

*Full Length Research Paper*

# **Socio-demographic characteristics of patients presenting pulmonary tuberculosis in a primary health centre, Zaria, Nigeria**

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Accepted 22 of June, 2010

**Tuberculosis is one of the killer diseases of great antiquity especially in developing countries and so contributes significantly to health instability and economic loss. The directly observed treatment (DOT) course is the recommended standard of care in treatment of tuberculosis worldwide and its key elements lie in making the diagnosis. The study was aimed at examining the socio-demographic characteristics of patients presenting at a primary health care centre in Zaria, North-Western Nigeria. The records of all suspected cases of tuberculosis seen at Sabon-Gari Comprehensive Health Centre Zaria, Kaduna State, Nigeria between May, 2005 - 2006 were scrutinized and reviewed. The main variables studied were age, education, occupational and educational status. A total of 694 case records were reviewed comprising of 58.4% of males and 41.6% females with a mean age of 32.78 years  $\pm$  15.10. The proportion of sputum smear positive samples was 12% with high preponderance of smear positive cases in the age group 20 - 29 years. There was statistically significant association between sex ( $\chi^2 = 52$  df = 1  $p < 0.05$ ) educational status ( $\chi^2 = 10.24$  df = 4  $p < 0.05$ ) occupational status ( $\chi^2 = 19.2$  df = 5  $p < 0.05$ ) and the very likely chance of detecting AFB in sputum. The study revealed that most of the patient presenting with tuberculosis are in the productive age with unemployment and low literacy level serving as potent risk factors for tuberculosis in the study area. There was a positive relationship between sputum positive, unemployment, education and occupational status (socio-demographic characteristics). There is the need for National tuberculosis and leprosy control programme (NTLCP) to take cognizance of socio-demographic factors in designing an efficient TB control programme in Nigeria.**

**Key words:** Tuberculosis, socio-demographic characteristics, age, occupation, educational status.

## **INTRODUCTION**

Tuberculosis (TB) is a disease of great antiquity (Morse et al., 1964) and remains a major public health problem in Nigeria. Tremendous progress has been made in combating TB over the past ten years but TB still remains a significant problem for the world and hits poor communities very hard especially in developing countries where the greatest burden is concentrated. It is estimated that 1.7 - 2.0 billion humans are infected with tuberculosis and tuberculosis was responsible for at least 30 million deaths in the 1990s. The average annual risk of TB infection varies geographically with Sub-Saharan

Africa having the highest annual risk of TB infection (ARTI) of 1.5 - 2.5%. The significance of the ARTI is that a 1% ARTI equals 50 smear-positive cases per 100,000 populations per year; most developed countries have less than 0.5%. Approximately, 8.8 million TB cases occur each year, which translated to 1,000 new cases every hour of the day. There are 52,000 deaths per weeks attributable to TB (American Thoracic Society Committee, 1971; Rattan et al., 1998; Harries and Maher, 2000).

In Nigeria, over a quarter of a million cases of active TB are reported (Dosumu, 1998) and Nigeria ranked 4th among 22 countries of the world with the highest burden of the disease, with an estimated 380,000 cases occurring annually of which 50% are smear positive (World Health Organization Global Report, 2005). The National tuberculosis and leprosy control programme

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**Table 1.** Distribution of patients by age-sex.

Age group	Male frequency	%	Female frequency	%
< 10	8	1.97	19	6.6
11 - 19	30	7.4	31	10.7
20 - 29	151	37.3	115	39.8
30 - 39	104	25.7	63	21.8
40 - 49	45	7.7	29	10.1
50 - 59	37	1.7	5	1.7
60 - 69	29	7.2	23	8.0
> 70	7	7.2	4	1.4
Total	405	58.4	289	41.6

(NTLCP) is the body responsible for the control of TB, leprosy and buruli ulcer in Nigeria and has reported that annually, there are estimated 105,000 deaths from TB in Nigeria (National Tuberculosis and Leprosy Control Programme, 2004). Nigeria adopted the DOTS strategy for TB control since 1993 with the assistance of the German bank for Reconstruction (KfW), members of the international federation of anti-leprosy associations (ILEP), The international against tuberculosis and lung disease and WHO (National Tuberculosis and Leprosy Control Programme, 2004).

The pandemic of human immune deficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) epidemic has a significant impact on the TB epidemic as evidenced by a shift to the younger age groups (15 - 35 years), who have higher HIV sero-prevalence too.

Tuberculosis is a social disease with medical aspects. The social factors include many non-medical factors such as poor quality of life, poor housing, overcrowding, under nutrition, lack of education, large families and lack of awareness of cause of illness (Park, 2005). Tuberculosis is more prevalent in males than in females. Also, in developing countries there is a sharp rise in infection rates from infancy to adolescence. However, in developed countries the disease is more common on the elderly<sup>8</sup>.

The aim of the study is to determine the socio-demographic characteristics of patients presenting with pulmonary TB (PTB) at a primary health care centre in Zaria, Kaduna State of Nigeria.

#### STUDY POPULATION AND METHODOLOGY

This study was conducted in Comprehensive Health Centre, Sabon-Gari, local government area (LGA) of Kaduna State, Nigeria between May 2005 to 2006. The centre is one of the two primary health care (PHC) centres run by the department of community medicine, Ahmadu Bello University Teaching Hospital, (ABUTH), Zaria. The centre offer 24 h PHC services to its catchment's areas including outpatient, child welfare, immunization, antenatal care, postnatal, family planning and laboratory services.

The study subjects include Nigerians aged 8 years and above residing in Zaria, Kaduna State, Nigeria since there was subject

less than 8 years as at the time of study. The inclusion criteria were patients that presented at directly observed treatment (DOT) TB control comprehensive health centre, Sabo-Gari, Local Government Area of Kaduna State, Nigeria with symptoms suggestive of PTB and had acid and alcohol fast bacilli (AFB) demonstrated in their sputum by direct sputum smear using Ziehl-Neelsen (Harries and Maher, 2000). Prior to the year 2001, tuberculosis cases were treated on outpatient basis and those cases requiring further evaluation and treatment were referred to tertiary institution (ABUTH), Zaria. The centre started the DOTS strategy in 2001 following the training of its staff and provision of laboratory reagents, equipment, anti-TB drugs and other materials. The data were collected using a proforma and two-year records of all patients seen were analyzed. Enquiries were made into their age, sex distribution, education, occupational status and the test result of sputum microscopy for AFB. The result was presented in the form of frequency tables. The  $X^2$  test statistics was used to test for significance of association between categorical variable at P- value 0.05.

#### RESULTS

A total of 694 suspected cases of pulmonary tuberculosis were reviewed during the year period of May, 2005 to 2006. Male constitute 58.4% of the subjects while females were 41.6%. About one-third of the subjects (39.7%) were in the age group 20 - 29 years with a mean age of  $32.78 \pm 15.10$  (Table 1). The study shows that 56.5% of the subjects were employed as civil servants, petty traders and artisans while the remaining 43.5% were unemployed (Table 2). Similarly, 76.2% of the subjects had some formal education while 24.2% had no form of education at all (Table 3). Among the total of 694 cases reviewed, 12% of the sputum samples tested positive for acid fast bacilli on three consecutive sputum. Among these, 7.4% were males while 4.6% were females (Table 4). This finding was found to be statistically significant ( $x^2 = 54.6$  df = 1 p < 0.05). A comparison was made between the educational status of the subjects and outcome of sputum test for AFB. The results indicate that there were more sputum smear positive cases among those with no formal education (Table 5). This finding was found to be statistically significant ( $x^2 = 10.24$  df = 4 p < 0.05). Another parameter that was compared is the

**Table 2.** Occupational status of respondents.

Occupational status	Frequency	%
Unemployed	200	28.9
Petty traders	100	14.4
Civil servants	138	19.9
Artisans	154	22.1
Students	79	11.4
Others	23	3.3
Total	694	100

**Table 3.** Educational status of respondents.

Educational status	Frequency	%
None	168	24.2
Primary	108	15.6
Secondary	147	21.2
Tertiary	50	7.2
Quaranic	221	31.8
Total	694	100

occupational status of the subjects and outcome of sputum examination. This shows that there were more sputum smear positive cases among unemployed (Table 6). This finding was also found to be statistically significant ( $\chi^2 = 19.16$  df = 5  $p < 0.05$ ).

## DISCUSSION

In recent years, there has been an increasing concern on the threat of tuberculosis to public health, especially in developing countries where its alliance HIV/AIDS is making the situation worse. Twenty-five years ago, primary health care for everyone on earth seemed to be an attainable goal but the TB maladies still threaten millions of people especially in Nigeria. Over the years, low socio-economic status has been closely linked to increased risk of developing tuberculosis and in Nigeria, over 80% of patients suffering from TB first visit private hospitals<sup>5</sup>. According to the World's Youth Demographic and Health, 2006 data sheet, the population of young persons aged 10 - 24 was estimated at 34% (Population Reference Bureau (The World's Youth, 2006). Similarly, adult literacy and the proportion of the population gainfully employed was put at 48% female, 73% male and 56.1% female, 69.8% male (Nigeria National Demographic Health Survey Report, 2003). This review examined the role played by three variables on the prevalence of tuberculosis - viz; age, educational and occupational status of the cases reviewed. This finding is similar to what obtains globally worldwide that tubercu-

losis affects the most productive age group and on the average 3 - 4 months of work time are lost if an adult has tuberculosis, resulting in a loss of about 30% of annual household income (Khatri and Frieden, 2000).

The study also found that 56.5% of the clients that presented were employed in one occupation or the other below what Nirupa et al. working in Tiruvallur district Tamil-Nada India found with level of employment rate of 68% among PTB patient (Nirupa et al., 2005). A statistically significant finding was observed between occupational status and likelihood of sputum testing positive for AFB. Other studies have documented the role of occupation as a risk factor for PTB (Manalo et al., 1990; Islam et al., 2002). Poor socio-economic status with its attendant poor education is associated with poor knowledge of TB, risks of infection and dissemination and access to health care. Our review shows more sputum smear positive cases among those that are unemployed and this finding was found to be statistically significant. In a study carried out by Pratibha and colleagues in three composite districts of North Area India, the proportion of sputum found to be sputum smear positive in the districts implementing DOT were 4.7 and 5.7%, respectively, while in the third district where DOT is not implemented, the sputum smear positivity was 38.7% (Khatri and Frieden, 2002). Our study found a rate of 12%, which could be attributed to the fact that the centre is relatively new and cases of false positive are not unexpected.

## Conclusion

TB remains a significant problem for the world, especially in Nigerian poor communities. The study revealed that most of the patient presenting with tuberculosis are in the productive age with unemployment and low literacy level serving as potent risk factors for tuberculosis in the study area. This situation creates a risk of multi-drug resistant TB outbreaks. There was a positive relationship between sputum positive, unemployment, education and occupational status. There is therefore an urgent need to further provide opportunities for meaningful involvement of patients and communities within the LGA TB programme structure by increasing awareness with improved diagnostic services for case detection. With early case detection, proper case treatment and management, integration of TB services into general health services, involvement of communities in TB control activities and improvements in strategic information / public health education / communication especially to the low income and uneducated (in line with the strategies of NTBLCP to reduce TB prevalence and incidence) as well as the socio-economic impact of the disease is strongly recommended.

## ACKNOWLEDGEMENTS

These authors thank the following people, Mal. Ishiaku

**Table 4.** Sputum smear acid fast bacilli (AFB) status of the respondents by sex.

AFB status	Male frequency	%	Female frequency	%
Positive	51	7.4	32	4.6
Negative	354	51	257	37
Total	405	58.4	289	41.6

$\chi^2 = 54.6$ ,  $df = 1$   $p < 0.05$ .

**Table 5.** Educational status versus AFB status.

	Positive frequency	%	Negative frequency	%
None	30	4.3	138	19.9
Primary	16	2.3	92	13.3
Secondary	12	1.7	135	19.5
Tertiary	5	0.7	45	6.5
Quaranic	20	2.9	201	28.9
Total	83	11.9	611	88.1

$\chi^2 = 10.24$ ,  $df = 4$   $p < 0.05$ .

**Table 6.** Occupational status versus AFB status.

	Positive frequency	%	Negative frequency	%
Unemployed	24	3.5	176	25.4
Petty traders	11	1.6	89	12.8
Civil Servants	14	2.0	124	17.8
Artisans	20	2.9	134	19.3
Students	5	0.7	74	10.7
Others	9	1.3	14	2.0
Total	83	12.0	611	88.0

$\chi^2 = 19.6$   $df = 5$   $p < 0.05$ .

Abubakar, Mr Stephen Odeh of Comprehensive Health Centre, Sabon-Gari, Local Government Area (LGA) of Kaduna State, Nigeria for their assistance and cooperation during the time of data collection.

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