

Preliminary Report on Leprosy in Bhutan¹

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Leprosy has been known as a disease in Bhutan for many years. In 1964 the Royal Government of Bhutan invited The Leprosy Mission to start a leprosy service in cooperation with the Government. This was begun in 1966 and the present report is based on the records that have been accumulated since then. The intention is to give a descriptive survey of the pattern of leprosy that appears in Bhutan from these records and from the results of a preliminary survey. A more comprehensive survey is just beginning. This work is based in the 60-bed Gida Kom Leprosy Hospital near the capital, Thimpu.

Hospital records show a total of 450 recorded cases of leprosy of which 84 are of limited value as they only record identification data (name, sex, and address) with no clinical information. They are therefore included in the geographic distribution of patients, but the remainder of the figures are based on the 366 complete records.

TABLE 1. *Geographic distribution.*

Region	Male	Female	Total
North	13	10	23
Central	45	11	56
West	111	53	164
East	115	76	191
South	4	1	5
No address	10	1	11
TOTAL	298	152	450

Geographic distribution. The distribution of the 450 patients is shown in Table 1, from which it is evident that the majority of cases are in either West or East Bhutan with very few in other areas. Gida Kom Leprosy Hospital is situated in West

Bhutan and in East Bhutan there are Government dispensaries with inpatients. The presence of a center for treatment in these areas will tend to reveal more cases in the respective districts. During 1966-1967 a preliminary survey was made by means of a series of tours to various parts of Bhutan. These tours examining 5,778 persons, revealed 227 cases of leprosy distributed as follows:

North Bhutan	-16
Central Bhutan	-11
West Bhutan	-71 (plus 52 in-patients at Gida Kom)
East Bhutan	-74
South Bhutan	- 3

No figures can be given for the prevalence rate of leprosy because the examined population cannot be defined. Bhutan will have a census in the near future but at present the demographic data is incomplete. Those who came forward to be examined during the preliminary survey were either self-selected or selected as reported cases or contacts of known cases.

Our records show that in East Bhutan there have been 191 cases identified—of which 96 were identified in one district (Kurtoe). This apparent clustering suggested the possibility of a point epidemic, and with this in view the duration of leprosy in all the Kurtoe patients was studied. The result showed that two peaks of disease onset accounted for 37 per cent of all cases—one in 1946 and the other in 1954. The peaks may be accounted for by factors other than epidemicity, for example inaccurate histories, susceptibility, personal incentive to seek treatment, etc.

Due to the topography of the Inner Himalayas many villages are of difficult access which may prevent patients coming forward. On the whole the leprosy sufferer is not rejected by his family but concealed

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by his family against the community. It is difficult to measure to what extent these factors influence the figures.

Sex. Table 1 shows that there were 298 males and 152 females with leprosy—the male:female ratio being 1.96:1. Comparison of East and West showed that there are relatively more females with leprosy in East Bhutan:

West—males 67.7% and females 32.3%
(ratio 2.09:1)

East—males 61.2% and females 38.8%
(ratio 1.51:1)

Classification. The disease classifications were analyzed from 345 records as shown in Table 2. In 21 records there was no classification and they are therefore excluded.

West & Central—lepromatous 45.5%;
dimorphous 25.4%

East —lepromatous 30.4%,
dimorphous 30.4%

The generally lower incidence of lepromatous leprosy in East Bhutan is confirmed by the figures on Bacteriologic Index (BI), which would be expected since these determinations enter into diagnostic consideration.

The figure for tuberculoid leprosy is higher than might have been expected but finer points of differential diagnosis might have been responsible for these cases being classified as tuberculoid rather than dimorphous tuberculoid.

Bacteriologic determinations. Determination of the BI has only been carried out

TABLE 2. Classification.

Region	Lepromatous		Dimorphous		Indeterminate		Tuberculoid		Polyneuritic	
	M	F	M	F	M	F	M	F	M	F
North	5	3	5	4	0	2	0	1	0	0
Central	15	1	10	1	0	1	6	3	0	0
West	39	20	21	5	4	6	14	12	2	1
East	29	20	33	16	8	11	18	21	3	0
South	0	0	1	0	0	0	1	1	0	0
No address	0	0	1	0	1	0	0	0	0	0
Total	88	44	71	26	13	20	39	38	5	1
Combined	132		97		33		77		6	

Cochrane ⁽¹⁾ pointed out that the Caucasian and Mongolian races appear more likely to develop lepromatous leprosy than the Indian and African races. Job ⁽²⁾ stated that the lepromatous leprosy rate in India is 13-15 per cent, while in China it is 40-50 per cent. From the available figures the lepromatous leprosy rate for Bhutan is about 38 per cent and this fits in with what might be expected when one considers the racial background.

Regional differences suggest that there are less lepromatous and more dimorphous cases in the East. Compared with the West the relative figures are:

on a small number of outpatients. It was thought that this might give an unnatural bias to the statistics and therefore only the inpatient results have been taken. The BI has been determined in 107 of 117 inpatients admitted since the hospital opened. The results are given in Table 3.

It will be seen that the BI was positive in 58.9 per cent of cases. Relating this to region showed:

North, Central & West—positive 62.3%;
negative 37.6%

East Bhutan —positive 41.6%;
negative 58.4%

TABLE 3. Bacteriologic index.

Region	Positive (<2.00)		Positive (>2.00)		Negative	
	M	F	M	F	M	F
North	0	1	3	0	1	1
Central	1	1	9	0	9	2
West	8	2	19	9	10	6
East	3	0	5	2	12	2
South	0	0	0	0	0	0
No address	0	0	0	0	1	0
Total	12	4	36	11	33	11
Combined	16		47		44	

In East Bhutan it would appear, therefore, that there is a lower ratio of infectious cases than in other areas of the country. This confirms the lower percentage of clinically diagnosed lepromatous cases in East Bhutan.

Of the bacteriologically positive patients 74.6 per cent had a BI greater than 2.00. This cannot be taken as being representative since it derives only from hospital inpatients, but it points to the infectivity of those who present themselves for hospital admission and the relative danger of such people to the community.

The infectivity in relation to contact was determined and it was found that in 59.4 per cent of cases there was a known contact with other cases of leprosy. About half

of these were contacts within the family and the others were contacts in the same village.

Age of onset. From the history given in each case the age at which leprosy had been recognized was determined. This is shown in Table 4. The highest frequency within five-year age groups was in those groups lying between 15-30 years (15-19 years, 13.9%; 20-24 years, 14.9%; 25-29 years, 15.3%). There was a slight difference in age of onset between males and females, the highest incidence for males being at 15-40 years and for females at 10-30 years. Very few cases began in the younger age groups and there was only a total of 12 cases which started before the age of 10 years. Similarly

TABLE 4. Age of onset.

Age (yrs)	North		Central		West		East		South		All areas		Total
	M	F	M	F	M	F	M	F	M	F	M	F	
0-4	0	0	0	0	0	1	0	0	0	0	0	1	1
5-9	0	1	0	0	0	3	2	5	0	0	2	9	11
10-14	1	1	0	0	2	4	8	9	0	0	11	14	25
15-19	1	0	2	1	9	3	9	16	0	0	21	20	41
20-24	0	3	3	2	8	5	14	9	0	0	25	19	44
25-29	2	0	4	1	12	7	13	6	0	0	31	14	45
30-34	1	0	5	1	2	3	10	5	0	0	19	9	28
35-39	2	1	3	0	10	0	12	0	0	0	28	1	29
40-44	1	1	5	1	3	3	7	2	1	0	17	7	24
45-49	1	1	4	0	2	0	7	5	0	0	14	6	20
over 50	1	0	4	0	4	1	6	8	1	1	16	10	26

TABLE 5. Disability (related to BI) in 103 patients.

Age (yrs.)	With disability			Without disability		
	Pos.	Neg.	Total	Pos.	Neg.	Total
0-4	0	0	0	0	0	0
5-9	0	0	0	0	0	0
10-14	0	2	2	0	0	0
15-19	3	4	7	3	2	5
20-24	7	1	8	2	2	4
25-29	5	3	8	6	1	7
30-34	4	5	9	10	0	10
35-39	1	0	1	3	3	6
40-44	6	2	8	4	0	4
45-49	4	2	6	5	0	5
over 50	5	4	9	1	3	4

there were only a small number (26 cases) that began at an age over 50 years. This indicates that examination of the 15-40 year age group is likely to yield the highest number of new cases.

Disability. The disability in each case was classified according to the scheme of the WHO Expert Committee on Leprosy (³) for grading disabilities arising from leprosy. This was done on the 103 inpatient records which contained sufficient information. The results are shown in Table 5.

Out of the 103 patients disability of grades 2 to 5 was found in 58 cases. Of these 38 were either bacteriologically negative or had a BI of less than 2.00 and these were further examined to make some rough assessment of potential for surgical amelioration. Seven patients were over the age of 50 and therefore regarded as unsuitable for reconstructive surgery. The disabilities of the remaining 25 patients are shown in Table 6. In two-thirds of the patients there was more than one disability and of the

TABLE 6. Disability (related to surgical potential) in 103 patients.

Disability	Negative	Positive (<2.00)	Total
Hands	3	1	4
Feet	6	3	9
Face	1	2	3
Combined	13	9	22

Degree	Grade II		Grade III		Grade IV		Grade V	
	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.
Hands	8	5	1	0	5	4	1	1
Feet	5	4	11	3	2	5	1	0
Face	2	2	6	1	0	1	0	0
Total	15	11	18	4	7	10	2	1

grades 2 to 5 disabilities one-third were grade 4 or 5. It is reasonable to assume that disabled patients will seek hospital treatment before those with no disability, and therefore the amount of disability in the whole population will be less than the amount and extent shown in these patients. Nevertheless, there must be a significant number of disabled patients in the total population.

Hospital usage. It was found that more than half of all the recorded cases of leprosy had been inpatients at some time. Of the 366 recorded patients 67.2 per cent had been in hospital or in a dispensary. This would indicate that patients were quite willing to come to hospital for treatment. But in fact many patients admitted to hospital could well be treated as outpatients with the establishment of regular clinics.

On the average it was found that patients delayed four years after their recognition of leprosy before presenting for treatment.

CONCLUSION

This preliminary descriptive report assesses the information hitherto collected and suggests future lines of planning.

Addendum: In a subsequent note, the author indicates completion of a systematic survey on one district each in East and West Bhutan. The prevalence rates were:

West Bhutan (Paro District) 13.6 per 1,000.

East Bhutan (Kurtoe District) 23.3 per 1,000.

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