A Cross-Sectional Study of Tuberculosis in General Hospital Nasarawa, Nasarawa State, Nigeria

Osu, Musa Udeh

1. Osu   osuosumusa@gmail.com 08058514598 / 08133324630

**Department of Epidemiology and Disease Control,
School of Public Health Sciences,
Nasarawa State College of Health Science and Technology, Keffi, Nigeria**

Corresponding author: Osu MU. :Received: 08/3/2023 | Accepted: 13/3/.2023 | Published:X/3/2023

Abstract

Tuberculosis is a chronic disease that affects man and other mammals, birds, fish, and reptiles. Mammalian tuberculosis is caused by four very closely related species such as Mycobactarium tuberculosis (the human tubercle bacillus); Mycobactarium bovis (the bovine tubercle bacillus); Mycobactarium microti (the vole tubercle bacillus); and Mycobactarium africanum (rodent tubercle bacillus). These together formed the parasite "Mycobacterium" to humans and animals that is affecting the entire human and animal population in the society. It is against this background that this a cross-sectional study of tuberculosis in general hospital Nasarawa, Nasarawa State, Nigeria was conducted to: determine the sex that is likely to have the highest tuberculosis cases; find out the causes and risk factors that result in the tuberculosis infection; determine the age range at which the tuberculosis cases are more vulnerable; and determine the best ways at which the tuberculosis cases can be prevented. Structured questionnaires were used. A total of thirty (30) questionnaires were administered, and each questionnaire contains about eleven (11) items for about thirty (30) respondents under the study. All the questionnaires were answered and retrieved accordingly. The study revealed that majority of respondents 21(70%) are males in the sex distribution; 10(33.33%) respondents were mostly farmers in the distribution of occupation; 27(90%) respondents experienced fever and cough as their clinical signs and symptoms; and 18(60%) respondents said they mostly using nose masks to prevent spread of tuberculosis. There is need for government to provide free medication for tuberculosis patients, there is needs to improve health care facilities, there is needs for private hospitals to ensure proper biomedical waste management and disposal, and there is needs for creation of Epidemiological Units in all Health Care Centres in order to ensure regular monitoring and reporting of tuberculosis cases and other infectious diseases to the appropriate health authorities in order to prevent epidemic in the society.

Keywords: Cross-sectional study, Diseases, General hospital, Tuberculosis, Transmission, Nasarawa.

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INTRODUCTION

Tuberculosis is a chronic disease that affects man and other mammals, birds, fish and reptiles. Mammalian tuberculosis is caused by four very closely related species such as *Mycobacterium tuberculosis* (the human tubercle bacillus), *M. bovis* (bovine tubercle bacillus), *M. microti* (the vole tubercle bacillus) and *M. africanum* (rodent tubercle bacillus). These together formed mycobacterium tuberculosis complex that causes infections and transmissible TB disease to human and other animals. Another mycobacterial species called none tuberculosis mycobacterium (NTM) are increasingly encountered as a major cause of disease in humans.

These bacteria are also known as tubercle bacilli because they produce characteristic lesions called tubercles (WHO, 2013). The roles of its (Mycobacterium tuberculosis) complex, contribute to its virulence which is contained in the Mycobacterium cell wall. The cell wall's main constituents are Mycolylarabinogalactan, Lipo-arabinomannan, and Mycolic acids. Their three-dimensional distribution and the exact molecular mechanisms of the most effective anti-tuberculosis drugs that target the cell wall are not yet fully understood (Alsteens *et al*, 2007).

According to world health organization global report 2014, that one third of the world's population is infected with the bacilli that causes tuberculosis and the report collected for 2013, shows that there were an estimated 9.0 million new cases of tuberculosis (TB) globally, with most cases occurring in resource-limited or resource-poor countries in Asia (55%) and Africa (28.9%). Eighty percent of all cases worldwide occurred in the 22 high-burden countries with an estimated 1.5 million deaths occurring among all cases in 2013 and approximately 4105 deaths every day one of the most important factors influencing the current TB epidemic in resource-limited settings is poverty, which is closely related to malnutrition, crowded living conditions, lack of access to free or affordable health care services, and dependence on traditional healers that can facilitate the transmission of tuberculosis (WHO, 2014). The co-infections between TB and HIV have caused active disease of both infection and greatly increase their morbidity and mortality rate (WHO, 2014).

Pulmonary tuberculosis (PTB) cases accounted for 84% of the total TB caseload and extra pulmonary tuberculosis (EPTB) for 16% treatment outcomes have improved with new smear positive cure rate of 58% and treatment success rates of 71% in 2005 compared to rate of 51% and 66% respectively in 2004. The poor documentation of cure (high completion rates), defaulter rate over 10% and large numbers of unevaluated cases are indicative of poor systems at health facilities, and contribute to the failure to reach program targets. It is against this background that the cross-sectional study of tuberculosis in general hospital Nasarawa, Nasarawa State, Nigeria was conducted.

Aim of the Study

A cross-sectional study of tuberculosis in general hospital Nasarawa, Nasarawa State, Nigeria is the sole aim of this study.

Objectives of Study

The study has the following objectives
1.   Determine the sex that are likely to have the highest tuberculosis cases;
2.   Find out the causes and risk factors that result in the tuberculosis infection;
3.   Determine the age range at which the tuberculosis cases are more vulnerable;
4.   Determine the best ways at which tuberculosis cases can be prevented.

Research Questions

1.   What are the sex that are likely to have highest tuberculosis cases?
2.   What are the causes and risk factors that result in the tuberculosis infection?
3.   What is the age range at which the tuberculosis cases are more vulnerable?
4.   What is the best ways at which tuberculosis cases can be prevented?

METHODOLOGY

Study Design

The study was a cross-sectional design that was conducted in order to determine the tuberculosis cases in general hospital Nasarawa, Nasarawa State, Nigeria.

Study Setting

Nasarawa is a Local Government Area in Nasarawa State, Nigeria. Its headquarters are in the town of Nasarawa, located at 8°32'N 7°42'E, with a population of 30,949 (as of 2016 population projection). The local government area has an area of 5,704 km^2 and a population of 189,835 at the 2006 census. The postal code of the area is 962.

Sample Size and Sample Techniques

The sample size of this study was 30 people in the area and 30 questionnaires were structured, processed and shared to them. All the questionnaires were retrieved accordingly.

Instrument Design

The instrument used was structured questionnaire. This comprises of two sections. Section A is about the background information of the respondents; while section B concerns with the research questions on a cross-sectional study of tuberculosis in general hospital Nasarawa, Nasarawa State, Nigeria. Each copy of the questionnaire contains eleven questions all together, while research questions were four in number. Physical observation and oral interview were also integrated.

Method of Validating Instrument

The instrument was carefully designed by the researcher to obtain information about tuberculosis patients in general hospital, Nasarawa, Nasarawa State, Nigeria. After which the questionnaires were validated by the supervisor and also went through the research work to make necessary corrections. Two other experts in the same profession also helped in validating the research.

Method of Data Collection

The researcher used 30 structured questionnaires, distributed them to 30 respondents and all were retrieved at same time. Physical observation and oral interview were also used at the course of the research, most especially for those who cannot read and write. Personal and physical observation and oral interview were used to collect firsthand information regarding tuberculosis cases, treatment and prevention.

Ethical Issues

Research ethical clearance and approval were obtained from the medical superintendent (MS) of general hospital Nasarawa, Nasarawa State, Nigeria to enable the researcher to have accessed to the facility.

Method of Data Analysis

The data collected were analyzed using Microsoft excel. The data were processed and presented in simple bar charts, pie charts, and figures. Also the summary of descriptive statistics was made in the study.

Limitation of the Study

In the course of the research work, the researcher's time was so limited for thorough investigation. Secondly, there was financial constrain that affects the researcher to over comes the challenges in the area of his study.

RESULTS

Figure 4.1 the result showcased that 9(30%) respondents were females and 21(70%) respondents were males. Hence, 21(70%) respondents were mostly males in the sex distribution. Fig 4.2 result shows that 22(73.3%) respondents were between the age of 15-24 years, 6(20.0%) respondents were between the age of 25-44 years, 1(3.3%) respondents were between the age of 45-54 years, and 1(3.3%) respondents were between the age of 65 and above. Hence, 22(73.3%) respondents were mostly between the ages range of 15-24 years in the distribution of age. Fig 4.3 result shows that 13(43.33%) respondents were Muslim, and 17(56.67%) respondents were Christianity. Hence, 17(56.67%) respondents were mostly Christianity in the distribution of religion. Fig 4.4 result shows that 10(33.33%) respondents were famers, 7(23.33%) respondents were civil servants, 7(23.33%) respondents were traders, and 6(20.0%) respondents were tailors. Hence, 10(33.33%) respondents were mostly farmers in the distribution of occupation.

Figure 4.5 result shows that 2(6.67%) respondents experienced cough and general malaise, 27(90%) respondents experienced fever and cough, and 1(3.33%) respondents experienced cough and emaciation. Hence, 27(90%) respondents mostly experienced fever and cough as their clinical signs and symptoms. Fig 4.6 result shows that 29(96.67%) respondents were taken to the hospital as in-patients, and 1(3.33%) of respondents were by a public health provider in your home. Hence, 29(96.67%) respondents were mostly taken to the hospital as in-patients. Fig 4.7 result shows that 3(10%) respondents were not hospitalized at all, 7(23.33%) respondents were less than one month, 14(46.67%) respondents were 1-3 months, 4(13.33%) respondents were 4-6 months, and 2(6.67%) respondents were longer than six months. Hence, majority 14(46.67%) of respondents stayed in the hospital for 1-3 months.

Figure 4.9 result shows that 3(10%) respondents have gotten support from other TB patients, 5(16.67%) respondents have gotten cash incentives to help them continue their treatments by NGOs, 1(3.33%) respondents have being involved in making decision about TB care, 15(50%) respondents have been counseling to help them cope with the fear and emotional strain of having TB, 2(6.67%) respondents have gotten support from the family to get better, 3(10%) respondents have their own motivation to get better, and 1(3.33%) respondents have being treated with respect by their health care providers. Hence, majority 15(50%) of respondents have been counseling to help them cope with the fear and emotional strain of having TB.

Fig 4.1.10 result shows that 7(23.3%) of respondents said through self-isolation, 18(60%) respondents said they are using nose mask, 4(13.33%) respondents said they discharge sputum into containers, 1(3.33%) respondents said they don't have idea. Hence, majority 18(60%) of respondents said they are using nose mask.
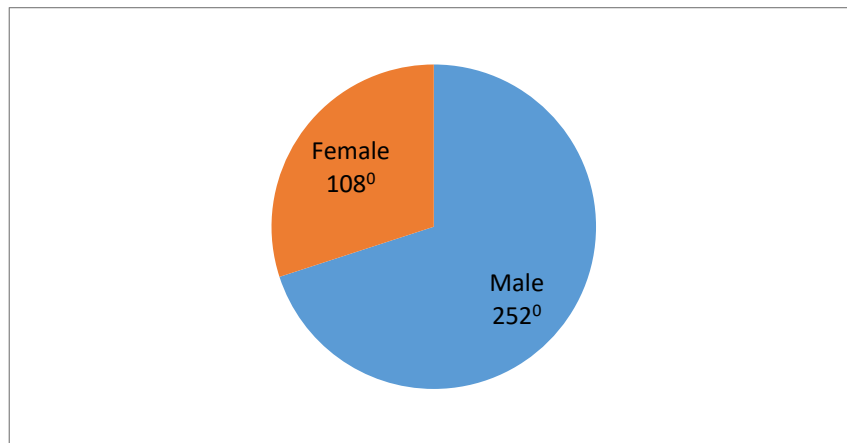
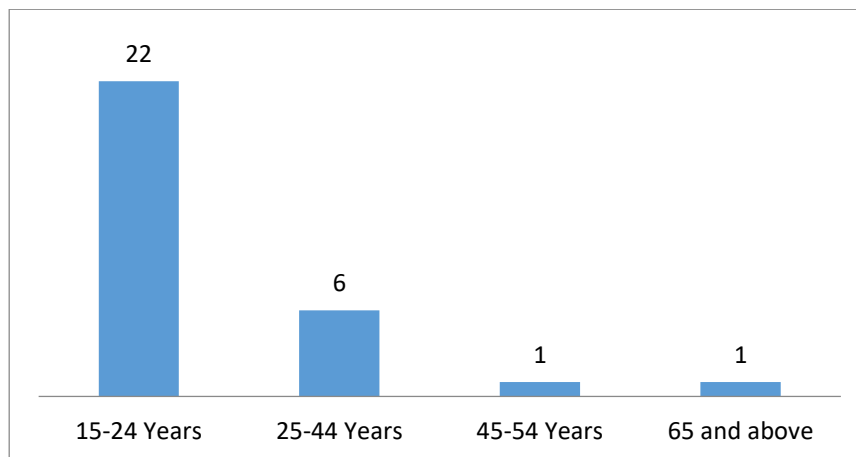**Fig. 4.1 Sex Distribution of Respondents**
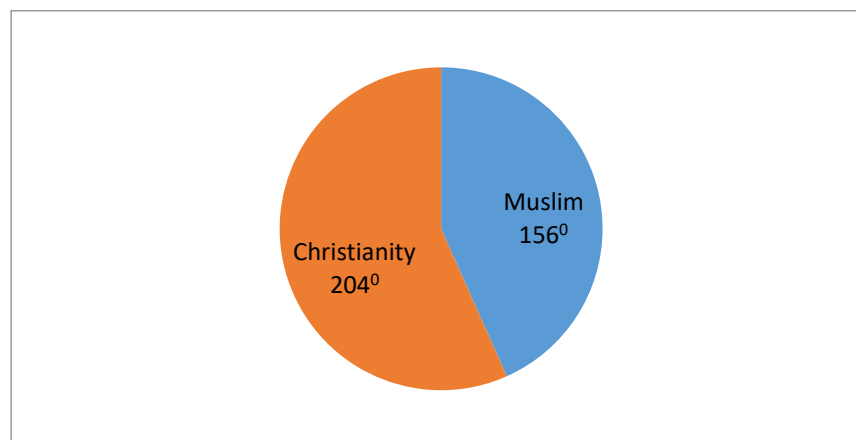

Fig. 4.2 Age Distribution of Respondents

Fig. 4.3 Religious Distribution of Respondents
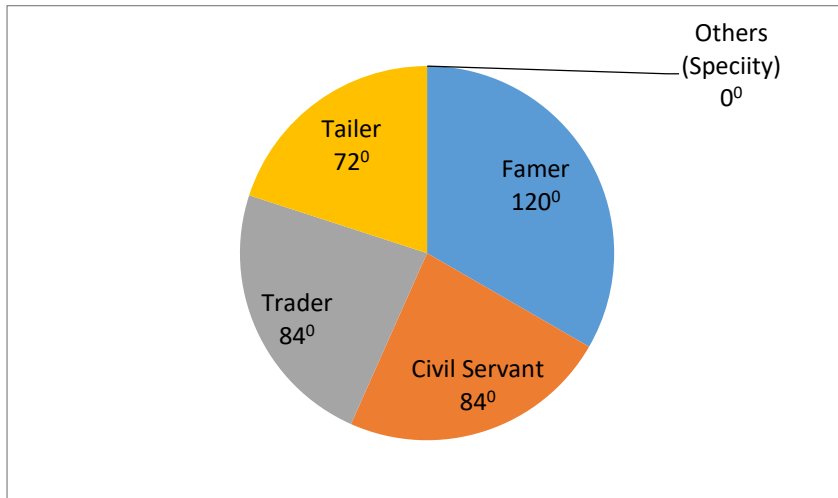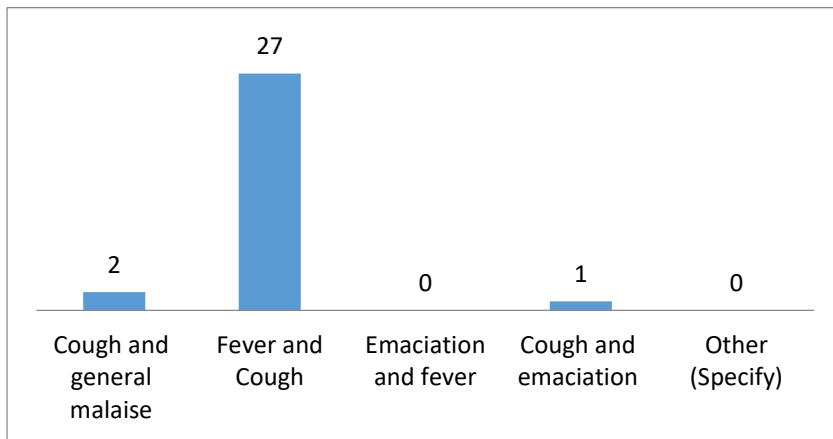
Fig. 4.4 Occupational Distribution of Respondents

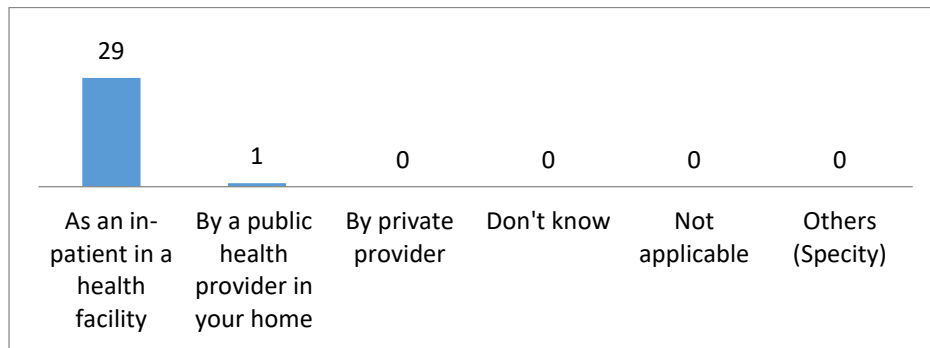**Fig. 4.5 Respondents' Signs and Symptoms of Tuberculosis**

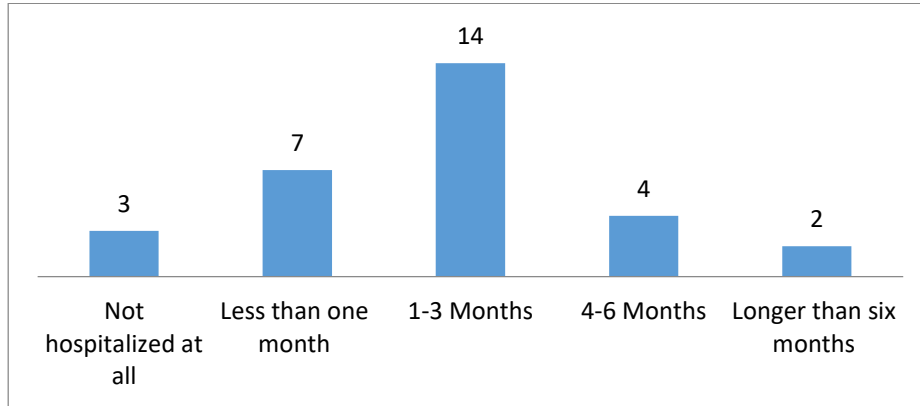**Fig. 4.6 Respondents' Beginning of Treatment Delivered to the Tuberculosis Patients**

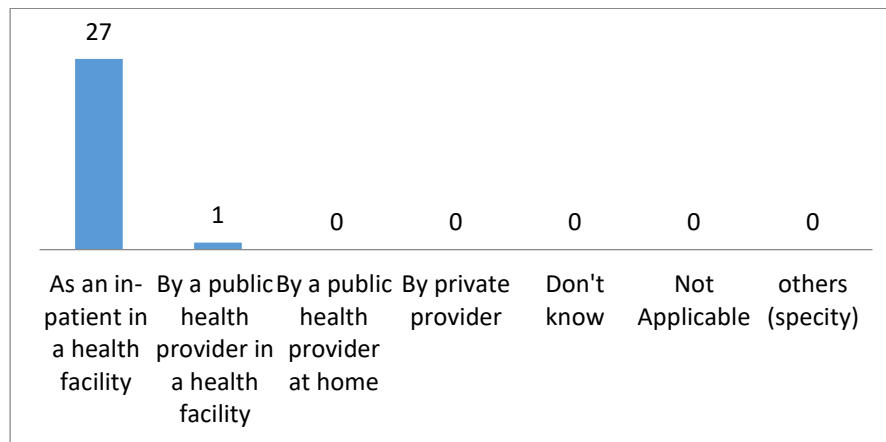**Fig. 4.7 Respondents' Duration of Tuberculosis Hospitalization**

Fig. 4.8 Respondents' Continuation Phase of Treatment of Tuberculosis Delivered
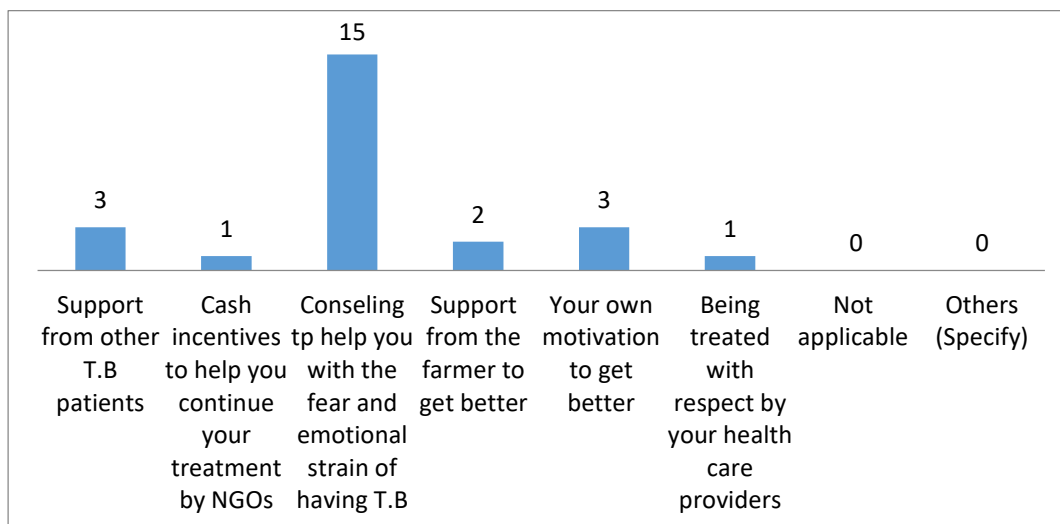

Fig. 4.9 Respondents' Most Helpful Factor during the Treatment of Tuberculosis
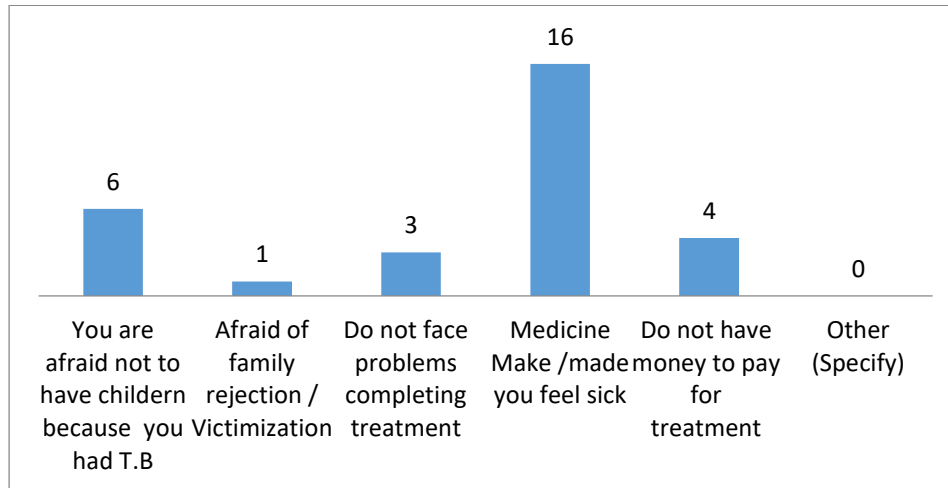
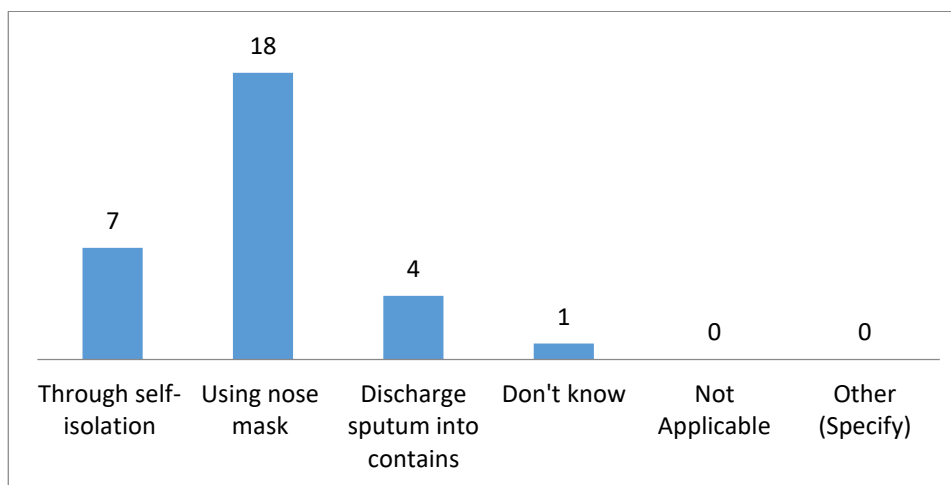**Fig. 4.10 Respondents' Top Factor that makes them Difficult to complete their Tuberculosis Treatment**

Fig. 4.11 Respondents' Way of Preventing Spread of Tuberculosis

DISCUSSION AND CONCLUSION

Discussion

Tuberculosis is a chronic disease that affects man and other mammals, birds, fish and reptiles. Mammalian tuberculosis is caused by four very closely related species such as *Mycobacterium tuberculosis* (the human tubercle bacillus), *M. bovis* (bovine tubercle bacillus), *M. microti* (the vole tubercle bacillus) and *M. africanum* (rodent tubercle bacillus). These together formed mycobacterium tuberculosis complex that causes infections and transmissible TB disease to human and other animals. Another mycobacterial species called None tuberculosis mycobacterium (NTM) are increasingly encountered as a

major cause of disease in humans. These bacteria are also known as tubercle bacilli because they produce characteristic lesions called tubercles. This present study reviews that most TB patients were males with 70% due to their smoking habits which exposed them to the disease; the patients age were mostly ranged about 73.3% which falls between the age of 15-24 because they are the youths who normally go out for labour markets and smoking cigarette. The study also reviews that 56.67% were mostly Christians due to the religion's gathering and having direct contact in churches that may exposed them to this disease; 33.33% farmers were victims of Tuberculosis because most farmers inhale dust during farming activities and some them are smokers which exposed them to TB infection; 90% of TB patients

experienced fever and cough as their signs and symptoms; 96.67% of TB victims were brought to the General Hospital as in-patients; 46.67% of TB patients were hospitalized for about 1-3 months; 90% TB victims were delivered as in-patients in the facility for their continuation phase treatments because they ignore what their doctors told them to do; 50% TB victims were have guidance and counsellors to help them reduced their fear and emotional strain of having tuberculosis as the major factor that were mostly used in the treatment of TB; 53.33% of TB patients said that medicine make them feeling sick and is one the top factors that they find it difficult to complete their treatments; and 60% of TB victims said that they use nose masks in preventing spread of TB in their various households and homes.

Conclusion

In conclusion, Tuberculosis is contagious and can be spreads to others by airborne droplets during sneezing, coughing, and contact with sputum, so one can get the disease by close contact with infected persons; and outbreaks occur in crowded conditions. The incubation period may vary from about two to twelve weeks (2 – 12 wk). The persons may remain contagious for a long time (as long as viable TB bacteria are present in sputum) and can remain contagious until they have been on appropriate therapy for several weeks. However, some people may be infected but suppress the infection and develop symptoms years later; and some never develop symptoms or become contagious especially asymptomatic patients.

RECOMMENDATION

In view of the above, the researcher is hereby recommended as follows:
1.   There is needs for the epidemiologists to ensure regular monitoring and reporting on the status of the TB epidemic and progress in financing and implementation of the response at global, regional and country levels.
2.   Government should ensure the provision and improvement of public health facilities in all health care centres been its primary, secondary, and tertiary.
3.   There is for provision of environmental health departments in all public and private hospitals to ensure proper biomedical waste management, disposal and prevention of its implications in the society.
4.   There is needs to shape the TB research and innovation agenda and stimulating the generation, translation and dissemination of knowledge.

5.   There is needs to set norms and standards on TB prevention, care, promote and facilitate their implementation.
6.   There is needs to develop and promote ethical and evidence-based policy options for TB prevention and cure.

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