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# DIABETES IN RAMADHAN – AN INNOVATIVE GUIDE TO FASTING WISELY FOR PEOPLE WITH DIABETES

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## ABSTRACT

The incidence of Type 2 Diabetes Mellitus (DM) in Malaysia is increasing, with 59% in Malays followed by the other races. Fasting in Ramadhan for those with DM is challenging and needs close monitoring with sufficient and comprehensive medical advice. Diabetic complications during fasting is mainly seen in patients with improper disease control or inadequate information. This guide aims to facilitate knowledge attainment and improve dissemination of information to mitigate the risk of complications in Ramadhan and to pave the way to fasting safely. Innovation product. A novel guidebook fashioned for educating people with DM and their care-givers on the proper approach to fasting safely in Ramadhan. A compilation of important information on managing the challenges DM patients face in the fasting month was assembled, gathered mainly from the Malaysian DM clinical practice guidelines and the International Diabetes Federation (IDF) Diabetes in Ramadan Guideline. This compendium was designed primarily in the Malay language to enable better understanding in the Malaysian population. This guide detailed essential knowledge on fasting in Ramadhan for people with DM, and was divided into a few categories, comprising of: risks and possible complications of fasting in people with DM, population categories at high risk for continuous fasting, adequate and timing of blood sugar monitoring, when to break of fast in the event of complication and steps to handle the situation, medication adjustment, dietary advice and tips on keeping active during the fasting month. Conclusion. A practical tool that is simplified for general use is essential in empowering people with diabetes to handle to their condition better and to facilitate safe fasting in the month of Ramadhan. This guide has been designed to fulfil this requirement and aspires to be beneficial in clinical practice and additionally function as a valuable instrument for personal and public use.

**Key Words:** Diabetes mellitus, fasting, Ramadhan, guidebook.

## 1. INTRODUCTION

The incidence of Type 2 Diabetes Mellitus (DM) in Malaysia is increasing, with an estimation of 3.9 million adults diagnosed according to the recent Malaysian National Health and Morbidity Survey (NHMS) in 2019. This is contributed largely by the Malay race with a prevalence of 59%, followed by the other races (National Health and Morbidity Survey [NHMS] 2019), translating into a significant proportion of people with diabetes who will be fasting in the month of Ramadhan in Malaysia. Indeed, Malaysia lies in the geographical region with the highest Muslim population in the world (International Diabetes Federation [IDF] 2021), and in an international survey assessing people with Type 2 DM it was seen that more than 95% of these patients fast in Ramadhan regardless of their diabetic control, contributing to the largest number when compared to the other participating countries (Salti I, Benard E, & Detournay B et al, 2004).

Fasting in Ramadhan for those with DM is challenging and needs close monitoring with sufficient and comprehensive medical advice. Diabetic complications during fasting is mainly seen in patients with improper disease control or inadequate information. This was illustrated in a nationwide survey looking at admissions to general hospital across the different states in Malaysia during the month of Ramadhan, which revealed a high number of admission due to diabetic emergencies, with more than half of the assessed population unable to recall receiving medical advice regarding managing diabetes in Ramadhan (Chin V.T. et al, 2021). To address this issue, an innovative guidebook was fashioned for patients attending the endocrine clinics in Universiti Teknologi MARA (UiTM) medical centre.

## **2. METHODOLOGY**

A diabetes in Ramadhan patient education booklet was specifically designed and produced for the muslim diabetic patients in UiTM. This guide aimed to: 1) facilitate knowledge attainment and improve dissemination of information, 2) mitigate the risk of diabetic complications in Ramadhan and 3) pave the way to fasting safely. Referencing the Malaysian Type 2 DM clinical practice guidelines (Ministry of Health, 2020) and the International Diabetes Federation (IDF) Diabetes in Ramadan Guideline (IDF, 2021), important information on managing the challenges DM patients face in the fasting month was assembled and subsequently translated into an interactive and educational training program tailored for the local population. This compendium was fashioned mainly in the Malay language to enable better understanding in the local population

## **3. INNOVATION PRODUCT**

Titled 'Panduan Berpuasa Dengan Selamat Bagi Pesakit Diabetes', this novel instruction booklet was utilized to educate people with diabetes mellitus on the approach to fasting wisely in the month of Ramadhan. Targeting mainly the population of patients and caregivers attending the endocrine clinics both at the Hospital Al-Sultan Abdullah (HASA) UiTM Puncak Alam and at the UiTM medical centre at Sungai Buloh, this guide was divided into a few parts, providing both a comprehensive and also an easy-to-understand management approach. Organized into three distinct parts, this program enabled effective multi-directional communication between patients, family members and healthcare professionals.

### *3.1. Overview on risks and complications*

This guide initiates with an overview on fasting in Ramadhan for people with diabetes, covering both the advantages and possible risks. Outlining the physiological changes during fasting, this page states the risks and complications of prolonged fasting, particularly on the blood sugar levels, and patients can develop both high (hyperglycaemia) and low sugar (hypoglycaemia) levels during fasting.

### *3.2. Risk categories*

This guide then details the risk categories for fasting during Ramadhan, divided into low, moderate and high-risk categories, with fasting recommendations for each group. Following that is a list on some of the criteria for the high-risk category. Clinic attended will undergo sessions with healthcare practitioners to calculate their individual risk and be informed regarding their risk category and fasting recommendations. This individualized approach facilitates optimal knowledge dissemination.

### *3.3. Monitoring and symptom recognition*

An important aspect of this guide is the blood sugar monitoring recommendations. This page details the suggested timings for blood sugar monitoring during the fasting month, as well as

actions to be taken during episodes of abnormal blood sugar readings, both low and high sugar levels. Additionally, details on symptoms of complications, especially low blood sugar (hypoglycaemia) are listed clearly. These references are provided to empower people with diabetes to manage their diabetes optimally during fasting.

### 3.4. Action plan

As a special feature, this guide has a page dedicated to recognition and management of complications during fasting. Particularly, this part of the guide details steps to be taken during episodes of low blood sugar (hypoglycaemia), as well as follow-up approach.

### 3.5. Lifestyle recommendations

Recognizing that lifestyle modification is an important aspect in managing diabetes during fasting, this guide details recommendations and both dietary approach and physical activity during the fasting month. Dietary advice particularly during sahur and iftar are stressed upon, with fairly thorough information. Physical activity, incorporating light exercise and tarawih prayers are included in the management approach.

## 4. CONCLUSION

This novel and innovative diabetes in Ramadhan patient education guide was specially designed for better management of diabetes for patient fasting in the month of Ramadhan. It provides an essential service and aims to fill the gap in crucial knowledge dissemination that is urgently required in this country. This comprehensive and engaging program has been tailored to local specifications with potential for multi-centre engagement, as well as to enable patient empowerment and pave the way to fasting safely

## REFERENCES

- National Health and Morbidity Survey 2019. Available at <http://www.iku.gov.my/nhms/>.
- International Diabetes Federation (IDF) in collaboration with the Diabetes and Ramadan (DAR) International Alliance. *Diabetes and Ramadan: Practical Guidelines*. 2021.
- Salti I., Benard E., Detournay B., et al. (2004). A population-based study of diabetes and its characteristics during the fasting month of Ramadan in 13 countries: results of the epidemiology of diabetes and Ramadan 1422/2001 (EPIDIAR) study. *Diabetes Care*, 27(10):2306-2311
- Chin V.T., Hui Y.Y., Nurain M.N., & Zanariah H., (2021). Diabetes Emergencies around Ramadan Study (DEARS) – A Multi-center Study of Diabetes Emergencies Admitted Before, During and After Ramadan in Malaysia. *Diabetes Res Clin Pract*, May;175:108854. doi: 10.1016/j.diabres.2021.108854.
- Ministry of Health Malaysia. *Clinical Practice Guidelines for the Management of Type 2 Diabetes Mellitus* 6th edition. 2020