Prof. M. Viswanathan: The Pride of Asia in Diabetology

Dear Editor,

Prof. M. Viswanathan (Prof. MV) was not just a doyen in the field of diabetes but also an astute clinician, teacher, researcher, and administrator. He made substantial contributions to diabetes care and research for nearly five decades. He was one of the most internationally recognized research scientists in India of his time. Prof. MV published more than 250 peer-reviewed research papers in prestigious national and international journals. His work propelled India to the forefront of diabetes care and research, and he played a pivotal role in elevating the nation's status in this field.

Born on August 26, 1923, in Kerala, India to Mr. A. K. Menon and Dr. M. Madhavi Amma (who was one of the first doctors of Kerala), Prof. MV's career in medicine was greatly influenced by his mother. He pursued medicine at Stanley Medical College, Madras graduating in 1946, and worked as a House Physician. At a time, when diabetes was not regarded as a special field of study, he established the first organized diabetes clinic in India in 1948 at the Stanley Medical College. His dedication led to his promotion as Hon. Asst. Prof of Medicine and later as Hon. Prof of Medicine at the same college. In 1952, he married Sarada, who provided unwavering support throughout his life.

Prof. MV voluntarily left government service with a view to setting up a hospital and research center devoted to clinical research in diabetes, the first of its kind in India. He also built up his private practice as a full-time Diabetologist. His achievements include the prestigious Dr.B.C.Roy National Award in 1982 for the development of the specialty of diabetology in India by the Medical Council of India. He has the unique honor of being the organizing secretary of three successive Association of Physicians of India (API) conferences. He held the posts of President, Association of Physicians of India, and President of the Scientific Section of the Diabetes Association of India with great distinction. He was also a member of the American Diabetes Association, British Diabetic Association, International Diabetes Federation, European Association for Study of Diabetes (EASD), and the Research Society for Study of Diabetes in India (RSSDI).

At his center, Prof. MV created a modern reference library with well-organized resources for diabetes education and research. He also maintained a unique medical records system which served as a database for most of his long-term research findings. Many institutions sought his guidance in setting up modern and well-organized record-keeping departments. Prof. MV research efforts garnered numerous national and international honors and awards. He organized scientific conferences in India and also presented his research work at seminars and conferences worldwide. His primary objectives were to ensure high-quality diabetes research in India and more importantly to prevent and conquer diabetes. He pursued these goals relentlessly and with a missionary zeal until his passing on March 1, 1996. Quite appropriately, Prof. MV is recognized and finally referred to as the "Father of Diabetology" in India.

Research Journey of Prof. M. Viswanathan

In the natural history of type 2 diabetes, most individuals pass through a phase of impaired glucose regulation who eventually develop diabetes. In 1954, Fajans and Conn first identified the 'Prediabetes state' as a precursor to type 2 diabetes.[1] They described the cortisone GTT as a possible approach for the detection of the prediabetes state.[2]The research work on this was taken up by Prof. MV as early as 1959. A well-designed study in 1962 focused on the relatives of individuals with diabetes, comparing them to a control group with no relatives with diabetes, subjected them to a glucose tolerance test after steroid administration revealed higher abnormal glucose responses in those with a family history of diabetes, especially those under 30 years old. The study also considered the impact of obesity, comparing findings with Western literature from 1954 to 1961. This research pioneered a method to identify individuals at risk of future diabetes ultimately guiding Prof. MV's work toward diabetes prevention.[3]

Prof. MV strongly believed that diabetes can be prevented and emphasized the significance of individual and community-based preventive strategies. He highlighted the basic risk factors for diabetes which eventually lead to the development of diabetes. Heredity was identified as a crucial risk factor, with a focus on close relatives and offspring of individuals with diabetes. Environmental factors, modifiable in contrast to genetics, played a pivotal role. Other risk factors such as obesity, repeated pregnancies, physical inactivity, and stress were also addressed. Screening high-risk individuals allowed for effective preventive measures. His observations convinced him about the need for the prevention of diabetes and he explored ways and means of halting the progression of this pathological process.[4-6] He stressed the need for recognizing and reversing the natural history of diabetes

through primary prevention efforts. The studies on hormonal profiles in the offspring offered very interesting and useful information. The findings revealed early abnormalities in beta cell activity. In the early 1980s, his research on insulin and c-peptide levels laid the foundation for future studies. These levels were measured during oral glucose tolerance tests, indicating lower beta cell function in impaired glucose tolerance (IGT) and diabetes, alongside decreased hepatic extraction of insulin.[7] Other workers reported similar findings in the Western population. In 1983, Rossell *et al.*[8] suggested that hepatic insulin extraction was decreased in obesity. Another study by Bonora *et al.*[9] also indicated that peripheral hyperinsulinemia in IGT was a result of both pancreatic hypersecretion and diminished hepatic insulin extraction.

Prof. MV's last publication on the preventive aspect emphasized the importance of weight loss to maintain normal glucose tolerance, even in non-obese individuals with a strong family history of diabetes. He highlighted the role of physical activity and proper diet in mitigating diabetes risk.[10] Prof. MV was far ahead of his time in advocating for type 2 diabetes prevention, promoting lifestyle intervention at the earliest signs of glucose intolerance, even before the NDDG and WHO defined IGT.

Prof. MV revolutionized nutrition research in diabetes with his ground-breaking research. The diet of the Indian population is cereal-based and rich in carbohydrates. It was believed at the time, in India that people with diabetes should avoid rice completely. Prof. MV found that the prescribed dietary changes could not be adhered to by many patients for a long period of time. Hence, he evolved the concept of the restricted calorie high-carbohydrate high-fiber (HCHF) diet whereby the patients were allowed to follow their usual food pattern to achieve better dietary adherence and patient cooperation, but with restriction and avoidance of free sugars. He proved that a South Indian diet with rice but with restriction of calories, was ideal for people with diabetes. This was a major research contribution made by Prof. MV in diabetes nutrition research.

Prof. MV noticed that the diet of our people was deficient in protein. He advocated increasing protein in their diet by adding vegetable protein in the form of pulses and legumes. This resulted in not only making the food a more balanced one but also the glycaemic control achieved within a short period. His innovative dietary strategy achieved glycaemic and lipid control, countering prior beliefs. This pattern of diet is now regarded as the more practicable diet for people with diabetes.

Prof. MV extensively studied familial aggregation of type 2 diabetes, emphasizing the impact of genetics on the disease's prevalence.[11] His earlier study analyzed 4000 individuals with type 2 diabetes for the number and classification of relatives with diabetes and demonstrated the presence of a positive family history of diabetes in 33.9% of study participants highlighting familial aggregation of diabetes.

Another of Prof. MV's studies involved a study of 2600 conjugal parents with diabetes.[12] The study showed path-breaking results with nearly 62% of offspring having a risk when both parents had diabetes, and when only one parent had diabetes the risk was 22%. His collaboration with UK researchers for advanced complex segregation genetic analysis paved the way to identify diabetes susceptibility genes among the Indian population. These observations had important implications for the search for genes involved in the pathogenesis of type 2 diabetes.

Remission in diabetes may be defined as a period when blood glucose levels are back to normal levels and there is no need for anti-diabetic treatment. The concept of remission of diabetes has been widely recognized recently. It is therefore surprising to note that Prof. MV recognized the concept of "Remission in Diabetes" as far back as 1987.[13] His research highlighted the role of lifestyle changes and medical intervention in achieving remission, providing valuable insights into the natural history of diabetes.

In conclusion, the profound contributions of Prof. MV to the field of diabetes are valid to this day and his visionary approach to diabetes research had a lasting impact. His emphasis on primary prevention, innovative dietary interventions, and pioneering research on familial aggregation and clinical management has significantly advanced the field and contributed to our understanding of diabetes. His work challenged prevailing beliefs and advanced our knowledge of diabetes, offering valuable insights that continue to shape diabetes research and care even today. His work continues to influence and inspire researchers, clinicians, and individuals living with diabetes. He is truly the pride of Asia in Diabetology.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Fajans SS, Conn JW. The approach to the prediction of diabetes mellitus by the modification of GTT with cortisone. Diabetes 1954;3:296-302; discussion, 302.
2. Conn JW. The prediabetic state in man. Diabetes 1958;7:347-57.
3. Viswanathan M, Krishnamurthy M. Prediabetic state. J Assoc Physicians India 1962;10:273-77.
4. Viswanathan M, Krishnamurthy M. Prevention of diabetes mellitus. Antiseptic 1964;61:189-94.
5. Viswanathan M. Prevention in diabetes. J Assoc Physicians India 1981;29:251-61.

6. Mohan V, Ramachandran A, Snehalatha C, Viswanathan M. Recent advances in the diabetes primary prevention of diabetes. Antiseptic 1984;81:689-96.
7. Snehalatha C, Mohan V, Ramachandran A, Jayashreee R, Viswanathan M. Serum insulin & C-peptide responses in individuals with impaired glucose tolerance & diabetes. Indian J Med Res 1984;79:378-83.
8. Rossell R, Gomis R, Casamitjana R, Segura R, Vilardell E, Rivera F. Reduced hepatic insulin extraction in obesity: Relationship with plasma insulin levels. J Clin Endocrinol Metab 1983;56:608-11.
9. Bonora E, Zavaroni I, Coscelli C, Butturini U. Decreased hepatic insulin extraction in subjects with mild glucose intolerance. Metabolism 1983;32:438-46.
10. Viswanathan M, Snehalatha C, Viswanathan V, Vidyavathi P, Indu J, Ramachandran A. Reduction in body weight helps to delay the onset of diabetes even in non-obese with strong family history of the disease. Diabetes Res Clin Pract 1997;35:107-12.
11. Viswanathan M, McCarthy MI, Snehalatha C, Hitman GA, Ramachandran A. Familial aggregation of type 2 (non-insulin-dependent) diabetes mellitus in south India; absence of excess maternal transmission. Diabet Med 1996;13:232-7.
12. Viswanathan M, Mohan V, Snehalatha C, Ramachandran A. High prevalence of type 2 (non-insulin-dependent) diabetes among the offspring of conjugal type 2 diabetic parents in India. Diabetologia 1985;28:907-10.
13. Ramachandran A, Snehalatha C, Mohan V, Viswanathan M. Remission in non-insulin depedent diabetes. J Med Assoc Thai 1987;70:185-9.

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Received: 18-October-2023, **Accepted:** 18-October-2023,
Published: 14-November-2023

Access this article online

Quick Response Code:

Website: https://journals.lww.com/JODB

DOI: 10.4103/jod.jod_108_23

How to cite this article: Kumpatla S, Viswanathan V, Ramachandran A, Mohan V. Prof. M. Viswanathan: The pride of Asia in diabetology. J Diabetol 2023;14:S2-4.