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Evaluation of common risk factors of hypoglycaemia

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Hypoglycemia is common during management of diabetes and is a limiting factor for good glycemic control. In diabetes care, identifying common risk factors helps to develop better approaches in hypoglycemic episodes. An observational study has been conducted among 420 patients with type 1 and type 2 diabetes who were connected to the Remote Management System. This is a unique technology that connect patient's glucometer device to a centralized monitoring centre which can generate alerts when blood glucose levels fall below 70 mg% (threshold level of hypoglycemia). Among the total number of patients that were monitored, 63.79% presented with hypoglycemic readings.74.35% demonstrated symptoms of hypoglycaemia at daytime and 25.65% at night time. The most common cause of hypoglycemia among the patients has been identified as decreased carbohydrates in meals (37.88%), delay in meals (25.65%) followed by high dose of Insulin/OHA in 23.5% of patients. Only 12.95% of cases demonstrated hypoglycaemia due to increased physical activity. For the management of hypoglycemia among the subjects, the most common treatment options adopted were administration of oral glucose in 62.6% of cases followed by dextrose in 34.5% of cases. From the above findings, it can be concluded that hypoglycemia is a serious concern and can be managed diagnosed, supported & educated better with use of technology and trained staff.

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Tracking diabetes using Hidden Markov Model

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In the biomedical domain there are many problems which can be identified as prediction problem such as predicting the diabetic patient. Such prediction can be done with the help of periodic clinical data. Machine learning approaches for prediction such as Hidden Markov Model can be used effectively in solving real time problems. Hidden Markov Model (HMM) can be applied in many fields where the goal is to recover a data sequence that is not immediately observable and which is dependent on previous sequence. Thus, Hidden Markov Model can be used for detecting various diseases like diabetes, thyroid and heart problems. The prediction power of HMM can be useful to address many problems in medical domain. International Diabetes Federation (IDF) Risk Score is useful in calculating the risk of Diabetes. I am proposing the idea to apply HMM in predicting the risk of Diabetes disease over a period of time.

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Notes:

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