

Original Article

A CROSS-SECTIONAL STUDY OF PULMONARY AND EXTRA PULMONARY TUBERCULOSIS



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Abstract:

Background: Mycobacterium tuberculosis, which causes TB, is an infectious disease that affects the lungs (pulmonary tuberculosis) and other organs (extra pulmonary tuberculosis). Therefore, it is important to pay attention to the risk factor and the treatment of tuberculosis. **Aim:** Studying the risk factors and treatment options for tuberculosis is the goal. **Objectives:** Finding out the risk factors for pulmonary and extra pulmonary tuberculosis, identifying the many types of extra pulmonary tuberculosis, and researching the various treatment options for pulmonary and extra pulmonary tuberculosis are among the objectives of this study. **Materials and methods:** Over the course of six months, a cross-sectional observational study was conducted in the district tuberculosis centre, Nagapattinam. **Result:** In our study, 178 (69.53%) were male and 78 (30.47%) were female. Males outnumber females in percentage terms. Pulmonary tuberculosis affects more people on a gender-based tuberculosis distribution scale. 62.11% of patients with 217 instances of pulmonary tuberculosis were men. In our research on extrapulmonary tuberculosis, lymph nodes were shown to be the most frequent location of infection in 17 (43.5%) of the patients, followed by the pleura in 7 (17.94%), and the abdomen in 6 (15.38%). When addressing risk factors, tobacco use was a risk factor in the diagnosis of 5 (1.95%) patients with extrapulmonary tuberculosis and 44 (17.18%) patients with pulmonary tuberculosis. Patient, along with diabetes mellitus (DM), was also a risk factor for pulmonary tuberculosis 43 (16.79%) and extrapulmonary tuberculosis 5 (1.95%). **Conclusion:** Patients with PTB and EPTB were more likely to have risk factors such DM and tobacco use. Avoiding tobacco use and managing diabetes properly can boost our immune systems and lower our risk of contracting PTB and EPTB.

Keywords: Pulmonary tuberculosis, extrapulmonary tuberculosis, Risk factors, Management

Introduction:

The anticipated incidence of all kinds of TB in India for the year 2020 was 188 per 100,000 people, according to the global TB report 2021. A total of 19,33,381 patients with TB incidence were notified, which was more than the 16,28,161 cases in 2020.[1] After COVID-19, TB is the second most common infectious agent and the thirteenth most common cause of death globally.[2] A contagious illness caused by the bacteria *Mycobacterium tuberculosis*, pulmonary tuberculosis affects the lungs whereas extra pulmonary tuberculosis affects other organs such as the lymph nodes, belly, GIT, bones, skin, and neurological system.[3]

Pulmonary tuberculosis:

People with a weakened immune system or those who have already been infected are most likely to develop pulmonary tuberculosis (PTB).[4]

Extra pulmonary tuberculosis:

Extra-pulmonary tuberculosis (EPTB) is the term used to describe the condition in which the tuberculosis infection affects organs other than the lungs, such as the lymph nodes, abdomen, gastro intestinal tract, bones, skin, and nervous system.[4]

Causative agents:

The following types of tuberculosis are *M.tuberculosis*: *M.bovis*, *M.fortuitum*, *M.kansasii*, *M.avium*, *M.abscessus*, *M.phlei*, *M.africanum*, *M.microti*, *M.canetti*, and *M.gordonae* [5].

Pathogenesis:

When a person breathes in a droplet nucleus containing tubercle bacilli that was shed by an infected person. The lung's macrophages will then assault the tubercle bacilli after they have reached the alveoli. Only a small number of the bacilli will survive inside the macrophage cells, where the majority of them will be destroyed. The macrophages are destroyed as the bacilli grow inside the cells and leave the body. The expelled cells move into the bloodstream or lymphatic system. They then spread throughout the body, infecting various tissues and organs along the way, including the lymph nodes, kidneys, brain, spine, and bone. [5]

Symptoms:

Chest discomfort, weariness, appetite loss, fever, chills, hematemesis, chills, cough, and night sweats [6]

Diagnosis method:

Smear microscopy, a chest x-ray, a molecular approach, a tuberculin test, a nucleic acid amplification test, a FNAC test, and a CT scan are examples of diagnostic techniques. [6]

Risk factor:

HIV, ageing, immune system disorders, overcrowding, contact with a TB patient, whether they are latent or active, Malnutrition, Diabetes mellitus, Alcohol, and Smoking. [7]

Materials and methods:

It is a cross sectional observational study

Place of study:

Nagapattinam District Tuberculosis Centre, Tamil Nadu, India.

The period of study:

6 months (April 2022 to September 2022)

Inclusion criteria:

- Included are patients with pulmonary TB.
- Included are patients with extrapulmonary TB.
- HIV infection and TB are both included.
- Diabetes mellitus and tuberculosis patients are included

Exclusion criteria:

- Women in pregnancy and lactation are not included
- Patients under the age of 18 are not accepted

Result:

In the course of our study, we looked at 256 different patients at the district tuberculosis centre in Nagapattinam. Over the course of six months. The following conditions were seen.

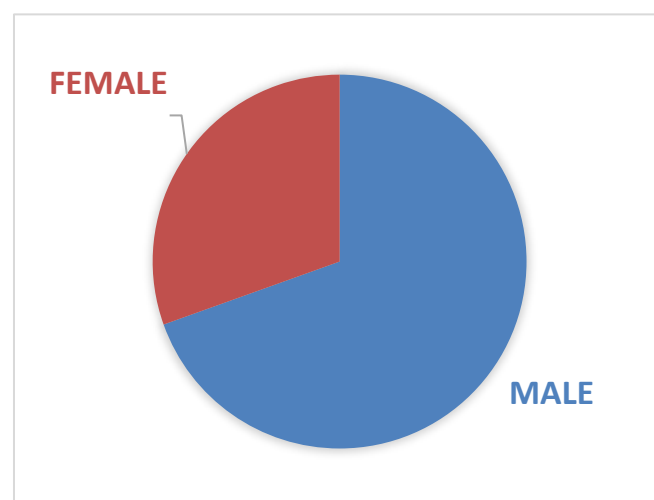
Gender wise distribution of tuberculosis

In our study 178(69.53%) were male and 78(30.47%) were females. Males outnumber females in percentage terms. Table 1 & Figure 1

Table 1: Gender wise distribution of tuberculosis

Gender	NO	%
Male	178	69.53%
Female	78	30.47%
Total	256	100%

Figure 1



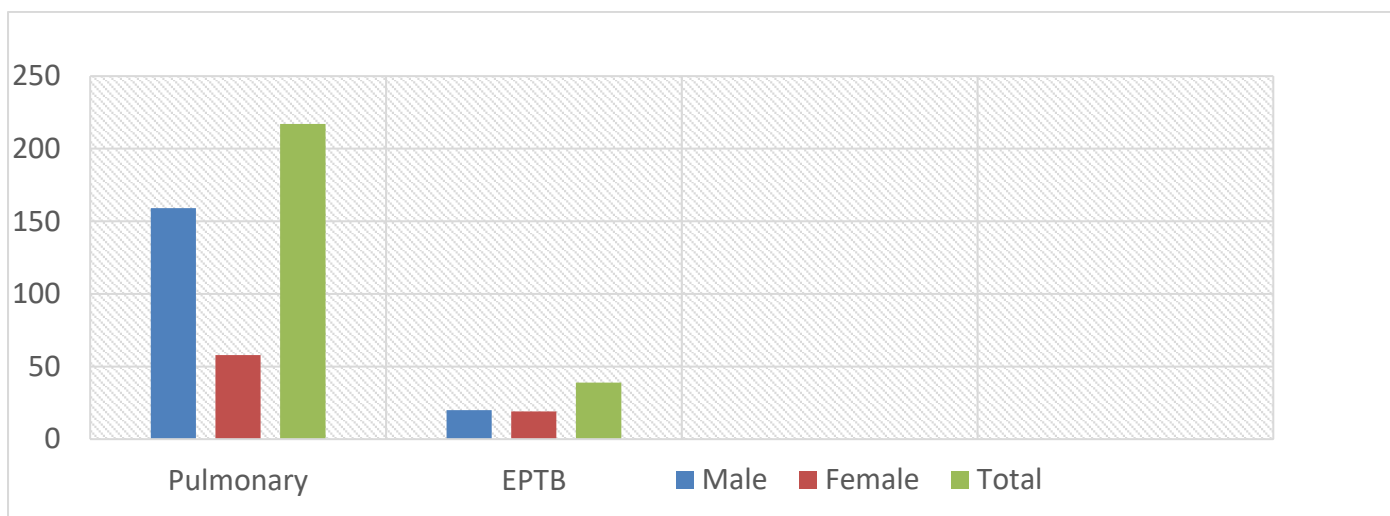
Gender wise distribution in types of tuberculosis

Pulmonary tuberculosis affects more people on a gender-based tuberculosis distribution scale. 62.11% of patients with 217 instances of pulmonary tuberculosis were men. Table 2 & Figure 2

Table 2: Gender wise distribution in types of tuberculosis

Gender	PTB		EPTB	
	NO	%	NO	%
Male	159	62.11%	20	7.82%
Female	58	22.65%	19	7.42%
Total	217	84.76%	39	15.24%

Figure 2



Site of extra pulmonary tuberculosis

In our research on extra pulmonary tuberculosis, lymph nodes were shown to be the most frequent location of infection in 17 (43.5%) of the patients, followed by the pleural in 7 (17.94%), and the abdomen in 6 (15.38%). Table 3

Table 3: Site of extra pulmonary tuberculosis

Site of EPTB	No. of. Person	%
Lymph node	17	43.5%
Pleural	7	17.94%
Abdominal	6	15.38%
Spinal	4	10.25%
Bone	2	5.12%
Genito urinary	1	2.56%
Tbm	1	2.56%
Total	39	100%

Risk factors

When addressing risk factors, Tobacco use was a risk factor in the diagnosis of 5 (1.95%) patients

with extrapulmonary tuberculosis and 44 (17.18%) patients with pulmonary tuberculosis. Patient along with Diabetes mellitus (DM) was also a risk factor for pulmonary tuberculosis 43 (16.79 %) and extrapulmonary tuberculosis 5 (1.95%) Table 4

Table 4: Risk factors

Risk factor	PTB		EPTB	
	NO	%	NO	%
Not known	86	33.59%	25	9.76%
Tobacco	44	17.18%	5	1.95%
Diabetes	43	16.79%	5	1.95%
Urban slum	15	5.85%	0	0%
Contact of known TB	8	3.12%	0	0%
Miner	8	3.12%	4	1.56%
Diabetes, tobacco	6	2.34%	0	0%
Migrant	3	1.17%	0	0%
Diabetes, Urban slum	2	0.78%	0	0%
Diabetes, known case of TB	2	0.78%	0	0%
Total	217	84.76%	39	15.24%

Management of Tuberculosis

In our analysis of the treatment of tuberculosis, we included 217 patients with PTB and 39 patients with EPTB. The treatment included a six-month course of isoniazid 75 mg, rifampicin 150 mg, pyrazinamide 400 mg, and ethambutol 275 mg, with the patient's dose being based on body weight.

Regimen for pulmonary and extra pulmonary tuberculosis IP (2months) Table 5

Regimen for pulmonary and extra pulmonary tuberculosis CP (4months) Table 6

Table 5: Regimen for pulmonary and extra pulmonary tuberculosis IP (2months)

Drugs (4FDC)	Weight category	No. of tablets / day
Isoniazid 75mg Rifampicin 150mg Pyrazinamide 400mg Ethambutol 275mg	25-34kg	2
	35-49kg	3
	50-64kg	4
	65-75kg	5
	>75kg	6

Table 6: Regimen for pulmonary and extra pulmonary tuberculosis CP (4months)

Drugs (3FDC)	Weight category	No of tablets / day
Isoniazid 75mg Rifampicin 150mg Ethambutol 275mg	25-34kg	2
	35-49kg	3
	50-64kg	4
	65-75kg	5
	>75kg	6

Discussion:

After COVID-19, TB is the second most common infectious agent and the thirteenth most common cause of death globally which affects the lungs and is known as pulmonary tuberculosis; extrapulmonary tuberculosis, on the other hand, affects other organs such as the lymph nodes, abdomen, GIT, bones, skin, and nervous system.

A total of 256 patients participated in our study, of whom 217 (84.76%) were PTB and 39 (15.24%) were EPTB. There are more PTB than EPTB. Our study's finding has been supported by a study by Kosar M. Ali et al. from 2014. [8]

39 (15.24%) patients in the study group had extra pulmonary TB. In that lymph node, infection was most prevalent in lymph node 17 (43.5). According to a study by Priyanka Sharma et al. published in 2019 and relevant to our study [9], lymph node TB is the most prevalent location of EPTB.

According to a study's findings, tobacco use is the main risk factor for both PTB (17.18%) and EPTB (1.95%). Patients with diabetes mellitus are also a risk factor for both PTB (16.79%) and EPTB (1.95%). Smoking tobacco and diabetes mellitus increase the risk of PTB and EPTB, according to a 2019 study by Alberto Arnedo-Pena et al. [10]

According to our analysis, the RNTCP guideline 2016[3] serves as the basis for managing PTB and EPTB. Krishnakanth, et al.'s study from 2020 indicated as much. [11]

Conclusion:

The lymph node is the location of infection that occurs most frequently in extrapulmonary tuberculosis compared to other sites. The chance of getting PTB and EPTB, respectively, is increased by the patient, cigarette use, and diabetes mellitus. The RNTCP guideline from 2016 also serves as the fundamental framework for treating tuberculosis. Avoiding tobacco use and managing diabetes properly can boost our immune systems and lower our risk of contracting PTB and EPTB.

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Conflict of interest: None

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