ABSTRACT

Stunting is a major health problem in Indonesia that impacts children's physical growth and cognitive development, and has long-term consequences on quality of life. Although the stunting rate decreased from 21.6% in 2022 to 21.5% in 2023, it is still high and has not reached the WHO target of 20% for 2024. This shows that Indonesia is still far from achieving the stunting prevalence target of 14%. Despite the efforts of the government and health agencies, key challenges include late detection and inaccuracies in manual data that hamper monitoring of maternal and child health. Lack of education and adequate nutrition also contribute to the high stunting rate. The absence of utilizing modern technology for early detection highlights the need for more effective innovative solutions. This research aims to design and develop a stunting prediction feature in toddlers by utilizing the Extreme Gradient Boosting (XGBoost) algorithm integrated in the Genting mobile application. This application is designed to improve the accuracy of early detection of stunting in children aged 0-5 years, enabling faster and more effective interventions. Development was conducted using Extreme Programming (XP) approach for rapid iteration and customization according to user needs. In addition to the prediction feature, the app also provides personalized nutrition intervention recommendations. Application testing in three iterations using the System Usability Scale (SUS) showed excellent performance with average SUS scores of 87.5, 88.75, and 87.5. The classification model performance metrics recorded an accuracy of 92%, precision 0.93, recall 0.92, and F1-Score 0.92, demonstrating the effectiveness of the application in detecting and providing appropriate interventions to reduce stunting in Indonesia.

Keywords: Stunting, Extreme Gradient Boosting (XGBoost), Stunting Prediction