



PERCEPTION OF THE PREVALENCE, CAUSES, TRANSMISSION, SIGN AND SYMPTOMS, PREVENTION AND TREATMENT OF MYCOBACTERIUM TUBERCULOSIS AMONG RESIDENTS OF IFE EAST LOCAL GOVERNMENT AREA, ILE-IFE, OSUN-STATE. NIGERIA.

By

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Abstract

Tuberculosis (TB) remains a critical global public health concern, with effective control heavily dependent on robust community knowledge. This study aimed to assess the knowledge levels of residents in Ife East Local Government Area (LGA), Ile Ife, Osun State, Nigeria, across various aspects of Mycobacterium tuberculosis disease.

A descriptive cross-sectional study was conducted involving 200 randomly selected adult respondents. The participant pool was mature, with the majority aged 54–62 years (40.5%), primarily married (59.5%), and engaged as traders (48.5%). Educationally, 45.5% had attained a secondary school education.

General knowledge of TB demonstrated significant variance across demographics. The 54–62 years age group (17.5%) and married respondents (29.5%) exhibited the highest knowledge prevalence. While 50.0% correctly identified a bacterium as the causative agent, widespread misconceptions persisted, with 48.0% believing cold air and 48.5% believing punishment of God were causes. Understanding of transmission was mixed: a high percentage (68.0%) correctly identified living with a TB patient as a high-risk mode, yet 59.5% incorrectly believed the disease was hereditary. Respondents showed a fair understanding of clinical presentation, with coughing duration ≥ 2 weeks (57.0%) and weight loss (58.5%) well-recognized as symptoms. Regarding treatment, 51.0% believed TB is curable; however, nearly equal proportions cited non-biomedical methods, with 47.5% citing praying and fasting and 49.5% citing traditional medicines. Alarming, only 10.0% of respondents knew the approximate cost of TB treatment.

The study concludes that residents of Ife East LGA possess fragmented knowledge, showing adequate awareness of core symptoms but harboring critical gaps and misconceptions regarding the definitive cause, hereditary transmission, and reliance on non-biomedical treatment. These findings underscore the urgent need for targeted, culturally-sensitive health education campaigns that address community-specific myths to bolster local TB control efforts.

Keywords: Perception, Prevalence, Causes, Transmission, Sign and Symptoms, Prevention, Treatment Mycobacterium Tuberculosis. Residents Ife East Local Government Area.

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Introduction

Mycobacterium tuberculosis is the causative agent of tuberculosis (TB), a chronic infectious disease that primarily affects the lungs, though it can spread to other organs such as the brain, kidneys, and bones (Fadeyi *et al.*, 2020). TB has been a major public health issue for centuries and remains one of the leading causes of infectious disease-related morbidity and mortality globally. TB continues to be one of the top 10

causes of death globally, with over 10 million new cases and 1.5 million deaths annually, according to the World Health Organization (WHO). Although TB incidence has decreased in many high-income countries, it remains a major burden in low- and middle-income countries, where healthcare access is often limited. (Akinbo and Akinboboye, 2019, WHO, 2022).

The rise of MDR-TB and XDR-TB has exacerbated the challenge of TB control, and the ongoing HIV/AIDS

pandemic has further fueled the TB epidemic, as HIV-positive individuals are more susceptible to developing active TB. The adoption of preventive measures is often hindered by inadequate health education and poor access to healthcare services (Adesina *et al.*, 2017). A study by Oloruntoba *et al.*, (2014) noted that many rural residents in Osun State were not aware of the BCG vaccine or the importance of completing a full course of TB treatment. There is also limited access to diagnostic services and TB treatment centers in rural areas. Despite significant advancements in medical science, TB continues to pose a challenge to public health systems, particularly in low- and middle-income countries. The prevalence of tuberculosis (TB) is alarmingly high in many parts of sub-Saharan Africa, including Nigeria. (Owoaje and Adebayo, 2012.). TB prevalence in Nigeria is a significant concern, with rural areas often experiencing higher rates of undiagnosed cases due to limited healthcare access. (Adejumo *et al.*, 2015, Almeida *et al.*, 2018, Adefolalu *et al.*, 2019). The Federal Ministry of Health Nigeria (2019) reported that Osun State had a relatively high burden of TB, with certain rural localities facing challenges in early diagnosis and effective treatment, including the Ife East Local Government Area.

A survey conducted in Osun State found that many rural dwellers have little awareness of TB prevalence and its implications, contributing to late-stage diagnoses (Adebayo *et al.*, 2020, Ogunleye *et al.*, 2021). The prevalence of TB in rural areas, including Ife East, may be underreported due to poor healthcare infrastructure and social stigma surrounding the disease. The study aims was to assess the perception of the prevalence, causes, transmission, signs and symptoms, prevention, and treatment of Mycobacterium tuberculosis.

Methodology

Ethical Consideration

Prior to the commencement of the study, verbal informed consents were obtained from all respondents and confidentiality was assured by using codes.

Study Area

Ife East Local Government Area is one of the 30 local government areas in Osun State, Nigeria. The area is predominantly rural, with a population of approximately 150,000 people.

Ife East Local Government Area in Osun State, Nigeria, has a rich history tied to the ancient town of Ile-Ife, considered the cradle of Yoruba civilization. The area is believed to be the ancestral and spiritual home of the Yoruba people, with the Ooni of Ife serving as the traditional head. Historically, Ile-Ife was a major center of political and religious development for Yoruba culture, with the town dating back to the early 11th century. The area was also known for its artistic achievements, particularly in terra-cotta and bronze work.

Ife East Local Government Area was created as part of Osun State, which was established on August 27, 1991. The local government area has its headquarters in Oke Ogbo and covers an area of approximately 172 square kilometers. According to the 2006 census, the population of Ife East Local Government

Area is around 188,087 people. Today, Ife East Local Government Area is home to several important cultural and historical sites, including the Ooni's Palace, the Ife Museum of Antiquities, and the Opa Oranmiyan shrine. The area also hosts the annual Olojo Festival, a significant cultural event in the Yoruba calendar.

The study adopted a cross-sectional design, which involved collecting data from a representative sample of household in Ife East Local Government Area.

Population of the study

The study population comprise of households within aged range 18 and above who resided in Ife East Local Government Area, Ile Ife, Osun State. Ife East comprise of 11 wards, people were randomly selected for the sample, a total of two hundred (200) people.

Sample Size: Size to be sample was carried out according to the method of Wang and Ji, (2020) as indicated below.

$$N = \frac{z^2 p(1-q)}{d^2}$$

Where; **SS (N)** = Sample size

Z= degree of confidence (i.e. 95% confidence interval which will yield 1.96)

d = precision (5%= 0.05)

p = the proportion in the target population estimated to have infection.

q= 1-p

Therefore, a total of 200 samples were collected from Ife East Local Government Area. Osun State.

Data Collection Methods

Household Survey: A structured questionnaire was administered to the selected households to collect data on Mycobacterium tuberculosis.

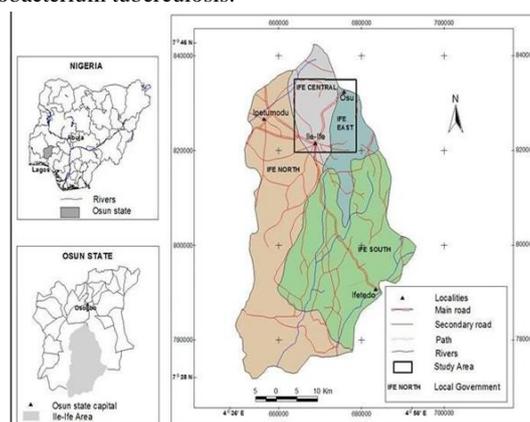


Figure 1: Map showing Ife East Local Government Area, Ile Ife, Osun State

Inclusion Criteria:

- Individuals aged 18 years and above.
- Both males and females living in the study area for at least 6 months.
- Willingness to participate in the study.

Exclusion Criteria:

- Individuals with prior diagnosis or treatment for TB (to avoid bias in perception).
- Individuals with physical or cognitive impairments that hinder their ability to respond to the survey.

Data Analysis Methods

Statistical Package for the Social Science (SPSS) method was adopted in the presentation and analysis of the data generated for the study. Descriptive statistics: Frequencies, percentages, and Inferential statistics: Chi-square. These statistical tools were used because they were suitable means of breaking down and analyzing the generated data.

Results

Table 1, shows the areas of the respondents in Ife East Local Government Area Ile Ife, Osun State. Majority of the area where questionnaire were administered are Safejo 38 (19.0%), Ita Osa 28 (14.0%), Bisileko 22 (11.0%), Temitope 18 (9.0%) and Aderemi 16 (%).

Majority of aged 54-62 years (40.5%) had participated in this study. Majority of the married that participated were 59.5% (119/200), 48.5% (97/200) were traders, 45.5% (91/200) had secondary school education and 68.5% (137/200) were Yoruba. (Table 2).

Knowledge of TB was prevalent among aged group 54-62years (17.5%), followed by aged 45-53years and the least was recorded among aged 63-71years (2.0%). In marital status, married had the highest prevalence of 29.5%, followed by 9.0% among separated and the least 0.5% was recorded among single mother. Among religion, Christianity has the highest prevalent of 23.5% while Islam has 21.5% and the least was recorded among the traditional religion. Among occupation, Traders has the highest prevalence (19.0%) of the knowledge of TB, followed by Artisan (10.5%) and the least (0.5%) among the student. The highest (20.0%) was recorded among respondents with secondary level of education, followed by tertiary (16.5%) and the least (1.5%) was recorded among Arabic. Yoruba has the highest (34.5%) prevalence of TB and the least (3.5%) was recorded among Hausa. Among the family structure, nuclear family has the highest (31.0%) prevalence of TB, followed by 12.0% among polygamous and the least (7.0%) was recorded among extended family. (Table 3)

Table 1. Areas of the Samples collection in Ife East Local Government Area Ile Ife, Osun State.

Area of Respondents	Number Examined	Prevalence (%)
Aderemi	16	8.0
Akogun	5	2.5
Apata 2	5	2.5
Bisileko	22	11.0
Erefe	5	2.5
Ifelodun	5	2.5

Iloro	4	2.0
Ita faji	12	6.0
Ita-osa	28	14.0
Laisi-ese	12	6.0
Moremi	4	2.0
Nata	5	2.5
Nato	3	1.5
Okerewe	3	1.5
Olaoluwa	3	1.5
Olowopoku	4	2.0
Safejo	38	19.0
Sasa	3	1.5
Temitope	18	9.0
Texaco	5	2.5
Total	200	100.0

Table 2. Socio- Demographic Characteristics of Respondents used in the study in Ife East Local Government Area, Osun State

Variables of the Parents	Number Examined	Percentage (%) in the pool
Age group (Years)		
18-26	15	7.5
27-35	19	9.5
36-44	28	14.0
45-53	51	25.5
54-62	81	40.5
63-71	6	3.0
Marital Status		
Divorce	9	4.5
Married	119	59.5
Separate	34	17.0
Single	21	10.5
Single mother	4	2.0
Widow	13	6.5
Religion		
Christian	93	46.5

Muslim	81	40.5	45-53	51	24	27 (13.5)	
traditional	26	13.0			12.0)		
			54-62	81	46	35 (17.5)	
					(23.0)		
Occupation			63-71	6	2 (1.0)	4 (2.0)	
Artisan	37	18.5					
Trader	97	48.5	Marital Status				X ² =
Civil servant	31	15.5					2.866, p=
Student	1	.5	Divorce	9	6 (3.0)	3 (1.5)	0.721
Farmer	15	7.5	Married	119	60	59 (29.5)	
Driver	19	9.5			(30.0)		
			Separate	34	16 (8.0)	18 (9.0)	
Level of Education			Single	21	10 (5.0)	11 (5.5)	
Arabic	4	2.0	Single mother	4	3 (1.5)	1 (0.5)	
Primary	43	21.5	Widow	13	5 (2.5)	8 (4.0)	
Secondary	91	45.5					
Tertiary	62	31.0	Religion				X ² =
							1.704, p=
Yoruba	137	68.5	Christian	93	46	47 (23.5)	0.427
Ibo	33	16.5			(23.0)		
Hausa	10	5.0	Islam	81	38	43 (21.5)	
Others	20	10.0			(19.0)		
			traditional	26	16 (8.0)	10 (5.0)	
Family Structure							
Extended	27	13.5	Occupation				X ² =
Nuclear	124	62.0					11.095,
Polygamous	49	24.5	Artisan	37	16 (8.0)	21 (10.5)	p=0.050
Total	200	100.0	Trader	97	59	38 (19.0)	
					29.5)		
			Civil servant	31	14 (7.0)	17 (8.5)	
			Student	1	.0 (0.0)	1 (0.5)	
			Farmer	15	4 (2.0)	11 (5.5)	
			Driver	19	7 (3.5)	12 (6.0)	
Age group (Years)			Level of Education				X ² =
							3.169, p=
18-26	15	6 (3.0)	Arabic	4	1 (0.5)	3 (1.5)	0.366
27-35	19	8 (2.0)	Primary	43	19 (9.5)	24 (12.0)	
36-44	28	14 (7.0)					

Table 3: Respondents' knowledge of the prevalence of *Mycobacterium tuberculosis* in Ife East Local Government Area, Osun State

Variables of the Parents	Number Examined	No	Yes	P-value
Age group (Years)				X ² = 3.411, p= 0.637
18-26	15	6 (3.0)	9 (4.5)	
27-35	19	8 (2.0)	11 (5.5)	
36-44	28	14 (7.0)	14 (7.0)	

Secondary	91	51 (25.5)	40 (20.0)
Tertiary	62	29 (14.5)	33 (16.5)
Ethnicity			$X^2=7.074, p=0.070$
Yoruba	137	68 (34.0)	69 (34.5)
Ibo	33	22 (11.0)	11 (5.5)
Hausa	10	3 (1.5)	7 (3.5)
Others	20	7 (3.5)	13 (6.5)
Family Structure			$X^2=0.057, p=0.972$
Extended	27	13 (6.5)	14 (7.0)
Nuclear	124	62 (31.0)	62 (31.0)
Polygamou s	49	25 (12.5)	24 (12.0)
Total	200	100 (50.0)	100 (50.0)

Table 4: show Respondents' knowledge of the Causes of Mycobacterium tuberculosis in Ife East Local Government Area, Osun State. 50.0% of the respondents think a bacterium is the cause of TB, while 48.0% think a cold air is a cause of TB. Only 48.5% think the cause of TB is due to a punishment of God, 49.0% think poor hygiene is a cause of TB and 51.0% think poor hygiene is a cause of TB.

Table 5: show Respondents' knowledge of the transmission of Mycobacterium tuberculosis in Ife East Local Government Area, Osun State. 51.0% of the respondents think TB is communicable from person to person, while 52.5% think coughing (breathing) is one of the modes of TB transmission. Only 52.5% think sharing dishes, plates, cups and spoons with is a means of transmission of TB, 68.0% think living with TB patient is one of the mode of TB transmission and 59.5% think hereditary is one of the modes of TB transmission.

Table 6: show Respondents' knowledge of the sign and symptoms of Mycobacterium tuberculosis in Ife East Local Government Area, Osun State. 57.0% of the respondents think coughing ≥ 2 weeks is a sing and symptom of TB disease, while 53.0% think fever is a sign and symptom of TB. Only 52.5% think night sweating is a sign and symptom of TB

disease and 58.5% think weight loss s a sign and symptom of TB disease.

Table 4: Respondents' knowledge of the Causes of Mycobacterium tuberculosis in Ife East Local Government Area, Osun State.

Questions for the Respondent	No	Yes	Total
Do you think a bacterium is the cause of TB?	100 (50.0)	100 (50.0)	200 (100.0)
Do you think a cold air is a cause of TB?	104 (52.0)	96 (48.0)	200 (100.0)
Do you think the cause of TB is due to a punishment of God?	103 (51.5)	97 (48.5)	200 (100.0)
Do you think poor hygiene is a cause of TB?	102 (51.0)	98 (49.0)	200 (100.0)
Do you thinks smoking is a cause of TB?	98 (49.0)	102 (51.0)	200 (100.0)

Table 5: Respondents' knowledge of the transmission of Mycobacterium tuberculosis in Ife East Local Government Area, Osun State

Questions for the Respondent	No	Yes	Total
Do you think TB is communicable from person to person?	98 (49.0)	102 (51.0)	200 (100.0)
Is coughing (breathing) one of the modes of TB transmission?	95 (47.5)	105 (52.5)	200 (100.0)
Do you think sharing dishes, plates, cups and spoons with TB	95 (47.5)	105 (52.5)	200 (100.0)
Is living with TB patient one of the mode of TB transmission?	64 (32.0)	136 (68.0)	200 (100.0)
Is hereditary one of the modes of TB transmission?	81 (40.5)	119 (59.5)	200 (100.0)

Table 6: Respondents' knowledge of the sign and symptoms of Mycobacterium tuberculosis in Ife East Local Government Area, Osun State

Questions for the Respondent	No	Yes	Total
Is coughing ≥ 2 weeks a sign and symptom of TB disease?	86 (43.0)	114 (57.0)	200 (100.0)
Is fever a sign and symptom of TB disease?	94 (47.0)	106 (53.0)	200 (100.0)
25. Is night sweating a sign and symptom of TB disease?	95 (47.5)	105 (52.5)	200 (100.0)
Is weight loss a sign and symptom of TB disease?	83 (41.5)	117 (58.5)	200 (100.0)

Table 7: show Respondents' knowledge of the prevention of Mycobacterium tuberculosis in Ife East Local Government Area, Osun State. 52.5% think TB is a preventable disease, while 50.5% believe that covering mouth while coughing is a method of TB prevention, 56.0% think avoiding sharing of cups with TB patients is a method of TB prevention. Only 52.0% think ventilating living rooms and opening car's window is a method of TB prevention, 46.0% think isolation of TB patient is a method of TB prevention and 49.0% is believe that vaccination of children is a method of TB prevention.

Table 8: show Respondents' knowledge of the treatment of Mycobacterium tuberculosis in Ife East Local Government Area, Osun State. 51.0% think TB is a curable disease, while 50.5% believe that there is a specific drug therapy to cure TB, 47.5% think praying and fasting is a method to cure TB. Only 49.5% think Traditional medicines is a method to cure TB, 10.0% know the amount of cost for TB treatment and 49.0% think that isolation of TB patient is a method of TB prevention and 49.0% is believe that inadequate diet favour TB disease.

Table 7: Respondents' knowledge of the prevention of Mycobacterium tuberculosis in Ife East Local Government Area, Osun State

Questions for the Respondent	No	Yes	Total
Is TB preventable disease?	95 (47.5)	105 (52.5)	200 (100.0)
Is covering mouth while coughing a method of TB prevention?	99 (49.5)	101 (50.5)	200 (100.0)
Is avoiding sharing of cups with TB patients a method of TB prevention?	88 (44.0)	112 (56.0)	200 (100.0)
Is ventilation living rooms and opening car's window a method of TB prevention?	96 (48.0)	104 (52.0)	200 (100.0)
Is isolation of TB patient a method of TB prevention?	108 (54.0)	92 (46.0)	200 (100.0)
Is vaccination of children a method of TB prevention?	102 (51.0)	98 (49.0)	200 (100.0)

Table 8: Respondents' knowledge of the treatment of Mycobacterium tuberculosis in Ife East Local Government Area, Osun State

Questions for the Respondent	No	Yes	Total
Is TB curable?	98 (49.0)	102 (51.0)	200 (100.0)
Is there specific drug therapy to cure TB?	99 (49.5)	101 (50.5)	200 (100.0)
Is praying and fasting a method to cure TB?	105 (52.5)	95 (47.5)	200 (100.0)
Are Traditional medicines a method to cure TB?	101 (50.5)	99 (49.5)	200 (100.0)
Do you know the amount of cost for TB treatment?	180 (90.0)	20 (10.0)	200 (100.0)
Is inadequate diet favoring TB disease?	102 (51.0)	98 (49.0)	200 (100.0)

Discussion

The study of 200 respondents in Ife East LGA reveals a mixed level of TB literacy, characterized by the simultaneous existence of basic scientific knowledge and pervasive cultural or traditional misconceptions. The study's sampling was concentrated in specific areas and the demographic profile was heavily skewed toward older, married, Yoruba, traders, with a secondary school education. The finding that the highest prevalence of TB knowledge is concentrated among these demographic majority groups suggests that knowledge dissemination may be socially and economically stratified. This concentration indicates that public health campaigns must consciously target minority groups (e.g., other ethnic groups, younger people, those with less formal or only Arabic education, and other family structures) to ensure equitable health literacy.

While 50.0% correctly identified a bacterium (*Mycobacterium tuberculosis*) as the cause of TB a foundational piece of scientific knowledge the persistence of misconceptions among nearly half of the respondents is alarming. Beliefs that TB is caused by cold air, poor hygiene (confusing a risk factor with the cause), or a punishment of God reflect a significant interference from folk beliefs and lack of clear etiological understanding. The "punishment of God" belief is a common barrier to treatment adherence in many African contexts, as it frames the disease as a spiritual problem requiring non-medical intervention.

A high percentage of respondents believed in hereditary transmission and transmission via sharing dishes/cups. While the highest recognition was for the correct risk factor of living with a TB patient, these misconceptions are dangerous. They lead to:

- **Stigma and Isolation:** Attributing TB to heredity or divine punishment increases the stigma associated with the disease.
- **Misplaced Prevention Efforts:** Focusing on avoiding shared utensils (56.0% citing it as a prevention method) distracts from crucial airborne control measures like proper isolation and masking.

Respondents showed better performance on the practical, observable aspects of the disease:

Over half correctly recognized key symptoms like weight loss (58.5%) and coughing ≥ 2 weeks (57.0%). This recognition is vital for early case detection. 51.0% knew TB is curable, and 50.5% were aware of specific drug therapy. However, the efficacy of this knowledge is undermined by:

- **Reliance on Non-Medical Methods:** Nearly half relying on praying and fasting (47.5%) or traditional medicines (49.5%) for cure suggests a high risk of treatment interruption or substitution, which is the primary driver of drug resistance (MDR-TB).
- **Low Awareness of Financial Access:** Only 10.0% knew the cost of TB treatment. This knowledge gap, especially among the dominant trading population, is concerning. Since TB diagnosis and treatment are often provided free of charge by national TB control

programs (NTCPs) in Nigeria, this low awareness indicates a failure in communicating program benefits and may lead people to avoid screening due to perceived cost.

- **Lower Prevention Literacy:** Knowledge of crucial control measures like isolation of TB patient (46.0%) and vaccination of children (49.0%) (referring to the BCG vaccine) was slightly lower than other measures.

Conclusion

The study's findings collectively paint a picture of inconsistent TB literacy in Ife East LGA. While half of the community possesses the necessary fundamental knowledge (bacterial cause, curability, key symptoms), the remaining half harbors powerful misconceptions rooted in culture, tradition, and insufficient health communication regarding etiology, transmission, and the critical need for exclusive adherence to standard drug regimens.

Targeted, culturally sensitive interventions are urgently required to:

1. **Dispel Myths:** Directly address beliefs in "punishment of God," "hereditary transmission," and non-medical cures.
2. **Reinforce Scientific Facts:** Stress the importance of airborne transmission and the free, curative nature of the NTCP drug regimen.
3. **Target Vulnerable Groups:** Focus campaigns on the less-knowledgeable demographics identified in the study.

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