

LEPROSY PROBLEMS IN TURKEY

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Systematic examination of the epidemiology and symptomatology of leprosy in Turkey has been largely neglected for a long time. More than 50 years ago von Düring reported about leprosy in Turkey, but his reports dealt with only limited areas of the Black Sea coast. Only Marchionini has written more extensively about leprosy in Turkey, but his reports are not available to us. Of the Turks only Utku⁽⁸⁾ has worked on therapeutic questions. Under the auspices of the World Health Organization, Cochrane in 1953 and Gay Prieto in 1956 made study journeys in Turkey and produced memoranda about their experiences and their proposals for the fight against leprosy.

We ourselves have been occupied with several publications on leprosy problems, and have tried especially to examine thoroughly the epidemiology and symptomatology of the disease in Turkey⁽⁵⁾. For this we used in part the reports on leprosy cases sent to the Ministry of Health in Ankara, and partly a visit to the leprosarium in the province of Elazığ to obtain personal information and make examinations of the patients. The results of these examinations are to be given here.

STUDY OF THE MINISTRY REPORTS

Study of the reports on leprosy cases sent to the Ministry of Health from January 1, 1950 to December 31, 1954, involving a total of 510 cases, gives us an idea of the geographic distribution of the disease in the country. The distribution of cases is shown in Text-fig. 1, from which it is seen that the greater numbers of cases are in the southeastern and eastern regions. There are also smaller endemic areas in Central Anatolia, in the vilayets (provinces) of Ankara, Kirsehir, Corum, Yozgat and Sivas; in the north, in the vilayet of Zonguldak; in the southwest, in the vilayets of Burdur and Isparta; and in the west, the vilayet of Canakkale. Mention must be made of the comparatively large number of cases in the vilayets of Ankara and Zonguldak. An immigration, especially from the east, to Ankara has taken place during recent years of people looking for better opportunities to earn money. The same applies to the vilayet of Zonguldak, the center of Turkish heavy industry. The numbers of leprosy patients in those vilayets can be explained by immigration from the eastern districts.

One cannot believe that the reports of 510 patients in the five-year period in question really represent the true number of leprosy cases. They are only the cases that the doctors or the government were informed about. As yet

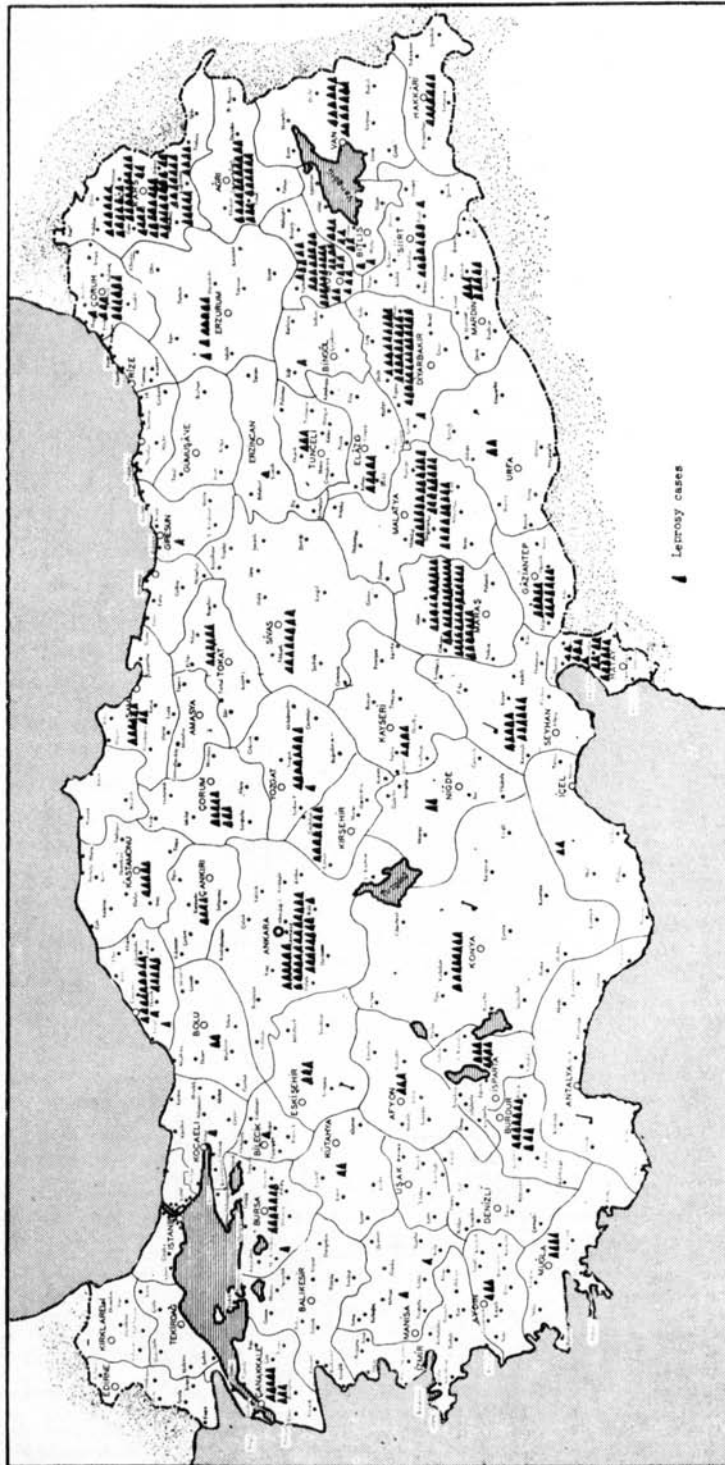
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a systematic and complete examination of the population, especially in the main endemic districts, has not been done. There are doctors only in the capital towns of the provinces and in country towns, and the many villages which are distant or accessible with difficulty are without medical care. Added to this there is a certain indifference of the population toward the disease, caused partly by the kismet belief of Islam, partly by the fear of being detained for months or years in a leprosarium. So it happens that leprosy cases come to be diagnosed only by chance. For example, in the annual muster of recruits, men with leprosy—even advanced cases—are often found among them. Otherwise, patients get into the hands of doctors only if their condition is so bad that they are excluded from the village community, or if they are no longer able to work, although a case of leprosy may be discovered by chance during an examination for a different purpose. However, Text-fig. 1 should correctly indicate the distribution of the main endemic districts.

It is difficult from the known numbers to form an estimate of the total prevalence of leprosy in Turkey. In a population of 23 millions, 500 patients are 0.0021 per cent of the population, or a little more than 0.02 per thousand, a number which is certainly too small. If we consider the experiences gained in other countries with similar climatic and social conditions, for instance in Greece (4), and also consider the special circumstances in Turkey, the number 10-12,000 leprosy patients should be more correct, i.e., about 0.05 per cent of the population, about 0.5 case per thousand. This corresponds to the conditions in the worst-infected provinces like Kars, Agri, Maras, where the known numbers of cases amount to 0.013 to 0.03 per cent of the population and the number of unknown cases is certainly higher.

It is necessary here to give some data on the geographical conditions of the main endemic districts. All of the vilayets in which leprosy cases accumulate are crossed by high mountains, some of them the highest in Turkey. The only exception is the vilayet of Urfa in the south, which is bordered on the west and north by mountains but belongs geographically to the plain and steppe of Mesopotamia (Syria). It is remarkable that very few patients have been reported from this district, and that at Elazig there was none. Climatically this district has dry and hot summers and mild winters with little rain. There are doctors only in the town of Urfa and a few smaller towns, while the greatest part of the level country is without medical care. A peasant population lives in scattered villages, a part of the population being still nomads. Contrary to Urfa vilayet, the other vilayets from which most of our patients come have a definitely continental climate, i.e., hot, dry summers and cold, long winters with plenty of snow. Only in Hatay does the Mediterranean climate have influence, but in the vilayets of Gaziantep and Mardin the winters are also mild.

The patients come mainly from districts whose climate, by contrast of summer and winter, has a stimulating effect, whereas few patients are produced by the districts with mild or hot climates without great climatic contrasts. The districts on the Black Sea coast also have a mild climate; on the coast of the vilayets of Rize and Corun the climate is nearly subtropical and even tea can be grown. These climatic conditions in the endemic districts of Turkey must be stressed, because a stimulating climate is considered unfavorable for the spread of leprosy (2, 3, 6, 7).



TEXT-FIG. 1. Distribution of leprosy in Turkey

In so far as the reports examined permitted, we have identified the clinical forms of the disease in the patients concerned, representing leprosy in Turkey, as shown in Table 1.

TABLE 1.—*Frequency of the clinical forms of leprosy in the 510 reported cases.*

Form	Males		Females		Total	
	No.	(%)	No.	(%)	No.	(%)
Lepromatous	197	(58.8%)	90	(51.4%)	287	(56.3%)
Tuberculoid	9	(2.7%)	2	(1.1%)	11	(2.1%)
Indeterminate	89	(26.6%)	47	(26.9%)	136	(26.7%)
Uncertain	40	(11.9%)	36	(20.6%)	76	(14.9%)
Total	335	(100.0%)	175	(100.0%)	510	(100.0%)

It is to be noticed firstly that males, with 335 cases, prevail over females, with 175 cases, nearly 2:1, and secondly, that in both males and females the malign form of leprosy is prevalent. In total 56 per cent of the cases are lepromatous, while only 2 per cent are tuberculoid, there being little difference in percentages between the sexes in any group. Of the total group 290 were married and 32 were widowed, so three-fifths of the patients are or have been married. This fact, with respect to endangering the families, is not unimportant, especially since all of the patients come from the poorest parts of the population and especially endanger the children in their small and primitive dwellings. This work on the reports makes it possible for us to obtain a survey of some of the epidemiologic factors of leprosy in Turkey.

EXAMINATION OF ELAZIG CASES

We can now go into our findings in the 229 patients which we examined in the Elazig leprosarium.² All but a few of the patients in that institution came from the southeastern and eastern vilayets, which as has been seen are the main endemic districts; patients from western Turkey are mostly sent to the leprosarium in Istanbul.

Of great importance in the epidemiology of leprosy is the type of the disease which prevails in the endemic districts. We have already seen from the leprosy reports that in general the lepromatous type prevails. The same thing was found in the cases examined by us, as shown in Table 2.

Lepromatous leprosy by far exceeds the other forms. If we accept also that benign leprosy is not often hospitalized, and especially that it is not diagnosed in its early stages, the numbers in relation to benign and malign leprosy should not be far out. The ratio of males to females in these cases is 2:1, a ratio reported by many other authors for many endemic districts.

² Elazig Province will be found in Text-fig. 1, about one-third of the length of the country inward from the eastern border, and midway in the north-south direction.

In the children we examined the ratio between males and females is 3:1. That corresponds approximately to the figures given by Chaussinand (¹). One must also consider that in Mohammedan countries women live much

TABLE 2.—Frequency of the clinical forms in 229 cases examined at the Elazig leprosarium.

Group ^a	No. of cases	Lepromatous	Tuberculoid minor	Tuberculoid major	Indeterminate
Male adults	137	127	0	3	7
Female adults	61	58	1	1	1
Male children	23	20	0	1	2
Female children	8	7	0	0	1
Total	229	212	1	5	11

^a Children are aged up to 15 years.

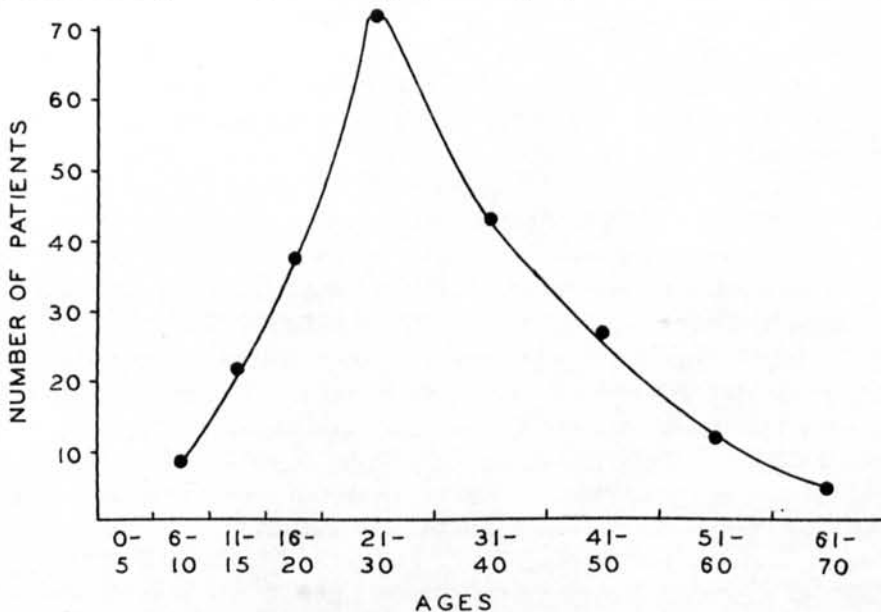
more secluded lives than men do. In Turkey, also, the Islamic customs prevail among the peasant population from which the great majority of our patients derive. There is the possibility that women consult doctors more infrequently than men, so that really the relative numbers of affected males and females are different.

The age factor of the cases is an important element of the epidemiologic condition of a country. The distribution of ages of the 229 Elazig patients is given in Table 3.

TABLE 3.—Age distribution of the 229 patients examined in the Elazig leprosarium, by form of the disease.

Age group	Lepromatous		Tuberculoid		Indeterminate		Total
	M	F	M	F	M	F	
6-10	7	2	0	0	0	0	9
11-15	13	5	1	0	2	1	22
16-20	23	14	0	0	1	0	38
21-30	42	24	1	0	4	1	72
31-40	31	7	1	2	2	0	43
41-50	19	9	0	0	0	0	28
51-60	8	4	0	0	0	0	12
> 60	4	0	1	0	0	0	5
Total	147	65	4	2	9	2	229

The majority of our patients are in their prime, a considerable rise in their numbers occurring after puberty, from 16 years onward. This fact, and the prevalence of malign leprosy in our children, shows that our other patients also were taken ill in their childhood. The few patients with benign leprosy are, with one exception, of an age when the body is at its strongest and can vigorously develop its means of defense. It cannot be said how many of the cases of indeterminate leprosy would have changed into malign leprosy without treatment. If we demonstrate the ages of our patients graphically, there is a conspicuous peak in the curve between 16-25 years of age, to descend gradually to old age (Text-fig. 2).



TEXT-FIG. 2. Distribution of patients according to age.

If we accept Rogers' estimate of the latent period of leprosy infection as 5 years, then it follows that the greatest part of our patients must have acquired the illness in their youth, i.e., before their 20th year, so that the acme of clinical symptoms is found between 30-40 years of age.

The individual exposure to leprosy infection lies firstly in the families in which there are patients, secondly in the surroundings, i.e., in the village community. We questioned our patients about their contact with leprosy cases, in the family or outside of it, and found that 11 times the source of infection was a spouse, 32 times one of the brothers or sisters, 9 times the mother, 8 times the father and lastly 16 times other near relatives, uncles or aunts. Eight times we found ill children together with ill parents. Undoubtedly the danger of infection in the family is great if one member has leprosy. We know that family infection influences especially the type of leprosy, so all our children suffering from the lepromatous type come from parents of which one or both suffered from the same type of leprosy.

In the small, far-away Anatolian villages the living conditions are very intimate, and everybody contacts everybody else continually. Consequently, the danger to young persons is especially great in villages, if there is a person with leprosy in the community. It is much greater than in towns, where the possibility of continual and intensive contact is much less. We see that very convincingly in the analysis of the sources of our 229 cases, for only 12 came from large towns and 14 from country towns (a total of only 26), while 203 came from villages.

Leprosy in Turkey is a disease of the peasant population. The combat against leprosy has to start in the villages. The disease will not decrease in prevalence unless all the villages in the endemic districts have been thoroughly examined. We are aware of the difficulty of such an enterprise. In our description of the geographic situation of the endemic districts we mentioned the high mountains that cross them, making the villages for the most part inaccessible mountain villages. Without energetic government support a census and examination of the ill or endangered persons in these villages cannot be done. It is easier in the larger and smaller towns, where doctors are available, but leprosy cases occur only sporadically in those places. More attention should be paid to preventing the introduction of leprosy cases by immigration (e.g., to Ankara or Zonguldak).

According to our findings the importance of rural customs and habits in the epidemiology of leprosy in Turkey is evident. An open case in a village endangers the whole village. One is able to understand this only if one knows those small, unhygienic, cramped villages, in which the segregation of individuals is impossible, as—so to speak, all the inhabitants are one family. Because of the code of Islam to help and support sick people on the one hand, and the indifference of the population towards disfiguring skin diseases on the other, a person with leprosy can participate in the life of the village community without any restriction and consequently be a continual source of infection. Only at the worst stages of the illness, when the victim is completely maimed or blinded, is it perhaps decided to take him to see a doctor, who then sends him to a leprosarium. It is often not possible even then to examine the next of kin, to say nothing of the other inhabitants of the village.

How predominant are the patients who come from the villages is indicated by the following list of their callings.

Peasants.....	125
Shepherds.....	3
Housewives.....	60
Coffee-house keepers.....	2
Peddlers.....	2
Grocer.....	1
Carpenter.....	1
Hair dresser.....	1
Butcher.....	1

As seen, they are overwhelmingly peasants; workmen and food sellers are few, and of intellectual people there are none. This, too, corresponds to the social structure of the village.

We want to point out another fact that is perhaps not unimportant for the epidemiology of leprosy in Turkey. The main endemic areas are destitute of woodland, what wood there is consisting mostly of low, goat-eaten oak undergrowth. The scarcity of wood in those areas is so great that the people are obliged to gather the dung of their domestic animals to make briquettes for their fires. Those dung briquettes are pasted onto the walls of the houses to dry, and later piled up near the houses. It is not surprising, therefore, that during the summer season there is an enormous plague of flies. If we think at all that leprosy infection can be spread by insects, there is here a great opportunity for them to load themselves with bacilli on open lepromatous sores. We must mention also the plague of bedbugs in those villages, and the fact that phlebotomous flies find ideal opportunity for breeding in the cracks and joints of the houses. It is not without reason that the main endemic areas of leprosy in Turkey are also the main areas of trachoma; and that Oriental boil also occurs rather frequently.

TABLE 4.—*Frequency of symptoms due to leprosy in the 229 Elazig cases examined.*

Leprosy symptom	Form of leprosy		
	Lepromatous	Tuberculoid	Indeterminate
Macules	17	3	3
Infiltrations, plaques	44	2	2
Papules	16	0	0
Nodules	60	1	0
Facies leonina	37	0	0
Facies antonina	2	0	0
Madarosis	110	2	0
Nasal cartilage, destruction	38	0	0
Nasal bone, destruction	8	0	0
Mouth, lepromata	82	0	0
Pharynx, lepromata	34	0	0
Nerves, thickening	151	3	3
Arms, muscular atrophy	38	4	2
Claw hand	57	2	0
Skin, scars of	74	0	0
Skin, atrophy of	21	0	1
Perforating ulcers	35	0	1
Mutilations of hands	30	0	0
Mutilations of feet	34	0	0
Mutilations of both	23	0	0
Mutilations of ear	3	0	0
Gynecomastia	12	0	0
Elephantiasis cruris	10	0	0
Eye lesions			
Ectropion	6	0	0
Ptosis	2	0	0
Pterigium	3	0	0
Keratitis	8	0	0
Pannus, lepromatous	22	0	0
Corneal ulcer	13	0	0
Episcleritis	15	0	0
Iritis	4	0	0
Coloboma	6	0	0
Blindness	16	0	0

Here follows a list of the symptoms of the cases examined by us, in Table 4. In examining that table it will of course be realized that multiple symptoms, as for example papules and infiltrations, and lesions of the mucosa and of nerves, can occur in one case.

The frequency of severe lesions shows that with only a few exceptions, our cases are in advanced stages, even if they have only recently been hospitalized. Chronic cases with regressive development were frequently seen among the lepromatous patients. It was remarkable that when we examined them none of the patients was in a state of lepra reaction. This we explain on the grounds that for about nine months the patients had been without any effective specific treatment. They were only being given isoniazid, which it is well known does not have a satisfactory effect in leprosy. Sulfones and thiosemicarbazones were not available.

All of the lepromatous cases and the major tuberculoid cases were bacillus-positive in smears of material curretted from the nose. In many cases of both types histologic examinations have been made.

The clinical aspects of these patients confirm our opinion that, for reasons that have been mentioned, only seriously advanced cases come to be diagnosed and hospitalized, and that the observation of cases in early stages of the disease is nearly impossible. If the main work of leprosy census and combat in Turkey is not done in the villages, these conditions will not be changed and the disease in the endemic districts will not lessen. For discovering cases a sufficient number of well-trained doctors is necessary. Single courses for government-employed doctors are not much good, because there is no material for demonstration available. Leprosy should be taught in the medical schools; a separate course on the subject should be compulsory. No Turkish university has such a course, and none has a leprosarium attached to it to make sufficient demonstration material and cases available to the lecturers. Didactic teaching is of no value. It is of no use to a young doctor going out into the country if, in a lecture on hygiene, or on bacteriology or on infectious diseases he has heard something about leprosy. The teaching of leprosy belongs to the dermatologist, but he is not able to deal with the matter in a one-hour weekly lecture. A leprosarium should be attached to the skin disease clinic, in order always to have material for teaching and research, and it should be required that at least one hour a week during one term should be devoted to the subject. As yet, all efforts to that end have been in vain. It may be hoped that in Turkey, where so much progress has been made in combating other infectious diseases, especially malaria and venereal diseases, leprosy also will ultimately be dealt with on a large scale.

SUMMARY

A review of epidemiologic data on leprosy in Turkey is presented, and the findings in 229 patients which we examined in the leprosarium in Elazig province are discussed. The problems of the endemicity of the disease in Turkey are discussed, and methods to combat it are suggested.

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