

Attitude towards Patients upon Knowledge of their Tuberculosis Status: A Cross-Sectional Study in Southeast, Nigeria.

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Abstract

Tuberculosis remains a major public health problem in Nigeria attributed to low level of knowledge of the disease which sometimes results into stigma against patients. Stigma and attitude against patients are sometimes based on their socio demographics. Hence, this study was instituted to assess the extent of the relationship between individual's and community's knowledge of patients TB status and the differences in attitude towards them based on their socio-demographics. This was a cross-sectional study and data analysis was achieved through the use of Statistical Package for Social Sciences (SPSS 16). The discrete data were described using frequencies and percentages, while the continuous variables were described using means and standard deviations. The level of relationship was elicited using the chi-square statistical test and the alpha was set at 0.05. There was a very high knowledge of patients' TB status among the people living and coming in contact with them and in the community. Some individuals were compassionate and desired to help 46.4%, while those

who were compassionate still stayed away from them were 19.2%. The result also reveals that 38.1% of the Males received positive feelings while 54.8% of the females received same from the uninfected individuals. More males 55.6% than females 32.3% received positive solidarity from their community. We concluded that tuberculosis remains a major public health issue in Nigeria promoted by insufficient information on the disease resulting into stigma towards patients.

Key words: Nigeria, tuberculosis, patients, socio-demographics, attitude.

INTRODUCTION

Background

Nigeria is ranked fourth globally and first in Africa among 22 high burden Tuberculosis countries (WHO, 2009), (Onyeonoro et al; 2014). The country in recent times has intensified efforts to address the challenges posed by the disease through expansion and enhancement of TB services, and directly observed treatment short-course (DOTS) (Onyeonoro et al; 2014). However, despite increased availability of TB services, case detection has only increased from 22% in 2002 to 37% in 2008 and is still grossly short of WHO target of 70% (WHO, 2008). This is partly attributed to low level of TB knowledge and the subsequent low utilization of services in Nigeria (Onyeonoro et al; 2014), (Okuonghae and Omosigho, 2010). One major setback to the success of TB control in Nigeria is the poor knowledge and stigma attached to the disease (Promtussananon and Peltzer, 2005), (Okeibunor et al; 2007), (Ganapathy et al; 2008), (Dodor and Kelly, 2009), (Okuonghae and Omosigho, 2010)]. Correct knowledge and positive perception of the community toward TB and its management are prerequisites to early treatment seeking (Mangesho et al; 2007), (Brassard et al; 2008), (Okuonghae and Omosigho, 2010). Public knowledge and attitude toward TB patients could be influenced by socio-demographic variables of the patients. Such knowledge may also influence the attitude as to how the patient sees himself and the reaction towards him from individuals and the community. In one study, a little above fifty percent of the respondents (Okuonghae and Omosigho, 2010) had attitude scores below the mean, implying poor attitude towards patients, while about seventy percent had attitude scores above the mean (good attitude). In another study, lack of knowledge of TB was demonstrated frequently (Anochie et al; 2013) among the respondents resulting in unfavourable attitude towards patients. On knowledge and attitude toward TB patients (Gelaw et al; 2001) about seventy percent of the informants felt that TB patients are not accepted in the community, and about seventy eight percent replied that they fear physical contacts with TB patients. Respondents were of the view (Aftab, Abid and Haris, 2013) that the community rejects TB patients in about nine percent of the time and at about thirty percent of the time, the community was friendly. Percentile in a study (Aftab, Abid and Haris, 2013) explains that forty percent of respondents will behave in sympathetic form toward TB patient, and about three percent said that they feel hate for TB patients, eleven percent will behave in friendly way but also try to avoid them, predominantly about forty four percent of the respondents inclined to support and help TB patients. The majority of the respondents (Koay, 2004) considered tuberculosis as socially acceptable among their family members and the community at ninety six and ninety three percents respectively. Those who considered tuberculosis as not socially acceptable expressed fear of getting the disease from the sufferers (Koay, 2004). Fifty-one percent of the respondents thought that tuberculosis patients should not socially mix as the disease could be transmitted to others (Koay, 2004). A study (Khalid, Frah and Osman, 2014) identified the stigma against TB patients among participants in which nearly thirty percent are highly stigmatized, and sixty three percent had moderate stigma toward TB patients. Both males and

females had the same feelings towards TB patients and Stigma was significantly associated with age group of studied participants (Khalid, Frah and Osman, 2014). Young age groups are more stigmatized than the other age groups. Stigma was also significantly associated with educational level of participants with primary education level more stigmatized than the Secondary and University education levels (Khalid, Frah and Osman, 2014). Majority of the subjects indicated that a person with TB experiences rejection and is feared as a source of infection with only a few of the interviewees indicating that the society treats them normally (Eva and Mark, 2013). About forty percent of the participants had no particular feeling toward people with TB disease and nearly as much felt compassion and desire to help the patient with nearly fifty percent of them responding that the community mostly supports and helps the patient (Eva and Mark, 2013). Only four percent of the respondents replied that most people reject the patient (Daniel, Girmay and Mengistu, 2013). Another study (Saria, Aminur and Anamul Hoque, 2012) on attitude towards TB patients revealed that about sixty six percent felt compassionate and desire to help, a little above twenty eight percent were indifferent, and about five percent would prefer to stay away.

As at the time this study was conceived and conducted, no work has been done specifically to the best of the researchers' knowledge in Nigeria to ascertain the relationship between individual's and community's knowledge of patients' TB status and the subsequent attitudinal differences towards them specifically based on the patients' socio-demographics. That is if patients' socio-demographics (age, marital status, education, sex, religion etc;) do determine to an extent individual's and community's attitude and stigma toward them.

This study was therefore aimed at examining the relationship between individual's and community's knowledge of patients' TB status and attitude toward them based on their (patients') socio-demographics. The results, it is hoped will improve knowledge and help to model out strategies on how to specifically deal with and manage attitude towards TB patients base specifically on their socio demographics.

Methods

Study design:

This was a cross-sectional study and involved the use of questionnaire for the collection of data from the study participants (patients) on attitude and stigma toward them from individuals and community at large.

Study Population:

The study population included all the registered TB patients—one hundred and eighty five (185) at the University of Nigeria Teaching Hospital (UNTH) chest clinic--old site as at this date (19th November, 2012) which was the date this study was commenced. The site for the study was conveniently selected. The study population was then receiving treatment at the DOTS centre. The clinic offers free services to TB patients and the drugs are provided by the global fund for Malaria, Tuberculosis and Leprosy (MTL). These patients were mostly residents of Enugu State and the adjoining states in Nigeria and were from varying backgrounds and socio-economic strata of the population. The patients were made up of urban and rural residents and many presented cases of 'human immunodeficiency virus' (HIV). The patients, regardless of gender, age, socio economic status and education were assessed and treated at the centre. Patients were treated on out-patient basis and those with acute or serious presentation of the disease are admitted into the hospital. Patients will normally submit for diagnosis if they suspect TB or are referred and results are provided on the spot.

Sampling and sample size

As at the date this study commenced--the 19th of November, 2012, the researchers were reliably provided with documents indicating that there were one hundred and eighty five (185) TB patients registered at the TB chest clinic, University of Nigeria, who were on active TB treatment. The study lasted through 20th of March, 2013. The patients were all registered for TB treatment at the site and were at the time of the study undergoing TB treatment. All the patients (total sample frame) were eligible for inclusion in the study. The sampling method included all the patients registered at the TB treatment facility in the hospital. A total of 185 patients were registered with the TB treatment facility as at the time of this study. All the patients were given equal opportunity to be included in the study sample, however only 125 respondents representing 68% of the patient population at the facility responded by filling and returning the questionnaire. Data was collected in 2013.

Sample size calculation/response rate

There was no sample size calculation in this study since all the patients (sample size) receiving treatment at the facility were all included in the study. There were 185 patients (sample size) receiving treatment at the facility as at the time of this study and were all included in the study. One hundred and twenty five (125) of the 185 patients were able to respond to our questionnaire. So we calculated the response rate by looking at the percentage of 125 of 185 which gave 67.56% and was rounded off to 68%.

Participants' recruitment

Eligibility for patients' participation in the study was a major concern for our study. We resolved that all the patients who were then diagnosed of TB and receiving treatment (185) were to be given equal chance to be included in the study. These patients were informed by the chief nursing officer that they could choose to or not partake in the study. The potential participants were instructed on the nature of the study, how they will remain anonymous in the results and the overall benefits likely to accrue from the study. Informed consent was sought and obtained from participants before partaking in the study.

World Health Organisation (WHO) Validated questions on stigma

Questions on stigma and attitude posed to the patients were as follows:

Do people now know you have TB?

1. Yes
2. No

Which statement is closest to your feeling now that people know about your TB status?

1. "They feel compassion and desire to help
2. "They feel compassion but they tend to stay away from me"
3. "They feel it is your problem and they cannot get
4. "They fear me, because I may infect them"
5. "They have no particular feeling."
6. Other (please explain)

In your community, how is a person who has TB usually regarded/treated?

1. Most people reject him or her
2. Most people are friendly, but they generally try to avoid him or her
3. The community mostly supports and helps him or her
4. Other (please explain)

Part of the study questionnaire as seen from the questions above examined individual's and community's knowledge of patients' TB status and the resultant attitude towards them. The responses to the questions as indicated were from the patients' perspectives. There are between two to six options as answers to each question. The respondents chose just one option as answer to each question. The patients chose their option based on how they actually felt concerning an individual's and community's attitude towards them on finding out they had TB. Content and semantic validations of the questionnaire were carried with a different set of TB patients undergoing treatment at the University of Nigeria Teaching hospital four months prior to the commencement of this study.

Eligibility and exclusion criteria including a brief description of participants

Eligible candidates for the study included patients who were actively receiving TB treatment at the University of Nigeria chest clinic (DOTS) centre as at the date the study commenced. Those excluded were patients who had finished their treatment regimen even though were still on register when the investigation started. Participants were mostly from Enugu State and other adjoining States in Nigeria. They were from varying socio economic backgrounds, age groups, marital status, educational attainment and employment. The patients were also mostly urban in residence and majority could understand spoken English very well.

Validity and Reliability:

To ensure the validity and reliability of the study and also its result, the questionnaire was first pre-tested using a different set of patients from the study respondents four months earlier though in the same facility. This was done to measure patients' understanding of the contents of the questions and to measure how the understanding of the questions were agreeable and same among the respondents and the researchers. Questions that were confusing and did not make any sense to the patients were either amended or discarded. Secondly, the questions were first translated into *igbo* (the *local language*) from English language *and* back to English language from *igbo* language to strengthen the content validity of the questions. Respondents who did not understand English language or the *igbo* language were interviewed using *pidgin English* language (local variance of English language) spoken and understood by virtually every person regardless of tribal affiliation.

Mode of administration/Data collection Methods:

The investigators trained and supervised data collection clerks on the mode of questionnaire administration. Patient's consent was first obtained before the questionnaire administration. Patients who had difficulty understanding English language were helped by the students (clerks) by translating the questions into *Igbo* language *or* *Pidgin* English as the case may be. The *Igbo* language is the local language, while the *Pidgin* English is a local variance of the English language. The questionnaire administration commenced on the 19th of November, 2012 and lasted through 20th of March, 2013. The students had prior training on the translation technique. Questions pertaining to the respondents' (patients') perception of individual's and community's attitude towards them based on their TB status among others were posed to them.

Methods of Data Analysis:

Data analysis was achieved through the use of SPSS statistical tool. The data was entered in Epi Info and was transferred to Statistical Package for Social Sciences (SPSS 16) for analysis. The discrete data were described using frequencies and percentages, while the continuous variables were described using means and standard deviations. In addition, cross

tabulations were done to establish the level of relationship or otherwise on key variables to find out the factors that influenced variables outcomes. The level of relationship was elicited using the chi-square statistical test. The alpha was set at 0.05 and the researcher concluded a statistical significant relationship to exist when the P-value of the test statistics is less than or equal to 0.05. Finally, a logistics regression was done on the factors that influenced various outcomes and their likelihood ratio was accepted as predictive values when the p-value is less than or equal to 0.05.

Ethical Consideration/Consent of participation:

University of Nigeria Teaching Hospital (UNTH) Health Research Ethics Committee reviewed the questionnaire and protocols to ensure that the study procedure adequately protected the study participants before issuing the ethical clearance. The participants were not exposed to any risk factor. The questionnaire was self-administered with the guidance of the research clerks (students). The Reference Number to the Ethical Clearance Certificate is UNTH/CSA/329/Vol.5. This research was performed in accordance with the Helsinki declaration and local legislations. The consent of each respondent was sought and obtained before the questionnaire administration. The students who helped in the questionnaire administration explained the study procedure including the right not to participate in the study to the patients before seeking and obtaining their consent to be involved in the study.

Results and discussion

Tables

Table 1: Showing the socio-demographic composition of the respondents

Socio demographic	Frequency n =125(%)
Age	N
Under 30	54(43.2)
31-40	25(20)
41-50	29(23.2)
Over 50	17(13.6)
Gender	
Male	63(50.4)
Female	62(49.6)
Education level	
No school	9(7.2)
Primary	38(30.4)
High school	40(32.0)
College/ University	38(30.4)
Employment status	
Yes	59(47.2)
No	66(52.8)

Table 1 shows that a total of one hundred and twenty five respondents were interviewed. Those aged thirty years and below (≥ 30) constituted the majority of the participants 54(43.2%). Respondents who were fifty years and above (≤ 50) were 17(13.6%). The gender

of the respondents was almost equally split (50.4%) for males and (49.4%) for females. This finding is in line with studies (Okuonghae and Omosigho, 2010), (Tobin, Okojie and Isah, 2007) where males were found to be the most infected with TB. Respondents with college/university education were (30.4%). About forty seven percent (47.2%) of the respondents were employed while (52.8%) were unemployed. The fact that those infected the most are in their prime and productive work years and moreover are college graduates and employed is a big problem for an emerging economy like Nigeria. Definitely due to the heightened stigma and discrimination against TB infected individuals, these persons are most certainly likely to lose their employment and begin a live of dependency that will spiral into poverty. In a country like Nigeria where the social economic safe-net for the elderly population is the employed relative, many of the elderly population would have to seek for alternative sources of livelihood since their younger relatives/off springs may be infected. The mark on the economy is definitely going to be noticeable as the infected individuals' contribution to the gross national product (GNP) will definitely reduce. Managing these problems will mean the provision of adequately ventilated housing for the emerging middle class and enough information to counter poor TB knowledge within some quarters of the population among others. These things will definitely reduce the infection rate. A policy should also be in place to protect those diagnosed with TB from losing their employment while on treatment.

Table 2: Showing people's and community's knowledge of patients TB status

PERCEPTIONS	Frequency (%)
People's knowledge of patient's TB status	103(82.4)
Yes	22(17.6)
No	
Feelings (attitude) towards patient's TB status by uninfected individuals	58(46.4)
Compassionate and desire to help	24(19.2)
Compassionate and stay away	2(1.6)
It's my problem and they can't get TB	8(6.4)
Fear me because I may infect them	33(26.4)
No feeling	
Community's perception and attitude towards TB patients	28(22.4)
Most people reject him	42(33.6)
Most people are friendly but avoid him	55(44.0)
Community mostly support him	

Table 2 presents a result that shows a very high knowledge of the TB status of the patients among the individual persons living and coming in contact with them. It revealed that the TB status of about 82.4% of the total respondents was already known, while 17.6% was not known. This finding is supported by studies (Daniel, Girmay and Mengistu, 2014) and (Saria, Aminur, Anamul Hoque, 2012) where it was recorded that individuals had good knowledge of the signs and symptoms of TB and could understand when a patient is infected with the

virus. According to our study, the individuals who were compassionate and desired to help the patients on the knowledge of their TB status were 58(46.4%), while those who were compassionate but stayed away from the patients were 24 (19.2%). The community mostly supports the patients 55(44.0%). High knowledge of patients' TB status within the community they live is good as it will help control the spread of the virus, but the resultant feelings of discrimination and stigma against TB patients should be brought to the barest minimum through the provision of adequate information on how to protect uninfected persons because most actions on stigma and discrimination are actually based on ignorance and bias.

Table 3: Factors that contributed to peoples' knowledge of patients TB status

	YES	NO n=103(%)	Chi-Square (P-value) n=22(%)	
Gender				
Female		52(82.5)	11(17.5)	0.002(0.967)
Male		51(82.3)	11(17.7)	
Age group				
Under 30		41(75.9)	13(24.1)	3.551(0.314)
31-40		23(92.0)	2(8.0)	
41-50		24(82.8)	5(17.2)	
51 and above		15(88.2)	2(11.8)	
Marital status				
Married		64(87.7)	9(12.3)	3.362(0.067)
Single		39(75.0)	13(25.0)	
Education level				
No formal		5(100)	0(0)	
Primary		35(83.3)	7(16.7)	3.121(0.373)
Secondary		30(75.0)	10(25.0)	
Tertiary		33(86.8)	5(13.2)	
Employment status				
Employed		51(87.9)	7(12.1)	2.283(0.131)
No employment		52(77.6)	15(22.4)	

The association between knowledge of patients' TB status and their socio demographic variables was also tested to understand which category of patients were most likely to be discriminated against when their TB status are known by the uninfected individuals and the community at large. The essence of this test was to help design specific TB infection control and stigma reduction strategies for each group depending on the findings. When the factors that could have influenced the individual's knowledge of patient's TB status were examined [Table 3], it was found that the gender of the respondents was not a factor. This was also revealed with the $\chi^2=0.002$, $p=0.967$. Since the alpha was set at 0.05, the researchers therefore considered that there was no relationship between the gender of the respondents and the open knowledge about their TB status. Still on table 3, it was also seen that the age of the respondents was not able to establish a significant difference on why the patients' TB status were known. The result shows a Pearson $\chi^2=3.551$, $p=0.314$. Again the percentage knowing

in each of the age groups was very close to each other viz: 75.9% for those under 30 years, 82.8% for those within 41-50 years, 88.2% for those from 51 years and above and 92.0% for those from 31-40 years. These percentages are very close to each other and they show that in all the age groups, respondents were either willing to let their status known to those around them or the symptomatic nature of TB sickness propelled people around them to identify the TB status of the patients. Again the table goes to show that there is a very high level of awareness among individual members as regards tuberculosis. This result is in agreement with studies (Daniel, Girmay and Mengistu, 2014) and (Saria, Aminur and Anamul Hoque, 2012) where they recorded that individuals had good scores on the knowledge about TB. However the table equally shows a little relationship between the marital status of the patients and the knowledge about their TB status in the neighbourhood. This was revealed as 87% of the married have their status known while the score was 75% for the singles. Even though the Pearson $\chi^2=3.362$, $p=0.067$ did not show a statistically significant result, it however shows that there is a strong relationship between the marital status of the respondents and knowledge of their TB status. This can be attributed to the fact that married patients are advised to disclose their status to their spouses, children and where necessary other family members. However, a single individual may find it a little hard to disclose his/her TB status especially when such a person is living alone. Moreover, it was as well seen that the educational level and the employment status of the respondents did not exert any influence on the knowledge of the TB status of the patients. None of the Pearson χ^2 for the two showed a statistically significant outcome. Those who are single and infected with TB should be encouraged through policy initiatives to make their status known to relatives and friends to discourage further spread of the deadly virus in the community.

TABLE 4: Predictors to people’s knowledge of the patient’s TB status

Variable	Odds ratio	p value	95% Confidence interval for Odds ratio	
			Lower	Upper
Gender				
Female	0.261	0.627	0.454	3.712
Male	1			
Age groups in years				
Under 30	0.372	0.828	0.051	3.344
31 – 40	0.763	0.507	0.228	10.821
41 -50	0.122	0.907	0.136	5.823
51 and above	1			
Marital status				
Single	0.991	0.485	0.167	3.806
Married	1			
Education				
No school	18.750	0.458	139009927.1	139009927.1
Elementary school	0.553	0.261	0.134	2.476
High school	0.718		0.140	1.703
Tertiary	1			

In addition [table 4] the researchers went ahead to look at the likely predictors and predictive values to the above factors and the result showed that none of the socio-demographic variables predicted the knowledge of the patients' TB status.

Table 5: Factors that influenced the feelings/attitude of the individuals on the TB status of patients

Feelings towards patients TB status	Frequency (%)
Positive feelings	58(46.4)
Negative feelings	67(53.6)

Square (P-value)	Positive feeling n=58(%)	Negative feeling n=67(%)	Chi-
Gender			
Male	24(38.1)	39(61.9)	3.522(0.067)
Female	34(54.8)	28(45.2)	
Age group			
Under 30	24(44.4)	30(55.6)	3.551(0.314)
31-40	9(36.0)	16(64.0)	
41-50	13(44.8)	16(55.2)	
51 and above	12(70.6)	5(29.4)	
Marital status			
Married	36(49.3)	37(50.7)	0.600(0.439)
Single	22(42.3)	30(57.7)	
Education level			
No formal	4(80)	1(20)	6.591(0.086)
Primary	18(42.9)	24(57.1)	
Secondary	14(35.0)	26(65.0)	
Tertiary	22(57.9)	16(42.1)	
Employment status			
Employed	28(48.3)	30(51.7)	0.153(0.696)
No employment	30(44.6)	37(55.2)	

The researchers as well thought it wise to look at the feelings (stigma) of the uninfected individuals toward the TB patients. It was seen from table 5 that 46.4% of the patients received "compassion and desire to help" from the uninfected individuals, 19.2% of the patients received "compassion" from the individuals who still stayed away from them, 1.6% of the individuals felt it was the patient's problem, 6.4% of the patients met individuals who had the fear that they may get infected and 26.4% were not able to establish their feelings toward the TB patients. The researchers however considered it wise to compress these feelings into two (table 5) for the purpose of effective measurement. Hence the feelings were categorized into two--positive feeling and negative feeling. The positive feeling was arrived

at by looking at those individuals who are compassionate and are willing to help while the others who rendered no practical help to the patients were categorized as negative feeling. It then gave us that 46.4% of the respondents received positive feelings while 53.6% turned out as those who received negative feelings from the uninfected individuals. At this point the researchers took a look at the factors that may have contributed to such feelings. The table 5 as shown reveals that 38.1% of the males received positive feelings while 54.8% of the females received positive feelings from the uninfected persons. This shows that more women received more positive feelings from the uninfected persons than males. This could be attributed to the fact that women naturally receive more empathy either from family members, spouse and or children when things go wrong especially in our culture. Again, whenever a married woman is faced with such health challenge, people tend to conclude that it was given to her by her husband. The Pearson $\chi^2 = 3.522$, $p=0.067$ however did not show to be statistically significant but it revealed that a greater percentage of women would receive more empathy from the uninfected persons when compared to the males. This result is in support of (Koay, 2004) where it was found that age, marital status, gender, educational status and ethnicity were not associated with stigma towards patients. The table as well showed that there was no statistically significant relationship between the age groups and the type of feelings, or support gotten from the uninfected persons. However, a very distinct outcome is that patients within the age group of 31-40 years got the least positive feelings. This could be because many of them are still single and may not have even disclosed their status. Some others who may have disclosed their status would lose their friends and associates. At that age, most young people, the uninfected feel invincible and should not be concerned with such health related issues. This finding is supported by ((Khalid, Frah and Osman, 2014) and (Eva and Mark, 2013) where they recorded that younger age groups were more stigmatized than the other age groups. In addition, we saw that the married respondents received more positive attention than the singles. Well, this may still be attributed to the fact that spouses would ordinarily show concern for each other any time there is a health challenge. However, the result did not show to be statistically significant as the Pearson $\chi^2 = 0.600$ $p=0.439$. Again the result shows that there is no statistically significant relationship between the educational level, employment status of the respondents and the type of feelings they got from the public. This result is supported by (Tobin, Okojie and Isah) which recorded individual attitude score which showed no association with age, marital status, religion or educational levels. The younger TB patients should be encouraged to share their TB status as a policy initiative to discourage further spread of infection since they turned up as the most group to receive less empathy from the community and are socially mobile than other groups. Further discrimination of this group will rather force them into hiding without seeking for help and will definitely result into more TB infections within the community they live. Not to be discriminated against should be seen as a human right and policy initiatives should be directed at protecting this right.

Table 6: Predictors to the individual's feelings/attitude of the patient's TB status

Variable	Odds ratio	p value	95% Confidence interval for Odds ratio	
			Lower	Upper
Gender				
Male	0.840	0.060	0.966	5.553
Female	1			

Age groups in years				
Under 30	1.084	0.329	0.335	26.106
31 – 40	1.948	0.012	1.538	31.992
41 -50	1.441	0.050	1.003	17.792
51 and above	1			
Marital status				
Single	0.207	0.830	0.186	8.148
Married	1			
Education				
No school	0.189	0.888	0.086	17.060
Elementary school	0.639	0.247	0.642	5.588
High school	1.053	0.038	1.062	7.742
Tertiary	1			
Employment status				
Not employed	0.545	0.237	0.235	1.431
Paid employment	1			

The predictors and predictive values [table 6] show that the male respondents were 1.1904 less likely to receive a positive feeling from the uninfected persons when compared to the females (95% CI: 0.966-5.553) p= 0.060.

Table 7: Factors that influenced the community’s feelings/attitude towards the TB status of the patients

Square (P-value)	Positive feeling	Negative feeling	Chi-
	n=55(%)	n=70(%)	
Gender			
Female	20(32.3)	42(67.7)	
6.883(0.009)			
Male	35(55.6)	28(44.4)	
Age group			
Under 30	21(38.9)	33(61.1)	5.693(0.128)
31-40	10(40.0)	15(60.0)	
41-50	12(41.4)	17(58.6)	
51 and above	12(70.6)	5(29.4)	
Marital status			
Single	22(42.3)	30(57.7)	0.103(0.748)
Married	33(45.2)	40(57.7)	
Education level			
No formal	2(40)	3(60)	2.323(0.508)

Primary	21(50.0)	21(50.0)	
Secondary	19(47.5)	21(52.5)	
Tertiary	13(34.2)	25(65.8)	
Employment status			
Not employed	30(44.8)	37(55.2)	0.035(0.851)
Employed	25(43.1)	33(56.9)	

Again to make the community's perception and relational approach to TB patients [table 7] more measurable, the researchers collapsed them into positive and negative feelings. The positive attitude/feelings were those communities who were mostly supportive of the patients and those with negative attitude/feelings were those communities who reproached the patients. Hence it shows that 44% of the respondents received positive feelings while 56% received negative feelings from their various communities. At this point the researchers took a look at each patient's socio-demographic variables and their community's perception/attitude of their TB status. It showed that more males 55.6% have received positive solidarity from their community members when compared to the females' 32.3%. The result showed a statistically significant result $\chi^2 = 6.883$, $p=0.009$. This shows that the community as a whole had better attitude towards male TB patients than they do towards the females. However the result showed that none of the other socio-demographic factors had any influence on how the community as an entity relates to the TB patients. This finding is in negation with (Koay, 2004) where it was recorded that there were no association between stigma and age groups, gender, educational status and ethnic groups.

Table 8: Predictors of community's feelings/attitude towards TB patients

Variable	Odds ratio	p value	95% Confidence interval for Odds ratio	
			Lower	Upper
Gender				
Female	0.872	0.051	0.997	5.737
Male	1			
Age groups in years				
Under 30	2.793	0.043	1.097	243.065
31 – 40	1.443	0.083	0.838	21.398
41 -50	1.275	0.111	0.746	17.156
51 and above	1			
Marital status				
Single	0.207	0.830	0.186	8.148
Married	1			
Education				
No school	0.924	0.483	0.191	33.307
Elementary school	0.148	0.791	0.389	3.459

High school	0.373	0.460	0.256	1.854
Tertiary	1			
Employment status				
Not employed	0.603	0.196	0.219	1.364
Paid employment	1			

When the predictors were looked at [table 8), it revealed that the females TB patients were 1.147 less likely to receive a positive solidarity from the community when compared to the males.

This result is the opposite of individual's feelings/attitude towards TB patients where it was recorded that females received more positive feelings and attitude from spouses and other family members than their male counterparts. The community should be sensitized as a policy to encourage better acceptance of TB patients regardless of sex and to encourage better health seeking behaviour among infected persons. These results, the researchers admit may be generalizable only to the studied population given the limited sample and time of this study.

Conclusions

Tuberculosis remains the deadly disease it is and this situation is heightened by the increasing discrimination and stigma towards TB patients most probably fuelled by lack of knowledge of the disease. The younger population group seems to be the most vulnerable to the TB infection and most discriminated against. They are the most mobile of the population groups and this may increase the infection rate in the communities. Efforts should be put in place to mitigate this trend, as they are most likely to be employed and supportive of the economy and their families. Policy initiatives to discourage discrimination against TB patients especially at places of work should be supported by the government, and DOTS centres should be extended more to the peripheral sectors of the health systems to encourage access to care and mitigate further infection.

Ethics approval and consent to participate

University of Nigeria ethical review committee reviewed the questionnaire and protocols to ensure that the study procedures adequately protected the study participants. Ethical clearance was eventually obtained from the committee. The study was organized in accordance with the Helsinki Declaration and local legislations in protection of patients' right. Patient's consent was sought and obtained before the administration of questionnaire. Those that did not consent to participate were not interviewed.

Authors' contributions

OGO thought and initiated the study; OCN, JCA and EOD supervised and provided the technical support needed for the completion of the project while IOM and PO supervised the analysis. All the authors read and approved the final manuscript.

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