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Unfavorable Attitude and Perceived Stigma towards Leprosy: A Concern for Status Perpetuation in a Community in Cross River State, Nigeria

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Authors' contributions

The work was conceptualized by authors GIO and AAI. Manuscript was written by Authors GIO, SNU AAI, UEE, EMN, RIEN and NCO. Data was analyzed by Authors AAI, UEE, EMN, RIN, ONC and AO undertook the literature searches. All authors carried out the data collection, read and approved the final copy of the manuscript. All liabilities therein, pertaining to the content, shall be borne by the authors.

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ABSTRACT

Background: Negative attitude and stigma against leprosy patients constrain them to resort to concealing their status thus resulting in delayed detection, treatment, complications and perpetuation of the condition in the locality. This study was aimed at finding out the prevailing attitude and stigma toward leprosy in the community with a view to addressing the fueling factors.
Materials and Methods: It was descriptive cross sectional study. Semi-structured interviewer administered questionnaires were used for data collection. Explanatory Model Interview Catalogue (EMIC), was used to grade stigma against leprosy amongst participants. Answers to questions in the questionnaire were assigned scores which were summed up into percentage breakpoints. A

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respondent was interpreted as having favorable or unfavorable attitude to leprosy depending on his or her percentage sum of score.
Stigma was categorized based on the sum of an individual's EMIC score as high, moderate or low level of stigma. Data were analyzed using SPSS version 20.
Results: The study revealed that only 44(15%) of respondents had favorable attitude towards leprosy whereas 250(85%) had unfavorable attitude towards this group. Attitude to leprosy was observed to be significantly related to age and sex of respondent, religion and ethnicity, p-value< 0.05. EMIC profile of the study respondents revealed that 47(16%) demonstrated low stigma, 81(28%) demonstrated moderate stigma and 166(56%) demonstrated high stigma towards leprosy. There was no statistically significant relationship between stigma and socio-demographic variables.
Conclusion: Misunderstanding and misconceptions about leprosy and leprosy patients is still well rooted in the norms and culture of the people of Ikun, breeding negative attitude and stigma toward leprosy. Vigorous leprosy awareness programs structured along the lines of attitude-stigma influencing socio-demographic variables, with emphasis on the cause, transmission, diagnosis and treatment of leprosy will help to stem the tide of myths and misconceptions.

Keywords: Unfavorable attitude; stigma; community; resurgence; leprosy.

1. INTRODUCTION

The World Health Organization (WHO) in 1991 took a position to eradicate Hansen's disease (leprosy) as a public health problem [1]. About 29 years since this resolution, this target is yet to be realized. Although there has been a global decline in prevalence, there are still clusters of the condition in some developing nations of Africa and Asia with prevalence greater than the WHO approved elimination breakpoint of less than 1 case per 10,000 population. Indonesia, Brazil and India for instance, respectively contributed 8%, 13% and 60% of the global new cases burden in 2015 while Nepal contributed 1.3% [2,3]. In Terai, a high burden leprosy region of Nepal, 19.77 leprosy affected individuals were diagnosed in every 10,000 population in the region [4]. Nigeria, one of the African countries endemic for leprosy established National Tuberculosis and Leprosy Control Program in 1989 to actively identify and manage cases. The country was able to achieve in 2000, WHO elimination bench mark of < 1 case per 10,000 population but the figure soon began to spike again due to relaxed commitment by Government. By 2018, Nigeria recorded 2,095 new cases with Cross River State enlisted as one of the 10 states with high burden of the disease [5]. Paucity of awareness, poor knowledge of personal hygiene and sanitation practices as well as low economic status of the people might also be the reasons for the sustained burden of this disease in these regions [6].

Early case finding and treatment is the hallmark of leprosy management in achieving better outcome. Disfigurement, disability and the peculiar symptomatology of leprosy attract negative attitude and stigmatization from the society to the afflicted. These range from isolation, banishment to social deprivation. A patient at the start of his travails, even though suspicious of leprosy, will refuse to present for diagnosis and follow-up for fear of exposure to ridicule. This status concealment and delay in diagnosis lead to delay in treatment and onset of complications with potential to affecting quality of life even after treatment.

In a study in which 20 leprosy patients were interviewed, it was revealed that 70% of them intended to conceal their disease status on grounds of fear of transmission, exclusion, separation and rejection from the society [7]. A study done in Lalitpur Nepal in 1993 to 1995 showed that 6% (10/166) of leprosy affected persons reported of not seeking treatment earlier due to fear and social consequences including isolation [8]. A study in Nigeria, it was reported that for fear of stigmatization, leprosy patients delayed seeking treatment for a year and so developed complications that would have been avoided [9]. A related study in Western Nigeria revealed that Yoruba culture perceived leprosy as a most shameful and detested condition with symbolic association with filth and immoral behavior that is dishonoring to Yoruba identity and one with the condition deserved the harshest stigma [10] A study in Cameroon reported that only two fifths of the respondents in the study could shake hands with leprosy patients [11]. The objective of this study was therefore aimed at finding out the prevailing attitude and stigma toward leprosy and leprosy patients among the

people and inhabitants of Ikun community .This was with a view to showcasing the need or otherwise for rigorous health education, with focus on addressing ignorance, myths and superstition about the condition, that were known to drive these attitude and stigma.

2. MATERIALS AND METHODS

2.1 Study Design

It was descriptive cross sectional study involving members of the community who volunteered to participate in the study.

2.2 Study Location

This study was done in Ikun community, Biase Local Government Area of Cross River State. It is bounded in the West by Ndibe Ohafia and Okon Aku. In the East, it is bounded by Cross River, in the North by Urugbam and Ipene and in the South by Etono Central and Etono 2 and Biakpan. Ikun community consists of 3 clans, namely Ikun Igbet, Ikun Ithon and Ikun Evai, The projected population of Ikun by 1991 was 6104 [12] 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 one primary and one secondary school and a health centre Power supply from the National grid is irregular.

2.3 Duration of Study

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

2.4 Sample Population

The study was targeted at indigenes or settlers of Ikun community who were 16 years and above in age and had lived continuously in the community for at least a year.

2.5 Sampling Method

Convenience sampling method was used in this study in which participants were selected based on availability, satisfaction of inclusion criteria and willingness to participate in the study. All who met the inclusion criteria and volunteered consent were enlisted into the study.

2.6 Sample Size

A sample size of 295 was arrived at using the Taro-Yamane formula [13]. The figure included a 5% increase of 14 meant to accommodate withdrawal of participation. One 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

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

2.7 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 16 years of age
iv. One must give informed consent to participate in the study.

2.8 Exclusion Criteria

One is excluded from participation in this study if:

i. One was a migrant 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

2.9 Operational Definition

- Attitude refers to the perception of the respondent (community) about leprosy or leprosy infected persons.
- Stigma refers to respondent's (community's) perception of disgrace and dishonor about leprosy or leprosy patient.

2.10 Procedure Methodology

The tool of data collection was structured questionnaire (Appendix 1) which consisted of 3 sections A,B and C. Section A was to collect data relating to respondent's socio-demographic data, section B was used to assess respondent's

attitude towards leprosy and leprosy patient and section C was used to assess respondent's stigma towards leprosy and leprosy patient using the Explanatory Model Interview Catalogue (EMIC). It is a standard stool for assessment of stigma.

The aim of the study was explained to each respondent, emphasizing that participation was voluntary, that one was at liberty to participate or not to without any consequence and that information given in the course of participation would be handled with utmost confidentiality. Questionnaire was interviewer administered by the team and trained assistants after consent was obtained.

The section B part of the questionnaire contained 13 probe questions, 10 positive and 3 negative answer questions towards leprosy. The expected response was 'Yes' or 'No'. A response of 'Yes' to a positive answer question or 'No' to a negative answer question attracted 1 mark each whereas a 'No' answer to a positive question or a 'Yes' answer to a negative question attracted 0 score. A respondent with percentage sum of score ≥ 75% was said to have 'Favorable attitude' towards leprosy or leprosy patient whereas a sum score of <75% was interpreted to mean 'Unfavorable attitude'.

EMIC score was calculated based on a participant's response to 15 probes on the EMIC scale. Answer to each probe was rated as "Yes = 2, Possibly = 1, No or Don't know = 0". Stigma was categorized based on the sum of an individual's EMIC score as 'high level of stigma' for respondents with EMIC score greater than 20, 'moderate level of stigma' for respondents with EMIC score range of 10-20 and 'low level of stigma' for respondents with EMIC score < 10.

2.11 Data Analysis

Data were analyzed using SPSS version 20. Frequency, percentage, and median were used to describe the socio-demographic indices. Logistic regression analysis was carried out to determine predictors of unfavorable attitude towards leprosy.

2.12 Ethical Consideration

Ethical approval was received from the Cross River State Health Research Ethical Committee, State Ministry of Health, Calabar.

3. RESULTS

3.1 Socio-demographic Profile of Respondents

Two hundred and ninety four (294) respondents participated in this study, ages 15 to 69years. They were 137 (46.6%) males and 157 (53.4%) females, 262 (89.1%) were indigenes and 32 (10.9%) were settlers. The distribution of respondents by clan was 117 (39.8%) 46 (15,6%) and 131 (44,6%) for Ikun-Igbet, Ikun-Ithon and Ikun-Evai respectively. Two hundred and thirty nine (81.6%) and 55(18.4%) were unmarried. The respondents were all (100%) low income earners who were all (100%) not comfortable with their earnings (Table 1).

3.2 Attitude of Community towards Leprosy and Leprosy Patients

The study revealed that only 44(15%) of respondents had favorable attitude towards leprosy and leprosy patients whereas 250(85%) had unfavorable attitude towards this group (Fig. 1). Two hundred and thirteen (72.4%) respondents would not allow their children to play with children of leprosy patients. Of this number, 135(63.4%) were males and 78(36.6) were females. Two hundred and seventy five (93.5%) said they would be ashamed to admit to having a family member with leprosy, 125(45.5%) were males and 150(54.5%) were females. In like attitude, 257(87.4%) respondents would not assist a leprous family member in receiving treatment and with this mindset were males, 137(53.3%) and females 120(46.7%). Two hundred and fifty six (87.1%) respondent would not like to participate in leprosy awareness education.

3.2.1 Relationship between socio-demographic profile and community attitude towards leprosy and leprosy patients

Respondents' attitude to leprosy and leprosy patients was observed to be significantly related to age and sex of respondent, religion and ethnicity, p-value< 0.05 (Table 2). Most respondents 102(47.9) under the age brackets of 31-40 years will not allow their children to play with the children of leprosy patients. More males, 135(63.4%) than females 78(36.6%) would not allow their children to play with children of

leprosy patients. Majority of indigenous respondents 254(92.7%) said they would be ashamed admitting to having a family member with leprosy as against 20(7.3%) settlers with same opinion. Most members 233(86.6%) of the Christian religious sect would not share cloths or towels with leprosy patients. On the other hand, arising from data analysis based on age 118(46.1%), sex 137(53.3%), religion 220(85.9%) and ethnicity 225(87.9%) most respondents said they would assist a leprous family member through the duration of treatment.

Table 1. Socio-demographic profile of the respondents

Characteristics	% Frequency	Number/Total
Age (years)		
1 – 15	5.8	17
16 – 30	29.2	86
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	81.6	239
Unmarried	18.4	55
Total	100	294
Religion		
Christian	81.6	240
Pagan	18.4	54
Total	100	294
Type of family		
Not Applicable	24.5	72
Monogamous	57.5	169
Polygamous	18,0	53
Total	100	294
Occupation		
Farmer	39.2	115
Labourer	6.1	18
Business	29.9	88
Housewife	0.7	2
Student	11.9	35
Unemployed	12.2	36
Total	100	294
Income comfortableness		
No	100	294
Yes	0.0	0
Total	100	294

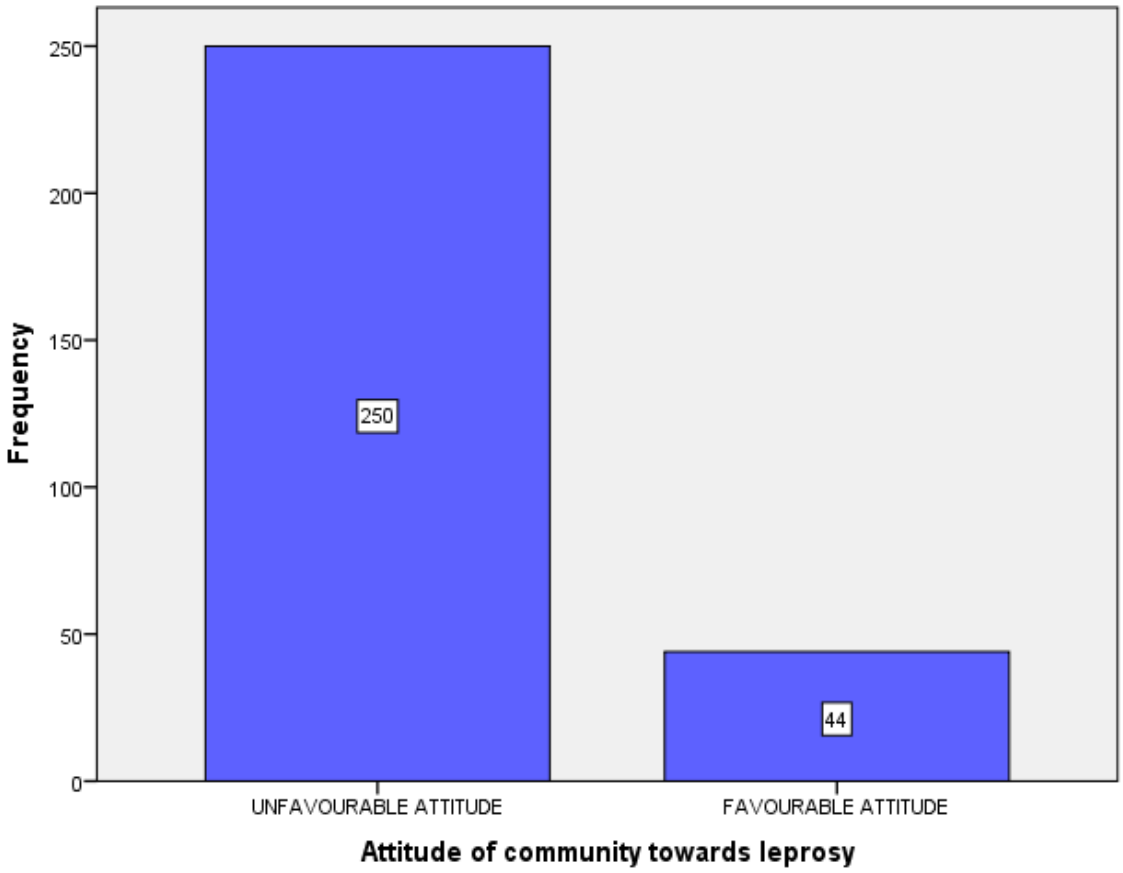

Fig. 1. Attitude of community towards leprosy and leprosy patients

Table 2. Univariate analysis of Community attitudes towards Leprosy

Variables	No (%)	Yes (%)	X^2	P-value	Odds ratio	Confidence interval
Can you allow your children to play with the children of a leprosy patient?						
Age group (yrs)			34.38	0.000	*	*
16-30	57 (26.8)	28 (35.0)				
31-40	120 (47.9)	17 (21.2)				
>40	37 (17.4)	35 (43.8)				
Sex			86.57	0.000	67.5	16.138-282.337
Male	135 (63.4)	3 (3.7)				
Female	78 (36.6)	78 (96.3)				
Religion			42.4	0.000	7.13	3.764-13.515
Christian	193 (90.6)	46 (57.5)				
Pagan	20 (9.4)	34 (42.5)				
Ethnicity			16.16	0.000	4.13	1.941-8.775
Indigenes	199 (93.4)	62 (77.5)				
Settlers	14 (6.6)	18 (22.5)				
Are you ashamed to admitting that you have a leprosy patient in your family?						
Age group (yrs)			9.14	0.027	*	*
16-30	7 (36.8)	78 (30.4)				
31-40	12 (63.2)	107 (41..6)				
>40	0 (0.0)	72 (28.0)				

Variables	No (%)	Yes (%)	X^2	P-value	Odds ratio	Confidence interval
Sex			2.16	0.138	2.04	0.781-5.347
Male	12 (63.2)	125 (45.5)				
Female	7 (36.8)	150 (54.5)				
Religion			4.50	0.032	*	*
Christian	19 (100)	220 (80.3)				
Pagan	0 (0.0)	54 (19.7)				
Ethnicity			57.0	0.000	0.05	0.016-0.130
Indigenes	7 (36.8)	254 (92.7)				
Settlers	12 (63.2)	20 (7.3)				
Can you assist a leprous family member through the duration of treatment?						
Age group (yrs)			32.6	0.000	*	*
16-30	19 (51.4)	66 (27.6)				
31-40	1 (2.7)	118 (41..6)				
>40	17 (45.9)	55 (23.0)				
Sex			33.0	0.000	0.03	0.003-0.181
Male	1 (2.7)	137 (53.3)				
Female	36 (97.3)	120 (46.7)				
Religion			25.7	0.000	0.17	0.083-0.360
Christian	19 (51.4)	220 (85.9)				
Pagan	18 (48.6)	36 (14.1)				
Ethnicity			2.9	0.086	4.96	0.657-37.471
Indigenes	36 (97.3)	225 (87.9)				
Settlers	1 (2.7)	31 (12.1)				
Can you participate in leprosy awareness education?						
Age group (yrs)			91.7	0.000	*	*
16-30	36 (94.7)	49 (30..6)				
31-40	2 (5.3)	117 (49..2)				
>40	0 (0.0)	72 (30..2)				
Sex			0.01	0.94	1.03	0.520-2.036
Male	18 (47.4)	120 (46.9)				
Female	20 (52.6)	136 (53.1)				
Religion			7.25	0.007	9.71	1.302-72.393
Christian	37 (97.4)	202 (79.2)				
Pagan	1 (2.6)	53 (20.8)				
Ethnicity			5.35	0.021	1.14	1.092-1.198
Indigenes	38 (100)	223 (87.5)				
Settlers	0 (0.0)	32 (12.5)				
Can you share cloths or towel with leprosy patient?						
Age group (yrs)			15.7	0.001	*	*
16-30	79 (31.3)	6 (25.0)				
31-40	101 (40.1)	18 (75.0)				
>40	72 (28.6)	0 (0.0)				
Sex			8.40	0.004	0.26	0.102-0.687
Male	119 (44.2)	18 (75.0)				
Female	150 (55.8)	6 (25.0)				
Religion			55.6	0.000	19.4	7.227-52.169
Christian	233 (86.6)	6 (25.0)				
Pagan	36 (13.4)	18 (75.0)				
Ethnicity			3.2	0.073	*	*
Indigenes	237 (88.1)	24 (100)				
Settlers	32 (11.9)	0 (0.0)				

P-value ≤ 0.05 is significant

**Not calculated, only calculated for 2x2 table without empty cells*

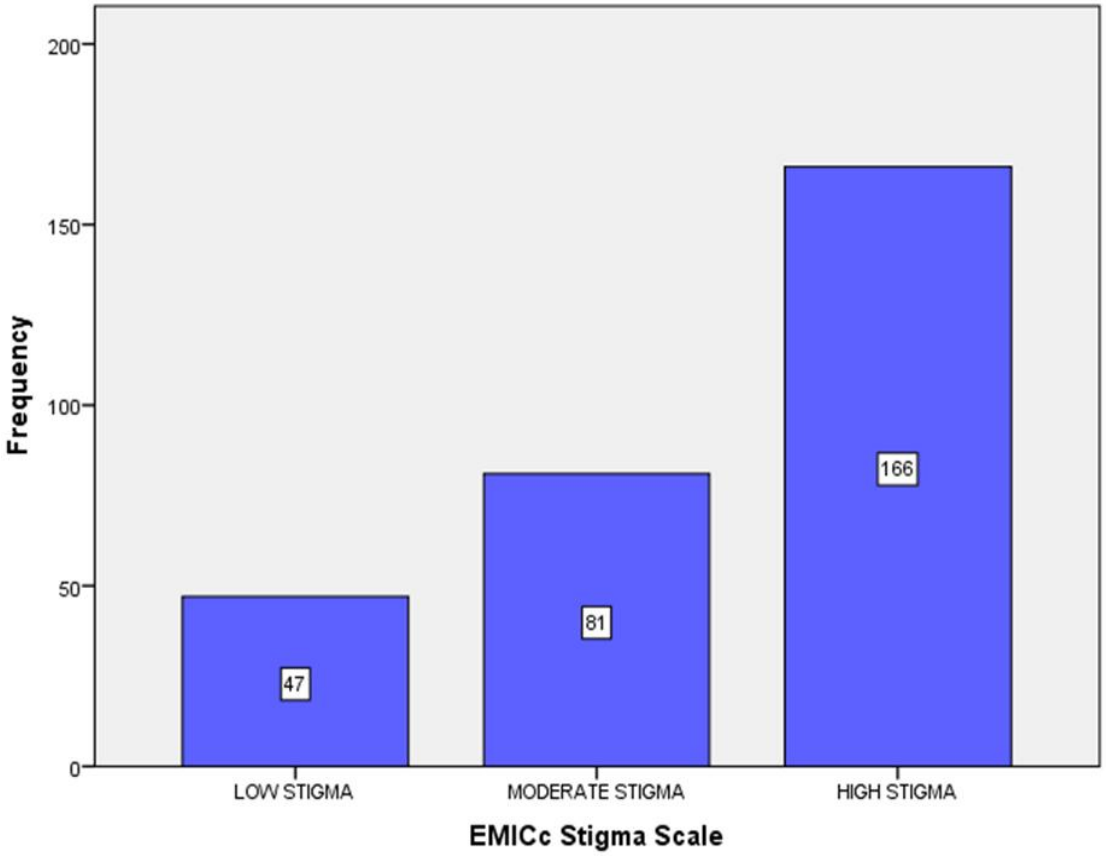

Fig. 2. Levels of stigma among study respondents

Table 3. Univariate analysis of explanatory model interview catalogue (EMIC) stigma scale according to selected socio-demographic variables

Variables	Low stigma (%)	Moderate stigma (%)	High stigma (%)	X^2	P-Value	Odds ratio
Age group (yrs)				5.42	0.491	*
1-15	4 (8.5)	4 (4.9)	9 (5.4)			
16-30	16 (34.0)	29 (35.8)	41 (24.7)			
31-40	16 (34.0)	32 (39.5)	71 (42.8)			
>40	11 (23.5)	16 (19.8)	45 (27.1)			
Sex				1.51	0.927	*
Male	23 (48.9)	38 (46.9)	75 (45.8)			
Female	24 (51.1)	43 (53.1)	90 (54.2)			
Religion				1.98	0.38	*
Christian	35 (74.5)	68 (84.0)	137 (82.5)			
Pagan	12 (25.5)	13 (16.0)	29 (17.5)			
Ethnicity				1.41	0.493	*
Indigenes	41 (87.2)	75 (92.6)	146 (88.0)			
Settlers	6 (12.8)	6 (7.4)	20 (12.0)			

P-value ≤ 0.05 is significant

**Not calculated, only calculated for 2x2 table without empty cells*

Age, sex, religion and ethnicity were the independent predictors of attitude, p-value < 0.05 (Table 2).

3.3 Community Based Stigma towards Leprosy and Leprosy Patients

Analysis of Explanatory Model Interview catalogue (EMIC) profile of the study respondents revealed that 47(16%) demonstrated low stigma, 81(28%) demonstrated moderate stigma and 166(56%) demonstrated high stigma towards leprosy (Fig. 2).

3.3.1 Relationship between stigmatization and selected socio-demographic variables

No statistically significant relationship was found between stigma and socio-demographic variables. However, a trend was observed between them (Table 3). Perceived stigma irrespective of category was observe to increase with age up to 40 years and then dropped with ages >40 years, p-value = 0.491. Stigma was observed to be higher among females than males, p-value = 0.927. It was also revealed that stigma against leprosy was higher among members of the Christian religion than pagans, p-value = 0.38. Statistics also revealed that stigma toward leprosy and leprosy patients was higher among indigens than settlers, p-value = 0.493.

4. DISCUSSION

This study revealed that 250(85%) of the respondents in the study, had unfavorable attitude towards leprosy and leprosy patients as against 44(15%) who demonstrated favorable attitude towards this condition and the patients. It was also found out that community based stigma against leprosy and leprosy patients was quite prevalent among the study participants. Explanatory Model Interview catalogue (EMIC) scores of the study respondents revealed that 166(56%) demonstrated high stigma, 81(28%) demonstrated moderate stigma and 47(16%) demonstrated low stigma towards leprosy and leprosy patients.

The Community attitude as reported in this study is similar to the findings in a community study in Dhanusha and Parsa districts of Southern Central Nepal [14] in which 59.1% of the respondents had unfavorable attitude while 40.9% had favorable attitude to leprosy. This unfavorable attitude was expressed in such untoward behaviors such as most respondents not wanting their children to play with children of leprosy students, most respondents feeling ashamed having a family member with leprosy, most respondents refusing to assist a family member with leprosy in receiving treatment and most respondents not willing to participate in leprosy awareness education. The pattern of attitudinal findings towards leprosy in this study is also similar to the report in a study in Ethiopia [15]. Some socio-demographic characteristics of respondents have statistically significant influence on their attitude. The result of this study showed that the attitude of respondents was significantly related to age and sex of respondent, religion and ethnicity, p-value< 0.05. This result is similar to findings from studies done in Ethiopia and Cameroun [14,16] and another study carried out in Western region of Nepal [17]. Poor communal attitudinal posture to leprosy patients can affect their status disclosure and health- seeking behaviors thus leading to delayed diagnosis, complications and perpetuation of the condition in the community.

The results of this study showed that there is high prevalence of stigma towards leprosy and leprosy patients among members of Ikun community. The perception of the people about leprosy and leprosy patients is shrouded with myths and misconceptions such as participants not wanting to buy food from leprosy patients, community members not willing to marry a leprosy patient or relative of a leprosy patient, thinking that it is difficult to find job for a leprosy patient, thinking that infection with leprosy would cause problem in present marriage or cause shame and embarrassment to a family for people to know that a family member has leprosy. Participants tended to think less of a person with leprosy, thinking of avoiding leprosy patient and unwillingness to visit the homes of leprosy patients and preferring not to allow others know their leprosy status where possible. The level of high stigma recorded among greater proportion of respondents in this study is similar the reports of studies done in West Nepal [17] and rural India [18]. The high stigma prevalence recorded in this study is a reflection of how deep rooted myths and misconceptions about leprosy and leprosy patients has permeated the spectrum of Ikun community. Unlike the study in West Nepal [17], there was no statistically significant relationship between perceived stigma and socio-demographic variables however a trend

was observed between the two. This was that perceived stigma irrespective of category was observe to increase with age up to 40 years and then began to drop with ages >40 years. Stigma was observed to be higher among females than males. It was also revealed that stigma against leprosy was higher among members of the Christian religion than pagans. Statistics also revealed that perceived stigma toward leprosy and leprosy patients was higher among indigenes than settlers. Although these observations are not statistically significant, perhaps raising the sample size, might change the narrative.

Misunderstanding and misconceptions about the cause, methods of transmission, and treatment of leprosy [19] breed negative attitude and stigma about the disease, encouraging status concealment, delayed diagnosis and onset of debilitating complications which further worsen public perception of the condition [20].

Misgivings and misconceptions about leprosy and leprosy patients are still well rooted in Ikun community giving rise to the high degree of unfavorable attitude and stigma recorded in this study. Leprosy eradication in this community will involve re-orientation of the populace through vigorous leprosy awareness programs structured along the lines of attitudo-stigma influencing socio-demographic variables. The state ministry of health through dedicated community health extension workers should liaise with community leaders, heads of age grade organizations and churches to organize town- hall sensitization talks with emphasis on the cause, transmission, diagnosis, treatment of leprosy. This approach has the potential to shape the people's perception of leprosy in the right perspective and thus ameliorating the current wave of negative attitude and stigma to enable infected people to timely present themselves for diagnosis and treatment.

5. CONCLUSSION

Misunderstanding and misconceptions about leprosy and leprosy patients is still well rooted in the norms and culture of the people of Ikun. These are such that most respondents admitted to being ashamed having a family member with leprosy, most others would not like to assist a family member with leprosy to receive treatment and most others would not like to partake in leprosy awareness programs. The study revealed that only 44(15%) of respondents had favorable attitude towards leprosy and leprosy patients whereas 250(85%) had unfavorable attitude towards this group. Respondents' attitude to leprosy and leprosy patients was observed to be significantly related to age and sex of respondent, religion and ethnicity, p-value< 0.05.

Analysis of Explanatory Model Interview cataloque (EMIC) profile of the study respondents revealed that 47(16%) demonstrated low stigma, 81(28%) demonstrated moderate stigma and 166(56%) demonstrated high stigma towards leprosy. Vigorous leprosy awareness programs structured along the lines of attitudo-stigma influencing socio-demographic variables, with emphasis on the cause, transmission, diagnosis and treatment of leprosy will help to stem the tide of myths and misconceptions.

CONSENT

Written informed consent was taken from each participants.

ETHICAL APPROVAL

Ethical approval was received from the Cross River State Health Research Ethical Committee, State Ministry of Health, Calabar.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. WHO. Report No. 1, 2002;77: 1-8
2. Blok DJ, De Vlas SJ, Richardus JH. Global elimination of leprosy by 2020: are we on track? Parasites & vectors. 2015;8:54.
3. Global leprosy update, 2015: time for action, accountability and inclusion. Wkly Epidemiol Rec. 2016;91(35):405–20.
4. 3K new leprosy cases spotted each year—General—The Kathmandu Post [Internet]; 2018.
   [Accessed 2020 April 15]
   Available:http://kathmandupost.ekantipur.com/news/2018-01-29/3k-new-leprosy-cases-spotted-each-year.html
5. Leprosy lives on in Nigeria, 20 years after its 'elimination' as a public health problem. [Internet]; 2020.

[Accessed2020 April 15]
Available:https://www,devex.com

6. Leprosy cases rising despite govt's efforts [Internet]; 2018.
[Accessed 2020-04-15]
Available:https://thehimalayantimes.com/kathmandu/leprosy-cases-rising-despite-govts-efforts/.
7. Adhikari B, Kaehler N, Raut S, Gyanwali K, Chapman RS. Stigma in leprosy: A qualitative study of leprosy affected patients at green pastures Hospital Western Region of Nepal. J Heal Res. 2013;27(5):295–300.
8. Nicholls PG, Butlin R. Delay in presentation and start of treatment in leprosy: Experience in an out-patient clinic in Nepal. Lepr Rev. 2000;71(4):511–6.
9. Van de Weg N, Post EB, Lucassen R, et al. Explanatory model and help-seeking behaviours of leprosy patients in Adamawa State, Nigeria. Lepr Rev. 1998;69:382-389.
10. Ebenso B, Newell J, Emmel N, Adeyemi G, Ola B. Changing stigmatization of leprosy: An exploratory qualitative life course study in Western Nigeria. BMJ Global Health; 2019.
Available:http://gh.bmj.com
[Accessed 2020 April 16]
11. Tabah EN, Nsagha DS, Bissek ACZK, Njamnshi TN, Njih INN, Pluschke G, et al. Community knowledge, perceptions and attitudes regarding leprosy in rural Cameroon: The case of Ekondotiti and Mbonge health districts in the South-west Region. PLoS Negl Trop Dis. 2018;12(2):e0006233.
Available:http://www.ncbi.nlm.nih.gov/pubmed/29432474
[PMID:29432474]
[Accessed April 16, 2020]
12. National Population Commission: Final results of population Census of Nigeria; 1991.
13. Yamane T. Statistics, an introductory analysis, 2nd Ed. New York; 1967.
14. Singh R, Singh B, Mahato S. Community knowledge, attitude, and perceived stigma of leprosy amongst community members living in Dhanusha and Parsa districts of Southern Central Nepal. PLoS Negl. Trop. Dis. 2019;13(1): e0007075.
DOI: 10.1371/journal.pn.td007075
15. Aa T, Benso M. Assessment of Knowledge and Attitude of Community on Leprosy Patients in Kuyera Town, West Arsi Zone, Oromia Region Southeast Ethiopia. Hered Genet [Internet]; 2015.
[Accessed, 7th June 2020]
Available:https://www.omicsonline.org/open-access/assessment-of-knowledge-and-attitude-of-community-on-leprosy-patientsin-kuyera-town-west-arsi-zone-oromia-region-southeast-ethiopia-2161-1041-1000156.pdf.
16. Tabah EN, Nsagha DS, Bissek A-CZ-K, Njamnshi TN, Njih INN, Pluschke G, et al. Community knowledge, perceptions and attitudes regarding leprosy in rural Cameroon: The case of Ekondotiti and Mbonge health districts in the South-west Region. PLoS Negl Trop Dis [Internet]. 2018;12(2):e0006233..
[Accessed 2020 June7]
Available:http://www.ncbi.nlm.nih.gov/pubmed/29432474
[PMID:29432474]
17. Adhikari B, Shrestha K, Kaehler N, Raut S, Champan R. Community attitudes towards leprosy affected persons in Pokhara municipality of western Nepal. J Nepal Health Res Counc [Internet]. 2013;11(25):264–8.
Available:http://www.scopus.com/inward/record.url?eid=2-s2.084903436530&partnerID=tZOtx3y1
[PMID:24908528]
18. Van Brakel WH, Sihombing B, Djarir H, Beise K, Kusumawardhani L, Yulihane R, et al. Disability in people affected by leprosy: The role of impairment, activity, social participation, stigma and discrimination. Glob Health Action [Internet]. 2012; 5:18394.
[Accessed 12th June, 2020]
Available:http://www. ncbi.nlm. nih.gov/pubmed/22826694
19. Adhikari B, Kaehler N, Chapman RS, Raut S, Roche P. Factors affecting leprosy infected people in West Nepal; PLoS Negleted Tropical Disease. 2014;8(6):2940.
20. Sathish P, Sisodia M, Selvaseka A. The role of stigma and depression in influencing leprosy affected person's quality of life. Symposium: Social aspects and self-care; 2013.

Apendix 1: The study questionnaire

A. Socio-demographic characteristics:

1. Ages (years)

   a. 1-5 b. 6-10 c. 11-15 d. 16-20 e. 21-25 f. 26-30 g. 31-35 h. 36-40i. 41- 45 j. ≥ 46

2. Sex

   a. Female b. Male

3. Ethnicity

   a. Indigenes b. Settlers

4. Religion

   a. Christian b. Muslim c. Pagan

5. Clan

   a. IkunIgbet b. Ikun Ithon c. IkunEvai

6. Marital status

   a. Married b. Unmarried c. Widow/Widower d. Divorced e. Separated

7. Type of family:

   a. Not applicable b.Monogamous c. Polygamous.

8. Family history of leprosy

   Any family member infected with leprosy? A. Yes B. No
   Any member exposed to leprosy? A. Yes B. No

9. Occupation: What is your occupation?

   a. Farmer b. Laborer c. Business d. Civil Servant e. Housewife f. Student g. Unemployed h. Others

10. Your monthly income (#)

    a. ≤ 10,000
    b. 21,000- 30,000
    c. 31,000-50,000
    d. 51,000-99,000
    e. ≥ 100,000

11. Are you comfortable with your income?

    a. Yes
    b. No

B. Attitudes of community towards leprosy

1. Can you sit side by side with leprosy patient in a taxi? a. Yes b. No.
2. Can you attend a meeting in same venue with leprosy patient? a. Yes b. No
3. Can you accept food cooked by a leprosy patient? a. Yes b. No
4. Can you marry from a family of a leprosy patient? a. Yes b. No
5. Is it possible for a leprosy patient to get married .n your community? a. Yes b. No
6. Can you work in the same environment with a leprosy patient? a. Yes b. No
7. Can you allow your children to play with the children of a leprosy patient? a. Yes b. No
8. Are you ashamed to admitting that you have a leprosy patient in your family a. Yes b. No
9. Cam you assist a leprous family member through the duration of treatment a. Yes b. No
10. Can you participate in leprosy awareness education? A. Yes b. No
11. Can you share cloths or towel with leprosy patient? a. Yes b. No

C. Explanatory Model Interview Catalogue (EMICc) stigma scale

No.		Yes	Possibly	Uncertain	No	Score
		2	1	0	0	
1.	Keep others from knowing leprosy status if possible					
2.	Think less of yourself due to leprosy affected individual in family					
3.	Leprosy has caused shame or embarrassment in community					
4.	Others think less of a person with leprosy					
5.	Adverse effect on others if they know someone's status of leprosy					
6.	Others would avoid a person with leprosy					
7.	Others would refuse to visit home of leprosy affected individual					
8.	Other people think less of a family with leprosy patient					
9.	Causes problem for family if anyone in family has leprosy					
10.	Disclosure concern by family to share leprosy status to others					
11	Leprosy would cause problem to get married					
12.	Leprosy would cause problem in an ongoing marriage					
13.	Leprosy would cause problem in marriage of relatives					
14.	It is difficult to find work/job for a leprosy affected individual					
15.	Others would dislike to buy foods from a leprosy affected individual					

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