

Leprosy in South Eastern Nigeria

*Report on a Survey at Etiti Ama, Nkporo, Bende Division,
Owerri Province.*

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INTRODUCTION.

Etiti Ama is one of a group of eight villages which together comprise the town of Nkporo in the Bende Division, Owerri Province, Southern Nigeria. Situated in hilly country at a height of about 400 feet, the village lies at the northerly edge of the belt of tropical forest which extends across Nigeria. Here and there are areas of grassland, which become general a few miles further north.

The village is in Ibo country, in the midst of an area where leprosy is known to be rife, but where no accurate statistics have yet been obtained. From the standpoint of leprosy work it is of peculiar interest in that for more than 10 years the people have of their own accord adopted a system of segregation for the lepers of the village and have co-operated with a neighbouring village in building a leper village about half a mile from the parent villages, to which lepers are sent when recognised.

LOCAL CONDITIONS.

The village is as yet little touched by civilization as it is four miles from the nearest road. The compound is the unit of the social life of the people. It consists of a roughly circular area of ground around which houses are built, the majority of them small, dark, unventilated, unhygienic. Their back walls constitute a wall around the compound, while any openings remaining are closed by means of a stockade. Access to the compound is by means of a single narrow entrance. A

village consists of a group of such compounds, their entrances converging on a central open space or playground, where the village council house is usually constructed. Etiti Ama is a large village with 25 compounds, and contains several playgrounds and council houses.

The village is occasionally visited by a sanitary inspector, and is kept moderately clean. There is a great deal of overcrowding, however, and the sanitary conditions are most primitive, the water supply being of doubtful purity, latrines are of the open, untrenched type, while the rubbish is deposited without system.

The diet of the people is largely vegetarian, and consists of yams, cocoyams, cassava and its derivatives, various other vegetables, palm oil, stockfish, with an occasional goat or antelope. Fresh fish is unobtainable.

Cases of cassava poisoning are not rare in the area. Yaws, malaria, and helminth infections are extremely common.

THE LEPROSY SURVEY.

The complete co-operation of the people is the first essential of successful survey work. Unless elders are willing for all members of their families to be examined, and the examination of each person be thorough, the value of the survey is vitiated. The interest of the people of Etiti Ama in leprosy and their eagerness for the segregation of their lepers suggested this village as a good centre for a thorough survey, as not only could the incidence of leprosy be discovered, but the value of the method of segregation adopted by the people could be estimated. This report follows a survey undertaken by a group of workers from the Uzuakoli Leper Colony, including the Medical Officer, a clinical assistant, an experienced laboratory attendant, and others.

A preliminary visit was first made to both Etiti Ama and the leper village when local conditions were observed, and the suggestion of a survey was made to the elders, this meeting with their unanimous approval.

The second visit was a prolonged one, and was made a fortnight later. A meeting of the representatives of each family was first called when the method of survey was carefully explained, questions were answered, and the importance of seeing every member of the community was stressed.

When the people were ready, all the compounds of the village were visited in turn. In each case the men and boys were seen together in one part of the compound, the women and girls in another part. When coming for examination the men were either completely stripped or wore a minimal

loin-cloth. The women wore a cloth drawn between the legs and tied round the waist. As they came for examination, a census of the people was made by one observer who recorded the age group of each person, reckoned in decades, and noted the names of any absentees. The actual examination was made by two, sometimes three, trained observers simultaneously, and it was almost impossible for any lesion to remain undetected. The names were taken of all persons having lesions which could possibly be produced by leprosy, and when all the people had been seen, all these people were thoroughly examined, both clinically and bacteriologically.

THE TESTING OF SENSORY LOSS.

Nigerian practice has convinced me of the value of testing for the loss of thermal sensation in establishing a diagnosis of neural leprosy. In the majority of cases this is the first type of sensation to be impaired, analgesia and loss of the sensation of light touch following later in that order. The test is easily carried out, two test tubes, one containing warm water and the other cold, being required, and even primitive people have no difficulty in differentiating between the touch of the two tubes.

All three types of sensation were tested in this survey, but a number of early neural cases were found in which, while there was no analgesia and no loss of sensation of light touch, there was definite impairment of the sensation of hot and cold. In two cases the perception of cold was alone lost, the patient distinguishing the hot tube with accuracy.

In a few cases, a decision had to be reserved, and the names of these people were put on the observation list. On subsequent visits to the village absentees were seen, and some cases were re-examined.

In the leper village, every person was examined clinically and tested bacteriologically.

POPULATION OF ETITI AMA.

The population of the village is given in Table 1, the people being subdivided into age groups. The co-operation of the people was such that 99% of them were seen.

TABLE I.

POPULATION OF ETITI AMA.										
Age	0-5	5-10	10-15	15-20	20-30	30-40	40-50	50-60	60 plus	Total
Male	230	104	62	35	44	85	108	40	13	721
Female	270	139	62	56	144	204	102	38	26	1041

As no previous census returns are available, conclusions based on these figures must be made with caution. The most striking features are:—

- (1) Females considerably outnumber males.

- (2) The enormous number of infants in relation to the older children and young adults. 500 children between 0-5 compares with 91 between 15-20. This either indicates a very high child mortality rate or a recent sudden and remarkable increase in the birth rate. There is no doubt that the child mortality in the area is very high.
- (3) The few young adults compared with those in middle life (180 between 20-30 and 289 between 30-40). The reason for this is obscure. One fact to be presumed is that a few young males may be away from their villages engaged in trading or labouring at the sea-ports, etc., but their number is few and will not account for the differences observed. The influenza epidemic of 1918 surely resulted in a high mortality and a low birth rate at that time.

CLASSIFICATION OF LEPROUS LESIONS.

The following classification of leprous lesions is adopted.

- (1) *Lepromatous Leprosy*—three clinical forms of leprosy were found in the survey, classified as follows:—(a) Nodular form, (b) Diffuse infiltration, (c) Macular form.

These are all well known forms, the first two needing no particular description. The third form is not common in Nigeria. It is usually of acute onset, numerous macules appearing within a short time of one another over all parts of the body. They are characterised by erythema, some degree of depigmentation, are raised, tense, and thickened, the edge is not clearly defined, there is no alteration in sensation, and they contain masses of acid-fast bacilli.

- (2) *Neural Leprosy*—for convenience, the manifestations of neural leprosy are classified as follows:—(a) The pale flat macule, (b) Major tuberculoid lesions; (c) Minor tuberculoid lesions.

(a) The term '*pale flat macule*' is applied to all those lesions of neural leprosy in which there is no elevation above the surrounding skin. They vary in size from half an inch to a foot in diameter, may be single or multiple. A single macule is more or less circular in shape, but a variety of appearances may follow the confluence of adjacent macules. A greater or lesser degree of depigmentation is always found, clearly marked at the edge of the macule which is well defined. Anhydrosis is commonly found, the macule being drier than the surrounding skin, and it may be scaly. Loss of hair over the macule may be observed. Impairment

of sensation in the macule occurs early, commencing in the centre. As already mentioned impairment of thermal sensation is usually the first abnormality, and is followed by analgesia, and loss of the sense of light touch. I have never felt thickening of the cutaneous nerves around such macules, but thickening of the ulnar nerve, and less frequently, of the great auricular nerve and the external popliteal nerve is of common occurrence as the disease advances.

Some degree of retrogression of the disease is not uncommonly found, particularly in the centre of the macule, Here the skin may be thin and atrophied, and a greater or less degree of repigmentation observed.

(b) *Major tuberculoid lesions.* In this case, the macule is clearly raised above the level of the surrounding skin. Two forms are seen:—The annular form and the plaque form.

The annular form commonly exhibits three zones from without inwards: a narrow zone of depigmentation; a thick hard raised zone of depigmentation, often erythematous,, $\frac{1}{8}$ "— $\frac{1}{2}$ " in width, with anhydrosis and impaired sensation; an inner zone, which may not be raised at all, exhibiting a greater or less degree of retrogression. The skin may be atrophic, and pigmentation may be returning.

The macule is often of long duration, and commonly slowly increases in size until it may cover a large part of the body. "Colonial" macules are very commonly seen, and the cutaneous nerves around the macule may be thickened.

In the plaque form, the whole macule has the characteristics of the thickened zone in the annular form, an outer depigmented zone is commonly seen, and the macule may be scaly and bear some resemblance to the lesion of psoriasis. Some impairment of sensation is distinctive. On the face the macule is rarely scaly, and may indeed have a greasy appearance, while loss of sensation is not invariably found. The majority of major tuberculoid lesions are of the plaque form when they first appear, but have a marked tendency to revert to the annular form.

(c) *Minor Tuberculoid Lesions.* This term is applied for convenience to all manifestations of neural leprosy which are intermediate between the typical pale flat macule and the major tuberculoid macule. It covers a variety of forms, plaque, annular, serpiginous, papulate, etc., all characterised by depigmentation, impaired sensation and some slight degree of elevation. Resolving major tuberculoid forms are included. The classification is clinical and not based on histological findings.

RESULTS OF THE SURVEY.

The following cases were found:—

			Etiti Ama.	Leper Village.
Lepromatous Cases	...	...	4	27
Pale Flat Macules	...	...	19	20
Major Tuberculoid Lesions	...	...	13	7
Minor Tuberculoid Lesions	...	...	28	9
			—	—
Totals	...	...	64	63

All the lepromatous cases gave positive bacteriological findings.

All the cases with tuberculoid lesions gave negative findings except in one minor lesion which was slightly positive at the edge. Only eight of the pale flat macules gave positive findings and these were all scanty.

DISCUSSION.

1. *The Incidence of Leprosy.*

In spite of 10 years of segregation, 65 cases of leprosy remained at large in the village, an incidence of 3.7%. There were 62 lepers living in the leper village, of whom 41 had come from Etiti Ama. No Etiti Ama lepers were living elsewhere, so that the total incidence of leprosy in Etiti Ama was 106 lepers, or almost exactly six per cent.

2. *The Sex Incidence.*

The following table gives the sex incidence of leprosy in the village, the leper village, and the total number of Etiti Ama lepers.

TABLE II.
SEX INCIDENCE OF LEPROSY.

			Males	Females
Etiti Ama	...	...	24	41
Leper Village	...	...	18	44
Total Etiti Ama Lepers			37	69

The preponderance of females will be observed and is characteristic of leprosy in South Eastern Nigeria.

3. *The Age Incidence of Leprosy.*

The incidence of leprosy at the different ages of life is presented in Table III.

TABLE III.

	AGE.								
	0-5	5-10	10-15	15-20	20-30	30-40	40-50	50-60	60 & over
Etiti Ama	1	3	1	1	15	36	6	2	
Leper Village		3	4	1	11	30	7	4	2
Total Etiti Ama Lepers	1	6	3	2	24	55	9	4	2

At Etiti Ama, leprosy is particularly a disease of active

adult life, more than half of the total cases being people between 30 and 40 years of age. The two decades 20-40 years contain 74 per cent. of the total cases.

In Table IV., the above figures for the total number of Etiti Ama lepers are represented as percentages of the population at the corresponding age group. Between the years 20-50 the sex ratio is also given.

TABLE IV.
INCIDENCE OF LEPROSY AS PERCENTAGE OF POPULATION
AT CORRESPONDING AGE GROUP.

	AGE.								
	0-5	5-10	10-15	15-20	20-30	30-40	40-50	50-60	60
Etiti Ama total lepers	0.2	2.4	2.4	2.2	11.6	18.1	4.2	5.0	4.9
				Males	11.1	18.9	3.7		
				Females	12.0	17.5	4.8		

These figures indicate firstly that there is little difference between the susceptibility of the two sexes to leprosy, and also that the susceptibility of the people to leprosy as indicated by the percentage of the population affected for each age group is low and relatively constant throughout childhood, but rises rapidly in adult life until no less than 18 per cent. of the population between the ages 30-40 are affected. This is a matter of great importance, as at that age, the intimate contacts of family life are a potent factor in the spread of infection. Further, many of the women have small children, and although the incidence of leprosy is low in the village in the early years of life, later discussion suggests that children are highly susceptible when placed in repeated contact with a source of infection.

4. *Source of Infection—Evidences of Contact with other Lepers.*

It was found impossible to obtain accurate data as to the contact of people living in the leper village with other lepers. In Etiti Ama itself however, it was discovered with the aid of the chiefs that no less than 39 of the patients (60 per cent.) had actually lived with a leper before they themselves exhibited signs of the disease. In many instances, the apparent source of infection was dead when the survey was undertaken.

5. *Leprosy as at Present in Etiti Ama.*

Both lepromatous and neural types of leprosy were discovered, and were classified as follows :

Lepromatous Types :	Nodular	2
	Diffuse Infiltration	1
	Mixed leprosy	1
	Total	4 (6 per cent.)

Neural Types :	Pale flat macules	19
	Major Tuberculoids	13
	Minor Tuberculoids	30
		<hr/>
	Total	61 (94 per cent.)

Speaking generally, the cases were on the whole not advanced. The lepromatous cases were all in the early stages, and their rarity is to be observed. Many of the neural cases presented a solitary macule, easily concealed by clothing.

6. *The Leper Village.*

The village was situated about half a mile from the parent villages, and had been built without supervision. The houses were, on the whole, no worse than many in Etiti Ama itself, but the majority were nothing more than hovels, huddled together, dark, small, and with no ventilation. A small council house was found at one end of the village, and this was kept reasonably clean, but there was a general atmosphere of decay, reflected in the hopeless faces of the villagers. From the list of cases presented, it will be seen that they embraced people of all ages. Several of the women had young children in arms, most of whom were suffering from yaws. It is the custom for the women in the village to care for their children until they are three years of age, when they are sent back to the parent village if they have no sign of leprosy. The effects of this custom were apparent. One child was seen who was said to be ready for its return to Etiti Ama. Macules were clearly seen on its arms and face. Two others had been sent to Etiti Ama, but had contracted leprosy and had returned. One of them was found in a dying condition in the last stages of neglect and starvation. A fourth child was traced to Etiti Ama, and on examination was found to be suffering from leprosy. There is no doubt that children living with their leper parents can be regarded as extremely prone to infection, and tend to acquire a virulent form of the disease.

The able bodied lepers in the village are able to support themselves by farming, palm nut cutting, and in other ways. The lot of the enfeebled cases is, however, a very hard one, for they are sometimes deprived of any means of support, and, deserted by relatives, are dependent on the charity of fellow sufferers. One woman was found in a serious state of neglect. Such people are apparently left to die and are

then buried in their house, which is closed until the arrival of the next patient in the village.

All types of leprosy were discovered in the leper village and were classified as follows:—

Lepromatous Types :		Nodular	5
		Diffuse Infiltration	3
		Macular	1
		Mixed	18
		<hr/>	
		Total	27 (43 per cent.)
Neural Types :		Pale flat macules	20
		Major Tuberculoids	7
		Minor Tuberculoids	9
		<hr/>	
		Total	36 (57 per cent.)

In Etiti Ama, the majority of the cases of leprosy found were of a mild type, but in the leper village every case was unmistakeable and many were advanced in type. The most striking difference between the two villages however was in the incidence of lepromatous leprosy cases, 4 in Etiti Ama contrasting with 27 in the leper village. There was considerable evidence that a proportion of these were not suffering from the lepromatous form of the disease when they were segregated, but that this form developed later.

With one or two exceptions the villagers stated that the disease was advancing, in many cases rapidly, and the clinical findings pointed to the same conclusion.

These facts are of considerable importance. In many cases the effect of segregation on those segregated at Etiti Ama has been to accelerate the course of the disease, and at the same time a number of neural cases have become lepromatous in type.

The incidence of leprosy in Southern Nigeria is so high the application of adequate measures to combat the disease is an almost overwhelming problem. Insistence on segregation seems the first measure necessary, but in this connection the results of segregation at Etiti Ama give food for thought. If segregation is not accompanied by a radical change in the hygiene of village life, is it not likely that what is happening at Etiti Ama will occur elsewhere, and it is a matter for debate as to whether the picture presented by numbers of segregated lepromatous cases of leprosy, *with no adequate supervision*, is preferable to unsegregated neural cases.

Further work is necessary before it can be definitely

established that segregation alone is liable to involve an increase in the number of infectious cases. The following fact is of interest. While the survey was in progress, numbers of lepers came from other segregated villages, eager to see the Medical Officer. They were classified clinically as follows:—

Lepromatous Types :	Nodular	12
	Diffuse Infiltration	5
Neural Types :	Macular	2
	Pale flat macule	23
	Major Tuberculoid	6
	Minor Tuberculoid	6

All were advanced cases, and the high proportion of L cases is noticeable.