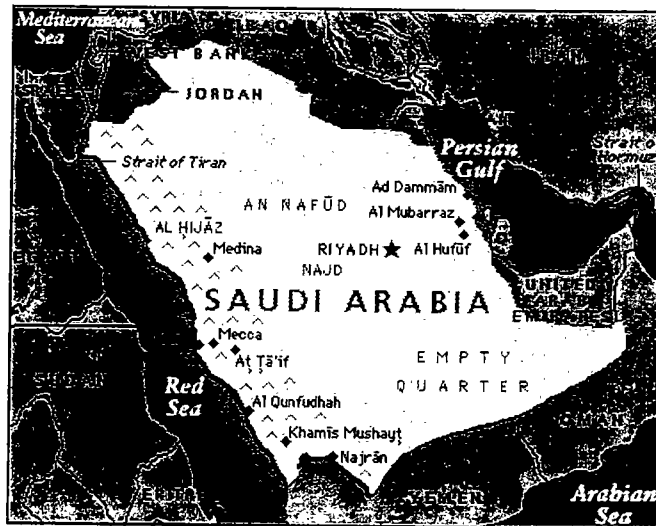


Eradication of Dracunculiasis in The Kingdom of Saudi Arabia

COUNTRY REPORT



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Background Information

The Kingdom of Saudi Arabia occupies about four-fifth of the Arabian Peninsula. It comprises about 2.4 million square kilometres. It shares boundaries on the north with Jordan, Iraq and Kuwait, on the east with Bahrain, Qatar, the United Arab Emirates and the Arabian Gulf, on the south with the Sultanate of Oman and the Republic of Yemen, and on the west it is bounded by the Red Sea that separates it from the African continent.

Geography

Along the coast of the Red Sea, the Tihama coastal plain is running for more than 1,700 kms long. It varies in width from 15 to 60 kms. The Hejaz mountain range which run almost from north to south, eastern to the 'Tihama' plain, rises to over 9,000 feet and then slopes gently to the east constituting the 'Najdh' desert plateau with an average elevation of 2,000 to 3,000 feet from the sea level. Rub'Al-Khali, 'the empty quarter', a massive expanse of shifting sand dunes with salt basins, occupies much of the southern part of Saudi Arabia. The eastern coast extends for about 480 kms on the Arabian Gulf.

Climate

The climate is predominantly hot with regional variation. It is hot and humid in summer and warm in winter in the coastal areas (east and west coasts). In the high altitude regions it is cool in summer and cold in winter. The central and northern areas are dry, very hot in summer (temperature reaching up to mid-forties) and cold in winter.

Saudi Arabia is a dry country and does not have lakes or permanent rivers. There are some permanent streams and valleys which contain water only during seasonal rains.

Average rainfall is 3-5 inches annually mostly during the period October to March, with the Asir region of south-west getting about 10-20 inches.

Population

According to 1992 (Sept.) Census population of Saudi Arabia was 16,929,294 (both Saudis and Non-Saudis), of which Saudi citizens were 12,304,835. The population in 1997 is estimated to be 18,855,494 according to data available to the Ministry of Health. Saudi nationals are 14,230,760 (50.5% of them males and 49.5% females). Non-Saudis are 4,624,734. Annual growth rate for Saudis is 3.7%.

Health Services

During the last few decades and since its foundation in 1932 by King Abdul Aziz, the dominant culture of Saudi Arabia has passed from pastoral to urban in a short time. This was accompanied by successful community development projects supported by the nation's oil wealth. As part of country development and specially during the last two decades, health services have undergone rapid expansion. A major component of it was health centres and hospitals construction. Even the remote areas are now served by physician-staffed health centres. This enables the Government to provide comprehensive range of preventive and curative health services in all regions.

The Ministry of Health (MOH) is responsible for curative and preventive health services in the Kingdom. In addition to the MOH, other parties sharing provision of health services include: National guard, Ministries of Defence, Interior and Education, Insurance and private sector. (see Annex No. 1)

The Kingdom is currently divided into 20 areas (regions) as regards the health information system; one of its components is the reporting of infectious diseases.

The annual budget of the Ministry of Health ranged between 10,283.4 to 7,364.8 million SR during the last five years. That was 5.2 to 4.9% of the Government budget. The standard of services is considered to be good and satisfactory as shown by some health indicators in Tables 1 and 2 of Annex No. 2.

Disease Surveillance System

Surveillance activities of infectious diseases in the K.S.A. date back to 1933 when the 'Health precautions for protection against communicable diseases' act was issued, based on a royal decree.

Infectious diseases directorate is running a surveillance system which includes 36 reportable infectious diseases. Other disease specific directorates are Malaria, Chest, Bilharziasis and Leishmaniasis. Each has its own disease surveillance at the central level while integrated disease control activities take place at regional, sub-regional and peripheral levels. All data on disease occurrence and control activities are compiled in the annual health report produced by the Health Statistics Department of the central level.

A. Responsibilities and duties of different levels

Health centre level (primary health care level)

- Collect morbidity and mortality data of all reportable diseases.
- Compare data with previous ones to detect change.
- Initiate preventive measures towards the patient, contacts and the immediate environment.
- Ensure quick reporting to the next level according to the classification of diseases and the stated time period.

Regional level

- Verify diagnosis, revise and augment preventive and control measures initiated by the primary level.
- Analyse data and take measures accordingly.
- Report to the central level.

Central level

- State national policies and identify interventions to be carried out for disease control.
- Collect, tabulate and present regional data.
- Monitor and compare regional incidences with national incidence.
- Provide technical support to regional level when needed.
- Keep regular feedback and organize in-service training

B. Classification of reportable diseases

Group A list: Diseases subject to immediate reporting (within 24 hrs). Special notification form is designed for each. The list includes class-one diseases, epidemic forming diseases or any unusual occurrence of events.

Group B list: Other notifiable diseases. All diseases are reported on weekly basis from the health centre level to the region and monthly from the region to the central level.

Diseases under special surveillance: Certain infectious diseases with specified targets are under special surveillance. Among these are poliomyelitis, meningococcal meningitis, measles, dracunculiasis. Dracunculiasis is under special surveillance since 1988 when all health facilities of different sectors were involved in a search for any reported case(s) for the last three years. Results were negative and since that time, a monthly zero reporting is still effective from all regions. According to circulars and directives, any case would have been immediately reported to the central level.

C. Surveillance activities

Surveillance is predominantly passive as the system is initiated by the central level and regions report according to directives and regulations. Diseases are reported in terms of number of cases and characterized by week of occurrence, age group, nationality and sex.

Nevertheless, active surveillance is used for completeness purpose. Sentinel sites receive reports from different reporting sites and initiate control measures. Laboratory-based surveillance is confined only to two diseases, polio and animal rabies. Case investigation reports are requested for diseases of special importance e.g. poliomyelitis, meningococcal meningitis, neonatal tetanus, haemorrhagic fevers, etc. Case investigation reports extend to include details of measures taken for contacts and immediate environment.

All the health centres are staffed with at least one general practitioner. Most of them have received training in PHC concept. Urban centres and hospitals are well equipped with laboratory facilities, however doctors in remote areas depend on clinical judgement. Notification of infectious diseases is passed first to the health inspector or infection control nurse located at each principal health centre or hospital. Case containment, follow up and reporting start at this level. At the mid- level, the region, information is compiled, analysed, containment activities are reviewed, remedial action is taken and notification is forwarded to the central ministry. Procedures of public health interventions for infectious diseases control are standardized through plans, protocols and circulars issued by the Ministry of Health.

Water Sources

The country depends on underground water sources and desalination plants. According to MOH evaluation reports the percentage of (total) population with access to safe water was 86% in 1983 and 93% in 1990. UNICEF estimation is 100% for urban, 74% for rural and 95% for total population for the period 1990-96.

The water sources can be divided into four types:

1- Surface water

Depends on rainfall, for which many dams have been constructed for storage of collected water. Currently there are 184 dams and others are under construction, with a total capacity of 775 million sq.m. For 1995 total surface water was estimated to be around 2000 million sq.m. These dams are under government control and water protection is highly secured.

2- Ground water

- To secure the need of safe drinking water to the main cities, major water projects have been constructed from wells in the form of water fields.
- Other comprehensive water projects have been installed in towns, nearby villages and rural areas. There are seven of such projects with a daily production of more than 0.3 million c.m. from 104 wells, at a cost of about 2043 million S.R.
- More than 1200 small scale water projects are run within the small villages and 'hougers'. Each is composed of one well (or more), a tank and a water net.
- Water tankers (*Sougia* projects) are used to supply drinking water to people in remote areas. Annual estimate is 590,000 tankers.

3- Desalinated sea water

Desalination was adopted by the Kingdom as a main strategy to increase provision of safe drinking water. Hence it is considered as one of the important sources of drinking water in Saudi Arabia. Currently 25 desalination plants are installed on both the eastern and western coasts with an annual production of 719 million c.m. (1996). Further extensions will be effective within the coming few years that will increase the production to 1050 million c.m. per year. It is considered a cost effective technology as electricity is produced as well (3,600 mega watt). Total cost was 56,000 million S.R and further extension is undergoing.

The average person consumption of water is estimated at 230 L/day and more (380L) in the main cities.

4- Treated waste water

It is estimated that 50 to 70% of used domestic water are received back in the sewage system. Treated water is re-used in industry and irrigation of public parks and partly in the underground aquifers. In 1996, 418 million c.m. of sewage water were treated of which 95 million c.m. were re-used. It is estimated that treated water will increase to 841 million c.m. within two years.

History of Dracunculiasis in Saudi Arabia

Dracunculiasis was once endemic in Saudi Arabia. Very few topics were published as the disease was a rapidly disappearing phenomenon. Most of the water holes had been replaced by dig cemented wells and later by piped water supply. During 1973, 25 Yemeni immigrant workers and 4 Saudis (from Bisha, south-western part) with clinical picture were reported (Morsy & Sebai, 1975). The authors mentioned the results of other surveys which were negative. One survey was conducted in Mekkah among 80 water-carriers; no active cases were detected. Occasionally calcified worms were detected radiologically in Mekkah, Medina and Gizan hospitals. Another survey was carried out in the western part of Saudi Arabia (Sebai et al, 1974) for Filariasis; no active cases of dracunculiasis were met. However it was mentioned that the disease was known to be prevalent in Mahayel, on the edge of the Asir highlands, about ten years before this survey.

Certification of Dracunculiasis Eradication in the Kingdom of Saudi Arabia

Since 1408h (1988) the Kingdom has an active dracunculiasis surveillance system, following the 1986 resolution of the World Health Assembly [WHA 39.21].

Eradication of Dracunculiasis was adopted as an objective by the World Health Assembly (resolution WHA 44.5) in 1991, and in 1993 the criteria of certification (WHO/FIL/93.187) were issued.

In 1996 the Ministry of Health received detailed reports from regional authorities on activities of certification of eradication. Reports included demographic data, water supply sources and a review of surveillance activities. Active case search was conducted in remote and at risk areas, as well as in areas bordering Yemen.

Summary of regional reports

The 20 regions of the Kingdom submitted their reports. The disease was never reported in any available disease registers. Nevertheless it was witnessed by a few elderly people in the south-western region (Asir, Najran and Jazan). It was called 'o' roag', an Arabic name which means vessels, mostly because the worm was thought to be, or looks like a vessel. The only two recent cases were recalled by two physicians, one in Najran and the other in Asir. The Najran case was an imported case of a Yemeni patient more than 15 years ago. The other case of Asir was also an imported case of a Yemeni patient 8 years ago. Both cases were treated and did not generate local transmission. Since then not a single case was encountered.

Verification visits

Three regions were selected (Asir, Najran and Jazan) to receive supervisory visits from the central level as they share common boundaries with Yemen, which is a known endemic country. The visits were organized to review the regional activities of the certification requirements, including the active case search. Meetings were conducted with health officials at regional, sub-regional and randomly selected health centres of remote areas. Key persons of the community were also interviewed. Some of the elderly people recalled the occurrence of the disease in their area more than 20 to 30 years ago. They knew it was related to infected sources of water. Most of the young people do not even know the disease. People are using safe drinking water even in remote areas, as piped water or brought by tankers from treated wells.

Risk of Reintroduction of Dracunculiasis into Saudi Arabia

Since 1970s the disease has disappeared from the Kingdom, mostly due to the massive development of social and welfare services. Large-scale availability of safe water and an improved living style are among the reasons behind the disappearance of the disease.

Risks of importation:

1. The continuous population influx for religious reasons (Hajj or Omra) is a possible source of importation of cases, though not reported before. The persons in charge of the two holy mosques are giving due attention and making all the possible efforts to welcome the honoured pilgrims and care for their welfare. The Hajj health services system is a major component of the Hajj plan. The Ministry of Health over years, has developed and built up experience to a satisfactory level in preventing introduction of highly contagious diseases like meningitis and cholera during Hajj seasons. Such system is competent enough to detect any imported case(s) and immediately contain it. Every effort is made to avail safe water for pilgrims visiting the holy areas. Sanitary conditions are of high standard and there are no exposed water sources. These conditions guard against any local transmission, in case of importation.

2- An other possible risk of introduction of dracunculiasis into the Kingdom is the proximity of endemic countries (Yemen and Sudan). Surveillance services at the entrance points to the Kingdom, guided by directives from the central level, guard against importation of infectious diseases from these endemic areas. At least during the last two decades, not a single imported case of dracunculiasis was detected. The vast majority of Sudanese individuals come from the northern part, which is not affected by the disease and hence creates no threat. In Yemen the disease is endemic in a localised area and control measures were intensified during the last few years. This will help minimising the risk to the Kingdom.

The health services system covers the whole country. The disease surveillance system is reliable, efficient and sensitive enough to detect any imported case and contain it. The satisfactory level of availability and usage of safe drinking water makes the risks for local transmission negligible.

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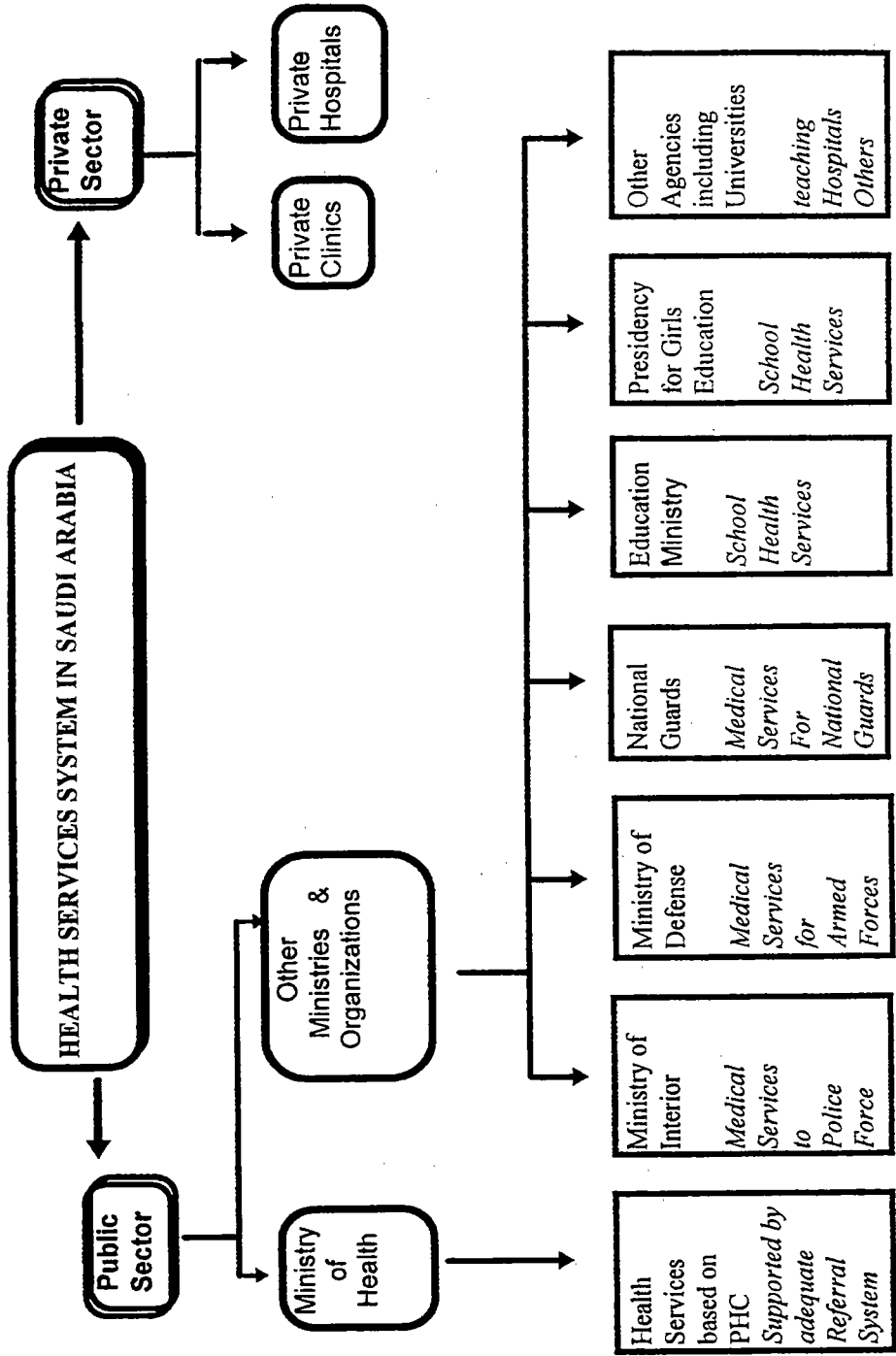
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Annex No.1



Annex No. 2

Table No. 1: Development of health services over the last two decades

A/ MINISTRY OF HEALTH		
INDICATORS	DATES	
	1390h (1970)	1416/17h (1996)
No. of Hospitals	47	176
No. of Beds	7,165	26,955
No. of Health Centres	187	1,731
No. of Doctors in H.Cs	**	4,172
Dr. Pop. Ratio / 10 000 for H.Cs	**	8.3
No. of total Doctors	817	15,266
No. of total Nurses	2,268	34,947
No. of total Technicians	1,532	19,334
B/ TOTAL HEALTH RESOURCES		
INDICATORS	1992	1996
No. of total Health Centres/Clinics	2,166	2,329
No. of Hospitals	274	290
No. of Beds	41,151	42,625
Bed Pop. Ratio / 1000	**	2.32
No. of total Doctors	25,151	30,544
Dr. Pop. Ratio / 1000	**	1.7
No. of total Nurses	53,867	61,214
No. of total Technicians	28,320	31,977

** Data not available

Source: MOH, Annual Health Reports, 1399 (1979), 1400 (1980), 1406 (1986), 1416/17h (1996).

Table No. 2: Some health status indicators

Indicators	Value	Year
Total population	18 855 000	1997
Crude birth rate (per 1000 population)	35.2	1993
Crude death rate (per 1000 population)	4.2	1996
Infant mortality rate (per 1000 live birth)	21	1995
Under-five mortality rate (per 1000 live birth)	30	1996
Maternal mortality rate (per 10 000 live birth)	1.8	1992
Percentage of neonates with birth weight of at least 2500 g	94.9	1996
% of population covered by local health care	99	1995
% of women attended by trained personnel during pregnancy	90	1996
% of women attended by trained personnel during childbirth	91	1996
% of BCG immunization coverage	92	1997
% of DPT3 immunization coverage	92	1997
% of OPV3 immunization coverage	92	1997
% of measles immunization coverage	92	1997
% of HBV3 immunization coverage	91	1997
% of women immunized during pregnancy with TT2	64	1997
% population with safe drinking water	93	1990
% population with adequate excreta disposal facility	87	1990
% GNP spent on health	8	1990
Per capita GNP (US\$)	6 680	1994
Adult literacy rate %	74.9	1996
Adult literacy rate (male) %	85.1	1996
Adult literacy rate (female) %	64.5	1996

Source: WHO & Statistical Bulletin for G.C.C. States (1997).

Annex No. 3

Kingdom of Saudi Arabia
Regional Health Directorates

