

## DETERMINING HOSPITAL STAY DURATION FOR SICK CHILDREN: A CASE STUDY

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Childhood diseases are a significant concern in the world, affecting the development and well-being of young children. The main objective of the study was to assess the length of stay of paediatric hospitalization of sick children admitted to the Sirimavo Bandaranayake Specialized Children's Hospital (SBSCH) in Peradeniya, Sri Lanka. The dataset consisted of 104,757 paediatric patient admissions from 2019 to 2023, including the admission information such as admission number, age, gender, International Classification of Diseases code (ICD), date of admission and date of discharge. Among the total number of admissions, 58% were male patients. The preliminary results revealed that the number of patient admissions from 2020 to 2021 was significantly lower than in the other years. This could be due to the COVID-19 pandemic in Sri Lanka, which restricted people from gathering in public. However, the percentage of patient admissions per year with respect to gender was approximately the same for the period of study. Children under one year of age and school-aged children were the highest admitted patient category, reporting approximately 30% in each year. The most common disease type among children admitted was respiratory system diseases (14.96%), while other significant disease categories were injuries, infectious, factors influencing health status and digestive system problems. The average and the standard deviation of the length of stay in the hospital per admission were 3.06 days and 4.37 days, respectively. Mean comparison tests indicated that the length of hospital stay was statistically significant with respect to gender (3.11 days for males and 3.02 days for females) and the type of disease. A zero-truncated negative binomial regression model indicated that Age, Gender and Disease type were the most significant variables in determining the length of stay in the hospital. A chi-squared test for deviance indicated that the fitted model is significant compared to the null model ( $p < 0.01$ ). The log count for the length of stay in days increases by 0.603 units for perinatal diseases, where it decreases by 1.457 for mental, behavioural and neurodevelopmental disorders. The log count for the length of stay decreases by 0.014 units for each one-year increase in age. The study provides information about the factors influencing the length of hospital stay for paediatric patients in SBSCH in Peradeniya, which could help healthcare providers optimize resource allocation and improve patient care outcomes.

**Keywords:** Child diseases, International classification of diseases code, Length of hospital stay, Paediatric admissions