

# Observation of Common Clinical Symptoms and their Duration among Diagnosed TB Patients

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### Abstract

**Introduction:** Tuberculosis (TB) is a major global health issue, with millions of people affected each year. Timely detection and appropriate management of TB are essential to reduce its spread and associated morbidity and mortality. In this study, the authors aimed to observe the prevalence of common clinical symptoms among diagnosed TB patients and their duration. The study findings can provide valuable insights for healthcare providers in managing TB patients and improving treatment outcomes.

**Methods:** This observational cross-sectional study was conducted at the Department of Medicine, Pabna Medical College, Pabna. Study was done from January 2021 to December 2021.

**Result:** Most participants were aged 31-50 years, with 37.93% falling into the 41-50 age range. 58.62% were male, while 41.38% were female. Housewives (37.93%), laborers/farmers (34.48%), and students (12.07%) made up the majority of participants. Bronchial asthma (86.21%) was the most prevalent comorbidity, followed by hypertension (36.21%) and diabetes mellitus (17.24%). The majority of participants (63.79%) fell within the normal BMI range of 18.5-24.9. Cough (94.83%) and fever (74.14%) were the most common symptoms. Among the 43 participants with on and off fever, 53.49% had been experiencing fever for more than 2 weeks up to 1 month. Among the 55 participants with continuous cough, 60% had been experiencing cough for more than 2 weeks up to 1 month.

**Conclusion:** The study found that most participants were between the ages of 31-50 years, with a majority being male. Bronchial asthma was the most common comorbidity observed. The majority of participants had a normal BMI, and cough was the most prevalent symptom. The duration of fever and cough among TB patients was found to be prolonged, with a majority experiencing symptoms for more than 2 weeks up to 1 month. Early diagnosis and treatment are essential to prevent the progression of the disease and reduce the duration of symptoms.

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### Introduction

Tuberculosis (TB) is a communicable disease caused by the bacterium *Mycobacterium tuberculosis*, which primarily affects the lungs.<sup>1</sup> According to the World Health Organization (WHO), TB remains one of the top 15 causes of death worldwide and is the leading cause of death from a single infectious agent.<sup>1</sup> In 2019, an estimated 10 million people worldwide fell ill with

TB, with 1.2 million deaths recorded among HIV-negative individuals and an additional 208,000 deaths among people living with HIV.<sup>2</sup> The clinical presentation of TB can vary widely, with symptoms ranging from mild to severe and depending on the extent and location of the infection. Common symptoms of TB include cough, fever, weight loss, night sweats, and fatigue.<sup>3,4</sup> The commonality of these

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symptoms have been observed in various studies, both new and old. These symptoms can persist for weeks or months, leading to a significant impact on the quality of life of affected individuals.<sup>5,6</sup> Moreover, TB can be difficult to diagnose, particularly in resource-limited settings, where healthcare access may be limited, and diagnostic tools are often scarce.<sup>7</sup> As a result, timely and accurate diagnosis is critical to prevent the spread of TB and to initiate appropriate treatment. The duration of clinical symptoms among TB patients is an important aspect of the disease that can have significant implications for patient outcomes, disease progression, and healthcare utilization. Patients with prolonged symptoms may be at increased risk of disease complications and may require more intensive treatment and follow-up care.<sup>8</sup> Furthermore, the duration of symptoms can impact the accuracy of diagnostic tests and the potential for transmission of the disease to others. Observing the common clinical symptoms and their duration among diagnosed TB patients can provide valuable insights into the natural history of the disease and inform clinical practice, research, and public health interventions. The identification of the most common symptoms and their duration can help healthcare providers and public health officials recognize the need for TB screening and follow-up care among individuals who may be at increased risk of infection.<sup>9</sup> Moreover, understanding the duration of clinical symptoms can help healthcare providers monitor patient progress and identify potential complications or treatment failures. However, despite the necessity of such studies, very few studies have focused on the duration of clinical symptoms among TB patients, with varying results. Some studies have reported a prolonged duration of symptoms among TB patients, with cough persisting for several weeks or months, while other studies have reported shorter durations of symptoms. However, many of these studies have been conducted in specific populations or geographical regions and may not be representative of the global burden of TB. The aim of the present study was to observe the common clinical symptoms and their duration among diagnosed TB patients in the Bangladeshi population. By analyzing the duration of symptoms among TB patients, we hope to identify trends and patterns that may inform clinical practice and public health interventions.

### Materials and Methods

This prospective observational cross-sectional study was conducted at the Department of Medicine, Pabna Medical College Pabna, Bangladesh. The study duration was 1 year, from January 2021 to

December 2021. During this period, 58 patients were diagnosed as TB while visiting the hospital for extreme cough, fever or both. Data was collected using a structured questionnaire supplied to the TB patients by the researchers themselves. Informed consent was taken prior to data collection of each participant, and ethical approval of the study was obtained from the ethical review committee of the Pabna Medical College. Any patients presenting with TB symptoms who were clinically diagnosed with TB (pulmonary / extra pulmonary), and patients older than 10 years of age were included in the study following approval from the patient themselves or their legal guardian. However, any patients who had a previous history of tuberculosis treatment, had other chronic respiratory diseases, such as asthma or chronic obstructive pulmonary disease (COPD), had chronic disease that could have affected the immune system, such as HIV infection or cancer, were excluded from the study. After data collection was completed, all data was organized in an SPSS database, and analyzed using the SPSS V.25 software. Data was presented as frequency tables and Mean values where necessary.

### Results

**Table I.** Distribution of participants by Socio-Demographic characteristics (n=58)

| Sociodemographic Characteristics | Frequency           | Percentage |
|----------------------------------|---------------------|------------|
| Age Distribution                 |                     |            |
| d"20 years                       | 7                   | 12.07%     |
| 21-30 years                      | 8                   | 13.79%     |
| 31-40 years                      | 18                  | 31.03%     |
| 41-50 years                      | 22                  | 37.93%     |
| >50 years                        | 3                   | 5.17%      |
| Mean Age                         | 38.43 ± 11.58 years |            |
| Age range                        | 13-65 years         |            |
| Gender                           |                     |            |
| Male                             | 34                  | 58.62%     |
| Female                           | 24                  | 41.38%     |
| Occupation                       |                     |            |
| Labour/Farmer                    | 20                  | 34.48%     |
| Student                          | 7                   | 12.07%     |
| House wife                       | 22                  | 37.93%     |
| No job                           | 2                   | 3.45%      |
| Other job                        | 7                   | 12.07%     |

The majority of the participants were between the ages of 31-50 years, with 37.93% falling into the 41-50 age range. The mean age of the sample was 38.43 years with a range of 13-65 years. More than half of the participants (58.62%) were male, while 41.38% were female. In terms of occupation, the highest proportion of participants were housewives (37.93%), followed by laborers/ farmers (34.48%) and students (12.07%). Interestingly, a small percentage (3.45%) reported having no job, while another 12.07% reported having other types of jobs.

**Table II.** Distribution of participants by existing comorbidities (n=58).

| Comorbidities                         | Frequency | Percentage |
|---------------------------------------|-----------|------------|
| Diabetes Mellitus                     | 10        | 17.24%     |
| Hypertension                          | 21        | 36.21%     |
| Chronic obstructive pulmonary disease | 1         | 1.72%      |
| Bronchial Asthma                      | 50        | 86.21%     |
| Chronic Kidney Disease                | 0         | 0.00%      |

Out of the comorbidities listed, bronchial asthma was the most prevalent, affecting 86.21% of the participants. Hypertension was also relatively common, with 36.21% of the sample population reporting this condition. Diabetes mellitus was present in 17.24% of participants, while chronic obstructive pulmonary disease was reported by only 1.72% of the sample. Chronic kidney disease was not present in any of the participants.

**Table III.** Distribution of participants by BMI distribution (n=58)

| BMI                      | Frequency    | Percentage |
|--------------------------|--------------|------------|
| Underweight (<18.5)      | 10           | 17.24%     |
| Normal Range (18.5-24.9) | 37           | 63.79%     |
| Overweight (25.0-29.9)   | 9            | 15.52%     |
| Obese (≥30)              | 2            | 3.45%      |
| Mean BMI                 | 22.32 ± 3.77 |            |
| BMI Range                | 15.05-33.60  |            |

The data shows that the majority of participants (63.79%) fell within the normal BMI range of 18.5-24.9. 17.24% of the sample population were underweight, while 15.52% were overweight, and only 3.45% were obese. The mean BMI of the sample was 22.32 ± 3.77, with a range of 15.05-33.60.

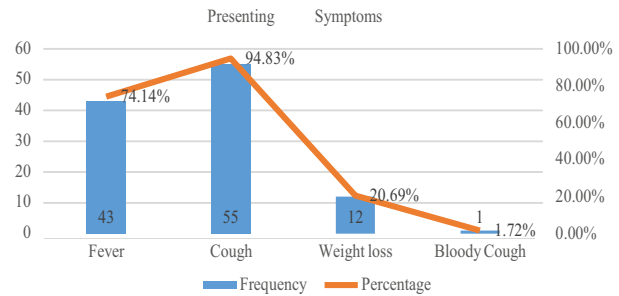


**Figure 1:** Distribution of participants by presenting symptoms (n=58)

Cough was the most prevalent symptom, reported by 94.83% of participants. Fever was also relatively common, affecting 74.14% of the sample population. Weight loss was present in only 20.69% of participants, while bloody cough was reported by only 1.72%.

**Table IV.** Distribution of participants by duration of fever (n=43)

| Duration of Fever | Frequency | Percentage |
|-------------------|-----------|------------|
| ≤2 weeks          | 4         | 9.30%      |
| >2 weeks-1 month  | 23        | 53.49%     |
| 1-2 months        | 12        | 27.91%     |
| 2-4 months        | 2         | 4.65%      |
| 4-8 months        | 2         | 4.65%      |

Among the 43 participants with on and off fever, majority of participants (53.49%) had been experiencing fever for more than 2 weeks up to 1 month. 27.91% of participants had been experiencing fever for 1-2 months, while a smaller proportion had been experiencing fever for shorter or longer periods. Specifically, 9.30% had been experiencing fever for ≤2 weeks, while 4.65% had been experiencing fever for either 2-4 months or 4-8 months.

**Table V.** Distribution of participants by duration of cough (n=55)

| Duration of Cough | Frequency | Percentage |
|-------------------|-----------|------------|
| ≤2 weeks          | 0         | 0.00%      |
| >2 weeks-1 month  | 33        | 60.00%     |
| 1-2 months        | 14        | 25.45%     |
| 2-4 months        | 4         | 7.27%      |
| 4-8 months        | 3         | 5.45%      |

Among the 55 participants with continuous cough, the majority of participants (60%) had been experiencing cough for more than 2 weeks up to 1 month. 25.45% of participants had been experiencing cough for 1-2 months, while smaller proportions had been experiencing cough for shorter or longer periods. Specifically, 7.27% had been experiencing cough for 2-4 months, while 5.45% had been experiencing cough for either 4-8 months. No participants had been experiencing cough for  $\leq 2$  weeks.

### Discussion

Tuberculosis (TB) is a global health issue affecting millions of people each year. The present study was conducted with diagnosed TB patients to observe their basic characteristics, and to see if the duration of certain symptoms can act as predetermination factors for the disease. The study hopes to present valuable insights into the demographics, comorbidities, BMI, and symptoms of TB patients, which can aid in improving patient care and treatment strategies. One of the key findings of the study is the demographic distribution of the participants. The majority of the participants were between the ages of 31-50 years, with a mean age of 38.43 years. This was similar to previous study that showed that TB affects individuals in their prime working years<sup>10</sup> In terms of gender, more than half of the participants (58.62%) were male, which was consistent with the higher prevalence of TB in men reported in other studies.<sup>11,12</sup> The study also revealed that the highest proportion of participants were housewives, followed by laborers/farmers and students.

This was in line to the findings of other studies that have shown that individuals with low socioeconomic status and those who work in certain occupations such as miners, healthcare workers, and prisoners are at a higher risk of contracting TB.<sup>11,12</sup> In terms of comorbidities, the study observed the bronchial asthma was the most common (86.21%) comorbidity observed among the participants. This was in contrast to previous studies that have shown that HIV, diabetes, and malnutrition are the most common comorbidities in TB patients.<sup>13,14</sup> However, it is important to note that this study only included a small sample size, which may have contributed to the differences in the prevalence of comorbidities. In terms of BMI, the majority of participants fell within the normal range, with 17.24% being underweight. This was somewhat different to the findings of other studies, which found

TB to be more common among malnourished and underweight patients<sup>15,16,17</sup> Cough was the most prevalent symptom reported by 94.83% of participants, which was consistent with the primary symptom of TB.<sup>18,19</sup> However, fever was reported in 74.14% of participants, which was within the 60-85% reported in other studies.<sup>20</sup> The duration of fever and cough among TB patients is an important factor in determining the severity of the disease and the prognosis of the patient.

The findings of the study show that a majority of the participants with on and off fever had been experiencing it for more than 2 weeks up to 1 month, while a significant proportion had been experiencing it for 1-2 months. Similarly, among the participants with continuous cough, the majority had been experiencing it for more than 2 weeks up to 1 month, with a smaller proportion experiencing it for longer periods. These findings were consistent with previous studies that have reported the duration of fever and cough among TB patients. A systematic literature review of found that cough lasting for more than 4 weeks works as a predictor of TB<sup>21</sup> Other studies have also mentioned the importance of longer cough duration as a primary indicator of TB<sup>22</sup>. These findings suggest that the duration of cough among TB patients is often prolonged, and that early diagnosis and treatment are essential in order to prevent the progression of the disease and reduce the duration of symptoms. However, the longer duration of fever was not common in other studies, mainly due to the difference of socioeconomically structure. In most countries, patients with lasting fever get diagnosed early, but many people in Bangladesh still don't have appropriate access to healthcare facilities, and do not visit the hospital unless they absolutely need to.

### Conclusion

The study findings indicate that TB primarily affects individuals in their prime working years, with a higher prevalence in males and those with low socioeconomic status. Bronchial asthma was the most common comorbidity observed among the participants, and the majority of participants fell within the normal range of BMI. Cough was the most prevalent symptom reported, with fever also being reported by a significant proportion of participants. The duration of cough and fever were found to be prolonged in a majority of participants, highlighting

the importance of early diagnosis and treatment. The study's findings suggest that there is a need for more accessible healthcare facilities and greater awareness of TB symptoms and risks among the general population in Bangladesh. Further research with larger sample sizes could also help to better understand the prevalence and risk factors associated with TB in the country. Overall, this study contributes to the growing body of research on TB and can aid in improving patient care and treatment strategies for this global health issue.

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