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Prevalence of Leprosy in Nkanu West LGA of Enugu State, Nigeria (2005-2015)

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Abstract
The prevalence of leprosy is decreasing in many parts of the world following a global campaign to reduce the prevalent rate to less than 1/10,000 population. Since, leprosy has high socioeconomic and public heath burden, Nigeria has adopted the campaign strategies and has achieved the target. However, there are no data on the prevalence and rate of leprosy based on age and gender in Nkanu West Local Government Area (LGA) of Enugu state which necessitated this study. Four research questions were posed to guide the study. Ex-post-facto design was employed in the census study involving 26 patients that reported in the health facilities in the LGA. The data obtained using the researcher's self-developed Leprosy Record Review Proforma (LRReP) were analyzed using frequency and percentage. Results showed that the prevalence of leprosy was highest in 2012 with 5 cases (19.23%) and least in 2010 with zero case (0.00%). Prevalence rates of leprosy in Nkanu West LGA (2005-2015) were within the international elimination target of below 1/10000. Prevalence rate of leprosy was highest (0.3/10000 population) in 2012 and lowest (0.0/10000 population) in 2010. The cumulative prevalence rate from 2005-2015 was 1.3/10000 population. Leprosy was most common among those aged 41 years and above 16 (61.53%) and least among those aged 0-20 years with one (3.85%) case. More male 14 (53.85%) than female 12 (46.15%) sought treatment for leprosy during the period. Based on the results, the researcher made some recommendations which included carrying out health promotion in the communities to sensitize them on the cause and mode of transmission of leprosy. There could also be health promotion on the best treatment option which was available in the health facilities in the LGA.
Keywords: leprosy, prevalence, health promotion, demographic characteristics

Introduction

Cursory observation shows that health challenges are rampant in Nigeria at the present. The country is faced with many health challenges like the spread of infectious diseases. One of such infectious diseases is leprosy.

Leprosy is a chronic infection caused by germs known as *Mycobacteria lepae*. The microorganisms damage the superficial nerves that supply the body extremities like the face, legs and hands (Peters, 2005). If the infection is not detected and treated on time, skin ulcerations can lead to loss of toes and fingers which the layman usually associated with the infection. It has to be made clear from the outset that the loss of toes and fingers is a complication of the disease and not the signs and symptoms. In fact, the initial signs and symptoms are skin lesions, leo-like-face, hoarse voice and numbness. According to Chukwu (2010), a case definition of leprosy is hypopigmentation or reddish skin lesion with definite loss of sensation. Leprosy is principally a contagious disease. However, it could be air-borne (Akinsola, 2006; Chukwu, 2010). Okoeguale (2015) was of the view that the incubation period is variable from two to upwards of ten years.

Leprosy is debilitating and victims depended on others for support. Ogbonnaya and Chuka-Okosa (2004) showed that, apart from the loss of fingers and toes, about 350,000-400,000 leprosy patients were estimated to be blind globally. Therefore, high prevalence rate of leprosy is a significant determinant factor in the development of any community or country. According to the authors, out of the estimated 10-20 million cases of leprosy worldwide, only 5.4 million of them were registered. The authors observed that the prevalence of leprosy across the world reduced to about 0.75 million by 2002. The drastic reduction in the prevalence of leprosy shown above followed the international resolution passed in 1991 to eliminate leprosy as a public health

problem (World Health Assembly-WHA, 1991). Elimination of leprosy, according to WHA (1991), means reducing the prevalence rate to less than 1/10000 population.

Prevalence is the overall number of persons affected by a health problem at a particular period in a given population. Akinsola (2006) used prevalence to mean both new and old cases of a disease. According to Mba (2011), prevalence is the total number of disease or condition in a given population. According to Odo, Ede and Isife (2016), prevalence rate is the occurrence of both old and new cases at a stated period of time per a thousand (1000) population. When the prevalence rate of a health condition is in relation to a large population at risk like Nkanu West LGA it could be expressed in multiples of 1000. For instance, prevalence rate could be calculated per 10000 or 100000 of the population in question. By the year 2000, the world target of reducing the prevalence rate of leprosy to less than 1/10000 was exceeded with a prevalence of 600,000 cases (Fine, 2006). The 600,000 cases occurred among the population of the world which, according to Redmond (2008), was estimated to be 6 billion by the end of 1999. Fine reported that only Brazil, Democratic Republic of Congo, Madagascar, Mozambique, Tanzania and Nepal were yet to reach the elimination goal by 2006. It is certain that many developed countries were no longer under the burden of communicable diseases like leprosy. Nonetheless, morbidity and mortality arising from such infections in the sub Saharan African countries were still high **(**Vander Sande et al., 2001).

In Nigeria, for instance, leprosy might still be a public health problem. According to Okoeguale (2015), on the average 4,000 leprosy cases were reported annually in Nigeria in the preceding ten years. The official statistics on leprosy in Nigeria should be viewed with skepticism. This is because Lucas and Gilles (2009) observed that social and psychological stigma loom so large in leprosy. The stigmatization and discrimination against the patients might force many of them to conceal their problem and even in extreme cases contemplate killing themselves. It is because of the negative image and attitude towards leprosy and the victim that many health workers at the present prefer to refer to it as 'Hansen's disease'. This was in honour of Hansen, the scientist that isolated the microorganisms that cause leprosy.

Another reason for speculating that the statistics of leprosy may be inaccurate is on account of the inadequacies in Nigeria's health system. It is obvious that modern healthcare services are still neither accessible nor acceptable to millions of Nigerians (Ebo, 2006; Egbulam, 2010). As such, some individuals who were down with diseases definitely stay away from the clinics or patronize alternative health care services. Leprosy patients might even stay away from the traditional or spiritual centres for fear of discrimination. Lack of access to healthcare was worse in the rural areas, where Nkanu West is located. Since the scourge of leprosy is facilitated by overcrowding, which is common in Nigeria, according to Ashiru (2007), it suggests that it could easily spread in the country. The economic, social and psychological impacts of leprosy were high on the individual, family and society. That was why the country set up leprosy control programme to eliminate the disease in line with the international resolution.

At the present, Nigerian governments in concert with donor agencies carry out screening and treatment of infected individuals. Okoeguale (2015) indicated that the goal of leprosy control in Nigeria included reducing the prevalence and socio-economic burden associated with the disease. According to Chukwu (2010), the specific objectives of the programme included to provide health education and counseling to ensure at least 85 per cent treatment completion and 100 per cent multi drug therapy (MDT) for all patients in need of the treatment. The strategies mapped out to realize the stated objectives included monitoring the trend, and integration of leprosy into the general health care services. Mustapha et al. (2012) stated that these strategies amongst others were being implemented in the country as a whole and that Kaduna state had a prevalence rate of 0.3/10,000. According to them, leprosy elimination target had been attained in all the Local Government Areas of Kaduna state except Zaria with 1.4/10000 prevalence rate. In the same state, there was a decline in new cases from 226 in 2004 to 140 cases in 2008 whereas a total of 956 cases were seen during the period. Federal Ministry of Health-FMOH (2008) reported that apart from Taraba state all the other states in Nigeria had attained the global leprosy elimination target at the end of 2007. However, as it had been shown earlier by Okoeguale, (2015), on the average 4,000 leprosy cases were still reported annually in Nigeria in the preceding ten years and the mean child-case was on the increase. This called for the intensification of the control strategies in the country.

The overall national leprosy control strategies were physical examination, treatment, tracing and supervision of contacts, and education of the public. The strategies are in line with Lucas and Gilles (2009). The German Leprosy Relief Association was the specific partnering agency that supported the treatment of leprosy patients in Nkanu West and Enugu state in general. They also carried out public enlightenment campaigns on the electronic media where persons suspected to be infected with leprosy were informed of the availability of diagnosis and treatment services in health facilities in the state. The tests and treatment were free. Of course, these measures were health promoting.

Health promotion, according to Ene (2004), opens an individual's door to the concept of wellness by helping him to identify and to find solution to his health challenges. Onyekwere, Samuel and Akwuba (2015)

saw health promotion as the process of empowering people to determine their own health. Owie (2000) and Udoh (2000) stated that health promotion is a multifaceted change process including access to health care. As regards access to MDT against leprosy, some infected persons of different ages and gender have availed themselves of the services in Nkanu West LGA.

The patients' demographic data were recorded in the clinics. Demographic characteristics include all the personal data of a given population. Demographic data include age, gender, socioeconomic status, marital status, educational level, religion, residence amongst others (Ugwuoke & Ene, 2013). Data on demographic characteristics of leprosy patients help in contact tracing of the victims and their relatives. Contact tracing is vital because treatment for leprosy last for a long time and many patients are likely to drop out due to shame, lack of means of transportation to the clinic or ignorance. The data on age and gender of the leprosy patients presenting in health facilities in Nkanu West LGA were compiled by the tuberculosis and leprosy (TBL) supervisor.

Age in this study means the length of time one has existed starting from the date of one's birth. For the adult, age is usually expressed in years. Some diseases are more common and more serious in childhood while others affect the older age group more frequently. Age was deemed relevant in this study since children and adolescents were more susceptible to leprosy infection (Lucas & Gilles, 2009). Okoeguale (2015) reported that relatively high proportion of children was diagnosed in Nigeria. However, Mustapha et al. (2012) reported that the mean proportion of leprosy patients who were children in Kaduna was low. The authors indicated that the proportion of children among new cases dropped from 2004 to 2007 and rose again in 2008.

Gender was another personal characteristic that determines how vulnerable a person can be to a particular disease. Aside from the biological features of an individual, gender includes his or her socially constructed roles. Esu, Ekpenyong and Edem (2009) viewed gender as the totality of an individual's cultural values, attitudes, practices and characteristics based on sex. The cultural values, attitudes and practices aspects of gender are very vital in the present study. This is because many diseases, including leprosy, have behavioral correlate (Akinsola, 2006). Lucas and Gilles (2009) pointed out that leprosy was generally higher among males than females but the infection is exacerbated by pregnancy and childbirth. Consequently, gender was deemed necessary to be investigated in the present study. Abanobi (2007) posited that the extent to which healthcare resources are available to those who need them influence the pattern of disease morbidity in any population. The author posited that if a valid inference is to be drawn from comparing the influences of demographic or social factors on different groups of the population on utilization of health facilities, each of the various groups should have equal access to the facilities in terms of affordability. Similarly, the pattern of organization of the health services ought to be acceptable to all the users. In other words, the health promotion resources should not be selectively biased against any segment of the population being compared.

Data on age and gender were collected on routine basis in the health facilities in Nigeria. However, in Nkanu West LGA, no research has been conducted, to the best of the knowledge of the researcher, to determine the role of age and gender on leprosy patients who presented in the health clinics. Therefore, the purpose of this study was to determine whether the cases of leprosy recorded in LGA fit into the aforementioned established paradigm.

Research Questions

1. What is the prevalence of leprosy in Nkanu West LGA of Enugu state from 2005 to 2015?
2. What is the prevalence rate of leprosy in Nkanu West LGA of Enugu state (2005-2015)?
3. What is the prevalence of leprosy in Nkanu West LGA of Enugu state (2005-2015) based on age?
4. What is the prevalence of leprosy in Nkanu West LGA of Enugu state (2005-2015) based on gender?

Methods

Ex-post-facto research design was used for the study. According to Okwor (2001), the design is suitable for establishing relationship between independent variable that had operated in the past and its suspected resultant effect. The study was conducted in Nkanu West LGA of Enugu state, Nigeria. Nkanu West LGA had an estimated population of 199,028 in 2015. The figure was estimated using the 1991 population census of 137,147 as the base year (National Population Commission-NPC, 1991). The sample for the study was all the 26 leprosy patients that registered in the health care facilities in the LGA from 2005-2015. The TBL supervisor, who served as a referral officer to the health centres compiled the patients' attendance register (Nkanu West TBL Unit, 2015). Census study was conducted because the population was easily manageable. Furthermore, census study excluded classification and sampling errors inherent in every sample study (Nworgu, 2006).

A researcher's self-developed 'Leprosy Record Review Proforma' (LRReP) was used to generate data. The face validity of the proforma was established by the judgment of three professionals. One of them was a public health doctor whereas the other two were health educators. The data obtained in the register were utilized

for analysis. Frequency and percentage were used for description and to answer the research questions generated to guide the study. According to Akinsola (2006); Lucas and Gilles (2009), prevalence rate is calculated thus:

$$\text{Prevalence rate} = \frac{\text{Number of cases of a disease in a year}}{\text{Population at risk group}} \times \frac{1000}{1}$$

**The estimated population of Nkanu West LGA for 2015 was 199,028.*
***** *In the present study the prevalence rate was computed per 10000.*

Results

The results of the study were presented below.

Table 1: **Prevalence of Leprosy in Nkanu West LGA of Enugu state (2005-2015) (N=26)**

Year	Cases	
	f	%
2005	2	7.69
2006	2	7.69
2007	4	15.38
2008	2	7.69
2009	3	11.54
2010	0	0.00
2011	3	11.54
2012	5	19.23
2013	3	11.54
2014	1	3.85
2015	1	3.85
Total	26	100.00

Table 1 shows that the prevalence of leprosy in the LGA was highest in 2012 with 5 cases (19.23%) and least in 2010 with no case (0.00%) reported.

Table 2**: Prevalence Rate of Leprosy in Nkanu West LGA of Enugu state (2005-2015) (N=26)**

Year	Cases	
	F	per 1000 population
2005	2	0.10
2006	2	0.1
2007	4	0.2
2008	2	0.1
2009	3	0.1
2010	0	0.0
2011	3	0.1
2012	5	0.3
2013	3	0.1
2014	1	0.1
2015	1	0.1
Total	26	1.3

Table 2 indicates that the yearly prevalence rates of leprosy in Nkanu West LGA (2005-2015) were within the international elimination target of below 1/10000. Prevalence rate was highest (0.3/10000 population) in 2012 while the lowest (0/10000 population) was in 2010. From the Table, the cumulative prevalence rate from 2005-2015 was 1.3/10000 population.

Table 3: **Leprosy patients in Nkanu West LGA (2005-2015) according to Age (N=26)**

Age	Cases	
	f	%
20 years and under	1	3.85
21 – 40 years	9	34.62
41 and above	16	61.53
Total	26	100.00

Table 3 indicates that leprosy was most common among those aged 41years and above 16 (61.54%) while the infection was least among those aged 0-20 years with only one case (3.85%).

Table 4: **Leprosy patients in Nkanu West LGA of Enugu state (2005-2015) according to Gender (N=26)**

Gender	Case	
	F	%
Male	14	53.85
Female	12	46.15
Total	26	100.00

Table 4 shows that more males 14 (53.85%) reported for treatment than females leprosy patients 12 (46.15%).

Discussion

The prevalence of leprosy in Nkanu West LGA of Enugu state from 2005-2015 was low (Table 1). The result was consistent with Fine (2006), who reported that leprosy had been reduced to low level globally. Finding from the present study also supported Mustapha et al. (2012), who found low prevalence of leprosy in Kaduna state. Apparently, this finding indicated that leprosy was no longer a public health challenge in Nkanu West LGA during the period. Nonetheless, the finding might not be a true reflection of the situation on ground. This is because Eboh (2006) indicated that many Nigerians had no access to modern health facilities. Therefore, the low prevalence of leprosy in the LGA could be as a result of lack of access to the health facilities by some leprosy patients. This position supported Ogbonnaya and Chuka-Okosa's (2004) finding that many leprosy patients across the world were never registered in the clinics.

Table 2 indicated that the yearly prevalence rates of leprosy (2005-2015) in Nkanu West LGA were below 1/10000 population. Thus the global target of reducing the prevalence rate below 1/10000 which was set by World Health Assembly (1991) was attained in Nkanu West LGA. This finding agreed with FMOH (2008); Mustapha et al. (2012), who showed that apart from Taraba state the elimination target had been achieved in Nigeria. The attainment of the leprosy elimination target in Nkanu West could be ascribed to the effectiveness of the control measures adopted in the LGA. Nonetheless, the low prevalent rate could be as a result of other factors such as the stigma and discrimination associated with leprosy in the area. It is possible that fear of stigmatization made some of the patients to shy away from the clinics. This result differed from Okoeguale (2015), who reported that there was a recrudescence of leprosy, particularly among children, in Nigeria generally.

The finding of high cumulative prevalence rate in the present study might not reflect the true position on ground either. This is because some of the patients might have been completely treated and discharged over the 16-year period under review since leprosy patients, who are diligent on MDT, are expected to be free from the disease after one year of commencing treatment (Chukwu, 2010; Okoeguale, 2015).

Table 3 showed that leprosy patients treated in health facilities in Nkanu West LGA were mostly aged 41 years and above. This is not surprising since the disease is transmitted after a long constant contact with an infected person and also has a long incubation period that runs into many years (Akinsola, 2006). This finding agreed with Mustapha et al. (2012), who found that children cases were on the decline in Kaduna state. However, this result disagreed with Lucas and Gilles (2009), who reported that children and adolescents are vulnerable to leprosy. The seeming disagreement between this result and Lucas and Gilles might be due to the long incubation period of the disease. Probably the older patients were infected when they were much younger.

The finding also disagreed with FMOH (2008) and Okoeguale's (2015) report, which showed that the mean child proportion of leprosy was becoming high in Nigeria. The finding might not be wholly explained on the basis of epidemiology alone. How the ages of patients were determined could have also contributed to the discrepancies in the results. Determination of age of adults in Nigeria, especially in rural areas like the location of the study, was difficult since they had no birth registration (Alakija, 2000). Unfortunately, it is common for a Nigerian in early adulthood to claim to be very old and vice versa. Moreover, the difference between the present finding and FMOH and Okoeguale could be as a result of other variables. For instance, Akinsola (2006); Egbulem (2010) stated that many sick persons in rural parts of Nigeria patronize traditional and spiritual centres due to ignorance and belief system. Patronizing alternative care providers might have delayed the patients' presentation in health facilities at younger age.

Table 4 showed that leprosy was higher among males than female. This finding is not amazing since it had been established that leprosy infected more males than females (Lucas & Gilles 2009). The higher number of male patients could also be reasonably attributed to the boldness inherent in males. Since Chukwu (2010); Mustapha et al. (2012) and Okogeguale (2015) observed that leprosy was associated with stigma; females were likely to suffer stigmatization more acutely than the males and consequently stay away from the health facilities.

All the same, one had anticipated the reverse to be the case since in Nigeria and in many parts of the world females are better reporters of their health problems.

Nonetheless, the result could also be ascribed to poverty. It is experientially clear that females, especially in rural areas, were dependent on their male spouses for decision-making on health seeking behaviour. This is partly because they are not financially autonomous. It is true that leprosy treatment in the LGA was free but money was still needed for transport and other sundry things in the hospital which could have contributed to the lower turn out of women in the health centres.

Implications for health promotion

The finding that leprosy is dominant among the middle aged calls for an urgent health mobilization campaign in the communities to educate the general public on the cause, mode of transmission and best treatment option which is available in the health facilities. The health promotion should also aim at correcting the misconceptions that surround leprosy which make infected individual to conceal their problem until disabling conditions set in. In order to realize the objective of such health promotion, the community leaders should be involved. The community leaders could be reached in their village meetings, worship centres and even work places. Through such interactions, the public health educators could gain further insight into the belief systems of the people that promote the transmission and stigmatization of persons affected with the disease. Drama, demonstration and role play would be effective educational methods to utilize in passing the message across. These measures would motivate the people to take responsibility for preventing leprosy. Health promotion would also stimulate an individual's access to appropriate health services on time when infected with the disease in order to reduce complications associated with it.

Conclusions and Recommendations

Based on the findings of the study the following conclusions were reached.

1. The prevalence of leprosy in Nkanu West LGA of Enugu state was low.
2. The prevalence rate of leprosy in Nkanu West LGA for each of the years 2005-2015 was low.
3. Leprosy patients aged 41 years and above were mostly treated in health facilities in Nkanu West LGA.
4. Leprosy was higher among males than female in Nkanu West LGA.

Recommendations

Based on the following conclusions the researcher recommended the involvement of traditional and spiritual healers in the campaign against leprosy in Nkanu West LGA. They would be educated on the need for early referral of suspected leprosy cases to prevent the disabilities associated with the disease.

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