

PREVALENCE AND FACTORS ASSOCIATED WITH TB SUCCESS RATE IN KULIM DISTRICT FROM 2020 - 2024

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Introduction

Tuberculosis remains a major health challenge in Malaysia. Treatment success serves as a key indicator of program performance, and identifying its drivers is essential for refining care and halting transmission. This study aims to determine the prevalence and factors associated with treatment success among TB patients in Kulim District from 2020 to 2024. Treatment outcomes were classified as follows: “successful” included patients who were cured or completed treatment, while “unsuccessful” included those who failed treatment, died, or defaulted.

Methodology

A cross-sectional study was conducted using secondary data from the National Tuberculosis Registry for Kulim District between 2020 and 2024. The study included Malaysian TB patients aged ≥18 years, excluding those with incomplete records, MDR-TB, ongoing treatment, transfers, or revised diagnoses. The final sample size was 419, estimated using a single proportion formula. Independent variables included sociodemographic factors (age, gender, education, occupation, smoking, facility type) and clinical factors (diabetes, TB site). Data were analyzed using descriptive statistics and multiple logistic regression with R software version 4.4.3.

Result

A total of 419 TB patients were included. Most were male (64%) and aged 18–39 years (39%), with the majority having formal education (99%). About half were employed (51%), and most were treated in government facilities (80%) and had pulmonary TB (78%). Non-smokers accounted for 73%, and only 5.5% had diabetes mellitus. The overall treatment success rate was 82.3% (95% CI: 78.3–85.9%). In multivariable analysis, female gender (AOR = 3.88; 95% CI: 1.72–9.21; $p = 0.001$) and type of facility were significantly associated with treatment success, whereby patients managed in government facilities had substantially lower odds of achieving success compared to those treated in private facilities (AOR = 0.13; 95% CI: 0.03–0.38; $p < 0.001$).

Table 1. Multiple Logistic Regression Model of Factors Associated with Tuberculosis Treatment Success in Kulim District from 2020–2024 (n = 419)

Variables	Adjusted OR (AOR)	95% CI	p-value
Sociodemographic			
Gender			
Male	-	-	
Female	3.88	1.72, 9.21	0.001
Age(years)			
18–39	-	-	-
40–59	0.86	0.44, 1.68	0.7
≥60	0.36	0.17, 0.76	0.008

Occupation			
Employed	-	-	
Unemployed	0.61	0.27, 1.31	0.2
Education			
Informal	-	-	
Formal	5.04	0.58, 44.3	0.12
Facilities (place of treatment)			
Private	-	-	
Government	0.13	0.03, 0.38	0.001
Clinical Characteristics			
Anatomy			
Pulmonary	-	-	
Extrapulmonary	1.98	0.79, 5.38	0.2
Pulmonary and Extrapulmonary	0.36	0.07, 1.73	0.2
Smoking			
No	-	-	
Yes	0.59	0.26, 1.32	0.2
Diabetes Mellitus			
No	-	-	
Yes	0.78	0.17, 4.16	0.8

Intercept = 2.165

No multicollinearity detected (all GVIFs < 2)

Hosmer–Lemeshow p-value = 0.557

Classification accuracy = 81.6%

AUC = 0.755

Discussion

The treatment success rate for TB patients in Kulim District was 82.3%, higher than national estimates but still below the 90% target set by WHO and the Malaysia National Strategic Plan. This highlights the need for stronger adherence support and improved outcome monitoring at the district level. Two factors were significantly associated with treatment success: gender and type of treatment facility. Female patients had nearly four times higher odds of achieving treatment success compared to males, suggesting differences in health-seeking behaviour and adherence. Patients managed in government facilities had markedly lower odds of treatment success compared to those in private facilities. This may be related to greater clinical complexity in public facilities, where patients are often referred with more severe disease, multiple comorbidities, or advanced presentations, which can reduce the likelihood of achieving successful treatment outcomes. These findings emphasize the importance of gender-responsive interventions and the need to strengthen patient-centred services and adherence support, particularly in government facilities, to improve treatment outcomes.

Keywords: Tuberculosis, treatment success, treatment outcome, registry, factor associated