

Review

Assessment of tuberculosis-related knowledge, attitudes and practices in Enugu, South East Nigeria

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Received 15 March, 2011; Accepted 8 April, 2011

This study was carried out in 2009 to determine the knowledge, attitude and practice of tuberculosis (TB) and its socio-demographic determinants in six selected Local Government Areas (LGAs) in Enugu State, South East Nigeria. A total of 1,200 respondents were selected from 6 Local Government Areas by multi-stage sampling technique and responses elicited from them by semi-structured, pre-tested interviewer administered questionnaire. Data collected were analysed using Statistical Package for Social Sciences (SPSS) version 17. Awareness of tuberculosis was high (93%) among the households. Primary sources of information were radio (59.1%), community members (29.8%) and television (17.1%). Knowledge of tuberculosis disease was low, except for knowledge of TB symptoms (61.5%). Urban residents had better knowledge of TB than the rural respondents. Most of them believed that TB is curable and would opt for medical consultation, following suspicion of TB. Despite having relatively poorer knowledge of TB, rural communities were less likely to stigmatise against persons with TB ($p = 0.000$). Urban households had significantly better knowledge of TB and access to TB services ($p = 0.000$). Educational status of an individual and the spouse, literacy status and religion were significantly associated with TB-related knowledge, attitude and practice. Therefore, socio-demographic factors should be considered in subsequent behavioural changes communications in the country.

Key words: Perception, symptoms, transmission, determinants, Nigeria.

INTRODUCTION

Tuberculosis (TB) has remained a major killer disease, despite efforts to reduce its burden globally. More significantly affected are developing countries, including Nigeria (Wang et al., 2008). The country is ranked fourth globally and first in Africa, among 22 high burden TB countries. According to World Health Organisation (WHO), number of TB-related deaths reported in the country in

2008 was 94,826 (WHO, 2009). The country in recent times has intensified efforts to address the challenge posed by the disease through expansion and enhancement of TB service, and Directly observed treatment short-course (DOTS). Presently, the country has achieved 75% DOTS coverage. However, despite increased availability of TB services, case detection has

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only increased from 22% in 2002 to 37% in 2008 and is still grossly short of WHO target of 70% (WHO, 2008). Primary control strategy for TB in the country is a passive case finding and DOTS. This implies that individuals and families must be able to recognise symptoms of TB, take appropriate measures to protect themselves, as well as seek care in appropriate places. However, poor knowledge of tuberculosis, low risk perception, stigma and lack of access to treatment facilities has been some of the factors militating against appropriate TB care seeking practices. In most developing countries, poor knowledge and perception of TB is prevalent, resulting in delayed TB diagnosis and treatment (Sharma et al., 2007; Mushtaq et al., 2010; Yousif et al., 2009; Busari et al., 2008). As at the time of the survey, no study has been done to ascertain the level of TB-related knowledge in the area. However, it is believed that the low case detection rate is attributable to poor knowledge of the disease (Okuonghae and Omosigbo, 2010). Consequently, the country through a Global Fund Initiative carried out behavioural change communication (BCC) intervention using the local media aimed at improving the knowledge and TB care seeking behaviour.

Prior to the commencement of the intervention baseline data on prevailing TB-related knowledge, attitude and practice was not available. This study therefore is aimed at exploring knowledge, attitudes and practices regarding TB and its determinants in urban and rural communities in Enugu State, South eastern Nigeria. The findings of the study will help to guide subsequent interventions aimed at improving TB-related knowledge and behaviour in the country.

METHODOLOGY

Study area

The study was carried out in Enugu state, in south eastern Nigeria. The state is divided into three senatorial zones and seventeen LGAs, and is predominantly rural. Only five LGAs are urban and they include; Enugu North, Enugu South, Enugu East, Nsukka and Oji River LGAs. The estimated population of the state in 2010 was 3,666,118 (National Population Commission (NPC), 2006). Most of the inhabitants are Ibos and Christians. The primary economic activity is farming in the rural areas; while most urban residents are traders, artisans and civil servants. Literacy rate in the state is 70%, with urban-rural disparity. Access to health care services is better in the urban areas than in rural areas. Every LGA in the state have TB treatment facility, while most of them have a microscopy center.

Sampling technique

This cross sectional study was carried out in December, 2009. The study population comprised all individuals aged 15 years and above, and residents of Enugu State. The calculated sample was based on the assumption that the prevailing level of TB-related knowledge and practices in the area and country was not known as at the time of the study. Hence, the prevalence of TB-related knowledge and behaviour was assumed as 50% and absolute allowable error of 5% on either side, thus the approximate sample size was found to be

384 for each locality. However, to account for non responses as well as ensure adequate representation of all parts of the state and population, we decided to interview a total of 600 subjects per locality.

A total of 1,200 respondents comprising 624 males and 576 females, selected by multi-stage sampling technique, were studied. First, the state was divided into three senatorial zones; the LGAs in each zone were stratified into urban and rural LGAs. From each stratum, a LGA was selected per zone, thus a total of six LGAs were selected. In each selected LGA, using the NPC Enumeration areas (EAs) as the sampling unit, four EAs were selected by simple random sampling. Starting from a prominent landmark in each EA and moving in clockwise direction, households with eligible respondents were selected, from which respondents were recruited until the required sample size of fifty per EA was completed. In each household, not more than two eligible respondents of different sexes were selected. Individuals who were residents in the state for a period of less than 6 months prior to the study were excluded.

Data collection and analysis

With the aid of five research assistants trained on community entry, questionnaire administration and vernacular translation of important concepts in the questionnaire, responses were elicited from the respondents using semi-structured, interviewer administered, pretested questionnaire. The questionnaire was pretested among households in Enugu East LGA (one of the LGAs not involved in the survey) to ascertain the validity of the survey tool and duration of its administration. Data collected from the respondents included bio-data, knowledge of TB symptoms, transmission and prevention, perception of TB and treatment, attitude towards TB patients and their treatment seeking behaviour. Knowledge and perception of TB disease was assessed by independent questions on transmission, symptoms, prevention and cure.

However, accepting attitude towards people with TB was measured by willingness to do all the following; willingness to eat with a person with TB, willingness to care for a close relative with TB, willingness to accommodate a person with TB and willingness to shake hands or hug a person with TB. Data collected were analysed using SPSS version 17; relevant means and frequencies were calculated. Determinants of knowledge and perception of TB and treatment seeking behaviour were assessed using bivariate analysis. Chi-square statistics were used to determine difference in proportions and p-value of < 0.05 was considered to be significant.

Ethical consideration

Ethical approval for the survey was obtained from University of Nigeria Teaching Hospital Ethical Committee. Approval from local authorities was obtained prior to community entry. Participation in the survey was voluntary, and only consenting eligible respondents were recruited and interviewed during the survey.

RESULTS

Socio-demographic characteristics of the respondents

Table 1 show that the mean age of the respondents was 40.5 ± 17.5 years. Majority of them were males (52.0%) and 90% of them were either married (60.1%) or single (30.3%). Most of them (84%) had at least primary education. Literacy status was assessed based on ability

Table 1. Socio-demographic characteristics of the respondents.

| Socio-demographic characteristics | Total (n = 1,200) | Urban (n = 600) | Rural (n = 600) | p-value |
|-----------------------------------|----------------------|--------------------|--------------------|--------------------|
| Age SD in years | 40.4±17.5 | 40.2±17.5 | 40.7±17.4 | 0.567 [†] |
| Sex | | | | |
| Male | 624 (52.0) | 288 (48.0) | 336 (56.0) | 0.005* |
| Female | 576 (48.0) | 312 (52.0) | 264 (44.0) | |
| Marital status | | | | |
| Single | 363 (30.3) | 205 (34.2) | 158 (26.3) | 0.010* |
| Married | 721 (60.1) | 344 (57.3) | 377 (62.8) | |
| Divorced/separated | 64 (5.3) | 32 (5.3) | 32 (5.3) | |
| Widowed | 52 (4.3) | 19 (3.2) | 33 (5.5) | |
| Educational status | | | | |
| Nil | 209 (17.4) | 66 (11.0) | 143 (23.8) | 0.000* |
| Primary | 327 (27.3) | 129 (21.5) | 198 (33.0) | |
| Secondary | 473 (39.4) | 254 (42.3) | 219 (36.5) | |
| Tertiary | 191 (15.9) | 151 (25.1) | 40 (6.7) | |
| Literacy status | | | | |
| Yes | 767 (63.9) | 446 (74.3) | 321 (53.5) | 0.000 |
| No | 433 (36.1) | 154 (25.7) | 279 (46.5) | |

[†]Student's t-test, *chi-squared test, SD = standard deviation.

Table 2. Sources of Information on TB.

| Source | Total n = 1118* (%) | Urban n = 564* (%) | Rural n = 554* (%) | p-value [#] |
|------------------|------------------------|-----------------------|-----------------------|----------------------|
| Radio | 661(59.1) | 341(60.5) | 320(57.8) | 0.000 |
| Community member | 333(29.8) | 172(30.5) | 161(29.1) | 0.599 |
| Television | 191(17.1) | 137(24.3) | 54(9.8) | 0.000 |
| Family member | 184(16.5) | 90(16.0) | 94(17.0) | 0.648 |
| Health worker | 173(15.5) | 103(18.3) | 70(12.6) | 0.009 |
| Friend | 102(9.1) | 54(9.6) | 48(8.7) | 0.597 |
| Newspaper | 56(5.0) | 24(4.3) | 32(5.8) | 0.243 |
| School | 43(3.9) | 34(6.0) | 9(1.6) | 0.000 |
| Church | 41(3.7) | 30(5.3) | 11(2.0) | 0.003 |
| Others | 11(0.1) | 6(0.1) | 5(0.9) | |
| Nil Response | 16(1.4) | 2(0.04) | 14(0.2) | |

*Multiple responses, [#]chi-squared test

to read or write, either in a local language, English or both, and 767 (63.9%) of them were literate. Significantly, more respondents from the urban area were female ($p = 0.005$), single/never married ($p = 0.010$), educated ($p = 0.000$) and literate ($p = 0.000$).

Awareness and knowledge of TB

One thousand one hundred and eighteen respondents

(93.2%) have heard of tuberculosis, while 92 (6.8%) of them have not (Table 2). Out of 1,118 respondents that have heard of TB, about 60% of them received information about TB through radio, and then followed by community members (29.8%), television (17.1%), family members (16.5%) and health workers (15.5%). Households in the rural areas were less likely to have heard of TB through the radio ($p = 0.000$), television ($p = 0.000$) and health worker ($p = 0.009$). Table 3 highlights knowledge of

Table 3. Knowledge of TB transmission, symptoms, transmission and prevention.

| Knowledge of TB | Total n = 1118 (%) | Urban n = 564(%) | Rural n = 554 (%) | p-value* |
|---|-----------------------|---------------------|----------------------|----------|
| Transmission | | | | |
| Contact with somebody that has TB | 548 (49.0) | 319 (56.7) | 229 (41.3) | 0.00 |
| Air | 339 (30.3) | 199 (35.3) | 140 (25.3) | 0.00 |
| Poison | 177 (15.8) | 96 (17.0) | 81 (14.6) | 0.27 |
| Water | 165 (14.8) | 90 (16.0) | 75 (13.5) | 0.25 |
| Smoking | 57 (5.1) | 35 (6.2) | 22 (4.0) | 0.09 |
| Food | 25 (2.2) | 10 (1.8)) | 15 (2.7) | 0.29 |
| Witchcraft | 10 (0.9) | 5 (0.9) | 5 (0.9) | 0.98 |
| Others | 14 (1.3) | 7 (1.2) | 7 (1.3) | 0.97 |
| DNK | 252 (22.5) | 80 (31.7) | 172 (68.3) | 0.00 |
| Symptoms | | | | |
| Cough of ≥ 3 weeks duration | 688 (61.5) | 364 (64.5) | 324 (58.5) | 0.037 |
| Weight loss | 566 (50.6) | 301 (53.4) | 265 (47.8) | 0.064 |
| Coughing out blood | 362 (32.3) | 208 (36.9) | 154 (27.8) | 0.001 |
| Breathlessness | 144 (12.9) | 104 (18.4) | 40 (7.2) | 0 |
| Joint pains | 42 (3.8) | 24 (4.3) | 18 (3.3) | 0.376 |
| Fever | 46 (4.1) | 15 (2.7) | 31 (5.6) | 0.013 |
| Headache | 28 (2.5) | 15 (2.7) | 13 (2.4) | 0.737 |
| Vomiting | 18 (1.6) | 11 (1.9) | 7 (1.3) | 0.362 |
| Others | 11 (0.1) | 6 (0.1) | 5 (0.9) | 0.975 |
| DNK | 128 (11.4) | 41 (32.0) | 87 (68.0) | 0 |
| Prevention | | | | |
| Avoiding contact with somebody TB | 416 (37.2) | 254 (45.0) | 162 (29.2) | 0 |
| Ensuring adequate ventilation | 218 (19.5) | 127 (22.5) | 91 (16.4) | 0.01 |
| Covering one's mouth while coughing or sneezing | 167 (14.9) | 100 (17.7) | 67 (12.1) | 0.008 |
| Eating good food | 99 (8.9) | 47 (8.3) | 52 (9.4) | 0.535 |
| Immunizing children | 71 (6.4) | 36 (6.4) | 35 (6.3) | 0.964 |
| Others | 33 (3.0) | 22 (3.9) | 11 (2.0) | 0.059 |
| DNK | 403 (36.1) | 161 (28.5) | 242 (43.7) | 0 |

*Multiple responses, *chi-squared test. DNK: Does not know

tuberculosis among the respondents. Majority (49.0%) of those who have heard of tuberculosis said it is transmitted through contact with someone who had TB. Only 30% of them knew that TB is an airborne infection, while 15.8% attributed it to poison. The common symptoms known by the respondents were cough of > 3 weeks duration (61.5%), weight loss (50.0%) coughing out blood (32.3%) and breathlessness/difficulty in breathing (12.9%). Knowledge of TB prevention was low, only 14.9% knew that it is prevented by covering of one's mouth while sneezing or coughing. Knowledge of TB disease transmission-air ($p = 0.000$), symptoms-cough > 3 weeks duration ($p = 0.038$) and prevention ($p = 0.008$) was significantly better in the urban areas than in the rural area.

Perception of TB and attitude towards TB patients

Most households (96.3%) surveyed believed that

tuberculosis is curable, and that it could be cured by medication/drugs (90.5%). Fewer said it could be cured by native medicine (5.6%), both drugs/medication and native medicine (4.4%) and prayers only (2.2%). Further analysis showed that 540/564 respondents in the urban areas (95.7%) and 513/554 respondents in the rural areas (92.6%) said the disease is curable. Among those that said it is curable in the urban areas, 90.5% said it could be cured by medication/drugs, while 5.6% said by native medicine and 4.4% by both means and prayers (4.0%) while in the rural areas, 86.7% of them said it could be cured by medications/drugs, 6.0% by native medicine (6.0%) or by both drugs and native medicine (6.0%). The most common measure taken, following suspicion of TB, among community members is visit to a healthcare facility (91.0%), but a significant proportion of rural households will engage in self medication ($p = 0.000$). Less than half of the respondents (47.0%) were willing to eat with a

Table 4. Accepting attitudes towards persons with TB.

| Attitude | Total n = 1118 (%) | Urban n = 564 (%) | Rural n = 554 (%) | p-value* |
|---|-----------------------|----------------------|----------------------|----------|
| Willingness to eat with a person with TB | 525 (47.0) | 208 (36.9) | 317 (57.2) | 0 |
| Willingness to care for a close relative with TB | 1074 (96.1) | 541 (95.9) | 533 (96.2) | 0.804 |
| Willingness to accommodate a person with TB | 1030 (92.1) | 511 (90.6) | 519 (93.7) | 0.055 |
| Willingness to shake hands or hug a person with TB | 1069 (95.6) | 534 (94.7) | 535 (96.6) | 0.122 |
| Willingness to do all the above (Accepting attitude towards person with TB) | 495 (44.3) | 191 (33.9) | 304 (54.9) | 0 |
| Willingness to do any of above after completion of treatment/cured | 612 (54.7) | 367 (65.1) | 245 (44.2) | 0 |
| Never willing to do any of the above despite completion of treatment/cured | 11 (1.1) | 6 (1.1) | 5 (0.9) | 0.785 |

*chi-squared test.

person with TB. However, most individuals were willing to care for a close relative with TB (96.1%), accommodate a TB patient (92.1%) or shake hands or hug a TB patient (95.6%). Generally, only 44.3% demonstrated accepting attitude towards TB patients (willingness to do all the above). More people were willing to accept TB patients after completion of treatment. A significant proportion of rural respondents were willing to eat with TB patients ($p = 0.000$) as well as willing to demonstrate accepting attitude towards TB patients ($p = 0.000$) (Table 4).

Knowledge of and access to TB treatment services

Table 5 shows that 772 households (69.1%) were aware of TB treatment facility, but fewer (36.4%) knew of any DOTS facility. Among those aware of DOTS facility, less than half of them (46.7%) live within 10 km radius of an existing DOTS facility. Knowledge of DOTS facility ($p = 0.012$) and relative distance of DOTS facility from place of residence ($p = 0.000$) was significantly better in the urban than the rural areas.

TB treatment seeking behaviour

A total of 138 individuals as shown in Table 6 reported that a family member had suffered from TB, out of which 75 (54.3%) were from urban areas, and the remainder (45.7%) were from rural areas. Most households utilised health facilities for treatment of TB of family members. However, a significant proportion of them still patronised chemist or patent medicine vendors and traditional healers. No significant difference was observed in treatment seeking pattern of the urban and rural households.

Socio-demographic determinants of TB-related knowledge, attitude and practice

Table 7 shows socio-demographic factors associated with knowledge, attitude and practice of TB. Educational status of the individual and spouse, literacy and religion were found to be significantly associated with TB-related knowledge, attitude and practice. Gender was not significantly associated with knowledge, perception and treatment seeking behaviour. Individuals who are literate and those with higher educational status had better knowledge of the

disease and TB treatment/DOT facility; however they were less likely to accept persons with TB.

DISCUSSION

Awareness of TB was quite high in this part of Nigerian greater than 78% reported in Iraq, but marginally lower than 99.1% reported in India (Sharma et al., 2007; Mushtaq et al., 2010; Yousif et al., 2009). Radio was the most common source of information on TB, and then followed by community members, television and health workers. In Iraq and Pakistan, main sources of information on TB were health workers, teachers, friends/relatives, newspapers and television (Mushtaq et al., 2010; Yousif et al., 2009). The role of television and health care workers as sources of TB information was low in rural areas, but there was greater involvement of family members. Most rural residents in the country lack access to television and electricity required to power it. TB knowledge includes the ability to recognize symptoms, identify causes, and transmission routes, and familiarity with the availability of cure (Waisbord, 2007). Although knowledge of TB was generally low in both communities except knowledge for TB symptoms,

Table 5. Knowledge and access to TB treatment services.

| Access to TB services | Total n = 1118 (%) | Urban n = 564 (%) | Rural n = 554 (%) | p-value* |
|---|-------------------------------|------------------------------|------------------------------|-----------------|
| Knowledge of TB treatment facility | 772 (69.1) | 415 (73.6) | 357 (64.4) | 0.005 |
| Knowledge of DOTS/DOTS-providing facility | 407 (36.4) | 236 (41.8) | 171 (30.7) | 0.012 |
| Distance of DOTS facility from place of residence | n = 407 | n = 236 | n = 171 | |
| 0-5 km | 100 (24.6) | 82 (34.7) | 18 (10.5) | |
| 5-10 km | 90 (22.1) | 37 (15.8) | 53 (31.0) | 0.00 |
| > 10 km | 217 (53.3) | 117 (49.6) | 100 (58.5) | |

*chi-squared test.

Table 6. Household treatment seeking behaviour.

| Place visited for TB treatment | Total n = 138* (%) | Urban n = 75* (%) | Rural n = 63* (%) | p-value |
|---------------------------------------|-------------------------------|------------------------------|------------------------------|----------------|
| Health facility | 91 (65.9) | 48 (64.0) | 43 (68.3) | 0.599 |
| Chemist/PMS** | 37 (26.8) | 23 (30.7) | 14 (22.2) | 0.264 |
| Traditional healer | 33 (23.9) | 21 (28.0) | 12 (19.0) | 0.219 |
| Prayer house | 15 (10.9) | 9 (12.0) | 6 (9.5) | 0.641 |
| Self medication | 12 (8.7) | 7 (9.3) | 5 (7.8) | 0.583 |
| Others | 3 (2.2) | 2 (2.6) | 1 (1.6) | |

*Multiple responses, **Patent medicine seller, #chi-squared test. Few of them visit traditional healers (3.4%), patent medicine vendors (2.1%) or prayer houses (1.3%).

households in urban areas fared slightly better. Few of them knew that TB is an airborne infection. More than 64% of urban households compared to 58% of the rural knew that cough of more than 3 weeks duration is a symptom of TB.

In Iraq, Yousif et al. (2009) reported that the most common TB was coughing out blood, and less than 30% of them knew that cough of > 3 weeks duration is a symptom of TB; but their knowledge of TB transmission and prevention was higher. Higher knowledge of TB transmission was reported in India, and cough of unspecified duration was the most common known symptom of TB, but few (14.3%) of them knew that cough of > 3 weeks duration is associated with TB (Sharma et al., 2007). Knowledge of TB prevention was poor in both localities but lesser in the rural areas. Studies in Vietnam, Pakistan, Philippines and Jordan have also confirmed that knowledge of TB is poor in developing countries despite bearing greater burden of the disease (Yousif et al., 2009; Hoa et al., 2009; Portero et al., 2002; Rumman et al., 2008).

Coming in contact with persons with TB was the most common known way of acquiring the infection, thus its prevention is by avoiding contact with such individuals. The most common known way of preventing TB in India was complete and regular treatment of TB cases (96%), also greater proportion of them mentioned good cough

hygiene (30%) (Sharma et al., 2007). Poor knowledge of tuberculosis cause, transmission, symptom and prevention is often associated with poor treatment seeking behaviour. The propensity of an individual to seek care depends on knowledge about and perceived risk of TB. As demonstrated in studies in Ethiopia, India, Mexico, Nigeria, Pakistan and Thailand, patients with low knowledge about symptoms are more likely to postpone care-seeking and getting tested (Hoa et al., 2009).

TB perception and stigma

Most of the respondents believe that TB is curable, and can be cured mainly by medications or drugs. In India and Philippines (Sharma et al., 2007; Portero et al., 2002), more people now believe that TB is curable, and will seek for medical care following onset of the illness. Similarly, most TB patients elsewhere, India, Jordan, Philippines and Tanzania will opt for medical consultation once TB symptoms are suspected in an individual (Sharma et al., 2007; Portero et al., 2002; Bacay-Domingo and Ong-Lim, 2009; Okeibunor et al., 2007). Most households whose family members suffered the disease utilised health care facilities for treatment. However, multiple care seeking options was common, including patronage of chemists or patent medicine sellers and traditional healers, and has

Table 7. Socio-demographic determinants of knowledge, attitude and practices of TB.

| Socio-demographic Factor | | Knowledge of TB transmission n (%) (p-value*) | Knowledge of TB symptoms n (%) (p-value*) | Knowledge of TB prevention n (%) (p-value*) | Perception that TB is curable n (%) (p-value*) | Accepting towards persons with TB n (%) (p-value*) | Knowledge of DOTS/DOTS providing facility n (%) (p-value*) | Treatment seeking behavior n (%) (p-value*) |
|---------------------------|---------------------------------|--|--|--|---|---|---|--|
| Sex | Male | 192 (44.8) | 349 (69.2) | 77 (21.3) | 549 (94.3) | 271 (46.3) | 212 (51.5) | 57 (64.8) |
| | Female | 181 (44.7) | 312 (67.7) | 87 (25.7) | 500 (93.9) | 223 (42.0) | 194 (54.0) | 33 (66.0) |
| | Significance level | ns | ns | ns | ns | ns | ns | ns |
| Marital Status | Single | 107 (42.6) | 207 (74.2) | 60 (26.5) | 305 (94.4) | 142 (43.8) | 115 (55.6) | 23 (71.9) |
| | Married | 208 (40.4) | 387 (64.8) | 98 (10.5) | 655 (94.9) | 299 (43.3) | 270 (52.3) | 63 (75.0) |
| | Separated/ Divorced/ Widowed | 21 (30.0) | 61 (68.5) | 7 (17.9) | 89 (88.1) | 53 (52.5) | 22 (44.9) | 6 (46.2) |
| | Significance level | ns | 0.021 | ns | 0.023 | ns | ns | ns |
| Educational Status | Nil | 14 (12.4) | 86 (63.7) | 10 (18.5) | 150 (89.8) | 67 (40.1) | 43 (51.2) | 14 (63.6) |
| | Primary | 57 (27.4) | 161 (62.2) | 34 (19.1) | 293 (94.2) | 163 (52.4) | 99 (45.6) | 29 (63.0) |
| | Secondary | 71 (20.3) | 270 (68.5) | 66 (21.6) | 419 (93.3) | 182 (40.5) | 166 (52.5) | 34 (72.3) |
| | Tertiary | 111 (66.5) | 154 (87.0) | 55 (33.5) | 186 (98.9) | 67 (35.6) | 99 (63.9) | 15 (65.2) |
| | Significance level | 0.000 | 0.000 | 0.006 | 0.003 | 0 | 0.006 | ns |
| Spouse Educational Status | Nil | 17 (22.7) | 61 (62.2) | 8 (17.0) | 110 (92.4) | 64 (32.2) | 32 (45.1) | 11 (78.6) |
| | Primary | 45 (26.5) | 134 (67.3) | 27 (18.6) | 232 (95.5) | 131 (53.9) | 90 (50.6) | 22 (61.1) |
| | Secondary | 91 (46.7) | 129 (59.2) | 31 (18.7) | 225 (93.8) | 86 (35.8) | 91 (48.9) | 23 (65.7) |
| | Tertiary | 58 (75.3) | 73 (88.2) | 30 (38.0) | 92 (97.9) | 22 (23.4) | 57 (69.5) | 3 (30.0) |
| | Significance level | 0.000 | 0.000 | 0.000 | ns | 0 | 0.006 | ns |
| Literacy | Yes | 282 (47.4) | 482 (72.3) | 138 (25.0) | 709 (96.1) | 307 (41.6) | 319 (57.2) | 65 (69.9) |
| | No | 49 (20.2) | 184 (61.5) | 27 (18.0) | 341 (90.2) | 188 (49.7) | 88 (41.2) | 26 (72.2) |
| | Significance level | 0.000 | 0.000 | ns | 0 | 0.01 | 0 | ns |
| Religion | Christianity | 327 (41.8) | 629 (69.7) | 153(22.6) | 988 (94.7) | 464 (44.4) | 393 (52.5) | 108 (83.7) |
| | Islam/traditional religion | 8 (15.1) | 36 (59.0) | 2(9.0) | 58 (85.3) | 30 (49.2) | 12 (54.5) | 2 (20.0) |
| | Significance level | 0.000 | ns | ns | 0.001 | ns | ns | 0 |

ns = not statistically significant, *chi-squared test.

been reported by Okeibunor et al. (2007). The study demonstrated that TB is still stigmatised in most communities in Nigeria, especially in the urban areas. Most were unwilling to eat with

persons with TB. Generally, more people in rural areas had more accepting attitude towards individuals suffering from TB than those in urban area. Stigma towards TB patients is probably

linked to low knowledge of TB transmission and prevention, as most respondents believed that the disease is acquired through contact with someone with TB.

Fear of being infected has been reported to be a cause of discrimination against TB sufferers in Nepal (Bacay-Domingo and Ong-Lim, 2009). Association between TB stigma and treatment seeking behaviour has been demonstrated in previous studies. Stigma is a major barrier in timely and appropriate treatment seeking behaviour. Fear of been identified with the disease affects timing of seeking for care, as well as continuing with care, both of which affect the dynamics of TB transmission (Yousif et al., 2009; Waisbord, 2007; Kilale et al., 2008).

Knowledge of DOTS facility and treatment seeking behaviour

Urban household had better knowledge and access to TB treatment facility and DOTS facility. Respondents in India reported higher knowledge of DOTS facility/TB treatment facility (64.5%) than reported in the study (Sharma et al., 2007). It is evident that TB services coverage in the state and country is still low, particularly in rural areas. In Tanzania, majority of TB patients accessing care in four urban and peri-urban health care facilities lived within a walking distance to their place of treatment (Bacay-Domingo and Ong-Lim, 2009). From the foregoing, it is evident that many individuals who may wish to seek for care do not know where to access TB services in their locality. Where services are available, the distance and transportation cost may prove prohibitive especially for the rural households. This probably explains why some rural residents adopt self medication.

Determinants of TB-related knowledge, attitude and practice

Studies have revealed association between knowledge and gender, education, socioeconomic status and access to media (Wang et al., 2008; Mushtaq et al., 2010; Yousif et al., 2009; Waisbord, 2007). However, our findings revealed that being literate, better educational status of an individual or the spouse, and being a Christian were all associated with better knowledge of the tuberculosis. No association was demonstrated between knowledge and gender, in contrast to a similar study in Vietnam (Hoa et al., 2009). Also, better educated individuals were more likely to know where to access TB treatment and care in their communities. No association was demonstrated between treatment seeking behaviour and socio-demographic characteristics; probably because the decision to seek for TB treatment is often influenced by attitudes or opinions of the family members or community. Although in Tanzania, patients with low knowledge of TB were more likely to visit traditional healers and pharmacists rather than DOTS providers. Poor knowledge alone is not a good predictor of care seeking behaviour in general. Others factors such as risk perception, stigma,

attitude to health services, distance and opinion of the family and the community are also known to influence care seeking pattern (National Population Commission (NPC), 2006; Bacay-Domingo and Ong-Lim, 2009; Baral et al., 2007).

CONCLUSION

Awareness of TB was more than 90%. knowledge of TB transmission was 30.3%, symptoms (61.5%) and prevention (14.9%). In general, urban residents had better knowledge of the TB transmission ($p = 0.000$), symptoms ($p = 0.037$) and prevention ($p = 0.008$) than their rural counterparts. However, rural dwellers were less likely to stigmatise against persons with TB disease ($p = 0.000$). There was no significant difference in treatment seeking pattern in both localities. Therefore, to enhance success of subsequent TB-related behavioural change communication (BCC) interventions, socio-demographic factors should be taken into consideration during both planning and implementation.

ACKNOWLEDGEMENTS

The authors are grateful to Global Fund Against AIDS, TB and Malaria (GFATM) for their financial support. U. U. Onyeonoro participated in the study design, coordinated the survey, analysed the data and wrote up the manuscript. J. N. Chukwu conceived the study, participated in the study design, coordinated data collection. C. C. Nwajor, A. O. Meka and D. C. Oshi participated in study design. All authors read and approved the final manuscript.

Conflict of Interest

The authors declare no competing interest

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