



Ocular Morbidity in the Elderly Population of Nyanya, Abuja, Nigeria

Onwukwe, N.A. & Okafor, P. C.

Department of Optometry

Madonna University, Nigeria

Email: kaakaamain@yahoo.com

ABSTRACT: This is a cross-sectional study involving 308 elderly participants, aimed at investigating the burden of ocular morbidity among the elderly population of Nyanya, Abuja. Their ages ranged from 40 to >70 years with a mean of 55.01(SD \pm 11.39), the minimum age was 40 and the maximum age was 89. In the data collection, convenient sampling method was used. A comprehensive examination consisting of visual acuity testing, anterior and posterior segment examination was carried out on all the participants. Refraction was done where necessary. Presbyopia was not considered for the analysis, because presbyopia is common among this age group. Intraocular pressures (IOPs) were checked for cup disc ratio >0.6 or where there is 2D difference between the two eyes and when there is synechia. Glaucoma suspects were referred for perimetry. Visual impairment was classified according to the World Health Organization. Data were analyzed with statistical package for social sciences (SPSS version 25). From the result, the ratio of males to females is 1:1.08. Ocular morbidity was not significantly dependent on gender ($P < 0.05$) but was significantly dependent on age ($P < 0.05$). The most common ocular morbidity was conjunctivitis(15.3%, n=47), followed by refractive error (13.3%, n=41), other patterns are pterygium and refractive error (10.7%, n=33), Cataract (9.4%, n=29) normal/presbyopia(9.4%, n=29), dry eye(7.8%, n=24), pterygium/pinguecula + dry eye (5.5%, n=17), corneal ulcer (4.5%, n=14), uveitis(3.9% n=12), lid disorder (3.2%, n=10), hypertensive retinopathy(2.3%, n=7), glaucoma(1.6%, n=5), cataract + pterygium + refractive error (1.6%, n=5), glaucoma + cataract (1.6%, n=5), diabetic retinopathy(1.3%, n=4), refractive error and dry eye (3.2%, n=10), glaucoma + refractive error (3.2%, n=10), pterygium(0.6%, n=2), conjunctivitis + refractive error(0.6%, n=2), retinitis pigmentosa (0.6%, n=2). In conclusion ocular morbidity was found to be high among the elderly in Nyanya hence, health education programs should target the elderly specifically and the entire population in general, on the importance of regular and comprehensive eye/vision check.

INTRODUCTION

Ocular morbidity is defined as the spectrum of eye diseases which includes both visually impairing and non-visual impairing conditions, experienced by a population. Ocular morbidity is one of the significant problems found in rural areas of undeveloped countries such as; India, Ethiopia, Nigeria, etc., as it remains undiagnosed and neglected. As estimated, by 2025, the population of elderly is expected to be about 840 million in low income countries (Park, 2015). The pattern of ocular diseases vary in different parts of the world and is influenced by racial, geographic, socioeconomic and cultural factors (Catherine, 2013). cataract, glaucoma, conjunctivitis, corneal ulcers, uveitis, refractive errors, pterygium and other eye diseases such as trachoma, onchocerciasis, xerophthalmia and ocular malignancies, were considered to be the most common ocular diseases worldwide.

Worldwide, approximately 285 million people are visually impaired, 90% of whom live in developing countries. Up to 80% of blindness and 85% of moderate or severe visual impairment is avoidable by prevention, treatment or cure. The frequency of eye diseases has been suggested to start increasing around 40 years of age, with an even steeper increase beginning around 60 years of age (Vibha, Rupali, Nitin, Shavinder, 2017). Some common factors were considered to be responsible for 75% of blindness, worldwide. These



include; cataract, refractive errors/low vision, trachoma, onchocerciasis, and vitamin A deficiency and other causes of childhood blindness (Catherine, 2013). Effective and cost efficient intervention strategies are available for each of these diseases. A joint initiative VISION 2020: the right to sight by the World Health Organisation for Prevention of Blindness and its constituent members in collaboration with countries and international agencies involved in eye care have put in place strategies to facilitate the implementation of effective and efficient eye care services in all districts. If this strategy is successfully implemented, blindness due to cataract, refractive errors, trachoma, Vitamin A deficiency, onchocerciasis and some due to diabetic retinopathy and glaucoma would be eliminated. The projected increase in global blindness to above 75 million by year 2020 could be reduced to approximately 24 million (Catherine, 2013). It has been observed that many individuals residing in Nyanya, Abuja, hardly access eye care services and good health care services. Instead, they practice self-medication because there is no government established eye clinic or hospital and the only available private eye clinic is not affordable by most of the inhabitants of Nyanya due to their socio-economic status. Therefore, there is need for studies on ocular morbidity in the elderly population of Nyanya, Abuja, for policy makers, government at all levels and all stakeholders, to be aware of the burden of ocular morbidity and take responsible action.

METHODOLOGY

Ethical Consideration

Ethical approval was obtained from

- *The research committee of the Department of Optometry, Madonna University.
- * Verbal consent was obtained from each of the participant's prior to examination.
- * Measures were taken to ensure confidentiality of data

RESEARCH DESIGN

This is a cross-sectional study to determine the magnitude and types of ocular morbidity in the elderly population of Nyanya, Abuja.

STUDY POPULATION

The study population of this study were the elderly both male and female of 40 years and above in Nyanya, Abuja.

AREA OF STUDY

The study was conducted in Nyanya District, a suburban district which is densely populated, situated in Abuja; Federal Capital Territory. The district is served by two hospitals and a number of Pharmacies, with no government owned eye hospital or clinic. Nyanya was chosen as the survey site, because it is thought to be a representative of the country with respect to demographics, population density, and provision of health and eye care services.



SAMPLE SIZE AND SAMPLING TECHNIQUE

Convenient sampling technique was used for this study and a total of 308 respondents were examined, 160 females and 148 males.

INCLUSION AND EXCLUSION CRITERIA

This study included male and female of age 40years and above, who are residents of Nyanya, Abuja. Male and female who were not up to 40 years of age were excluded.

INSTRUMENTATION

Instruments used in this study include the following: Snellen chart, occluder, retinoscope, trial case, trial frame, near visual acuity chart, ophthalmoscope, schimers strip, fluorescein dye, topical tropicamide, tonometer, visual field analyzer, pachymeter, slit lamp biomicroscope.

PROCEDURE FOR DATA COLLECTION

A comprehensive ophthalmic examination was carried out on each participant. The examination conducted were external eye exam, visual acuity test in meters (distance and near), ophthalmoscopy, retinoscopy, subjective refraction. Some diagnostic tests like dry eye test with the use of Schimmers strip and fluorescein dye were done. Topical tropicamide was used for dilation of the pupils where necessary. Tests like central visual field test, tonometry, pachymetry, slitlamp biomicroscopy and fundus photography, that could not be carried out in the screening centre were done at supreme vision eye clinic at Wuse II or Davik eye clinic in Nyanya. Severe cases like glaucoma, uveitis were referred for proper management and follow up. Also cases like cataract and diabetic retinopathy were referred for surgical intervention.

PROCEDURE FOR DATA ANALYSIS

Data was analyzed with the descriptive and inferential statistics of the statistical package for social sciences (SPSS). A P-value < 0.05 was used to denote statistical significance.

RELIABILITY AND VALIDITY

The instruments used in this study are recognized and approved by the World Council of Optometry (WCO) and Optometrist and Dispensing Opticians Registration Board of Nigeria (ODORBN)

RESULTS AND DATA ANALYSIS

Demographic Profiles of Study Participants

A total of 308 individuals were used in this study. The ages ranged from 40 to >70years with a mean of 55.01(SD ± 11.39). The ages of the participants were classified into seven groups and the age group with the highest number of participants was 40-45 age group (27.3%) as compared to other age groups within the scope of the study. While the lowest number of participants were within the age group of 61-65 (5.5%) as shown in the table below



Table 1: Age distribution of the participants

Age group	Frequency	Percentage
40-45	84	27.3
46-50	57	18.5
51-55	19	6.2
56-60	65	21.1
61-65	17	5.5
66-70	45	14.6
>70	21	6.8
Total	308	100.0

Table 2: Distribution of occupation of the participants

Occupation	Frequency	Percent
Civil servants	48	15.6
Traders	105	34.1
Unemployed and farmers	120	39.0
Retired civil servants	35	11.4
Total	308	100.0

Gender of the Patients

There were nearly equal number of males and females in this study in a ratio of 1: 1.08. The gender proportion of the participants is presented in table 3 below:

Table 3 Gender distribution of the patients

Gender	Frequency	Percentage
Female	160	51.9
Male	148	48.1
Total	308	100.0

Interpretation

The results in Table 4 below, shows conjunctivitis(15.3%) to be the most common type of ocular morbidity, followed by refractive error (13.3%), Other patterns are pterygium and refractive error (10.7%), cataract (9.4%), normal/presbyopia (9.4%), dry eye(7.8%), pterygium/pinguecula + dry eye (5.5%), corneal ulcer (4.5%), uveitis (3.9%), lid disorder (3.2%), hypertensive retinopathy(2.3%), glaucoma (1.6%), cataract + pterygium + refractive error (1.6%), glaucoma +cataract (1.6%), diabetic retinopathy (1.3%),refractive error and dry eye(3.2%), glaucoma + refractive error (3.2%), pterygium (0.6%), conjunctivitis + refractive error (0.6%), retinitis pigmentosa (0.6%).



Table 4 Common ocular conditions among the elderly

Ocular morbidity	Frequency (N)	Percentage (%)
Normal	29	9.4
Lid disorder	10	3.2
Pterygium/pinguecula + dry eye	18	5.5
Conjunctivitis	46	15.3
Cataract	29	9.4
Glaucoma	5	1.6
Dry eye	24	7.8
Refractive error	41	13.3
Uveitis	12	3.9
Hypertensive retinopathy	7	2.3
Diabetic retinopathy	4	1.3
Retinitis pigmentosa	2	0.6
Pterygium + refractive error	33	10.7
Glaucoma + cataract	5	1.6
Refractive error + dry eye	10	3.2
Glaucoma + refractive error	10	3.2
Cataract + pterygium + refractive error	5	1.6
Pterygium	2	0.6
Conjunctivitis + refractive error	2	0.6
Corneal ulcer	14	4.5
Total	308	100.0

This is also represented in the bar chart below.

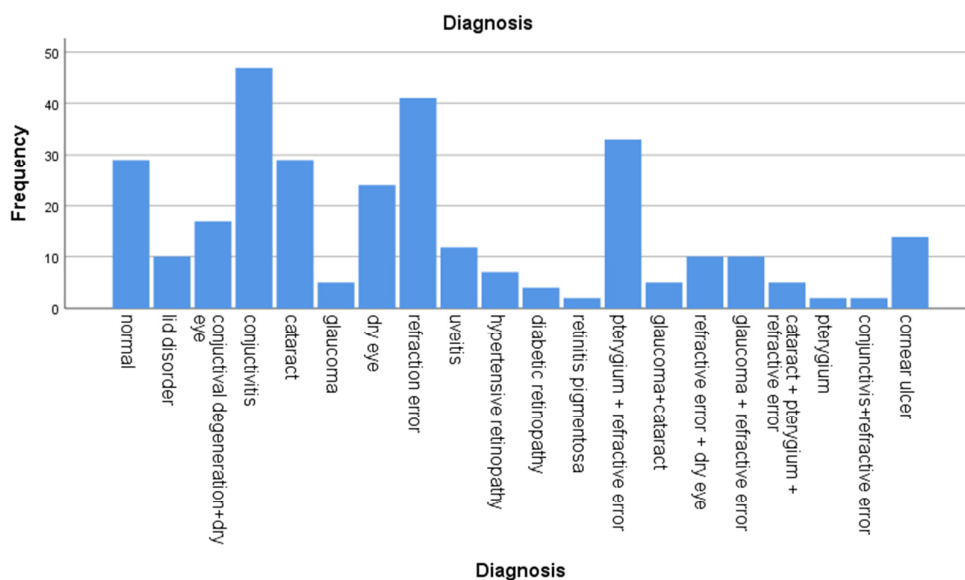




Table 5: Ocular morbidity in relation to gender of the participants

Diagnosis	Female	Male	Total
Normal	12	17	29
Lid disorder	7	3	10
Conjunctival degeneration + dry eye	8	1	18
Conjunctivitis	25	21	46
Cataract	16	13	29
Glaucoma	3	2	5
Dry eye	13	11	24
Refractive error	16	25	41
Uveitis	8	4	12
Hypertensive retinopathy	7	0	7
Diabetic retinopathy	1	3	4
Retinitis pigmentosa	2	0	2
Pterygium + refractive error	18	15	33
Glaucoma + cataract	4	1	5
Refractive error + dry eye	5	5	10
Glaucoma + refractive error	2	8	10
Cataract + pterygium + refractive error	3	2	5
Pterygium	1	1	2
Conjunctivitis	1	1	2
Corneal ulcer	8	6	14
Total	160	148	308

Interpretation

The results in Table 5 above, show that among the 308, there were 160 females and 148 males and the pattern was as follows; conjunctivitis (46, i.e. 25 females and 21 males) to be the most common type of ocular morbidity, followed by refractive error (41 i.e. 16 female and 25 males). Other patterns are pterygium and refractive error (33 i.e. 18 females and 15 males), cataract (29 i.e. 16 females and 13 males), normal/presbyopia 29 (i.e. 16 females and 13 males), dry eye(7.8%), pterygium/pinguecula + dry eye (18 i.e. females 8 and 10 males), corneal ulcer (14 i.e. 8 females and 6 males), uveitis (12 i.e. 8 females and 4 males), lid disorder (10 i.e. 7 females and 3 males), hypertensive retinopathy(7 i.e. 7 females and 0 males), glaucoma (5 i.e. 3 females and 2 males), cataract + pterygium + refractive error (5 i.e. 3 females and 2 males), glaucoma +cataract (5 i.e. 4 females and 1 males), diabetic retinopathy(4 i.e. 1 females and 3 males),refractive error and dry eye (10 i.e. 5 females and 5 males), glaucoma + refractive error (10 i.e. 2 females and 8 males), pterygium (0.6% i.e. 1 females and 1 males), conjunctivitis + refractive error (0.6% i.e. 1 females and 1 males), retinitis pigmentosa (0.6% i.e. 2 females and 0 males).



Table 6: Analysis of ocular morbidity on gender

Chi-Square Tests on gender				
	Value	df	Asymptotic Significance(2-sided)	
Pearson Chi-Square	23.236 ^a	19	0.227	
Likelihood Ratio	27.206	19	0.100	
Linear-by-Linear Association	0.118	1	0.731	
N of Valid Cases	308			

a. 19 cells (47.5%) have expected count less than 5. The minimum expected count is 0.96.

The result shows that Ocular morbidity is not significantly dependent on gender ($P < 0.05$)

Table 7: showing visual acuity distribution

The table below classified visual acuity into normal, visual impairment (mild, moderate and severe) and blindness.

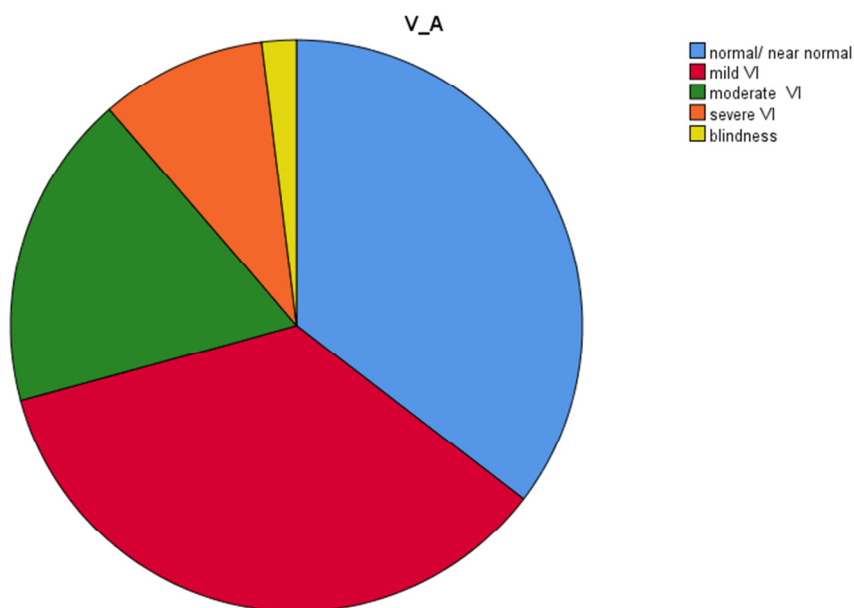
Visual Acuity	Frequency (N)	Percent (%)
normal/ near normal	109	35.4
mild VI	109	35.4
moderate VI	55	17.9
severe VI	29	9.4
Blindness	6	1.9
Total	308	100.0

Interpretation

The table above, shows the visual acuity rank of occurrence for normal/ near normal were 109 (35.4%) in the population, mild visual impairment was 109 (35.4%) in the population, moderate visual impairment was 55 (17.9%), severe visual impairment 29 (9.4%), blindness occurrence was 6 (1.9%). **This is represented also in fig 2 below.**



Figure 2: showing the visual acuity distribution of the participants



Pattern of Ocular Morbidity in Relation to the Age Group of the Participants
 Diagnosis * AGE-GROUP Cross-tabulation

Ocular morbidities		Age Group						
		40-45	46-50	51-55	56-60	61-65	66-70	>70
Normal	Count	8	9	0	4	2	4	2
	% within Diagnosis	27.6%	31.0%	0.0%	13.8%	6.9%	13.8%	6.9%
lid disorder	Count	3	0	1	3	1	0	2
	% within Diagnosis	30.0%	0.0%	10.0%	30.0%	10.0%	0.0%	20.0%
Conjunctival degeneration + dry eye	Count	5	2	2	5	1	1	1
	% within Diagnosis	29.4%	11.8%	11.8%	29.4%	5.9%	5.9%	5.9%
Conjunctivitis	Count	16	9	6	7	0	5	4
	% within	34.0%	19.1%	12.8%	14.9%	0.0%	10.6%	8.5%



	Diagnosis							
Cataract	Count	7	3	1	6	0	10	2
	% within Diagnosis	24.1%	10.3%	3.4%	20.7%	0.0%	34.5%	6.9%
Glaucoma	Count	1	2	0	0	0	1	1
	% within Diagnosis	20.0%	40.0%	0.0%	0.0%	0.0%	20.0%	20.0%
dry eye	Count	8	6	0	6	4	0	0
	% within Diagnosis	33.3%	25.0%	0.0%	25.0%	16.7%	0.0%	0.0%
refractive error	Count	8	6	3	9	2	9	4
	% within Diagnosis	19.5%	14.6%	7.3%	22.0%	4.9%	22.0%	9.8%
Uveitis	Count	1	1	0	5	2	2	1
	% within Diagnosis	8.3%	8.3%	0.0%	41.7%	16.7%	16.7%	8.3%
hypertensive retinopathy	Count	1	1	0	3	2	0	0
	% within Diagnosis	14.3%	14.3%	0.0%	42.9%	28.6%	0.0%	0.0%
diabetic retinopathy	Count	3	0	0	1	0	0	0
	% within Diagnosis	75.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%
retinitis pigmentosa	Count	1	0	0	1	0	0	0
	% within Diagnosis	50.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%
pterygium + refractive error	Count	9	9	3	3	1	5	3
	% within Diagnosis	27.3%	27.3%	9.1%	9.1%	3.0%	15.2%	9.1%
Glaucoma + cataract	Count	1	2	2	0	0	0	0
	% within Diagnosis	20.0%	40.0%	40.0%	0.0%	0.0%	0.0%	0.0%
refractive error + dry eye	Count	1	5	0	1	1	2	0
	% within Diagnosis	10.0%	50.0%	0.0%	10.0%	10.0%	20.0%	0.0%
glaucoma + refractive error	Count	1	1	1	3	0	4	0
	% within Diagnosis	10.0%	10.0%	10.0%	30.0%	0.0%	40.0%	0.0%
cataract + pterygium + refractive error	Count	2	0	0	1	0	2	0
	% within Diagnosis	40.0%	0.0%	0.0%	20.0%	0.0%	40.0%	0.0%
Pterygium	Count	1	1	0	0	0	0	0
	% within	50.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%



	Diagnosis							
Conjunctivitis +refractive error	Count	0	0	0	1	1	0	0
	% within Diagnosis	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%
corneal ulcer	Count	7	0	0	6	0	0	1
	% within Diagnosis	50.0%	0.0%	0.0%	42.9%	0.0%	0.0%	7.1%
Total	Count	84	57	19	65	17	45	21
	% within Diagnosis	27.3%	18.5%	6.2%	21.1%	5.5%	14.6%	6.8%

Table 9: showing the analysis of relationship between the age group of the participants and the occurrence of ocular morbidity.

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	144.091 ^a	114	0.030
Likelihood Ratio	155.809	114	0.006
Linear-by-Linear Association	0.044	1	0.833
N of Valid Cases	308		

a. 121 cells (86.4%) have expected count less than 5. The minimum expected count is .11.

The relationship between the age group of the participants and the occurrence of ocular morbidity was found to be statistically significant (p-value 0.030).

DISCUSSION

A total of 308 participants were used for this study. Their ages ranged from 40 to >70years with a mean of 55.01(SD ± 11.39), the minimum age was 40 and the maximum age was 89. The ages of the participants were classified into seven groups and the 40 to 45 age group had the highest frequency 84 (27.3%). This research showed that ocular morbidity is not significantly dependent on gender (P<0.05) and the relationship between the age group of the participants and the occurrence of ocular morbidity was found to be statistically significant (p-value 0.030). The ratio of males to females in this study was 1: 1.08, this supports the view of gender equality of patients visit to clinics for eye check, as posited by recent research in developing countries byZelalem, (2014) in Ethiopia and which also corresponds to the studies done byKumar, Srivastava, Mishra, Srivastava, (2016) in India. The higher prevalence of ocular diseases in old age could be due to increasing degenerative conditions, increased susceptibility to infections, lack of proper care of the eyes, among other reasons. Singh, Dwivedi, Dabral, Bihari, Rastogi, Kumar, (2012), in India asserted that the main causes of ocular morbidity were cataract (41.9%), uncorrected refractive errors (21.59 %), xerophthalmia



(10.20 %) and glaucoma (4.83 %) this was in contrast to the findings of this study where uncorrected refractive error 41(13.3%) and conjunctivitis 47(15.3%) were the prevalent ocular morbidities. Agrawal, Singh, Garg, Chopra, Roy, Chaturvedi, (2011) hypothesized that the most common ocular morbidity was refractive error (86.4%), cataract (22.5%) and conjunctivitis (6.0%), which was consistent with the results from this study as shown in Table 4. Refractive error and conjunctivitis were the most common eye diseases in this study and have been reported to be the most common causes of ocular morbidity as posited by (Catherine,2013) in Asia. Most of the participants had Pterygium, this was similar to the results obtained by Jitendrakumar, Naveen, Nitin, (2016) in Bundelkhand.who stated that pterygium had a high prevalence of (18.8%) which was attributed to the rocky geographical region and high UV exposure of labourers of Bundelkhand.This was also the same for this study as Nyanya community is in a rocky region with tropical savanna climates having monthly mean temperature above 18 oc in every month of the year and typically a pronounced dry season, with the driest month having less than 60 mm of precipitation. Previous study on Pattern of Ocular Morbidity in the Elderly Population of Northern India by Vibha et al., (2017), showed that the number of patients with cataract is decreasing because of increased cataract surgical rate, this correlated with the trend observed in this research as cataract alone accounts for only 29(9.4%). Majority of the participants in this study had more than one ocular morbidity, this was also reported by Zelalem, (2014) in Ethiopia, during his study of ocular morbidity of patients attending ophthalmic outreach services in rural Ethiopia.

CONCLUSION

The common ocular disorders seen in this study issimilar to the findings from other states in Nigeria and other parts of theworld. In this study ocular morbidity was found to be high among the elderly in Nyanya hence, health education programsshould target the elderly specifically and the population in general. Focus should be on providing affordable, qualitative eye care services to both urban and rural dwellers, so that we can prevent and manage visual impairing ocular morbities and blindness in the elderly especially those with low educational and socioeconomic status.

RECOMMENDATIONS

The following recommendations are made

Free vision screening programs should be done regularly to enhance the ocular health of the elderly in Nyanya and free medical care services should be granted to the elderly by the government. Government through the media, should also create awareness for proper ocular hygiene and discourage self-medication. Also, it is recommended that government should include eye care services in the Nyanya government hospital and the services given should be subsidized.This should be done in other rural and sub-urban areas of Nigeria.



REFERENCES

- Agrawal, D., Singh, J.V., Garg, S.K., Chopra, H., Roy, R. and Chaturvedi, M. (2011) Current trends in eye diseases and its correlates in an urban population Indian. *J. Prev. Soc. Med.* 2 (1),75-78.
- Catherine, U.U. (2013) Pattern of ocular morbidity in Nigeria, Asian Pacific Journal of Tropical Disease. *Asian Pac J Trop Dis.*3(2), 164-166.
- Jitendrakumar, D., Naveen, S. and Nitin, T. (2016) Ocular Morbidity Among Elderly Population in Rural Areas of Bundelkhand. *Journal of Dental and Medical Science.*15(6), 5-10.
- Kumar, A., Srivastava, A.K., Mishra, M. and Srivastava, V.K.(2016) Prevalence of ocular Morbidity in rural population of eastern Uttar Pradesh, India. *Indian J Comm Health.*3, 275-279.
- Park, K.(2015) Park's textbook of Preventive and Social Medicine; 22nd ed. Bhanot Publishers.
- Singh, A., Dwivedi, S., Dabral, S., Bihari, V., Rastogi, A. and Kumar, D. (2012) Ocular morbidity in the rural areas of Allahabad, India. *Nepal J Ophthaolml.* 4(1),49-53.
- Vibha, F.B., Rupali, C., Nitin, B. and Shavinder, S. (2017): Pattern of Ocular Morbidity in the Elderly Population of Northern India. *J ClinDiagn Res.* 11(8), 20-23.
- Zelalem, A. (2014): A study of ocular morbidity of patients attending Ophthalmic outreach services in rural Ethiopia. **Article** · June 2013. *International journal of medicine and medical sciences.* 3(4), 450-453.