
PATTERN OF EYE DISEASES AMONG PATIENTS PRESENTING TO A UNIVERSITY HEALTH SERVICE

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Abstract

Background: To determine the pattern of eye diseases among patients attending the Eye Clinic of the University of Jos Health Centre.

Methods: A retrospective study of all patients presenting to the eye clinic of the University of Jos Health Services between March, 2019 to March, 2020 was done. Consecutive patients who visited the eye clinic were first seen by a nurse who collected biodata and tested the visual acuity. Distance visual acuity was tested at a distance of 6m in day light using Snellen's chart for literate and E chart for illiterate patients and near visual acuity was tested at a distance of 33cm. Those with distance visual acuity of worse than 6/6 had refraction done by the optometrist and the best corrected visual acuity recorded. Detailed ocular examination was performed by the Ophthalmologist using pen torch and direct Ophthalmoscope. Data was analyzed using SPSS version 20.

Results: A total of 531 patients were seen during the study period comprising of 241 (45.4%) males and 290(54.6%) females with a male to female ratio of 1:1.2. The mean age of the study participants was 32years (SD ±15). About 10.5% of the study participants had normal ocular examination findings, while 89.5% had at least one eye problem. The commonest ocular morbidities were allergic conjunctivitis 29%, refractive error 22.8%, presbyopia 16.6%, infective conjunctivitis 4.9%, cataract (3.8%) and Glaucoma (15%).

Conclusion: Eye disease constitute one of the presentation of patients attending the university health services. Therefore the need for man power and infrastructural development cannot be over emphasized as good vision would improve the quality of services rendered by staffs and academic performance of the students..

Key words: Pattern, eye diseases, University of Jos

Introduction

Ocular diseases negatively impact on every aspect of the life of an individual and the pattern of such eye diseases varies in developing as well as the developed world depending on the age, sex, race and climatic conditions¹. Common causes of blinding eye disease globally include uncorrected refractive errors (43%), cataract (33%), glaucoma (2%), while age related macular

degeneration (ARMD), diabetic retinopathy, trachoma and corneal opacities, each account for about 1%². Majority of these ocular conditions can lead to blindness that can either be potentially preventable or curable when detected early². The University of Jos Health Services provides health care to the university community (students, staff and their families) as well as the host community. The clinic is located within the university campus. The eye clinic,

which was established in 2019 is managed by a visiting Ophthalmologist who provides consultation twice a week while a visiting Optometrist provides refraction once a week.

We are unaware of a study on the pattern of eye diseases among the university community. This study aims to determine the pattern of eye diseases among patients presenting to the University of Jos Eye clinic with a view to make recommendations to the hospital management on improvements in the clinic infrastructure and human resource. To the best of our knowledge, no study has been conducted on the pattern of eye diseases among the university community in Jos. The information from this study will therefore help in planning preventive, curative and rehabilitative eye care services for the common eye disorders seen at the Jos University Health Services.

Methodology

This is a retrospective study of all patients seen at the eye clinic of the University Health Services, Jos, Plateau state Nigeria between March 2019 and March 2020. Patients were first seen in the General Outpatient Department before being referred to the eye clinic on account of an eye problem. However, few patients presented directly to the eye clinic. All patients were seen by the same Ophthalmologist. For each patient bio data was obtained and the distance as well as near visual acuity was recorded using the Snellen or illiterate E chart and near chart (except when this was not possible such as in infants and pre-school children) by a nurse. The anterior and posterior segments was examined with a

torch and a Heine direct Ophthalmoscope by the Ophthalmologist. Dilated funduscopy was also done, if indicated. Refraction was also done by the Optometrist for those with visual acuity of 6/9 and less and/or those with near vision of worse than N5. Patients with treatable eye diseases were treated and those that required further eye evaluation and management were referred to Jos University Teaching Hospital. Patients who required spectacles were given from the glass stock in the eye clinic. The following details of the patients were recorded in a register opened for the eye clinic: the name of the patients seen, the hospital number, age, sex and diagnosis. The patients were classified as staff, family members of staff, students and outsiders.

Data was entered into Microsoft excel sheet and analyzed using Statistical Package for Social Sciences version 22.

Ethical approval was obtained from the Health Research and Ethical Committee of University of Jos (Reference number: UJ/UHS/EC2018Vol.I/014).

Definition of terms

1. Presenting visual acuity (PVA)- The visual acuity of the patient on assessment (this include unaided VA for participants not using spectacles and VA with spectacles for individuals who have corrective spectacles on while being assessed).
2. Refractive error-defined as presenting visual acuity of less than 6/12 in the better eye.
3. Blindness-presenting visual acuity of less than 3/60 in the better eye

4. Allergic conjunctivitis-diagnosed by the presence of itching, lacrimation, conjunctival hyperemia and papillae.
5. Refractive error is defined as presenting visual acuity of 6/9 and worse which improves with pin hole.
6. Infective conjunctivitis-diagnosed by the presence of redness, discharge, burning, eye lid oedema and conjunctival hyperemia
7. Cataract is defined as the opacification of the lens fibres
8. Glaucoma is diagnosed by a vertical cup-disc ratio of 0.8 or greater or a cup disc asymmetry of 0.2 or greater.
9. Pingueculum- defined as a yellowish white growth on the nasal or temporal bulbar conjunctiva adjacent to the limbus
10. Pterygium-defined as a triangular fibrovascular growth of conjunctiva on to the cornea.
11. Chalazion-defined as a painless nodule within the tarsal plate.
12. Stye-defined as the presence of a painful swelling at the lid margin
13. Trachoma-defined clinically as the presence central corneal scarring in the presence of at least one of the following signs of trachoma: trichiasis/entropion, conjunctival scarring, pannus or Herbert's pits.
14. Surgical complication refers to an eye that was blind or visually impaired that had undergone cataract surgery in the absence of other causes of blindness/visual impairment.
15. Age Related Macular Degeneration is defined clinically by the presence of drusens at the macula, retinal pigment epithelial changes (hyper or hypopigmentation), geographic atrophy and/or choroidal neovascularization.
16. Diabetic Retinopathy is defined by the presence of the following in the retina; microaneurysm, hemorrhages (dot and blot and/or splinter), hard exudates, cotton wool spots, venous changes, arterial changes, and/or neovascularization.
17. Orbital cellulitis- defined as unilateral pain associated with visual impairment, hyperemic periorbital and lid oedema as well as the presence of proptosis.
18. Preseptal cellulitis-defined as unilateral pain associated with hyperemic periorbital and lid oedema in the presence of normal visual acuity and absent of proptosis.
19. Presbyopia- A person is said to have presbyopia if he is unable to read the N8 optotype with distance correction in place if needed, or they are able to read at least one more line with the addition of a plus lens.
20. Ptosis- is defined as drooping of the eye lid from various causes

RESULTS

A total of 531(9.3%) patients with eye complaint were seen out a total of 5700 patients that visited the health facility during the study period. There were 241 (45.4%) males and 290 (54.6%) females giving a male to female ratio of 1:1.2 with an age range of 1- 70years. The mean age of the study participant was 32years (SD \pm 15). The predominant age group was 21-30years as seen in Table 1. Majority of the patients were students and included both undergraduate and post graduate students. This was followed by staff and staff relatives that comprises of staff family members and dependents as seen in Table 1.

Table1: Occupational distribution of study participants

Occupation	Frequency(n)	Percent (%)
Student	320	60.3
Staff	116	21.8
Staff Relatives	76	14.3
Outsider	19	3.6
Total	531	100.0

Of the patients that were seen during the study period, 56 (10.5%) were found to have normal ocular examination findings while 475(89.5%) patients were found to have at least one eye disease as seen in table 2. More females 263(55.4%) than males 212(44.6%) were found to have eye diseases. The commonest eye disorder found was allergic conjunctivitis 154(29.0%). This was followed by refractive error 121(22.8%). Table 3 shows the distribution of major eye diseases in the different age category.

Table 2: Pattern of Eye Diseases among study participants

Diagnosis	Frequency(n)	Percent(%)
Normal	56	10.5
AC	154	29.0
RE	121	22.8
Presbyopia	88	16.6
IC	26	4.9
Cataract	20	3.8
Glaucoma	15	2.8
Trauma	11	2.0
Pterygium, Pingueculum	8	1.5
Stye	6	1.1
Chalazion	5	0.9
Corneal disorders	3	0.5
DR	2	0.4
Macula Hole	2	0.4
Post cataract surg comp	2	0.4
Conj Disorders (Conj naevus, SCC)	2	0.4
Optic nerve disorder	2	0.4
Dry Eye	1	0.2
ARMD	1	0.2
Orbital cellulitis	1	0.2
Preseptal cellulitis	1	0.2
Ptosis	1	0.2
SCH	1	0.2
Superficial Dermoid	1	0.2
Amblyopia	1	0.2
Total	531	100

‡‡: AC: Allergic Conjunctivitis, RE: Refractive Error, IC: Infective Conjunctivitis, DR: Diabetic Retinopathy, Post Cataract Surg Comp: Post Cataract surgical Complication, Conj: Conjunctiva, SCC: Squamous Cell Carcinoma, ARMD: Age Related Macula Degeneration, SCH: Sub Conjunctiva Hemorrhage

Table 3: Age distribution of major eye diseases

Age Category	AC	RE	Presbyopia	IC	Cataract	Glaucoma
0-10	7	5	0	3	0	0
11-20	38	37	0	8	2	4
21-30	90	35	0	9	2	2
31-40	9	11	11	4	0	2
41-50	7	11	44	0	0	1
51-60	3	15	27	1	10	3
61-70	0	7	6	1	6	3
Total	154	121	88	26	20	15

‡‡: AC: Allergic Conjunctivitis, RE: Refractive Error, IC: Infective Conjunctivitis

Table 4 shows the effect respondents characteristic on the prevalence of allergic conjunctivitis

Table 4: Effect of respondent's characteristic on prevalence of Allergic conjunctivitis

Allergic Conjunctivitis	Odds ratio	Std. err.	p value
Age	0.9635	0.0042	0.0001
Sex	1.4986	0.3104	0.0510

Log Likelihood= -263.170 Prob > chi2=0.0001 Number of Obs=474

The common eye disorders among students were Allergic conjunctivitis (37.8%), refractive error (21.9%) and Presbyopia (7.2%). Myopia was the commonest refractive error followed by astigmatism and anisometropia.

Presbyopia was found to be the commonest eye disorder among staff accounting for more than one third of the eye conditions, followed by refractive error (23.2%), cataract (8.6%), Glaucoma (5.2%) and Allergic conjunctivitis (5.2%) Table 5.

Table 5: Pattern of eye diseases among students

	Frequency(n)	Percentage (%)
Normal	44	13.8
AC	121	37.8
Refractive Error	70	21.9
Presbyopia	23	7.2
IC	11	3.4
Trauma	10	3.2
Glaucoma	8	2.5
Cataract	5	1.6
Chalazion	4	1.3
Stye	4	1.3
Pingueculum	3	0.9
Pterygium	3	0.9
Post Cataract Surgical Compl	2	0.6
Corneal Opacity	2	0.6
Conj Disorder (Conj naevus, OSSN)	2	0.6
Optic nerve disease	1	0.3
Ptois	1	0.3
Macula Hole	1	0.3
Dry eye	1	0.3
Corneal Ulcer	1	0.3
Preseptal cellulitis	1	0.3
Orbital cellulitis	1	0.3
Amblyopia	1	0.3
Total	320	100

‡‡: AC: Allergic Conjunctivitis, IC: Infective Conjunctivitis, Post Cataract Surg Comp: Post Cataract surgical Complication, Conj: Conjunctiva, OSSN: Ocular

Surface Squamous Neoplasia

The distribution of ocular trauma among study participants based on gender and occupation is shown in Table 6

Table 6: Distribution of ocular trauma among study Participants

Age Group (years)	Gender		Occupation	
	Male	Female	Staff Relatives	Student
0-10	0	0	0	0
11-20	1	1	0	2
21-30	2	4	0	6
31-40	0	1	0	1
41-50	1	1	1	1
51-60	0	0	0	0
61-70	0	0	0	0
Total	4	7	1	10

Table 7 shows the distribution of the various eye conditions among staff.

Table 7: Pattern of Eye diseases among staff

	Frequency(n)	Percentage (%)
Normal	9	7.7
Presbyopia	47	40.5
RE	27	23.2
Cataract	10	8.6
Glaucoma	6	5.2
AC	6	5.2
IC	5	4.3
DR	2	1.7
ARMD	1	0.9
Macula Hole	1	0.9
SCH	1	0.9
Pterygium	1	0.9
Total	116	100

‡‡: AC: Allergic Conjunctivitis, RE: Refractive Error, IC: Infective Conjunctivitis, DR: Diabetic Retinopathy, ARMD: Age Related Macula Degeneration, SCH: Sub Conjunctiva Hemorrhage

Discussion

The female preponderance in this study is similar to previous hospital based studies^{3,4}. This could be because the women in this community have better health seeking behaviour. Our result is contrary to another finding which revealed that more males were seen in medical clinic in developing countries¹. We also found in this study that more students were seen in the University eye clinic. This could be because of the larger population of students as compared to the staff and their families in the institution, as well as the close proximity of the hostels to the university clinic making it easily accessible to the students. It was found in this study that increase in age increases the tendency of eye disease. More females were also found to have eye conditions than males which could be due to higher population of females in the study odd ratio 4.3553 at p value of 0.00001.

Allergic conjunctivitis was found to be the commonest eye condition among the study population as seen on table 2. This is similar to findings of other studies^{3,5}. This could be because of the windy and dusty weather in the Northern part of Nigeria. Allergic conjunctivitis is found to be commoner in those less 30years of age which could probably be due to the fact that over 87.6% of respondents sampled for this study falls within youthful age bracket (1-30 years) meaning majority of the patients attending the eye clinic are in this age bracket and thus justifies the reason for the findings. The relationship between allergic conjunctivitis and age was positive and significant at p value of 0.00001 (1%) implying that as age increases there is more chances of been affected by the disease among participants in the first three decades as seen on table 3 and also age as a variable is very important factor that influences allergic conjunctivitis. This differ from previous studies that revealed preponderance of allergic conjunctivitis in those 16 years and less⁶⁻⁸. Similar to age, sex also has a positive relationship to allergic conjunctivitis and it was not significant

implying variation in sex between female to male increases chances of been affected with conjunctivitis, the variable was however is not significant in determining prevalence of the disease. This is similar to findings of several other studies^{3,6,9-10}.

Refractive error was found in about a quarter of the study population, with majority of those affected being students. Myopia was found to be the commonest type of refractive error. The high prevalence of uncorrected refractive error among students could have an impact on the visual and educational performance of these students. Similar studies found refractive error to be the second common ocular eye disease^{1,3,5,11}. Presbyopia was found in less than 1/3rd of the patients, more than half of whom were staff and this could have an effect on the routine office work. Infective conjunctivitis was the fourth leading ocular condition in this study which is similar to findings of Adenuga et al³. Cataract and Glaucoma which are ocular conditions associated with advancing age accounted for 3.8% and 2.8% respectively of eye conditions seen in this study. 80% of those with cataract were 50years and above and comprised staff and staff relatives whereas the remaining 20% were students between ages of 20-25years. On the contrary, more than half of those with Glaucoma were students less than 40years of age. This may be related to the known early onset of glaucoma in persons of African descent¹². The prevalence of Cataract and Glaucoma in this study is similar to that found by Adenuga et al³ working in a military Hospital in Jos which has similar demographics with our setting. However, the prevalence was lower than that found from previous studies by Monsudi et al¹³ and Adeoye et al⁴ working in Northwest Nigeria and South west, Nigeria. These higher prevalences could be because majority of the participants in these studies were 50 years and above and such conditions are commoner with advancing age.

Ocular trauma was found among 11 participants, 90% of whom were students with female preponderance. This could be because the population of females generally in the study outweighs that of males. In addition, it could also be due to quarrels from relationship among students. This is contrast to other studies around the world that revealed higher prevalence among males¹⁴⁻¹⁶.

Conclusion

In conclusion, eye disease constitutes one of the presentations of patients attending the university clinic with allergic conjunctivitis, refractive error, presbyopia, infective conjunctivitis, cataract and glaucoma being the most common eye conditions encountered. There is therefore need to further develop the eye clinic with respect infrastructure and man power.

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Conflict of Interest

We declare that we have no financial or personal relationship which may have inappropriately influenced us in writing this paper.

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