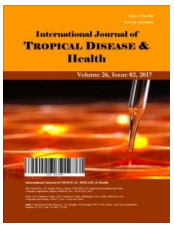

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Ophthalmic Problems of Adults in Rural Communities of Rivers State, Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Author ECS designed the study, wrote the protocol and the first draft of the manuscript. Author OFN performed the statistical analysis, managed the analyses of the study the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Aim: To determine the ophthalmic problems and their possible causes among adults in rural communities in Rivers State.
Methods: A multistage population based random sampling study of adults in five clans of Etche Local Government Area of Rivers State. Medical history was taken and comprehensive ocular examination done on each subject. Ocular examination included visual acuity, visual field, tonometry and ophthalmoscopy. Data taken were recorded and analysed using statistical software called Minitab 11. Ethical approval was obtained from relevant authorities.
Results: Out of the 600 subjects seen in this study 276 (46.0%) were males and 324 (54.0%) females. They were all above 21 years old. Twenty six (2.4%) subjects had good vision while 8 (0.8%) were blind. The ophthalmic problems identified were Presbyopia 298 (28.0%), Refractive error 247 (23.2%), Cataract 126 (11.8%), Allergic conjunctivitis 106 (9.9%), Glaucoma 94 (8.8%), Pterygium 86 (8.1%), Bacterial conjunctivitis 35 (3.3%), Corneal opacity 32 (3.0%), Chalazion 4 (0.4%), Diabetic retinopathy 3 (0.3%) and Ptosis 1 (0.1%).

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Conclusion: The most common ophthalmic problems in this study which were dependent on gender and occupation include Presbyopia, Refractive Error, Cataract and Allergic Conjunctivitis. More females and farmers were seen in this study. The problems identified can be easily managed if well-equipped health facilities are provided by the government.

Keywords: Ophthalmic problems; adults; rural communities; Rivers State.

1. INTRODUCTION

Ophthalmic problems are global and constitute serious public health challenges especially among older adults [1]. According to Bethesda, the prevalence of blindness and visual impairment increases with age among all racial and ethnic groups, especially among people older than 75 years of age [2].

The World Health Organization estimated number of people with visual impairment worldwide is 285million, while 39 million are blind and 246 have low vision [3]. About 81% of all people who are blind or have moderate to severe visual impairment are aged 50 years and above, indicating that with an increasing population of older people, more people will be at risk of visual impairment due to chronic eye diseases [4]. About 90% of the world's visually impaired live in low income settings and 80% of all visual impairment can be prevented or cured and over 90% of the world blind is in Sub Saharan African and Asia and especially among the persons in the rural communities [5]. Lawallen and Courtright reported the major causes of blindness in Africa as cataract, trachoma and glaucoma [6] Blindness prevalence rates vary globally but evidence based study suggests that approximately 1% of Africans are blind and majority of the blindness in that region are preventable or curable [6].

The Nigeria National blindness and visual impairment survey that was carried out in the year 2009 [7] showed that the major causes of blindness and visual impairment among adults in Nigeria were uncorrected refractive error, cataract and glaucoma. The survey also stated that increasing age was associated with increasing prevalence of all blinding conditions. According to the survey, 4.25 million adults aged 40 years and above have moderate to severe visual impairment or blindness. The prevalence of blindness in Nigeria is 0.78% attributed that to poor technology, minimal eye care services, malnutrition and poverty [7,8].

The commonest causes of blindness worldwide are cataract, glaucoma, trachoma, onchocerciasis and refractive errors [9]. Most of these blinding diseases are preventable and easily treatable but the majority of the victims in Africa and Asia are either poor, ignorant, or do not have eye -care services available to them [10]. Etche indigenes are predominantly farmers and farmers according to Momoh and Abadom are usually exposed to certain occupational hazards that predispose them to ocular diseases and injuries [11]. Visual impairment obviously compromises people's quality of life because it makes them unable to read, watch television, drive a car, operate machines or attend to themselves. Most times, it isolates older people from friends and family which may lead to depression.

Ejimadu and Pedro-Egbe [12] in their study on prevalence and causes of Blindness in Ikwerre Local Government Area of Rivers State revealed that the common causes of blindness in that community which were avoidable included Cataract, Glaucoma, Optic Atrophy, Corneal Opacity, Phthisis Bulbi, Absent Globe, Chorioretinitis and Maculopathy. They recommended that more emphasis on eye care should focus on prevention through public enlightenment and regular eye screening with participation of the government. They were also the prohibition of harmful traditional practices, discouragement of self-medication, provision of basic eye care delivery and increasing cataract surgery will reduce prevalence of blindness.

Our study seeks to determine the ophthalmic problems and their possible causes among adults in rural communities in Rivers State.

2. METHODOLOGY

A multistage population based random sampling study of adults in five clans of Etche Local Government Area of Rivers State.

Medical history was recorded and com-prehensive ocular examination done on each

subject who was at least 21 years after obtaining consent from them.

Instruments used during the research were Pen torch for examination of the external structures of the eyes, Keeler ophthalmoscopes for fundus examination, Snellen's charts both literate or illiterate charts for visual acuity assessment, Reichert AT 555 Auto non-contact tonometer for measurement of the intra-ocular pressure and trial lens cases used for subjective refraction.

Data taken were analysed using statistical software called Minitab 11 where the raw data obtained were classified into different groups and categories based on their common characteristics. The data were logically represented, where raw data were summarized and displayed in a compact form that is statistical tables.

An ethical approval to carry out the study was obtained from Rivers State Ministry of Health through the office of Planning, Research and Statistics. Afterwards a second approval was obtained from Rivers State Ethical Committee following due applications.

Inclusion criteria was adults in Etche local Government Area who were 21 years and above and was randomly selected at the sampling stage. It also involved those that signed the consent forms and were ready to participate.

3. RESULTS

Table 1 shows the demographical characteristics of the respondents. Out of the 600 subjects seen in this study 276 (46.0%) were males and 324 (54.0%) were females. Their ages ranged from 21 years and above. The highest age group was 41-50 with 174 (29.0%) subjects, followed by age group of 31-40 years 161 (26.8%) while the smallest age group was >60 years with frequency of 38 (6.3%).

The second segment of the table shows the occupational distribution of the subjects. Majority were farmers; 276 (46.0%) while others were civil servants 152 (25.3%), and traders 102 (17.0%), few students 46 (7.6%), Retirees 15 (2.5%) and unemployed 9 (1.5%).

Table 2 summarizes the distribution of ophthalmic conditions of subjects. The most predominant oculo-visual condition was presbyopia (28.0%), followed by refractive error (23.1%) and cataract (11.8%). The least common conditions were chalazion (0.4%), diabetic retinopathy (0.3%) and ptosis (0.1%).

Table 3 shows the distribution of common ophthalmic problems with respect to occupation. Farmers (41.3%) presented more with cataract than other occupations. Civil Servants had more errors refractive (51.8%) than other groups. The highest prevalence of presbyopia occurred amongst Civil Servants (49.0%).

Table 4 shows gender related ocular conditions seen in the subjects. Females presented more with allergic conjunctivitis (7.1%), pterygium (4.1%) and cataract (6.0%) than males. While the male presented more with refractive error (11.9%) and presbyopia (14.8%) than females.

Table 1. Demographic characteristics of the respondents

Age (Years)	Male (%)	Female (%)	Frequency (%)
21-30	57 (9.5)	60 (10.0)	117 (19.5)
31-40	79 (13.1)	82 (13.6)	161 (26.8)
41-50	72 (12.0)	102 (17.0)	174 (29.0)
51-60	46 (7.6)	64 (10.6)	110 (18.3)
>60	22 (3.6)	16 (2.6)	38 (6.3)
TOTAL	276 (46.0)	324 (54.0)	600 (100)
Occupation			
Civil Servants	81 (13.5)	71 (11.8)	152 (25.3)
Traders	52 (8.6)	50 (8.3)	102 (17.0)
Farmers	115 (19.1)	161 (26.8)	276 (46.0)
Students	17 (2.8)	29 (4.8)	46 (7.6)
Retirees	9 (1.5)	6 (1.0)	15 (2.5)
Unemployed	2 (0.3)	7 (1.1)	9 (1.5)
Total	276 (46.0)	324(54.0)	600(100)

Table 2. Distribution of oculo-visual pattern of subjects

Oculo/Visual Status	Frequency (N)	(%)
Presbyopia	298	28.0
Refractive Error	247	23.1
Cataract	126	11.8
Allergic Conjunctivitis	106	9.9
Glaucoma	94	8.8
Pterygium	86	8.0
Bacterial Conjunctivitis	35	3.3
Corneal Opacity	32	3.0
Good Vision	26	2.4
Blindness	8	0.8
Chalazion	4	0.4
Diabetic Retinopathy	3	0.3
Ptosis	1	0.1
Total	**1066**	**100**

Table 3. Distribution of common oculo-visual problems with respect to occupation

Occupation	Oculo-Visual conditions (NO (%))				
	Cataract	Ref error	Presbyopia	Aller. CONJ.	Pterygium
Civil servant	19 (15.1%)	128(51.8%)	146(49.0%)	15(14.2%)	10(11.6%)
Traders	45 (35.7%)	22(8.9%)	50(16.8%)	18(17.0%)	16(18.6%)
Farmers	52 (41.3%)	57 (23.1%)	69(23.2%)	55(51.9%)	53(61.6%)
Students	0 (0%)	31(12.6%)	10(3.3%)	12(11.3%)	3(3.5%)
Retirees	8 (6.3%)	6(2.4%)	15(5.0%)	3(2.8%)	3(3.5%)
Unemployed	2 (1.6%)	3(1.2%)	8(2.7%)	3(2.8%)	1(1.2%)
Total	126(100%)	247 (100%)	298(100%)	106(100%)	86(100%)

Table 4. Gender –related ocular conditions in subjects

Ocular conditions	Gender no (%) prevalence		
	Male	Female	Total
Presbyopia	158 (14.8%)	140 (13.1%)	298 (28.0%)
Refractive error	127 (11.9%)	120 (11.3%)	247 (23.1%)
Cataract	62 (5.8%)	64 (6.0%)	126 (11.8%)
Allerg. conj	30 (2.8%)	76 (7.1%)	106 (9.9%)
Glaucoma	46 (4.3%)	48 (4.5%)	94 (8.8%)
Pterygium	42 (3.9%)	44 (4.1%)	86 (8.0%)
Bact. conj	17 (1.6 %)	18 (1.7%)	35 (3.3%)
Corneal Opacity	21 (2.0%)	11 (1.0%)	32 (3.0%)
Good Vision	14 (1.3%)	12 (1.1 %)	26 (2.4%)
Blindness	5 (0.5%)	3 (0.3%)	8 (0.8%)
Chalazion	3 (0.3%)	1 (0.1%)	4 (0.4 %)
Diabetic Retinopathy	3 (0.3%)	0 (0%)	3 (0.3%)
Ptosis	0 (0%)	1 (0.1%)	1 (0.1%)
Total	**528 (49.5%)**	**538 (50.5%)**	**1066 (100%)**

4. DISCUSSION

The ophthalmic problems found among adults in Etche LGA were Presbyopia 298 (28.0%), Refractive Error 247 (23.1%), Cataract 126 (11.8%), Allergic Conjunctivitis 106 (9.9%), Glaucoma 94 (8.8%), Pterygium 86 (8.1%), Bacterial Conjunctivitis 35 (3.3%), Corneal Opacity 3 (3.0),Chalazion 4 (0.4%), Diabetic Retinopathy 3 (0.3%) and Ptosis 1 (0.1%). Twenty six (2.4%) subjects had good vision whileB8 (0.8%) were blind. These findings are similar to studies by WHO[4] that listed the common ocular diseases worldwide as cataract,

glaucoma, conjunctivitis, corneal ulcers, uveitis, refractive errors, pterygium, trachoma, onchocerciasis, xerophthalmia and ocular malignancies. This is also similar to the study by Edema and Okojiein a rural area in Ethiopia and Benin City were conjunctivitis, cataract, presbyopia, refractive errors, glaucoma and blepharitis [13].

Presbyopia was the most common type of ophthalmic problems found in our study, accounting for 28.0% of all cases seen. This is similar to findings by Nwosu [14].

The second most prevalent ophthalmic problem is Refractive Error 247(23.1%). According to WHO, [4] uncorrected refractive errors are the most common cause of visual impairment accounting for 43% of cases and representing an important causes of blindness [15]. The prevalence of refractive errors in this study was higher in males than females which may be linked to the fact that majority of the males are educated, in school or are civil servants which may be a contributory factor to the diagnosis of refractive error or presbyopia. This was in agreement with a study which stated that the prevalence of refractive errors vary with race, age, gender and geographical region and that environmental factors like level of education, occupation, near work load, time of outdoors as a child are also associated with aetiology of refractive error [16]. Uncorrected refractive error was the main cause of Low vision and second commonest cause of blindness in a study which also revealed that uncorrected refractive error can hamper performance at school, reduce employability and productivity, and generally impair quality of life [15].

Uncorrected refractive error which was the commonest cause of ophthalmic problems in this study has been reported as the commonest cause of ocular morbidity in another study [17]. It was the commonest cause of mild and moderate visual impairment in the Nigerian national blindness and visual impairment survey accounting for 77.9% and 57.1% respectively [7,18].

We recorded cataract as the third most common type of ophthalmic problem accounting for 11.8% of all cases which is similar to that of 16.7% reported from a study in Benin, Nigeria [13]. In a study on causes of visual impairment and blindness in Kwara State of Nigeria [19], Cataract was responsible for more than half the cases of ocular morbidity and was the commonest cause of visual disability. The high rate of cataract cases in the study is basically unknown but may be attributed to their constant exposure to ultraviolet rays, firewood smoke, trauma, age group of the study area and poorly controlled diabetes since a lot of the cataract patients reported to be diabetic.

The fourth commonest ocular problem reported in this study was Allergic Conjunctivitis with an incidence of 9.9%. This is similar to other studies that reported Allergic Conjunctivitis as the third leading cause of ocular morbidity with prevalence of less than 20% [14,20].

The high occurrence of allergic conjunctivitis in this study may be associated with higher pollen content of the farming environment since they are basically farmers, this is related to a study by Momoh and Abadon [11] where high rate of allergic conjunctivitis found in farming environment was linked to higher pollen content of farming environment and also they postulated that allergic conjunctivitis may be prevalent in a dusty environment.

Glaucoma is one of the common ocular diseases found in this study accounting for 8.8%. This is similar to a study where Glaucoma was seen in 11.9% of patients [17] and it has been reported to be the second most common cause of blindness or visual impairment worldwide [5]. It is the leading cause of irreversible blindness in West Africa and it has been estimated that 20% of people older than age 40 in West Africa may be at risk from the disease [17].

Pterygium is another prevalent ocular disease in this population with an incidence of 8.1%. This is consistent with Momoh and Abadom [11] where incidence of pterygium was common among farmers but in contrast in another study [20] that showed Pterygium as the second common eye disorder among the welders in their study with a prevalence of 17.5

Corneal Opacity accounted for 3.0% in this study. This may be attributed to the fact that the majority of the subjects are predominantly farmers and most of the subjects reported applying traditional medicine in the eyes. Majority of the corneal opacity occurred as a result of trauma and traditional medical practices. About 321(68.0%) respondents have never have any

form of ocular trauma while 151(32.0%) respondents reported of having at least one episode of ocular trauma but only 32(3.0%) subjects had corneal Opacity, this may have connection with the majority indigene of the study area being predominately farmers. This is in line with the global estimates that showed that there are about total of 1.6 million ocular trauma cases of blindness and about 2.3 million ocular trauma from agricultural labour, also victims have less access to eye care services than their urban counterparts, it is likely that rural people may have a greater burden of vision impairment or blindness caused by trauma [14].

In contrast with those of Wokoma and Ichenwo [10] in rural community in Rivers State, Nigeria where a lower occurrence of corneal opacities was reported (0.9%). The subjects being basically farmers had a high occurrence of trauma-related visual problems (corneal opacity) which may be attributed to the fact that they came directly in contact with occupational hazards such as dust, projectiles of organic agricultural materials such as twigs and seeds and falling objects.

Surprisingly bacterial conjunctivitis (3.3%) showed to be an uncommon ocular problem in this study. This is similar to the study by Momoh and Abadom[11]with incidence of 1.3%. Other rare ocular diseases found in this study include chalazion 0.4%, diabetic retinopathy 0.3%, ptosis 0.1% and blindness 0.8%.

The distribution of blindness in this study showed that six subjects (75.0%) had mono-ocular blindness while two subjects (25.0%) were bilaterally blind. The three causes of blindness in the subjects were Glaucoma (25%), Cataract (50%) and Corneal Opacity / Trauma (25%). The incidence of blindness (0.8%) may suggest poor or no availability of eye care services in the locality.

This study revealed significant relationship between the subjects' occupations and their common oculo-visual problems. The majority of the subjects were mainly farmers 276 (46.0%), civil servants 152(25.3%) and traders 102 (17.0%). Civil Servants 128 (51.8%) and Students 31(12.6%) have the highest prevalence on Refractive error/Presbyopia respectively. This may be attributed to their visual task being higher than those in other occupation. This is similar to a study by Njepuome, Onyebuchi, and Igbe [21] that showed the pattern of oculo-visual problems among public / civil servants in Abuja as follows refractive error 88.7%, Cataract 1.1%, Pterygium 2.3%, Disc cupping 3.4%, Chalazion 1.1% and Conjunctivitis 3.4% where the ages of the subjects ranged from 25 years to 60 years and the study showed refractive error as a leading cause of visual impairment among civil servants in Abuja. Farmers were found to have the highest prevalence of Allergic Conjunctivitis (51.9%) and Pterygium (61.6%). This may also be attributed to the nature of their occupation that is basically outdoor activities that expose them to dust and ultra violet rays.

More so, the common ocular diseases prevalent among adults in our study are dependent on gender. The adult females have the highest prevalence on Cataract 64 (50.8%), Allergic Conjunctivitis 76 (71.7%) and pterygium 44 (51.2%) while Refractive Error 127 (51.4%) /Presbyopia 158 (53.0%) are more prevalent in males. This may be associated to the fact that majority of their females are more exposed to farm related activities while the males mostly do official works hence, have higher near visual tasks. This is in contrast to similar studies in the same environment and in southern Nigeria where there were a higher proportion of males to females and the male had a higher prevalence of Pterygium and allergic conjunctivitis in the study by Edema and Okojie [13]. But this finding is similar to a study by Nwosu [14] on rural young adults in Anambra state whose predominant occupation was farming, in which there were more females than males in the study and they had higher prevalence of allergic conjunctivitis than males. Nwosu (1998) postulated that it was probably due to the rural- urban drift of more males than females. It is also similar to a study by Wokoma [10] in a rural community in Rivers State where the proportion of female participants was higher than that of male and they also presented with higher rate of allergic conjunctivitis.

The absence of any form of eye care service in this community, no doubts contributed to the relatively high prevalence of visual impairment. Eye diseases that would have been detected earlier and intervention given, continue to persist and deteriorate, eventually progressing to blindness. None of the General hospitals in our study area has any form of eye service. The available state owned hospitals that have eye sections are at Port Harcourt, Okrika, Ahoada

and Bori. Unfortunately, the distance from our study area to these facilities, the logistics and costs involved hinder majority from accessing quality eye services. The greater majority remain in the community with their problem until they may become blind. The observation in this rural community is not peculiar to Etche as similar observations have been reported in other rural communities in the Nigeria [10,22]. The causes of blindness in this study are preventable and treatable if detected early.

5. CONCLUSION

The most common ophthalmic problems among adults, who are predominantly farmers, in this study are Presbyopia, Refractive Error, Cataract, Allergic Conjunctivitis and Pterygium and they accounted for more than two-third of the ocular problems and are dependent on gender and occupation.

The lack of regular health education, inaccessibility of health facilities and the nature of their occupation may be a contributing factor to the ocular diseases found in this study. The state Government should therefore, make eye care services available.

ETHICAL APPROVAL AND CONSENT

An ethical approval to carry out the study was obtained from Rivers State Ministry of Health through the office of Planning, Research and Statistics. Afterwards a second approval was obtained from Rivers State Ethical Committee following due applications. Inclusion criteria was adults in Etche local Government Area who were 21 years and above and was randomly selected at the sampling stage. It also involved those that signed the consent forms and were ready to participate.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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