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Neural Network Based Weight Prediction System for Bariatric Patients

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Obesity has become an epidemic condition in Sri Lanka as well as around the world. It is proven beyond doubt that Bariatric Surgery (BS) is the most effective option in treating morbid obesity patients, whose Body Mass Index (BMI) is greater than 40.0. After undergoing surgery, it is required to monitor a patient's weight for eighteen months until they reach a healthy weight that falls within the normal BMI range (18.5-24.9). This study has analysed records of bariatric patients registered at Colombo South Teaching Hospital, Kalubowila under three surgery types. Records show that due to the inability of tracking their weight loss throughout the post-surgery period and lack of continuous assessment after BS, majority of patients have lost their track of weight before reaching the eighteenth month. Therefore, some patients have to go through the same operation more than once, which creates a threat to their lives. This study aims to remotely track pre-and post-surgery bariatric patients and allow them to keep track of their weight loss until they achieve their expected weight using a web-based weight prediction system based on artificial neural networks. To predict the final weight bariatric patients might get after the surgery, pre-surgery and post-surgery data are taken as inputs. Mainly three predictions are aimed to be given as the outputs; namely pre-surgery, post-surgery and monthly weight. Machine learning algorithms like artificial neural networks provide an average of 85% accuracy in predicting the weight until the patient achieves the expected result in the final month.

***Keywords**: Bariatric Surgery (BS), Body Mass Index (BMI), obesity, morbid obesity, telemedicine, neural networks, machine learning, artificial intelligence*