Asian Journal of Social Sciences and Management Studies
ISSN: 2313-7401
Vol. 2, No. 3, 89-100, 2015
http://www.asianonlinejournals.com/index.php/AJSSMS

Assessment of Level of Public Knowledge about Leprosy and its Effects on Leprosy Control Programmes in Anambra and Ebonyi States of Southeast Nigeria

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Abstract

Three related objectives informed this research paper. The first was to ascertain the level of knowledge about leprosy among residents of Anambra and Ebonyi states of Southeast Nigeria. The second was to find out if there were differentials in levels of knowledge about leprosy across socio-economic profile of residents of the two areas. The third objective interrogated how the prevailing level of knowledge in the area affected the effectiveness of leprosy control programme in the area. The study adopted a cross-sectional survey design. Quantitative data was generated through structured questionnaire schedule administered on 1116 study participants, selected through a combination of cluster and simple random sampling methods. Qualitative data were generated through Focus Group Discussion (FGD) administered to persons affected by leprosy and In-Depth Interview (IDI) of leprosy control staff and officials of both World Health Organization and the donor agency supporting leprosy control in the two states. The Statistical Package for the Social Sciences (SPSS) software was employed in analysis of data. Frequency tables, percentages, bar charts, chi-square and multiple regressions were used for presentation, analysis and in testing the stated hypotheses. The study found that knowledge level about cause, early danger signs, place of treatment and curability of leprosy was very low in the two states. Such low level of knowledge about leprosy and low literacy level among patients were among major socio-cultural factors found to affect leprosy control in the area. It was recommended that aggressive public enlightenment through public, private and local media; incentive package for health workers; prohibition of socio-cultural practices and beliefs that promote the spread of leprosy be adopted to actualise leprosy control in Anambra and Ebonyi states.

Keywords: Knowledge, Leprosy, Leprosy control programme, Isolation, Rehabilitation, Isolation, Social stigma, Persons affected by leprosy.

Contents

1. Introduction

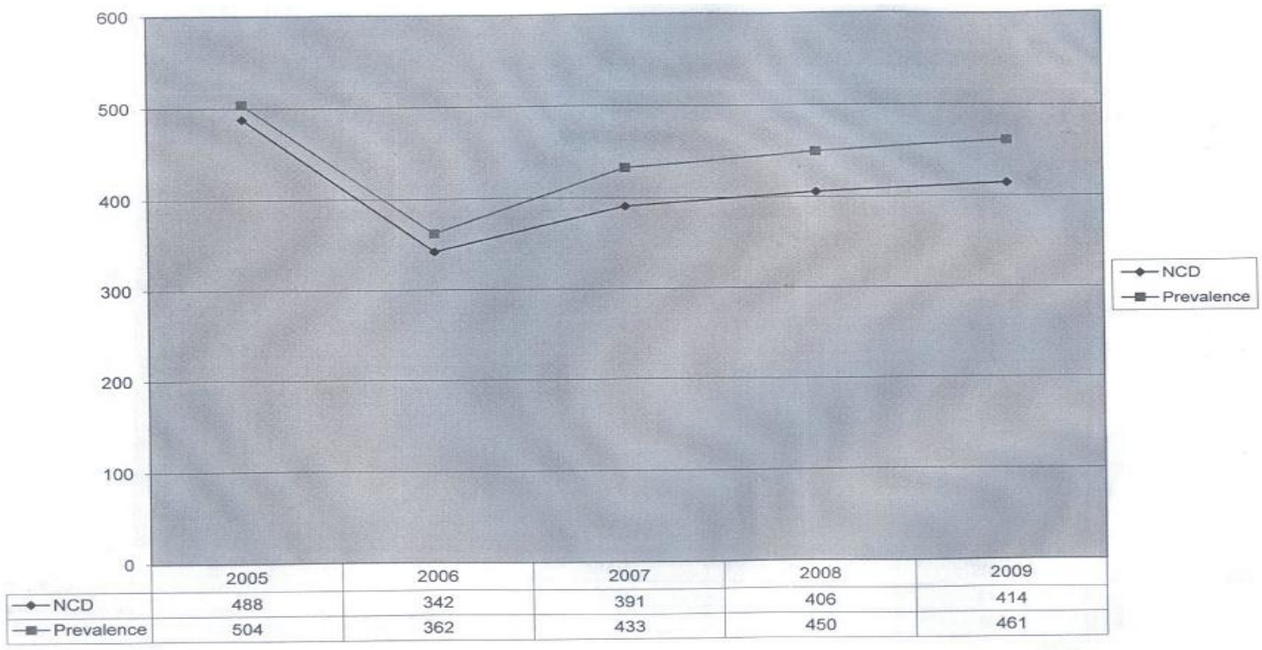
Nigeria's Federal Ministry of Health (Federal Ministry of Health Department of Public Health, 2004) defined leprosy as a chronic, infectious disease that mainly affects the skin, peripheral nerves and mucous membrane of the upper respiratory tract caused by Mycobacterium leprae. The disease has remained a public health problem and cause of morbidity in Nigeria. Lockwood (2000) also notes that the disease is a leading cause of permanent disability worldwide, and has over the year's left terrifying memory of mutilation, rejection and social exclusion.

Nigeria has a national leprosy control programme, an organised effort with clearly defined goals to reduce leprosy burden in the country. Key activities of the programme include problem assessment, health education of the public, case finding, diagnosis, chemotherapy, rehabilitation and efforts to integrate persons affected by leprosy into their community. There is also inbuilt monitoring and evaluation arrangements in the programme.

However, over the years, Nigeria's leprosy control programme and persons affected by leprosy have encountered several problems. These include poor funding of leprosy control activities and unsuccessful integration of leprosy control with general primary health care.

Particularly disturbing is the graph below from World Health Organization (2010), which shows consistent increases (rather than decreases) in both new case detection and prevalence of leprosy from 2006-2009 in Southeast area of Nigeria.. This raises worries about the effectiveness of leprosy control programme in the area and whether leprosy is a re-emerging disease in the area and for what reasons.

Furthermore, poor leprosy control outcomes has persisted to the extent that a former World Health Organization's Country Representative in Nigeria, Dr Peter Ekiti lamented that in 2008; only 14% of the estimated new leprosy cases in Nigeria were actually detected and enrolled for treatment (Ekiti, 2010). Similarly, Adagba (2011) was very critical that prevalence of leprosy among children in Nigeria is still high and unacceptable.



	2005	2006	2007	2008	2009
NCD	488	342	391	406	414
Prevalence	504	362	433	450	461

Fig-1. Leprosy New Case Detection(NCD) and Prevalence,2005-2009 for South-east Zone of Nigeria

Source:WHO (2010).

In 2008, Nigeria was ranked at the fifth position among nations with high leprosy burden in the world, and in Africa, second only to Republic of Congo (WHO, 2008). Nigeria's registered prevalence of leprosy as at 2002 was 5890 (FMOHDOPH, 2004). It declined to 5381 by the beginning of 2008 (WHO, 2008) and further to 3913 cases at the end of 2010 (Adagba, 2011).The above situation appears to be compounded by enormous fear of leprosy among the Nigerian populace (Ogoegbulem, 2000). Furthermore, community participation and socio-economic rehabilitation which are crucial elements in leprosy control have remained weak (Osakwe, 2004). Consequently, community response or behaviour toward those suffering from leprosy is characterized by avoidance, insult and rejection. Even discharged leprosy ex-patients are not spared of these actions that also constitute violation of human rights.

Nicholls (2000) further observes that leprosy more than any other disease has caused individuals to leave their families and communities and be forced to live as outcasts in separate colonies and settlements. Some of such colonies or settlements are still operating at Okija, Otolo-Nnewi, and Amichi communities in Anambra state; and at Mile Four Abakaliki and Uburu communities at Ebonyi state. There are others at other parts of Nigeria. Their continued operation is an evidence of the failure of the National Leprosy Control Programme to implement home based or ambulatory care arrangement where most patients access treatment from their homes, except those who are in critical conditions and require hospitalization. The advantage of home based care in reducing segregation and facilitating the new thrust toward Community Based Rehabilitation (CBR) cannot be over-emphasized.

The lukewarm attitude of health workers toward leprosy control activities (Adagba, 2011) is also a major challenge facing the control programme Poor allowances, negative cultural reactions towards leprosy and fear of contracting the disease negatively affect the disposition of health workers to committed service.

Above all, knowledge of leprosy in Nigeria seems to be low, which may likely produce negative impact on the control effort. 'Knowledge of leprosy' in the context of this study refers to having correct information on the cause,

early signs, curability and place of treatment. It also includes being well informed of the existence of functional leprosy control programme in one's local area.

It is against the above background and problems that the research was undertaken to investigate the level of knowledge of residents of Anambra and Ebonyi states of Southeast Nigeria about leprosy, and how such prevailing level of knowledge about leprosy affect the effectiveness of leprosy control programme in the area.

1.1. Brief Review of Literature on Knowledge of Leprosy across Societies and Medical / Bio-Physical Features of the Disease

The level and accuracy of knowledge about leprosy, possessed by individuals across social systems has remained relatively low (Rafferty, 2005). This is notwithstanding the fact that research works on medical and biophysical characteristics of leprosy have continued to expand over the years. WHO (2000) notes that the handicap posed by tendency for leprosy to evolve slowly which make fast documentation of its epidemiological pattern difficult, have had an insignificant effect on research output. Scott (2000) therefore frowns at poor dissemination of knowledge arising from researches and the concentration on medical without commensurate emphasis on social aspects of leprosy.This review work on knowledge and bio-physical features of leprosy will specifically address the following areas; Causative organism of leprosy, Mode of spread of leprosy disease, Signs and symptoms of leprosy, Types of leprosy, Treatment of leprosy.

(a) Causative Organism of Leprosy

A Norwegian doctor, Gerhard HennikArmauer Hansen (1841 – 1912) was the person who in 1873 found that leprosy is caused by a bacillus, Mycobacterium leprae, and not a punishment from gods or a hereditary disease (Bryceson and Pfaltzgraff, 1990; WHO, 2000). Rees (1989) observes that the appointment in 1866, of ArmauerHansen as a medical officer to a leprosy hospital in Bergen set the stage for his interest in leprosy research. According to Rees (1989), Hansen severally examined under the microscope materials from skin lesions of leprosy patients and came to a conclusion that rod-shaped bodies (Mycobacterium leprae) consistently observed were the cause of leprosy.

(b) Mode of Spread of Leprosy

The human being is the most significant reservoir of infection of Mycobacterium leprae from where the disease agent could spread to other humans (WHO, 1985; Noordeen, 1989; Ezekpeazu, 2000). Noordeen (1989) reports that the limited growth of organisms indistinguishable from Mycobacterium leprae in the foot pad of mice and cases of naturally infected armadillous in Southern parts of U.S.A were of negligible significance in the spread of leprosy in human population.

Chukwu (2004) observes that among human beings, untreated lepromatous or multi bacillary types of leprosy carry largest load of infectious Mycobacterium leprae organisms and pose greater risk of transmission to others. WHO (2000), reports that the commonest mode of spread of leprosy from infected person to an uninfected one is by means of droplets. This means that tiny drops of liquid coughed/sneezed out from the nose, throat or mouth of leprosy patients carry leprosy bacilli which can easily be inhaled by an uninfected person.

Chukwu (2004) also affirms that nasal and other secretions from respiratory tract and lepromatous ulcers are two main portals of exit of leprosy germs from the patient. He adds that the respiratory tract and the skin are similarly portals of entry of leprosy bacilli into the body system of persons who had prolonged contact often at intra-familial situations with untreated leprosy patients.

Green (1995) emphasized that indirect transmission does not play an important role in the spread of leprosy. He however noted that leprosy may occasionally occur through wearing clothes or using beddings of a patient with multi bacillary leprosy. This is because Mycobacterium leprae may remain viable for several days on beddings and clothing's etc.

The consideration of contaminated clothing and other formites acting as sources of infection were anchored on findings that Mycobacterium leprae in nasal secretions can survive up to 36 hours or more (Davey and Rees, 1974) and for up to 9 days under tropical conditions (Desikan, 1977).

Nigeria's Federal Ministry of Health (FMOHDOPH, 2004) sums up factors affecting transmission of leprosy as follows:

1. The infectiousness of the infected person which is affected by his bacillary load.
2. The susceptibility of the contact which depends on his immune status.
3. The closeness, frequency and duration of contact with the source of infection

According to Ezekpeazu (2000), education of persons affected by leprosy about how the disease is spread is a crucial aspect of leprosy control. This is with a view to encourage them to limit the spread. Unfortunately, he observes that this important strategy is yet to reach its peak in Nigeria due to public enlightenment challenges.

(c) Signs and Symptoms of Leprosy

Leprosy presents with many signs and symptoms but their degree of manifestation or clinical picture vary in individuals due to different levels of immune response (Ezekpeazu, 2000). The WHO (1988); WHO (2000) and FMOHDOPH (2004) outlined the following major signs and symptoms as typical in leprosy disease:

1. Presence of skin lesions/patches (hypo pigmented areas of skin) with definite loss of sensation to touch.
2. Enlargement and or pain in one or several peripheral nerve trunks.
3. Positive skin slit smear for acid fast bacilli (Mycobacterium leprae)
4. Numbness (loss of feeling) of the hands, feet or areas of the skin.

v. Weakness or total loss of function of hands and feet

Federal Ministry of Health (FMOHDOPHC, 1997) further notes that depending on duration of the disease and the spread of leprosy through the body, various other organs may show typical signs and complications like:

1. Loss of eyebrow and eyelashes
2. Enlarged and elongated ear lobes which show hanging down defect.
3. Depression or total collapse of nose bridge
4. Ulceration or bleeding from the nose (epitasis)
5. Swelling of breast (gynaecomastia) in males pointing to involvement of the testes.
6. Husky (coarse) voice due to damage of vocal cords by leprosy germs
7. Dryness of the skin, Loss of hair (alopecia), Loss of sweat and Leopard like face
8. Various forms of eye involvement like trichiasis (eyelashes touching the eyeball); entropion (upper eyelid turning in); ectropion (lower eyelid turning down and out); lagophthalmos (inability to close the eye fully leaving a lid gap due to facial nerve damage); conjunctivitis, corneal ulcer, acute iritis etc.
9. Swollen painful fingers (dactylitis) and painful testicular swelling (orchitis) during lepra reactions.
10. Ulcers of the feet and hand arising from pressure on insensitive areas
11. Fixed or mobile clawing of fingers and toes, Wasting of muscles of palm
12. Dropped feet.

(d) Types of Leprosy

Leprosy is classified either as Paucibacillary leprosy or Multibacillary depending on the number of skin lesions/patches and number of nerve trunks affected (WHO, 2000; FMOHDOPH, 2004).

Table-1. Types of Leprosy (W.H.O Classification):

	Paucibacillary	**Multibacillary**
Skin lesions	1 – 5 lesions	6 or more lesions
Nerve Damage	Only one nerve trunk involved	Two or more nerves involved

Source:FMOHDOPH (2004)

(e) Treatment of Leprosy

The W.H.O Study Group on Chemotherapy of Leprosy for Control Programmes, in 1981, recommended Multi-Drug Therapy (MDT) for treatment of leprosy on the grounds that the regimen prevents drug resistance, cures patients faster and that relapses are minimal (WHO, 1982; WHO, 1988). In Nigeria, the Federal Ministry of Health commenced implementation of the policy to treat patients with MDT as recommended by W.H.O in 1983 but it was formally launched with National Tuberculosis and Leprosy Control Programme (NTBLCP) in1991.

According to FMOHDOPH (2004), World Health Organization's Multi-drug Therapy (MDT) has been positive, it cures patients within a short period and interrupts the transmission of the disease very rapidly. The regimen is also operationally feasible for field use and socially acceptable. Smith (2000) observes that the use of MDT and the political commitment of counties to leprosy control gave rise to 85% reduction in leprosy prevalence globally. According to FMOHDOPH (2004), MDT is readily available to patients in Nigeria free of charge throughout their period of treatment. However, Nwankwo (2006) frowned that without viable MDT advocacy groups, the public are inadequately informed of the efficacy of the drug.

The researcher however frowns that treatment success with MDT has had minimal impact on social dimensions of leprosy especially in Nigeria. Stigma has not subsided, and economic and social rehabilitation programmes are not adequate. These situations are reminiscent of the area of study where persons affected by leprosy are not fully integrated into their communities.

1.2. Research Questions

The following research questions guided the study

1. To what extent are residents of Anambra and Ebonyi states of Southeast Nigeria knowledgeable about leprosy?
2. Are their differential levels of knowledge about leprosy across social demographic profile of residents of Anambra and Ebonyi states of Southeast Nigeria?
3. How does level of knowledge about leprosy in the area affect leprosy control programme?

1.3. Research Hypotheses

1. Respondents with higher level of formal educational qualification are more likely to be knowledgeable about the cause of leprosy than those with lower educational qualification.
2. Persons with lower level of formal education are more likely to isolate/discriminate against persons affected by leprosy than those with higher level of formal education.

1.4. Theoretical Framework

Health Belief Model (HBM) is a health behaviour change model first developed in the 1950s by Social Psychologists, Houchbaum G.H., Rosenstock I.M, and Kegel. According to Glanz *et al.* (2002), the proponents used the theory in its original form to explain why free medical screening for tuberculosis offered by the U.S. Public Health Service was not successful. However, the model has been furthered by Howard Becker and colleagues in the 1970s and 1980s. Subsequent amendments to the model were made as late as 1988, to accommodate evolving evidence generated within the health community about the role that knowledge and perceptions play in personal responsibility Glanz *et al.* (2002).

In its latest packaging, the HBM has been defined as a conceptual tool used to understand, explain and predict health behaviour (curative and preventive), including possible reasons for non-compliance with recommended health action (Becker and Rosenstock, 1984). In its task of explaining and predicting behavioural responses to treatment and other health services (health behaviours) and to promote uptake of health services, HBM focuses on the role that

knowledge, belief, perceptions and attitude play in personal responsibility, decisions and actions toward a disease or health service. Conner and Norman (1996) identified three broad areas of application of HBM. These are

1. Preventive health behaviours which include health promoting (e.g. Diet, exercising) and health risk behaviours (e.g. Smoking) as well as vaccination and contraceptive practices.
2. Sick role behaviours which refer to compliance with recommended medical regimens usually following professional diagnosis.
3. Clinic use which includes physicians visits for a number of reasons.

The core assumptions, propositions and statements of HBM are based on the understanding that a persons' willingness to take a health action or change his health behaviour in a recommended direction is hinged on four major considerations or constructs. These are:

1. Perceived susceptibility (an individual's assessment of their risk of getting a condition.
2. Perceived severity (an individual's assessment of the seriousness of the condition, and its potential consequences)
3. Perceived barriers (an individual's assessment of the influences that facilitate or discourage adoption of the promoted behaviour)
4. Perceived benefits (an individual's assessment of the positive consequences of adopting the behaviour). A variant of the fourth construct include the perceived cost of adhering to prescribed intervention.

Two constructs added later were:

5. Perceived Efficacy (an individual's self assessment of ability to successfully adopt the desired behaviour).
6. Cues to action (external influences promoting the desired behaviour).

The four major constructs of perception however respond to modifying or mediating factors that affect behaviour. Such modifying factors include the media, health professionals, personal relationships, incentive, culture, education level, past experiences and skill etc.

Against the above background, HBM has become a very useful tool to explain the problems associated with leprosy and its control programme in society. The quantum and nature of knowledge, beliefs, perception and attitude toward leprosy is largely negative in many societies. This affects actions and decisions of individuals toward the disease. Despite strong perceptions of susceptibility and severity of leprosy, HBM explains poor compliance to treatment and low uptake of leprosy services as products of barriers posed by socio-cultural interpretations that stimulate a preference to cover-up the disease among victims. Among health workers, the perceived risk of contracting leprosy surpasses their estimation of perceived benefits from participation in leprosy management process. This accounts for their poor attitude to leprosy control duties. Unfortunately the role of mediating or modifying factors like the media and incentives has been abysmally low. They could not attenuate the negative perceptions of victims, health workers and the public hence the tenacity of leprosy and its related problems in society.

2. Materials and Methods

The study which is located in Anambra and Ebonyi states, randomly selected out of five states of Southeast Nigeria, adopted cross-sectional survey design. The study participants consisted of adults, aged 18 years and above. There are about 3,515,370 of such adults in the area which represented 57.2% of the area's total population of 6,354,775 (National Population Commission, 2006)

Three instruments (questionnaire, focused group discussion and in-depth interview) were combined for optimum results. There are four categories of respondents, namely, the general public, persons affected by leprosy, leprosy control staff and officials of World Health Organization and the donor agency operating in the two states. All residents of the two states constituted the population of study. However, a sample size of 1116 adults (about 0.32% of adults/study population), considered adequate for applicable statistical techniques were the study participants on who a uniform set of structured questionnaire schedule, containing closed and open ended items were administered on a one-on-one (other administered) basis to generate quantitative data. The sample also accommodated geographical spread and rural-urban bias at the ratio of 2:1 (see Table 2 below).

Respondents were selected through a combination of cluster and random sampling methods. Qualitative data via focused group discussion (FGD) were generated from purposively selected 52 persons affected by leprosy from State Leprosy Treatment Registers. There were four sessions of FGD (two in each state) with 6-12 participants per session segmented along gender. The moderator of each FGD was of the same sex with their FGD group. Also, purposively selected 10 Leprosy Control Staff and 2 officials of World Health Organization and the donor agency operating in the two states were respondents to In-Depth Interview (IDI).

All instruments used in the study were pre-tested outside the study locations by the researcher and five Field Assistants trained for the research This was to ensure reliability and suitability of instruments to meet study objectives. The language of administration of the questionnaire and FGD was Igbo, spoken in the area, because there were many respondents who could not read, write or understand English language. Nonetheless, English was used where any respondent showed preference for English language. The instrument which was originally in English was translated into the local language, which is Igbo and retranslated into English, to provide both Igbo and English versions. Same sex administration of questionnaire was carried out to prevent any cultural barriers and permit free discussion or responses to questionnaire items. All IDI sessions were conducted in English because respondents were all very literate.

Quantitative data gathered in the course of research were analyzed with the help of the Statistical Package for the Social Sciences (SPSS) soft ware. Descriptive statistics like frequency distribution tables, mean, median, percentages and bar-charts were used to interpret data. One correlation analysis (the chi-square) was employed in hypothesis test. On the other hand, qualitative data generated through FGD and IDI were transcribed and organized under different aspects of the discussion and used to explain quantitative data where applicable.

Table-2. Local Government Areas (LGA), Communities and Villages used in the study

States	LGAs	Communities	Villages/Streets	Compounds Visited	No of Respondents
ANAMBRA	Nnewi North (Urban)	Otolo	Orizu Road	62	186
	Idemili South (Rural)	Alor	Ifite village	62	186
	Awka North (Rural)	Achalla	Umudiana village	62	186
EBONYI	Abakaliki (Urban)	Abakaliki	Ibibio Street	62	186
	Ohaozara (Rural)	Okposi	Okposi-ukwu	62	186
	Ohaukwu (Rural)	Efiom	Akparata village	62	186
Total	**6 LGAs**	**6Communities**	**6 Villages/Str.**	**372**	**1116**

Source: Field Survey, 2010.

2.1. Research Findings

One thousand, one hundred and sixteen (1116) questionnaires were administered out of which 1104 were used for analysis after coding and cleaning/ editing all validly completed and returned questionnaire schedules. Results and their analysis were presented according to research questions for easy comprehension.

1. Socio-Demographic/Personal Characteristics of Respondents

The socio-demographic profile of respondents is presented in Table 3 below.

Table-3. Distribution of Respondents by Socio-Demographic Characteristics

Socio – Demographic Characteristics (Items 1 – 11)	Frequency N = 1104	Percentage %
Sex		
Male	505	45.7
Female	599	54.3
Age Group		
18 – 27	246	22.3
28 – 37	206	18.7
38 – 47	326	29.5
48 – 57	201	18.2
58 – 67	78	7.1
68 and above	47	4.3
Marital Status		
Married	499	45.2
Single	363	32.9
Divorced	51	4.6
Separated	62	5.6
Widowed	129	11.7
Religious Affiliation		
Christianity	890	80.6
Islam	21	1.9
Traditional Religion	189	17.1
Others	4	.4
Highest formal Educational Attainment		
No Formal Education	145	13.1
Primary School Certificate	142	12.9
Secondary School Certificate	414	37.5
Vocational/Technical School Certificate	168	15.2
Tertiary	235	21.3
Occupation		
Civil/Public Servant	239	21.6
Trader/Business man	243	22.0
Farmer	260	23.6
Student	119	10.8
Apprentice	85	7.7
Artisan	80	7.2
Unemployed	74	6.7
Others	4	.4
Nature of Income Per Month		
Regular	239	21.6
Periodic	634	57.4
No Income	231	20.9
Income Per Quarter of a year (every 3 months period)		
None		
Below N30,000	232	21
N31,000 – N50,000	147	13.3
N51,000 – N70,000	141	12.8
N71,000 – N90,000	123	11.1
N91,000 – N110,000	149	13.5
N111,000 – N130,000	124	11.2
Above N131,000	93	8.4
	95	8.6

Source: Field Survey, 2010.

Table 3 shows that females constituted 54.3% of the total respondents, while the males constituted 45.7%. Many of the respondents (29.5%) fall within the age bracket of 38 – 47 years. The least number of respondents (4.3%) came from the age – group of 45 years and above. However, the modal and median ages were 41 and 45 years respectively. Also, the mean age of respondents was 40.33 years with a standard deviation of 13.45.

With regard to the marital status of the respondents, 45.2% were married while 32.9% are single. The widowed, separated and divorced respondents were very few (11.7%, 5.6% and 4.6% respectively). The large number of married respondents illuminates the high premium placed on marriage and family institution in the area. Similarly, divorce is low probably because the value system abhors it. Being married and having stable marriage are accorded high esteem and social honour among Igbo people. With respect to religious affiliation, the table clearly shows that more than three-quarter of the respondents (80.6%) were Christians. A few of the respondents belong to other religious groups including Islam (1.9%), traditional religion (17.1%) and other unspecified groups (.4%). In terms of highest formal educational attainment, those who possess secondary school certificate constituted 37.5% of the respondents. Other categories of educational attainment/ certification were tertiary (21.3%), vocational/technical school (15.2%), and primary school certificate holders (12.9%). With only 13.1% of the respondents without any form of formal education, the literacy level in the area is relatively high. However, more respondents from Anambra state (27.7%) had tertiary education than those from Ebonyi state where only 15% had tertiary education.

The respondents were almost equally divided across three major occupations. These are farmers (23.6%), traders (22%), and civil/public servants (21.6%). Students, apprentices, artisans and the unemployed were few. They constituted 10.8%, 7.7%, 7.2%, and 6.7% respectively. The occupational distribution of the respondents highlighted above mirrors the popular description of Ebonyi state as food basket (major agricultural zone) of the nation, and Anambra state as center for commerce and other entrepreneurial activities. The predominance of farmers and traders in the area of study is therefore not a major surprise. However, the nature of income reveals that most of the respondents (57.4%) earn periodic income; 21.6% earn regular income on monthly basis, while 20.9% earn no income at all. In terms of actual income earned per quarter (every three months), many of the respondents (21%) earn no income. These include students, apprentices, some artisans and the unemployed. More than two-thirds of these respondents that earn no income are from Anambra state. Furthermore, 13.5% of the respondents earn below N30, 000 per quarter, and only 8.6% earn above N131, 000 per quarter. This shows that income status of individuals within the area of study is generally low. The mean income per quarter of the respondents is Analysis of Research

2.2. Questions

The research questions posed to guide the study are analysed below.

2.3. Research Question I: To what Extent are Residents of Anambra and EbonyiStates Knowledgeable about Leprosy?

The level of knowledge on leprosy by respondents was measured by their knowledge of the cause and early signs of the disease. Also, their knowledge of correct place(s) of treatment, treatment duration and whether the disease is curable or not was equally relevant.To be knowledgeable about leprosy, the respondents must satisfy at least one out of 5-point criteria used for knowledge assessment. They must know that the cause of the disease is a germ, and that its early sign is patch (es) on the skin with loss of feeling. They should also know that the disease is curable over a 6-18 months period and that the correct places for treatment are Leprosy Clinics/Hospitals and Primary Healthcare Centres (PHC). At such places, treatment is obtained free of charge (FMOHDOPHC, 1997).

Respondents who failed to satisfy at least one of the criteria were considered as not knowledgeable about leprosy. The knowledge level /profile of respondents on leprosy, and the comparison of level of knowledge on leprosy between the two states were examined in Tables 4 below.

Table-4. Distribution of Respondents by their Knowledge Profile on Leprosy using 5-point Criteria of Cause, Early signs, Designated Place of Treatment, Mode of Treatment and Curability.

5-Point Knowledge Criteria/ Profile	Frequency n = 1104	Percentage(%)
Cause of Leprosy (Item 15)		
Germ	282	25.5
Poison/charm	168	15.2
Witches	207	18.8
Curse/Angry Gods	399	36.1
Don't Know	48	4.3
Early Signs of Leprosy (Item 16)		
Patches on the skin with loss of feeling	254	23.01
Disfigured toes and fingers	406	36.8
Itching and sweating	133	12.0
Swollen legs	96	8.7
Don't know	215	19.5
Designated Place of Treatment (Item 20)		
General Hospital	576	52.2
Maternity homes	52	4.7
Teaching hospitals	155	14.0
Leprosy clinics/hospitals	257	23.2
Primary Health Centre (PHC)	60	5.4
Don't know	34	3.1
Mode of leprosy treatment (Item 21)		
Runs throughout life	313	28.4
Free and lasts 6-18 months to cure	160	14.5
Available only in urban areas	276	25.0
Costs between N50,000 – N100,000	101	9.1
Don't know	254	23.0
Curability (Is leprosy curable; Item 19)		
Yes	477	43.2
No	573	51.9
Don't know	54	4.9

Source: Field Survey, 2010.

Table 4, shows that while the people of the communities sampled and by implication, the people of Anambra and Ebonyi states are aware of leprosy, they are not knowledgeable about its cause, early signs, place of treatment, curability and mode of treatment etc.

Most respondents do not have a clear knowledge of the cause of leprosy. For example, only about one-quarter or 25.5% correctly identified germ as cause of the disease. On the other hand, 36% wrongly attributed it to curse/angry gods; 18.8% to witches; 15.2% to poison /charm, while 4.3% do not know of any cause.

On early signs of the disease, an aggregate 77% identified signs that were not typical of early leprosy. Only 23%, representing less than one-quarter of the respondents were knowledgeable that patch (es) on the skin with loss of feeling to light touch is a sign of early leprosy.

The findings in respect of respondents' understanding or knowledge of cause and early signs of leprosy were corroborated by FGD participants who similarly attributed leprosy to other causes other than germs. They also accepted that they did not recognize the problem in its early stage and hence, did not seek medical attention on time. A female FGD participant at Mile 4 Hospital, Abakaliki described her case thus- *'I saw patches on my body and took local drugs for many years but it did not heal. I heard about this place (Mile 4) through radio and came'.* Another FGD participant remarks that *'I have gone to three hospitals at Onueke. This place (mile 4) is my fourth place in search of cure?* Yet another participant said '*it started in 2005 but it was in 2009 that I got to know it is leprosy'*With respect to designated place(s) for leprosy treatment, 23.2% and 5.4% correctly identified leprosy clinic/hospital and PHC centre respectively. The remaining 71.4% showed their lack of knowledge by their reference to general hospitals, teaching hospitals and maternity homes. The result is also corroborated by more than half of FGD participants per session who stated that they did not know the service outlets and had wandered to different types of hospital, prayer houses and traditional healers before they came across individuals who properly guided them.

On whether leprosy is curable, 51.9% of the respondents wrongly believed that the disease is not curable. About 43.2% have accurate knowledge that the disease is curable, while 4.9% were unsure about whether the disease is curable or not. However, only slightly above one-tenth (14.5%) of the respondents were knowledgeable that leprosy treatment is free and lasts between 6-18 months for cure to be achieved. The rest (85.5%) were not well informed.

2.4. Research Question II: Are their Differential Levels of Knowledge about Leprosy Across Social Demographic Profile of Residents of Anambra and EbonyiStates of Southeast Nigeria?

To further evaluate the socio-demographic correlates of knowledge about leprosy among the respondents, their knowledge on whether leprosy is curable was cross tabulated with some socio- demographic variables. This is shown in table 5 below

Table-5. Distribution of Respondents by some Socio-Demographic Variables, Knowledge level on Cure (% in parenthesis).

Socio-Demographic Variables	**Knowledge Level on Curability of leprosy**			**Statistics**
	Have Knowledge n=477 (43.2%)	**No Knowledge n=573 (51.9%)**	**Unsure n=54(4. 9%)**	
Age				
Younger Respondents	229 (50.7%)	202 (44.7%)	21(4.7%)	X^2=17.614,df=2,p=.000
Older Respondents	248 (38%)	371 (56.9%)	33 (5.1%)	
Total	**477 (43.2%)**	**573 (51.9%)**	**54 (4.9%)**	
Marital Status				
Single	194 (29.8%)	417 (64%)	41 (6.3%)	X^2=23.319,df=2,p=.000
Ever Married	283 (62.6%)	156 (34.5%)	13 (2.9%	
Total	**477 (43.2%)**	**573 (51.9%)**	**54(4.9%)**	
Occupation				
Income Generating	359 (43.5%)	426 (51.6%)	41(5.0%)	X^2=.153,df=2,p=.926
Non Income Generating	118 (42.5%)	147 (52.9%)	13 (4.8%)	
Total	**477 (43.2%)**	**573 (51.9%)**	**54 (4.9%)**	
Educational Attainment				
No Formal Education	70 (48.3%)	68 (46.9%)	7 (4.3%)	X^2=51.183,df=6,p=.000
Low Formal Education	68 (48.9%)	70 (49.3%)	4 (2.8%)	
Medium Formal Education	200 (34.4%)	342 (58.8%)	40 (6.9%)	
High Formal Education	139 (59.1%)	93 (39.6%)	3 (12.8%)	
Total	**477 (43.2%)**	**573 (59.1%)**	**54 (4.9%)**	
Religion				
Christianity	439 (49.3%)	423 (47.5%)	28 (3.2%)	X^2=101.653,df6,p=.000
Islam	4 (19.1%)	11 (52.4%)	6 (28.6%)	
Traditional Religion	34 (18%)	136 (72%)	19 (10.1%)	
Others	0 (0%)	3 (75%)	1 (25%)	
Total	**477 (43.2%)**	**573 (51.9%)**	**54 (4.9%)**	
Income Group				
No Income	141 (60.8%)	90 (3%)8.8	1 (0.43%)	X^2=50.400,df=6,p=.000
Low Income	225 (40.2%)	301 (53.75%)	34 (6.07%)	
Medium Income	71 (32.7%)	129 (59.5%)	17 (13.8%)	
High Income	40 (42.1%)	53 (55.8%)	2 (2.1%)	
Total	**477 (100%)**	**573 (100%)**	**54 (4.9%)**	
Locality				
Urban	185 (49.9%)	162 (43.7%)	24 (6.4%)	X^2=30.882,df=4,p=.000
Rural	289 (39.6%)	411 (56.3%)	30 (4.1%)	
Total	**477 (43.2%)**	**573 (51.9%)**	**54 (4.9%)**	
Gender				
Male	253 (50.1%)	230 (45.5%)	22 (4.4%)	X^2=18.026,df=2,p=.000
Female	224 (37.4%)	343 (57.3%)	32 (5.3%)	
Total	**477 (43.2%)**	**573 (51.9%)**	**54 (4.9%)**	

Table 5 shows that slightly above four-tenth of the respondents (43.2%) were found to be knowledgeable that leprosy is curable. The rest (51.9%) were not knowledgeable, while about 5.7% were undecided.

In terms of age groups, 50% of the younger respondents aged 18-37years and 38% of the older group aged 38-68years and above were knowledgeable about cure of leprosy. Also, the younger generation were significantly more knowledgeable ($p< 0.05$) about leprosy than the older generation. This could be accounted for by the positive effects of information, communication and technology (ICT) on the younger generation.

With respect to marital status, the single respondents were also significantly more knowledgeable ($p < 0.05$) of cure of leprosy than the ever married respondents. About 62.2% of the ever married respondents are knowledgeable whereas only 29.8% of the single respondents were also knowledgeable. This may be attributed to the fact that ever married are more exposed life .They are also more likely to explore various sources of information and may have travelled to more places through which they update their knowledge on various issues.

Also, in terms of occupation, 43.5% of the income generating and 42.5% of the non-income generating respondents were knowledgeable. There was no significant difference in levels of knowledge about cure of leprosy between the two groups ($p < 0.05$).

Respondents who attained tertiary education were most knowledgeable about cure of leprosy. Almost six-tenth (59.1%) of those in this group was knowledgeable. There is a significant difference ($p < 0.05$) in the level of knowledge of respondents with different levels of education. Respondents with medium education (secondary and vocational) are least knowledgeable. This could be explained by their minimal level of social contacts and education.

With respect to religious affiliation, income group, locality and gender, the table shows that Christians (49.3%), no income group (60.8%), urban residents (50.14%) and male gender (50.1%) were all more knowledgeable than their opposite counterparts. It was also found that there is significant difference in levels of knowledge ($p < 0.05$) on cure of leprosy between different religious affiliations, urban and rural areas, male and female gender, and between distinct income groups

2.5. Research Question III: How does Level of Knowledge about Leprosy in the Area Affect Leprosy Control Programme?

This research question was verified by asking respondents to identify major problems that confront leprosy control programme in their area. This is with a view to ascertain if low level of knowledge of leprosy will be listed by respondents. In this regard, majority of the respondents (21.9%) were of the opinion that the first major problem facing leprosy control programme is the belief system **(see fig 2 below)**.

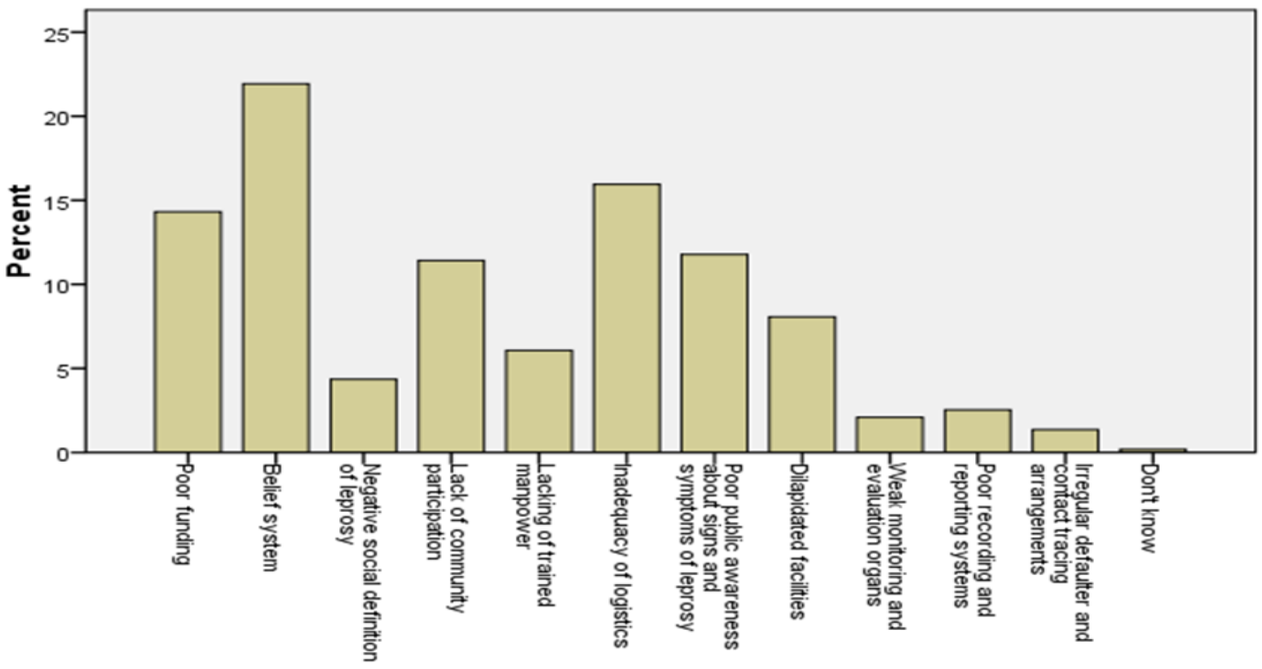


Fig-2. What do you consider as the major problem facing leprosy control progamme in your community?

Four other problems, mentioned in their order of importance, were inadequacy of logistics (15.9%), poor funding (14.3%), poor public awareness and knowledge about signs and symptoms of leprosy (11.8%) and lack of community participation in control effort (11.4%) etc. These problems were also emphasized by many FGD participants. An IDI participant from Ebonyi state identified problems of poor salary, low level of research and inability to link leprosy to national social welfare plan as additional problems.

2.6. Test of Research Hypotheses

In this section, two hypotheses raised for the study were tested separately. The chi-square statistics was employed in hypotheses testing since most of the data are categorical variables.

Test of Hypothesis One: Respondents with higher level of formal educational qualification are more likely to be knowledgeable about the cause of leprosy than those with lower educational qualification.

To test this hypothesis, cross- tabulations between level of education of respondents and their response about cause of leprosy was used. See Table 6 below

Table-6. Distribution of Respondents by their Level of Education and Knowledge of the Cause of Leprosy

Level of Education	Cause of Leprosy					
	Germ	Poison/Charm	Witches	Curse/Angry gods	Don't know	Total
No Education	36 (12.8%)	32 (19.1%)	28 (13.5%)	38 (9.5%)	16 (34.8%)	145 (13.1%)
Low Education	50 (17.8%)	16 (9.5%)	21 (10.1%)	48 (12%)	7 (15.2%)	142(12.9%)
Medium Education	108(38.3%)	98 (58.3%)	137(66.2%)	223(55.9%)	16(34.8%)	582(52.7%)
High Education	88 (31.2%)	22 (13.1%)	26 (12.6%)	90 (22.6%)	9 (19.6%)	235 (21.3%)
Total	282 (100%)	168 (100%)	207 (100%)	399 (100%)	46 (100%)	1104 (100%)

$X^2 = 81.797$, df 12, p = 0.000

The calculated value of chi-square is 81.797. The critical or table value of chi-square at 0.05 level of significance with a degree of freedom (df) of 12 is 21.026. Having observed that the computed value of chi-square is greater than the table value, we therefore accepted the alternative hypothesis and concluded that there is a significant relationship between level of education and knowledge of cause of leprosy.

Test of Hypothesis Two: Persons with lower level of formal education are more likely to isolate/discriminate against persons affected by leprosy than those with higher level of formal education.'

To test this hypothesis, a cross-tabulation between level of education and how one relates with persons affected by leprosy was carried out (see Table 7 below)

Table-7. Distribution of Respondents according to Level of Education and their Relationship with Persons Affected by Leprosy (Percentages in Parenthesis)

Level of Education	Relationship with Persons Affected by Leprosy			
	Am afraid of them	I isolate (stay away) from them.	I co-operate and interact with them	Total
No formal Education	30 (10.6%)	99 (15.6%)	16 (8.6%)	145 (13.1%)
Primary School Certificate	45 (15.8%)	74 (11.7%)	23 (12.4%)	142 (12.9%)
Secondary School Certificate	100 (35.2%)	237 (37.4%)	77 (41.4%)	414 (37.5%)
Vocational /Technical School Certificate	36 (12.7%)	115 (18.1%)	17 (9.14%)	168 (15.2%)
Tertiary	73 (25.7%)	109 (17.2%)	53 (28.5%)	235 (21.2%)
Total	284(100%)	634(100%)	186(100%)	1104 (100%)

$X^2 = 32.572$, df = 8, p = 0.000

The computed value of chi-square is 32.572. The tabulated value of chi-square at 0.05 level of significance with a degree of freedom (df) of 8 is 15.507. Since the computed value of chi-square is greater than the tabulated value, the researcher consequently accepted the alternative hypothesis. This implies that there is a significant relationship between educational attainment and relationship with persons affected by leprosy.

3. Discussion of Research Findings

From the analysis of field data, it was observed that knowledge about cause of leprosy, its early signs and symptoms, place of treatment, mode of treatment and curability has remained quite low. This is not unconnected to low levels of advocacy, health education and public enlightenment drives which as Adagba (2011) disclosed, breeds misconceptions. Such misconceptions generate wrong management strategies which have continued to compound the problem of leprosy in the two states.

Specifically, low level of knowledge about place of treatment is accountable for why only 19.5% of the respondents considered orthodox medicine as the best (appropriate) management strategy for leprosy. The remaining 80.5% of the respondents were inclined toward ritual cleansing, traditional medicine and prayer houses as preferred options for leprosy treatment. Delays in prompt response to early signs of leprosy are also attributable to lack of knowledge about these early signs. The problem of low level of knowledge about leprosy was quite pronounced because less than 27% of respondents from both states were knowledgeable on 4 out of 5-points profile used for assessment. The situation calls for concerted effort by stakeholders to respond aggressively to the problem which negatively affects leprosy control. Also, other socio-cultural factors were identified which may have united with limited knowledge about the disease to compound challenges experienced by the control programme. The most important of such factors is the people's belief system about leprosy. This observation agrees with the Health Belief Model (HBM) adopted as the theoretical thrust for this study. The HBM explains behaviour (preventive and curative health behaviour and responses) in relation to belief systems, knowledge, attitude and perceptions held by individuals that ultimately affect their actions toward problems and disease situations. Given strong perceptions of susceptibility and severity of leprosy among the study population (which ordinarily should stimulate appropriate responses), HBM thus relates or explains poor performance of leprosy control, evident in the study area in the forms of low community participation, low uptake of leprosy control services and poor compliance to treatment as associated to socio-cultural beliefs and reactions that stimulate a preference to cover up the disease by victims. Beliefs serve as templates that have negatively structured responses or activities of individuals in the context of leprosy control. Interestingly, this type of situation has also been found to be true in both Eastern and Western cultures where fear of leprosy has existed from ancient times (Nicholls, 2000). Valsa (1999) has also observed that the belief that leprosy is a curse from gods is a global phenomenon. This study has therefore shown that the Igbo group which populate the two states is not an exception in that regard.

It is therefore pertinent, as Kaufmaun *et al.* (1993) suggested that shared meanings of the group about leprosy and other cultural factors ought to be understood by leprosy control programmes. Unfortunately, this is the exception rather than the rule in the control programmes of Anambra and Ebonyi states.

4. Conclusions and Recommendations

Based on the findings from the present study, the following recommendations are made

1. In view of prevalent low level of knowledge about leprosy, government and private media houses in the two states and beyond should be involved in a comprehensive health education and public enlightenment package. The programme should preferably use local dialect to disseminate correct information about leprosy as well as reliable interventions in place for its control. This is to counter erroneous cultural and religious beliefs about the disease and to improve the ability of individuals in the community to recognise its early danger signs and take appropriate health seeking solutions. By so doing, the spread of leprosy and the development of deformity due to late detection and late commencement of treatment would be minimized
2. The use of traditional media like town criers as effective tools for sensitizing community members about leprosy should be adopted. This will complement the efforts of the western form of media and ensure a more extensive coverage of the area with appropriate leprosy related information.
3. The support of traditional and religious institutions must be sought and won. To this end, there should be extensive advocacy visits by leprosy control staff to traditional rulers, religious leaders and other opinion leaders in the communities that make-up the two states. This is to improve their understanding of issues related to leprosy and to enable them be at the fore-front of the crusade to change people's perception about leprosy.
4. There is immense need to improve the level of knowledge through massive community involvement, ownership and participation in the programme. The involvement of community leaders is a laudable step in this direction. In addition, the role of social groups like age-grades, women groups, clubs and faith-based associations will positively affect people's knowledge of leprosy and decisions toward dismantling challenges, beliefs and socio-cultural factors that affect leprosy control programme
5. With the support and participation of the community, socio-cultural practices and beliefs that negatively affected leprosy control should be out rightly abolished.
6. Public health education and advocacy should be a major priority in a holistic leprosy control strategy. In this regard the capacity building of health workers should continuously updated for effective health education sessions.
7. There is immense need for inter-agency collaboration to meet the goals of leprosy control. The programme should liaise with National Alleviation Poverty Eradication Programme, Social Welfare Department and Ministry of Education among others to address issues of poverty, welfare low public lieracy and social integration as they affect leprosy patients.
8. In view of the fact that leprosy affects principally the low income group; and that low education is often correlated to poor treatment compliance and tendency to isolate/discriminate against persons affected by leprosy; there is need for social support package to cushion the effects of poverty and improve the literacy level in the community. In this regard, interest free loans, free education and adult education classes will be very helpful.
9. There should be regular conduct of seminars for traditional healers to enable them suspect and appropriately refer leprosy cases. This seminar is important given the fact this study found that the dominant choice for anti-leprosy treatment were toward traditional healers. They thus need to be enlightened about the proper thing to do when such cases come to them.

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