

PREVALENCE OF TUBERCULOSIS INFECTION
IN UN-VACCINATED FIRST YEAR PRIMARY SCHOOL STUDENTS
IN BALKA-PROVINCE (JORDAN 1986/1987)

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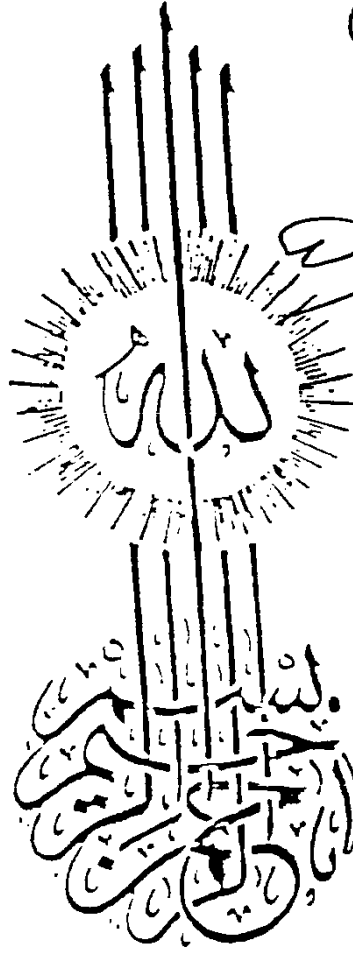
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Introduction

1- Tuberculosis problem (general considerations) :-

It is estimated that there are approximately seven million cases of infectious T.B.* in the world, more than three fourth of them are in the developing world.⁽⁴⁶⁾ Each year about 3.5 million new infectious cases occur and more than half a million people die from this disease⁽⁴⁶⁾. Although it is reported that, most countries in Europe and North America have eliminated the disease as a major public health problem, but for obvious reasons sporadic cases will continue to occur and T.B. will remain an important problem in many technically advanced countries for many years to come^(20,36,45). Tuberculosis remains to occupy an important position among the 21 communicable diseases considered as priority problems in all the six W.H.O. regions⁽⁴⁵⁾. It remains as a problem in most parts of Asia, Africa, Latin America and even in Europe⁽⁴⁰⁾. T.B. morbidity data are registered only in countries where there are well established recording and reporting systems. Even in these countries, the information are sometimes incomplete or inconsistent, because of the lack of standard criteria for diagnosing and reporting the disease. Hence they are of limited use as an index for the measurement of the size of the problem. They may reflect the intensity of case-finding efforts being made from time to time, rather than the actual epidemiological trends specially in developing countries^(46,47).

* T.B. = Tuberculosis

The W.H.O. expert committee on tuberculosis, in its ninth report, recognized that there are many defects in most current systems of recording and reporting, which indicates that the size of T.B. problem might be much greater than what is being reported and reflects the need for national epidemiological surveys specially in developing countries where the reporting system is expected to be weak⁽⁴⁷⁾.

2- The status of tuberculosis in Jordan :-(6)

The first effort to control T.B. in Jordan started in 1952, when the first T.B. out-patient clinic was opened in Amman. In 1954 a tuberculosis hospital was opened in Amman and in 1957, the out patient clinic was expanded to serve as a training and control centre and a section was established at the Ministry of health to organize all activities pertaining to T.B.

New control centres in most of the large cities were opened, supported by a network of "microscopic stations" in out-lying clinics.

At present there are 7 chest centres in the country distributed in Amman, Irbid, Zarqa, Karak, Tafileh, Ma'an and Balka provinces.

In addition to these centres, there are about 11 microscopic stations distributed throughout the small districts. There are two governmental hospitals for chest diseases and tuberculosis, one in Amman and the other is in Ma'an.

2.1- T.B. Control programme in Jordan:- (6)

2.1.1- Description:

The national T.B. control programme in Jordan started at the beginning of this decade, adopting appropriate policies in; surveillance system, treatment regimens and B.C.G. vaccination. It depends to a great extent on active case-finding beside the passive approach. Since 1982 the treatment programme adopted the short treatment policy, which aims at achieving cure within 6 months instead of the old policy which used to extend for 18-24 months. The vaccination policy against T.B. has also been changed starting from 1980; shifting from neonatal vaccination to vaccination of children at school entrance age. Children in the first primary class are vaccinated by mobile teams by the direct vaccination approach (without prior tuberculin testing). Case-finding activities in the programme depend on the following tests:-

- a- Direct smear microscopy of the sputum.
- b- Tuberculin tests using 2 tuberculin units of P.P.D-RT₂₃ solution.
- c- X-ray, using miniature films.
- d- Culture of the sputum for confirmation of certain cases.

Currently T.B. in Jordan is considered to be under good control and the programme aims at reducing the infection rate to a level lower than 1% among children under 14 years of age. At this low level of infection rate, the disease might be considered to be eradicated, and no longer constituting a public health problem and continues in the form of sporadic cases.

It is hoped that Jordan will be the second country to reach this goal in the Middle East after Kuwait. Al-Damluji (1976)⁽³⁾ reported that, when the infection rate drops below 1% in children under 14 years of age, the disease is considered to be eradicated in that community.

2.1.2- Appraisal of current T.B. control activities in Jordan:-

Inspite of deficiencies and inaccuracies in T.B. recording system in Jordan, Jordan T.B. control programme seems to operate satisfactorily.

If we look to the secular trend of T.B. incidence rates for the period (1967-1985) as shown in the following table.

Secular trends of T.B. incidence rates (both pulmonary and extrapulmonary) for the period 1967-1985^(18,6).

Year	Incidence rate per 100000	Year	Incidence rate per 100000
1967	50.9	1976	22.0
1968	37.7	1977	17.9
1969	28.3	1978	14.8
1970	23.7	1979	14.0
1971	29.4	1980	13.3
1972	33.1	1981	27.8
1973	35.8	1982	27.8
1974	33.8	1983	22.4
1975	25.9	1984	25.8
		1985	23.2

The figures seem to be low by international standards, and the disease as judged by incidence rates seems to be declining.

Despite of the general declining pattern of incidence, annual incidence rates are fluctuating up and down. Such fluctuations might reflect deficiencies in the recording system and improved case-finding activities rather than the actual picture of the disease in the country.

2.1.3- Previous studies on T.B. in Jordan:-

Few tuberculin surveys were done in the country in the last 20 years.

One of them was done in early 1970s, which revealed

that about 30% of children aged 12-13 years were infected, with an overall infection rate of 36% for the different age groups⁽⁶⁾.

Another tuberculin study was done in Amman area (1976)⁽³⁰⁾ on school children 5-8 years old. The study reported an infection rate among non-vaccinated children of 0.7%.

The latest study done in 1982/1983 by the T.B. control centre in AMMAN, on 3437 first year primary school students, among them 2700 students (78.6%) were not vaccinated with B.C.G.

The infection rate among the unvaccinated was found to be 1.78%⁽⁶⁾.

The limitations of these three studies were:-

- a- The sample sizes in Amman study (1976) and in the national study of Jordan (1982/1983), were small (1285, 2700 respectively) and do not justify the conclusions offered by these studies.
- b- The study done in the early 1970s did not take into consideration the previous history of B.C.G. vaccination of the study population.

In conclusion, T.B. in Jordan seems to be declining, however, the size of the problem is not well defined yet. Epidemiological surveys using certain epidemiological indices as those recommended by W.H.O.⁽⁴⁷⁾

for the measurement of the actual size of T.B. problem, are highly needed in Jordan.

The epidemiological indices considered relevant by W.H.O. for this purpose are; surveys using the direct smear microscopy of the sputum or the tuberculin test surveys on samples of unvaccinated children.

The tuberculin surveys are more preferred, since they are cheap, easy to conduct and more comprehensive than sputum examinations⁽⁴⁷⁾.

Tuberculin surveys can be conducted either by sampling all the country at the same time or by conducting surveys on the level of the provinces in the country, where one or two provinces are surveyed in one year and in a matter of few years, all the provinces could be covered.

These tuberculin surveys might be conducted in Jordan on children of school entry age, since those children are not vaccinated previously by B.C.G. according to the present national vaccination policy. Accordingly the interpretation of their tuberculin results will be reliable.

The present study is to be conducted on the students of "Balka province", which is one of the big provinces of Jordan.

It is hoped that this study will be the base line for future studies in the same province and other provinces in the kingdom.

Review of Literature

Tuberculosis in the World:

Tuberculosis is still a major scourge of man kind, mainly in the developing part of the world, and although the epidemiological situation of T.B. nowadays in developed countries is good and will continue to improve, since most countries in Europe and North America have eliminated the disease as a major public health problem, but for obvious reasons, sporadic cases will continue to occur, and T.B. will remain an important problem in many technically advanced countries^(20,36,45). It is estimated that there are approximately seven million cases of infectious T.B. in the world, more than three fourth of them are in the developing countries.

Each year about three and half millions new infectious cases occur, and more than half a million die from this disease⁽⁴⁶⁾. The annual risk of infection in developing countries, is estimated to range from 2-5%, which is 20-50 times greater than in technically advanced countries⁽⁴⁰⁾.

In the industrial countries, a natural decline had set in long before chemotherapy became available, and the comprehensive T.B. programmes introduced later on achieved at best a reduction in the risk of infection of some 10% per year. This may seem appreciable, but it nevertheless means that, under the best conditions, about 90% of the new infections could not be prevented. No scientific explanation has yet been found, why the prompt removal by intensive case-finding and chemotherapy of almost all sources of infection, was so slow in affecting the transmission of T.B.

The same technological package would naturally be even less effective in developing countries, where there are many more constraints on early diagnosis and treatment. Apart from medical technology, many sociological factors enter into the process of T.B. control⁽²⁰⁾.

According to the general survey of the world health situation, during the period 1969-1972, T.B. occupies an important position among the 21 communicable diseases considered as priority problems in all the six W.H.O. regions. In order of importance; T.B. was in the thirteenth place in the African region, seventh place in the European region, sixth in the region of the Americas, fourth in the South-East Asia region, third in the Eastern Mediterranean region and second in the Western Pacific region⁽⁴⁵⁾.

The W.H.O. expert committee on T.B. in its ninth report⁽⁴⁷⁾ recognized that, there are many defects in most current systems of recording and reporting. Which indicates that the size of T.B. problem might be much greater than what is being reported, and reflects the need for national epidemiological surveys, specially in developing countries, where the reporting system is expected to be weak⁽⁴⁶⁾.

In the past, T.B. mortality rates were commonly considered to be the most relevant indicator of the size of the T.B. problem. Since the morbidity and mortality were paralleled once upon a time. Estimates of T.B. incidence and prevalence were usually obtained by multiplying the mortality figures by two and four respectively.