Prognostic factors of delayed sputum conversion among smear positive tuberculosis patients in Tanah Merah district from 2018-2022

Mohd Rujhan Hadfi Mat Daud[1], Aliff Ridzwan Hamidun[2], Farah Wahida Mohamad[2], Remie Aswarie Ramlan[2], Siti Nurul Fatihah Abdullah[2]

[1]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Tanah Merah District Health Office, Tanah Merah, Kelantan Malaysia

ABSTRACT

Introduction: Tuberculosis is one of the oldest diseases known to affect humans and it is a major cause of death worldwide. The disease is completely curable with an at least 6-month course of treatment. Sputum smear conversion is an indication of patients responding well to tuberculosis treatment. However, previous studies have shown that 10 to 20 percent of cases have delayed sputum smear conversion. The aim of this study is to determine the prognostic factors of delayed sputum conversion among smear positive tuberculosis patients in Tanah Merah district. **Materials and Methods:** This study was conducted using secondary data from MyTB from 2018 to 2022. MyTB is a tuberculosis surveillance system managed by the TB and Leprosy Control Sector of Disease Control Division, Ministry of Health Malaysia. MyTB is input by well-trained health care workers in tuberculosis at health clinics and the data were monitored weekly at district health office and state health department level. All smear positive pulmonary tuberculosis patient's data were included in this study. The independent variables included in this study are age, gender, race, nationality, location of residence, type of residence, education level, working status, smoking status, diabetic status, HIV status, BCG scar status, treatment category and pretreatment chest x-ray findings. The dependent variable is the sputum smear result at the end of the intensive phase. The data were initially analysed using descriptive statistics and multiple logistic regressions were used to determine the association between delayed sputum smear conversion and the independent variables. The fitness of the regression model was assessed with Hosmer and Lemeshow goodness of fit, classification table and area under the receiver operating characteristic (ROC) curve. **Results:** A total of 253 cases of smear positive tuberculosis were reported in Tanah Merah district from 2018 to 2022. Thirty-one (12.3%) of them were reported to have delayed sputum conversion at the end of intensive phase treatment. The mean age of those with delayed sputum conversion is 52.5 with standard deviation of 13.1. Majority of them are male (80.6%), Malay (90.3%), Malaysian (93.5%), have BCG scar (90.3%) and not have HIV (96.8%). Almost half were not working and were nonsmokers. Having diabetic (AdjOR: 2.83; 95% CI: 1.28, 6.26) and living in urban area (AdjOR: 2.59; 95% CI: 1.06, 6.31) were found to be significant prognostic factors associated with delayed sputum conversion in smear positive tuberculosis patient. **Conclusion:** Patients with diabetic and patients living in urban areas need to be given extra attention during the intensive phase of treatment. Compliance on treatment and good diabetic control are important in managing tuberculosis to ensure success of tuberculosis treatment.