



Clinical diversity of Tuberculosis in Bangladesh: A systematic exploration of patient profiles



Presented by- Dr. Sanghita Banik Proma,
Research Assistant,
Dhaka Medical College Hospital,
Oxford Bangladesh Sepsis Research.

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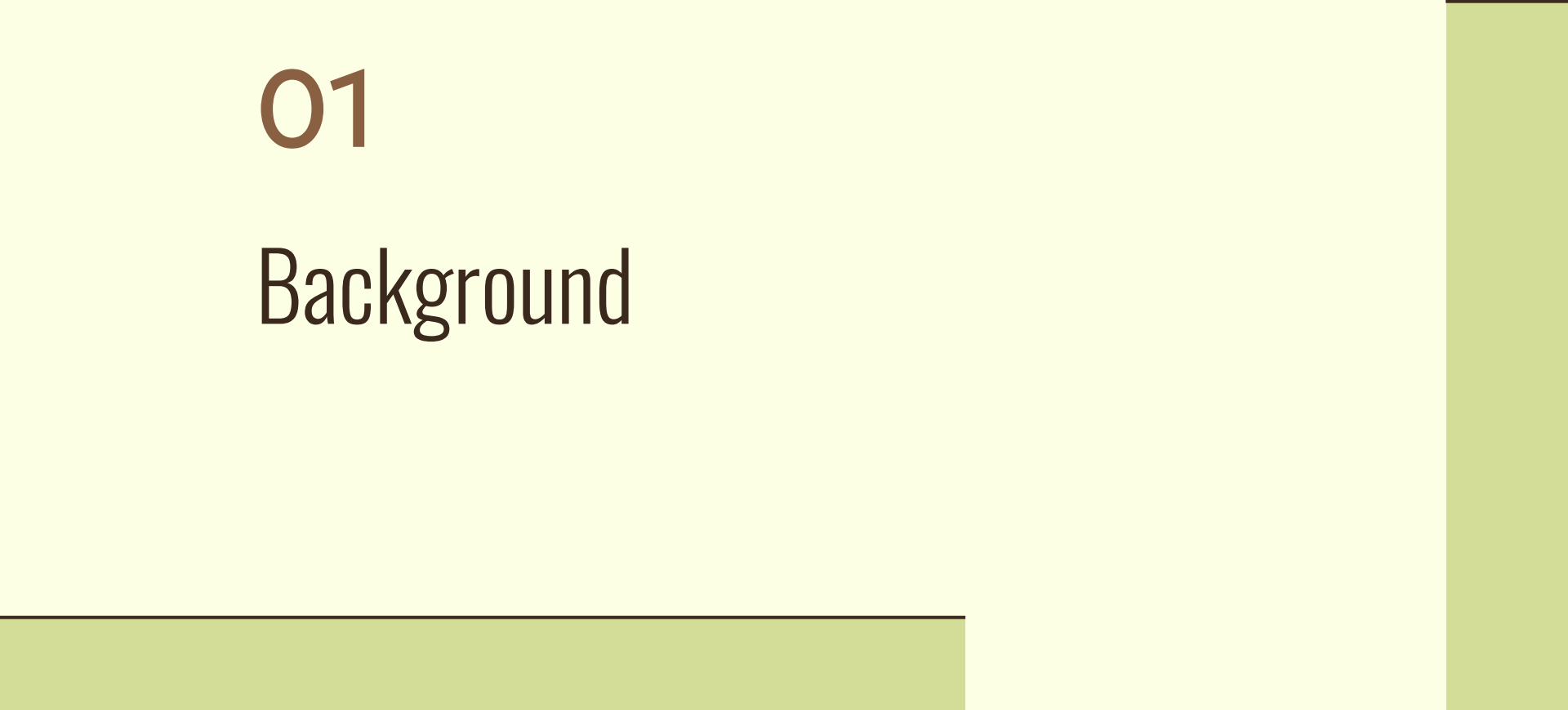
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01

Background



Tuberculosis (TB) is a global public health challenge causing substantial mortality and morbidity. In 2020, TB was the world's leading cause of death from a single infectious agent, and second after coronavirus disease (COVID-19) in 2022¹.

Worldwide, an estimated 10.6 million people developed TB in 2022 and an estimated 1.30 million deaths was caused by it¹.

1. World Health Organization. *Global Tuberculosis Report*. Geneva: World Health Organization; 2023.

30 high TB burden countries are accounted for 87% of the world's TB cases and two-thirds of the global total are in 8 countries, which includes BANGLADESH¹.

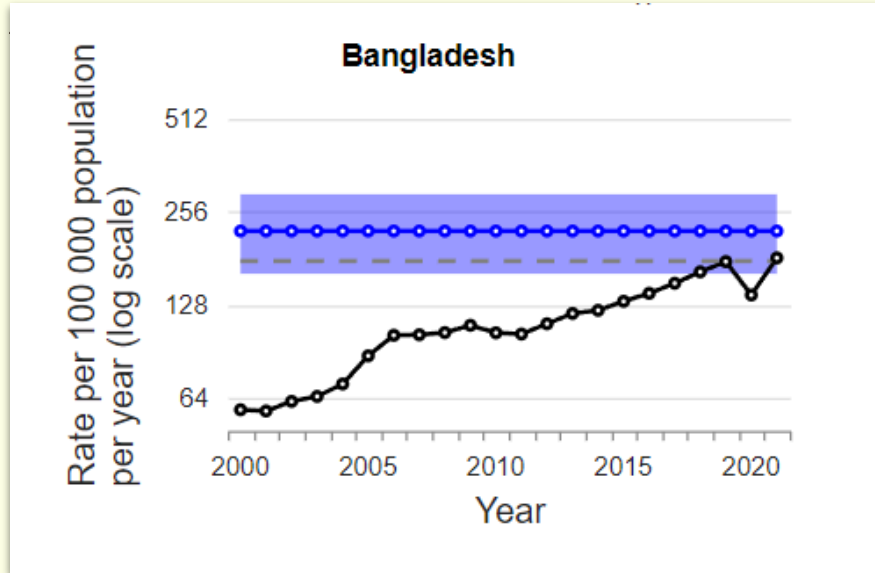
COUNTRY	TB	TB/HIV	MDR/RR-TB
Angola	■		■
Azerbaijan			■
Bangladesh	■		■
Belarus			■
Botswana		■	
Brazil	■	■	
Cameroon		■	
Central African Republic	■	■	
China	■	■	■
Congo	■	■	
Democratic People's Republic of Korea	■		■
Democratic Republic of the Congo	■	■	■
Eswatini		■	
Ethiopia	■	■	
Gabon	■		
Guinea			
Guinea-Bissau			
India	■	■	■
Indonesia	■	■	■
Kazakhstan			■
Kenya	■	■	
Kyrgyzstan			■
Lesotho	■	■	
Liberia	■		
Malawi		■	
Mongolia	■		■
Mozambique	■	■	■
Myanmar	■	■	■
Namibia	■	■	
Nepal			■
Nigeria	■	■	
Pakistan	■		■
Papua New Guinea	■		■
Peru			■
Philippines	■	■	■
Republic of Moldova			■
Russian Federation		■	■
Sierra Leone	■		
Somalia			■
South Africa	■	■	■
Tajikistan			■
Thailand	■	■	
Uganda	■	■	
Ukraine			■
United Republic of Tanzania	■	■	
Uzbekistan			■
Viet Nam	■		
Zambia	■	■	
Zimbabwe		■	■

Countries in the three global lists of high-burden countries for TB, HIV-associated TB and MDR/RR-TB to be used by WHO in the period 2021–2025.

The red square indicates that a country is in a list.

COUNTRY	TB	TB/HIV	MDR/RR-TB
Angola	■		■
Azerbaijan			■
Bangladesh	■		■
Belarus			■
Botswana		■	
Brazil	■	■	
Cameroon		■	
Central African Republic	■	■	
China	■	■	■
Congo	■	■	
Democratic People's Republic of Korea	■		■
Democratic Republic of the Congo	■	■	■

1. World Health Organization. *Global Tuberculosis Report*. Geneva: World Health Organization; 2023.



The estimated incidence of TB per 1,00,000 is 221 in Bangladesh, with a mortality rate of 24 per 100,000 population².

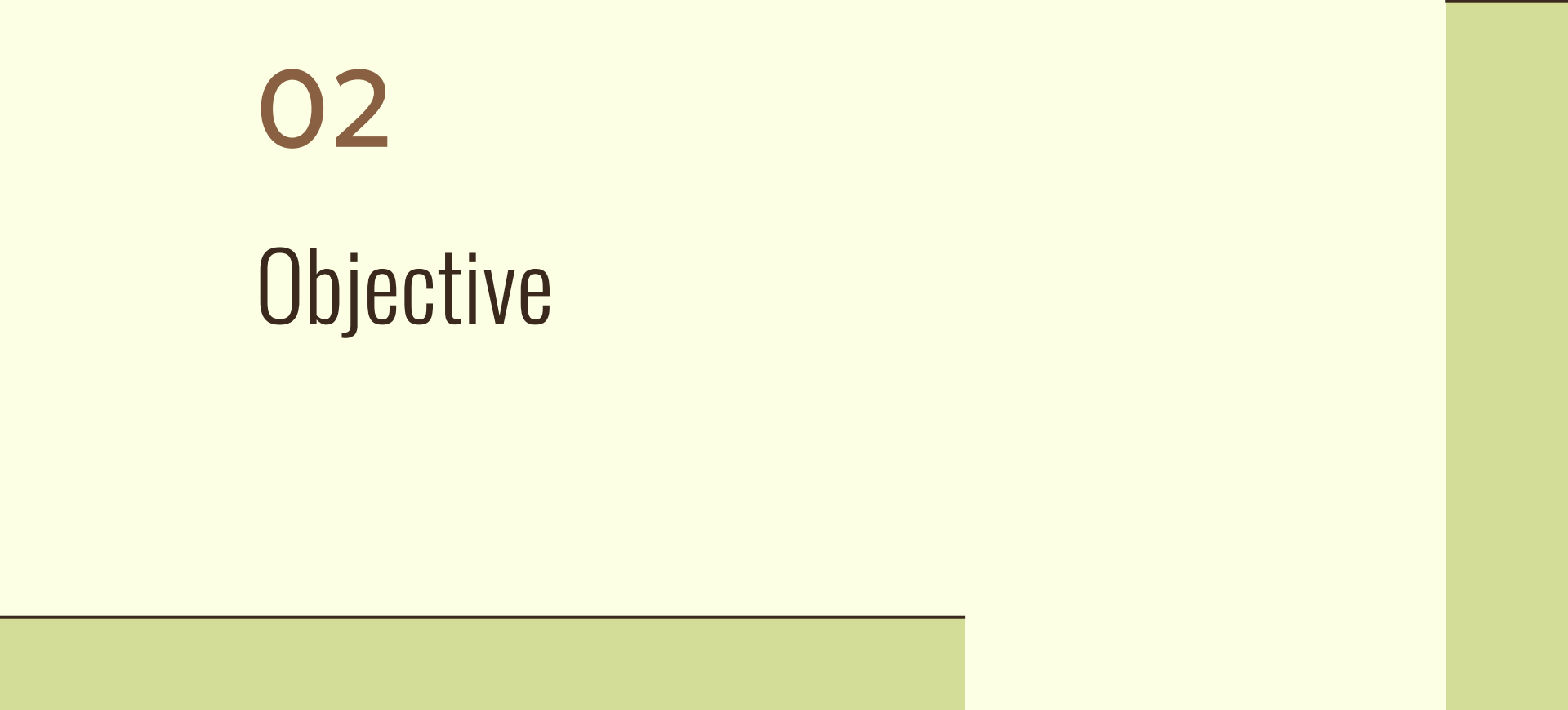
2 .National Tuberculosis Control Programme (NTP). Tuberculosis control in Bangladesh. Annual Report 2020. Dhaka: Director General of Health Services, 2020.

Despite numerous initiatives, including governmental programs like the Directly Observed Treatment Short-course (DOTS) clinic, tuberculosis remains uncontained in our environment. It has already been established that relying solely on medical treatment is insufficient in this battle; equal emphasis must be placed on early diagnosis and prevention.



02

Objective



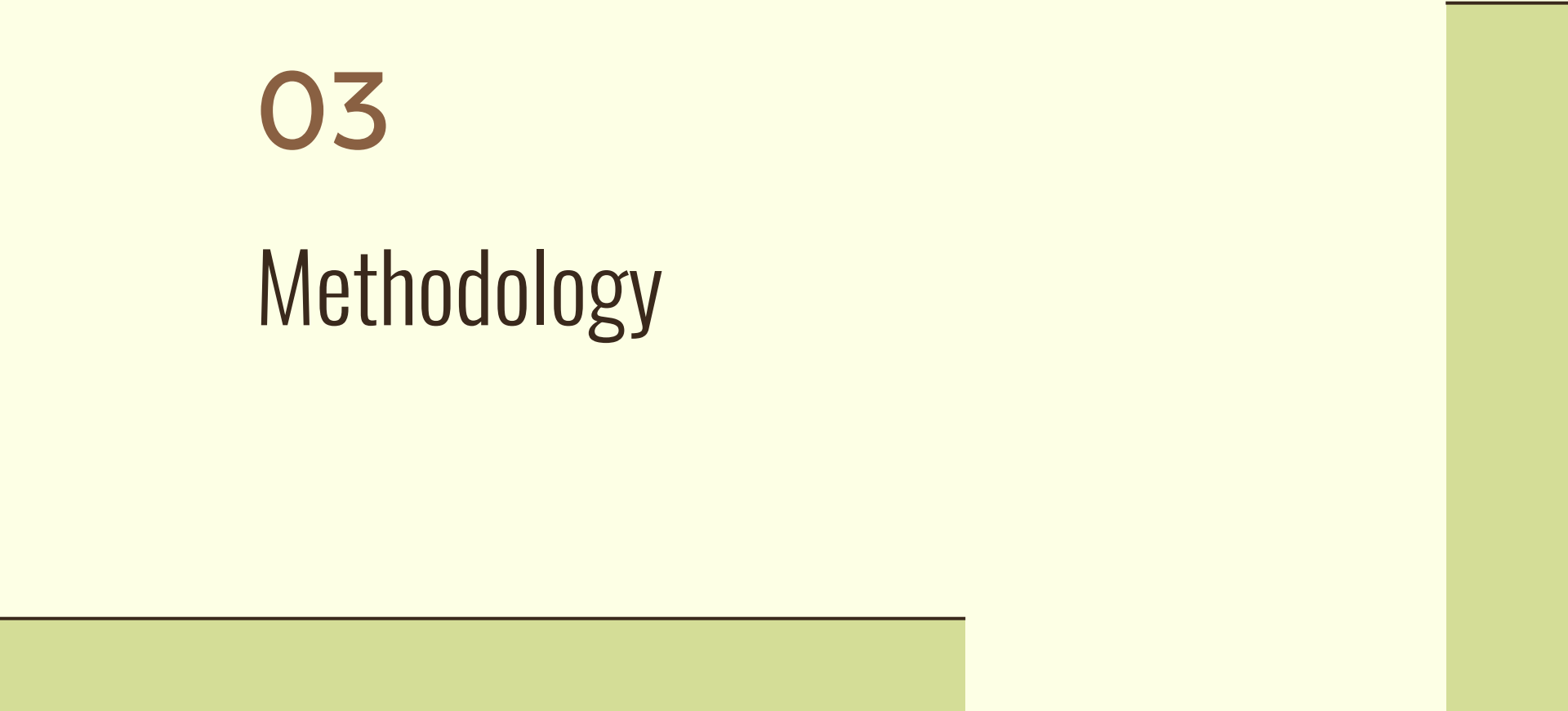
To effectively plan control and prevention strategies and enhance service delivery systems, epidemiological information on TB is essential.

- This review aims to comprehensively analyze and synthesize existing socio-demographic and clinical data related to TB patients in Bangladesh, which will subsequently facilitate a focused approach to address community challenges and evaluate the effectiveness of current preventive programs.



03

Methodology



Literature Review

We conducted an extensive search of literature following the guidelines of Cochrane Library and PRISMA. Our literature search utilized two databases, namely PubMed and Google Scholar, employing a standardized search strategy.

Two reviewers evaluated the relevant articles using their title and abstracts prior to retrieval of full-text articles. The retrieved full-text articles were further screened according to pre-specified inclusion and exclusion criteria. We resolved disagreements by discussing with a third reviewer



Inclusion Criteria

- **Design type:**
Cross-sectional and other observational studies
 - **Study subject:**
Tuberculosis (TB) patients of Bangladesh
 - Studies that reported socio-demographic parameters of TB patients.
 - Studies that assessed clinical profiles of TB patients.
 - Studies conducted in Bangladesh in the last 10 years.
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- 

Exclusion Criteria

- We excluded case reports, editorials, letters, reviews, surveys and interventional studies.
- Duplicate studies were also excluded.

Identification

Records identified through
database search

- Pubmed (n= 14)
- Google Scholar (n=13)

Additional records identified
through other sources
(n = 17)

Screening

Records after duplicates removed
(n= 24)

Titles and abstracts screened
(n= 24)

Articles assessed for eligibility
(n= 19)

Articles included for analysis (n= 8)

Excluded due to difference in

- Study designs
- Time period
- Sample population
- Parameters not of interest

Inclusion

	Author	Title	Year	Study Design	Sample Size
1	Tanzila Ferdous et al.	Socio-Demographic and Clinical Profile of Patients with Pulmonary Tuberculosis in A Tertiary Care Hospital	2023	Descriptive cross-sectional study	100
2	Md. Zillur Rahman et al.	Clinical Profile Analysis of Tuberculosis Patients Attended in a Tertiary Care Hospital in Bangladesh	2023	Prospective Observational study	87
3	Sadia Saber et al.	Socio-demographic Determinants of Adult Pulmonary Tuberculosis Patients: A Hospital Based Study	2022	Cross-sectional observational study	410
4	Abu Khalid Muhammad Maruf Raza et al.	The Epidemiological Aspects of Tuberculosis Patients in a Tertiary Care Medical College Hospital of Bangladesh	2017	Observational study	112
5	C. M. Reza Qureshi Forhad et al.	The Demographic Profile of Pulmonary TB Patients	2021	Prospective observational study	76
6	Atiquzzaman et al.	Clinical Profile of Tuberculosis Patients in a Tertiary Care Hospital of Bangladesh	2022	Prospective observational study	73
7	Muna AT et al.	Multimorbidity among Tuberculosis Cases' Bangladesh Perspective	2017	Cross-sectional study	227
8	Abu Bakar Siddique et al.	Descriptive Epidemiology of Multidrug Resistance Tuberculosis (MDR-TB) in Bangladesh	2018	Descriptive cross-sectional study	148

Risk of Bias Assessment

The included studies were classified as low risk according to risk of bias assessment by ROBINS-E tool.

		Risk of bias domains							
		D1	D2	D3	D4	D5	D6	D7	Overall
Study	Study 1	+	+	-	+	+	+	+	+
	Study 2	+	+	-	+	+	+	-	+
	Study 3	+	+	-	+	-	+	+	+
	Study 4	+	+	-	+	+	-	+	+
	Study 5	+	+	-	+	+	+	-	+
	Study 6	+	+	-	+	-	+	+	+
	Study 7	+	-	-	+	X	+	-	+
	Study 8	+	-	+	X	-	+	+	+

Domains:

D1: Bias due to confounding.

D2: Bias arising from measurement of the exposure.

D3: Bias in selection of participants into the study (or into the analysis).

D4: Bias due to post-exposure interventions.

D5: Bias due to missing data.

D6: Bias arising from measurement of the outcome.

D7: Bias in selection of the reported result.

Judgement

X High

- Some concerns

+

Low



04

Results





Parameters included in the Study

- Age
 - Gender
 - Education Level
 - Employment status
 - Smoking Habits
 - Clinical presentation
- 
- 

	Study 1	Study 2	Study 3	Study 4	Study 5	Study 6	Study 7	Study 8
Age Group	31-40 years	41-50 years	41-50 years	25-34 years	36-55 years	>50 years	20-39 years	31-40 years
Gender	Male	Male	Male	Male	Female	Female	Female	Male
Education Level	Higher secondary	Primary	Higher secondary	None	Primary	Primary	Secondary	Secondary
Employment Status	Employed	Unemployed	Employed	Employed	Employed	Unemployed	Unemployed	Employed
Smoking Habits	Absent	Present	Absent	Present	Present	Absent	Absent	Absent
Clinical Presentation	Cough (100%)	Cough (93%)	Cough (80.21%)	Cough (93%)	Cough (87%)	Cough (96%)	Cough (100%)	Cough (94%)

Publication Bias

Funnel plots and Egger's test revealed no publication bias in the results of socio-demographic parameters and clinical profiles of the systematic review concerning the Tuberculosis (TB) patients.



05

Conclusion





In conclusion, this review underscores the diverse spread of TB in our community and highlight the importance of targeted prevention strategies in addressing this persistent public health challenge in the country. This review serves as a valuable resource for informing and optimizing future interventions in the fight against tuberculosis in Bangladesh.





THANK YOU!

