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Original Research Article

World sight day: A veritable avenue for vision screening towards attaining the goals of VISION 2020 in Nigeria

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Abstract

Background: World sight day is marked yearly and provides the opportunity to create awareness about eye health. The global event can also serve as an avenue to appraise impacts of health promotions and interventions on blindness prevention.

Aim: To determine the prevalence of blindness and common ocular conditions among the studied population.

Materials and methods: It was a cross-sectional study involving workers at Uyo Mechanic Village and University of Uyo Teaching Hospital. Instrument was developed in line with study's objectives. Subjects' responses to questionnaires and ocular assessment formed the core of data generated which was analyzed by Statistical Package for Social Sciences (version 20.0)

Observation: A total of 121 males and 280 females with a ratio of 1:2.3 were analyzed. Age range was from 18 years to 66 years with a mean of 39.8±9.2 years. Prevalence of blindness was 1%. Intraocular pressure, indicated in 81 subjects, ranged from 11 to 33 mmHg with a mean of 16.2±4.8 mmHg. Absolute glaucoma was recorded in 5 patients (1.2%), 71 patients (17.7%) were glaucoma suspects and 19 patients (4.7%) had glaucoma. Refractive error 167 (41.6%) was the commonest finding. Statistical analysis of data revealed no significant relationship between sex and diagnoses (p value = 7.967, X^2= 0.826, 95% CI = 0.821-0.836) or age and diagnoses (p value = 509.522, X^2= 0.601, 95% CI = 0.591-0.510).

Conclusion: Refractive errors were the commonest ocular finding in the population studied.

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Key words

Vision 2020, Visual impairment, Blindness, Uyo.

Introduction

Global blindness had surged from 28 million blind people (Best Corrected Visual Acuity [BCVA] less than 3/60) in 1978 to 38 million in 1990. On account of anticipated population and life-expectancy increase, this figure has been estimated to be 45 million in 1995 and 76 million by 2020 [1-3].

Of the estimated 45 million cases of blindness by 1995, approximately 60% were due to either cataract (16 million people) or refractive errors. A further 15% were due to trachoma, vitamin A deficiency or onchocerciasis, with another 15% due to diabetic retinopathy or glaucoma. The remaining 10% of cases were attributable to age-related macular degeneration and other diseases. In view of the proportion of treatable eye diseases or treatable causes of blindness, such as cataract, trachoma, onchocerciasis and some eye conditions in children, it was estimated that 75% of all blindness in the world could have been avoided [4].

In 2002, WHO's meta-analysis showed that approximately 37 million people are blind and 124 million people have low vision. The prevalence of blindness varies from 0.2% in Western Europe and North America to 1.0% in Africa. Of the 37 million blind, 1.4 million are aged 0–14 years, 5.2 million 15–49 years, and 30.3 million 50 years or above, with women being affected more than men, the female to male blindness ratio varying from 1.5 to 2.2 [5, 6]. In 2006, WHO released new global estimates, which, for the first time, included the global magnitude of visual impairment due to uncorrected refractive errors, accounting for an additional 153 million people [7]. At least 13 million children (aged 5–15) and 45 million working-age adults (aged 16–49) were affected globally. Thus, according to WHO estimates, there are approximately 314 million people around the world whose vision is impaired, due either to eye diseases or uncorrected refractive errors. Of this number, 45 million people are blind. This statistic does not include uncorrected presbyopia, the prevalence of which was unknown [4].

Prevalence of blindness in the Nigerian national blindness and visual impairment survey (NNBVIS) which spanned 2005-2007 was 4.2% and the prevalence of severe visual impairment (SVI) was 1.5%. Using BCVA in the better eye, 3.4% were blind, 0.8% had moderate visual impairment, 4.5% had mild visual impairment. The prevalence of blindness increases significantly with increasing age from 0.8% at 40-49 years to 23.3% among those aged 80 years. Females and illiterates had higher prevalence of blindness [8].

VISION 2020: the Right to Sight is an established partnership between the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB). It was launched in 1999 with the twin aims of eliminating avoidable blindness by the year 2020 and preventing the projected doubling of avoidable visual impairment between 1990 and 2020 [4]. The ultimate goal of the initiative was to integrate a sustainable, comprehensive, high-quality, equitable eye care system into strengthened national health-care systems.

Sub-Saharan Africa bears a disproportionate amount of the world's blindness [9]. Without global, regional and national action plans, the goal of eliminating avoidable blindness and low vision by 2020 is unlikely to be achieved

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especially in developing nations. In Nigeria, intensive efforts have been made to align with this global initiative arising from the appalling eye health indices reported from the national blindness survey. Not-with-standing, the survey continues to serve as a working document for all eye health promotive, preventive, rehabilitative and treatment efforts. Prohealth International, Sightsavers International, Hellen Keller Foundation and Christoffel Blinden Mission (CBM) are few of the health partners in Nigeria that engage in health promotion and advocacy since the inception of VISION 2020. These concerted efforts demand periodic appraisal on such days like World Sight Days. This study gives eye health-care providers, policy-makers and VISION 2020 partners up-to-date information about the impact of various interventions on reducing the prevalence of avoidable visual impairment in one of Nigeria's urban centers.

Material and methods

It was an observational study of workers in Uyo Mechanic Village and University of Uyo Teaching Hospital (UUTH). Staff of the department of ophthalmology UUTH embarked on free eye screening as a part of events commemorating 2014 World Sight Day. Convenience sampling technique was used where all participants were recruited into the study. The rights of subjects were not breached as all assented to verbal and written consents. Interviewer-questionnaires were designed to solicit information on socio-demographic status. Ocular examination which included vision screening was done with the standard Snellen's and E-chart by ophthalmic nurses in an open space under ambient light. Standard cuff mercury sphygmomanometer was used to determine blood pressure by ophthalmic nurses. Two ophthalmologists conducted anterior segment examination with pen-light and over-head 3.5X loupe. Hirschberg and Cover-Uncover tests were occasionally carried out if indicated. Either Welch Allen or Heine ophthalmoscopes were used for direct fundoscopy. Where necessary, eyes were dilated with Tropicamide 1% and/or Phenylephrine 2.5% for proper fundal view and scrutiny.

Diagnostic criteria were based on uncorrected VA and findings culled from ocular examination. Refractive error was diagnosed if VA <6/9 with subsequent improvement on pin-hole (PH) in the absence of identifiable anterior or posterior segment pathology. All the patients who needed reading add who had a history of difficulty in reading small letter prints in the absence of ocular pathology were considered as having presbyopia. Cases of refractive errors and presbyopia were combined under a single umbrella tagged refractive errors. Chronic glaucoma was diagnosed in those with classical glaucomatous optical atrophy with CDR of 0.7 and above in at least one eye. Confrontational visual field testing provided ample information in those with advanced glaucoma. Those with complete glaucomatous optic atrophy, No Light Perception (NLP), CDR of 1.0, chorio-retinal atrophy with α and β, and relative afferent pupillary defect (in asymmetric cases) were diagnosed as absolute glaucoma. Other diagnoses were based on morphologic appearances and anatomic locations. Eye health talk was given and subjects with further attention were referred to eye clinic of the University of Uyo Teaching Hospital.

Statistical Package for Social Science (SPSS, IL, Chicago version 20.0) was used to analyze data. Chi-squared was used to determine non-ranked non-parametric data with level of significance pre-determined at 5% (2-tailed) while ranked data was analyzed with Spearman-ranked correlation at same significance level.

Results

A total of 401 patients (802 eyes) were analyzed comprising 121 males and 280 females with a

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ratio of 1:2.3. Age range was from 18 years to 66 years with a mean of 39.8±9.2 years (**Table - 1**). The distribution of visual acuity was as depicted in **Table - 2**. Prevalence of blindness was 1%. Intraocular pressure, indicated in 81 subjects, ranged from 11 to 33mmHg with a mean of 16.2±4.8mmHg (**Figure - 1**). Absolute glaucoma was recorded in 5 patients (1.2%), 71 patients (17.7%) were glaucoma suspects and 19 patients (4.7%) had glaucoma. Refractive error 167 (41.6%) was the commonest finding. Other findings were as per **Figure - 2**. Statistical analysis of data revealed no significant relationship between sex and diagnoses (p value = 7.967, X^2= 0.826, 95% CI = 0.821-0.836) or age and diagnoses (p value = 509.522, X^2= 0.601, 95% CI = 0.591-0.510).

There were no statistical significant associations between blood pressure and right eye CDR (p=0.947), left eye CDR (p=0.586) and right eye IOP (p=0.290). However the association between blood pressure and left eye IOP (p=0.024), was statistically significant. A Spearman Rank Order Correlation was run to determine the relationship between CDR and IOP. There was strong, positive correlation in the right eye (r_s =0.256, p=0.021[2-tailed]) and left eye (r_s=0.304, p=0.006[2-tailed]) which were statistically significant.

Discussion

There are several reasons why it is difficult to directly compare blindness and visual impairment prevalence survey results across studies. First, many different definitions of blindness and visual impairment have been used in the past. Second, studies vary widely in how they achieve BCVA. The current study defines blindness as presenting distance VA <3/60 [9, 10]. This allows for local and international comparisons and enabled justifiable inferences.

The prevalence of blindness in this survey was 1%. This is much lower than the figure (3.24%) reported in NNBVIS for south-south Nigeria [8]. Our survey did not have a national outlook and could not have been representative. Furthermore, it was based on convenience sampling technique which inadvertently introduced a bias. It is likely however that the impacts of many years of VISION 2020 interventions have begun to manifest. Since the launch of the VISION 2020 initiative in 1999 there have been some notable achievements in the prevention and management of avoidable blindness [11, 12, 13, 14]. It has brought increased public awareness, professional and political commitment to prevention of blindness. Coordination among the non-governmental organizations (NGOs) has increased and a partnership between United Nation agencies, governments, NGOs, and the corporate sector has begun to develop with the common goal to eliminate avoidable blindness.

Refractive error was the commonest ocular findings in this study. This is in consonance with findings from NNBVIS and other recently conducted vision surveys in Nigeria [15, 16, 17]. Refractive errors are a key component of the initial phase of VISION 2020 of ocular conditions that needed urgent attention. Sixteen years into VISION 2020, refractive errors are still reported to constitute significant sources of ocular morbidity [16, 18]. It appears this will continue for a long time as causes of refractive errors are neither infective like trachoma and onchocerciasis that have since abated nor subject to pharmacologic or dietary control like Diabetic complications [13]. Refractive errors have been linked largely with hereditary and polygenic factors, [19, 20] with pharmacologic or dietary modulation less likely to yield significant effect, wide-spread education about availability of solution to refractive problems appears key.

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Glaucoma (4.7%) and suspicious discs (17.7%) were second only to refractive errors in our cohorts. The proportion of people with glaucoma would have been higher if kinetic perimetry was done. In sub-Saharan Africa, local and regional studies have shown that glaucoma continues to be a major cause of irreversible blindness [21, 22, 23]. Surprisingly, it was not included in the initial phase of VISION 2020. India, realizing it devastating consequences on its population, advocated for its inclusion in the second phase of VISION 2020 in its national program. The bane of glaucoma blindness control in Africa sub-region has been delayed presentation, endemic poverty, non-compliance to ocular hypotensives and pervasive attribution of supernatural causes to medical conditions [24, 25, 26].

The mean age of our sampled population was about 40 years and may have accounted for cataract prevalence of 3.5%. Cataract, being associated with ageing, it is expected that a youthful population like ours will have a low prevalence figure. In El Salvador, a population-based study that sampled individuals 50 years and above, cataract constituted about 80% of ocular findings [27]. Kolawole, et al reported 56% cataract prevalence in Egbedore, south-western Nigeria among individuals with mean age of 65.9±11.4 (age range 50-99) [21]. Fortunately, cataract blindness is treatable and with two major eye centers in Akwa-Ibom state, cataract surgical services have increased. The inhibiting factors to cataract surgery uptake till date are cost and ignorance of cure for cataract blindness.

The contributions of posterior segment diseases in our sample were small. This may not reflect the true state in the population. Diabetic retinopathy and Age-related Macular Degeneration are emerging concerns [15, 28].

Conclusion

In conclusion, there has been a decrease in global blindness based on emerging data from various parts of the world. It is likely that the Vision 2020 initiative has contributed to this improvement in eye care. However, there is still much to be done with an ongoing need, country by country- and within a country, region to region- to identify the priorities to reduce blindness and visual impairment. This calls for periodic evaluations of all VISION 2020 interventions at various levels on such unique occasions as World Sight Day.

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Table - 1: Age groups of subjects.

Age group (years)	Frequency	percent
<40	192	47.9
40-49	139	34.6
50-59	60	15.0
60-69	10	2.5
Total	**401**	**100.0**

Table - 2: Visual acuity.

Visual acuity	RIGHT EYE	LEFT EYE
	Frequency (%)	**Frequency (%)**
6/18 or better	385 (96.0)	385 (96.0)
<6/18 to 6/60	10 (2.5)	11 (2.7)
<6/60 to 3/60	2 (0.5)	0 (0)
<3/60 to NPL	4 (1.0)	5 (1.2)
Total	401 (100)	401 (100)

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Figure - 1: Intraocular pressure.

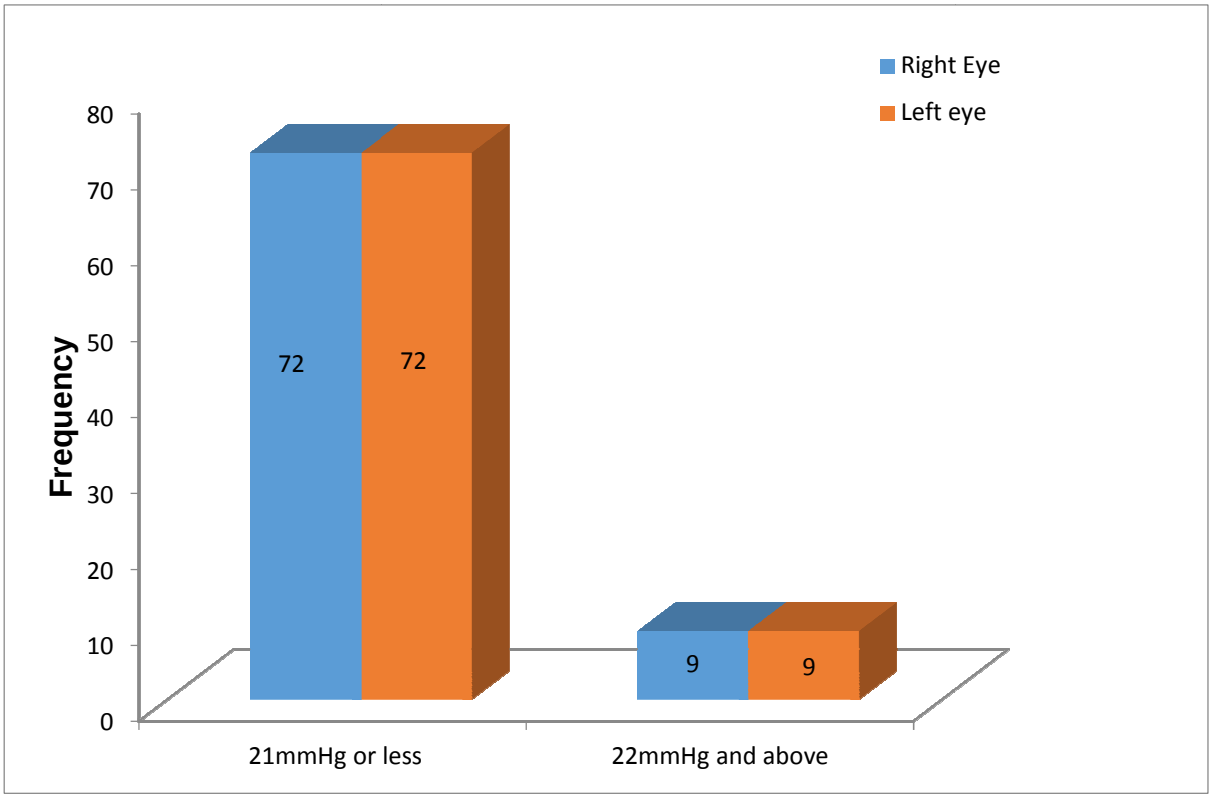

Figure - 2: Diagnoses.