Prediction of transition to Multidrug resistant Tuberculosis (MDR-TB) among individuals with tuberculosis using computational intelligence.

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Tuberculosis (TB) is a global public health threat and a major leading cause of death in the world. In 2015, 10.4 million people fell ill with TB and 1.8 million died from the disease (including 0.4 million among people with HIV). Over 95% of TB deaths occur in low- and middle-income countries, Swaziland inclusive. The TB problem is compounded by the emergence of multidrug resistant TB in which there is annual estimate of 480 000 people having multidrug-resistant TB (MDR-TB). TB in Swaziland has reached an epidemic stage and the rate and pattern of transition to multidrug resistant TB from individuals having TB is unknown, yet treatment and care for clients with multidrug resistant TB poses serious burden on the economy of the nation and leads to high mortality, hence the need for the nation to prepare adequate human resources and finance to mitigate the impact of the disease. Predicting the rate of transition to multidrug resistant among individuals with TB using computational intelligence will assist government in preparing manpower and materials to deal with the menace thus reducing the effect of the epidemic. Computational intelligence uses computational methodologies and approaches to address complex real-world problems such as prediction of transition from TB to MDR-TB. Results revealed that given the current prevalence of TB in the country, three out of every ten individuals with TB develop MDR-TB most of the transition occurs from second year of contracting TB and among those who default treatment. In the light of the result, government should scale up prevention strategies and procure diagnostic and treatment resources. Training of human resources for the diagnosis, treatment and care of MDR-TB has been recommended to the government.

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