I am an American Board certified Endocrinologist living in Mumbai, India. In my clinical practice I work with people from all across India and also people of Indian origin living in different parts of the world.

The direct effect of lifestyle choices on diabetes, metabolic syndrome and weight are what drew me to endocrinology, but my fellowship taught me close to nothing about lifestyle change.

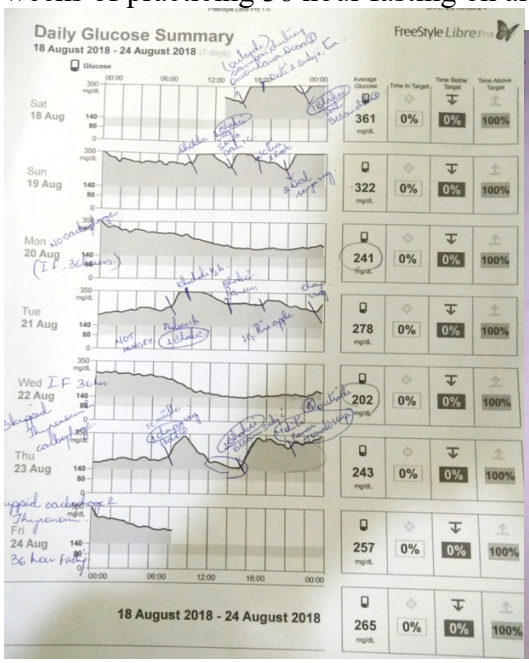
I was first introduced to the concept of nutrition therapy thanks to the excellent work of the certified diabetes educators at the hospitals in Chicago, USA where I trained from 2003-2009 and later at the hospital I worked at from 2009 to 2011. I saw that the doctors would review labs, adjust medication, and prescribe "diabetes self-management education", which was delivered by the CDEs. There was also intensive nutrition management in the bariatric clinic, where patients were counselled on their relationship with food, both before and after surgery. I attended many of these patient education sessions during my endocrinology fellowship, to understand what the CDEs were teaching my patients. It was fascinating and seemed to actually address their metabolic disorder at the root, through changing food habits.
Before moving to India in 2011, I trained and certified as a diabetes educator. I wanted to actually learn for myself, what best practices could be translated into culturally relevant education for my patients in India.
My first opportunity to apply carbohydrate restriction was with a patient with severely uncontrolled diabetes. This encounter was described in detail on DietDoctor as a featured article and podcast interview with Dr Bret Scher. Briefly, my patient had already "failed" on maximal oral agents, with an HbA1c of over 16% which was the highest I had seen. Despite the next logical step being to start insulin therapy, he insisted on avoiding injections. He was sitting there in my office, talking comfortably, clinically stable and well preserved, simply asking for guidance. He certainly did not look like he had insulin deficiency or DKA, so the endocrinologist in me was out of options. I could not force him to take insulin. The educator in me decided to review his carbohydrate intake and found plenty of scope for reduction, and we negotiated reducing his daily chapati (Indian flatbread) count to half. Seeing his glucose levels drop rapidly within weeks without taking insulin was lifechanging- for both of us. There was no looking back.

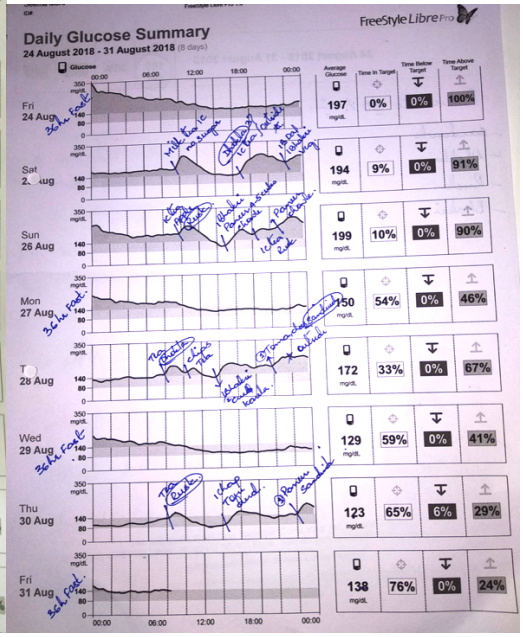
In 2014, I launched the first Diabetes Self-Management Clinic in India ever to be delivered by an endocrinologist. This group education class delivered culturally relevant diabetes self-management education to people with diabetes and ran every month until I left that hospital in 2016. Since then, I have set up my own outpatient practice and transformed my entire approach to support people who want to use a low carb diet and comprehensive lifestyle change to achieve better health while reducing their medication burden. We make sure to screen people before working with them to make sure they are committed to learning a low carb approach. I have built my reputation in the city and across the country as the go-to doctor for lifestyle medicine.

The degree of carbohydrate restriction gets decided during coaching sessions with my patients. I use motivational interviewing to help patients decide how much carbohydrate restriction they can sustain as a lifestyle. We use a non-dieting approach, where there is no rigid "plan" to follow. We focus on getting protein to target first, because the average Indian is protein deficient. Getting protein to target results in reduced hunger, after which reducing carbohydrates becomes easier and more natural, without a sense of deprivation or restriction. The logic is to build an approach that is sustainable as a way of life. Small steps lead to early

wins that self-perpetuate commitment. Generally, we are able to see results when we get patients to around 80-100 grams of carbohydrate per day. The reason for this range is due to the vegetarian predominance in the Indian culture, and necessity of plant-based protein sources that come with complex carbohydrates. We offset this obligatory carbohydrate intake with a comprehensive approach that includes focus on sleep habits, screening for sleep apnea when needed, stress management, spirituality, self-care, exercise (including counseling on building lean muscle through hypertrophy training due to high prevalence of sarcopenia), time restricted eating and intermittent fasting.

Favorable outcome #1: A young woman in her thirties saw us for PCOS, type 2 diabetes and weight gain. By adopting a low carb approach, continuous glucose monitoring and intermittent fasting, she was able to reverse her diabetes. She and her husband were not using contraception because the PCOS had reduced her fertility and her periods were always irregular. She ended up overcoming infertility and conceiving thanks to insulin resistance reversal, without taking any specific treatment for infertility. These are her continuous glucose sensor downloads showing dramatic improvement in glucose levels within two weeks of practicing 36 hour fasting on alternate days.





Favorable outcome #2: A man in his upper 40's with an HbA1c of 10%, weighing 140 kilograms, adopted a low carb approach combined with intermittent fasting. He brought his HbA1c down to 5.9%. His uric acid came down from 8.5 to 6.7 mg/dl despite stopping febuxostat. He reversed his fatty liver and normalized his blood pressure, all without medication. He has sustained this way of life for 3 years now. When life gets hectic, he knows how to come back to his foundational habits of low carb, fasting and strength training. He has lost 30 kilos of weight and is now aiming to get below 100 kg with a focus on building lean muscle tissue. His biggest driver to sustain a healthy lifestyle going forward is his love for his family. He wants to spend many years of healthy time with them, having seen his own father suffer with complications of diabetes in the last years of his life. He did an Instagram live, sharing his story in the hope that it may inspire others.

Favorable outcome #3: A postmenopausal woman, who felt like her metabolism was slowing, decided to work with us. She had tried every diet and always feared the holiday weight gain

that plagued her whenever she came back from international travel. She was pursuing a PhD and wanted to be a fit healthy grandmother. She had prediabetes and followed a typical protein deficient vegetarian Indian diet. We worked on getting her protein to target and got her started on intermittent fasting. A year later, after completing our program, she happily announced that she had travelled to the United States to visit her daughter and came back without “holiday weight gain” for the first time in 15 years. She maintained time restricted eating and supported her circadian clock with early morning walks and reduced screen time after sunset. Her hot flashes stopped bothering her and the quality of her sleep improved, resulting in better overall mood and outlook on life. Her focus moved from just being frustrated about weight loss to improving her body composition. Having understood that building lean muscle would help prevent postmenopausal osteoporosis, she started exercising to stay fit and strong so she could continue enjoying her golf game! Through trial and error, she found various combinations of fasting schedules that helped her overcome her weight loss plateaus, while enjoying the journey and staying low carb at every step of the way.

Challenging case #1 A 76-year-old widow, living with her grown children, contacted us with a 30 year history of diabetes. She had chronic kidney disease, with a creatinine of 1.8mg/dl and eGFR of 35. She had extensive sarcopenia and anxiety. She tried her best, and whenever her personal trainer tried to push her towards muscle building, through intensification of strength training, she complained that her body did not support her. I got on a call with the trainer to explain how increasing muscle mass would help bring her glucose levels down, but the patient convinced the trainer not to push her too hard. She followed a carbohydrate restricted diet, and cooked keto recipes at home for herself. She practiced intermittent fasting, and wanted to reverse diabetes. I feared that without sufficient strength training she was losing muscle mass and this was causing a plateau in her results. Her creatinine and eGFR improved initially after stopping sulfonylureas, and then due to personal stress at home, her glucose levels rose to the point of needing to be put on insulin. Her c-peptide showed that her diabetes was due to insulin resistance, not insulin deficiency, and I explained to her that putting her on insulin was clearly not helping with diabetes reversal. We focused on keeping glucose levels normal, although I knew this was not treating her condition at the root. She also worked on stress management with our therapist and described herself as a “sensitive person”. I feel that her severe sarcopenia, persistent anxiety and being put on insulin therapy contributed to a vicious cycle of insulin resistance.

Challenging case #2 A man in his low forties started working with us on weight management. He started using our in-house custom-built app, to track his carbohydrate and protein intake. Our app and coaching philosophy used the hormonal approach to weight management, and we explained to him why the “eat less, move more” calories in, calories out (CICO) approach doesn’t work. Being tech savvy and having been on many diets throughout his life, he was disappointed that we were not asking him to count calories like other weight loss apps and programs did. I asked him if calorie restricted diets had helped him with long term weight loss at any point. He said no. He self-reported drinking 180 ml of whiskey multiple times a week. We always advise our patients that alcohol intake can slow the progress of our approach, because alcohol works like sugar on the liver, worsening insulin resistance. He was eating pre-decided quantities of food, eating by the clock without adjustment of portions based on appetite, hunger or fullness. I pointed out to him that his reduced appetite was a sign that his body was sensing sufficient nutrient availability and he seemed ready for intermittent fasting. I educated him how fasting would allow the body to shift the metabolism to burn stored fat. He ended up being frustrated without more “specific” prescriptive diet advice. The irony was, that he struggled to follow our specific advice to reduce carbs, get protein to target

and gradually increase fasting hours. He found the concepts too difficult to apply, considering his travel schedule, work demands and dietary preferences. We asked him what it would be like to follow a specific prescriptive diet plan, considering his dynamic lifestyle. He knew that following diets had not worked in the past, for exactly the same reasons. We were going in circles. I suspect that his regular alcohol intake was causing insulin resistance and interfering with his ability to learn a completely new approach. The alcohol was probably also interfering with good quality sleep, and directly causing a weight loss plateau. Ultimately, he did not benefit from our approach, and went back to his calorie counting app. He stopped working with us, preferring something "familiar". I can see that there are people who are not yet ready to give up the CICO model, and excessive alcohol use can interfere with learning and accountability.

Challenging case #3: A woman in her young twenties with lean PCOS. She had a history of being overweight in childhood and her current BMI was underweight at 19. This young woman had the psychological signs of an eating disorder. She wanted to lose body fat and wanted to pursue intermittent fasting to reverse PCOS. Her relationship with food was riddled with guilt. She saw all food as either good or bad. Every food decision was backed by hours of analysis, Google searching and anxiety. Her marriage was unhappy. Her in-laws wanted her to produce a grandchild, and she was not getting spontaneous periods, so everyone worried she was infertile. She had moved to her in-law's house, as is customary in many traditional Indian marriages. She was lonely, missed home and sought junk food and sugar for comfort. She maintained a blaming attitude towards life. It was a cry for help. She wanted to get better but viewed the world from the eyes of a victim. I told her she needed to work with a mental health professional before I could work on her hormones, lifestyle and metabolism. I told her she was at risk for an eating disorder and needed to work on healing her relationship with her body and her food.
She didn't think anything was wrong with her and was clingy towards me as her doctor, insisting someone needed to diagnose what was wrong with her hormones. She gave off an air of feeling helpless, betrayed or abandoned and could not find anything in her power to make her situation better. She kept looking for answers on the outside, asking for more hormone tests and a clinical diagnosis. I was unable to help her.

In the future, I see myself pioneering the low carb movement across India and the Indian population around the world, in multiple Indian languages and formats, delivered in culturally relevant ways, cutting across literacy barriers. We need to make a dent in how diabetes is treated, in this lifetime, and expand the low carb approach to preventive medicine. I see myself making a difference and contributing to this cause. I am training my coaches and team in motivational interviewing and the details of low carbohydrate lifestyle medicine to ensure the highest possible patient experience and touch more lives.

I look forward to meeting like-minded people at SMHP, contributing as a speaker from India and learning from other speakers at low carb conferences and growing this revolution in the healthcare system.