

Digital epidemic detection and action: Development and validation of a mobile health application for empowering university community COVID-19 management

Edre Mohammad Aidid¹, Muhamad Ashraf Rostam², Mohd Haikal Muhamad, Halil³, Mohd Zuhairi Zainuddin⁴, Muhammad Shafiq Aiman Jefri⁵

¹Department of Community Medicine, Kulliyyah of Medicine, International Islamic University Malaysia, ²Department of Nutrition Sciences, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia, ³Department of Restorative Dentistry, Kulliyyah of Dentistry, International Islamic University Malaysia, ⁴Department of Psychiatry, Al-Sultan Abdullah Hospital, Universiti Teknologi Mara, ⁵Department of Software Engineering, IKHLAS Com Travel, AirAsia

ABSTRACT

Introduction: There was a need for an in-house complementary digital surveillance method to detect COVID-19 cases early in campus setting and break the chain of transmission. The aim of this research was to develop and validate the DETect mobile health application to empower the university community in managing COVID-19 during the endemic transition phase. **Materials and Methods:** The research was executed in two phases. For the development phase, a risk assessment and action algorithm was adopted from the Ministry of Health Malaysia and created in-app using Flutter software development kit. Google DataStudio dashboards for quarantine, isolation and statistics were integrated and updated automatically. Targeted YouTube tutorials and health education materials were made readily available in-app. Face and content validation of ease of use, functionality and technical support phase were done together with end-users and a panel of experts, respectively. Beta testing was done thereafter for 1 month. **Results:** The web application version was the most feasible platform for multiple device usage after initial testing. Content validity index was 1.00. More than half (63%) of the users strongly felt that the system was easy to use, and most (75%) of them strongly agreed that the video tutorials helped in the usage and the technical support team assisted them well. The number of views for the educational video significantly increased with each case being reported ($r=0.3$, $p<0.05$). **Conclusion:** DETect was able to empower the university community to embrace living with COVID-19. Future development will be to expand the functions to other communicable and non-communicable disease prevention mechanisms.

Keywords: DETect, Development, Validation, mHealth, Empower

Factors associated with tuberculosis treatment success among tuberculosis and human immunodeficiency virus co-infected patients in Kelantan

Siti Romaino Mohd Nor^{1,2}, Nyi Nyi Naing¹, Mat Zuki Mat Jaeb³

¹Faculty of Medicine, Universiti Sultan Zainal Abidin (UniSZA), Terengganu, ²Clinical Research Centre Kelantan, Hospital Raja Perempuan Zainab II, Kelantan ³Respiratory Unit, Department of Medicine, Hospital Raja Perempuan Zainab II, Kelantan

ABSTRACT

Introduction: Tuberculosis (TB) and Human Immunodeficiency Virus (HIV) co-infection is a global public health issue among people living with HIV (PLHIV). The objective was to assess the prevalence of TB treatment outcomes (successful and unsuccessful) and associated factors with TB treatment success among TB and HIV co-infected patients in Kelantan for five years (2014 – 2018). TB treatment success was defined as the sum of cured patients and those who completed treatment. **Materials and Methods:** A cross-sectional study was conducted at the TB/Leprosy Unit of the State Health Department of Kelantan (JKNK) using secondary data from January 2014 to December 2018 assessed in the MyTB online system. The data were analyzed using SPSS 25.0 and STATA 14. Ethics approvals were obtained from Medical Research Ethics Committee (MREC) and UniSZA Human Research Ethics Committee (UHREC). **Results:** Kelantan has had 6,313 TB cases from January 2014 to December 2018. There were 703 (11.1%) cases of TB and HIV co-infection. The prevalence of successful treatment among TB and HIV co-infected patients was 57.1%. The duration of treatment and anatomy of TB location was significantly associated with TB treatment success. **Conclusion:** This study's findings showed that the prevalence of TB treatment success rate was 57.1%, and the unsuccessful rate was 42.9%. The treatment duration and the TB location's anatomy were significantly associated with the treatment success rate. Since the anatomy of TB location for both PTB and EPTB has a higher probability of treatment failure in TB and HIV co-infection, DOTS should be given more attention and importance.

Keywords: Factor associated, Tuberculosis (TB), Treatment Outcome, Human Immunodeficiency Virus (HIV), Co-infected Patient