

## **Leprosy control in the Republic of Yemen: co-operation between government and non-government organizations, 1989–2003**

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*Summary* Although the prevalence rate of leprosy in the Republic of Yemen has dropped below the WHO elimination level of less than one case per 10,000 of the population, it is still regarded as a serious public health problem calling for continued vigilance, notably in the detection and treatment of hidden and undiagnosed cases. In the past, religious misinterpretation has generated adverse behaviour patterns towards people affected by leprosy, characterized by aggression, negligence and isolation. Until about 1982, following a visit of a leprologist (Dr S. K. Noordeen) from the World Health Organization, there was no leprosy control programme and attempts to establish one remained ineffective until in 1989, when an agreement was signed between the Ministry of Public Health and Population and the German Leprosy Relief Association. This led to the development of a leprosy control programme in four governorates, later extended to the rest of the country. This paper describes the progress made in the control of leprosy in the Yemen, 1989–2003, by the Ministry of Health and Population and the GLRA, in association with two local societies.

### **Introduction**

In The Republic of Yemen, leprosy is still considered as a ‘public health’ problem, although the prevalence rate has dropped below one case per 10,000 of the population at the national level. We reached this level in spite of leprosy being at the bottom of the priority list of health problems that should be addressed by the Ministry of Public Health and Population (MOPH & P) and the community.<sup>1</sup>

The Republic of Yemen occupies the southern part of the Arabian Peninsula and is located in the southern western corner of Asia. It occupies an area of 555,000 square kilometers with a 3000 km of coastline stretching from the Red Sea in the northwest to the Arabian Sea on the Indian Ocean in the southeast. It controls the southern entrance to the Red Sea through the Bab-Al-Mandab. The topography shows great variation, from coastal plains to middle highlands in the central region, and to the plateau region in the east and north, which runs parallel to the mountainous regions with a maximum height of 3400 m above sea

level. The population of Yemen was 17,676,000 in 1999 and it is primarily a traditional rural society, with 77% of the inhabitants living in small inaccessible tiny villages situated in deserts, mountains and hills.<sup>2,3</sup>

Yemen is an Arab/Islamic state, with a minority Jewish community. Religious misinterpretations have caused behavioural patterns towards people affected by leprosy that were characterized by aggression, negligence, and isolation. These reactions, unfortunately, are contradictory to true Islamic teaching which instructs all Muslims to accept sick people in general, to visit them and give them the necessary support.<sup>4,5</sup> This attitude has resulted in the negligence of charitable support to people affected by leprosy, and contributed additionally to the overall suffering of the Yemeni population in a country forming an island of poverty within the wealthy Arabian Peninsula.

Yemen is one of the most under-developed countries in the Third World. The per capita gross national income (GDP) is US \$451 per year (report of MOPH&P 2001). Thirty-seven percent of girls and 70% of boys are enrolled in the Primary Education Board. In rural areas, the rate of illiteracy is 85% among women, and 42% among men.<sup>6</sup>

As a mountainous country with a poor road network, access to public health facilities remains severely limited. Only 50% of the total population and 30% of the rural population has access to health care. Even where government facilities are operational, bypass rates of 42% have been found, due to the lack of essential drugs and low quality of health services.<sup>7</sup>

Lack of trained manpower, low salaries, poor logistics and supportive services, limited management and supervisory capabilities, low budget allocation for disease control and high average annual population growth rate (3.7%), are amongst the most important factors impeding improvements in health care.

The share of MOPH&P in the Governmental budget is only 4.5% (MOPH&P 2001). The government per capita healthcare budget was only \$2.6, which is extremely low compared with the international standard (minimum \$12 per capita).

All these factors have contributed to the inability of the existing poor health services to cope with the health hazards in general. A field study conducted by the World Bank (1998) showed that government share of health care for each citizen is only 25%, while 75% is paid by the patients.

### **General health situation (MOPH&P 1998)<sup>8</sup>**

In Yemen, the prevalence of most tropical diseases is very high. Tuberculosis, malaria, schistosomiasis, infective hepatitis, leishmaniasis, onchocerciasis, infestation by intestinal parasites and diseases of malnutrition might be mentioned as examples (Table 1). Table 2 shows the demographic parameters for the region.

These indicators are clearly a sad reflection of the overall health situation in Yemen (Table 3). The manpower in the health industry is neither well trained nor motivated (e.g. low salary of less than \$100 paid to medical doctors per month). In consequence, MOPH&P has had to direct its attention towards the control of highly prevalent fatal diseases, with minimal attention to non-fatal diseases such as leprosy.

Safe water is available to only 39% of the population, and 75% of houses in urban areas are not connected to safe water or a sanitary disposal system. This leads to an increase in the rate of water-borne diseases, and of those transmitted through bad waste management.

**Table 1.** Prevalence of tropical diseases in Yemen

Disease	Cases
Malaria	2,000,000 (1997)
Tuberculosis	12,013 (1997)
Diarrhoea and related diseases	304.2/100,000

### General government policy

In 1998, MOPH&P received 3.9% of the overall government budget, which represented less than 4.5% of the country's GNP. The per capita expenditure for health in 1996 was only \$2.6 and is still very low. The priority of the MOPH has been the management of highly prevalent endemic diseases (see above). The control of diseases calling for less public attention, like leprosy, was left to the community or international volunteers like the Missionaries of Charity who started their symbolic institutional care of disabled leprosy patients in 1973.<sup>9</sup>

In this situation of a poor and underdeveloped country, with a long list of priorities of serious health problems and no local funding to fight a disease like leprosy, there was no fieldwork or control programme, except for the contribution of individuals. The registration, notification and follow-up of new cases were extremely poor. A high stigma was attached to speaking about leprosy in public; this was regarded as shameful, and it was prohibited to mention the existence of leprosy in the country in any mass media.

Suspicion and diagnosis of leprosy was poor, not only among health workers, but even among general practitioners and dermatologists. There was no leprosy education in the medical curriculum, and no training for leprosy control was offered to health personnel. Thus, many leprosy cases among outpatients in the general hospital were undoubtedly not diagnosed.

Leprosy control was maintained throughout the country by one of us (Y.A.Q.), who served as director of an Al-Jamhori general hospital in Taiz (400 beds). He used the general hospital's own resources and some additional support from WHO obtained after a visit by Dr S. K. Noordeen in 1982 to Yemen<sup>10</sup> to start control activities in a small part of Yemen between 1985 and 1990; the results are shown in Figure 1 and Table 4. Obviously, no significant improvement in the programme's performance could be observed. What was the solution?

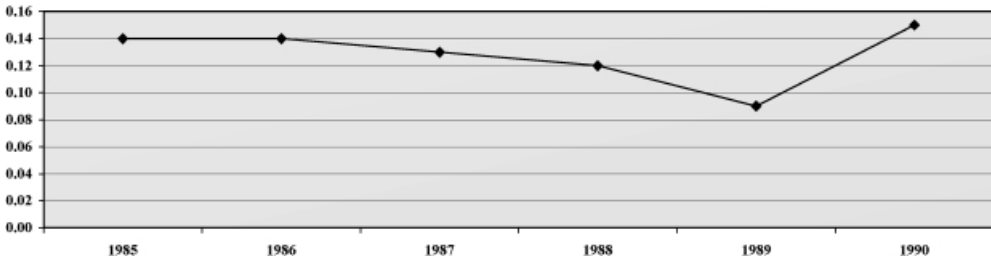
In order to improve this situation, it was decided to initiate a search for local and international, non-governmental support. The long search for international donors ended in

**Table 2.** Demographic indicators in Yemen

Total population	17,676,000
Growth rate	3.7%
Total fertility rate	5.9
Crude death rate among children under 5 years (per 1000)	190
Crude birth rate (per 1000)	52.6
Crude death rate (per 1000)	21
Maternal mortality rate (per 100,000 live births)	1000-1400
Life expectancy at birth (years)	57.5

**Table 3.** Shortages of medical personnel in Yemen

No. of specialist doctors/10,000 population	0.77
No. of general practitioners/10,000 population	1.51
No. of nurses/10,000 population	5.55
No. of beds/10,000 population	5.36



**Figure 1.** Leprosy detection rate per 10,000 population, 1985–1990.

**Table 4.** Leprosy detection rate, 1985–1990

Year	Population	New cases	Detection rate per 10,000 population
1985	11,619,139	158	0.14
1986	11,619,139	164	0.14
1987	12,304,665	154	0.13
1988	12,304,665	152	0.12
1989	12,304,665	116	0.09
1990	12,691,188	185	0.15

June 1989, with an agreement between MOPH&P and the German Leprosy Relief Association (GLRA), after a visit by the director of Medical Projects in GLRA, the late Mr Gershon. During the course of a week, he visited the whole of Yemen using land and air transport, including using a helicopter on a fact-finding mission. This event represented a substantial impetus to leprosy control in the country. GLRA support was initiated immediately and the National Leprosy Elimination Programme (NLEP) was formulated and organized. Five four-wheel drive cars were donated by GLRA. The financial support from GLRA was enough to attract more personnel to work in leprosy. NLEP started its real field activities in 1990 as a pilot project in four governorates, serving a total population of 5,119,960. Four main clinics and a referral centre with a specialized laboratory were opened in major hospitals in the capitals of the governorates (Taiz, Ibb, Hodeidah and Dhamar).<sup>11</sup>

Teams comprising a physician, a medical assistant and a driver were recruited with special support for their salaries. Four mobile teams were trained for field control activities and full MDT services, with support in their training from WHO and GLRA.

The mobile teams started to carry out field work and to mobilize the community through health education in schools, mosques, military camps and other community groups. A

village-to-village search for cases of leprosy was actively implemented. A real 'fight' against leprosy was inaugurated.

Three expatriates, a physiotherapists, a laboratory expert and a consultant leprologist, were recruited by GLRA, and six Indian nurses who were about to leave the leprosy hospital because of low salaries from MOPH&P were supported by GLRA and continued their work. Improved medical services were given to persons affected by leprosy and other skin diseases. International surgeons were attracted to the hospital. In 1992, the MOPH&P changed the name of the old leprosy hospital to the Skin and Venereal Disease Hospital.

### **Co-operation between NLEP, GLRA and the Yemen Leprosy Elimination Society (YELEP)**

The support of GLRA to the NLEP mobilized the local communities considerably. In January 1992, a local non-government organization called Yemen Leprosy Elimination Society (YELEP) was established on the occasion of the International Leprosy Day, attended by the Minister for Health, to support and maintain the activities of NLEP together with GLRA.

YELEP later participated in covering the areas not covered by GLRA budget. In cooperation with other local NGOs, YELEP provided the buildings needed for training, laboratory, physiotherapy and administration, contributing \$408,512 between 1992 and 2002.

In 1990, the two parts of Yemen re-united and in 1991, an assessment was made of the leprosy situation in the southern part of the country. In 1994, GLRA and YELEP cooperated to extend the area of work of NLEP to the rest of Yemen, covering 17,000,000 population and resulting in increased case detection and MDT coverage. Table 5 shows the increasing case detection rate after the successful initiation of activities. The high figure for 1998 is largely due to the success of a Leprosy Elimination Campaign (LEC) in Hodeidah Province, already

**Table 5.** Medical statistics 1985–2002

Year	Population	New cases	Registered cases	Detection rate per 100,000 population	Prevalence rate per 10,000 population
1985	11,619,139	158	1714	1.4	1.50
1986	11,619,139	164	1878	1.4	1.61
1987	12,304,665	154	2032	1.3	1.65
1988	12,304,665	152	2373	1.2	1.93
1989	12,304,665	116	2379	0.9	1.93
1990	12,691,188	185	1400	1.5	1.10
1991	12,691,188	376	1095	3.0	0.90
1992	12,691,188	419	924	3.3	0.70
1993	12,691,188	721	1071	5.6	0.80
1994	15,804,654	309	877	2.0	0.60
1995	16,391,006	384	664	2.3	0.40
1996	16,999,112	456	765	2.7	0.45
1997	17,629,779	517	647	2.9	0.37
1998	18,283,844	734	709	4.0	0.38
1999	18,962,175	561	607	3.0	0.32
2000	18,298,000	554	560	3.0	0.30
2001	18,934,000	513	519	2.7	0.27
2002	19,607,000	388	422	2.2	0.22

reported.<sup>12</sup> This called for the organization of similar campaigns in other parts of Yemen, but progress was not possible due to lack of funds.

## **Training**

International training was started in ALERT, Addis Ababa, Ethiopia, as well as participation in international meetings. These measures strengthened the capacity of the national programme and enabled the NLEP staff to work in close co-operation with health providers within the country.

To start local (national) training, a building with a capacity of 200 persons was financed by the Hayel Saeed Charitable Society (HSCS) (local NGO) in cooperation with YELEP.

GLRA and WHO financed equipment, teaching material and training expenses. The GLRA support included both leprosy and TB-related training of different categories of medical personnel all over the country. Between 1989 and 2003, 215 health providers were trained locally.

## **Health education**

Social stigma attached to leprosy in Yemen has been a major constraint in the control of the disease. Leprosy was understood as a curse from God and incurable. Such wrong beliefs had to be addressed. Therefore, health education activities have been intensified to correct these notions, to change the social image of leprosy and to increase passive case detection. The main tools used are mass media such as TV, radio, newspapers, and the conduction of health education seminars for health personnel, scholars, teachers, and the general public.

Every year, more than 500,000 items of information about leprosy were distributed to students at the beginning of each school year and hundreds of thousands of pamphlets fighting the stigma of leprosy were distributed in mail boxes all over the country immediately before the holly Hegira fasting month, Rhamadan. These activities were all financed and supported by GLRA and YELEP.

In 1998, with support from YELEP, the NLEP used famous actors to produce a stage-play titled 'Please don't isolate us', intended to lighten the social stigma of leprosy. The play succeeded in raising awareness and reducing the social stigma, and encouraged sympathy towards leprosy patients in the audience.

To lower the stigma against leprosy, our mobile teams included health education on leprosy with other tropical diseases of importance in Yemen, such as onchocerciasis, leishmaniasis and TB.

## **Impact of GLRA support**

The main support of GLRA has been to create knowledge, skills and motivation of the leprosy field workers. Support during the last 12 years includes performance allowances for field workers, consultancy by international expatriates, vehicles, drugs, equipment and consumables, local and international training, and help for the socio-economic rehabilitation of persons affected by leprosy. Between 1990 and 2002, GLRA has contributed US\$ 1,256,893.

As already noted above, co-operation between GLRA, YELEP, WHO, and the MOPH resulted in a significant increase in case-finding and improved implementation of MDT.

## Conclusions

Mainly as a result of religious misinterpretation, the impact on social behaviour of the community in Yemen has resulted in severe negligence and ostracism of people affected by leprosy. Additionally, the difficult terrain, illiteracy, and the tragic economic and health situation of the country have all contributed to low priority being given to this disease.

In this situation of poverty and underdevelopment, funds were not available to fight a disease like leprosy. There was no field leprosy service except for the contribution of individual volunteers. The notification of new cases was very poor, so almost until 1984 there was no real country leprosy cases register. The only solution was to call for local and international non-governmental support.

The long search for donors ended in 1989 after an agreement between the Ministry of Public Health (MOPH) and the German Leprosy Relief Association (GLRA) was signed. GLRA support started immediately, and the National Leprosy Elimination Programme (NLEP) was formulated and organized. The real 'fight' against leprosy could begin. The co-operation between GLRA, YELEP, HSCS, WHO and the MOPH resulted in the training of 1829 medical and paramedical workers, with an increase in the case detection rate from 1.4 to an interim maximum of 4.0 new patients/100,000 population. More than 5800 leprosy patients have been treated, and in the meantime, the rate of registered cases (so-called 'prevalence rate') is down to 2.4 patients/100,000 population.

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