Ocular disorders in a tertiary Hospital in South East Nigeria

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Abstract

The object of this study was to determine the pattern of ocular disease patients that presented to the Enugu State University of Science and Technology Teaching Hospital, Park Lane, Enugu, Nigeria. A retrospective study was conducted, where the medical case notes of patients who had ocular examinations, other clinical examinations, and investigations from April 2022 through December 2022 were retrieved. There were a total of 1145 patients, with a male population of 476 (41.6%), while females were 669 (58.4%). The mean age of the study population was 40.8 years, with a Standard Deviation (SD) of 22.4. A total of 924 (80.7%) participants were adults while children (aged 16 years and below) were 221 in number and constituted 19.3% of the study population. The most common eye disease was refractive error, which occurred in 266 (23.2%) of the participants; it was followed by allergic eye diseases, 201 (17.6%), cataract, 170 (14.9%), glaucoma, 111 (9.7%), and trauma to the eye, 94 (8.2%). Among the children, the most common eye disease seen were allergic eye diseases, 78 (35.3%), followed by refractive error, 70 (31.7%), trauma, 21 (9.5%), cataract, 11 (5.0%), while infections of the eye were 10 (4.5%). The most common eye disease among the adult participants was refractive error, 196 (21.1%), and then cataract, 159 (17.2%), allergic eye diseases, 123 (13.3%), glaucoma, 105 (11.4%), and retinal pathologies, 82 (8.9%). The most common causes of eye diseases in this study were refractive error, allergic eye diseases, cataracts, glaucoma, and trauma. Health education at community and primary health care level could help to reduce the number of people with avoidable causes of visual impairment.

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Introduction

Visual impairment is a major cause of hospital visits globally.[1] It is estimated that 2.2 billion people are affected with either blindness or some form of visual impairment, of which 1 billion people have a preventable blindness or visual impairment.[2] Nevertheless, the pattern of ocular diseases varies across the world and is influenced by racial, geographic, socioeconomic and cultural factors.[3] Out of those 1 billion who have preventable vision impairment are some that are yet to be addressed. Reduced or absent eyesight can have major and long-lasting effects on all aspects of life, including daily personal activities, interacting with the community, school and work opportunities, and the ability to access public services.[2] Though the majority of people with vision impairment are over the age of 50 years, vision loss can affect people of all ages.[2] Blindness and vision loss are felt more acutely by people in low- and middle-income countries, where accessibility and specific government services may be lacking.[2] In those countries, the most common cause of vision impairment in children is congenital cataract.[2] Globally, the leading causes of vision impairment are: uncorrected refractive errors, cataract, age-related macular degeneration, glaucoma, diabetic retinopathy.[2] It is estimated that, globally, only 36% of people with a distance vision impairment due to refractive error, and only 17% of people with vision impairment due to cataract have

received access to an appropriate intervention. Vision impairment poses an enormous global financial burden, with the annual global cost of productivity estimated to be 411 billion US$.

Based on the above findings, the World Health Organization (WHO) has recommendations on the feasible global targets for effective coverage of refractive errors and effective coverage of cataract surgery to be achieved by 2030.[4] Studies in African countries in children revealed refractive errors, allergic and infective conjunctivitis to be the most common causes of ocular morbidity.[5,6] Cataract, conjunctivitis, refractive errors and glaucoma were the most common causes of ocular morbidity in a study among adults in Sudan.[7] In the Asian continent, the most common ocular diseases in a study in a primary health center in Pakistan were conjunctivitis, cataract, and corneal problems, but this study was in a health centre with limited resources.[8] In Nigeria, Edema *et al.* reported refractive errors, conjunctivitis, cataract, and glaucoma to be common eye diseases. A hospital-based study by Adeoti *et al.* in Southwest Nigeria found that common causes of eye diseases were cataract, refractive errors and glaucoma.[9] This is similar to a report by Edema *et al.* based in Benin City, Nigeria, where common causes of ocular morbidities were refractive errors, conjunctivitis, cataract, and glaucoma.[10] A nationwide blindness and visual impairment survey among adults in Nigeria showed that common causes of mild to severe visual impairments were refractive error, cataract, uncorrected aphakia, while the main causes of blindness were cataract, glaucoma, uncorrected aphakia and cornea opacity.[11] The study also found that 84% of blindness was avoidable.[11] In Abakaliki, Southeast Nigeria, allergic conjunctivitis and refractive error were reported as the most common eye diseases in a study done 15 years ago.[12] A similar finding was reported in another study in Enugu, in which eye allergy, refractive error, and trauma were reported as the most common ocular disorder in children.[13] The aim of this study is to determine the pattern of eye diseases at the Eye Clinic of the Enugu State University of Technology Teaching Hospital (ESUTTH), and to compare the findings with previous studies in the same geopolitical environment. It is hoped that the findings will provide data for the planning and adequate provision of eye care services to the populace. There has not been a similar study done in the hospital. Furthermore, the findings from this study can be used for advocacy before the hospital management towards setting up a Pediatric Ophthalmology Unit.

Materials and Methods

This was a retrospective study, where the medical case notes of patients seen between April 2022 and December 2022 were examined. Ocular examinations done like visual acuity, anterior segment examinations, adnexae, fundoscopy, intraocular pressure, examination with slitlamp, refraction of patients, and other clinical examinations and investigations was retrieved.

The principal clinical diagnosis was retrieved from the medical case notes and the diagnoses were made by the consultants or the residents under the consultants' supervision. Furthermore, the bio and socio demographic data of the patients at presentation to the hospital were recorded in a proforma.

Sample size selection

All consecutive case notes of new patients that presented to the eye clinic during the selected study time were retrieved from the Hospital Records Department. The study duration was of 9 months, from March to April 2022, which encompasses the dry and rainy season period in the region.

Inclusion criteria

All patients with eye conditions/complaints that presented to the Eye Clinic of ESUTTH, Park Lane, Enugu.

Exclusion criteria

Patients whose records cannot be traced and those whose records are incomplete.

Statistical analysis

The data were collected, cleaned, coded, and presented as means and analyzed using the Statistical Package For The Social Sciences (SPSS) version 23. The level of significance was taken as $p<0.05$. Descriptive analysis was used for frequencies tables.

Results are presented in tables, figures, and prose.

Ethical considerations

Ethical approval was obtained from the Health Research Ethics Committee of Enugu State University Teaching Hospital (ESUTH).

Confidentiality

The retrieved information was treated with strict confidentiality and softcopies pass worded in a computer.

Results

There were a total of 1145 patients, with a male population of 476 (41.6%), while females were 669 (58.4%). The mean age of the study population was 40.8 years, with a Standard Deviation (SD) of 22.4.

The majority, 836 of the study population, resided in the urban areas of the state, and this constituted 73.0% of the study population, while 309 (27.0%) resided in the rural areas.

A total of 924 (80.7%) of the study population were adults, while children (aged 16 years and below) constituted 19.3% of the study population. The age range of the patients was from 2 weeks to 95 years. Table 1 shows the age and sex distribution of the patients.

Table 1. Socio-demographics characteristics of the patients.

Variable	Frequency	Percentage (%)
Age groups		
<16	221	19.3
17-30	169	14.8
31-50	322	28.1
51-70	345	30.1
71-99	88	7.7
Total	1145	100
Gender		
Male	476	41.6
Female	669	58.4
Total	1145	100
Residency		
Urban	836	73
Rural	309	27
Total	1145	100

The most common eye disease was refractive error, which occurred among 266 (23.2%) of the participants. This was followed by allergic eye diseases, 201 (17.6%), then cataract, 170 (14.9%), glaucoma, 111 (9.7%), and trauma to the eye, 94 (8.2%). The other diseases seen were diabetic retinopathy and other retinal pathologies, 85 (7.2%). Pterygium constituted 60 (5.2%), while infective conjunctivitis and other infections constituted 28 (2.4 %) of the ocular morbidities. Table 2 shows the spectrum and distribution of eye diseases among the patients. Other ocular abnormalities seen were corneal opacity, oculocutaneus albinism, pathological myopia, normal ocular assessment, chalazion, blepharitis, dermoid cysts, cortical blindness, bullous keratopathy, cranial nerve palsy, *etc.*

Among the children, as shown in Figure 1, the most common eye diseases seen were allergic eye diseases, 78 (35.3%), refractive error, 70 (31.7%), trauma, 21 (9.5%), cataract, 11 (5.0%), while infections of the eye and glaucoma constituted 10 (4.5%) and 6 (2.7%) of the diagnoses, respectively.

The most common eye diseases among the adult participants were refractive error, 196 (21.1%), cataract, 159 (17.2%), allergic conjunctivitis, 123 (13.3%), glaucoma, 105 (11.4%) and retinal pathologies, 82 (8.9%). The pattern of eye diseases seen among the adults is shown in Table 3.

Table 2. Spectrum and distribution of eye diseases among the patients.

Eye diseases	Frequency	Percentage (%)
Refractive error	266	23.2
Allergic conjunctivitis	201	17.6
Cataract	170	14.9
Glaucoma	111	9.7
Trauma	94	8.2
Retinal pathologies	85	7.4
Pterygium	60	5.2
Infective eye diseases	28	2.4
Uveitis	19	1.7
Dry eyes syndrome	17	1.5
Corneal ulcer	17	1.5
Others	77	6.7
Total	1145	100

Table 3. Pattern of eye diseases among adults.

Eye diseases	Frequency	Percentage (%)
Refractive error	266	23.2
Allergic conjunctivitis	201	17.6
Cataract	170	14.9
Glaucoma	111	9.7
Trauma	94	8.2
Retinal pathologies	85	7.4
Pterygium	60	5.2
Infective eye diseases	28	2.4
Uveitis	19	1.7
Dry eyes syndrome	17	1.5
Corneal ulcer	17	1.5
Others	77	6.7
Total	1145	100

Discussion

This study examined the pattern of ocular disorders among adults and children that presented to the eye clinic of Enugu State University Teaching Hospital. The male to female ratio in this study was 1:1.4, with females presenting more to the hospital than males. This is similar to studies in Democratic Republic of Congo[14] and Nepal, where more women attended their satellite eye clinic.[15] This differs from the study by Ukpowan *et al*.[3] which had an equal male to female ratio, and other studies in southern Nigeria, which had more male participants.[10,16] Furthermore, a similar study in the northern part of the country has a more male patients.[17,18]

The increase in female participants could be as a result of higher awareness[3] resulting from the high female literacy rate in the southeast, which could translate to a good health seeking behavior. Furthermore, the higher number of female attendants is probably because the health seeking behavior of females tends to be better than males, and this may explain the larger population of females in this study.[19]

The common eye diseases in this study were refractive error, allergic eye diseases, cataract, glaucoma, and trauma. This is similar to a previous study in Benin, southern Nigeria, in which refractive error, conjunctivitis and cataract were the common eye diseases.[3] Other studies in the same geographic area reported similar patterns of eye diseases. Akinsola *et al*. in Lagos, south western Nigeria, in a study among adults reported refractive error, cataract and conjunctivitis as common eye diseases in their study.[16] Cataract is a leading cause of blindness globally and the feasible global target for effective coverage of cataract surgery by the year 2030 shall reduce the burden of blindness caused by cataract.[4]

In another study in Benin City, South-south Nigeria, Edema *et al*.[10] reported a similar pattern of eye diseases in their study, in which refractive error, conjunctivitis, cataract, and glaucoma were tcommon eye presentations.[10] The similarities in pattern of eye diseases among these studies could be as a result of similarities in geographical location because all are located in the south of

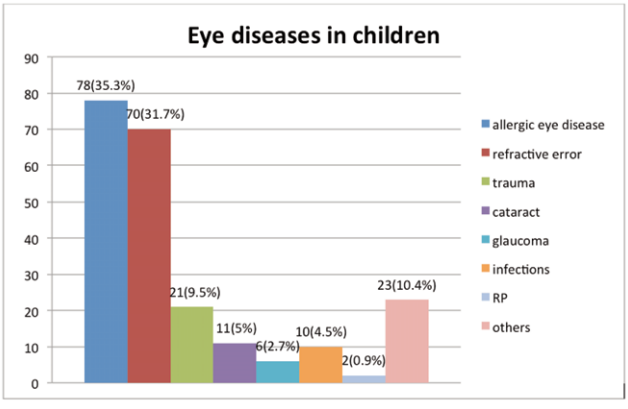

Figure 1. Eye diseases in children.

Nigeria. The findings from the study differ from a study in North central Nigeria, in which cataract, onchocerciasis, and trachoma were common eye diseases.[17]

Refractive error, which is the most common eye disease in this study, is similar to the finding that uncorrected refractive error was the most common cause of visual impairment, as reported by a landmark study by the Nigerian National Blindness and Visual Impairment Survey.[20]

Furthermore, cataract is the most common cause of avoidable blindness in Nigeria, and it is also the most common cause of severe visual impairment,[20] and findings from this study showed that cataract is among the most common ocular morbidities. In a study in Kwara State, North central Nigeria, by Mahmoud *et al*., cataract was the most common cause of visual morbidity, and similar findings have been reported globally.[2, 21]

Glaucoma was among the top four common eye diseases seen in this study, and it was followed by retinal pathologies and trauma. Age-related macular degeneration, diabetic retinopathy and other retinal pathologies were among the top five diagnoses made among the adult participants in the study. This is similar to a study in Benin.[3] Although retinal pathologies are important causes of blindness and visual impairment in developed countries,[22] they are increasingly becoming an important cause of visual impairment and blindness in middle and low income countries as life expectancy increases in these countries.[20,23]

Nwosu *et al.* reported retinal pathologies to be the second most common cause of blindness in patients aged above 50 years in a community-based study in Anambra state, south-east Nigeria.[23]

Though both studies were conducted in a similar environment, the earlier one was a community-based study, when compared to this study, which is hospital-based. The community-based study could be a better representation of the study population.

Trauma is often the most important cause of unilateral loss of vision in developing countries- and 5% of all bilateral blindness is a direct result of trauma.[24]

The majority of the children in this study presented with allergic conjunctivitis and refractive error, which is similar to studies of children of similar age groups in Enugu by Achigbu *et al*.[13] and Adio *et al*.[5] in Port Harcourt, where ocular allergies and refractive error were the most common ocular morbidities in children. The similarities in both studies could be as a result of similar geographical location. Uncorrected refractive error remains a leading cause of vision impairment in all countries amongst children and adult populations.[2]

Strabismus and amblyopia are the commonest cause of ocular morbidity in children[25] in a study in United States of America, which differs from findings in this present study. The differences showed that the most common causes of ocular morbidities in developing countries were preventable. Allergic eye diseases are a leading cause of absenteeism from school due to its discomfort, chronicity and recurrence.[26] Prompt adequacy of the management can bring symptoms under control and prevent potentially blinding complications, loss of concentration and absenteeism from school.[27]

Ocular trauma is the third most common cause of eye morbidities among children in this study which is similar to reports in which pediatric eye injuries were the third or fourth most common eye disesase.[9,12]

This differs from a study in a teaching hospital in southwestern Nigeria, in which trauma was the most common cause of eye morbidity.[28] Difference could be as a result of the largely agrarian nature of the community in the later study, which could have led to more incidences of trauma.[28,29]

Conclusions

Common causes of eye diseases in this study were refractive error, allergic eye diseases, cataract, glaucoma and trauma, which are all avoidable causes of visual morbidity. These findings are similar to studies in Nigeria and other parts of the developing countries of the world.

One of the priorities of the World Health Organization's Report on Vision, 2019, which was adopted at the 73rd World Health Assembly, 2020, is on integrated, people-centered eye care, including preventable blindness and vision impairment.[4] This will help to reduce refractive error, cataract and glaucoma as a cause of preventable visual impairment.

Furthermore, strategies should be put in place through effective health education and promotion in order to prevent visual impairment from trauma. Effective health education at the community and primary healthcare level could help to reduce the number of people with refractive error, allergic conjunctivitis, cataract and glaucoma. Early intervention for children with refractive error could help to prevent amblyopia. To achieve all these, government should ensure people centered eye care. Also, the hospital management should as a matter of urgency start a full Pediatric Ophthalmic Unit to cater for the children that present to the hospital. The current practice is that the pediatric patients are seen in the general eye clinic, which does not address the peculiar nature of children.

Limitation of the study

This was a retrospective study, and the researchers were not directly involved in making the diagnosis of all the patients seen during the study duration, so there could be a possibility of missed diagnosis and wrong diagnosis.

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