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Modeling of Multi-Response Longitudinal DataUsing Linear Mixed Modelin Patient with Pulmonary Tuberculosis in Syaiful Anwar Hospital Malang

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Abstract: In medical research, eventually researcher using the longitudinal data dealing with repeated measurement in each patient as a subject in several period of time with the quantitative response. Longitudinal data is data that has two characteristics which repeated measurements on the same subjects during a certain period and there is a relationship between the studied observations from time to time. In the longitudinal data is often found to observations that have more than two response variables are inter-connected and quantitative. Because the study was repeated in time on the same subject then the longitudinal data analysis are always correlated, corresponding to the analysis using multi-response longitudinal mixed model. This study aimed to establish the model of multi-response longitudinal data in medical research, using the Mixed Model. Data to be modeled is a secondary data on the effects of Anti Tuberculosis Drug therapy in patients with pulmonary tuberculosis, Syaiful Anwar Hospital Malang. Variable responses were observed, among others, BMI (Body Mass Index), LED (erythrocyte sedimentation rate), monocytes, and levels of Supar (soluble urokinase plasminogen activator receptor). Final model is formed in patients with pulmonary tuberculosis showed that during the treatment period increased Body Mass Index (BMI), decreased erythrocyte sedimentation rate (LED), decreased monocyte and decreased levels of soluble urokinase plasminogen activator receptor (Supar). This demonstrates the success of Anti Tuberculosis Drug therapy in patients with pulmonary tuberculosis. Increased Pulmonary Tuberculosis patient age resulted in increased Body Mass Index (BMI), erythrocyte sedimentation rate (LED), monocytes and levels of soluble urokinase plasminogen activator receptor (Supar). The gender difference in patients with Pulmonary Tuberculosis only affects the response variable is Body Mass Index (BMI), whereas the other response variables are not influenced by gender differences.
Keywords: Longitudinal, Multi-response, Mixed Model.

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