



Full Length Research Paper

Treatment outcome of pulmonary tuberculosis patients in a tertiary hospital in Bauchi Northeastern Nigeria

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Abstract

Pulmonary Tuberculosis (PTB) remains a major public health concern in both developing and developed countries, but the impact is much felt in sub-Saharan Africa and Asia, with high predisposing risk factor of co-morbidities of poverty, and high incidence of HIV. Information on the demographics and outcome is necessary for the control of the disease. The demographic characteristics and the treatment outcome of PTB have not been reported in Abubakar Tafawa Balewa Teaching Hospital (ATBUTH) Bauchi. Therefore, this study was aimed to describe the socio-demographic characteristics and determine the treatment outcome of the patients attending the Directly Observed Treatment Short course (DOTS) clinic at the institution. Demographic and outcome variables were extracted from the medical records and patient treatment by using a standard structured questionnaire and the results were expressed in percentages and frequencies. A total of two hundred and fifty nine (259) PTB patients records were extracted and entered into the study data base. Their Gender distribution was 146(56%) males and 113(44%) females age range of 15-70 years. Majority of the patients were civil servants with some level of education and earned less than thirty thousand (₦30,000) Naira, approximately sixty five dollars (\$65) monthly. Most of them lived less than 5 Kilometres from the clinic. Eighty percent (80%) of patients were successfully treated while in 20% were not successfully treated. This study showed that pulmonary tuberculosis affects mostly the most productive age group of the population with some level of education and low income. The success rate of treatment falls short of the recommended success rate suggested by WHO. There is need for further studies to identify the factors responsible for failure to achieve the WHO recommendation as well as factors responsible for unsuccessful treatment.

Keywords: Treatment outcome, Pulmonary tuberculosis, Northeastern Nigeria

INTRODUCTION

Tuberculosis (TB) continues to constitute a major public health problem in both developing countries and developed nations. It is one of the leading causes of deaths worldwide accounting for 2.5% of the global burden of disease and 25% of all avoidable deaths in developing countries (Woldeyohannes et al., 2011). Consequential effect of TB burden is concentrated in Asia and sub-Saharan Africa (which make up 58 % and 28 % of all cases respectively (World Health Organization,

Global tuberculosis report, 2015). According to WHO report (2012) as at 2012, Nigeria accounted for approximately 162,471 new TB cases in Africa which ranked her 6th in Africa (World Health Organization, 2012).

Tuberculosis is almost always curable if patients with drug susceptible organisms are given sufficient uninterrupted therapy. If untreated, 50%–80% of patients with smear positive TB die and in a poorly implemented

TB programme, as many as 30% of patients with smear positive TB die (Mugusi et al., 2009). Effective TB treatment has been shown to have a significant effect on the control of the disease, and completion of treatment of active cases has been found to be the most important priority of TB controls programs (Belay et al., 2016). The World Health Organization (WHO) TB control initiative of directly observed treatment short course (DOTS) strategy has effectively control TB pandemic based on report of documented studies (World Health Organization, 1994). Despite, the success recorded with the control strategy, difficulty is still being encountered in some African as the TB incidence continued to increase. Reasons for this scenario have been attributed to some many factors (Grange and Festenstein, 1993), (Hernández et al., 2010).

Treatment outcomes are classified as successful (cure/completed) or unsuccessful (lost to follow-up/failure/death) (World Health Organization, 1994). Successful treatment of TB involves taking anti tuberculosis drugs for at least six months. Poor adherences to treatment means patient remain infectious for longer time, are more likely to relapse or succumb to tuberculosis and could result in treatment failure as well as foster emergence of drug resistant tuberculosis (Erhabor et al., 2000).

Lost to follow-up is one of the major human dimensions that hinder tuberculosis control. It allows the infected individual to spread the disease to the community thereby giving the organism the opportunity to thrive. For new smear-positive pulmonary TB patients, the WHO set targets are 85% cure rate, 5% treatment completed, 1-2% treatment failure, 2-3% deaths, 5% lost to follow-up, and 5% transfer out (World Health Organization, 1996)

Several studies have reported varied overall treatment default and unsuccessful outcome, in Brazil, overall treatment default ratio of 20.9% and the unsuccessful outcome rate of 24.1%. (Belo et al., 2011) in South Ethiopia, overall defaulting treatment rate of 11.4% (Tessema et al., 2009), in Northern Ethiopia unsuccessful treatment outcome, of 18.3% which accounted for 10.1% mortality and treatment failure of 0.2%y (Biru and Lindtjörn 2007). In Nigeria, TB treatment success rate increased from 79% in 2002 to 85% in 2003, however, the default rate remained as high as 11% and death rate of 6.7% (Global Tuberculosis Programme, 2005). Studies from North-central and Southwestern region of Nigeria showed 44.2 % and 27% default rate respectively (Salami and Oluboyo, 2003), (Erhabor et al., 2003).

The study site is one of the major referral centres for TB DOTS programmes, therefore, the retrospective tends to evaluate the TB DOTS treatment success rate in the northeastern Nigeria, and compared with the rate

reported within and outside Nigeria. The retrospective study extracted the demographic variables of PTB patient on DOTS attending ATBUTH, Bauchi, and analyzed the success rate.

METHODOLOGY

Study design

The retrospective study was conducted on TB patients attending Directly Observed Treatment Short Course (DOTS) clinic of the Abubakar Tafawa Balewa University Teaching Hospital between July 2013 to July 2015.

The hospital is a 750- bed tertiary health care facility that provides specialist services and served as a major referral centre in Northeast region of Nigeria and other neighboring states. The TB DOTs Clinic is supported by the National Tuberculosis and Leprosy Control Programme (NTLCP) Bauchi State Coordinating unit. Treatment Procedures, Laboratory Diagnosis and the Drug Regimens are provided according to the national Policy on TB and Leprosy Programme (Federal Ministry of Health, Nigeria, 2008).

Definitions

According to WHO (The Stop TB Strategy, 2006), treatment outcomes are categorized into successful outcome, if TB patients were cured (negative smear microscopy at the end of treatment and on at least one previous follow-up test) or completed treatment with resolution of symptoms; and unsuccessful outcome if the treatment resulted in failure (remaining smear-positive after 5 months of treatment), defaulted (patients who interrupted their treatment for two consecutive months or more after registration), or died.

Data collection

Data were extracted from the medical records and patient treatment cards by using a standard structured questionnaire. Information retrieved from the records includes socio-demographic profile of the patients, date of TB diagnosis and treatment outcome and the end of 6 month treatment those there were transferred out were excluded from the study because the treatment outcome is not known. In addition to standard outcome definitions, we classified the final treatment outcome as, successful (cured or treatment completed) or unsuccessful (death, loss to follow-up, or failure). The administration of the questionnaires was done by the TB DOTs health officers who were certified by the investigator.

Table 1. Socio-demographic Characteristics of tuberculosis patients on DOTS (n = 159)

Variables	Number (%)	
Age (Years)	15-24	50(19)
	25-34	69(27)
	35-44	62(24)
	45-54	41(16)
	55-64	19(8)
	>64	18(7)
Gender	Male	146(56)
	Female	113(44)
Marital Status	Single	93(35.9)
	Married	158(61.0)
	Divorced	5(1.9)
	Widowed	3(1.2)
Education Level	Non-Formal	6(2)
	Primary	44(17)
	Secondary	92(36)
	Tertiary	117(45)
Occupation	Farming	11(4)
	Civil Servant	94(36)
	Housewife	62(24)
	Trader	9(4)
	Student	59(23)
	Business	24(9)
	Estimated Monthly Income (Naira)	<30,000
	30-50,000	54(21)
	50,000-100,000	6(2)
	>100,000	3(1)
Distance from the DOT clinic (Km)	<1	40(15)
	1-4	178(69)
	5-9	13(5)
	>10	28(11)

Data analysis

Socio-demographic variables and treatment outcome data were entered into the study database, and analyzed using SPSS version 17.0, the values expressed in frequencies and percentages.

Ethical consideration

The study protocol was approved by the Research and Ethics Committee of the ATBUTH Bauchi. In order to protect the confidentiality of the information, names and hospital numbers of the patients were not included in data extraction questionnaire.

RESULTS

Data of two hundred and fifty nine (259) TB patients on DOTS were extracted and analyzed. The socio-demographic variables of the patient as presented on table 1, Gender distribution, 146(56%) were males and 113(44%) females giving M;F ratio of and aged range of 15-70 years while . Majority of the patients were within the age group of 25-34 years. Only 7% of the patients were above the age of 64 years. Marital status showed that Sixty one percent were married. On educational background, 90% had one form of educational knowledge, but (45%) had tertiary education. Occupations, showed that majority of the patients were civil servants, (36%), housewives (24%) or students

Table 2. Treatment Outcomes of tuberculosis patients: (n = 259)

Treatment outcome	Number (%)
Successful	208(80)
Unsuccessful	51(20)
Total	259(100%)

Table3. Reasons for unsuccessful Treatment outcome in tuberculosis patients: n = 51

Reason	Number (%)
Lost to Follow-up	41(80)
Treatment failure	2(4)
Died	8(16)
Total	51 (100%)

(23%). The income of the patient showed 76%) earned less than thirty thousand (₦30,000) Naira approximately sixty five dollars (\$65) as estimated monthly income with only 9 (3%) of them earning ₦50, 000 or more per month. Considering the distance of the TB DOTS centre to the patients sampled, Majority of the patients 178(69%) lived less than 5 Km from the clinic. Only 11% live at a distance of more than 10 Kilometers.

Based on the WHO success treatment definition (table2), 80 (80%) of patients were successfully treated while in 20% showed unsuccessful treatment outcome. Of the 259 patients, 51(16.6%) had unsuccessful treatment outcome, 41(80%) were lost to follow up, 2(4%) treatment failure and 4(16%) died. (table3)

DISCUSSION

This study showed that pulmonary tuberculosis affects mostly the most productive age group of the population unlike in developed countries where TB affects mostly the elderly (P D O Devies, 1999) which is similar with other the findings of other studies (Jibrin et al., 2013), (Erhabor et al., 2003), (Kochi 1999). These are active, skillful, experience and mobile individual that drive the economy of the developing nation (Armstrong 1995). Therefore the economic development of the community would be affected and the spread of the infection into the population would be accelerated. The result also indicated that males are affected more than female and as males are mostly the income earners in this community, this further affects the family income. This leads to a vicious cycle as the disease affects mostly those with poor living condition and low socioeconomic

status as supported by the findings of (Fatiregun et al., 2009) and (Salami and Oluboyo, 2003) from southwestern and North-central part of Nigeria respectively. This stresses the urgent need for the control and treatment of Tuberculosis to break this circle. Majority of the patients were married. The practice of polygamy in this community is very common and people leave in overcrowded setting with large number of children and the elderly who are vulnerable to infection by Tuberculosis. The implication is that once a member of the family is infected, the chance of spreading the disease to other members of the family is high (Belo et al., 2011).

Majority of the patients had some level of education with many of them attaining a tertiary education. The proportion of this educated group is higher than reported from Ibadan, Nigeria²⁶

The likely biased as most of the patients are civil servants who were registered with national health insurance scheme, which makes it more convenient to seek for medical care in this centre. Despite the fact that majority of the patients have some level of education and are civil servants, the monthly income of most of them is less than 30,000 Naira. This further showed that low income is a major risk factor in the development of pulmonary Tuberculosis in our community which is consistent with reports from Ibadan (Akinola et al., 2004) and Ife (Erhabor et al., 2003).

Most of the patients in our study lived less than 5 Km from the clinic thus making it easier for them collect their drugs without much cost on transportation and time spending. This will have positive effect on the compliance and reduce the chances of lost to follow-up. A similar finding was documented by (Jibrin et al., 2013). In some

studies, the patients have to travel a distance of more than 7Km to the treatment centre and that implicate poor treatment outcome (Lisha et al., 2012), (Lake et al., 2011), (Babatunde et al., 2012).

The success rate of treatment in this study falls short of the recommended minimum 80% success suggested by the World Health Organization (WHO) (Global Tuberculosis Programme, 2005). There is need for further studies to identify the factors responsible for failure to achieve the WHO recommendation. The rate of unsuccessful treatment in our study is higher than what was reported from Hong Kong (Morsy et al., 2003), however, it is lower than what was reported from Shagamu, Southwestern Nigeria (Chan Yeung et al., 2003)

The treatment failure rate was lower than the rate found in tertiary hospital settings in southwestern Nigeria (Daniel et al., 2006), (Amaran 2011). However it is higher than the findings in a study conducted in Southeastern Nigeria (Isaac et al., 2014). Several reasons for the unsuccessful treatment were provided by some studies which include, previous exposure to anti TB treatment, poor knowledge of the duration treatment, unfriendly attitude of health care workers towards the patients, non-adherence to the drug regimen, drug resistance, mal absorption of drugs, laboratory error and not having received family support (Ibrahim et al., 2015), (Jha et al., 2010), (Gupta et al., 2011), (Fatiregun et al., 2009), (CDC. Treatment of Tuberculosis, American Thoracic Society 2003), (Maria et al., 2007). Since the study was a prospective review of records of the patients, it was not possible to evaluate the factors responsible for unsuccessful treatment. Therefore further prospective studies on factors associated with unsuccessful treatment in our environment are needed.

CONCLUSION

This study showed that pulmonary tuberculosis affects mostly the most productive age group of the population with some level of education and low income. The success rate of treatment falls short of the recommended minimum 80% success suggested by the World Health Organization and the treatment failure rate if is great concern. There is need for further studies to identify the factors responsible for failure to achieve the WHO recommendation as well as factors responsible for unsuccessful treatment.

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