UNIVERSITI TEKNOLOGI MARA

PREVALENCE OF CO-MORBIDITIES & RISK FACTORS FOR MULTIDRUG RESISTANCE AMONG TUBERCULOSIS PATIENTS IN INSTITUTE OF RESPIRATORY MEDICINE, KUALA LUMPUR

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree of qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Globally, the issue of Multidrug Resistant Tuberculosis (MDR-TB) was acknowledged as a threat to the successful prevention and treatment of TB. In Malaysia, TB remains a major health issue and incidence has been rising slowly for the past decade indicating poor success rate in current TB control programme. Currently, very little epidemiological data can be found regarding the situation of TB and MDR-TB in Malaysia. Therefore, this study aims to bridge the gap in information regarding TB and MDR-TB by identifying the population at risk. The objective of this study is also to identify the independent risk factors associated with MDR-TB in Malaysia. 477 TB patients from the Institute of Respiratory Medicine (IPR) were universally sampled based on the records of patients in 2010. Among 477 patients sampled, 67.9% were male with mean age 37.2 (SD 14.9). 30% of patients were foreign born with the majority were from Myanmar (14.9%), Indonesia (9.4%) and Bangladesh (2.7%). Prevalence of TB/HIV and TB/Diabetes among the patients sampled was 0.059 and 0.155 respectively. In multivariate analysis, BCG Status (AOR=0.292, 95%CI 0.13-0.67) was found to be a protective risk factor while history of previous TB (AOR=4.36, 95%CI 1.80-10.56) was a risk factor for MDR-TB. Whilst history of previous TB is a commonly acknowledged risk factor, the evidence of BCG as a protective factor for MDR-TB indicates that BCG vaccination is still a viable preventive measure. Association was found between BCG Status and foreign born patients (p-value < 0.01) indicating a need for active screening of immigrants.

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CHAPTER ONE
INTRODUCTION

1.1   INTRODUCTION

In the early 20th century, Tuberculosis (TB) was thought to have been almost eradicated thanks to the discovery of its treatment drugs. Yet, in 2010, the World Health Organization reported that approximately 8.8 million cases of TB were reported worldwide of which about 1.4 million resulted in mortality (WHO, 2011). It is clear that TB is still a threat and has caused a huge number of mortality now, and in the past.

Tuberculosis is a communicable disease caused by the bacterium *Mycobacterium tuberculosis*. The main target organ for this mycobacterium is the lungs. However, infections in other parts of the body are not uncommon. TB bacteria have been known to attack the kidney, spine and brain (CDC, 2010). The transmission of TB occurs in the air, hence it is known as an airborne disease. *Mycobacterium tuberculosis* can be transmitted during coughing, sneezing, speaking, thus infecting the people surrounding the patient.

The treatment of TB usually involves the injection of first-line and/or second-line of anti-tuberculosis drugs. Currently, the most common TB control and management programme is the Direct Observed Therapy, Short Course (DOTS) and so far, studies have indicated an increase in total success rate in the implementation of DOTS (Erhabor, *et al.*, 2003; Woldeyohannes, *et al.*, 2011).

However, poor management of TB control and treatment programme has resulted in the emergence of multi-drug resistance TB that threatens TB eradication programme (Sandhu, 2011). Resistance to an anti-tuberculosis drug occurs when Mycobacterium tuberculosis are able to withstand the attack of antibiotic (ALA, 2011). Since drugs used are not able to eradicate the bacteria, resistance will spread from one person to another, resulting in a Drug-Resistance Tuberculosis (DR-TB). In fact, a study reported a mere 37.1% of success rate for 202 Multi-Drug Resistance TB (MDR-TB) patients in 3 different hospitals (Jeon, *et al.*, 2011). Retreatment of the