

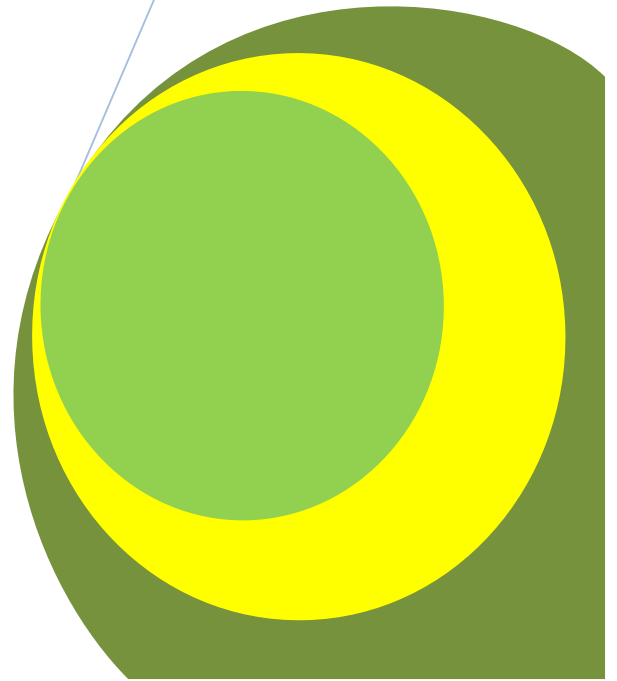
Greener Journal of Microbiology and Antimicrobials

ISSN: 2354-2284

Survey of the Incidence of TB Infection among Patients attending TBL of Gombe State Specialist Hospital, Gombe State Nigeria

By

**Shuaibu Isa
Hauwa Ibrahim S.
Fatima Umar M.
Hauwa Sa'ad
Muhammad Maikudi U.**



Research Article

Survey of the Incidence of TB Infection among Patients attending TBL of Gombe State Specialist Hospital, Gombe State Nigeria

*Shuaibu Isa¹, Hauwa Ibrahim S.¹, and Fatima Umar M.²,
Hauwa Sa'ad and Muhammad Maikudi U.

¹Microbiology Department, Gombe State University, P.M.B 127, Gombe, Nigeria.

²Biochemistry Department, Gombe State University, P.M.B 127, Gombe, Nigeria.

³Biotechnology Department, Modibbo Adama University of Technology, Yola, Nigeria.

*Corresponding Author's Email: shuaibuisa2002@gmail.com, Tel: +2348065534951

ABSTRACT

This study was conducted on the incidence of tuberculosis among patients attending Tuberculosis Laboratory (TBL) of Gombe State Specialist Hospital Gombe. Three hundred (300) samples from 100 patients were collected in three phases as initial spot, morning and final spot, and were analysed for the presence of the tubercle bacilli. Of the 100 patients scrutinised, 55 were males and the remaining 45 were females. Out of the 55 males, 17(30.1%) were found to be positive for TB and the remaining 38(69.9%) were negative. For the females however, 8 (17.8%) were positive for TB while the remaining 37(82.2%) were negative. Of the 300 samples, 28(82.4) were found to be positive for TB in both spots (initial and final) while 16(94%) were found positive for morning spot. In all, males were having the higher incidence than their female's counterparts (Stybio, 1986) because of the higher exposure and lesser hygienic condition than their female counterparts.

Keywords: Tuberculosis, tubercle bacilli, initial spot, morning spot and final spot.

INTRODUCTION

Tuberculosis commonly referred to as TB is an infectious, chronic, common and in many cases lethal and contagious disease affecting the lungs (pulmonary) and other parts of the body (extra pulmonary TB). It is caused by various strains of Mycobacteria, usually *Mycobacterium tuberculosis*. It remains one of the most important causes of mortality and morbidity in the world (Corbett *et al.*, 2003). It can cause serious respiratory problems which can be life threatening with certain symptoms such as fever, shortness of breath, cough, weight loss, night sweat and loss of appetite (Mims *et al.*, 2000).

A person can have active or inactive (latent) TB infection, those with active TB can pass it to any one they come in close contact with, through cough, sneezes and spits, And can infect an average of 10-15 people every year (WHO, 2005).

MATERIALS AND METHOD

Sample collection: The samples collected were the sputa of the patients. Three different samples were collected from each and every patient i.e. spot, early morning and spot. The method used was Ziehl-Neelsen technique. And it was carried out based on NTSOPM (NATIONAL TB STANDARD OPERATING PROCEDURES MANUAL). The reason for this technique is that, most mycobacteria grow at a relatively slow rate; therefore the acid-fast smear plays an important role in the early diagnosis and treatment of mycobacterial infections. Acid-fast bacilli are difficult to stain because of the lipid content of the cell wall. Heating during staining dissolves the lipid sufficiently to allow penetration of the primary stain. The cell wall retains the primary stain even after exposure to the decolorizing agent, the acid alcohol. The resistance to decolorization by acid alcohol is required for an organism to be termed acid-fast. Counter-stain was then employed to highlight the stain organism. The specimens were arranged and a glass slide labelled with a diamond marker was allocated to each sample.

Using applicator stick a portion of the specimen was transferred to the centre of the slide and a thin smear on the slide was made with concentric circular movements to make the smear to the recommended size (1-2cm). The slides were then placed on a flat surface with the smear facing upward. They were then allowed to

air dry for about one hour. After thorough drying, smears were fixed by passing 3 times through a blue flame, ensuring that smears were facing upward. Fixed slides to be stained were arranged on a staining rack, and ensured that they were not touching each other. The slides were flooded with carbol fuchsin solution, heated and allowed to stain for 5 minutes.

They were then washed off with running tap water to remove excess carbol fuchsin (until no more colour runs off) and drained off excess rinsing water.

The slides were flooded again with acid alcohol for 3 minutes to decolorize until the red colour disappeared, they were then washed with running tap water and drained off the excess rinsing water. The slides were finally counterstained with Methylene blue for one minute, rinsed again with tap water and drained. The slides were finally counterstained with Methylene blue for one minute, rinsed again with tap water and drained. Microscope was switched on, and a dry smear was placed on the stage of the microscope, then viewed using x10 objective at low power to identify fields to be examined.

A drop of an immersion oil was placed on the smear and switched to (x100), and the smear examined for the presence of acid-fast bacilli.

Interpretation of Zn Results

NUMBER OF AFB FOUND	RECORDS	REPORT
No AFB in at least 100 fields	0	Negative
1-9 AFB in 100 fields	Actual AFB counts	Scanty
10-99 AFB in 100 fields	1+	1+
1-10 AFB per field in at least 50 fields	2+	2+
>10 AFB per field in at least 20 fields	3+	3+

RESULTS

Table (1) the total number of males and females tested for TB. 300 samples, 100 for each of spot, morning and spot

Total number of patients	Patients (+) for TB	% positive	Patients (-) for TB	% Negative
100	25	25	75	75

Table (2) the incidence TB infection among female patients.

Total number of female patients diagnosed for TB	Female patients tested (+)	%(+)	Female patients tested (-)	% (-)
45	8	17.8	37	82.2

Table (3) shows the Incidence of TB infection among male patients.

Total number of males tested for TB	Male patients positive (+)	% positive(+)	Male patients negative(-)	% negative (-)
55	17	30.17	38	69.9

Table (4) shows the incidence of TB among male and female in relation to age groups.

Age(s)	Males	Females	Total
11-20	03	00	03
21-30	05	05	10
31-40	07	02	09
41-50	01	01	02
51-60	00	00	00
61-70	01	00	01
Total	17	08	25

DISCUSSION

25 patients indicated positive reaction for TB based on the procedures employed and this makes the (25%) of the total samples collected. This is similar to the work of (CDC,2005) who worked on the prevalence of TB infection resource poor counties. In table 2, the study showed that females were less infected with TB infection because only 8 were found to be positive and this makes the 17% out of the 45 samples collected. The number of males tested positive for TB infection were 17 and this makes of the 30.17% of the total samples collected. Table 4 shows the incidence of TB in relation to age groups. This research indicated that TB infection is high among people between the age of 20-40 with the higher percentage in males found positive within this range, and this corresponds with the work of Stybio (1986) and Harris (1990) who reported that the epidemics of HIV has altered the patients of TB disease in many countries, particularly in Africa where the prevalence of TB is high and up to the population between 20 and 40 years of age have been infected with the disease.

CONCLUSION

The result of this investigation show high incidence of tuberculosis infection among males because of their higher exposure and lesser hygienic condition than their female counterparts. This research also indicated that TB infection is high among people within the age of 20-40 with higher percentage of both males and females that were found positive within this range. However, children were less infected and this may be due to the advent of

immunization against TB , BCG vaccine that is given to children at their infancy while older people were not oppurtuned to have the immunization during their childhood.

RECOMMENDATION

We wish to acknowledge the effort of TB Laboratory of the Gombe state specialist hospital who gave us the samples and the necessary materials needed for the research to be effectively conducted.

REFERENCES

- Corbett, E.L., Watt C.J., Walker , N , Mather , D., Williams , BG;Raviglione , M.C (2003). The growing burden of tuberculosis ;global trends and interaction with the HIV epidemics. *Arch intern Med.* 163, 1009-21
- Harris, A.D. (1990). Tuberculosis and human Immunodeficiency Virus infection in developing Countries. *Lancet*, 335: 287-390.
- Mims, C., John , P . Ivan, R Drek, W. Rosamund, W.(2000). *Medical Microbiology*. Second edition PP. 213-242. Mycobacteriology Bench Manual, Ontario Ministry of Health,Laboratory Services Branch,December 1998.
- National TB and Leprosy Control Programme; *Workers Manual* 4th edition, Abuja; *Federal Ministy of Health*, Department of Public Health.
- Stybio, K. (1986). Tuberculosis Control and Surveilance. In: Recent Advances in Respiratory Medicine, Fleny, D.C.and Perry, T.L (editors). Edinburgh: Churchill Livingstone, PP. 77-108
- United States Department of Health and Human Services (2007). Public Health services. Center for Disease Control and Prevention, and National Institute of Health (2007). Biosafety in Microbiological and Biochemical Laboratories, Washington, DC,US Government Printing Office.
- WHO (2005) Global Tuberculosis Control: Surveliance, Planning, financing, global report.
- World Health Oganisation (2009). Global TB Control, Epidemiology,Strategy,Financing. WHO Report 2009. Geneva (WHO/HTM/2009.411).