

Leprosy Endemicity in Bombay: An Assessment Through Surveys of Municipal Schools*

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Leprosy surveys of randomly selected municipal schools in Greater Bombay during 1970-71 revealed the existence of pockets where the endemicity was expected to be high (of the order of 10 per 1000). It became possible to identify these pockets, essentially located in the northern suburbs of the city, by arbitrarily grouping some schools in which a prevalence rate of more than 5 per 1000 was encountered.

This experience led to a second phase of intensive surveys of all the schools situated in 10 such endemic pockets. Results of these surveys form the subject of this presentation. Out of 83,413 children on the rolls, 67,857 (81.4%) were available for examination, among which 733 leprosy cases could be identified. The overall prevalence rate of 10.8 per 1000 has confirmed our impression gained through previous surveys as regards the high endemicity in these localities.

In our opinion intensive surveys of schools located in presumably endemic zones should be given high priority in urban control programmes.

Introduction

The ample evidence available from the records of the Acworth Leprosy Hospital as regards the high endemicity of leprosy in Bombay, and the striking incidence of the disease among children of school age attending the leprosy clinics (Ganapati *et al.*, 1971) prompted large scale leprosy surveys of municipal schools after making the selection of schools by random sampling (Ganapati *et al.*, 1973). While the overall prevalence rate in schools in general was found to be 3 per 1000 we were struck by the existence of groups of schools where the prevalence was much higher than the general prevalence rate. The identification of 10 such "endemic spots", essentially located in the northern suburbs of the city (see map) was possible by arbitrarily grouping schools in which prevalence rates ranging between 5 and 17 per 1000 were encountered. Intensive surveys of all the schools situated

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in these localities were deemed necessary to confirm the impression of high endemicity in these areas. The results of these surveys, which were restricted to municipal schools, form the subject of this presentation.

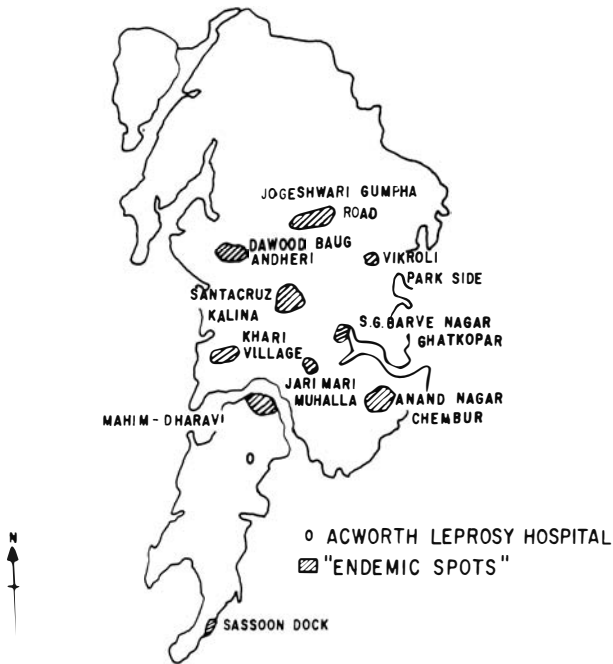


Fig. 1. Map of Greater Bombay showing "endemic spots" detected through school surveys.

Material and Methods

A total of 83,413 children were on the rolls in 148 schools situated in 10 presumably endemic localities. The operational methods of survey and technique of examination and case confirmation, etc. have been detailed in an earlier paper (Ganapati *et al.*, 1973). As in the previous study, the presence of a BCG scar on the deltoid region was noted down, with a view to studying the relation, if any, between the scar and the occurrence of leprosy lesions. Facilities were provided to bring all the suspected as well as diagnosed cases to the clinic of the Acworth Leprosy Hospital for examination and confirmation by senior doctors. While 57.4% of the cases were confirmed in this way, the remaining were examined in the schools by senior workers and the diagnosis confirmed.

Results and Discussion

Table 1 shows the extent of coverage of students in the 10 groups of schools and the prevalence of leprosy in each group.

TABLE 1
Area-wise distribution of cases

No.	Endemic pockets	No. of students on roll	No. of students examined	% covered	Leprosy cases	Cases kept under observation	Prevalence rate per 1000
1	Mahim-Dharavi	11891	9266	77.9	131	26	14.1
2	Khar-khari village	7366	5897	80.0	84	9	14.3
3	Santa Cruz-Kalina	17824	14794	83.0	215	35	14.5
4	Andheri-Dawoodbag/Tata compound	9324	7566	81.0	88	16	11.6
5	Jogeswari-Gumpha Road	13328	10418	78.2	120	16	11.5
6	Kurla-Jarimari Mohalla	2442	1872	76.6	11	2	5.9
7	Chembur-Anandnagar	974	745	76.6	9	1	12.2
8	Ghatkopar-S. G. Barve Nagar	8087	6999	86.5	51	8	7.3
9	Vikhroli-Park side	6717	5530	82.4	11	17	2.0
10	Colaba-Sasson Dock	5460	4770	87.3	13	12	2.7
	Total	83413	67857	81.4	733	142	10.8

Tables 2-4 show the distribution of cases according to age, sex, language groups, etc.

TABLE 2
Age distribution

Age	Number examined	Leprosy cases	Prevalence rate per 1000
5-7	18,555	157	8.4
8-10	26,152	304	11.6
11-13	16,956	193	11.4
14-16	5,461	72	13.2
17-19	682	7	10.3
20-22	51	—	—
Total	67,857	733	10.8

TABLE 3
Sex distribution

Sex	Number examined	Leprosy cases	Prevalence rate per 1000
Male	36,943	453	12.3
Female	30,914	280	9.1
Total	67,857	733	10.8

TABLE 4
Distribution according to language groups

Language	Number of students examined	Cases kept under observation	Leprosy cases	Prevalance rate per 1000
Marathi	40,109	82	453	11.2
Tamil	1,607	5	24	14.9
Gujarati	5,514	7	43	7.8
Telugu	525	2	3	5.7
Hindi	7,770	19	77	9.9
Urdu	9,024	17	86	9.5
Sindhi	14	0	1	-
English	645	3	4	6.2
Kannada	2,649	7	42	15.8
Total	67,857	142	733	10.8

These surveys have revealed an overall prevalence rate of 10.8 per 1000 in the groups of schools situated in the areas referred to and this conforms with the impression gained through our earlier surveys as regards the high endemicity in these localities. Bechelli *et al.* (1973) have correlated the prevalence rates in children and in the total population obtained from studies from various parts of the world and have concluded that the rate found among children 5-14 years old usually reflects the degree of endemicity for planning purposes, as it is easier and less costly to examine school children than other groups. Recent observations in Bombay (Ganapati *et al.*, 1975) from a total population survey of a large closed colony, as well as a survey of schools situated in the same colony, have confirmed the usefulness of such a procedure

The findings of lesser prevalence in the 5-7 year age group as opposed to the maximum prevalence in 14-16 year group (statistically significant: $\chi^2 = 10.06$; $P < 0.005$) and the higher prevalence among male children are similar to our observations in the earlier surveys. As regards the prevalence among various linguistic groups, rates of more than 10 per 1000 were encountered among Marathi, Tamil and Kannada speaking children, Marathi being significantly different from Kannada ($\chi^2 = 4.5$, $P < 0.05$).

Table 5 shows the relation between the presence or absence of BCG vaccination marks and the number of leprosy cases detected.

As in our previous study, the number of cases in the BCG vaccinated group is less than that in the non-vaccinated group; but unlike our earlier finding, this difference in incidence is highly significant ($\chi^2 = 22.8$ with $P < 0.01$).

TABLE 5
Relation between BCG scars and cases detected

BCG vaccination scar	Number of students examined	Number of leprosy cases	Prevalance rate per 1000
Present	37,669	343	9.0
Not present	30,188	390	12.80
Total	67,857	733	10.80

It was however not possible to obtain data on the vaccination and its relation to the occurrence of lesions, etc.

Out of 733 cases, 715 belonged to the non-lepromatous type. Of the 18 suspected infectious cases 12 could be confirmed to be smear positive by bacteriological examination, the remaining not being available for confirmation. A detailed analysis of the clinical features of these cases will form the subject matter of a future presentation.

The results of this investigation have strengthened our belief that intensive survey of schools located in presumably endemic zones should be given high priority in urban control programmes.

It is suggested that this technique of judging the general prevalence rates through detection of endemic foci after random sample surveys of child population should be applied especially in urban areas where whole population surveys cannot be done easily.

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