



PREVALENCE OF PULMONARY TUBERCULOSIS IN THROUGH ZIEHL-NEELSEN STAIN A TERTIARY CARE HOSPITAL IN RURAL RAJASTHAN.

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ABSTRACT **Background:** India has more tuberculosis (TB) cases annually than any other country globally. Tuberculosis (TB), caused by *Mycobacterium tuberculosis*, is a leading cause of death worldwide, especially in countries with poor socio-economic backgrounds and a lack of resources. The World Health Organization (WHO) has cautioned against a recent increase in the incidence of TB. **Methods:** It was observational, study. This is conducted in a tertiary care hospital in rural Rajasthan, from July 2018 to July 2019 in NIMS Medical College and Hospital Jaipur. Sputum samples were collected from the presumptive cases, processed and ZN staining was done. **Result:** A total of 1477 patients suspected of having pulmonary tuberculosis were investigated, which 227 (15.36%) were found to be sputum smear positive for Acid fast Bacilli. Among the male patients 187 (82.38%) were found to be positive for pulmonary tuberculosis and were females 40 (17.62%) were positive for sputum AFB samples. Most probably were found 3+ in male and female patients then 2+ & less common is Scanty in male and female patients for AFB positive according to RNTCP guideline. Maximum respond belonged to the age group of 41-60 years, male patient 85 (37.44%) and female 20 (8.8%) as followed by 61-80 years are male patient 51 (22.47%) and female patient are 5 (2.2%) and more prevalent is 0-20 years both are 4 (1.8%). **Conclusion:** Using a common national protocol this study for the first time provides baseline prevalence rate of bacillary pulmonary tuberculosis in the area. This prevalence is higher Female than male the reported in this study.

KEYWORDS : AFB, Sputum positivity, WHO

INTRODUCTION

Tuberculosis is a bacterial disease, is not only medical problem, but social and economic problem as well. Communities and nation since bacterial disease and currently one of the major public health problems in India. The diagnosis of pulmonary tuberculosis under RNTCP is primarily based on sputum examination, in accordance with the guidelines of WHO.¹

The causative agent is *Mycobacterium tuberculosis*, which primarily infects the lungs and cause pulmonary tuberculosis. Though India is most of the population country in the world India has more new TB cases annually than any other country.²

Sputum Acid fast staining with microscopy examination has been the primary method for diagnosis of pulmonary tuberculosis in developing countries, which is where nearly of TB cases and 98 per cent of deaths due to tuberculosis occur. It is a simple, rapid and inexpensive technique which is more specific in areas with a very high prevalence of tuberculosis.³

It also identifies the most infectious patients and is widely applicable in various populations with different socio-economic level.^{4,5}

Hence, it has been an integral part of the global strategy for mycobacterium tuberculosis control. However, sputum smear microscopy examination has significant limitations in its performance. It also has a poor track record in extra-pulmonary tuberculosis (ETB), paediatric tuberculosis and in patients co-infected with HIV and tuberculosis.^{6,7}

Due to the requirement of continue sputum examinations, some patients who do not come back for repeated sputum examinations become "diagnostic defaulters".⁸

MATERIALS AND METHODS

This is observational study conducted in a tertiary care hospital in rural

Table no 4:- Distribution between age group wise in male and female patients.

Age group	Male n= 187 (82.38%)					Female n= 40 (17.62%)				
	Scanty	1+	2+	3+	Total	Scanty	1+	2+	3+	Total
0-20	0	2 (0.9%)	1(0.44%)	1(0.44%)	4(1.8)	0	0	3(1.32%)	1(0.44%)	4(1.8%)

Rajasthan, from July 2018 to July 2019. To identify cases of pulmonary tuberculosis, patients presenting with respiratory symptoms were investigated for the disease. Sputum samples were collected from the presumptive cases, processed and ZN staining was done. A person found positive by sputum smear examination was identified as a positive case of pulmonary tuberculosis.

OBSERVATION AND RESULT

A total of 1477 patients suspected of having pulmonary tuberculosis were investigated, which 227 (15.36%) were found to be sputum smear positive for Acid fast Bacilli and 1250 (84.64%) Negative for sputum AFB. (Table No. & Fig. No. 1)

Table no 1:- Total suspected patients Total Positive and total Negative

AFB sample	Total sample	AFB positive	Total negative
	1477 (100%)	227 (15.36%)	1250 (84.64%)

Table no 2:- Distribution between male and female

S.N.	Male	Female
1	187 (82.38%)	40 (17.62%)

Among the male patients 187 (82.38%) were found to be positive for pulmonary tuberculosis and were females patients 40 (17.62%) positive for sputum AFB samples. (Table No. & Fig. No. 2)

Table No 3:- Distribution between grading (according to RNTCP) in AFB positive patients

SEX	Scanty	1+	2+	3+
Male	7 (3.08%)	29 (12.78%)	51 (22.46%)	100 (44.05%)
Female	1 (0.44%)	4 (1.8%)	14 (6.16%)	21 (9.23%)

Total 227 AFB sample screening positive by ZN Staining method most prevalent of male then female. Most probably were found 3+ in male and female patients then 2+ & less common is Scanty in male and female patients for AFB positive according to RNTCP guideline. (Table No. & Fig. No. 3)

21-40	1 (0.44%)	2(0.9%)	10 (4.41%)	19(8.37%)	32(14.09%)	0	1(0.44%)	3(1.32%)	5(2.20%)	9 (3.9%)
41-60	4 (1.8%)	19(8.34%)	22 (9.69%)	40(17.62%)	85 (37.44%)	1(0.44%)	2(0.9%)	6(2.62%)	11(4.79%)	20 (8.8%)
61-80	1(0.44%)	5 (2.20%)	15 (6.60%)	30 (13.21%)	51 (22.47%)	0	1(0.44%)	2(0.9%)	2(0.9%)	5(2.2)
>81	1(0.44%)	1(0.44%)	3 (1.32%)	10 (4.41%)	15 (6.61%)	0	0	0	2(0.9%)	2 (0.9%)
Total	7(3.08%)	29(12.78%)	51(22.46%)	100 (44.05%)	187 (82.38)	1(0.44%)	4 (1.8%)	14 (6.16%)	21 (9.23%)	40 (17.62%)

Maximum respond belonged to the age group of 41-60 years, male patient 85 (37.44%) and female 20 (8.8%) as followed by 61-80 years are male patient 51 (22.47%) and female patient are 5 (2.2%) and more prevalent is 0-20 years both are 4 (1.8%). (Table No.4)

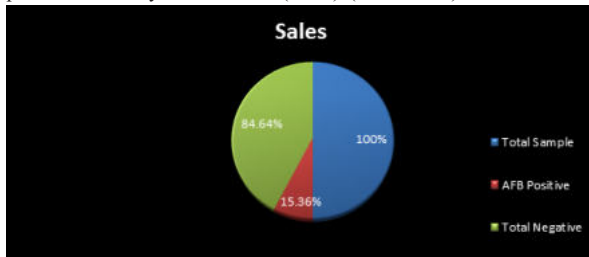


Fig No. 1:- Figure shown Total suspected patients, Total Positive and total Negative.

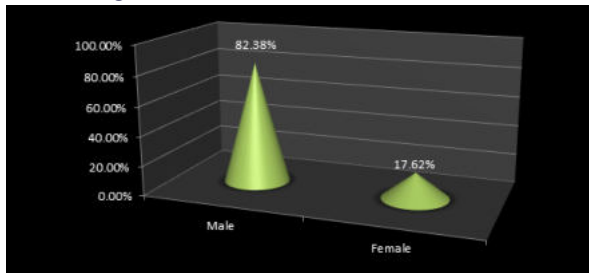


Fig. No 2:- Distribution between male and female.

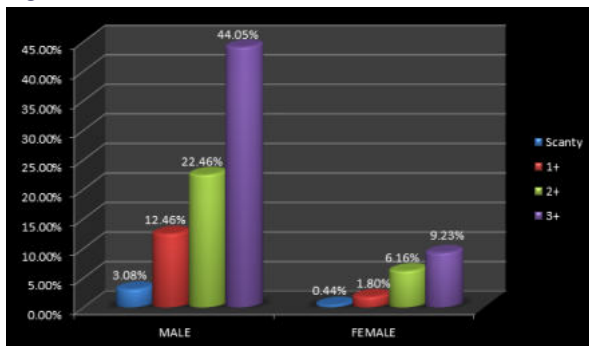


Fig. No 3:- Distribution between AFB grading (according to RNTCP) in AFB positive patients.

DISCUSSION:

This study is observational study, The causative agent is Mycobacterium tuberculosis, which primarily infects the lungs and cause pulmonary tuberculosis.

A total of 227 patients (15.36%) could be diagnosed as having tuberculosis on the basis of sputum smear positivity. Our result similar findings are Chauhan DS et al 2015.⁹

Total male patients were 187 (82.38%) and female patients were 40 (17.62%) of smear positive for mycobacterium tuberculosis. Our study compared to other studies Yashwant A. 2007.¹⁰

Thus, according the RNTCP grading of a positive smear in our study male were mostly affected 3+ then 2+, 1+ and scanty (44.05%, 22.46%, 12.78% & 3.08%) and female were 3+ then 2+, 1+ and scanty (9.23%, 6.16%, 1.8% & 0.44%) respectively. We are found similar result in other study Sanjay Rajpal et al.¹¹

In our study we find out highest prevalence were in male and female of age group 0-20 year. Other study also found to similar result Rani et al¹² also reported the highest prevalence of in this age group.

Sputum positive patients are capable of transmitting infection and those whose sputum is positive on direct microscopy are most likely to

infect their contacts. Authorities should continue periodic screening of mycobacterium tuberculosis, especially among local tribes, in order to eradicate the epidemic in rural India.

CONCLUSION

There was a high prevalence of TB in the present study though case finding was based only on already diagnosed cases. The prevalence of pulmonary tuberculosis was found to be higher in males compared to female patients, and However, the results may not be generalized due to expected higher burden in slums and also due to prevalence of less sample size.

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