A Study on Pregnancy Related Factors Associated with Infant Birth Weight in Western Province, Sri Lanka

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One of the most important measures of a country's development is the number of healthy infants. Infant health is mostly related to birth weight, which is greatly influenced by the diet of pregnant women, and nowadays most infants are underweight or overweight. This study aims to investigate the pregnancy-related factors that are associated with the birth weight of infants in the Western Province of Sri Lanka. Data for the study were obtained from a census that having data of 8313 conducted by the Department of Census and Statistics, Sri Lanka in 2016 and the birth weights of the infants were categorized into three sectors as Low Birth Weight (< 2500g), Normal Birth Weight (2500g - 4000g), and Extreme Birth Weight (>= 4000g). Statistical tests like Kruskal-Wallis and Kendall's rank correlation test were applied. The Ordinal Logistic model was fitted to find out the factors that are associated with infant birth weight, and machine learning models were also applied. According to the statistical tests and the fitted ordinal logistic model, pregnancy duration, time spent in the hospital, gender of the infant, birth type (single or multiple), getting iron pills, and delivery type were identified as the key factors that are significantly associated with the infant's birth weight. The best model out of fitted machine learning models was found to be the Extreme Gradient Boost model (overall accuracy = 65%), where pregnancy duration in months (below 6, 7, 8, 9, and 10), getting iron pills and folic acid, and the number of injections of tetanus given throughout pregnancy are reported as the most important factors with the newborn birth weight.

Keywords: Birth Weight, Infant, Pregnancy