

INTRODUCTION

The length of a patient's hospital stay is another factor that has a substantial effect on their overall experience. Patients like to leave the hospital as soon as possible once their treatment has been completed. Even though their time spent in the hospital sets them up for a successful recovery, patients are often ready to finish their recuperation at home, where they can be in an atmosphere that is familiar and comfortable, and where they can be accompanied by family and friends. Patients are uncomfortable when they are held for longer than is strictly required. It's aggravating, and it has a detrimental effect on how they perceive things. On the other hand, patients are much more likely to be satisfied with their experience and are more likely to trust you with their care in the future if they are discharged from the hospital at the appropriate time after having an excellent hospital stay and when they are provided with an excellent hospital experience overall.

A paediatric hospitalist named Brian Alverson, MD, who works at Hasbro Children's Hospital in Providence, Rhode Island, made the following observation: "We need to have in our thoughts a healthy concern about kids being hospitalised, in that there is an inherent risk to that event." It doesn't matter how hard we try to achieve perfection in patient care; mistakes are inevitable since humans are fallible. According to Alverson, a great method to lessen the impact of these everyday risks is to cut down on the amount of time patients spend in hospitals to fall within a safe range.

Extended periods of stay have a detrimental effect on hospitals as well. They contribute to a rise in expenses and are often associated with inefficiency, which is an indication that some procedures may need reevaluation. In a similar vein, the duration of stay has a direct influence on bed management, which in turn reduces turnover and affects income. When a patient is held in a bed for a longer period of time than they need, it may mean that the bed is not accessible for another patient who requires it more urgently. This implies that hospitals may not be able to satisfy the demands of their patients.

A shorter amount of time spent receiving therapy directly correlates to a shorter overall duration of stay. It is beneficial for patients, beneficial for the quality of care they get, and beneficial for the financial health of the institution.

LITERATURE SURVEY

Kenneth Tan et al [1] suggested to forecast the duration of stay using heart-rate readings and physiological ratings. They suggested a model for the heart rate based on the Markov chain model and estimated transition probabilities using the maximum likelihood estimator and the patient population from McMaster Hospital's Neonatal Intensive Care Unit. Using physiological measures and transition probabilities, they then developed maximum likelihood estimators for LOS. Training and test data sets were utilised to validate the linear and nonlinear estimators that were present. Keijiro Nakamura et al[2] a deep learning model with weighted predictors is created to predict hospitalisation cost and duration of stay using electronic health records. Through 5-fold cross validation, the suggested model outperforms linear regression in terms of prediction accuracy. Sneha Grampurohit et al[3] proposed effort to develop a Decision Support System to aid clinicians in predicting inpatient hospital length of stay utilising regression models Linear, Ridge, Lasso, and ElasticNet. Mean Absolute Error was used as the evaluative tool for comparing the outcomes of various regressors. The suggested work has produced a graphical user interface as its application. P.H. Millard et al [4] presented a model-based technique to extracting high-level length-of-stay trends of long-term care residents from a regularly collected administrative social care dataset. It is an expansion of prior work by the authors to include characteristics of inhabitants. Two applications using data given by an English local government were shown to illustrate the potential use of this method. Stephane Sanchez et al [5] contrasted machine learning-based hospital length of stay (LOS) predictions with and without clinical indicators given in text. Two random forests predicted LOS. The first was unstructured EHR text (EHRs). EHR data was assessed using a UMLS-based word-embedding method with precise matching confined to patient-centric affirmation phrases. The second model used structured data from ICD-10 diagnoses and triage codes (CCMU/GEMSA classifications). The model using unstructured data had a 75.0% accuracy compared to 74.1% for the model containing structured data. The two models produced a similar prediction in 86.6% of cases. developed a unique methodological framework based on predictive data mining to estimate LOS (Length Of Stay) in an emergency department (ED). Sondès Chaabane et al [6] Utilized supervised learning, compact models were constructed in terms of predictor characteristics. The objective was to determine the elements (variables) influencing LOS in EDs in order to develop models for LOS prediction. We discovered two linear regression-based models. Validated models were effectively applied to the categorization and prediction of LOS in the paediatric emergency department (PED) at the regional medical centre in Lille, France.