

Epidemiological Study on Knowledge, Attitude and Practices Regarding Pulmonary Tuberculosis among Rural Communities of Gulu Kano, Nigeria

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Abstract

Background: Tuberculosis (TB) is a chronic infectious disease that has long been one of the major health problems. It affects individuals of all ages and both sexes. Poverty, malnutrition and over-crowded living conditions have been known for decades to increase the risk of developing the disease. According to the Federal Ministry of Health (FMOH) hospital statistics data, TB is the leading cause of morbidity, the third cause of hospital admission (after deliveries and malaria) and the second cause of death in Nigeria after malaria. TB is an obstacle to socio economic development. So, this study is aimed at assessing the knowledge, attitude and practices regarding pulmonary tuberculosis among rural communities of Gulu, Kano, Nigeria. **Methods:** A community based cross-sectional study was conducted in Gulu from January, 2019 to March, 2019. Data was collected using a pretested structured questionnaire. Descriptive analysis was performed to obtain the frequency distribution of the variables. **Results:** Among 335 participants, the study showed that the overall level of knowledge was low and the overall attitude and practices related to PTB was highly inadequate. **Conclusion:** Study respondents had basic awareness about pulmonary TB but knowledge on cause and prevention was inadequate. Their attitude and practices towards TB also need to be improved. Health education activities need to be intensified for the rural population to bring about significant change in their level of awareness on TB.

Keywords: KAP, PTB, Awareness, Gulu, Kano.

Background of the study

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* and is one of the major causes of morbidity and mortality worldwide. Pulmonary tuberculosis (PTB) is the most common form of presentation but TB can also affect other sites and organs like lymph nodes, abdomen and meninges etc [WHO, 2018]. Some of the predisposing factors known to be associated with the TB disease are malnutrition, lack of awareness about TB, co-morbid illnesses like diabetes mellitus, HIV infection, and increased susceptibility at extremes of age, smoking, overcrowding and poverty [Lienhardt, 2001, Hassmiller, 2006, Cegielski, 2004]. Apart from these, lack of financial sources, poor accessibility to health facilities and lack of knowledge about the symptoms, mode of spread and available treatment among the population affects the health seeking behaviour of patients and might promote delay in diagnosis, improper treatment, poor compliance to medications and development of drug resistance [Kaona et al, 2004, Hill et al, 2005].

According to the World Health Organization (WHO), TB is the leading infectious cause of death worldwide and there were 10.4 million TB cases and 1.7 million deaths in the year 2016 [WHO, 2017]. Access to TB care has improved worldwide and TB mortality rate has shown 37% decline since 2000. Between 2000 and 2016, 53 million lives were saved through effective diagnosis and treatment of TB. On the other hand, the number of people diagnosed with multi-drug resistant TB (MDR-TB) is on the rise globally. An estimated 0.49 million people developed MDR-TB and 0.11 million were diagnosed with Rifampicin Resistant TB (RR-TB) in 2016. The incidence of MDR-TB/RR-TB was about 4.1% in new cases and 19% in previously treated cases [WHO, 2017].

In Nigeria, just as in many other African countries, tuberculosis is a major public health problem. The TB burden is further compounded by the high HIV prevalence of 4.1% in the country [Mesfin et al, 2005]. Tuberculosis was declared a national emergency in Nigeria in June 2006 after which an emergency plan for the control of the disease was developed. Currently, Nigeria is ranked 5th among the 22 high TB burden countries in the World and has second highest burden in Africa [Wandwalo and Morkve, 2000]. The WHO report on Global Tuberculosis Control 2008, revealed that Nigeria in 2006 had incidence for all cases 311/100,000, incidence for smear positive 137/100,000, prevalence for all TB cases 616/100,000 while case detection rate was put at 20% [WHO, 2007]. World over, TB affects men more than it does women (60-75%) attributable to differences in social habits and a slight genetic predisposition on the part of women as suggested by many studies [Javaid et al, 2006]. Individuals with a chronic illness like neoplasm, diabetes mellitus, heavy smokers and those in extreme poverty continue to be the main allies of TB because of the weakened immune system and greater contact with other sufferers due to overcrowding and poor nutrition as is the case with poverty [Javaid et al, 2006]. The TB epidemic in Nigeria is thought to be due to a multitude of factors that include poor housing, HIV infection, alcoholism, poor nutrition and poor access to high quality health services [FMOH, 2004]. Poverty has been cited as one of the main causes of this TB epidemic as it is associated with overcrowding and poor ventilation, enhancing high transmission [FMOH, 2006]. The increase has also been attributed to the HIV epidemic, of which there is a prevalence of 17.8% among antenatal clinic attendees [FMOH, 2006].

Given an HIV/TB co-infection rate of 35%, more than one million adults are infected by both diseases in the country at the moment [FMOH, 2004]. The high prevalence rate of HIV/AIDS in the country, severe economic disparities and poverty levels (70% of Nigerians are below the poverty line with little or no access to good food, sanitation and housing), population growth, incessant conflicts and displacement of people as well as inadequate health sector funding combine to worsen the national TB burden in the country. The situation is critical because about 70% of TB cases in Nigeria are unattended to [HSB, 2001]. This is alarming because, if unattended to, each TB patient (carrier) infects an average of 10 to 15 people every year [WHO, 2006].

In May 2014, the World Health Assembly passed a resolution approving with the new post-2015 „End TB Strategy“ with its ambitious targets. End TB strategy interventions fall under three pillars:

- Integrated, patient-centered care and prevention
- Bold policies and supportive systems
- Intensified research and innovation.

Bold policies and supportive systems require intense participation by the government, private stake holders and communities [WHO, 2018]. To improve the treatment outcomes and to bring down the incidence of TB, community participation plays a pivotal role [Bhuyan, 2004, Demissie et al, 2003]. In order to improve the health seeking behaviour, the population should have the correct knowledge about the disease, should be aware on the facilities available for free diagnosis and treatment in the public healthcare centres [IWHO, 2008].

Based on the above background, this study was carried out with the objective to assess the knowledge, attitude and practices regarding pulmonary tuberculosis among rural communities of Gulu, Kano, Nigeria.

Methodology

Study area

The study was conducted in Gulu which is one of the Villages found in Rimin Gado local government Kano state. Gulu is bordered on the east by Dawakin Gulu, on the north by Dawakin Gulu, on the west by Kazode, and on the south by Gora. According to national housing and population census the projected estimated population of the Gulu was 40,000. Agriculture is the main livelihood of the population, with potato, maize, bean, are the main crops cultivated in the Gulu. There are only 2 health posts providing health service for the Gulu population.

Study design

A community-based cross-sectional study was conducted using interviewer-administered questionnaire from January, 2019 to March, 2019.

Sample size determination

In this study, manual calculation of the sample size using Morgan and Krejcie (1970) formula was used for sample size determination as stated below:

$$S = \frac{X^2 NP (1-P)}{d^2 (N-1) + X^2 P (1-P)}$$

Where:

S = Required sample size

X^2 = The table value of the chi-square at desired confidence (3.841)

N = Study Population size (2600)

P = Population proportion assumed to be 0.50 since this would provide maximum sample size

d^2 = Degree of accuracy of the result expressed as proportion 0.050

$$3.841 \times 2600 \times 0.5 \times 0.5$$

$$0.0025 \times 2599 + 3.841 \times 0.5 \times 0.5$$

$$2496.65 = 335$$

$$7.45775$$

Hence 335 participants

Inclusion and exclusion criteria

Resident individuals aged 18 years and above and willing to participate were included in the study. Individuals who stayed as guests in the selected households, those who were <18 years of age and who had chronic illnesses were excluded from the study.

Data collection

Data was collected from eligible and willing participants using a pre-tested, structured questionnaire, adapted from the sample questionnaire in the guide to developing knowledge, attitude and practice surveys developed by the World Health Organization and Stop TB Partnership. Socio-demographic information including age, gender, occupation, education and socio-economic status were collected. The knowledge of the participants on symptoms suggestive of PTB, cause of TB, treatment and preventive measures, attitude and practices regarding TB disease were also collected.

Data analysis

Data were analyzed using Statistical Package for Social Science (SPSS) software version 16.0 at that time with the help of the Statistician. The descriptive statistical method was used to analyze frequencies and percentages.

Ethical considerations

This study was conducted only after obtaining approval from Gulu District Head.

Results

A total of 335 respondents were interviewed, giving 100% response rate. The majority, 195 (58.2%) of the respondents were males. Among all, 85(25.4%) of respondents were 31-35 years of age. Of the study subjects, 223 (66.6%), were married. The socio-economic characteristics of the study showed that, among all respondents, 180(60%) of respondents attended formal education, among this 145(43.3%) of respondents were primary school completed, 70(20.9%) of respondents were secondary school completed, while 120(35.8%) of respondents reported that they were took informal education (were illiterate and only read and write). Similarly, results of occupational status of respondents indicated, 150(66.7%) of respondents were farmers, 40 (11.9%) were Government employee, 70(20.9%) were Merchants and 75(22.4%) were House wives (Table 1).

Table 1. Socio demographic characteristics of the participants (n=335)

Characteristics	Frequencies (n=335)	Percentages %
Gender		
Males	195	58.2
Females	140	41.8
Ages		
20-25	60	17.9
26-30	70	20.9
31-35	85	25.4
36-40	72	21.5
41+	48	14.3
Marital Status		
Married	223	66.6
Single	90	26.9
Divorce	9	2.7
Widowed	13	3.9
Education		
Illiterate	75	22.4
Can read and write	45	13.4
Primary	145	43.3
Secondary and above	70	20.9
Occupation		
House wife	75	22.4
Farmers	150	44.8
Government employee	40	11.9
Merchants	70	20.9

Table 2 summarizes the different components of participants' knowledge towards TB.

Cough (32.5%) was the most commonly mentioned symptom of PTB and other symptoms reported were weight loss (28.7%), fever (13.4%) and loss of appetite (25.4%).

The fact that PTB can be transmitted from a patient to another person was known to 77.6% of the respondents and 16.1% didn't know that it is a transmissible disease. Transmission of PTB through air was correctly reported by only 31.3% of the subjects. Other modes of transmission mentioned by the participants were sharing items (25.4%), through touching items in public places (28.7%).

A bacterium as the cause for PTB was mentioned by 17.9% of the subjects. The other causes of TB reported by them were cold air (29.9%), tobacco use (22.4%) and poor food intake (19.4%). Nearly 49.3% of the participants knew that TB transmission is preventable and 42% mentioned that they didn't know whether the disease transmission could be prevented. TB was considered as a curable condition by 83.3% of the participants. About 6.3% didn't know whether TB could be cured. Nearly 51.9% said that TB can be treated with medicines given in health institutions and 3.3% mentioned that resting at home is sufficient for cure (Table 2).

Table 2. Knowledge of the participants on cause, symptoms, transmission, treatment and prevention of Pulmonary Tuberculosis (PTB), (n=335)

Characteristics	Frequencies (n=335)	Percentages (%)
Cause of PTB		
Bacteria	60	17.9
Smoking/tobacco use	75	22.4
Shortage of food	65	19.4
Cold air/dust/hot climate	100	29.9
Don't know	35	10.4
Symptoms of PTB		
Cough >2 weeks	109	32.5
Weight loss	96	28.7
Loss of appetite	85	25.4
Fever	45	13.4
PTB can be transmitted from one person to another		
Yes	260	77.6
No	21	6.3
Don't know	54	16.1
How can a person get PTB?		
Through air when a person with TB sneezes or cough	105	31.3
Through sharing items/eating from same plate	85	25.4
Through touching items in public places/hand shakes	96	28.7
Don't know	49	14.6
Transmission of PTB is preventable		
Yes	165	49.3
No	29	8.7
Don't know	141	42
PTB is curable		
Yes	279	83.3
No	14	4.2
Don't know	42	12.5
How can PTB are cured		
Medicines given in health institutions	174	51.9
Herbal remedies	25	7.5
Home rest without medicine	11	3.3
Praying	50	14.9
Self-treatment	54	16.1
Don't know	21	6.3

Study participants' attitude towards PTB is summarized in Table 3.

Nearly 45.4% of the subjects considered TB as a very serious disease and 13.4% as not very serious illness. When asked if anybody can get PTB, 20.9% replied „yes“ and 25.4% said they didn't know. Regarding the participants' reaction if they were diagnosed with PTB, 28.7% said they would experience fear, 17% said they will feel embarrassed, 17.6% mentioned that they would be surprised,

and 12.8% said they will face the situation confidently. When enquired about their feeling towards people with PTB, 28.4% said they would feel compassionate but tend to stay away from the infected people. Desire to help the patients was expressed by 30.1% of the subjects. Nearly 17.3% expressed fear as the patients might infect them and 10.1% denied having any particular feeling towards PTB patients (Table 3).

Table 3. Participants' attitude towards pulmonary tuberculosis (PTB), (n=335)

Characteristics	Frequencies (n=335)	Percentages (%)
Opinion about seriousness of TB disease		
Very serious	152	45.4
Somewhat serious	118	35.2
Not very serious	45	13.4
Don't know	20	6.0
Anybody can get PTB		
Yes	70	20.9
No	180	53.7
Don't know	85	25.4
Reaction if diagnosed with PTB		
Fear	96	28.7
Surprise	59	17.6
Confident	43	12.8
Hopelessness	47	14.0
Embarrassment	57	17.0
Don't know	33	9.9
Feeling towards people with PTB		
Compassion and desire to help	101	30.1
Feel compassion, but tend to stay away from them	95	28.4
It is their problem; I can't get TB	18	5.4
I fear them because they may infect me	58	17.3
No particular feeling	34	10.1
Don't know	29	8.7

Practices of the participants towards Pulmonary Tuberculosis are summarized in Table 4.

When asked who you would talk to if you had PTB. Nearly 44.8% of the subjects said Doctor or other medical workers. When asked what you would do if you thought you had symptoms of PTB. 52.8% said they go to health facility, 23.6% said they go to traditional healers and 2.7% said they don't know. Regarding the symptoms of PTB, when asked if you had symptoms of PTB, at what point would you seek medical help? 42.7% of the participants said when treatment on my own doesn't work and 37.0% said as soon as I realize my symptoms might be related to TB and 2.4% said they don't know (Table 4).

Table 4. Practices of the participants towards pulmonary tuberculosis (PTB), (n=335)

Characteristics	Frequencies (n=335)	Percentages (%)
Who you would talk to if you had PTB?		
Doctor or other medical workers	150	44.8
Spouse	31	9.3
Parent	99	29.5
Close friend	42	12.5

Don't know	13	3.9
What would you do if you thought you had symptoms of PTB?		
Go to health facility	177	52.8
Go to pharmacy	70	20.9
Go to traditional healers	79	23.6
Don't know	9	2.7
If you had symptoms of PTB, at what point would you seek medical help?		
When treatment on my own doesn't work	143	42.7
When symptoms that look like PTB last for >2 weeks	60	17.9
As soon as I realize my symptoms might be related to TB	124	37.0
Don't know	8	2.4
Behaviour of the Community towards people with PTB		
People in the village reject him/her	83	24.8
People are friendly but they try to avoid him/her generally	124	37.0
People mostly support and help him/her	102	30.4
Don't know	26	7.8

Discussion

This study conducted among 335 adults in a rural area of Gulu shows the present status of knowledge, attitude and practices related to TB in the study population with varied and interesting outcomes, which are discussed below.

Knowledge regarding PTB

Our study showed that the knowledge on the bacteria as the cause of TB was limited, as many of them suggested other causes like cold air, hot climate, tobacco smoke and food shortage. This low awareness on the cause was also reported in a Sudanese study in which only 2% respondents and in the Ethiopian study in which 22.9% respondents had knowledge on the cause of TB [Tolossa et al, 2014, Elbur et al, 2007]. A similar study among sandstone quarry workers in Rajasthan reported very low awareness (1.6%) on the cause of TB [Yadav et al, 2006]. On the other hand, Koay et al in their study in Malaysia and Malhotra et al in their study in Delhi stated that nearly half of the participants were aware of the cause of TB [Koay, 2004, Malhotra et al, 2002]. Easwaran et al in his study in a similar rural setting reported a much lower percentage of awareness (10.6%) on the causation [Easwaran et al, 2015]. Awareness on the causal factor of disease is very essential as it influences the patients' health seeking behaviour.

Regarding the awareness on PTB symptoms, 32.5% reported cough as the main symptom. In a study done by Konda in an urban township in Mumbai, 48.4% of the subjects, and in the study by Chinnakali et al in Puducherry, 82% of the subjects, and in the study by Tolossa et al in Ethiopia, 72.4% of the subjects mentioned persistent cough as the most common symptom [Tolossa et al, 2014, Chinnakali et al, 2013, Konda et al, 2016]. The awareness on the symptoms varies widely with different study settings. Knowledge on the symptoms of PTB is very vital as it guides the patients in seeking medical care without delay. The fact that PTB is a transmissible disease was stated by 77.6% of the respondents. In the study by Konda, the knowledge on transmission was higher (87%) compared to our study [Konda et al, 2016]. This could be due to the difference in the study setting as their study was done in an urban township whereas our study was done in a rural area. Similarly, Tolossa et al reported 80% of awareness regarding PTB transmission in their study [Tolossa et al,

2014].

In our study, a smaller number of participants (49.3%) was aware that PTB transmission is preventable. Whereas in the study by Chinnakali et al, 75% of the subjects and in the study by Elbur et al, 58.6% mentioned that PTB can be prevented [Chinnakali et al, 2013, Elbur et al, 2007]. Knowledge that PTB is preventable was found to be very high (98.2%) in a study by Sharma et al among the general population of Delhi [Sharma et al, 2007]. About 83.3% of the subjects mentioned TB as a curable disease. Sharma et al, Chinnakali et al and Elbur et al, in their study in Delhi, Puducherry and Sudan respectively reported that 94.4%, 87% and 80.3% of the participants were aware that PTB is curable [Chinnakali et al, 2013, Elbur et al, 2007, Sharma et al, 2007].

In this study, 20.9% of the participant had secondary and above level of education. This is significantly associated with adequate PTB knowledge. Tolossa et al reported that people with high education level had increased odds of having good knowledge towards PTB [Tolossa et al, 2014]. Konda in their study found that low knowledge was associated with less education and low income [Konda et al, 2016].

Attitude towards PTB

Around 45.4% of the respondents considered TB as a very serious disease, whereas the Ethiopian study reported that 55.4% of the respondents considered TB as a very serious disease [Tolossa et al, 2014]. About 28.7% respondents reported that they would feel afraid if they were diagnosed with PTB and a very less proportion of participants (12.8%) said they would face the situation with hope and confidence. In the study by Tolossa et al, about 69.3% mentioned fear as their predominant feeling if they were found to have PTB [Tolossa et al, 2014]. Koay in his study reported embarrassment as the feeling of 41% of the study subjects if they were found to have PTB [Koay, 2004]. Compassion and desire to help the patients infected with TB was noted in only 30.1% of the subjects. The fear of getting infected by patients was mentioned by 17.3% of the participants. Having adequate knowledge on PTB and higher levels of socioeconomic status were found to be associated with a positive attitude. More awareness has to be created among the population to bring a positive attitude towards TB patients.

Practices related to PTB

With regard to the practices, in our study, about half of the participants said they would go to a health facility if they had symptoms of PTB. This proportion was high in the study by Tolossa et al, where 71% mentioned they would go to health facility in case of any symptoms suggestive of TB [Tolossa et al, 2014]. Whereas around 20.9% preferred pharmacy, self-treatment or traditional healers. Nearly 42.7% of the subjects said that they approach medical care only if their self-treatment options don't work. Work commitment, difficulties with travel to clinic, negative attitude of the health workers were the major reasons given by the subjects for not going to the health facility for care.

Regarding the cost of PTB treatment, only 20% knew that TB treatment is available free of cost in government health centres, whereas this was found to be 84% in a study by Chinnakali et al, 2013, 34% in a study by Kar et al, 2010, and 48.8% in a study by Mushtaq et al, 2010. This emphasizes the need to strengthen the health education activities, as nearly 80% of the subjects didn't know about the free anti-TB drugs provided by the government. Community support to the PTB patients was also found to be less as nearly half of the respondents said the villagers generally tries to avoid the PTB patients. Practices also varied with age and knowledge level of participants on PTB. The importance of social support to the patients affected with PTB needs to be inculcated in the minds of the population.

Limitations of the study

This study done in the rural field practice area with a sample of 335 adults from a population of 40,000 could have been planned on a larger scale, covering larger populations to have a better understanding on knowledge, attitude and practices related to PTB, so that the outcomes could be generalized to a larger study area.

Conclusion

The study showed that the overall level of knowledge was low and the overall attitude and practices related to PTB was highly inadequate.

These findings highlight the need to improve the awareness about TB, by giving greater emphasis on the causation, symptoms, early diagnosis and treatment for preventing and curing the disease. A positive attitude needs to be inculcated with the rural masses so that it leads to good practices in the management of TB patients in the Community, which would in turn help in achieving the goals and targets of the National Tuberculosis and Leprosy Control Program (NTBLCP). Hence the recognized gaps in the knowledge should be kept in mind while planning for TB awareness campaigns and information, education and communication (IEC) activities need to be intensified for the rural population to bring a meaningful change in their knowledge, attitude and practices towards PTB in the primary healthcare setting.

Data availability

The data used to support the findings of this study are available from the corresponding author upon request.

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