

Prevalence and elimination of cataract in a rural setting in Yemen

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انتشار الساد (الكترأكت) والتخلص منه في محيط ريفي باليمن
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خلاصة : أجريت دراسة ارتيادية راصدة في المدة من 17 إلى 30 آذار / مارس 1996 في ثلاثة مواقع باليمن هي شبوة والمكلا والمحويت . وتضمن مجتمع الدراسة 5341 شخصا تقدموا باختيارهم إلى المستشفيات الحكومية المختارة للعناية بعيونهم . وسعياً إلى تعيين معدل انتشار أمراض العيون المختلفة ، وخاصة حالات الساد (الكترأكت) في مجتمع الدراسة ، استخدم فريق الباحثين استمارة لدراسة الحالات من أجل جمع البيانات الضرورية . وقام الفريق بفحص المرضى وإجراء الجراحات اللازمة . وفي هذه المقالة تحليل للنتائج ، ومناقشة لقيود الدراسة ، وما تم التوصل إليه من توصيات .

ABSTRACT A pilot observational study was conducted from 17 to 30 March 1996 in three locations in Yemen, namely Shabwa, Mukalla and Mahweet. The study population included 5341 people who came voluntarily to selected government hospitals for eye care. To determine the prevalence of the different eye diseases, especially cataract, among the study population, the team applied a case study form to collect the necessary data. The team examined patients and performed any surgery required. The findings are analysed, the limitations of the study discussed and recommendations formulated.

Prévalence et élimination de la cataracte en milieu rural au Yémen

RESUME Une étude d'observation pilote a été réalisée au Yémen du 17 au 30 mars 1996 dans trois localités, à savoir Shabwa, Mukala et Mahweet. La population étudiée comprenait 5341 personnes qui se sont présentées volontairement dans les hôpitaux gouvernementaux sélectionnés pour recevoir des soins ophtalmologiques. Afin de déterminer la prévalence des différentes affections oculaires et en particulier des cataractes dans la population étudiée, l'équipe a utilisé un formulaire d'étude de cas pour recueillir les données nécessaires. Les membres de l'équipe ont examiné les patients et ont pratiqué les interventions chirurgicales requises. Les résultats ont été analysés, les limites de cette étude ont été discutées et des recommandations ont été formulées.

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Introduction

In collaboration with the Ministry of Health in Yemen, IMPACT/EMR launched a national programme for the prevention of blindness due to cataract in 1995. The elimination of the backlog of cataract in Yemen started in three locations, namely the cities of Shabwa, Mukalla and Mahweet. The objectives of the programme are:

- To eliminate the backlog of cataract and at the same time address new cases.
- To increase the number of ophthalmologists in Yemen by training local Yemeni doctors. For this purpose, a 12-month diploma course in ophthalmology has been initiated in collaboration with the World Health Organization (WHO). Fifteen doctors were enrolled in the 1996–1997 course and priority in selection was given to those from rural areas.
- To bring ophthalmology care to remote areas by stipulating that Yemeni ophthalmologists trained through the programme serve a minimum of two years in remote villages where access to care is limited.

Methodology

A pilot observational study was launched in March 1996 in coordination with Al-Noor Caravan of Al-Basar International Foundation, which was established to develop, encourage and fund projects and programmes aimed at diagnosing, preventing and treating diseases of the visual system and reducing avoidable blindness. The Foundation arranged to send a team of ophthalmologists and other doctors to Yemen from 17 to 30 March 1996 in order to visit the three selected locations, examine the patients and perform the needed operations in the government hospitals in those areas.

Objectives of the study

- To determine the prevalence of the different eye diseases, especially cataract, among the study population.
- To document the progress of the project in order to help in its evaluation and cost-effectiveness.
- To help identify shortfalls/problems faced by the team so that they can be avoided in future endeavours.

Recruitment of patients

This was coordinated with the Director of Health, the Governor, the hospital manager and the representative of the charitable Ihsan Society in each of the targeted cities. The arrival of the team was announced in these cities and all persons with eye problems and/or those who suspected any eye problem were invited to attend the government hospital for diagnosis and treatment as needed. The duration of recruitment in each city did not exceed two days.

Materials

The IMPACT/EMR project coordinator accompanied the team and, with the help of interviewers recruited from the local community of each city, arranged for the completion of a case study form for each patient seen by the team.

The case study form collected the following information:

- 1) demographic information
- 2) general health record
- 3) basic eye examination
- 4) previous eye surgery
- 5) recommended action
- 6) surgery information

Due to the large number of patients seen by the physicians, the interviewers were divided into three groups in order to complete the case study forms. The first group was

responsible for collecting the demographic and general information about the patients before they were examined by the doctors. The second group, who accompanied the doctors during their examination of the patients, collected the medical information as advised by the doctors. The third group collected the surgery information from the doctors' medical cards.

Study population

In all, 5341 people came voluntarily to the selected government hospitals for eye diagnosis and treatment during the stay of the Al-Noor Caravan of Al-Basar International Foundation in the three cities.

Limitations of the study

- The people seen by the team were those who were health aware and/or those suffering from eye problems. All of the patients came forward voluntarily and wanted to be diagnosed and if necessary treated by the ophthalmologists, especially as the service was provided free of charge. There was no way of telling if most of those who had eye problems in the targeted areas were informed of the service. For future action, it is imperative to document the procedure used to inform the population of the services of the team.
- There was a lack of adequate communication between the team and the responsible persons in the selected locations, which resulted in insufficient preparation, such as recruitment of interviewers. In Mukalla, for example, the interviewers were recruited on the same day as the patients came to hospital, which did not allow for proper briefing. Furthermore, it was difficult to find a sufficient number of local interviewers with a good knowledge of English,

which was essential for communication with the doctors. Therefore, the number of interviewers (9–11 interviewers in each location) was relatively small compared with the large number of patients seen by the doctors (about 100 patients per doctor per day, on average). This fact did not allow for proper completion of the case study forms, which later affected the quantity of data.

- The case study form used did not match that used by the ophthalmologists and therefore could not be used by the interviewers as a substitute. Furthermore, when completing the examination cards the ophthalmologists used abbreviated medical terms not understood by the interviewers.
- There were a few logistical problems that hampered the work of the team, such as frequent electricity failures which delayed the photocopying of the case study forms.

Results

Demographic characteristics of the patients

The patients came from three locations: Shabwa 2131 (39.9%), Mukalla 1965 (36.8%) and Mahweet 1216 (22.8%); this information was missing for 29 patients. Most of the patients were 60 years and above and predominantly men (73.2%). The majority (67.6%) were married. There was a higher proportion of singles among males than females (24.6% versus 19.6%) and a higher proportion of "others" (divorced, widowed or separated) among females (14.3% versus 4.1%) (Table 1).

With regard to educational status, 42.5% were found to be illiterate and only 6.1% held a university degree or higher

Table 1 Distribution of patients by marital status and sex

Marital status	Male %	Female %	Total %
Single	77.5	22.5	23.3 <i>n</i> = 1242
Married	75.0	25.0	67.6 <i>n</i> = 3613
Others ^a	44.3	55.7	6.9 <i>n</i> = 366
No response	65.8	34.2	2.2 <i>n</i> = 120
Total	73.2 <i>n</i> = 3912	26.8 <i>n</i> = 1429	100 <i>n</i> = 5341

^aOthers include those who are divorced, widowed or separated

Table 2 Distribution of patients by education and sex

Education	Male %	Female %	Total %
Illiterate	56.7	43.3	42.5 <i>n</i> = 2272
Read and write	86.6	13.4	19.7 <i>n</i> = 1050
Primary	80.8	19.2	7.3 <i>n</i> = 390
Intermediate	85.7	14.3	8.4 <i>n</i> = 448
Secondary	90.4	9.6	11.1 <i>n</i> = 594
Technical	88.0	12.0	1.4 <i>n</i> = 75
University	93.5	6.5	5.7 <i>n</i> = 306
Postgraduate	78.9	21.1	0.4 <i>n</i> = 19
No response	59.9	40.1	3.5 <i>n</i> = 187
Total	73.2 <i>n</i> = 3912	26.8 <i>n</i> = 1429	100 <i>n</i> = 5341

(Table 2). However, the level of education differed substantially with sex. A higher percentage of males had had secondary and higher education than females (23.1% versus 6.3%) and a much lower percentage were illiterate (32.9%) compared with females (68.8%).

Results showed that 95.5% of all employed patients in the study were males (compared to 73.2% in the total study group) (Table 3). Furthermore, 28.4% of all patients were employed, while 69.8% were not working. It is important to note that these "not working" cannot be classified as unemployed, since the technical term "unemployed" has certain characteristics such as age, for example, where the person has to be at least 15 years, and must be actively seeking employment.

History of associated clinical conditions

The most prevalent associated clinical condition reported was hypertension among the age group of 36–59 years (5.5%), followed by diabetes (3.4%) and heart problems (2.5%). It is important to bear in mind while interpreting these figures that the history of associated clinical conditions was

Table 3 Distribution of patients by employment and sex

Employment	Male %	Female %	Total %
Employed	95.5	4.5	28.4 <i>n</i> = 1517
Not working	65.0	35.0	69.8 <i>n</i> = 3729
No response	44.2	55.8	1.8 <i>n</i> = 95
Total	73.2 <i>n</i> = 3912	26.8 <i>n</i> = 1429	100 <i>n</i> = 5341

identified through direct interviewing and not through clinical confirmation.

Eye conditions and recommended action

The distribution of eye diseases among the study population for each eye according to age is shown in Table 4. The general prevalence of the different eye diseases among the study population was 15.3% in the right eye and 13.9% in the left eye. The most frequent eye disease in both eyes was lens opacity or cataract.

Only 0.4% ($n = 20$) of the eye patients reported having previous eye surgery. Of these, only one case reported having previous lid surgery, while 17 cases reported having previous cataract surgery, the majority of whom were 60 years or more. There were two cases who had had glaucoma surgery; one in the under five years age group and one in the 60+ years age group.

It was found that 40.7% of the patients needed some sort of intervention; 20.6% ($n = 1101$) of all cases in the study needed medical and/or surgical intervention for the right eye, while 20.1% ($n = 1076$) required similar interventions to alleviate visual problems in the left eye (Table 5). In total, 2177 different interventions (in both eyes) were recommended by the ophthalmologists for the survey sample.

A total of 645 persons (12.1% of the total seen by the team) underwent eye surgery. The highest percentage needing operations was in Mahweet government hospital, where 15.3% of the patients seen by the team under-

Table 4 Distribution and prevalence of listed abnormalities in the right and left eyes by age

Age (years)	Condition in eyelid	Condition in globe	Corneal opacity	Corneal pterygium	No view in lens	Lens opacity	Aphakia	AMD	Others	Total
Right eye										
0-5	0	0	3	0	0	5	0	0	0	8 (0.1%)
6-14	0	2	4	3	0	19	1	0	0	29 (0.5%)
15-35	0	8	16	15	0	25	3	0	2	69 (1.3%)
36-59	2	7	34	15	2	102	19	2	2	185 (3.5%)
60+	3	8	72	6	4	330	92	6	6	527 (9.9%)
Total	5 (0.1%)	25 (0.5%)	129 (2.4%)	39 (0.7%)	6 (0.1%)	481 (9.0%)	115 (2.2%)	8 (0.1%)	10 (0.2%)	818 (15.3%)
Left eye										
0-5	1	2	3	0	0	2	0	0	0	8 (0.2%)
6-14	0	5	5	3	0	18	3	0	0	34 (0.6%)
15-35	0	4	15	14	0	23	2	0	2	60 (1.1%)
36-59	0	5	25	13	1	88	19	3	2	156 (2.9%)
60+	5	8	71	8	2	299	86	0	6	485 (9.1%)
Total	6 (0.1%)	24 (0.4%)	119 (2.2%)	38 (0.7%)	3 (0.1%)	430 (8.0%)	110 (2.1%)	3 (0.1%)	10 (0.2%)	743 (13.9%)

AMD = atrophic macular degeneration

Table 5 Recommended action for the right and left eyes by age

Action	Age (years)					Total
	0-4	5-14	15-35	36-59	60+	
<i>Right eye</i>						
Surgical treatment						
Lid surgery	0	0	0	0	2	2
Cataract surgery	2	13	17	73	227	332
Glaucoma treatment	0	0	0	2	1	3
Medical treatment						
Spectacles	0	3	23	67	33	126
Medication	8	53	331	163	83	638
Total	10	69	371	305	346	1101
<i>Left eye</i>						
Surgical treatment						
Lid surgery	0	0	0	0	2	2
Cataract surgery	2	15	17	67	211	312
Glaucoma treatment	0	0	0	1	0	1
Medical treatment						
Spectacles	0	3	21	71	31	126
Medication	9	53	329	162	82	635
Total	11	71	367	301	326	1076

Table 6 Distribution of patients who underwent eye surgery by location and age

Age group (years)	Shabwa	Mukalla	Mahweet	Total
< 5	2	2	0	4 (0.6%)
5-14	5	17	6	28 (4.3%)
15-35	15	11	8	34 (5.3%)
36-59	40	60	41	141 (21.9%)
60+	149	158	131	438 (67.9%)
Total	211 (32.7%)	248 (38.4%)	186 (28.8%)	645 (100%)

went eye surgery. Table 6 illustrates the distribution of patients who underwent eye surgery in each of the three hospitals according to age and location. The percentage of females who underwent surgery was much higher than males; 24% of female pa-

tients needed eye surgery compared with 7.6% of males. Table 7 shows the distribution of patients and surgeries performed by location. The majority of the patients (67.9%) who underwent surgery were in the 60+ years age group.

Table 7 Distribution of patients and surgeries by location

Location	Patients seen by the team	Surgeries performed
Shabwa	2131	211 (9.9%)
Mukalla	1965	248 (12.6%)
Mahweet	1216	186 (15.3%)
Not known	29	-
Total	5341	645 (12.1%)

Recommendations

The general prevalence of eye diseases among the study population was 15.3% in the right eye and 13.9% in the left eye. Lens opacity or cataract was found to be the most frequent eye disease in both eyes, representing 57.9% of the abnormalities detected in the left eye and 58.8% in the right eye. The majority (98.9%) of those who were found to be in need of surgical intervention were operated on by the eye team (652 recommended surgical interventions in comparison to 645 surgical operations performed).

The limitations of this pilot observational study have to be taken into consideration while planning a programme at the national level. In particular, there is a need for accurate documentation of the following:

- patient recruitment procedure
- measurement and reporting of visual acuity
- follow-up of patients after surgery to study the failure and success rate.

For this purpose, it is imperative to:

- Modify the case study form and include a part on visual acuity and another on follow-up procedures.
- Unify and standardize the case study forms used by both the ophthalmologists and interviewers. The case study form can be completed in duplicate and a copy can be retained by the hospital for follow-up and a copy kept with the IMPACT/EMR coordinator in Yemen.
- Train a sufficient number of interviewers, preferably health workers, before the commencement of a study.