



TDC Newsletter Featuring Diabetes Research & Developments

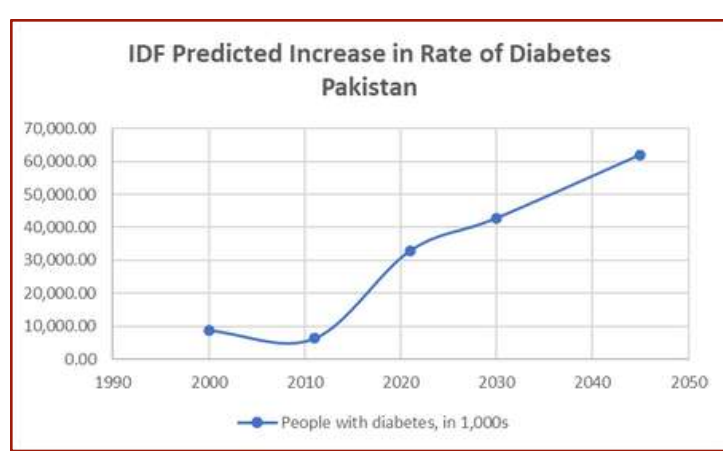


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The Diabetes Dilemma: A Global Crisis Looming Closer Than We Think

Dear Readers,

In the ever-evolving landscape of healthcare, it is crucial to keep our fingers on the pulse of global health trends. Today, we share an eye-opening revelation: by 2045, a staggering one in eight adults worldwide, totaling approximately 783 million individuals, will be living with diabetes. This represents a daunting increase of 46% from current numbers, according to projections by the International Diabetes Federation (IDF). The IDF predicted increase in rate of diabetes in Pakistan is shown in figure.



Closer to home, the numbers tell a compelling story. In Pakistan, the prevalence of diabetes has been on a relentless upward

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trajectory. In 2016, the recorded percentage stood at **11.77%**. Just two years later, it surged to **16.98%**, and by 2019, it had reached **17.1%**. Fast forward to 2022, and the figure had climbed to a concerning **26.7%**. And as of 2023, an alarming **30.80%** of the population grapples with this metabolic disorder.

These statistics serve as a wake-up call, urging us to unite in the face of this health crisis. Diabetes is not merely a statistic; it's a pressing reality that affects our communities, our families, and possibly even ourselves. Yet, in the face of this challenge, there is hope.

The Diabetes Center remains committed to providing the best care and support for our community, and together, we can face this challenge head-on.

In the face of these escalating numbers, let us remember that we have the power to write a different future, one where diabetes is less of a looming threat and more of a manageable concern.

Featured Research

Acute and chronic kidney complications in children with type 1 diabetes mellitus

Children with type 1 diabetes mellitus (T1DM) have an increased risk of developing kidney involvement. Part of the risk establishes at the beginning of T1DM. In fact, up to 65% of children during T1DM onset may experience an acute kidney injury (AKI) which predisposes to the development of a later chronic kidney disease (CKD). The other part of the risk establishes during the following course of T1DM and could be related to a poor glycemic control and the subsequent development of diabetic kidney disease. As a preventive measure, a higher parental awareness to the red flags of T1DM should be provided by Pediatricians in order to facilitate an early diagnosis of T1DM reducing the risk of AKI at T1DM onset and then of later CKD. In addition to the "first hit" to kidneys at T1DM onset, during the years of the illness additional hits can further deteriorate the kidney function such as recurrent diabetic ketoacidosis (DKA) with recurrent concomitant AKI. AKI, however, can also develop in non-diabetes-related conditions such as acute gastroenteritis or community acquired pneumonia. Therefore, T1DM patients should be carefully informed about the importance of dehydration prevention by adequate hydration in case of the common acute illnesses of childhood.

Moreover, poor glycemic control predisposes to DKD development with subsequent risk of CKD, indicating the importance of an adequate compliance to T1DM treatment.

Finally, in patients with T1DM regular follow-up visits are important to identify the possible onset of microalbuminuria or hypertension to start a timely and adequate treatment. These conditions, in fact, can facilitate both onset and progression of CKD.

Remission of Type 2 Diabetes with High-Fiber, Low-Fat, and Calorie Restricted Plant-Based Diet Study

Type 2 Diabetes (T2D) is a chronic progressive disease and despite advances in pharmacotherapy, mitigating the burden of the disease remains a challenge. Remission has emerged as a therapeutic target in T2D. This study achieved remission of type 2 diabetes with a plant-based diet in a cohort of free-living individual. The cohort of patients were referred to Wellness Clinic for management of various cardiovascular conditions and associated metabolic disorders. They were educated and counseled to adopt a plant-based diet while receiving standard medical treatment. The present study included non-pregnant adults 20 years and older, mostly elderly, with the diagnosis of T2D (HbA1c > 6.5%), with or without on antidiabetic medications. The remission of diabetes is defined as improving HbA1c to < 6.1%, without antidiabetic medications except metformin.

The results show that a low-energy diet of 800-1200 kcal per day achieved T2D remission in 46% of participants. Remission of diabetic macular edema by remission of type 2 diabetes with plant-based diet has been achieved. The results of this study indicate that BMI, HbA1c, fasting blood glucose, LDL cholesterol, triglyceride cholesterol has significantly improved with plant-based diet. The systolic and diastolic blood pressure, and HDL cholesterol though have improved, but are not statistically significant. Overall, the study concluded that a plant-based diet is poised to confer immediate and long-term benefits and it assists in the reduction of microvascular and macrovascular complications.

Chronotype, Unhealthy Lifestyle, and Diabetes Risk in Middle-Aged U.S. Women

People who tend to stay up late have a higher risk of developing diabetes than those who rise early, a new

study found. The study, published September 12 in the *Annals of Internal Medicine*, found that night owls are 72% more likely than early birds to develop diabetes. Following nearly 64,000 nurses from 2009–2017, researchers found that those who reported that they were night owls tended to have poorer diets, unhealthy weight, and were less physically active. But even after researchers adjusted for lifestyle factors such as diet, exercise, and smoking status, night owls still were 19% more likely to develop diabetes than non-night owls, suggesting that genetic factors may be involved.

Advances in Eye Scans and Protein Structure Win 2023 Lasker Awards

This year's awards were given to scientists who helped doctors see the retina and used artificial intelligence to predict the shapes of cellular proteins. The Lasker-DeBakey Clinical Medical Research Award was given to a team of three scientists, led by James G. Fujimoto, a professor of electrical engineering at the Massachusetts Institute of Technology, who helped invent optical coherence tomography (OCT).

An O.C.T. scan can measure the thickness of the retina, the fluid pockets in it and the abnormal blood vessel growth detecting small lesions that have not yet caused symptoms.

The technology can detect conditions like macular degeneration and diabetic retinopathy earlier than previous methods, preventing blindness. O.C.T. now is commonly used in ophthalmology offices, where the patient simply rests a chin and forehead against an instrument for a brief scan.

The potential of the Medical Digital Twin in diabetes management: a review

Diabetes is a chronic prevalent disease that must be managed to improve the patient's quality of life. However, the limited healthcare management resources compared to the large diabetes mellitus (DM) population are an obstacle that needs modern information technology to improve. Digital twin (DT) is a relatively new approach that has emerged as a viable tool in several sectors of healthcare. The concept of a Medical Digital Twin (MeDigiT) can be defined as a system that amalgamates various data science methodologies, each tailored to predict specific aspects of a patient's health. The DT cycle in the diabetes care pathway incorporates a multitude of techniques at every stage of the diabetes mellitus (DM) management cycle. This includes pre-disease

management, disease management, and post-disease management. The integration of diverse data sources and the application of various methods for data collection, modeling, and visualization is fundamental to the efficacy of DT. In the pre-disease management phase, DT can assess an individual's risk of developing DM by analyzing contributing factors such as obesity, a sedentary lifestyle, and genetic predisposition. This allows for the provision of preemptive interventions to prevent the onset of DM. For patients already diagnosed with DM, their DT counterpart can be utilized by healthcare professionals to administer personalized treatment options. In conclusion, DT is an emerging technology based on data, with the model as the core, and software as the carrier, by describing the physical world, diagnosing the physical world, and then gradually upgrading to predicting the physical world and finally making decisions. In healthcare, MeDigiT has the advantage of lowering costs, reducing animal testing, and improving disease prevention. It will continue to grow in popularity and accelerate its current trend with the development of AI and computer technology.

TDC Stories

Diabetes Care Camp at Kotli Sattian

We are delighted to share with you the incredible success of our free medical camp for diabetes patients in Kotli Sattian, which took place on October 1, 2023.



This event was a testament to our commitment to making a positive impact on the lives of individuals living with diabetes in our community. Here's a glimpse of the Diabetes Care Camp. Our dedicated team of skilled doctors, nurses, certified nutritionists and specialists were on hand to offer personalized care and expert advice to our patients. More than 130 patients received thorough health assessments. Team TDC provided complimentary diabetes screenings to help people identify potential health concerns and take proactive measures. Essential medications and supplies were distributed to those in need, ensuring that no one left the camp without the resources they required for their ongoing care. We extend our heartfelt gratitude to everyone who contributed to the success of this event.

From Adversity to Triumph: A Journey of Recovery at The Diabetes Center

In May, our hospital welcomed a resilient 51-year-old male patient, who arrived seeking treatment for a severe Diabetic Foot Ulcer. His condition was critical; the foot gangrene had advanced significantly, and the infection posed a grave risk of spreading above the knee. Admitted under the care of our skilled foot surgeon at The Diabetes Center, the primary focus was on immediate glycemic control and specialized diabetic foot treatment.

Despite diligent monthly follow-ups, the foot's condition continued to worsen, necessitating a difficult decision – amputation. Two months post-amputation, our dedicated Prosthetic team stepped in, sparing no effort in rehabilitating the patient. In August, their expertise culminated in the provision of an artificial limb, marking a significant milestone in the patient's recovery journey.



Today, this resilient individual has defied the odds. With the support of our medical experts and his own determination, he has not only regained his mobility but

also reclaimed his independence. He has seamlessly reintegrated into the workforce, demonstrating his ability to perform daily tasks and work independently. This story underscores the collaborative efforts of our healthcare professionals and the unwavering spirit of our patients. It stands as a testament to the transformative power of medical expertise, technology, and human determination. As we celebrate this remarkable journey of recovery, we are reminded of the incredible impact that specialized care and innovative solutions can have on the lives of our patients.



Upcoming Events At TDC

We are delighted to share with you the upcoming events in November that are designed to promote awareness, education, and support for diabetes care. Your participation is not only welcomed but also crucial in making these events successful. Here's what you can look forward to in November:

- **Diabetes Day Celebration at TDC**
- **Walk: Know Your Risk, Know Your Response**
- **Diabetes Screening Camp and Walk**
- **World Diabetes Day Press Conference**

Educational Resources

Health Professional Education

In our continuous efforts to enhance the knowledge and skills of our dedicated healthcare professionals, we are delighted to share valuable resources aimed at enriching their expertise in diabetes care.

Here is a list of online courses to help healthcare professionals keep up-to-date with various aspects of diabetes management and treatment.

- **Diabetes and cardiovascular disease**
- **Diabetes and Ramadan**
- **Diabetic retinopathy**
- **Management of Diabetic Macular Edema (DME)**
- **Prevention of type 2 diabetes**
- **The role of the diabetes educator**

We encourage all our healthcare professionals to take advantage of these resources to enhance their expertise and contribute to the exceptional care that TDC is renowned for. Thank you for your dedication, and together, let's continue making a positive impact on the lives of our patients.

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Feedback

We are excited to hear from you. Please send us your feedback at rc@tdc.com.pk

Let's join hands, raise awareness, and make a positive difference in the lives of those affected by diabetes.

**There is no improving the future
without disturbing the present.**

Catherine Booth