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Community Health & Disease Surveillance Newsletter

Sultanate of Oman **Ministry of Health**

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Brucellosis Control in Dhofar (Oman)

Global Scenario

Brucellosis is a systemic illness with variable manifestations caused by gram negative coccobacilli. Six species of Brucella are presently known, of which *B. melitensis*, *B. suis* and *B. abortus* have public health implications. *B. melitensis* occurs more frequently than the other types in the general population and it is the most pathogenic and invasive species of *Brucella*, followed, in order, by *B. suis* and *B. abortus*.

World wide, brucellosis continues to be an important source of morbidity primarily in the Mediterranean region, Arabian peninsula, Western Asia, parts of Africa and Latin America.

The routes of transmission include direct contact with such animals, their secretions, by infected aerosols or by ingesting unpasteurized dairy products. Human-to-human transmission is extremely rare.

True incidence of human brucellosis in the world is unknown. official figures do not fully reflect the number of people infected each year and the true incidence has been estimated to be between 10 and 25 times higher than the reported figures. Cases very often remain unrecognized because of inaccurate diagnosis, and are thus treated as other diseases or as *"fever of unknown origin"*.

Introduction

Brucellosis is one of the major zoonotic infectious diseases in Oman. However, it is mainly restricted to the southern part of the country viz. the Governorate of Dhofar. Figure 1 shows the notified cases of human Brucellosis in the country from 1985 to 2001.

Fig. 1
Notified Brucellosis Cases in Oman 1985—2001

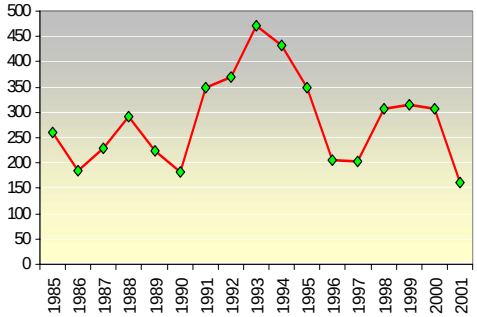


Table 1 shows distribution of cases of Brucellosis by regions of Oman in the last four years. It is evident that the problem is focal and is restricted only to Dhofar Governorate.

Few cases reported in other regions could be attributed to increased movement of population within the country and the resulting risk of exposure.

The climate in Dhofar is significantly different compared to the rest of the country. The region receives monsoon

rainfall during June to August (*Kharif* season). Animal herding including cattle, camels, sheep and goats is the main profession of the people living in the mountains (*jabals*).

Table 1
Brucellosis Cases from Dhofar & Other Regions of Oman 1998—2001

Region	1998	1999	2000	2001
Dhofar (% of total)	**305 (99.3)**	**309 (97.8)**	**302 (98.4)**	**159 (98.8)**
Muscat	1	2	2	1
N. Batinah	1	3	0	0
S. Batinah	0	0	0	1
Dakhliyah	0	2	0	0
N.Sharqiyah	0	0	0	0
S.Sharqiyah	0	0	0	0
Dhahira	0	0	2	0
Musandam	0	0	0	0
Al-Wustah	0	0	1	0
Total	**307**	**316**	**307**	**161**

Sero-Survey amongst Animals

Earlier serosurvey conducted in the animal population in Dhofar (1985-86) revealed prevalence of 8.0% in camels, 6.4% in goats & sheep and 3.3% in the cattle.

Family Contacts Survey

A survey of family contacts of 87 known cases of human Brucellosis was done by *Shafie et al* in 1993. Amongst the 559 sera tested from asymptomatic contacts, 123 (22%) had titres ≥ 1:160 either to *B. melintensis* or *abortus* or both. Of these 38 (21.6%) were children less than 10 years old.

Geographical Distribution

Dhofar can be divided into three terrains based on topography. The coastal belt in the south that includes the capital Salalah and other major cities; the desert in the north and a green belt in the mountainous region (*Jabals*) in the middle. The majority of the population of Dhofar lives in the coastal area. The people living in the desert and in the *Jabals* are scattered and live in small towns or family shelters. Animal rearing and breeding is their main occupation and cattle, camels, sheep and goats are the main animals.

There are 9 districts (*Wilayat*) in the Dhofar region. Table 3 shows the distribution of cases by Wilayat along with the inci-

"A survey of family contacts of 87 known cases of human Brucellosis was done by Shafie et al in 1993. Amongst the 559 sera tested from asymptomatic contacts, 123 (22%) had titres ≥ 1:160 either to B. melintensis or abortus or both

Table 3
Brucellosis Cases & Rate/10,000 population in Wilayat of Dhofar 1998-2001

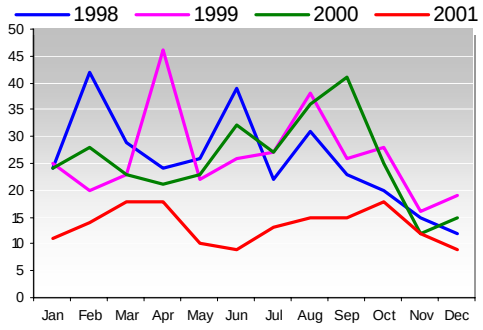
Wilayat	Population	1998 (rate)	1999 (rate)	2000 (rate)	2001 (rate)
Salalah	156,615	200 (13.4)	185 (12.2)	129 (8.2)	98 (6.0)
Dhalqut	3,216	24 (78.4)	10 (32.1)	1 (3.1)	1 (3.0)
Mirbat	13,496	13 (10.1)	20 (15.2)	0	14 (10.1)
Rakhyut	4,913	7 (15.0)	14 (29.4)	1 (2.0)	9 (17.8)
Shaleem	7,615	2 (2.7)	3 (4.1)	0	11 (14.0)
Sadha	5,223	9 (18.1)	7 (13.8)	3 (5.7)	5 (9.3)
Taqah	18,750	40 (22.4)	62 (34.1)	2 (1.1)	16 (8.3)
Thumrait	9,002	10 (11.9)	8 (9.4)	109 (121.1)	5 (5.4)
Muqshan	6,163	0	0	0	0
Total	**224,993**	**305 (14.2)**	**309 (14.2)**	**302 (13.4)**	**159 (6.8)**

dence rate per 10,000 population for the period 1998 to 2001. It is evident that there is wide variation in the incidence within the different Wilayat of Dhofar. While some Wilayat in the desert viz. *Muqshan* and *Shaleem* have a very low incidence, some in the green belt have a very high incidence. Within the period of four years the incidence has drastically fluctated in the Wilayat of *Salalah*, *Thumrait*, *Rakhyut* and *Taqah*. During that period 'NO' substantial control measures were undertaken in Dhofar. In the Wilayat neither the population has changed nor does the prevailing condition to explain this strange epidemiological shift. The probable explanation could be the subjective interpretation of the diagnostic test utilised for Brucellosis (SATT by slide method).

Monthly Distribution of Cases

Figure 2 shows the monthly incidence of

Fig.2
Monthly Distribution of Brucellosis in Dhofar 1998—2001

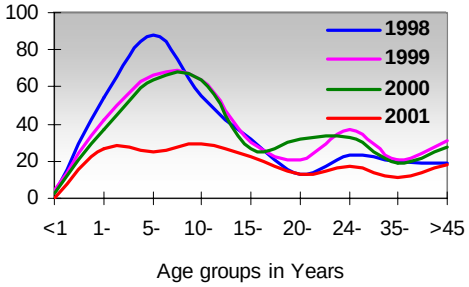


notified cases of Brucellosis in Oman during 1998 to 2000. The distribution does not appear to be significantly related to a particular period or season. The overall low incidence in 2001 is striking.

Age Distribution of Cases

Following figure shows the distribution of Brucellosis cases by age for the year 1999 and 2001. The incidence appears to be

Fig.3
Age Distribution of Brucellosis in Dhofar 1998—2001



higher in young children and adolescents (5 to 15 years) except during the year 2001. Probably this fact is in favour of the major mode of transmission through raw milk, which may be consumed more by the children in this age group. However *Shafie et al* did not find any significant difference in the age groups during the sero-epidemiological survey conducted in 1993 amongst the family contacts.

Laboratory Diagnosis

The diagnosis of brucellosis can be a difficult and can be affected by numerous factors including chronicity of infection, antibiotic use and Brucella species. While a definitive diagnosis of brucellosis can only be established by culturing the organism from blood, bone marrow or other tissues, serologic diagnosis can also offer a presumptive diagnosis.

Detection of Brucella in Blood Cultures

Blood cultures are positive in 53.4-90% of patients with brucellosis yet the chances of successful isolation wane with time

Serological Methods in the Detection of Brucellosis

The Gold standard serologic test for the detection of brucellosis is the tube agglutination test (SAT) which is the test against which all others are compared. This test was first applied to brucellosis by Wright

"The diagnosis of Brucellosis can be a difficult one to make, & can be affected by numerous factors including chronicity of infection, antibiotic use & Brucella species."

and colleagues in 1897. Its major criticisms are that it is labor intensive, complicated by cross-reactions with antibodies to other GN-bacteria. Hence other tests have been advocated such as complement fixation, indirect Coombs' and RIA and ELISA.

To distinguish between immunoglobulin classes – the 2-Mercaptoethanol test (2ME) and the dithiothreitol tests were devised. The 2ME test is used to measure resistant IgG antibodies. This is important since IgG antibodies are considered to be a better indicator of active infection than IgM antibodies.

Slide Agglutination – This test utilizes agglutination reaction comparable to that seen with the tube dilution method. However recently comparison of this test showed high yet variable sensitivity and specificity. Therefore this rapid serological test needs to be further confirmed by the standard tube agglutination method.

Interpretation of agglutination tests

The diagnostic titre of ≥1:160 is based on recommendation by CDC, Atlanta.

"The Gold standard serologic test for the detection of Brucellosis is the tube agglutination test (SATT) which is the test against which all others are compared."

Brucellosis Control in Dhofar

A WHO consultant (STC) assessed the status of Brucellosis in Dhofar in 1996. Following his recommendations a multisectorial *Regional Brucellosis Control Committee* (RBC) was established including members from Ministry of Health, Ministry of Agriculture & Fisheries and Municipality. The more specific diagnostic 2-Mercaptoethanol Test (2ME) was introduced in addition to the routine slide agglutination method (SATT) and culture. The diagnostic criteria and treatment regimen were reviewed and resolved. Health education material emphasizing prevention of Brucellosis was produced and distributed. The topic was introduced in the school health education programme. A long term plan of animal vaccination in a phased manner was adopted. Killing of infected live stock was not considered as a practical option. It was projected that a period of at least 10 to 12 years would be required to observe its impact on the incidence of human cases. One laboratory technician was trained in Spain in the laboratory methods of Brucellosis.

Limited prevention activities were undertaken in connection with the implicated dairy farms in 1998. The animals were tested and vaccinated. The Regional Brucellosis Control Committee held last meeting in 1998.

The major recommendation of vaccination of animals was not undertaken so far due to resource constraints. It is believed over the last few years the burden of Brucellosis in Dhofar has remained unchanged.

Laboratory Diagnosis

Two types of diagnostic tests are in vogue for Brucellosis in the regional hospital laboratory of Salalah. Slide agglutination test is also available in major health centres of Dhofar with laboratory facilities.

- **SATT by slide agglutination method:** Reagent used is *Brucella abortus* antigen from Micropath, Omega Diagnostics, UK. The test is in use since August 1977.
- **2ME (2-Mercaptoethanol Test):** Reagent from Riedel-Dettaen, Germany. This confirmatory test was introduced since June 1994.

Other tests like ELISA, Coomb's, Rose Bengal and others are not available in the hospital laboratory. The public health laboratory in Salalah in addition performs milk-ring test. Agglutination in ≥1:160 titre is considered positive. The positive sera are further tested by 2ME. Titre of ≥1:160 titre is considered as laboratory confirmation. **Culture:** In addition blood culture is also done for Brucella if and when requested by the treating physician.

Brucellosis Control: Areas of Concern

Following areas of concern need to be further strengthened:

- The control of human Brucellosis essentially depends on controlling the disease in animals. Hence a close coordination is required between the Ministry of Health and Ministry of Agriculture & Fisheries (MoA&F). Animal Brucellosis control is considered relatively a low priority since it does not lead to high morbidity in animals.
- The major strategy to control animal Brucellosis is to eliminate the infected animals (slaughtering) and to vaccinate the newborn calves. However at times it is difficult to get the needed cooperation from the community regarding sacrificing their animals.
- Animal vaccination project in Dhofar would require additional resources. For such a campaign to achieve reasonable coverage various agencies (sectors) need to coordinate their efforts.
- Brucellosis control by vaccination of the animals is an activity that would continue in phased manner over 5 to 10 years. Hence a sustained commitment is required from all relevant agencies.
- The slide method of SATT used in Dhofar should be abandoned in favour of the tube agglutination method.
- Diagnostic titre: *Collard et al* suggested that the titre of agglutinins considered to be of significance for the serological diagnosis of infections such as typhoid and brucellosis should be such as would not be expected to be present in 5% of the normal population. Accordingly *Shafie et al* after the sero-epidemiological survey in Dhofar suggest the diagnostic titre of ≥1:640. This was further supported by *Frank et al* in Saudi Arabia.

Current Status of Implementation of Brucellosis Control in Dhofar

The MoH and MoA&F are committed for Brucellosis control and are working in unison through the National Zoonotic Diseases Committee.

In 2002, a special budget was sanctioned by Ministry of Agriculture & Fisheries for animal Brucellosis control project to be implemented in Dhofar over the next 5 years . The funds would be exclusively utilized for procuring Brucella vaccine (REV-1), vaccination and diagnostic equipment and reagents etc. There are estimated 85,000 animals in Dhofar and a target of at least 70% coverage is projected.

As dictated by the WHO/FAO policy, in the first round of vaccination all animals would be covered. Followed by vaccination of new born, young calves in the second year. In the third year again all animals would receive vaccination except the pregnant and the bulls and so on.

Currently the implementation plan is under preparation and the activities are expected to commence by early 2003. MoH would continue its efforts in advocacy to generate commitment from other relevant sectors and also the community involvement.

Four laboratory technicians in Salalah hospital were trained in the diagnostic test for Brucellosis during the last quarter. The recommended tube method for SATT would soon be introduced in all laboratories in Dhofar.

Health education activities in the community and schools are conducted by the staff of school health programme and these are ongoing.

"The control of human Brucellosis essentially depends on controlling the disease in animals. Hence a close coordination is required between the Ministry of Health & the Ministry of Agriculture & Fisheries."

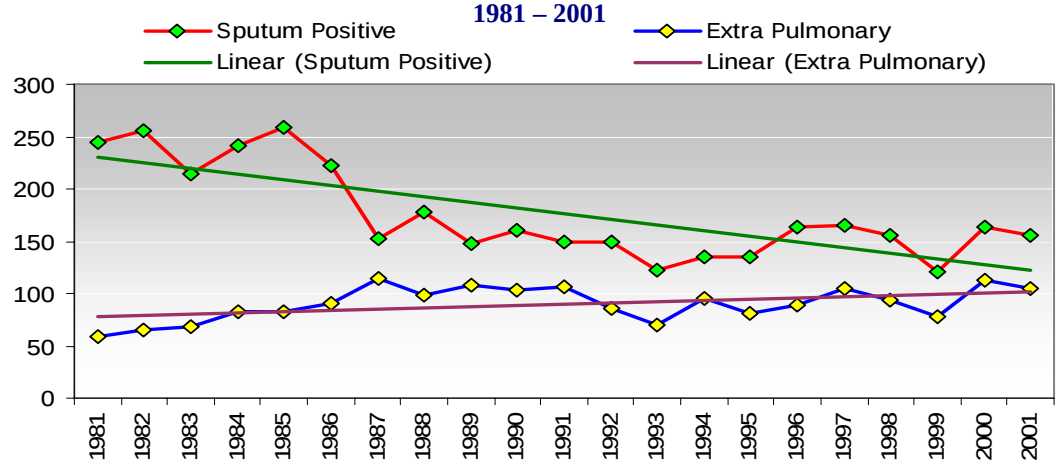
TBCP: Two Decades of Implementation

Background

Oman is one of the low burden countries for tuberculosis in the Eastern Mediterranean Region (EMRO). Tuberculosis cases have shown a substantial decrease over the last two decades since the launching of the Tuberculosis Control Programme (TBCP). The 'DOTS' *(Directly Observed Treatment, Short-Course)* strategy was adopted nationally from January 1996. The major activities included under this strategy include a standardised treatment regime, mandatory hospital admissions for all sputum positive cases for the initial 2 months of intensive treatment, establishment of TB control teams, and monitoring of case detection and cure rates etc.

"Tuberculosis cases have shown a substantial decrease over the last two decades since the launching of the Tuberculosis Control Programme (TBCP)".

Fig.1
TB Incidence & Trend in the Last 'Two' Decades in Oman
1981 – 2001



Above figure indicates that there has been a steady decline in the total TB cases over the years with apparent increase in the incidence of extra-pulmonary tuberculosis (EP) in recent years. This relative increase could be attributed to the expansion of health services as well as availability of better diagnostic facilities. On the other hand the decline in the smear-positive cases was less remarkable contrary to the trend observed in European and other developed countries. Over the past few years, the overall tuberculosis incidence appears to have remained more or less static indicating a continued transmission in the community.

TB Elimination Targets

Under the revitalized TB control programme in 1996, the Ministry of Health adopted following short term targets in concordance with GCC states...

- To achieve 90% cure rate & 5/100,000 incidence rate of new smear positive TB cases by 1999
- To achieve 3/100,000 incidence rate of new smear positive TB cases by year 2005.
- To achieve 1/100,000 or less incidence rate of new smear positive TB cases by year 2010

Target Achievements

The cure rate of above 95% has already been achieved since 1999. However the targeted incidence rate of 5/100,000 could not be achieved. In the year 2001, a total of 221

cases of tuberculosis were reported giving an incidence rate of 12/100,000 population. Of these almost half were smear-positive (incidence rate 6.1/100,000 population).

Case-detection & Follow-up

Sputum microscopy is the key to detection of TB cases. All laboratory facilities throughout the country are involved in conducting sputum examination. The central public health laboratory, which is also the national reference laboratory (NRL) for TB control, introduced a system of quality control for the sputum examination by re-examining all smear-positive slides and 5% of smear-negative slides from all the peripheral laboratories.

The case detection efficacy of tuberculosis in Oman is around 82%, of the estimated sputum positive cases in the community against 70% which is the satisfactory global target set by World Health Organization *(Global Tuberculosis Control, WHO Report 2002)*.

Table 1
Case detection & Cure Rates in GCC States* 2000

Country	Case Detection Rate (%)	Cure Rate (%)
Oman	82	95
Saudi Arabia	68	58
UAE	96	NA
Bahrain	100	95
Qatar	35	71
Kuwait	NA	NA

*Source: *Global Tuberculosis Control, WHO Report 2002*

Follow-up of patients during treatment, and their records, are meticulous. Defaulter retrieval in the continuation phase is active and prompt.

Treatment of TB cases & DOTS

The programme has adopted the standardized treatment regimens recommended by WHO. In accordance with the DOTS strategy, it was decided that all sputum-smear positive cases of TB would be admitted to hospitals for the first two months of treatment (*initial intensive phase*), during which anti-TB drugs would be given daily to the patients under the supervision of a trained health worker. During this period, the patients would receive counselling, motivation and education on the treatment of TB. After the initial phase of treatment the patients are discharged to continue their medication at PHC facilities. During the continuation phase, the patients receive anti-TB drugs on a fortnightly basis. All patients are followed up very closely till the completion of the treatment. The family members are also counselled on how to supervise the patient's intake of drugs.

Preventive Therapy (PT) for children under 6 years is routinely monitored. '143' children completed PT from April 2000 to March 2001. Of these 108 (75.52%) children completed three months of continuous INH therapy and '35' (24.47%) completed six months of continuous therapy.

Anti-tubercular Drugs Dispensing

The Ministry of Health, in line with the implementation of the DOTS Strategy, issued a decree prohibiting over-the-counter prescription of anti-TB drugs, thus restricting their use only for the registered tuberculosis patients. This step was taken due to the concern of emergence of multi-drug resistance and to prevent the overuse of Rifampicin. Fixed-dose combinations (FDC's) tablets have been introduced in TBCP from 2000.

Management & Supervision

The national programme management section for tuberculosis control is located

"The case detection efficacy of tuberculosis in Oman is around 82%, of the estimated sputum positive cases in the community as against 70% which is the satisfactory global target set by WHO."

within the Department of Surveillance and Disease Control under the Directorate General of Health Affairs. The Ministry of Health is fully committed to the achievement of the stipulated goals. Focal points of TB control are identified by name and designated to be responsible for the TB control in their respective regions. The regional team includes 4 members (physician, nurse, laboratory technician and sanitary inspector/assistant). A team of health personnel are required to report TB control activities in the Wilayat to the regional focal point.

All concerned health personnel were trained on DOTS before its implementation through the National TB Workshop held in December 1995. Subsequently regional TB Workshops were held in all regions and the Wilayat team members were trained by the regional master trainers.

Recording and Monitoring:

The DOTS recording and reporting system was incorporated into the programme in addition to the routine monthly reports. TB registers, treatment cards and laboratory registers are well maintained at all the institutions in the country. Rigorous monitoring of indicators is being done every quarter by cohort analysis at the national headquarters viz. case notifications, sputum conversion rate *(at the end of the second month of the treatment)*, as well as final treatment results. Such monitoring is essential to quantify the tuberculosis burden every quarter as well as it helps in assessing the programme performance. The sputum conversion rate is an early indicator of programme success, which would be confirmed by the final treatment outcome of the same cohort of patients 6 months later.

*"The **sputum conversion rate** is an early indicator of programme success, which would be confirmed by the final treatment outcome of the same cohort of patients 6 months later".*

Defaulters & Deaths

The sharp decline in the reported TB deaths in the range of 40 to 45 in 1981 to 15 in 2001 is due to achieving higher cure rates and as well as the direct impact of 'DOTS'.

The decline of TB lost cases (defaulters) from 45 (55%) in 1981 to just 1 (0.45%) in 2001 is due to better awareness among the patients, their families and the community as a whole strengthened further by aggressive defaulter-retrieval policy adopted in Oman.

Table-2
Sputum Conversion Rate: 2000

Cases	Registered	Evaluated	Smear Neg. (%)	Smear Pos. (%)	Died	Defaulter	Transferred Out
New	112	112	106	2	4	0	0
Re-treatment	7	7	7	0	0	0	0
Total Cases	119	119	113 (94.9)	2 (1.7)	4 (3.4)	0	0

Table-3
Cure Rate in Smear Positive Cases: 2000

Cases	Registered	Evaluated	Cured (%)	Completed Treatment	Died	Failure	Defaulter	Transferred Out
New	112	112	104	0	5	3	0	0
Re-treatment	7	7	6	0	0	1	0	0
Total Cases	119	119	110 (92.4)	0	5 (4.2)	4 (3.4)	0	0

Indicators for 'DOTS' Outcome

The programme has shown good results after the nationwide implementation of DOTS. Cohort evaluation of conversion and cure rates are regularly conducted on quarterly basis. Sputum conversion at 2 months is the earliest indicator to be monitored; while the cure and success rates are the later indicators. Sputum examinations is monitored at the end of the second, fourth and the sixth month. Such continuous monitoring of the indicators is the essential component of the success story of DOTS in Oman.

Tables 2 & 3 show that a cohort of 112 cases was enrolled for treatment in 2000 of in whom the smear conversion rate was 94.6% and the cure rate was 92.8%. The conversion and cure rate for re-treatment case(s) was 100% and 85.7% respectively. The collective conversion and cure rate was 94.9% and 92.4% respectively. 4.2% of the case died, treatment failure was observed in 3.4%, and none were defaulters or transferred-out of Oman during 2000.

Conclusions

The Tuberculosis control programme in Oman has demonstrated that the 'DOTS' strategy can be successfully implemented throughout the country with the strong political commitment, dynamic leadership, optimum training and commitment of health workers involved in the TB control.

The component of training of the health workers involved in TB control in the various levels of health services is crucial for the success. The programme has produced good results (›90% cure rates) within a relatively short period of time. Moreover the strategy has proved to be cost-effective.

The experience of Sultanate of Oman in the implementation of DOTS could be a role model for other countries.

With this sustained success of this programme, the Sultanate of Oman was able to achieve the elimination targets set by the WHO-EMRO.

"The experience of Sultanate of Oman in the implementation of DOTS could be a role model to other countries".

"Tobacco Free Sports"

The Winning Football Team from Dakhliyah

World 'NO' Tobacco Day Theme for 2002

"TOBACCO FREE SPORTS"

WHO/MoH jointly celebrated the day with a football tournament. The Ministry of Health team played 8 matches. They won 6 and equalized in 2 and picked up the cup.

13th April to 20th May 2002

'Cataract Fortnight' in Wilayat Bidiya of North Sharqiyah

Background

Blindness represents a serious public health, social and economic problem. Worldwide 40-50 million persons are estimated to be visually handicapped. 80% of the global blindness is avoidable. Cataract that comprises 50% of the global blindness is the first priority for intervention to reduce blindness. There are no known means of preventing common forms of cataract. All global efforts are aimed at its surgical removal.

The survey conducted in Oman in 1995-96 estimated the prevalence of blinding cataract to be 3.05/1,000 population. North Sharqiyah Region had the highest prevalence rate of 57.0/1,000 in Oman. The backlog of un-operated cases exists in Oman especially in the North Sharqiyah Region and this needs to be tackled.

"Cataract surgery is considered as one of the most cost-effective of all health interventions assuming the estimated cost of US $25-100 per surgery (WHO)".

In addition to care through ophthalmic services, the eye health care program has adopted a novel strategy of "*Cataract Fortnight*" projects that are held in different Wilayat.

Bidiya Wilayat, of North Sharqiyah region is a desert area with dry weather. The estimated Omani population is 15,139 (2001). A large proportion of them are nomadic (*Bedouins*). The Wilayat registered highest diabetics in the region. As diabetes is a known risk factor for cataract, many cases are expected. However a small number of blind due to cataract were registered from this Wilayat in the *National Registry* suggesting that many unreported and missed cases might exist in the community. Lack of awareness and limited access to health care among population may be responsible factors. Hence, Bidiya Wilayat of the North Sharqiyah region was chosen for the organization of the ***"Cataract Fortnight"*** project in the year 2002.

The project had following objectives:

Objectives

1. To increase the community awareness about the problem of cataract.
2. To identify blinding cataract cases in Bidiya Wilayat.
3. To operate blinding cataract cases at Ibra Hospital.

Materials & Methods

H.E. the Wali of Wilayat Bidiya and the chairman of the Wilayat Health Committee (WHC) conducted a preliminary meeting. Letters were issued to Sheikhs & other community leaders to inform them on the importance of cataract screening and requesting them to extend all the help. Villages were selected and a timetable for screening activities was prepared. A coordinator from the WHC was identified for each village and they organized logistics of the screening. Informative health education sessions on cataract were conducted during the Ramadan month. and as a part of the cultural activities of Bidiya sports club. H.E. the Wali, other community leaders and local citizens attended the function.

The community support group (CSG) members are considered as the key personnel to motivate the community and to ensure their participation. The Wilayat Health Superintendent and the project coordinator met the CSG members and made them aware of the forthcoming project.

Two school health staff nurses from Bidiya hospital were trained at the Ophthalmic Unit, Ibra hospital prior to the campaign. The medical officer in-charge of Bidiya hospital and Al Dahir Health Centre were briefed and involved in the activities.

All Omani nationals above the age of 40 years and who attended the camp were targeted for screening. The screening was carried out from 22nd Dec'01 to 8th Jan'02 in the selected villages by the Regional Eye

Health Care Supervisor and two school health staff nurses. While in the PHC screening was done by doctors and nurses.

Presence of cataract and extent of visual disabilities were determined by vision testing using **"E"** ***Snellen's*** **chart**. Cases with cataract were registered and referred to the ophthalmologist.

All suspected cases, who attended the Ophthalmic Unit at Ibra hospital, were examined by the ophthalmologists to confirm the diagnosis, to detect associated ocular/systemic diseases and to conduct preoperative assessment.

Achievements

Screening Activities: The estimated above 40 age group in the study area was around 2000. Of them, 893 (45%) people were screened. 703 people were registered in the villages and 190 people at health institutions. Of them, 119 (13.3%) were suspected to have cataract and referred to Ibra hospital for further tests.

Activities in Hospital: Of the 119 referred cases, 86 cases (72.3%) attended the Ophthalmic Unit (41 M & 45 F). 33 (27.7%) did not comply hence considered as defaulters (11 M & 22 F).

Total 71 (82.4%) of them could not be enlisted for surgery while 15 (17.6%) were given appointment for surgery. Of these 4 cases had systemic disease that demanded physician's consultation.

The associated ocular pathologies were corneal opacity (33%) and glaucoma (13%). This high proportion of associated ocular pathology among the suspected cataract cases is worth noting. The co-morbidity was more common in females patients.

Ten cases were operated for cataract. The surgical techniques of *'Modified Blumenthal'* and intra-ocular lens implantation in the posterior chamber were used. No suturing was used in all cases except one. Seven cases had post-operative vision more than 6/36 and 3 cases had vision less than 6/60. Two cases did not turn-up for the follow-up.

Conclusions

The *cataract fortnight* is an approach to tackle the problem of in the community. The population being nomadic, the 45% coverage of the eligible population although less, can be considered as reasonable. The number of cataract surgeries done were less than anticipated. However the increased community awareness about cataract problem and identification of new cases through the PHC approach were the distinct achievements. The role of the WHC in advocacy and mobilization of the community for the cataract screening was an ideal example of community participation.

Recommendations

The experience of *cataract fortnight* supports following recommendations for future:

- PHC institutions should be involved vigorously in the early detection of cataract and counselling.
- *Cataract fortnight* should target a manageable number of villages rather than all in a Wilayat.
- Due to presence of co-morbidity in large proportion of cataract cases, a total eye care approach is recommended rather than only the management of cataract.
- The suture-less surgery used in this project could be tried and adopted on a wider scale in other regions for the comprehensive day-care of cataract cases.
- In areas where access to eye health care is an identified hurdle, *cataract fortnight* approach would prove especially beneficial.

Acknowledgements: *Sincere efforts of all health staff in supporting the project are gratefully acknowledged.*

"In areas where access to eye health care is an identified barrier, ***cataract fortnight*** *approach might prove especially beneficial."*

Communicable Diseases Quarterly Report

Third Quarter (July to September 2002)

ICD Code	Diseases	2002 Third Quarter				2001		2002	
		Jul	Aug	Sep	Total	Q3 Jul-Sep	Q4 Oct-Dec	Q1 Jan-Mar	Q2 Apr-Jun
GROUP 'A' DISEASES									
A00	Cholera	-	-	1	**1**	5+2(i)	1	-	-
A20	Plague	*Never Reported*							
A36	Diphtheria	*Last Case in 1992*							
A39	Meningococcal infection	1	-	-	**1**	1	1	4	2
A80	Poliomyelitis	*Last Case in 1993*							
	Acute Flaccid Paralysis	-	3	2	**5**	3	3	1	5
B05	Measles	-	-	-	**0**	2	11	4	-
B06	Rubella & [CRS]	-	-	-	**-**	-	-	2	1
A95	Yellow fever	*Never Reported*							
A82	Rabies	-	-	-	**0**	-	-	-	-
A75.0	Louse-borne typhus	*Never Reported*							
A68	Relapsing fever	*Last Case in 1997*							
A33	Tetanus Neonatorum (NNT)	*Last Case in 1995*							
A99	Viral Hemorrhagic fever	-	-	-	**0**	-	-	-	-
GROUP 'B' DISEASES									
A03.0	Typhoid fever	8	6	11	**25**	32	23	19	16
A01.4	Paratyphoid fever	1	1	-	**2**	4	8	4	7
A02	Food poisoning	128	160	77	**365**	435	272	181	263
A22	Anthrax	*Never Reported*							
A23	Brucellosis	16	5	5	**26**	41	39	45	33
A37	Pertussis	7	7	3	**17**	11	7	21	43
A35	Tetanus (Excluding NNT)	-	-	-	**0**	1	1	1	1
A90	Dengue	-	-	-	**0**	1(i)	-	-	-
	Viral Hepatitis - Total	**159**	**141**	**93**	**393**	**370**	**285**	**531**	**834**
B15	Viral Hepatitis 'A' (ELISA)	44	90	33	**167**	5	-	84	234
B16	Viral Hepatitis 'B' (ELISA)	9	5	4	**18**	8	14	8	18
B17.1	Viral Hepatitis 'C' (ELISA)	-	4	1	**5**			-	6
B17.0	Viral Hepatitis 'D' (ELISA) among 'B'	-	-	-	**0**			-	-
B17.2	Viral Hepatitis 'E' (ELISA)	1	-	-	**1**			1	-
B19/B17.8	Viral Hepatitis Unspecified	105	42	55	**202**	354	270	438	615
B55	Leishmaniasis	-	-	-	**0**	1	2	7	2
B65	Schistosomiasis	-	-	-	**0**		-	2(i)	-
B74	Filariasis	1 (i)	-	-	**1 (i)**	3 (i)	-	-	-
B72	Dracunculiasis	*Certified by WHO as Eradicated from Oman*							
G00.0	Haemophilus Meningitis type b	-	2	2	**4**	7	8	9	10
G00.1-9	Bacterial meningitis other than Nm & Hib	4	11	8	**23**	14	29	27	23
A87	Viral meningitis	6	-	4	**10**	6	3	4	6
G03	Meningitis - Unspecified	5	-	-	**5**	20	32	-	7
A30	Leprosy	-	1	-	**1**	2	1	5	-
A15-A19	Pulm. Tuberculosis Sputum Positive	12	4	8	**24**	22	26	33	39
	Pulm. Tuberculosis Sputum Negative	3	3	2	**8**	7	8	9	6
	Extra Pulmonary Tuberculosis	13	12	13	**38**	21	19	20	23
B50-B54	Malaria (All sources)	73	88	66	**227**	252	161	85	179
A50-A53	Syphilis	4	12	9	**25**	36	40	33	33
A54	Gonococcal Infections	15	18	13	**46**	48	43	74	47
GROUP 'C' DISEASES									
A03	Shigellosis	58	84	61	**203**	360	373	296	242
A06	Amoebiasis	350	359	469	**1,178**	992	1,427	1,385	1,257
A09	Acute Gastro-Enteritis & Diarrhoea	6,230	7,579	9,214	**23,023**	23,434	29,726	31,391	20,667
B01	Chicken Pox	777	746	773	**2,296**	3,104	3,170	3,895	4,810
B26	Mumps	170	130	115	**415**	620	694	578	933
A71	Trachoma	10	16	32	**58**	130	133	115	153
J10-J11	Influenza	57	354	240	**651**	692	1,363	777	216

Communicable Diseases Quarterly Report by Regions

Third Quarter (July to September 2002)

ICD Code	Diseases	Total	Muscat	Dhofar	Dakhli-yah	North Sharqi-yah	South Sharqi-yah	North Batinah	South Batinah	Dhahira	Musan-dum	Al-Wustah
GROUP 'A' DISEASES												
A00	Cholera	1	-	-	-	-	-	-	-	1	-	-
A20	Plague	*Never Reported*										
A36	Diphtheria	*Last Case in 1992*										
A39	Meningococcal infection	1	-	-	-	-	-	-	-	1	-	-
A80	Poliomyelitis	*Last Case in 1993*										
	Acute Flaccid Paralysis	5	1	1	2	1	-	-	-	-	-	-
B05	Measles	0	-	-	-	-	-	-	-		-	-
B06	Rubella & [CRS]	0	-	-	-	-	-	-	-	-	-	-
A95	Yellow fever	*Never Reported*										
A82	Rabies	0	-	-	-	-	-	-	-	-	-	-
A75.0	Louse borne typhus	*Never Reported*										
—A68	Relapsing fever	*Last Case in 1997*										
A33	Tetanus Neonatorum (NNT)	*Last Case in 1995*										
A99	Viral Haemorrhagic fever	0	-	-	-	-	-	-	-	-	-	-
GROUP 'B' DISEASES												
A03.0	Typhoid fever	25	10	1	1	2	-	4	4	3	-	-
A01.4	Paratyphoid fever	2	-	-	-	-	-	2	-	-	-	-
A02	Food poisoning	365	26	3	36	26	17	124	24	101	-	-
A22	Anthrax	*Never Reported*										
A23	Brucellosis	26	1	25	-	-	-	-	-	-	-	-
A37	Pertussis	17	4	1	1	1	-	9	-	1	-	-
A35	Tetanus (Non NNT)	0	-	-	-	-	-	-	-	-	-	-
A90	Dengue	0	-	-	-	-	-	-	-	-	-	-
	Viral Hepatitis - Total	393	40	14	96	81	56	46	39	12	3	6
B15	Viral Hepatitis 'A' (ELISA)	167	14	-	86	38	5	9	9	-	2	4
B16	Viral Hepatitis 'B' (ELISA)	18	1	2	1	5	2	5	2	-	-	-
B17.1	Viral Hepatitis 'C' (ELISA)	5	1	-	1	-	-	2	-	1	-	-
B17.0	Viral Hepatitis 'D' (ELISA) among 'B'	0	-	-	-	-	-	-	-	-	-	-
B17.2	Viral Hepatitis 'E' (ELISA)	1	-	-	-	1	-	-	-	-	-	-
B19/	Viral Hepatitis Unspecified	202	24	12	8	37	49	30	28	11	1	2
B55	Leishmaniasis	0	-	-	-	-	-	-	-	-	-	-
B65	Schistosomiasis	0	-	-	-	-	-	-	-	-	-	-
B74	Filariasis	1(i)	-	-	-	-	-	-	-	-	-	1(i)
B72	Dracunculiasis	*Certified by WHO as Eradicated from Oman*										
G00.0	Haemophilus Meningitis	4	1	1	-	-	1	1	-	-	-	-
G00.1-	Bacterial meningitis other than Nm	23	9	4	3	1	-	3	3	-	-	-
A87	Viral meningitis	10	6	-	-	1	-	-	-	3	-	-
G03	Meningitis - Unspecified	5	-	3	-	-	-	2	-	-	-	-
A30	Leprosy	1	-	-	1	-	-	-	-	-	-	-
A15-	Pulm. Tuberculosis Sputum Positive	24	4	2	2	-	1	7	5	2	-	1
	Pulm. Tuberculosis Sputum Negative	8	2	-	-	1	-	2	2	1	-	-
	Extra Pulmonary Tuberculosis	38	7	9	2	2	-	10	7	1	-	-
B50-	Malaria (All sources)	227	131	7	6	11	4	22	26	12	6	2
A50-	Syphilis	25	6	-	-	-	-	19	-	-	-	-
A54	Gonococcal Infections	46	7	8	3	-	6	11	4	2	3	2
GROUP 'C' DISEASES												
A03	Shigellosis	203	66	3	54	14	25	14	9	8	6	4
A06	Amoebiasis	1,178	112	5	185	286	138	103	48	145	37	139
A09	Acute Gastro-Enteritis & Diarrhoea	23,023	3,637	3,583	3,062	1,859	3,057	3,858	2,601	933	299	334
B01	Chicken Pox	2,296	442	169	176	109	119	498	464	276	40	3
B26	Mumps	415	116	16	73	27	11	58	86	26	1	1
A71	Trachoma	58	7	-	4	-	-	20	20	7	-	-
J10-J11	Influenza	651	155	1	47	185	-	101	-	162	-	-

Selected Communicable Diseases by Wilayat

Third Quarter (July to September 2002)

Region	Wilayat	Acute Flaccid Paralysis	Measles	Rubella	Pertussis	TB (Total)	TB Sputum Positive	Tetanus (Ex. NNT)	Malaria (All)	Viral Hepatitis (Total)	Leprosy	Meningo. Infection	Leishma-niasis
MUSCAT	Muscat								3	9			
	Seeb	1				4	3		70	5			
	Muttrah					3	1		20	6			
	Bowsher				4	1			28	10			
	Al Amerat					2			9	6			
	Quriyat					3			1	4			
DHOFAR	Salalah	1				9	1		7	8			
	Thumrait												
	Taqah									5			
	Mirbat									1			
	Sudah					1	1						
	Rakhyut					1							
	Dhalqut												
	Muqshan												
	Shaleem												
NORTH BATINAH	Sohar				4	1			10	10			
	Shinas				1	3	2		2				
	Liwa				1					5			
	Saham					4	1		5	15			
	Khabura				1	5	2		1	4			
	Suwaiq				2	6	2		4	12			
SOUTH BATINAH	Rustaq					6	1		2	13			
	Nakhl								1	2			
	Wadi Maawil												
	Al Awabi									3			
	Musanah					6	3		7	12			
	Barka				1	2	1		16	9			
DAKHLIYAH	Nizwa								5	19			
	Bahla	1			1					40			
	Adam									1			
	Hamra					1				11	1		
	Manah									6			
	Sumail					2	2		1	7			
	Izki	1				1				11			
	Bid Bid									1			
DHAHIRA	Ibri								1	8			
	Yanqul					1				1			
	Dhank				1	1	1		1				
	Buraimi					2	1		9	3		1	
	Mahda								1				
NORTH SHARQIYAH	Ibra	1							2	12			
	Mudhaibi								6	29			
	Bidiyah				1	1			2	9			
	Al-Qabel					1				23			
	Dima Al-Tayeen					1			1	6			
	Wadi Bani Khalid									2			
SOUTH SHARQIYAH	Sur								2	10			
	Masirah									5			
	Al Kamil & Al Wafi								1	3			
	BBB Ali								1	32			
	BBB Hassan					1	1			6			
MUSANDUM	Khasab								3	2			
	Dibba								3	1			
	Bukha												
	Madha												
AL-WUSTAH	Haima								1	1			
	Duqum					1	1		1	1			
	Mahoot									3			
	Al-Jazer									1			
NATIONAL TOTAL		**5**	**0**	**0**	**17**	**70**	**24**	**0**	**227**	**393**	**1**	**1**	**0**

Age Distribution of Communicable Diseases

Third Quarter (July to September 2002)

ICD Code	Diseases	Total	Age Groups in Years								
			< 1	1 -	5 -	10 -	15 -	20 -	25 -	35 -	> 45
GROUP 'A' DISEASES											
A00	Cholera	1	-	-	-	-	1	-	-	-	-
A20	Plague	*Never Reported*									
A36	Diphtheria	*Last Case in 1992*									
A39	Meningococcal infection	1	-	1	-	-	-	-	-	-	-
A80	Poliomyelitis	*Last Case in 1993*									
	Acute Flaccid Paralysis	5	-	2	2	1	-	-	-	-	-
B05	Measles	0	-	-	-		-	-	-	-	-
B06	Rubella & [CRS]	0	-	-	-	-	-	-	-	-	-
A95	Yellow fever	*Never Reported*									
A82	Rabies	0	-	-	-	-	-	-	-	-	-
A75.0	Louse borne typhus	*Never Reported*									
A68	Relapsing fever	*Last Case in 1997*									
A33	Tetanus Neonatorum	*Last Case in 1995*									
A99	Viral Haemorrhagic fever	0	-	-	-	-	-	-	-	-	-
GROUP 'B' DISEASES											
A03.0	Typhoid fever	25	-	3	-	6	4	1	7	2	2
A01.4	Paratyphoid fever	2	-	-	-	-	-	-	-	-	2
A02	Food poisoning	365	3	38	78	84	46	31	40	28	17
A22	Anthrax	*Never Reported*									
A23	Brucellosis	26	1	2	9	8	3	-	2	-	1
A37	Pertussis	17	8	1	2	6	-	-	-	-	-
A35	Tetanus (Non NNT)	0	-	-	-	-	-	-	-	-	-
A90	Dengue	0	-	-	-	-	-	-	-	-	-
	Viral Hepatitis - Total	**393**	**1**	**74**	**199**	**54**	**14**	**11**	**14**	**10**	**16**
B15	Viral Hepatitis 'A' (ELISA)	167	-	28	95	29	6	5	-	1	3
B16	Viral Hepatitis 'B' (ELISA)	18	-	1	2	1	3	3	4	1	3
B17.1	Viral Hepatitis 'C' (ELISA)	5	-	-	-	-	1	-	1	1	2
B17.0	Viral Hepatitis 'D' (ELISA) among 'B'	0	-	-	-	-	-	-	-	-	-
B17.2	Viral Hepatitis 'E' (ELISA)	1	-	-	-	-	-	-	-	1	-
B19/B17.8	Viral Hepatitis Unspecified	202	1	45	102	24	4	3	9	6	8
B55	Leishmaniasis	0	-	-	-	-	-	-	-	-	-
B65	Schistosomiasis	0	-	-	-	-	-	-	-	-	-
B74	Filariasis	1	-	-	-	-	-	-	-	1	-
B72	Dracunculiasis	*Certified by WHO as Eradicated from Oman*									
G00.0	Haemophilus Meningitis type b	4	1	3	-	-	-	-	-	-	-
G00.1-9	Bacterial meningitis other than Nm & Hib	23	10	4	2	4	1	1	1	-	-
A87	Viral meningitis	10	6	1	3	-	-	-	-	-	-
G03	Meningitis - Unspecified	5	1	1	2	1	-	-	-	-	-
A30	Leprosy	1	-	-	-	-	-	-	1	-	-
A15-A19	Tuberculosis: Sputum Positive	24	-	-	-	-	4	5	2	2	11
	Tuberculosis: Sputum Negative	8	-	-	1	2	-	1	-	1	3
	TB Extra-Pulmonary	38	-	-	2	2	6	7	6	6	9

Note:

1. *The quarterly data are provisional & should be scrutinized & verified by the focal point of communicable diseases (Epidemiologist) in the regions. Previous quarter data would be finalized in the following quarter after receiving the regional feedback.*
2. *Tuberculosis & Leprosy data are for nationals only.*
3. *(i) = imported case.*
4. *Currently laboratory procedures are in the process of being laid down for classification of Viral hepatitis into different types. Hence presently the related data are incomplete.*

Animal Bite Surveillance by Regions

Third Quarter (July to September 2002)

Region	Population at Risk (2001)	Type of Animal					Total Animal Bites	Annualized Rate per 10,000 population for Q3	Annualized Rates of Animal Bites in Previous Quarters			
									2001		2002	
		Fox or Wild	Dog	Cat	Other Domestic	Others (unknown)			Q3	Q4	Q1	Q2
Muscat	685,676	-	35	34	1	1	**71**	4.1	3.6	3.5	3.5	3.9
Dhofar	232,563	-	-	6	-	-	**6**	1.0	1.2	1.0	1.1	1.4
North Batinah	435,681	-	6	3	1	-	**10**	0.9	3.6	3.3	2.0	0.6
South Batinah	250,603	-	15	45	3	-	**63**	**10.1**	**8.8**	**8.3**	**4.6**	**6.5**
Dakhliyah	279,829	1	5	22	1	-	**29**	4.1	**6.4**	**6.1**	**5.3**	**5.9**
Dhahira	221,687	-	5	9	-	-	**14**	2.5	3.2	3.7	3.3	3.8
North Sharqiyah	144,424	8	3	37	8	-	**56**	**15.5**	**14.8**	**12.3**	**10.0**	**14.1**
South Sharqiyah	171,160	-	2	4	-	-	**6**	1.4	3.6	4.3	2.2	2.1
Musandam	35,045	-	2	3	-	-	**5**	**5.7**	**4.8**	2.4	2.4	2.3
Al-Wustah	21,019	2	-	-	2	-	**4**	**7.6**	4.0	**6.9**	**11.8**	**7.6**
Total	**2,477,687**	**11**	**73**	**163**	**16**	**1**	**264**	**4.3**	**4.8**	**4.6**	**3.6**	**4.1**

Note: Rodent Bites excluded

NEWS FLASH

'Cold-Room Certification Initiative' (CSCI), a management tool developed by WHO to assess the performance of vaccine cold-chain was field tested in Oman from 24 to 29 September 2002. Oman's Central Vaccine Store was the first to be certified by WHO after the official launch of CSCI in the world.

Your opinion matters to us:

Any suggestions to improve upon the contents & the design of this Newsletter will always be gratefully received.

Your contribution is valuable to us:

Please write to us concerning your ideas & experiences, both good & bad. sharing them with a wider audience could benefit others, leading to new ideas, techniques & policies & helping to avoid struggling with problems others have already solved.

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