

Prevalence of Tuberculosis Infection in Pregnant Women attending the Outpatient Gynecology Department: A Cross-Sectional Study

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A B S T R A C T

Background: Although maternal tuberculosis (TB) is often overlooked and underestimated, it remains a major global public health issue. The estimated prevalence of TB among pregnant women is 2.3 per thousand, and literature suggests a rising incidence of active TB infections during pregnancy and the postnatal period worldwide.

Objective: To explore the prevalence of tuberculosis infection among pregnant women visiting the outpatient Department (OPD) of Gynecology Department.

Methodology: The current cross-sectional study was conducted at the Department of Gynecology, District Headquarter Hospital, Narowal from January 2020 to February 2021. A total of 2500 pregnant women who visited the OPD were examined for tuberculosis. Patients were assessed for clinical symptoms, and diagnostic tests were conducted, including sputum analysis for acid-fast bacilli and chest X-rays, especially in cases with advanced pulmonary diseases symptoms. Further diagnostic tests, such as GeneXpert testing were also utilized for comprehensive evaluation. EPI info (version 7.2) was used for the collection, compilation, and analysis of the data. Percentages were used to express qualitative variables. Mean and standard deviations were used to describe the quantitative variables. The approval of the current study was taken from the ethical and research committee of the DHQ hospital Narowal.

Results: Out of the total participants, 35 (1.4%) patients were diagnosed with TB. Amongst the 35 participants diagnosed with TB, 26 (74.28%) had pulmonary TB and 9 (25.17%) cases were detected with extra pulmonary Tuberculosis. The overall prevalence of Tubercular lymphadenitis was 13%, abdominal TB 6%, TB meningitis 4.16%, intestinal TB 1.42% and Pot's spine was observed in 1.42% patients. Chronic cough with expectoration was the most prevalent symptom in 24 (68.5%) followed by fever in 20 (57.14%).

Conclusion: The prevalence of tuberculosis infection among pregnant observed in our study was 1.4%. Therefore, proper screening of pregnant women is vital for TB diagnosis.

Keywords: Prevalence; Tuberculosis; Pregnant Women; Infection

Introduction

Tuberculosis (TB) is a leading infectious disease worldwide, with significant public health implications. According to the World Health Organization (WHO), TB remains a top cause of death from a single infectious agent, surpassing even HIV/AIDS. The burden of TB varies globally, with higher prevalence in low- and middle-income countries where access to healthcare resources and TB control measures may be limited. Among the vulnerable populations affected by TB, pregnant women represent a unique group whose health has far-reaching consequences for both maternal and neonatal outcomes.¹

Despite its global significance, maternal TB is often underestimated and under-researched. Traditionally, TB has been viewed through the lens of respiratory diseases in the general population, with less emphasis on its impact on pregnant women. However, the dynamics of pregnancy can complicate TB detection and management. Physiological changes during pregnancy, such as reduced lung capacity and altered immune response, can mask TB symptoms or lead to atypical presentations. This can result in delayed diagnosis, exacerbated by the reluctance to use certain diagnostic tools, such as X-rays, due to fetal safety concerns.

In 2018, 10 million individuals worldwide contracted tuberculosis. The prevalence of the disease varies greatly between nations, ranging from fewer than 5 to 500 instances per 10,000.² This may be the result of nonspecific clinical features, inadequate diagnostic tools for disease confirmation, a lack of standard procedures for disease notification, widespread disease exposure, a population living below the poverty line that is malnourished and highly susceptible to tuberculosis, a lack of awareness in the community regarding the importance of seeking early and comprehensive treatment, the stigma attached to the infection, and a significant rate of coinfection with HIV.³

The estimated prevalence of TB is 2.3 per thousand pregnant women, or approximately 44,500 individuals every year.^{4,5} Global literature indicates an overall rise in the incidence of active tuberculosis (TB) infection during pregnancy and the postnatal period, though some studies report conflicting findings.⁶ The most prevalent site of exposure is pulmonary TB, while currently extra pulmonary TB has become more and more common. Pregnancy-related physiological changes have been seen to frequently coincide with a variety of symptoms that patients come with, leading to a delayed diagnosis of tuberculosis.⁷

Pregnant women do not have a higher prevalence or increased risk of developing tuberculosis compared to women who are not pregnant. Women infected by tuberculosis (TB) have a fourfold increased likelihood of giving birth prematurely or having a low-birth-weight

child. Additionally, they have a sixfold higher risk of infant death.⁸

Despite a general rise in TB incidence during pregnancy and the postnatal period, existing research varies in its findings, often focusing on respiratory TB while overlooking extrapulmonary forms. Moreover, diagnostic challenges such as hesitancy to use X-rays during pregnancy due to fetal safety concerns further complicate detection. In settings with limited healthcare resources, stigma, and low TB awareness, these challenges are amplified.

This study aims to fill the gap by exploring the prevalence of TB among pregnant women attending the outpatient gynecology department at a district-level hospital in Narowal, Pakistan. The study's results will provide insights into the extent of TB among pregnant women, aiding in the development of effective screening and treatment strategies to improve maternal and neonatal outcomes. Understanding the prevalence and patterns of TB in this context will support healthcare professionals in better managing TB during pregnancy, ultimately leading to improved public health.

Objective

The aim of the current study was to explore the Prevalence of tuberculosis infection among pregnant women coming to the OPD of the gynecology department.

Methodology

The current cross-sectional study was conducted at the Department of Gynecology, District Headquarter Hospital, Narowal from January 2020 to February 2021. A total of 2500 pregnant women who visited the OPD were examined for tuberculosis. The age range of the enrolled patients was from 18- 42 years. Patients were assessed for TB symptoms and underwent various examinations, including sputum tests for acid-fast bacilli and chest X-rays. The latter was done with caution, ensuring the radiation dose was less than 0.01mGy, considered safe during pregnancy, particularly for those showing advanced signs of pneumonia. Additional diagnostics like GeneXpert were used, alongside a multidisciplinary approach involving consultation with microbiologists and pulmonary medicine specialists. Pregnant women with a history of tuberculosis who were properly treated and cured, as well as those who did not give birth during the research period, were excluded. EPI info (version 7.2) was used for the collection, compilation, and analysis of the data. Percentages were used to express qualitative variables. Mean and standard deviations were used to describe the quantitative variables.

Ethical approval of the current study was taken from the ethical and research committee of the DHQ hospital Narowal.

Table 1. Demographic characteristics of study cases

Characteristics	Frequency (%)
Pulmonary TB	26 (74.28%)
Extra pulmonary	9 (25.17%)
Lower socioeconomic status	14 (40%)
Middle socioeconomic status	21 (60%)
Registered pregnant women	12 (34%)
Unregistered pregnant women	23 (65.71%)

Results

A total of 2500 pregnant women who visited the OPO were included in the current study. Out of the total participants, 35 (1.4%) patients were diagnosed with TB. Amongst the 35 participants diagnosed with TB, 26 (74.28%) had pulmonary TB and 9 (25.17%) cases were detected with extra pulmonary Tuberculosis. In our study, 17 (48.6%) cases belong to an age-group of 21 to 25 years with the mean age of 21.56 ± 4.20 years. Similarly, 14 (40%) cases belong to lower socioeconomic status and 21 (60%) antenatal women belong to middle socioeconomic status. In the current study, 46 (65.71%) women were registered and 12 (34%) were unregistered pregnant women as described in table 1. The overall prevalence of Tubercular lymphadenitis was 13%, abdominal TB 6%, TB meningitis 4.16%, intestinal TB 1.42% and Pot's spine was observed in 1.42% patients (Figure 1). Chronic cough with expectoration was the most prevalent symptom in 24 (68.5%) followed by fever in 20 (57.14%), other symptoms like breathlessness,

fatigue, and hemoptysis in 12 (34.29%) and weight loss in 5 (14.28%) whereas some existing with atypical symptoms like headache, nausea, and neck swelling (Table 2).

Discussion

Tuberculosis (TB) is a health problem that is usually ignored. In 2018, the World Health Organization estimated that around 21% of the worldwide burden is attributed to Asia.² In low-burden regions, the prevalence of tuberculosis in pregnancy is between 0.06 and 0.25%, whereas in high-burden areas, it is between 0.07 and 0.5% among pregnant women who are HIV-negative. This is higher than 0.7–11% in female HIV-positive individuals. However, in this current study the prevalence of tuberculosis was 1.4%. This finding is in line with the previous study, who reported similar prevalence of TB amongst pregnant women.¹¹ In the current study the prevalence of pulmonary TB was 74.28% and extra pulmonary TB 25.17%. These findings are not similar to

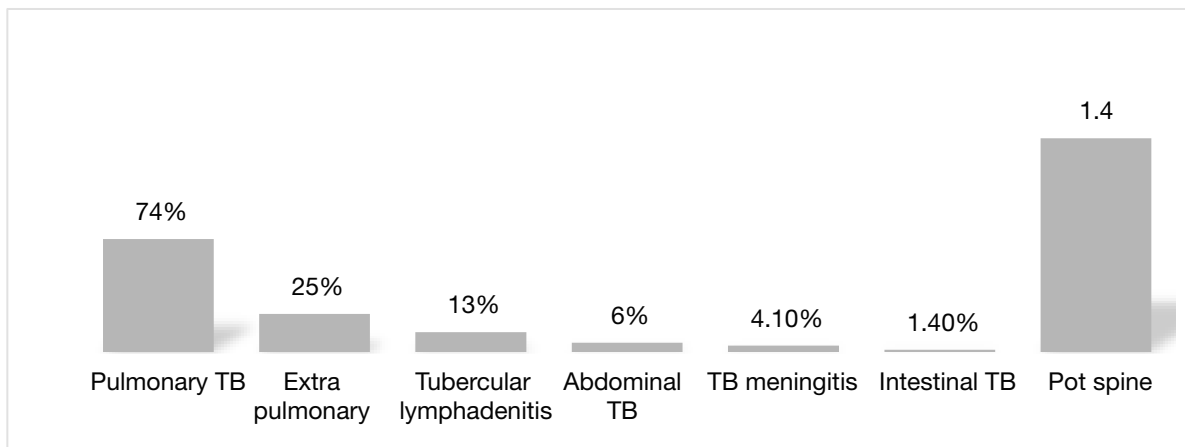


Figure 1. Distribution of study cases on the basis of site of TB

Table 2. Clinical profile of study cases

Symptoms	N (%)
Chronic cough with expectoration	24 (68.5%)
Fever	20 (57.14%)
Other symptoms (breathlessness, fatigue hemoptysis, and loss of appetite)	12 (34.29%)
Weight loss	5 (14.28%)
Headache, vomiting, and convulsions	2 (5.7%)
Neck swelling	1 (2.8%)
Pain in abdomen and diarrhea	1 (2.8%)

the study conducted by Chopra et al. who reported 62% prevalence of extra pulmonary tuberculosis in their study.¹² Similarly, Yadav et al.⁷ reported 66.6% and Jana et al.⁹ reported 20% prevalence of TB.

In our investigation, the mean age was 21.57 ± 4.22 years, similar to 25.7 ± 4.22 years and 28.7 ± 3.9 years in research by Chopra et al.¹² In our study, 14 women from middle socioeconomic position and 21 from lower socioeconomic status participated. A study done by Muniyandi et al. found that those who live in poverty had a greater frequency of tuberculosis.¹³

We observed a similar outcome in our search. Clinical signs of active tuberculosis in pregnant women can be problematic, and identification is sometimes complicated by nonspecific, unclear clinical symptoms associated with the body's reaction to pregnancy.¹⁴ Chronic cough with expectoration was the most prevalent symptom in our study (68.5%) followed by fever (57.14%). Aronoff et al and Newton et al. observed cough to be a typical symptom.^{15,16}

The overall prevalence of Tubercular lymphadenitis was 13%, abdominal TB 6%, TB meningitis 4.16%, intestinal TB 1.42% and Pot's spine was observed in this study. These results are similar to studies conducted by Gaifer¹⁷ research by Chopra et al.¹² But the findings of the current research are not consistent with the results of the study conducted by Yadav et al in which they reported genital TB as the most common extra pulmonary site.⁷

These variations in the prevalence and presentation of tuberculosis among pregnant women underscore the complexity and regional differences in the disease's epidemiology. The high prevalence of pulmonary TB (74.28%) in our study compared to previous studies could be due to differences in regional TB control measures, healthcare access, or socioeconomic factors. These disparities highlight the need for tailored approaches to

TB screening and treatment, especially in high-burden regions. This necessitates a flexible and adaptable healthcare system that can address the unique needs of each population. Ultimately, a multidisciplinary approach involving pulmonologists, microbiologists, and other healthcare professionals is crucial in managing TB among pregnant women, ensuring early diagnosis, appropriate treatment, and better outcomes for both mothers and their infants.

Conclusion

Our study concludes that the Prevalence of tuberculosis infection among pregnant women is high. The prevalence of tuberculosis infection among pregnant observed in our study was 1.4%. Therefore proper screening of pregnant women is vital for TB diagnosis.

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