

Ocular morbidity survey in an ophthalmically underserved rural area of Nigeria.

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Summary

This paper describes in some detail a prevalence of blindness study conducted in a rural area of South-Western Nigeria, which is served by a peripheral eye clinic. By a stratified random cluster-sampling procedure, 1975 people in ten villages were selected for ocular examination. Community prevalence rate of ocular morbidity was 3.3% with the highest prevalence in the 51-60 years age group. There was a male-female ratio of 4:3 and the prevalence of ocular morbidity in the 31-50 years age group was most significant, but people in this age group seldom reported at the peripheral eye clinic serving the survey areas. Age-related macular degeneration was found to be prevalent in the community, while few cases were reported at the peripheral eye centre. The information gathered in the survey is being used to plan and improve eye care services from the peripheral eye clinic. Case finding in persons aged 31-50 years and those at risk for age-related macular degeneration has been recommended as part of the programme of the peripheral eye clinic.

Keywords: *Community eye health, rural, blindness prevalence.*

Résumé

Cette publication décrit dans un certain détail la prevalence des aveugles dans une étude conduite dans un milieu rural du sud-ouest du Nigeria, qui a une clinique ophtamologique peripherique. En utilisant la procedure regroupement stratifie et aux hasard des specimens, 1975 personnes ont été sélectionnés dans 100 villages pour des examens oculaires. Le taux de morbidité oculaire dans les communautés a été de 3.3%. Il ya eu un ratio homme-femme de 4:3, et la prevalence de la morbidite oculaire a été plus forte dans le groupe des personnes age de 51- à 60 ans. La prevalence de la morbidite oculaire a été aussi significative dans les tranches d'ages de 31 à 50 ans mais les gens appartenant à ce groupe d'age ont rarement été rapporté à la clinique oculaire peripherique qui a servie de centre d'investigation. Les informations recueillies dans cette enquete sont entrain d'etre utilisé afin de planifier et améliorer les services des soins des yeux à partir des cliniques oculaires peripheriques. Les cas trouvés chez les personnes agés de 31 à 50 ans et ceux des ages à risque associés à la degeneration maculaire a été recommandé comme devant faire partit des programmes d'action dans les cliniques oculaire peripherique.

Introduction

An earlier assessment of the pattern of eye disorders at a rural eye-care centre (RECC) at Saki (Ifedapo Local Government Area), at the end of the first year, showed that ophthalmic services need to be made available to many people in the locale [1]. However, for careful planning and

successful implementation of expansion, appropriate data is required. The information obtained from the clinic records could be useful, but such hospital-based data would be inadequate because they offer skewed and regionalized information and represent experience within a very limited time period [2,3]. Information from the parent clinic at the University College Hospital in Ibadan covers a much longer time span, but is similarly skewed [4]. In addition, information from hospitals which serve largely urban populations is not necessarily applicable in rural hospitals, as the prevalence of blindness may be higher in rural than in urban communities [5] or vice versa.

It has been observed that, in rural Africa, the number of people served by a given number of static eye-care facilities, and the percentage population with a given condition who actually use the services, are usually not known because survey results are seldom published [3]. Lack of trained personnel and financial limitations have also been described as limiting factors in estimating the prevalence of blindness in the third world [6]. However, in Nigeria, Sudan and parts of South Africa, results of surveys conducted on subsections of the population have been published [2,7,8]. In Kenya and the Gambia, countryside community-based ocular disease surveys have also been conducted to provide information for planning and evaluation of eye-care services and national blindness control programme [5,9]. Such community-based surveys provide more reliable and representative information for health planning than hospital-based surveys.

Saki is the headquarters of Ifedapo Local Government (LGA). In the first year of operation at the RECC 85.5% of patients came from towns and villages within the LGA. To provide baseline information to be used in the planning, implementation and future evaluation of eye-care services and blindness control programme from the RECC, a decision was made to assess the prevalence and causes of ocular morbidity in the LGA.

This communication reports the findings of the survey which was conducted in March 1995 to determine the prevalence and causes of ocular disease in the Ifedapo LGA.

Materials and methods

Study Population

The total population of the LGA is 230,713. This includes 46,143 (20%) children under the age of five years, and 50,757 (22%) women of childbearing age [10]. They live in about 75 villages and 8 towns located mainly along the A1 trunk road running North from Iseyin, and along the East-West road running from Ago-Are into Kwara State. Almost 50% of the land area of the LGA is sparsely inhabited forest reserve (Fig. 1)

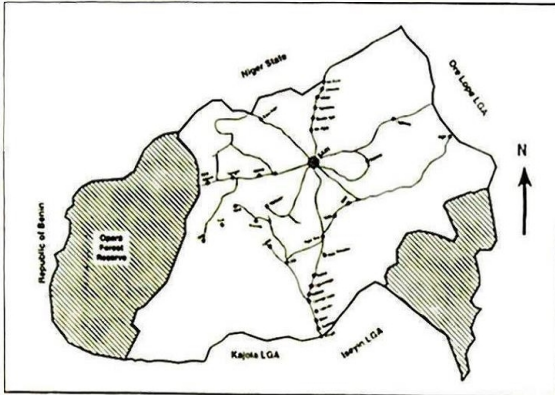


Figure 1: Udo Local Government Area

Fig. 1

Sample size

Using the statacalc mode of EPINFO, the sample size was calculated on the basis of an expected frequency of 2% ocular morbidity rate and 95% confidence interval. This estimated an approximate sample size of 2073 subjects (STACALC does not take clustering into consideration). To allow for the effects of clustering, 20% more persons were to be examined, thus bring the total sample size to 2488.

Sample unit selection

A stratified random cluster sampling procedure was used. Ten settlements were selected and stratified by population. It was impossible to obtain a recent census list or voter's registration list to determine accurate settlement size prior to the survey, but the local health officers provided a fair idea of the population of each settlement, using the pilot study settlement as a reference point.

Ethical considerations

Approval was obtained from the State Ministry of Health and from the Local Government office. The permission of each community head was obtained before the community was included in the study, and dates were agreed by the villagers to stay in and wait for the survey team. In each village, almost the entire population turned out, but two of the villages selected refused to take part in the study. In one, the village head insisted that the survey could only take place after the Ramadan fast, and in the other the village head, who himself had advanced glaucoma, seemed to have no clear reason. Both village heads were counselled on the importance of response to overtures for medical assistance to the people.

A pilot survey was performed in one village two weeks before the survey. Health officers from the LGA office had visited the selected village and supposedly discussed the planned project with the village heads. On arrival, the survey teams found that few families had stayed in to see the team. Most of the people waiting were heads of families. It transpired that the Health Unit staff had not told villagers the true reason for the request to stay at home. As a result, a mapper was employed for the survey. He travelled to the villages with the health office staff ahead of the survey teams to ensure that the purpose of the visit was correctly presented and that the proposed dates were agreeable to the communities concerned.

Definitions

An eye was described as having LOW VISION if the visual acuity was less than 6/18 (but equal to or better than 3/60) while wearing the best correction. One having visual acuity less than 3/60 while wearing the best correction was described as BLIND.

Data collection

The survey teams comprised two groups A and B, each including:

- 2 drivers who drove the vehicle and assisted in measurement of visual acuity
- 3 health officers who completed the household rosters
- 1 health supervisor who measured visual acuity
- 1 general nurse who measured visual acuity
- 1 ophthalmologist who performed eye examinations, trained the health officers to fill forms, and other workers to perform visual acuity assessment.
- 1 supervising ophthalmologist who coordinated the activities of the teams, made administrative contacts and also performed eye examination.

The Alaga-Sekona road runs from South to North, through Saki, separating the LGA into East and West zone (Fig.1). Survey team A worked in the West zone and team B in the East zone. On the appointed dates, each team arrived at the villages at mid-morning. They were presented to the village head by the health supervisors, and the villagers were asked to gather at a predetermined open space. They were registered in families using the WHO household roster, then the visual acuity of each person's eye was tested using 6/18 optotypes first, then 6/60 and 3/60 as required. Each person had pentorch ocular examination and funduscopy was also performed when indicated. Ocular findings were recorded on the WHO Eye examination record. Any medical intervention was taken immediately if possible, otherwise the person was referred to the RECC.

Results

The total population of the 10 selected settlements was 2993 by the household census, but 1975 persons were present to be examined. Coverage rate in each of the communities is illustrated in Table 1. The overall coverage rate was 66%, but if household members who have migrated to urban centres are excluded, the coverage rate becomes 91.6%.

Table 1: Coverage rate per community

Cluster	Exam status					Total	% coverage	
	1	2	3	4	5		A	B
Sani-sala	44	0	27	0	6	77	57.14	88.0
Onibongbo	217	0	31	8	5	261	83.14	94.3
Idera-oja	272	0	169	0	0	441	61.68	100.0
Tenleke	140	0	256	33	12	441	31.74	75.7
Owo	247	0	83	55	48	433	57.04	70.6
Aba-mongoro	125	0	62	9	4	200	62.50	90.5
Agbonle	206	0	40	0	0	246	83.74	100.0
Layi papa	204	0	39	0	0	243	83.94	100.0
Aba-sipe	220	1	83	1	1	306	71.89	98.6
Ago-Amodu	298	1	41	1	1	342	87.13	99.0
	1973	2	831	108	77	2993	65.92	91.67

Exam status key

- 1 - present
- 2 - refused
- 3 - absent during
- 4 - unable to attend
- 5 - temporarily absent

% Coverage

- A - routine
- B - adjusted for urban migration effect

The male: female ratio in the community was 1:1. The age range was 0 to 88 years and the mean was 23.70 (SD 18.63) years. The data estimated community prevalence of ocular morbidity to be 3.3% as the number of people in the study with ocular disease was 98, of whom 56 were males and 42 females (ratio 4:3). The age distribution of persons with eye disease in the community is shown in Table 2.

Table 2: Age distribution of community ocular morbidity vs age of persons visiting the RECC in the first year

Age in years	Number	Percentage	**RECC percentage
0 – 10	13	12.74%	12.0%
11 – 20	5	4.90%	16.5%
21 – 30	6	5.88%	14.5%
31 – 40	17	16.66%	7.0%
41 – 50	18	17.64%	7.0%
51 – 60	22	21.56%	19%
61 – 70	16	15.68%	19.5%
above 70	5	4.90%	4.5%
Total	102	100.0%	100.0%

*figures from RECC end of year assessment.

The mean age of persons with eye disease in the community was 43.92 years. This was significantly higher than the mean age of the general population (P 0.002). The prevalence of ocular morbidity peaked in the 51-60 year age group. In all, 177 diagnoses of ocular diseases were made (Table 3).

Table 3: Pattern of ocular morbidity

Diagnosis	Number	Frequency	**Hospital prevalence
Corneal pterygium	40	22.60%	6.45%
Vernal conjunctivitis	26	14.69%	18.45%
Cataracts	26	14.69%	28.22%
Corneal opacities	15	8.47%	1.61%
*SMD	13	7.34%	1.61%
Refractive error	11	6.21%	20.96%
Glaucoma	8	4.52%	4.03%
Phthisis buli	4	2.26%	3.22%
Squint	3	1.69%	1.61%
Corneal FB	3	1.69%	1.61%
Others	29	15.84%	12.24%
Total	177	100.00%	100.00%

*SMD – senile macular degeneration

**Figures taken from RECC end of year assessment.

The community prevalence rate of blindness was 0.15%, but 58% of this is treatable. As much as 13% could have been avoided if good ophthalmic services had been available. Thirteen percent was irreversible. In 13% of the cases of aetiology of blindness was unknown.

Discussion

The overall survey coverage rate of 66% is low if the urban migration group (27.8%) of the community is not taken into consideration. When adjusted for migration effect, the overall coverage rate rises to 91.6%. This is comparable with the figure of 94% obtained in the Gambia [5] where an urban migration effect is not described. Rural-urban migration in Nigeria has been attributed to structural change in the economy with resultant persistent decline in rural development in both human and physical terms [11]. The male-female ratio of persons with eye disease is not

significantly different from the community male-female ratio, but the mean age of the group with eye disease is significantly higher. This is to be expected since a good number of eye diseases are associated with aging [12].

The highest frequency of ocular morbidity in the community survey was in the 51 to 60 years age group. This is similar to the finding among patients reporting at the RECC. In a 1973 study in UCH, the largest number of patients were aged 60-69 years [4]. This difference between an urban-based and rural-based centre may be fortuitous especially because birth dates have been accurately recorded in most Nigerian communities only within the last three decades. In the community survey, the lowest ocular morbidity was found in persons 11 to 30 years of age. In contrast, RECC records show that persons aged 31 to 50 years report at the clinic least frequently. In the field survey, this age group were found to have ocular morbidity only a little lower than the 51 to 60 age group. The disparity in reporting may be a result of the fact that ages 31 to 50 are highly productive age-groups in the farming community, or it may be that at this age the afflicted persons are seeking other means of treatment while the older age group present at the RECC as a last resort.

The most common problem recorded during the first year of service of the RECC was cataracts and cataract-related diseases (28.22% of the total number of patients). This is the usual finding in hospital-based surveys [13,14]. In contrast, pterygium was the ocular disease most often observed in the community (22.60% of abnormal eyes). Only pterygia encroaching into cornea was recorded, but the community prevalence was about 1.5 times that of cataracts. The frequency of cataracts in the community (14.69%) was much lower than in the hospital report. This difference is a result of the degree of visual impairment caused by cataract compared with pterygium.

Vernal conjunctivitis showed similar prevalence in the hospital study (18.45%) and the community survey (14.6%). In retrospect, we realised that our clinical diagnosis of vernal conjunctivitis in the community may be questionable. We observed a high frequency of eye discharge among the school children in most of the communities, and trachoma is a differential diagnosis. However, the corneal opacities seen in the field were said to be due either to trauma, corneal foreign bodies, or residual of smallpox in childhood. Trichiasis and entropion were rarely seen. Corneal foreign bodies were removed from three eyes during the five-day survey, but all were located in the corneal epithelium. No clinical evidence of vitamin A deficiency was seen in this rural farming community. The frequency of refractive errors reported in the community (6.21%) was much lower than at the hospital (20.96%). No effort was made to diagnose presbyopia in the community survey and this may account for the underestimation of refractive errors in the community. The frequency of glaucoma could not be specifically screened in the community survey due to field equipment limitations. If screening had been done, there should have been a larger number of glaucoma cases reported [15]. A comparison of a hospital-and-population-based survey in Northern Transvaal showed a significant difference in the frequency of glaucoma – it was up to three times more prevalent in the hospital population [2]. The authors also attributed this to a difference in glaucoma diagnostic methodology in the two studies.

SMD has been reported as unusual in hospital studies in blacks [16,4]. In this study it was reported more frequently in the community (7.34%) than the hospital

figures suggested (1.61%). SMD often occurs together with cataracts and dense cataracts may occlude it from view hence both figures may in fact be underestimations. However, since more people with dense cataracts report in hospital, the lower hospital figure may indicate higher resultant under-diagnosis in hospital. It is also possible that the acceptance of this disease as a normal ageing process may account for the comparatively higher community prevalence.

The 3.3% estimated community prevalence of ocular morbidity translates to 7,613 persons needing ophthalmic care in this LGA alone. The community prevalence of low-vision was 0.56% and blindness prevalence rate was 0.15%. About 58% of blindness was described as treatable. This translates to 2,445 people blind in at least one eye in this LGA alone, of whom 1,736 have potentially curable disease. While these numbers are important, even one blind patient is enough reason to improve eye-care services at the RECC to ensure that blindness can be treated.

The survey served as a form of advertisement of services at the RECC and provided opportunities for health education and to discourage philosophical acceptance of eye disease especially in the elderly. It showed that pterygium is more prevalent in the community than can be predicted by the hospital figures. It also showed that glaucoma is a significant problem in the community and a screening exercise would be worthwhile. A pilot-screening exercise with laboratory investigation for trachoma must also be performed. Community health extension workers will have to be taught to remove corneal foreign bodies, and to specifically seek and screen persons in the 31 to 50 year age group for eye disease in their community visits.

It is difficult to make accurate projections regarding future prevalence of ocular morbidity because of unknown variables in population growth and life expectancy, but the statistics obtained from the survey are being used to project specific requirements for the RECC. Together with the results of Focus Group Discussions on socio-cultural practices in eye health in the same community [17], these results are being used to develop relevant services for the people of the LGA and environs.

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