

PREVALENCE AND SOCIO-ECONOMIC IMPACT OF LEPROSY IN NIGERIA: CASE STUDY OF OBUBRA LOCAL GOVERNMENT AREA OF CROSS RIVER STATE**E. Rove-Steiner***

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ABSTRACT

Background and Objective: The rise of global public health emergency on account of leprosy incidents are steadily affecting individual incomes and collective economic viability of sufferers and their communities. The impact of this health challenge on the socio-economic balance is significant and hence this study is intended to find the nexus between the disease and the earning potential of the citizens under such endemicity and the extended health burden it possess on national medical infrastructure. **Materials and Methods:** This investigative study was conducted at health facilities located at Obubra Local Government Area of Cross River State of Nigeria, hospital using recorded cases, direct interviews as well as responses to structured questionnaires. **Results:** Findings of the study show that residents of the area under investigation who are low income earners are at a higher risk of exposure to leprosy attacks and as such constitute a large catchment of the prevalence population. **Conclusion:** The Multiple Drug Therapy (MDT) measure has shown to be effective at leprosy treatment and reduction of individual and national economic impact. Thus, the prevalence indicate that national productivity is impacted on, and income is reduced significantly. Consequently, the decline in income with a corresponding rise in the rate of infection also led to a decline in the agricultural productivity of 10 (5.7%); as well as the number of days spent fishing 6 (6.3%). The factors responsible for the variance in the prevalence of leprosy as well as its socio-economic impact are significant and account for the recommendations of the study.

KEYWORDS: *Leprosy, Mycobacterium leprae, Multibacillary, Paucibacillary, Prevalence, Socio-economy.***INTRODUCTION**

Leprosy (Hansen's disease) is a chronic communicable disease caused by a *Mycobacterium leprae*. This mycobacterium is an obligate intracellular parasite with special affinity for Schwann cells and cells of the reticulo-endothelial system.^[1] Leprosy is an endemic disease found in the tropics mostly, Africa, Asia and the Far-East. It principally affects the peripheral nerves and skin, but sometimes the eyes, mucosa of upper respiratory tract, mouth, muscle, bone and testes. The word leprosy (from the Greek word – 'lepros'), mentioned several times in the Bible, is a translation of the Hebrew word 'Zaraath'. This term includes not leprosy alone but also a number of other skin diseases.^[1]

Leprosy can be diagnosed, and cured with no damaging after effect, only if it is recognised early and treated properly. If left untreated, it causes severe emotional distress to patients, their families, their communities and will seriously affect their socio-economic life. In the early 19th century, leprosy was taught to be a punishment from God.

It was generally believed to have originated from Asia while the earliest records that give good description of

leprosy and its treatment came from India, written by the eminent Indian surgeon 'Sushruta' as early as 600 BC. The next records are of slightly later dates from China. Lastly, Hansen's discovery of *Mycobacterium leprae* in Norway in 1873 represented one of the first identifications of a microbial pathogen of man. Despite its early discovery, the organism has not been cultured *in vitro*. Quantitative bacteriological studies of *M. leprae* became possible after 1960, when Shepard established that the organism grows in the Nine-banded Armadillo (*Dasypus nevelmcentus*) has provided larger amount of antigen and allow more precise characterization of the bacilli.^[20]

Taxonomy / Classification of Leprosy

Taxonomically, *Mycobacterium leprae* is classified under the Order: Actinomycetales and of the Family: Mycobacteriaceae.^[2] It is straight or slightly curved rod shaped organism with parallel sides and rounded ends, 1-8µm long and 0.3µm in diameter. Like other species of Mycobacterium, *M. leprae* divides by binary fission. It is Gram positive and strongly acid-fast following staining with Carbol fuchsin. Distinctively, *M. leprae* is a non-cultivable acid-fast bacterium but capable of limited multiplication locally following mouse footpad

inoculation. It is an obligate intracellular parasite predominantly in macrophages, where the organism commonly occurs in clumps or 'globi' which may become very large, containing hundreds of bacteria. In smaller clumps, the organism characteristically occurs in parallel array resembling 'bundles of cigar'.^[3]

It is important to note that *M. leprae* is the only species of mycobacteria to infect peripheral nerves and specifically Schwann cells.^[4] Finally, heated suspensions of bacteria from the skin lesions of lepromatous patients (Mitsuda lepromin) produced a positive skin response (lepromin reaction) in patients with tuberculoid leprosy, but no response in patients with lepromatous leprosy.

The Sixth International Congress of Leprosy which held in Madrid in 1953 recommended that leprosy should be classified as follows.

1. Lepromatous form (L)
2. Tuberculoid form (T)
3. Indeterminate group (I)
4. Borderline (dimorphous) group (B)

Lepromatous Form (L)

A malign form, especially stable; strongly positive on bacteriological examination, presenting more or less infiltrated skin lesions, and negative to lepromin. The peripheral nerve trunks become manifestly involved as the disease progresses, habitually in symmetrical fashion, and often with neural sequel in advance stages.

Tuberculoid Form (T)

Usually benign, stable; generally negative on bacteriological examination; presenting in most cases erythematous skin lesions which are elevated marginally or more extensively; positive to lepromin. Sequel to peripheral nerve trunk involvement may develop in a certain proportion of cases and this may give rise to serious and disabling deformity. This frequently appears to occur as a result of extension from, or through cutaneous nerve branches, rather than of systemic dissemination, and consequently it is often asymmetric unilateral.

Indeterminate Group (I)

A benign form, relatively unstable, seldom bacteriologically positive, presenting flat skin lesions which may be hypopigmented or erythematous; the reaction to lepromin may be negative or positive. The indeterminate group consist essentially of the "simple macular" cases. These cases may evolve towards the lepromatous form or the tuberculoid form or may remain unchanged indefinitely. Neuritic manifestations, more or less extensive, may develop in cases that have persisted for long periods.

Borderline (Dimorphous) Group (B)

A malign form, very unstable, almost always positive on bacteriological examination; the lepromin reaction generally negative. Such cases may arise from the

tuberculoid form as a result of repeated reactions, and sometimes, they evolve to the lepromatous form. The nasal mucosa often remains bacteriologically negative even when the skin lesion is strongly positive. The skin lesions are usually seen as plaques, bands, nodules, etc with a regional distribution similar to that of lepromatous leprosy except for conspicuous asymmetry.

WHO, (1982)^[5] outline a simple classification system based on the probable number of *M. Leprae* being harboured by an individual. Leprosy patients harbouring relatively few bacilli were called Paucibacillary leprosy (Tuberculoid & Indeterminate) patients. While those harbouring a relatively large number of bacilli were referred to as Multibacillary leprosy (Lepromatous & Borderline forms) patients.

Source of Infection

The existing epidemiological evidence suggests that human infection is the most important, if not the only source of infection in man.^[6] Observations made from incidence studies among contacts of leprosy patients have clearly established that multibacillary patients are of the highest epidemiological importance in disease transmission. Such data have consistently shown that household contacts of Paucibacillary leprosy patients are twice as likely to contract the disease as individuals with no known house hold contact, whereas similar contacts of multibacillary leprosy patients have a 4-10-fold increase in risk. Paucibacillary leprosy patients are usually negative in bacteriological test on skin and nasal smear specimens, and are therefore substantially less infectious than Multibacillary patients with high bacterial load.^[6]

It must, however, be appreciated that exposure to known cases cannot be established in a high proportion of leprosy infections. This is partly because of the long incubation period of the disease (between 2.9 and 5.3 years for tuberculoid leprosy), and (9.3 and 11.6 years for lepromatous leprosy) – National Communicable Disease Centre. And the social stigma, which often results in patients denying a history of interfamilial contact. "Inapparent" lepromatous cases with minimal, inconspicuous lesions may also account for a certain proportion of untraceable infections.

Modes of Transmission

Portals of exits

Lesions in the skin and nasal mucosa of leprosy patients have long been recognised as sources of *M. Leprae*.^[6] The present evidence is consistent with the hypothesis that the upper respiratory tract of multibacillary patients is the most important source of *M. Leprae* in the environment. The organism can also be discharged from the skin surface of multibacillary patients, especially when there is a breach in its continuity, e.g., leprosy ulcer.^[4]

Portals of entry

The skin and the respiratory tract have traditionally been considered as the most likely routes of entry of *M. Leprae* in the body. With regard to the respiratory tract, the evidence in its favour is on the increase in spite of the long held belief that the skin was the exclusive portal of entry.^[6] Recent experimental findings of Ref.^[7] on their mouse footpad model have raised some interesting possibilities on the route of entry of *M. Leprae* being a determining factor in the occurrence of leprosy and its type.

Global Prevalence

From the mid-sixties to the mid-eighties, global estimates appeared to be constant at between 10 and 12 million. The introduction of Multi-Drug Therapy (MDT) in many countries and the consequent reduction of prevalence of the disease have necessitated a re-assessment of the global estimate.^[7]

As would be observed, global public health impacts indicate that 2 to 3 million people are estimated to be permanently disabled because of leprosy. India has the greatest number of cases, Brazil second and Indonesia third. In 1991, the world incidence of Hansen's disease was estimated to be 640,000. In 2000, 738,284 cases were identified. According to the WHO 2003 to 2004 figures, new cases detected worldwide have decreased by approximately 107,000 cases (or 21%). This decreasing trend has been consistent for the past three years. In addition, the global registered prevalence of Hansen's disease was 286,063 cases; 407,791 new cases were detected during 2004.

Although the number of cases worldwide continues to fall, pockets of high prevalence continue in certain areas such as Brazil, South Asia, some parts of Africa and the western pacific. In 2015 alone, leprosy affected 212,000 more people globally, of them, 60% were in India. The other high-burden countries were Brazil and Indonesia. Of the new cases 8.9% were children and 6.7% with viable deformities.^[8] In 2017, there were 211,009 new leprosy cases registered globally according to the official figures from 159 countries from the 6 WHO regions. Based on the 192,713 cases recorded at the end of 2017, prevalence rate corresponds to 0.25/10,000.^[9]

Leprosy in Nigeria

Nigeria has annual new cases detection of 4000 people, a grade 2 disability rate of 12% and nearly 10% child ratio among new cases. Because of this, leprosy remains a disease of public health importance in Nigeria.^[10] The estimated disability rate in the country among the registered cases varies from 2% to 50%.^[9] In Northern Nigeria, the prevalence of leprosy is comparatively higher than in the South.

Consequently, with 2,892 new cases, Nigeria has been ranked third among African Countries with the highest burden of leprosy according to the World Health

Organisation Global Health Observatory Data Repository. DR Congo has 4, 237 new cases while Ethiopia has 3,970 new cases.^[11] The Multiple Drug Therapy (MDT) which has signified a major breakthrough in the control of leprosy, was introduced in Nigeria in 1985. In 1998, Nigeria achieved WHO's elimination target of less than one case/10,000 population at the national level, saying lateness in presenting cases at the health care facilities later made matters worse.^[11] It was however observed in the report that 'mistaken beliefs about the disease being highly contagious, hereditary and Heaven's punishment negatively affected persons with leprosy even after they are cured'.^[11]

In June 2018, WHO issued the first evidenced-based guide-lines for the diagnosis, treatment and prevention of leprosy. The guidelines indicate that standard methods of clinical diagnosis should be maintained, in addition to slit skin smears where such services are available. The 3-drug regimen comprising rifampicin, dapsone and clofazimine is now recommended for all leprosy patients, with a duration of 6 months for PB and 12 months for MB leprosy.

The adverse economic implications of leprosy in terms of manpower, and finance, for the nation cannot be overemphasized. The World Health Organization (WHO) in realization of the health and socio-economic importance of leprosy has placed leprosy as one of the six communicable disease for which control is being given high priority under the TDR programme.^[12] Despite the long existence of several leprosy institutions in various parts of the country, the real impact of the general control measures on the national leprosy situation is far from satisfactory.^[13]

Socio-Economic Factors in Leprosy

The social dimension of leprosy is often tragic and often or frequently hinders the successful implementation of leprosy control programmes.^[14] Few other diseases cause such an intense reaction from the community as so much distress and unhappiness to patients and their families. The socio implications of the disease are closely interwoven with the cultural traditions of society. Every society considers health and disease and life and death, in different ways and this influences the attitude taken by the community towards patients as a consequence to their illness.^[14]

The social response to leprosy has very often been harsh and unsympathetic, the patient being rejected on the basis of a belief that the disease is a divine punishment and is, hence, incurable. The unsightly deformities and the ulcerations that may occur only serve to heighten the repulsion just as WHO 2018 Report accordingly observed that a total of 208 619 new leprosy cases were recorded globally in 2018. This official finding came from figures received from 159 countries of 6 WHO Regions. Consequently, a total of 184 212 cases was

reported at the end of 2018, for which prevalence rate corresponds to 0.2/10 000.^[14]

The adverse reactions of the community tend to devalue the status of the patients. This manifests itself by fear, insecurity and withdrawal and frequently leads to deviant behaviour which hinders leprosy control activities. Ignorance, lack of faith in treatment, and loss of wages while attending clinics in marginal societies further aggravate the situation (WHO, 2018). Very often leprosy patients find it difficult to earn a living. This may be the result of progressive deformities, but more often it is caused by the employers' exaggerated fears regarding the disease. Unemployment, crippling deformities, and social ostracism may finally lead to alcoholism, begging and a hostile attitude towards society (WHO, 2018). In certain countries, special legislation against leprosy still exists, which lead to perpetuate the social prejudice against the disease.

Leprosy as a disease has constituted a grave social problem from time immemorial. Because it can deform its victim beyond recognition, many people dread it often beyond reason. To worsen the situation, the disease has been given various interpretations bordering on fear, superstition and ignorance.^[15] In the olden days, some societies who had lepers had bells tied to their waist to inform others of their arrival. Frequently, the patient is emotionally rejected by his society also. Very rarely does the patient rebel against this.^[15] The people believed that lepers have deviated from the norms of society. In these societies, the lepers are completely ostracised because of the belief that they had gone contrary to the laws of the land. They are quarantined in places where they would not mix freely with healthy people while some are even killed.

In other situations, many people would not risk the name of their families as such; a leprosy patient was therefore protected. This made leprosy become a source of infection and invariably increased the number of leprosy patients. Any family associated with leprosy resulted in loosing of their friends. Prospective suitors were scared because they believe that once a leprosy patient had been identified other members of the family would surely be come lepers sooner or later.

The social stigma and prejudice attached to the disease very much affects the reintegration of lepers into the society. In some societies, though the patient may show a sign of 'cleanness' they are still not taken seriously, but segregated and watched carefully waiting for the disease to break out again. For reintegration, many of the lepers in this case had no other option than to go to places where discrimination was minimal. Either near the leper colony, or back to the colony itself to look for jobs. Here they take up appointments as teachers, carpenters, tailors, cobblers, laundry men and choirmasters. This discrimination is even extended to staff that were seen as lepers, and as a result gradually lost their friends.

The amount of damage done by the disease to the patient may be devastating. A patient may have desired interest of becoming a cobbler for example but because of his physical deformities such as claw hands and bad eye sight (lagophthalmous condition), he cannot draw a straight line with a pencil and a ruler. This affects his chances of being a carpenter. Many of the patients were badly deformed and rightly felt they cannot be accepted in their respective villages. They also stand disqualified before any prospective employer because of their claw hands and drop foot.^[15]

MATERIALS AND METHODS

Description of Study Area

The study area is Obubra Local Government Area. Located between latitude 6°15'-6°45'N and longitude 6°10'-6°33'E of the equator. It is bounded to the north by Yala LGA, to the East by Ikom LGA, to the Northwest by Enugu State, Southwest by Yakurr LGA and to the South by Akamkpa LGA. It covers an area of about 1163.647Sqkm with a total population of 134,225 (66,659 males and 67,566 females) and a 1996 population projection of 154,929 as observed in the 1991 population census figure of Nigeria.

Identification of Leprosy Cases

This identification was carried out in conjunction with the medical experts of the Tuberculosis and leprosy hospital, Obubra using the following procedure.

1. Identification by skin examination Ref.^[16]

An area with good light penetration was chosen for the examination. The whole skin (except the genitals) was examined carefully and slowly at sites which were abnormal (presence of lesions). These lesions were in the form of a macule, an infiltration, a plaque, a nodule, a papule or a histoid nodule.

Final identification of these Lesions was done through the observance of.

- a. The colour: which can be;
 - i. Erythematous
 - ii. Copper-coloured
 - iii. Hypopigmented
 - iv. Hyperpigmented
 - v. Depigmented
- b. The surface: which can be;
 - i. Smooth
 - ii. Rough
 - iii. Scaly
 - iv. Pebbled
 - v. Shiny and sweating.
- c. The edges: which can be;
 - i. Distinct
 - ii. Raised
 - iii. Streaming or
 - iv. Like satellites.

2. Identification by nerve examination

The nerves were closely examined to observe for tenderness or hardness. During each pressing, the patient face was looked at to observe for pain. This is because leprosy;

- Makes nerve tender and painful
- Makes nerve thicker than normal
- Damage some or all of the fibres within a nerve causing paralysis, weakness or anaesthesia and dryness of the mouth.

3. Testing for weakness and paralysis

The procedure requires the patient to put the hand, foot or face into the test position (angle opposite to the examiner) and keep it there. The patient was then tested on how strong he can hold his hand, foot or face in this test position. If he cannot do this as strongly as normal, he has weakness (peresis) or paralysis.

Method Used for Prevalence Study

Records kept at the TBL clinic provided information on the following parameters;

- Sex of the patients
- Type of leprosy
- The total number of registered cases.

Methods Used for Socio-Economic Impact Studies

The study population consisted of civil servants, fishermen, farmers, businessmen and women, as well as traders. Structured questionnaire was used to obtain the responses and results that were analysed in this study.

RESULTS

Results collated from the five health districts showed clearly that, 257 patients were registered for leprosy between May to October 2019. The percentage prevalence, in respect of sex, examined were as follows; males 119(0.09%) and females 128(0.10%). While the

overall prevalence for both sexes was 1.03%. This result shows a higher prevalence rate in females than in males (Table 1). When compared to the percentage prevalence for the different types of leprosy (Table 2) the result show a higher percentage prevalence for multibacillary patients 214(0.16%) as compared to paucibacillary patients 43(0.03%).

The socio-economic impact study as it affects the monthly income of patients showed a total of 384 patients (76.8%) that received between \$20-\$40 monthly as compared to 116 patients (23.2%) who received between \$40-\$80 and above. These results indicated that low income earners recorded a higher rate of infection than the high income earners.

Leprosy did greatly reduce the manpower in terms of agricultural productivity of the patients. Before infection, a total of 110 patients (62.9%) cultivated on 3-4 hectares of land while a total of 45 patients (25.7%) representing those infected, cultivated the same number of hectares. This drop is also noticed for those farming on 5-6 hectares on land. The result also, showed an increase per yield for those that cultivated before the infection. Those that cultivated on 7 and above hectares of land before infection, had 10(5.7%) as compared to the 0.0% during infection (Table IV).

Similarly, out of a total of 96 patients, 42 patients (43.8%) representing those that fished before the infection, did so between 5-6 times per week while 25 patients (26.0%) fished between 7 and more times per week. These 2 values show an increase of fishing time per week before infection. During infection, 9 (9.3%) of the patients fished between 5-6 times per week and 0.0% for those that fished 7 and more times per week an indication that leprosy contributed to their low productivity.

Table I: Prevalence of Leprosy In The Five Health District of Obubra Local Government Area Between May-October 2019 With Respect To Sex.

Health districts	Population of the area (1991 census fig.)	Total no. Of registered cases	Total percentage prevalence	No. (%) prevalence with respect to sex	
				Males No. (%)	Females No. (%)
OKOM	37,689	67	0.17	25(0.07)	42(0.11)
ADUN	35,121	40	0.11	14(0.04)	16(0.05)
OSOPONG 1	19,181	88	0.45	50(0.26)	38(0.20)
OSOPONG 2	23,710	33	0.14	18(0.08)	15(0.06)
YALA	18,524	29	0.16	12(0.06)	17(0.09)
TOTAL	134,225	257	2.03	119(0.09)	128(0.10)

Source: Field Survey (2019)

Table II: Prevalence of the Different Types of Leprosy in the Five Health Districts of Obubra Local Government Area.

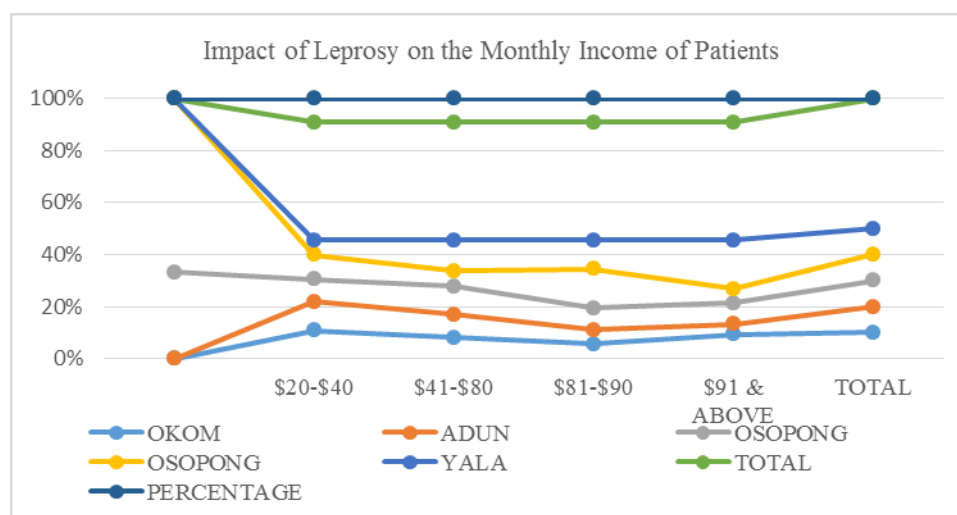
Health Districts	Population Of The Area (1991 Census Fig.)	Total No. Of Registered Cases	No. (%) Prevalence Of The Different Types Of Leprosy	
			Paucibacillary Leprosy No. (%)	Multibacillary Leprosy No. (%)
OKOM ADUN	37,689	67	4(0.01)	63(0.17)
OSOPONG 1	35,121	40	12(0.03)	28(0.08)
OSOPONG 2	19,181	88	21(0.11)	67(0.35)
YALA	23,710	33	3(0.01)	30(0.13)
	18,524	29	3(0.02)	26(0.14)
TOTAL	134,225	257	43(0.03)	124(0.16)

Source: Field Survey (2019)

Table III: Impact of Leprosy on the Monthly Income of Patients in the Five Health Districts in Obubra L.G.A.

Monthly income (n)	Okom	Adun	Osopong 1	Osopong 2	Yala	Total	Percentage %
\$20-\$40	58	60	46	51	30	245	49.0
\$41-\$80	25	27	33	18	36	139	27.8
\$81-\$90	10	10	15	27	20	82	16.4
\$91 & ABOVE	7	3	6	4	14	34	6.8
TOTAL	100	100	100	100	100	500	

Source: Field Survey (2019)

**Fig 1: Impact of leprosy on monthly income of patients.****Table IV: Impact of Leprosy on The Agricultural Productivity of Patients In Obubra Local Government Area**

Number Of Hectares Cultivated	No. Of Victim Cultivating A Particular Hectare Before Infection	% Of Victim Cultivating Before Infection	No. Of Victim Cultivating A Particular Hectare During Infection	% Of Victim Cultivating During Infection
NONE	0	-	10	5.7
1 – 2	25	14.3	115	65.7
3 – 4	110	62.9	45	25.7
5 – 6	30	17.1	5	2.9
7 AND ABOVE	10	5.7	0	-
TOTAL	175	100.0	175	100.00

Source: Field Survey (2019)

Table V: Impact of Leprosy on The Number of Fishing Time Per Week Before Infection and During Infection.

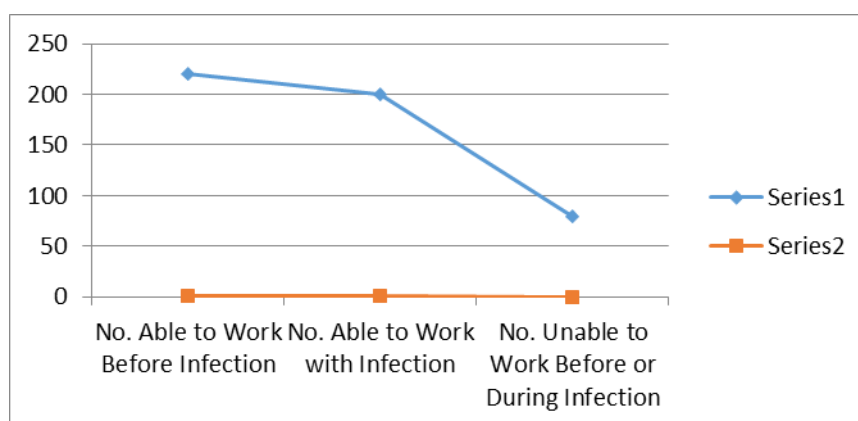
Number of fishing time per week	No. Of victim fishing before infection	Percentage before infection	No. Of victim fishing during infection	Percentage during infection
NONE	-	-	6	6.3
1 – 2	8	8.3	24	25.0
3 – 4	21	21.9	57	59.4
5 – 6	42	43.8	9	9.3
7 AND ABOVE	25	26.0	-	-
TOTAL	96	100.0	96	100.0

Source: Field Survey (2019)

Table VI: Response of Patients on Work Before and During Infection.

No. Able to Work Before Infection	220	44%
No. Able to Work with Infection	200	40%
No. Unable to Work Before or During Infection	80	16%
Total	500	100

Source: Field Survey (2019)



DISCUSSION

Leprosy as a disease has brought about grave social as well as economic problem in Obubra Local Government Area. The prevalence pool as observed in the total number of registered cases is in a constant flux resulting from inflow and outflow. The inflow is contributed by the occurrence of new cases, relapse of cured cases, and immigration of cases. The outflow is mainly through cure or inactivation of cases, death of cases, and emigration of cases.

The percentage prevalence as observed between May-October was given as 1.03%. This finding is similar to the work of Ref.^[9] that gave the prevalence rate of leprosy, based on the 192,713 cases at the end of 2017 as varying from 0.25 to 6.38/10,000 population.

The results showed that the prevalence of Multibacillary (Lepromatous) infection 214(0.16%) outweighs that of Paucibacillary (Non-Lepromatous or Tuberculoid) infections 43(0.03%). This finding agrees with the^[17] who found that the mortality rate for lepromatous patients was four times more as compared with the general population, and that the situation for non-lepromatous patients was very similar to that of the

general population. Noordeen (1972) canvassed in his work in Ref^[18], that while the standardize death rate for lepromatous patients was three and the half times that of the general population, the non-lepromatous patient themselves were having a mortality risk which was twice that of the general population.

Regarding percentage prevalence with respect to sex, it has been observed that “Males are more commonly diagnosed with leprosy than Females in many, though not all countries, often in the ratio of 2:1. “It should be pointed out that the male preponderance in leprosy is not universal and there are several areas, particularly in Africa, where there is either equal occurrence of leprosy in the two sexes, or occasionally even a higher prevalence among females. Such situations have been observed in Uganda, Nigeria, Malawi, Gambia, Burkina Faso and Zambia”.^[14] This finding agrees with the observed result where the percentage prevalence for females 128 (0.10%) outweighs that of the males 119 (0.09%).

Judging from the distribution of leprosy according to socio-economic backgrounds, there are indications that 384 patients representing 76.8% of those earning

between \$20-\$40 are of the low income group while 116 patients representing 23.2% of those earning between \$41-\$80 and above were those in the high income group. One can now draw from this result that leprosy prevails among the low income group. These findings are similar to the work of Browne (1975), in which he maintained that poor state of the economy evidenced by prolong and severe malnutrition, poor housing and general poor sanitary facilities helps to increase the prevalence of leprosy in a community.

Accordingly, a patient who does not depend materially on his community and especially if the reverse is the case and the community depends on him, then his status is far more secured.^[14] The status of the patients observed in the course of this work deviated from the above assertion. Reasons are that out of the 220 (44%) patients who confirmed ability to work before the infection, only 200 (40%) patients worked with the infection. Therefore, the remaining 80 of the response representing 16.0% were those that were unable to work either before or during infection. This situation could lead to a dependence on the community.

This problem is further aggravated since the 200 (40%) patients represented as working with the infection had yield per hectare reduced to a level considered too low. This is because prior to infection, 110 patients representing 62.9% produced crops on hectares ranging from 3-4, 30(17.1%) for 5 – 6, 10(5.7%) for 7 and above with 25(14.3%) going for those that had 1 – 2 hectares of cultivated land. This trend however changed as the highest percentage 115 (65.7%) of cultivated crop produced during infection was done on 1-2 hectares of land while 10 (5.7%) of the patients joined the ranks of those that were economically unproductive. Equally too, 6(6.3%) of the patient represented those that were unable to fish during infection thereby increasing the number of those that were economically dependent.

It is well recognized that Socio-economic factors play an important role in leprosy.^[14] It is hoped that improvement of the Socio-economic conditions of the patients will go a long way in bringing about a decline of leprosy in Obubra Local Government Area. This statement agrees with the findings in Ref^[4] that decline of leprosy is associated with improved Socio-economic conditions.

CONCLUSION

A study of the prevalence and socio-economic impact of leprosy in Obubra Local Government Area, Cross River State was carried out between May and October, 2019. It was observed in the course of this study that leprosy percentage prevalence was 1.03 while the percentage prevalence was higher in females than males.

Prevalence of leprosy by type did show that Multibacillary patients 214(0.16%) outweighed Paucibacillary patients 43 (0.03%). The clinical

manifestations in the two main types of leprosy are so different as to suggest two different diseases, of course, which they are not. The Socio-economic impact study did find out that leprosy prevails among the low income group 384 (76.8%) while Agricultural productively coupled with number of days spent fishing dropped during infection. There was also, a corresponding increase 80(16.0%) in the number of patients that were unable to add to the socio-economic growth of the Area.

Policy Recommendations

1. With the launch of a five-year National Leprosy and Buruli Ulcer Strategic Plan 2016-2020 (WHO, 2017), Government (National, State, LGA) should make elimination of the disease in the endemic states as part of its priorities.
2. There is urgent need for renewed commitment of all stakeholders especially in the use of inclusive approach in dealing with the scourge.
3. The need for Government at all levels to strengthen surveillance and Health Information Systems (including Geographical Information System) for programme monitoring and evaluation is imperative.
4. Government should encourage and facilitate basic and operational research in all aspects of leprosy.
5. Prejudice against leprosy has been observed to be one of the most important obstacles hindering the successful control of this disease.^{[19], [14]} The best way to combat prejudice is by demonstrating that leprosy can be cured. Health education should aim at promoting early detection and adequate treatment, by enlisting participation and cooperation of all concerned: Public authorities, the population, the patients and health personnel.
6. The political authorities should be persuaded that leprosy should not be considered as a scourge apart from other problems. A balanced view of leprosy must be introduced. The populations should be encouraged to look at leprosy as one disease among others, requiring no special measure, and to accept patients in the community.
7. The patient should be properly instructed regarding the disease, the need for treatment, the prevention of deformities, and the hope for a better future.
8. Social assistance to patients and their families is often necessary and Governments should provide it in the same way as it is given to other disabled patients.

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