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Assessment of Knowledge of Hansen's Disease inaBiase-West Community, Cross River State, Nigeria.

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Authors Contributions
The work was conceptualized by GIO,UEE and AAI. Manuscript was written by GIO,RIE,ONC and SNU. Data was analyzed by AAI. UEE,EMN and AO undertook the literature searches. All authors carried out the data collection, read and approved the final copy of the manuscript.

Abstract
Background
Leprosy, also referred to as Hansen's disease is an ancient disease caused by Mycobacterium tuberculosis. It could be debilitating if attention is delayed.In 1998, Nigeria had harmoniously achieved thenational elimination benchmark of ≤ 1 case of leprosy per 10,000 population as set by WHO but soon after resurgence of the disease set in, for lack of sustained infection prevention and control structures and grassroots sensitization.This study is aimed at finding the knowledge of leprosy among the people of Ikun community in Biase –West Development Area of Cross River State of Nigeria. The outcome will dictate appropriate interventions with a view to enhancing knowledge and curtailing myths and misconceptions towards leprosy in Ikun community.
Materials and Methods
Semi-structured questionnaires, with each question assigned weighted score. were used to collect data, A respondent level of knowledge about leprosy was categorized into Poor knowledge or Good knowledge based on percentage correct response to questions raised in the questionnaire. A respondent was rated as having Good knowledge of leprosy if he or she answered ≥75% of the questions correctly or having Poor knowledge where he or she answered <75% of the questions raised in the questionnaire correctly.
Results
Two hundred and ninety four respondents participated in this study,137 (46.6%) males and 157(53.4%) females. Majority 119(40.5%) were in the age bracket of 31-40years of age. Two hunded(68%) were married, 55(18.7%) unmarried while 39(13.3%) were minors. Respondents were mostly farmers 115(39.2%). One hundred and eighty (61.3%) of the respondents had poor knowledge of leprosy whereas 114(38.7%) had good knowledge .
Conclusion
There is poor basic knowledge of leprosy in the study area, particularly in the aspects of cause of the disease, transmission and presentation. This, if not addressed would lead to a build up of misconceptions and myths against individuals with the condition. There is strong need for health education and grassroots sensitization in the study area.

Keywords: *Assessment, knowledge, Hansen's disease, Biase-West, Cross River, Nigeria.*

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I. Introduction

Leprosy, also referred to as Hansen's disease has persisted as a public health challenge in many parts of the globe affecting peculiar sites of the body such as peripheral nerves, skin ,bone marrow, mucous membrane, eyes, testes and producing a spectrum of clinical phenotypes[1-3] .It is an ancient bacterial disease caused by *Mycobacterium leprae*. It could be debilitating if treatment is delayed.In 1991, the World Health Organization (WHO) in her 44th assembly passed into Law, a resolution calling for elimination of leprosy as a public health problem and setting elimination benchmark ata prevalence of ≤ 1 case of leprosy per 10,000 people by the year 2000[4] .This was merely realized at the global level. Nigeria had by end of 1997 achieved the National elimination target as set by WHO in all States of the Federation except Taraba and by end of 1998, the National

elimination target was harmoniously realized in the country[5]. However, in areas of the globe endemic for the disease, prevalence of the condition still persisted above the elimination target which might be as a result of regional differences in underlying risk factors such as culture, habits and socioeconomic factors, among others [6]. The National elimination benchmark could not be sustained in the country for long, such that in 2015, Nigeria reported 2892 new cases of leprosy and was reported as one of the 13 countries bearing 95% of the globalburden of new cases of leprosy for that year [7] with high incidence of the disease recorded in Cross River,Jigawa, Kano, Kaduna, Kebbi, Bauchi, Taraba, Niger, Kogi, Ebonyi, Abia, Edo, Osun, Ogun and Lagos states[8].

It is worrisome that leprosy, a curable bacterial infection reckoned for its slow infectivity has become so neglected as to resurge from the global elimination target achieved in Nigeria by 1997 to become reputed as one disease, more than any other , that has caused individuals to leave their families and communities and be forced to live as outcasts in remote colonies and settlements[9].

An effective leprosy control program must carry with it well articulated components of Government commitment and funding, health education of the community away from myth, superstition and misconceptions, community participation, socio-economic rehabilitation of patients even aftertreatment and discharge.[10] Our National leprosy control program is weak and lacks major aspects of these components. There is strong need to address this situation because here lies the problem of leprosy prevention and control in Nigeria. A community that lacks basic knowledge of leprosy regarding its causation, transmission, presentation, treatment and complications remains vulnerable to myths and misconceptions about the disease. This will in turn breed negative attitude and stigmatization against people with the condition. Consequently, infected persons resort to concealment of status thus paving way for spread and progression to severe disease.

Adagba in 2011, lamented the low level of advocacy and awareness about leprosy in Nigeria and the attendant misconceptions in the communities[11]. There is enormous fear about leprosy amongst Nigerian populace[12], such that in many communities, the people's perception of leprosy and leprosy patients is that of avoidance, insult, scorn, deprivation and rejection even after treatment and discharge. It was on this premise that we set out to probe into the knowledge of leprosy among the people of Ikun community in Biase –West Development Area of Cross River State of Nigeria. The outcome will dictate which direction to go in enhancing the knowledge base of the people and addressing prevailing myths and misconceptions.

II. Materials and Methods.

Study Design.

This was a descriptive cross sectional study carried out inIkun community on subjects who voluntarily gave consent to participate in the study.

Study Location.

This study was done in Ikun community, Biase-West Development Area ofBiase Local Council, Cross River State, Nigeria. It is bounded in the West by Biakpan, NdibeOhafia and OkonAku communities. In the East, by Cross River, in the North by Urugbam and Ipene and in the South by Etono Central and Etono 2.Ikun community consists of 3 clans, namely IkunIgbet, Ikun Ithon and IkunEvai, The population of Ikun by 1991 was 6,104 [13] and 11,938 by 2020, when projected at an annual growth rate of 3.2%. The inhabitants are mostly peasant farmers. There are limited social amenities. The community has two primary and one secondary schools and a health centre. Power supply from the National grid is irregular.

Duration of Study

The study lasted 3 days, 25th – 27th October, 2019.

Sampling Method

All who were briefed about the study, met the inclusion criteria and volunteered consent were enlisted.

Determination of Sample Size

A sample size of 295 was arrived at using the Taro-Yamane formula[14]. The figure included 14additional participantsmeant to accommodate 5% perceived withdrawal from participation. One pregnant female respondent withdrew her consent on grounds of sudden onset of labor, leaving a final sample size of 294.

$$n = \frac{N}{1 + N(e)^2}$$

Where n = Sample size

N = Considered study population

e = Error tolerance

$$n = \frac{950}{1 + 950(0.05)^2} = 281$$

Inclusion Criteria

To be enlisted in the study:

i. one must be an inhabitant of Ikun community either as an indigene or settler.
ii. one must have lived continuously in Ikun community as an indigene or settler for a least one year.
iii. one must not be less than 15 years of age
iv. one must give informed consent to participate in the study.

Exclusion Criteria

One was excluded from participation in this study if :

i. one was a migrant indigene or settler who had not lived continuously in Ikun community for at least a year..
ii. one was less than 15 years of age
iii. one refused consent

Operational Definition

Knowledge of leprosy :A psychological result about leprosy arising from perception, learning and reasoning over the condition.

Procedure Methodology

Interviewer-administered semi-structured questionnaire(Appendix 1) was used for data collection by the authors and trained assistants. It consisted of part A consisting of 12questions and part B with 14 questions . Part A was concerned with socio-demographic dataof respondents while part B probed into the knowledge base of the respondents.

The aim of the study was explained to each respondent. They were also informed that participation was voluntary, that withdrawal from participation at any time in the course of the study was of no consequence to the respondent and that information given in the course of participation would be handled with utmost confidentiality.

A respondent level of knowledge about leprosy was categorized into Poor knowledge or Good knowledge based on percentage correct response to questions raised in the questionnaire. A respondent was rated as having Good knowledge of leprosy if he or she answered $\geq$75% of the questions correctly or having Poor knowledge where he or she answered <75% of the questions raised in the questionnaire correctly.

III. Results

Socio-demographic data

Two hundred and ninety four respondents participated in this study,137 (46.6%) males and 157(53.4%) females. Majority 119(40.5%) were in the age bracket of 31-40years of age. Two hundred(68%) were married, 55(18.7%) unmarried while 39(13.3%) were minors. Respondents were mostly farmers 115(39.2%), all respondents 294(100%) were not comfortable with their salary(Table no.1)

Table no. 1: Socio-demographic profile of the respondents

Characteristics	% Frequency	Number/Total
Age (years)		
16 – 30	35.0	103
31 - 40	40.5	119
>40	24.5	72
Total	100	294
Sex		
Male	46.6	137
Female	53.4	157
Total	100	294
Ethnicity		
Indigenes	89.1	262
Settlers	10.9	32
Total	100	294
Clan		
IkunIgbet	39.8	117
Ikun Ithon	15.6	46
IkunEvai	44.6	131
Total	100	294

Marital status		
Married	68.0	240
Unmarried	18..7	55
Minor	13.3	39
Total	100	294
Religion		
Christian	81.6	240
Pagan	18.4	54
Total	100	294
Type of Family		
Not Applicable	24.6	72
Monogamous	57.4	169
Polygamous	18.0	53
Total	100	294
Occupation		
Farmer	39.2	115
Labourer	6.1	18
Business	20	88
Housewife	0.6	2
Student	11.9	35
Unemployed	12.3	36
Total	100	294
Income comfort		
No	100	294
Yes	0.0	0
Total	100	294

Respondents' basic knowledge of leprosy

Two hundred and fifty nine(88.1%) participants admitted to having heard about leprosy, 277(94.5%) claimed knowledge of how leprosy was transmitted. Two hundred and seventy five (93.6%) participants said leprosy was a dreadful disease, 276(93.9%) agreed the disease was treatable, 219 (74.7%) participants submitted that leprosy was treatable by pharmaceutical drugs,whereas 71 (24.1%) and 4(1.0%) were of the opinion that leprosy was treatable by use of medical herbs and performance of religious rituals respectively(Table no. 2). The major source of information was through health education by Community Health Extension Workers 174(59.2%), followed by TV/radio/ media education programs 68(23.1%) and others 52(17.7%). In specific terms, 143(48.6%) participants disclosed that route of transmission of leprosy was through mosquito bites, 60(20.4%) said transmission of leprosy was through snake bite, 36 (12.2%) of the participants submitted that leprosy could be acquired by bathing in same running stream with leprosy patient (Figure no.1)

Analysis of appropriateness of respondents' answers to questions related to knowledge of leprosy, revealed that 180(61.3%) of the respondents had poor knowledge of leprosy whereas 114(38.7%) had good knowledge of leprosy.

Table no. 2: Descriptive analysis of Knowledge about Leprosy

Characteristics	% Frequency	Number/Total
Heard about leprosy?		
No	11.9	35
Yes	88.1	259
Total	100	294
Is Leprosy a dreadful disease?		
No	6.4	19
Yes	93.6	275
Total	100	294
Any Knowledge about how leprosy is transmitted?		
No	5.5	17
Yes	94.5	277
Total	100	294
Is leprosy treatable?		
No	6.1	18
Yes	93.9	276
	100	294
Have you any Knowledge about signs and symptoms of leprosy?		
No	13.6	40
Yes	88.4	254
Total	100	294
What is the treatment modality for leprosy ?		
Pharmaceutical drugs	74.7	219
Medical herbs	24.1	71

Religious rituals	1.0	4
Total	100	294

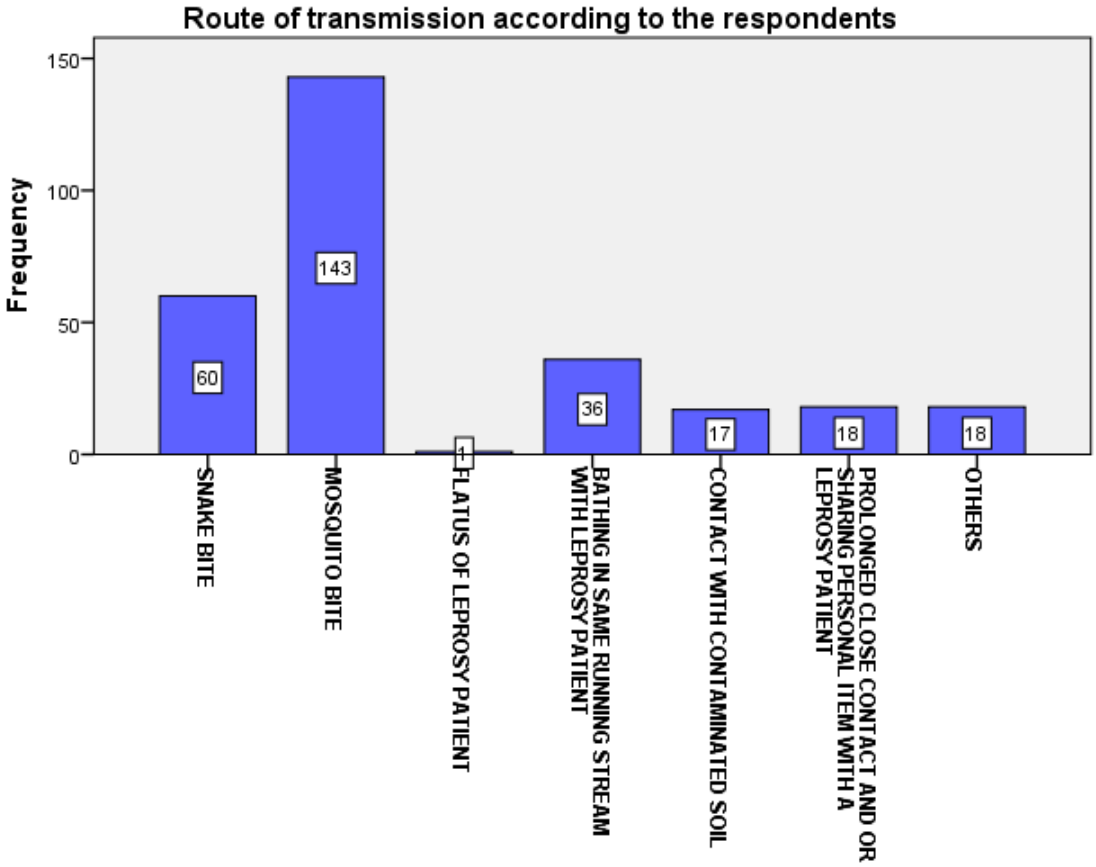

Figure no. 1: Routes of transmission of leprosy according to respondents.

Relationship between knowledge of leprosy and socio-demographic variables.

Some socio-demographic variables have statistically significant association with knowledge of leprosy (Table no.3). Religion and sex of participants were found to have significant association with respondents'knowledge of leprosy. Significant number of Christian respondents 144(49.0%, n=294) admitted that leprosy was caused by microorganism ($p< 0.05$). On same note, 221(75.1%, n = 294) of the Christian participants agreed that leprosy was infectious and 223(75.9%, n = 294) knew that leprosy was treatable,($p< 0.05$). On the aspects of sex of participants, all the female participants in the study 157(53.4%, n=294) admitted that leprosy was infectious and 155(52.8%, n=294) of the femaleswere also of the opinion that leprosy was treatable($p=0.05$) .

Table no. 3. Univariate analysis of knowledge of leprosy according to respondent's gender and religion

Variables	**Religion**		**X^2**	**P-Value**	**Gender**		**X^2**	**P-Value**
	Christian	**Pagan**			**Male**	**Female**		
What is the cause of leprosy?	(No/%)	(No/%)	37.1	0.000			72.5	0.000
Micro-organism	144 (49.0)	36 (12.2)			99 (33.7)	91(31.0)		
Curse by the gods	18 (6.1)	17 (5.8)			18 (6.1)	24 (8.2)		
Dirt	25 (8.5)	1 (0.3)			2 (0.7)	25 (8.5)		
Hereditary	18 (6.1)	0 (0.0)			18 (6.1)	0 (0.0)		
Bad blood	17 (5.8)	0 (0.0)			0 (0.0)	17 (5.8)		
No idea	18 (6.1)	0 (0)						
Do you think leprosy is infectious?			4.30	0.037			22.0	0.000
No	19 (6.5)	0 (0.0)			18 (6.1)	0 (0.0)		

Yes	221 (75.1)	54 (18.4)			119 (40.5)	157 (53.4)		
Do you know leprosy can be treated?			1.90	0.169			16.3	0.000
No	17 (5.8)	1 (0.3)			16 (5.4)	2 (0.6)		
Yes	223 (75.9)	53 (18.0)			121 (41.2)	155 (52.8)		
What is the treatment modality for leprosy?			1.6	0.45			15.3	0.000
Pharmaceutical drugs	182 (83.1)	37 (16.9)			116 (53.0)	103 (47.0)		
Medical herbs	55 (77.5)	16 (22.5)			19 (26.8)	52 (73.2)		
Religious rituals	2 (66.7)	1 (33.3)			2 (66.7)	1 (33.3)		

P-value ≤ 0.05 is significant

IV. Discussion

In this study, only 114 (38.7%) of the participants had good knowledge of leprosy while 180 (61.3%) had poor knowledge of the disease. This is a disturbing revelation since poor knowledge of leprosy tends to breed myths and misconceptions about the disease 15and these in turn will promote unfavorable attitudes and stigma in the community against leprosy and leprosy patients. A development thatcarries with it, tendency for patients, for fear of stigmatization to resort to status concealment by evading disclosure and diagnosis, a scenario that has the potential for status perpetuation in the community[16]. The level of knowledge about leprosyexpressed in this study is similar to the findings from a report of a study in South Central Nepal[15] where 57.9% of the participants had poor knowledge of leprosy. The poor level of knowledge is also similar to reports from clusters of studies from Eastern Nepal [17], Western Nepal [18], Andhra Pradesh and Orissa [19] but is an outstanding improvement whenompared with the report of a study in Ethiopia [20]in which about 80% of the participants had low knowledge of leprosy. Although the reasons for this difference could not be ascertained, it might beattributed to possiblesocio-cultural variations between the two study locations.

In this study, although majority of participants, 259(88.1%) admitted to having heard about leprosy, yet there was remarkable level of incongruous responses among the respondents. One hundred and forty three(48.6%) said route of transmission of leprosy was through mosquito bites, 36 (12.2%) attributed leprosy transmission to bathing in same running stream with leprosy patient, whereas only 18(6.1%) knew the condition was transmitted through prolonged close contact and sharing of personal items with leprosy patient. This is quite at variance with the result obtained from a related study in South Central Nepal[15] where 43.8% of the participants correctly answered that leprosy was acquired through prolonged contact with individuals with the condition. Two hundred and seventy five (93.6%) answered that leprosy was a dreadful disease. This perception is worrisome, as individuals with this mind- set would morbidly avoid leprosy patients with tendency to nursing misconceptions against them. The encouraging finding in this study was that majority of the participants, 276(93.9%) knew that leprosy was treatable and 219(74.7%) understood the treatment modality to be pharmaceutical.

It is clear from the above that while there is enhanced knowledge among the participants on the aspects of leprosy treatment, there is dearth of same on the perspectives of cause of leprosy, transmission and presentation. Health education program strategically tailored following this understanding would go a long way to addressing the general knowledge base about leprosy in the community. Some socio-demographic variables were found to have statistically significant influence on participants' knowledge of leprosy. Significant number of Christian respondents, 144(49.0%, n=294) admitted that leprosy was caused by microorganism ($p< 0.05$). On same note, 221(75.1%, n = 294) and 223(75.9%, n = 294) of the Christian participants agreed that leprosy was infectious and treatable respectively, ($p< 0.05$). Sex of participants was also seen to influence community knowledge of leprosy as all the female participants in the study 157(53.4%, n=294) admitted that leprosy was infectious and 155(52.8%, n=294) of them agreed that leprosy was treatable ($p=0.05$) . This significant relationship between some socio-demographic variables and community knowledge of leprosy had also been reported by other workers[15,21].

V. Conclusion

There is poor basic knowledge of leprosy in the study area, particularly in the aspects of cause of the disease, transmission and presentation. This level of ignorance if not properly addressed would lead to abuild up of misconceptions and myths against individuals with the condition. It is advisable that the public health office in the local council should constitute a team of community health extension workers who would organize regular health education programs for members of the community with particular emphasis on cause of leprosy, transmission and symptomatology. There is also the needto form community based health committees of trained members who will undertake to educate the people using the local language.

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