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Huge increase in diabetes rates in rural Tamil Nadu

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New findings from the Madras Diabetes Research Foundation/ University of Dundee 'TREND' rural diabetes project

In order to study the current status of diabetes in rural Tamil Nadu, the Madras Diabetes Research Foundation (MDRF) and the University of Dundee have taken up a joint research collaboration to screen 15,000 people in 25 selected villages in Kancheepuram district of Tamil Nadu.

The program called as the TREND (Telemedicine pRoject for screENing Diabetes and its complications in rural Tamil Nadu) project has already screened over 8000 people till date.

Headed by Professor Colin NA Palmer, Associate Dean for Research and Chair of Pharmacogenomics, School of Medicine, University of Dundee, Ninewells Hospital and Medical School Dundee and Dr.V.Mohan, Chairman and Chief Diabetologist – Dr. Mohan's Diabetes Specialities Centre and Director MDRF, the TREND project focuses on finding the burden due to diabetes and its complications in rural Tamil Nadu and providing novel solutions for its management.

In 2017, the National Institute for Health Research (NIHR) of the Department of Health, UK funded the Madras Diabetes Research Foundation (MDRF) and the University of Dundee, Scotland to take up the INdia-Scotland PartnershIp for pRecision mEdicine in Diabetes (INSPIRED) project. This project aims to develop a strategic plan of research and collaboration on diabetes. The resultant breakthroughs aim to achieve multiple goals namely, develop a large-scale Scotland clinical partnership to combat diabetes in India, work on understanding the heterogeneity of diabetes in India, develop innovative new tools and big data science to facilitate low cost diabetes screening in India and implement next generation precision telemedicine in India. Twelve Ph.D students have been registered so far under this programme with 9 students from the University of Dundee and 3 students from University of Madras. The TREND project is part of the overall INSPIRED program.

Elaborating his experience in the project, Professor Colin Palmer said, “On behalf of the University of Dundee, we are extremely glad to be associated with Madras Diabetes Research Foundation with Dr.V.Mohan and his team to have worked on this breakthrough project emphasizing the need to have Telemedicine as the most desirable solution for screening and treating rural population in India. The aim of this research is to improve the health of patients and public in low and middle-income countries like India. This four-year Indo-UK collaborative project has me, Prof. Colin Palmer from University of Dundee as the lead from UK and Dr.V.Mohan and colleagues from MDRF as the lead from India. We have found that risk factors that drive early onset diabetes in South Asian and white Europeans differ markedly, suggesting that the etiology of type 2 diabetes differs markedly across these two ethnicities.”

Leading the Indian team of researchers from MDRF, Dr. V.Mohan commented “In the TREND study we observed that the prevalence of diabetes in rural Tamil Nadu has increased from 4.9% in 2006 in the Chunampet Rural Diabetes Prevention Project (CRDPP) to 8% in 2011 in the ICMR- India Diabetes (ICMR-INDIAB) study in Tamil Nadu to 13.5% now in the TREND project representing a nearly threefold (300%) increase in diabetes prevalence in rural Tamil Nadu within 15 years. During the same period obesity rates also increased markedly. The mean body mass index (BMI) was 21.0 kg/m2 in 2006 which increased to 22.0 kg/m2 in 2011 in the ICMR-INDIAB study and to 25.0 kg/m2 now in the TREND study. We utilized telemedicine technology in the 25 villages that were selected from Cheyyur taluk, Kancheepuram district of Tamil Nadu state. So overall early and timely screening for diabetes and pre-diabetes, prevalence of hypertension and obesity, screening diabetic complications in eye using retinal images, foot and kidney as well as assessing diabetes control among individuals etc. were carried out through this project.“

Awareness, diagnosis, regular checkups and other ways of preventing as well as treating NCDs especially Diabetes, are very low among the rural sector. Through the TREND project, the Madras Diabetes Research Foundation (MDRF) and the University of Dundee aims to address these challenges with innovative use of technology that will enable even remote areas gain access to quality medical diagnosis and care.

Another novelty of the INSPIRED project is the use of retinal images to predict future risk of not only diabetic complications, but also other diseases like future heart disease, stroke and even dementia. This is one of the first such projects to be carried out in India and was possible due to use of novel software called VAMPIRE (Vascular Assessment and Measurement Platform for Images of the REtina) led by the Universities of Dundee (Prof E Trucco) and Edinburgh (Dr T MacGillivray).