

‘DISSECTING DIABETES’ WORKSHOP – A MALAYSIA-PAKISTAN COLLABORATIVE INITIATIVE

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Abstract: *Introduction. Diabetes Mellitus (DM) is a condition of chronic hyperglycaemia with many complications, leading to high morbidity. The prevalence of type-2 DM in Asia, particularly in Muslim populations such as Malaysia and Pakistan, is rising at an exponential rate, explained in part by the Asian diabetes phenotype. A conversation between these countries would enable delineation of common issues to improve patient care. Hence, an initiative on tackling diabetes was conducted between endocrinologists from Malaysia and Pakistan, aimed to update participants on the latest advances in disease management and provide a platform for sharing experiences and exchange of ideas. Program. This 2-day event, hosted at Hospital Al-Sultan Abdullah, consisting of lectures interspersed with clinical-case discussions and tour of the facilities. Initiated by a session on the changing landscapes of DM treatment in the digital area, focusing on regional diabetes burden highlighting Asian metabolic characteristics, and followed by discussion on the latest guidelines and its implications to the countries in this region, trailed by a lively interactive session, with clinical-case discussions. The Pakistan delegation then had a guided tour of the diabetes resource centre, wards, and clinics areas, culminating in discourse on experimental learning and experience-sharing between the delegates from Pakistan and the local team, with illustration of clinical cases, understanding the similarities and differences between these two nations. The second day concentrated on common complications of diabetes mellitus, with knowledge-sharing sessions by nephrologists, cardiologists and gastroenterologists, followed by a tour of the haemodialysis unit, daycare, and rehabilitation services, facilitated by interactions with respective healthcare-practitioners.*

A dialog on the psychological impact of diabetes on quality-of-life ensued, and this program concluded with an engaging session on the role of Augmented Intelligence and digital tools in research, followed by a brainstorming and networking session. Conclusion. This workshop was well-received by all the parties involved, with positive feedback and encouraging response for future collaborations.

Keywords: *Asia, Asian diabetes phenotype, collaboration, diabetes complications, Diabetes Mellitus*

Introduction

Diabetes Mellitus is a chronic condition, and is one of the non-communicable diseases (NCD) that is rapidly increasing in prevalence, especially in Asia. In Malaysia, the proportion of adult population with type 2 Diabetes Mellitus (T2DM) has been increasing exponentially, with a current prevalence on 21%, doubling from the figure in 2006, becoming the highest in Southeast Asia. Translating to approximately 4.7 million adults, 1 in 5 Malaysians live with diabetes, and of increasing concern is that nearly half of them were unaware of their condition before nationwide screening or until diagnosed with complications (Akhtar et al. 2022; Ismail et al 2023). Reflecting these numbers, T2DM in Pakistan has also grown dramatically, with a 31% prevalence affecting over 33 million individuals (Dina et al. 2025), making it one of the highest comparative prevalence in the world.

As both these Asian countries contribute to large numbers of adults with T2DM, a platform for sharing knowledge and discussion on tackling this condition is critical for optimal management of this burden.

Literature Review

Diabetes Mellitus is characterized by chronic hyperglycaemia leading to early and long-term complications that affect morbidity, mortality and health costs. Categorized into a few subtypes, T2DM is the commonest type worldwide, predominantly affecting adults and frequently attributed to lifestyle habits. Notably, the rapidly rising rates of T2DM in many parts of Asia, especially the South, Southeast and Western Pacific regions (Nanditha et al. 2016) are of increasing concern both in view of co-morbidities and long-term health impacts.

Special Considerations in Asians

The Asian diabetes phenotype in part explains the combined increasing prevalence of T2DM, especially in South Asians and Southeast Asians. This phenotype describes phenotypic features including small beta-cell mass, decreased insulin secretory function relative to insulin resistance, and the propensity for visceral adiposity even within a relatively acceptable body mass index, to the range of complications, which is markedly microvascular such as retinopathy and nephropathy and macrovascular with increased prevalence of stroke and higher rate of premature cardiovascular disease (Rhee 2015). It also highlights the dietary pattern in this population, which is high in carbohydrate, as well as the pattern of young-onset T2DM.

Analysing the revolving categorization of T2DM, which now includes Severe Insulin-Deficient Diabetes (SIDD), Severe Insulin-Resistant Diabetes (SIRD), Mild Obesity-related Diabetes (MOD) and Mild Age-Related Diabetes (MARD) (Deutsch et al. 2022), the most common subtype in Asians seems to be SIDD, with an estimated 15-30% general prevalence and almost 50% prevalence in Asians, as well as the MOD subgroup which seems to be described more in

Indians, constituting around 20 -30% of young Indians (Misra et al. 2023). This is certainly concerning, as the SIDD category occurs predominantly in younger adults with lean body mass, and rapidly progresses to insulin dependency with high rate of complications (Pigeyre et al. 2022). This again illustrates the reduced pancreatic beta-cell mass in Asians, and the increasing need for early insulin initiation in this population, underlining another common denominator between countries like Malaysia and Pakistan.

Among Asians, certain distinct comparisons have been described, particularly among the Chinese and Indian demography. Although the population determined were from the respective countries, seeing that both China and India form the highest global populace, reflecting that almost half of adults with T2DM worldwide originate from these two nations, the pattern can be used to evaluate those sharing similar genetic clusters. In the Indian population, there is a reduction of first-phase insulin secretion from the pancreas, and increased hepatic insulin resistance, resulting in impaired fasting glucose, while among the Chinese there is a deficiency of both first and second phase pancreatic insulin secretion, with elevated skeletal muscle insulin resistance leading to abnormal glucose tolerance (Ke et al. 2022). This important distinction shapes individualised diabetes care as it helps in selecting the optimal medication and treatment for each subgroup.

An important characteristic of metabolic conditions in both Malaysia and Pakistan is the obesity phenotype, particularly visceral adiposity that increases inflammation (Abdullah et al. 2018) and drives complications. Malaysia has among the highest rate of adult and childhood obesity in South-East Asia, with approximately half of the population being either overweight or obese, and concerningly 30% of children with excess weight (Mohd-Sidik et al. 2021). Similarly, in Pakistan, 60% of adults are classified as overweight, with a quarter having clinical obesity, at a rate that has tripled in the past two decades (Siddiqui et al. 2018). This pattern has been attributed to sedentary lifestyle in both these countries, with high consumption of calorie-rich and carbohydrate dense processed food, reduced physical activity, and additionally rapid urbanization in areas of Pakistan. The rate of obesity is concerning due to a variety of angles, including higher rate of insulin resistance and metabolic syndrome, increased burden of cardiovascular and renal disease, and transgenerational weight issues, as overweight parents are associated with having offsprings with higher risk of metabolic compromise. Additionally, childhood obesity has been shown to be significantly associated with developing certain T2DM subtypes, specifically SIDD, SIRD and MOD (Wei et al. 2023). This in turn translates to a higher rate of diabetes and obesity-related complication at a relatively young age.

The high propensity of having diabetes at a younger age among Asians also signifies and increasing prevalence of diabetes in pregnancy, both gestational and T2DM. This is a major health concern in both Malaysia and Pakistan, driven predominantly by rising obesity rates, advanced maternal age and South/Southeast Asian genetic predispositions (Siddique et al. 2023). The national prevalence of gestational diabetes mellitus (GDM) in Malaysia has risen exponentially from 12.5% in 2016 to above 27% in 2022, with notably higher rate among the Indian ethnicity (Chong et al. 2025), whereas in Pakistan the overall rate of GDM is 16.7%, with regional estimates between 11% to 35% (Adnan & Aasim 2024). Diabetes in pregnancy is notable for both short- and long-term complications for the mother and offspring, ranging from fetal neurological and cardiovascular anomalies to maternal pregnancy complications in the postnatal period and early life, to long-term issues for both the mother and child, ranging from a higher prevalence of metabolic syndrome and heart failure and to psychological

impairment. Early screening and recognition of this condition is crucial in tackling these deleterious effects.

T2DM and Mental health

Mental health among those with T2DM needs focused consideration, as the elevated rate of psychological issues among this population is increasingly concerning. Conditions such as depression (Naziha & Banik 2026), anxiety and diabetes distress (Kamrul-Hasan et al. 2025) have increasingly been described among Asians with T2DM, even with reported suicidal ideation and self-harm behaviours. Coupled with the social stigma for having the condition, especially with certain cultural barriers (Javed et al. 2025), optimal disease management and control can be severely compromised, adding to health burden.

Justification and Objectives

Taking all these facts into consideration, the need for a national and international treatment and prevention program is essential in designing a functioning action plan. Hence, this collaborative event was designed and organised with the aims of facilitating knowledge exchange on the current management of T2DM, and identify opportunities for clinical collaboration between Malaysia and Pakistan.

Methods

This collaboration initiative was organised as a diabetes action plan workshop, and created to discuss treatment options for T2DM among endocrinologists from Malaysia and Pakistan. The program was designed with knowledge-sharing session interspersed with clinical discussions and interactive components. Issues frequently encountered in the approach of T2DM, as well management of complications were divided into specific sessions, each section presented by the designated area specialist, with corresponding case illustrations. Management according to latest international and country-specific guidelines was aligned with the topics scheduled. A guided tour of the relevant facilities was incorporated into the program. Feedback and suggestions were obtained from the participants at the conclusion of this event.

Innovative Program

Themed ‘Dissecting Diabetes’, this program was held in Hospital Al-Sultan Abdullah (HASA) Universiti Teknologi MARA (UiTM) over a period of two days, and attended by doctors from Pakistan who directly treat diabetes. Organized by the Endocrine Unit of HASA UiTM, the Malaysian delegation included endocrinologists, medical officers, masters’ students and diabetes educators from the endocrinology unit, joined by invited specialists from other fields, namely cardiology, hepatology and psychology.

Knowledge-Sharing Sessions on the Burden of T2DM and Management Strategies

The burden of T2DM worldwide, and particularly in Asia was discussed and debated through a series of experience-sharing sessions between the delegates from Pakistan and the local team. The first session was a keynote address and lecture by an endocrinologist on the changing landscape diabetes management in Asia, which included an overview of diabetes epidemiology and trends, challenges faced by healthcare systems managing diabetes at various scales, and the role of dietitians and nutritionists in tackling diabetes in Asia.

Another knowledge-sharing session concentrated on the review of the latest guidelines, including the European Association for the Study of Diabetes (EASD) and the American Association of Diabetes (ADA) consensus, with corresponding Malaysia Diabetes Guidelines,

focusing on implementation in clinical practice. This session included specific considerations from the international guidelines in application to Asian population, comparison between the ADA, American Association of Clinical Endocrinologists (AACE) and NICE guidelines from UK, concentrating on local and regional context, as well as tailored case illustrations.

The discussion progressed to focusing on management options, highlighting the pattern of early-onset type 2 diabetes in Asians, and the role of basal insulin and emerging technologies. Ranging from comprehending the clinical picture and treatment approaches in young Asians with T2DM, to focusing on the importance of early insulin initiation, with differing regimens and evolving insulin preparations, this session emphasized the need for increased awareness at an earlier age and stage of diabetes. Novel options were also discussed, including continuous glucose monitoring parameters and wearable devices in improving diabetes care.

Interactive Experience-Sharing

Interspersed with the lectures were a few experience-sharing sessions between the delegates from both these countries, which were interactive exercises with panel discussion on selected clinical cases. The participants were intensely engaged in all these sessions, especially the practical scenarios, sharing experience from each country, acknowledging the similarities and variations in management approaches in Malaysia and Pakistan. The clinical scenarios discussed included management issues in early-onset T2DM, special conditions contributing to challenges in treatment, and curated complex T2DM cases treated with basal insulin therapy. Following case illustration by the faculty, break-out groups analyzed the cases based on current guidelines and discussion of potential management strategies, with subsequent expert panel commentary on the proceeding.

Focused Organ-Specific Complication Modules

The complication panel started off with a knowledge-sharing session by the cardiologist on the diabetic heart and early intervention strategies, encompassing the accelerated atherosclerosis in Asians with T2DM and the evolving understanding and management of heart failure in diabetes, with clinical case discussions. This session was highly engaged by the delegation from Pakistan, with sharing of their approach and treatment considerations.

Next, the nephrologist delivered an informative lecture on the effect of T2DM on the kidneys, with special focus on outlines of diabetic kidney disease presentation in Asians, and the renal benefits of anti-diabetic medications. This included descriptions of the spectrum of diabetic kidney disease, and the high occurrence of this complications among the early-onset T2DM, especially among Asians, mitigation of progression to rapid dialysis, and the utility of specific diabetic medications in addressing cardio-renal health and evidence-based incorporation into the treatment armamentarium.

An enlightening session by a gastroenterologist focused on metabolic-associated fatty liver disease, its high prevalence in Asians, especially in the Indian subcontinent, emphasizing the screening approaches and strategies for developing a patient-centric care plan, as well as presentation of certain clinical cases.

The subsequent component of this program was conducted by the psychologist, highlighting the psychological and psychosocial aspects of diabetes, with impacts on treatment adherence and quality of life. The lecture constituted of describing the emotional and mental health challenges frequently experienced by those with diabetes, motivational interviewing technique

specific for diabetes management, behavioural modification strategies to improve adherence to diabetes-care plans, and effective education techniques that promote self-management skills.

Discourse on Digital Space

The application medical technologies in the clinical management of medical conditions was a highly anticipated and informative sharing session, focusing on the use of digital devices and advances in technologies in the fields of medical evidence and research, particularly in the context of augmented intelligence (AI). This address included the role of technology in the current management scenario of T2DM and its associated organ involvements, significance of medical evidence and updates in management, and the utilization of digital space for supporting better patient care.

Experiential Learning Experience

Focusing on showcasing Hospital Al-Sultan Abdullah UiTM in fostering a high-performance diabetes clinic and resource centre, two guided tour sessions were conducted of some the facilities involved in the management of T2DM. The participants were divided into four smaller groups, each headed by a member of the UiTM endocrine team. On the first day, the groups were taken on visit to the diabetes resource centre, endocrine and ophthalmology clinics, wards and radiology, as well as the pharmacy, while on the second day, they visited the hemodialysis unit, rehabilitation centre, daycare and weight management clinic facilities. This tour included interaction with the support staff to promote understanding on practical challenges and solution, demonstration of local management algorithms and care plans for a variety of diabetes-related issues, and reiterating the role of dietitians and diabetic educators.

Networking

This program was concluded by a session on sharing of experiences between the physicians in both these countries, with comparison of technique and treatment approaches, followed by networking exercises between the Malaysian and Pakistani delegation to identify opportunities and set the stage for future collaborations.

Results and Discussion

This program was attended by 52 doctors from Pakistan, predominantly consisting of endocrinologists, with some general physicians (Figure 1). They participated enthusiastically in the whole program and were very engaged in clinical case and panel discussions. The feedback from the delegates were fairly positive, with the majority of the participants finding the whole program informative and though-provoking. The suggestions given were mainly for more clinical encounters, and longer discussion on AI and diabetes technologies (Table 1).

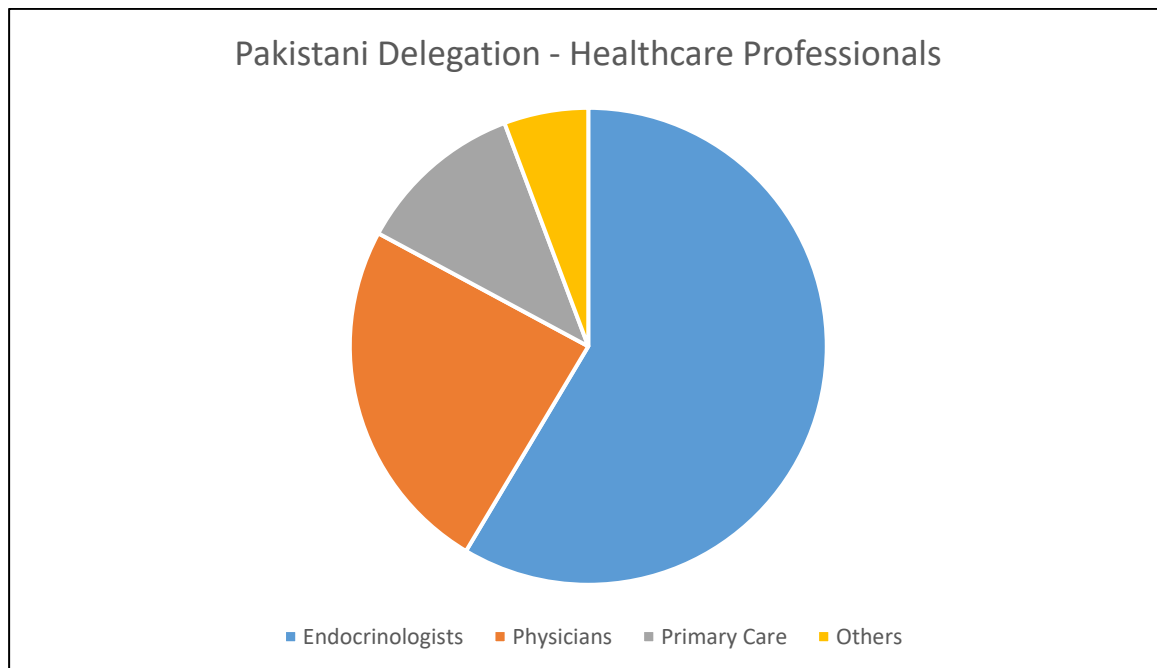


Figure 1: Categories of Healthcare Professionals Constituting the Delegation from Pakistan

This collaborative initiative highlights the importance of having a common platform for discussion and exchange of ideas between nations with some commonality. In this instance, the approach and management of T2DM, as both Malaysia and Pakistan have high prevalence of diabetes, which is rapidly rising, and share many similarities such as high rate of obesity, specific diabetes phenotypes, elevated occurrence of gestational diabetes, and rising mental health challenges.

This workshop has been successful in exploring the similarities and variations of treating diabetes in different countries, and has established a stage where ideas can be exchanged positively and comprehensively. Programs such as this initiative should be undertaken at a more widespread level, with incorporation of a multitude of other inter-related topics, to improve understanding and enhance patient care.

Table 1: Feedback from participants

Participant Experience (N=52)	
Overall program	92% positive feedback
Most beneficial sessions	Clinical discussion – 85%
	Case-scenario illustrations – 82%
	Digital space – 76%
Suggestions	More clinical exchange sessions
	Augmented Intelligence (AI) incorporation
	Future collaborative exercises

Conclusion

This program brought together health practitioners from Malaysia and Pakistan who manage diabetes mellitus on a regular basis. It was successful in promoting better understanding of diabetes care among Asians, and provided a medium for optimal exchange of ideas in clinical setting as well as chance for epidemiological impact. Similar collaboration at secondary and

tertiary care level will likely expand comprehension among healthcare workers and pave the way for better patient care.

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