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A study on using photoplethysmographic (PPG) signal as a non-invasive screening device of type 2 diabetes mellitus

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Diabetes mellitus is a non communicable disease, increasing its prevalence day by day becoming a heavy burden to the individual and to the country. It carries high morbidity and mortality mostly at later stages. Most patients are asymptomatic at early stage of the disease. Most clinicians ask for fasting blood sugar or random blood sugar levels as a screening method for diabetes. Taking blood samples carry risk of the procedure and it will cause pain to the patients which they hesitate to do study on variations of wave form in diagnosed patients with diabetic between age 50-65 years using non invasive PPG signal taken at finger tip. 9 patients with isolated diabetes (i.e. Non hypertensive, non dyslipidemic, no ischemic heart disease) who are on regular anti-diabetic treatment and 11 non-diabetic (with neither hypertension, dyslipidemia or nor ischemic heart disease) between age 50-65 years females were selected from NHSL(National hospital of Sri Lanka) and Sri Jayawardanapura hospital. They were interviewed and their blood flow was recorded using PPG signal for 5 minute duration connecting the probe to the index finger. Standard indices of wave form were calculated during data analysis. Out of 9 diabetic patients, 8 were identified as diabetics by calculating the standard indices of the pulse wave form. Our conclusion is calculated indices of PPG signal has a sensitivity of over 88% in screening of type II diabetes in age 50-65 years females.

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The Manage Care Model – Rethinking Ed Wagner’s chronic care model to develop an innovative chronic care management model, ensuring an integrated, team- and patient-centred approach

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Most current care models and treatment guidelines are disease-focused (sectored medical care) and do not include specific instructions on how to prioritise diabetes treatment relative to that of other comorbidities, the functional status of patients and the social dimensions of health. Based on a state of the art assessment, which provided knowledge and evidence on existing disease management models and on the needs of older people with diabetes mellitus, a new chronic care model was developed. Combining systematic research on global chronic care programs, a survey to identify the unmet needs of diabetic patients, needs analysis from health professionals’ perspectives and a strength-weakness analysis of the Ed Wagner Chronic Care Model, the study group identified and merged relevant key dimensions for the new model. The developed model covers both health- and well-being-related aspects in the treatment and care of ageing patients. The MANAGE CARE MODEL includes aspects of the social system, resources derived from the living environment of citizens, aspects of health promotion and prevention, assessment-based care planning and an expanded understanding of improved outcomes addressing awareness, understanding and motivation as an integral part of chronic care management. The MANAGE CARE MODEL provides an integrated, team- and patient-centred approach to the complex treatment and care of elderly with type 2 diabetes mellitus and associated comorbidities as an example for the development of chronic care models for other chronic conditions. This framework provides innovative guidance for the development of chronic care programs, regional networks and national strategies.

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