

Diabetes, its treatment and prevention: Are we on the right path?

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Diabetes is now seen as a heterogeneous group of diseases characterized by a state of chronic hyperglycemia, resulting from a diversity of etiologies, environmental and genetic, acting jointly [1]. The underlying cause of diabetes is the defective production or action of insulin, a hormone that controls glucose, fat and amino acid metabolism. WHO has classified diabetes as diabetes mellitus, impaired glucose tolerance (IGT) and gestational diabetes mellitus (GDM). In diabetes mellitus we have insulin-dependent (Type I) diabetes mellitus, Non-insulin dependent diabetes mellitus (Type II), malnutrition related diabetes mellitus (MRDM) and other types that occur secondarily due to diseases of pancreas, genetic abnormalities, drugs or hormones [2].

It was Dr. Himsworth (1905-1993) who studied the role of insulin in diabetes and came out with the concept of 'insulin-sensitive' and 'insulin-insensitive' diabetes. These can be now compared with type I and type II diabetes respectively. He was Professor of Medicine at University College Hospital in Britain. He summarized his research in his 1939 Goulstonian Lectures and noted the association of obesity, hypertension and arteriosclerosis with 'insulin-insensitive' diabetes [3]. In his research it was made clear that in type II diabetes, pancreas is secreting enough (actually more!) insulin but it is not effective. His work was revalidated by Dr. Gerald Reaven. Gerald M. Reaven could easily be epitomized as the "Father of Insulin Resistance." He is credited with developing the insulin suppression test, the first quantitative method to measure insulin-mediated glucose uptake in humans. Using this technique, he established the importance of insulin resistance in human disease, and importantly, in type II diabetes. In nondiabetic individuals, he demonstrated the role of insulin resistance/

compensatory hyperinsulinemia in the development of 1) hypertriglyceridemia and low HDL concentrations, 2) decreased urinary uric acid clearance and hyperuricemia, 3) decreased LDL particle diameter, 4) enhanced postprandial lipemia and remnant lipoprotein accumulation, 5) increased levels of plasminogen activator inhibitor-1, 6) salt sensitivity, 7) essential hypertension, and 8) increased sympathetic nervous system activity [4]. One must realize the main culprit in obesity and diabetes is hyperinsulinemia. If at all we have to deal with these two epidemic diseases in the world, our focus should be lowering insulin levels. Unfortunately the prevalent medical advice is far away from this truth!

Since many decades we do have scientific information about diabetes. Unfortunately it will be far from reality to say that we have understood it 100%! It will be worth studying about what happens to well treated patients of diabetes in present scenario. We studied 1012 patients of type II diabetes belonging to 7 states and 23 cities of India. They all were treated by DM (Endocrinology) or MD (General Medicine). The one common thing we noted was that nobody was cured of diabetes! It was also a common finding that initially the patient was started with single medicine and over years the number went on to 2 or even more. In some patients insulin was commenced. Most of them had various complications of diabetes. Is this the way the diabetologists intended to treat their patients? I doubt! With good intentions and backed by recent advanced medical knowledge, unfortunately the results of treating diabetics

are frustrating. Is it not the responsibility of diabetologists to find answer for this problem?

Nowadays patients too have access to medical literature. Some of the diabetics have put forth questions which are haunting them. Some of them dared to ask these questions to their treating doctors too with disastrous consequences! Let me pen down some of these questions:

- 1) Doctor, you said that my pancreas is not secreting enough insulin. Which blood test provided you this information?
- 2) Doctor, you said that my pancreas is exhausted. Then why are you giving me medicines that stimulate my pancreas to secrete more insulin?
- 3) Is it true that due to your medicines my weight would increase?
- 4) If my weight is increasing due to medicine, how it can be reduced by exercise or diet?
- 5) The advice about frequent, small meals originates from which scientific evidence?
- 6) Despite taking multiple medicine, why my diabetes is uncontrolled?
- 7) My sugar is in normal range due to your medicines, but why I don't feel energetic?
- 8) In how many diabetics you have stopped medicines??

These questions cannot be pushed below the carpet! The patients who dared to ask these questions were mostly driven out from the posh cabins of treating doctors for obvious reasons!! One can easily conclude from the present scenario that something is seriously going wrong as far as treatment of diabetes is concerned. In my opinion there are following issues in diagnosis and treatment of diabetes:

- 1) Diabetes is not diagnosed early enough: Rather than using fasting and postmeal blood sugars we should go for HbA1C as a screening test. This will help to diagnose around 30% more prediabetics than by testing only fasting and post meal sugars.
- 2) Doctors do not provide scientific information to diabetics: As a result many misconceptions prevail in society even among educated people.
- 3) Diabetes is over treated: Despite adequate evidence which suggests that lifestyle modification is more effective than medicine

like metformin; without giving enough time and supports for lifestyle modification, people are bombarded with medicines.

- 4) Diabetologists are not interested in trying out newer interventions supported by latest research: Some studies reveal that blood sugars of diabetics who eat only twice a day are better controlled than those who eat frequent meals. Still diabetologists are not willing to support their patients to try it out for themselves.
- 5) Doctors and patients both believe that the only aim of treating diabetes is to keep it under control and prevent complications: This negative attitude needs to be changed. This attitude depresses the patients and probably the doctors too. Especially with promising results of our campaign, there is surely a reason to cheer up!

We have initiated "India free of obesity and diabetes" campaign since 2014. The campaign originated from the work by eminent thinker and community physician, late Dr. Shrikant Jichkar of Maharashtra. In the campaign we believe that obesity and diabetes are the progressive milestones on the same road. Increased level of insulin forces your body to always use glucose as fuel. Frequent eating results in high levels of insulin in the body. Ultimately this results in insulin resistance and diabetes (Type II). The only way to tackle this problem is to reduce eating frequency to minimum possible. The advice in the campaign is very simple: "Eat twice in the day when you are really hungry and in between drink water!" Of course we allow people to eat or drink food items that do not cause insulin secretion. Our research is going on as regards such food items which do not cause insulin secretion. Unfortunately other than water we could get very few other items. The work is in progress on this front and soon we shall publish our research. In addition to the diet we advise people to walk at least 4.5 Km in 45 minutes every day. We call this not as "diet plan" but a "lifestyle modification".

With this simple lifestyle modification our achievements are spectacular. Our published research [5-8] reveals that people who follow

this lifestyle modification for 6 months lose on an average weight of 6.8 Kg with a range from 3 to 28 Kg. This is probably the only diet plan where the person loses tummy fat first and the cheeks never get retracted! In our research waist circumference of people decreased by 3.5 cm on an average in 6 months with a range of 1 to 10 cm. This lifestyle modification causes reduction of fasting insulin level which is a proxy indicator of insulin resistance and impending diabetes. In a study conducted on 48 prediabetics who followed this lifestyle modification for 3 months, it was observed that all of them converted to nondiabetic state. It was seen in patients with HbA1C of more than 10 and who were untreated that, they too became nondiabetic in a period of 6 to 9 months. In diabetics who were receiving multiple anti

diabetes medicines or high doses of insulin, it was observed that the requirement of medicinal dose decreased. In some patients whose diabetes was uncontrolled despite taking many medicines, with this lifestyle modification, diabetes came under control. Such an unbelievably simple lifestyle modification is giving such wonderful results.

We all know that diabetes is a lifestyle disorder. Is it not logical then to find a solution in lifestyle modification? This is a million dollar question! The future of the country and probably world resides in the ability and courage of our doctors and society to ask the right question to get the right answer!!

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