state of Nigeria

Methodology: A descriptive study was carried out to determine the causes of visual impairment seen over a period of 1year (January-December 2016). Records of all new cases with visual acuity below 6/18 in one or both eyes were studied. Demographic characteristics, level and causes of visual impairment were extracted and entered into Statistical Package for Social Sciences (SPSS version 20.0). Data were analysed and assessed for frequency, distribution and comparison of categorical data with statistical significance inferred at $P<0.05$.

Results: Visual impairment constituted 445(33.97%) of the total number of new patients seen. The ages ranged from 2years to 105years with a mean age of 53.6years ±23.6years.More females were seen with a Male: Female ratio of 1:1.1. Blindness constituted 42.9% of cases of blind eyes at presentation. Bilateral blindness occurred in 100 patients (22.5%) of cases. There was an observed greater risk of visual impairment among patients with unilateral eye disorders (3.758(95% CI 3.075-4.594) chi square <0.001). The major causes of visual impairment were Cataract (29.7%), Glaucoma (!7.8%), Refractive error(11.2%), Retinal disorders(13.2%) and corneal disorders(10.8%).

Conclusion: Consistently good optical and cataract surgical services will go a long way to reduce the burden of visual impairment in Ekiti. There is also a need for improved retinal service delivery as retinal disorders have been found to be on the increase as a cause of visual impairment. Low vision services should be made available for patients.

Keywords: Blindness; Visual impairment; Low vision; Refractive error

Abbreviations: PVA: Presenting Visual Acuity; BCVA: Best Corrected Visual Acuity; SPSS: Statistical Package for Social Sciences.

Introduction

Visual impairment is strongly associated with reduced quality of life [1,2]. It could affect work, study and social activities in adults and children [3]. The developing world harbours almost 90% of the world's blind [4]. In Nigeria 63% of the population lives in the rural areas with limited access to eye care services [5]. Until 2007, Nigeria had no accurate population data to plan and evaluate eye care services [5]. Existing resources must be effectively utilized to target the major avoidable causes of blindness [6]. The result of this study will provide the required knowledge of prevalence and causes of blindness and low vision.

Methodology

Our University Teaching Hospital is a semi urban tertiary health care Centre that provide Ophthalmological services among other specialized health care services . It is located in the state capital which is accessible to all the 16 local governments in the state with a population of 2,384,212 as well as to the localities around its borders in the neighbouring states like Ondo, Kogi, Kwara and Osun . The well developed subspecialty services makes the Centre to be sufficiently equipped to offer specialized services to referred patients from within and outside the state. Records of all new patients who presented with V/A of <6/18 in either or both eyes from January to December 2016 were retrieved. Data obtained include Demographic parameters, place of residence, social habits, presenting visual acuity (PVA), best corrected visual acuity (BCVA) and diagnosis. Existing systemic co morbidities were also noted. Ethical approval was obtained from the institutional ethics and research committee. The study adhered to the tenets of the declaration of Helsinki. Ethical approval was obtained from the institutional ethics and research committee. Patient's confidentiality was ensured by desisting from mentioning participants' names, initials or hospital numbers. Data were entered into Statistical Package for Social Sciences (SPSS) version 20.0 and analysed.

Definition of Terminologies

Visual impairment: Presenting visual acuity (PVA) less than 6/18(20/60, 0.3) in the better eye with best correction [7].

Blindness: Presenting visual acuity (PVA) less than 3/60 in the better eye or visual field less than 10^0 from fixation.

The cause of vision loss was determined based on the principles outlined in the WHO Prevention of Blindness Proforma (version III) World Health Organization. Coding Instructions for the WHO/PBL Eye Examination Record (version III) PBL/88.1.1998;WHO Geneva) [8].

Results

A total of 445 cases of visual impairment presented during the period of study thus constituting 33.97% of the total of 1310 new patients seen. The ages ranged from 2years to 105years with a mean of 53.6years ±23.6years and median of 60.0years. Males were 219(49.2%) while females constituted 50.8% of the total number of cases. There were 93(20.9%) singles, 302(67.9%) married and 50(11.2%) widowed/divorced. Skilled workers accounted for 200(44.9%) while 245(55.1%) were unskilled workers. About 205(46.1%) resided within the state capital while the remaining 240(53.9%) resided outside the state capital. There was no statistically significant difference in the number of patients presenting from within and outside the state capital (P= 0.12) History of alcohol intake was positive in 131(29.4%) of the cases while 37(8.3%) had history of cigarette smoking. Hypertension was a coexisting systemic disorder in 70(16.8%) and diabetes mellitus in 22(5.3%).

Age	Males	Females	Total
≤16years	16	30	46(10.3%)
>years	203	196	399(89.7%

Table 1: Age-Sex distribution.

There were more females among those aged less than 16years giving a risk ratio of 1.328 (CI 1.051-1.677) Chi square 0.043 (Table 1).

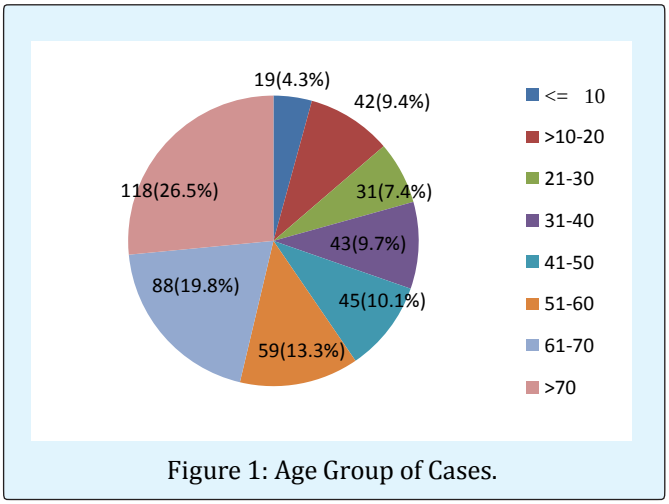

Figure 1: Age Group of Cases.

The proportion of patients increased from age 40years upward with highest number above 70years of age (Figure 1). The prevalence of blindness was 66.5% while 33.5% of the patients had low vision. Out of those with blindness, 196(44%) and 100(22.5%) had unilateral and bilateral blindness respectively. Of those patients with low vision, 37 (8.3%) presented with unilateral low vision while 112(25.2%) presented with bilateral low vision.

The risk of blindness was also found to be higher among subjects with unilateral eye disorders. RR=2.234(95% CI 1.894=2.636) chi square <0.001.

Visual Acuity	At Presentation	Best Corrected
≥6/18 (Normal)	222(24.9%)	317(35.6%)
Mild visual impairment	247(27.7%)	184(20.7%)
Moderate visual impairment	39(4.4%)	28(3.1%)
<3/60(Blindness)	382(42.9%)	361(40.6%)

Table 2: Category of vision expressed in eyes.

There were 668 eyes (75.1%) with varying degrees of visual impairment at presentation (Table 2). This reduced to 573 eyes (64.4%) after best optical correction. Mild visual impairment accounted for 247(27.7%) while presenting visual acuity in the blindness category accounted for 382(42.9%).Unskilled workers were observed to have a greater risk of visual impairment (RR:1.724 CI 1.028-2.892 P=0.025).

Laterality of eye disease	Unilateral visual impairment	Bilateral visual impairment	Total
Unilateral	161	5	166
Bilateral	72	207	279
Total	233	212	445

Table 3: Laterality of eye disease versus laterality of visual impairment.

Table 3 shows that 279 (62.7%) had bilateral eye disorders. The odd of developing visual impairment following unilateral eye disorders was 3.758(95% CI 3.075-4.594) chi square <0.001.

Types of eye disorders	Low vision no(%)	Blindness no(%)	Total no(%)
Cataract	31(7.0)	102(22.9)	133(29.9)
Primary Glaucomas	19(4.3)	60(13.5)	79(17.8)
Refractive eror	41(9.2)	9(2.0)	50(11.2)
Corneal disorders	14(3.2%	34(7.6)	48(10.8)
Macular diseases	13(2.9)	20(4.5%)	33(7.4)
Uveitis	9(2.0)	16(3.6)	25(5.6)
Optic nerve disorders	4(0.9)	17(3.8)	21(4.7)
Traumatic eye injuries	7(1.5)	7(1.5)	14(3.1)
Retinal detachment	0	9(2.0)	9(2.0)
Hypertensive/Diabetic/Sickle cell retinopathies	5(1.1)	3(0.7)	8(1.8)
Neovascular Glaucoma	0	6(1.3)	6(1.3)
Retinitis Pigmentosa	1(0.2)	5(1.1)	6(1.3)
Other lens related disorders	1(0.2)	5(1.1)	6(1.3)
Central Retinal vein occlusion	2(0.4)	1(0.2)	3(0.7)
Eyelid disorders	0	2(0.4)	2(0.4)
Cranial nerve 3 palsy	2(0.4)	0	2(0.4%)

Table 4: Eye disorders among patients.

Cataract was the leading cause of visual impairment accounting for 29.9% of all followed by primary glaucomas (17.8%), (Table 4) Retinal disorders (13.8%), Refractive error (11.2%), Corneal disorders (10.8%) and macular diseases (7.4%)

Discussion

Out of a total of 1310 new patients seen during the period of study, 445 cases presented with varying forms of visual impairment. This gives a prevalence of 33.97%. Bilateral blindness accounted for 13.6% while unilateral blindness accounted for 9.0%. Unilateral low vision accounted for 3.7% while bilateral low vision accounted for 7.7%. These rates are higher than the rates reported in the South-Eastern part of the nation with 6% uniocular blindness and 3.9% binocular blindness [9].

A lower blindness rate of 8.4% and higher (59.4%) low vision rate were reported in Abeokuta in Ogun State [10]. Visual impairment have been observed to constitute a high proportion of eye care service use in various studies [11,12] and results in important reduction in functional status [13].

Children below 16 years of age constituted 10.3% of total cases of visual impairment (Table 1). Childhood blindness constitutes 3% of world's blind population with at least 80% of the world's visually impaired children living in low and middle income countries where such children are predisposed to a lifetime of poverty and illiteracy [14]. The number of visually impaired patients increased with age from 40years (Figure 1) with the highest number among those aged 70 years and above. This agrees with findings from other studies where risk of visual impairment has been observed to increase with age because of the increased risk of occurrence of visually disabling diseases with increasing age [15-18]. This could also serve as an explanation for the observed 22.2% of systemic co morbidities like diabetes mellitus and hypertension among the cases as these are majorly age related systemic disorders.

A higher number of females were observed in this study. This was statistically significant (chi sq 0.043) in the age group less than or equal to 16years. Increasing evidences show that women are affected by blindness and visual impairment to a much greater degree than men [19,20]. Some of the reasons for this are that the feminine gender is a significant risk factor for some eye diseases with increased exposure of women to greater risk of eye diseases due to social and cultural differences between men and women, hormonal predisposition of women to some potentially blinding eye disorders [21]. Other reasons include reduced access of women to eye care and longer life expectancy of women thus exposing them to some eye diseases which occur later in life [19,22,23].

There were a greater number of unskilled workers constituting 55.1% of all cases of visual impairment .Also worthy of note was the statistically significant greater odd of visual impairment among unskilled workers (RR: 1.724 CI 1.028-2.892 P0.025). This could be due to the greater eye care seeking behavior among people with formal education which would have caused them to seek eye care before significant impairment of vision. It has also been suggested that greater knowledge, higher social class and greater financial prowess may make the skilled workers seek eye care before significant visual impairment results [8].

About half of the patients resided outside the state capital. It can therefore be averred that the eyecare service centre provides care for people residing outside its location and it could also imply that our eye care centre is accessible to all within and outside the state capital. There was no statistically significant difference between patients presenting from within and outside the state capital.

There was a 10.7% reduction in the number of visually impaired eyes with best optical correction with a reduction from 75.1% to 64.4%. The impact of the optical correction was more pronounced among patients with presenting visual acuity in the category with mild visual impairment with a 7% reduction in the number in that category (Table 2).

Cataract was the leading cause of visual impairment accounting for 29.9% (Table 4). It has been observed that although cataract is relatively easily, safely and cost efficiently treatable and in spite of the increasing rates of cataract surgery, cataract is still the leading cause of blindness and visual impairment worldwide especially in developing countries [24-26]. Various studies in Nigeria show that cataract is the leading cause of visual impairment in various parts of the nation [10,11,15,16]. The great backlog of cataract in Nigeria has been attributed to the increasing adult population with inadequate and inefficient control programmes and high cost of surgery in the country [14,27].

Glaucoma was the second leading cause of visual impairment accounting for 17.8%. It is the second cause of blindness worldwide [24]. Glaucoma is responsible for 16% of blindness in Nigerian adults and the foremost cause of irreversible blindness among Nigerian adults [28]. Most patients with glaucoma often present late to the hospitals [29]. Late presentation of patients with glaucoma has been identified as possible risk factor contributing to development of severe visual impairment and blindness [30]. Early diagnosis and intervention will help to reduce the needless avoidable blindness resulting from this condition.

Retinal disorders summed up accounted for 13.2% of all. This comprises macular diseases (7.4%), Retinal detachment (2.0%), hypertensive/ diabetic/sickle cell retinopathies (1.8%), Retinitis pigmentosa (1.3%, CRVO (0.7%). The increasing rate of visual impairment from retinal disorders in Nigeria is becoming worrisome [11,31-34]. Some of the reasons for this include increasing adult population leading to more cases of age related retinal diseases like macular degeneration and macular

holes, increasing prevalence of diabetes and hypertension from lifestyle changes and improved diagnosis of retinal disorders from improved training and diagnostic facilities [31-34].

Refractive error was a common cause of visual impairment in our centre (Table 4). Uncorrected refractive errors constitute important ocular health problem across the globe [35-38]. As observed in this study this condition accounted for a large number of cases of mild-moderate visual impairment similar to the report from the National blindness survey in Nigeria [38] and there was a significant reduction with optical correction (Table 2). An improved optical service is important in every eye care service to reduce the burden of visual impairment from this condition.

Corneal disorders account for 10.8% of causes of visual impairment. This rate is higher than rates from other reports within our country. Majority of these were infectious and inflammatory conditions which could have become a common problem in Ekiti because many of our patients were unskilled workers like artisans and farmers with increased predisposition to corneal injuries from occupational risks and organic matters [11,39]. Avoidable causes constituted majority of the causes of visual impairment in this study. No age group was spared even though there was an increasing occurrence with increasing age with females and unskilled workers more affected. This agrees with the national report of avoidable causes accounting for 84% of blindness in Nigeria [38]. We recommend an improved optical service, subsidized cost of cataract surgeries as well as increased health education to enable early diagnosis of glaucoma and retinal disorders employed to reduce the burden of avoidable blindness in Ekiti.

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