Age-Specific Patterns in Pulmonary Tuberculosis Epidemiology: Insights from Malaysia's Private Tertiary Healthcare Sector

Kai-Ying Low, Lian-Huat Tan, Oi-Fong Yew, Masita Arip, Jamuna Jairaman@Jeyaraman, Nurul-Atiqa Mohd Yuseri

Corresponding author: Kai-Ying Low *(lowkying@sunway.com.my) Laboratory, Sunway Medical Centre, Malaysia*

ABSTRACT

Background: Pulmonary tuberculosis (PTB) presents a significant global clinical challenge, necessitating accurate diagnosis through culture-based methods.

Objective: This study aims to examine the epidemiology of PTB in Malaysia's private tertiary healthcare sector and explore associated trends.

Methods: Data from 2019 to 2023 were gathered from Sunway Medical Centre's laboratory information system, including mycobacterium culture and susceptibility testing requests from various medical centers within the Sunway Health Group. Both solid (Lowenstein Jenson agar) and liquid (BD BBL™ MGIT™) media were utilised with up to 8 weeks of incubation. Descriptive statistical analysis, including crosstabulation, was conducted using IBM SPSS Statistics 26.

Results: During the study period, 7 213 culture requests were received, yielding 815 strains of *Mycobacterium tuberculosis* complex. Among these, 638 originated from pulmonary samples like sputum, bronchioloalveolar lavage, and lung biopsy, with 8.9% from foreigners. The frequency of PTB detection exhibited a declining trend over the years: 10.94% (2019), 7.96% (2020), 10.96% (2021), 8.10% (2022), and 7.14% (2023). Analysis by age groups showed a peak in the 20 - 39 age category (44.20%), followed by 40 - 59 (28.53%), 60 - 79 (18.81%), ≤ 19 (6.43%), and ≥ 80 (2.04%). First-line drug resistance rates varied, peaking in 2021 and showing a decreasing trend in 2023 for ethambutol (2.70% to 0.81%), isoniazid (6.08% to 3.25%), rifampicin (4.73% to 1.63%), and streptomycin (4.05% to 2.44%) resistance.

Conclusion: The decline in PTB detection frequency and resistance rates may partly result from preventive measures adopted during the COVID-19 pandemic, such as widespread mask usage and improved hygiene practices. While these interventions likely contributed to reducing PTB transmission, further research is needed to understand their overall impact. Nevertheless, despite this decline, the burden of PTB remains significant, particularly among younger age groups. This highlights the need to investigate various contributing factors such as lifestyle behaviors, socioeconomic status, and healthcare access.

BIOGRAPHY

With extensive experience in medical laboratory sciences and a four-year tenure on the antimicrobial stewardship committee, Kai-Ying is a dedicated and skilled professional specializing in bacteriology and mycobacteriology. Besides ensuring precise diagnostic results, she actively contributes to enhancing antimicrobial stewardship practices. Collaborating with healthcare teams, Kai-Ying drives towards optimizing antimicrobial use, preventing resistance, and improving patient safety. She conducts antimicrobial surveillance studies and raises awareness among healthcare workers and the public. Kai-Ying's dedication to staying updated in her field allows her to contribute effectively to medical science advancement and deliver reliable laboratory services. Her passion for precision and excellence drives her commitment to enhancing patient care and healthcare outcomes through antimicrobial stewardship efforts.

- Mobile Number*: +60166431819
- Category*: Poster presentation
- Linked In: https://www.linkedin.com/in/kai-ying-low-ab566a131/
- WhatsApp No: +60166431819
- Research Interest*: bacteriology and mycobacteriology
- Fax No: Nil