

## ARTICLE

# The Behavior of Muslim Type 2 Diabetic Patients towards the Fasting of Ramadan

Latifa Adarmouch, Nawal Elansari, Fatima Ouhdouch, Mohamed Amine

Unit of Epidemiology, Laboratory PCIM; Faculty of Medicine, Cadi Ayyad University Marrakesh

Corresponding author: Miss Latifa Adarmouch Email: l.adarmouch@hotmail.com

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## Abstract

The desire and feasibility of fasting during Ramadan are sensitive issues for diabetic Muslims. The aim of this study was to describe the behavior of patients with type 2 diabetes towards fasting. A prospective longitudinal study was conducted including 100 patients with type 2 diabetes. Data collection was carried out using an anonymous questionnaire administrated by the attending physician during two visits before and after Ramadan. A total of seventy-nine of the hundred enrolled patients fasted, and 62% of uncontrolled patients fasted against medical advice. The reasons given by patients to justify their behavior referred to socio-cultural imperatives. Most of our patients practice Ramadan fasting under the pressure of socio-cultural habits, despite their doctors' disapproval. This fact highlights the difficulties to manage these patients.

## Keywords

Type 2 diabetes, Ramadan fasting, patients' behavior

## Introduction

The national survey conducted among a representative sample of individuals aged 20 years and older in 2000 in Morocco, reported 6.6% of diabetes prevalence (1). Apart from its frequency, diabetes is often a disabling disease. Diabetic patients' management is particularly difficult and must be global and comprehensive, including drug therapy and counseling as well as psycho-social and economic patterns.

During the holy month of Ramadan, Muslims observe fasting. They abstain from all kinds of consumption (food, beverages, cigarettes and medications), from sunrise to sunset. Along this month, many changes affect eating habits, physical activity, and sleep patterns. Changes in eating habits affect quantity, quality, and distribution of food intake during the day. Food intake becomes exclusively nocturnal and is characterized by a huge fast breaking meal compared with usual meals during the year. In addition, meals include

large portions of sweetened food and beverages with risk of hyperglycemia and weight gain. Fasting has no adverse effects on young and healthy individuals (2), it may even have some beneficial metabolic effects (3,5). In opposition, it can cause some complications in diabetics especially as eating habits change considerably during the holy month (6,7). Nevertheless, available data argue in favor of absence of significant effects of Ramadan fasting on metabolic patterns in balanced type 2 diabetic patients with oral treatment, and no degenerative complications (7-10).

This religious rite is an obligation for all Muslims except for ill people, pregnant women, nursing mothers, and children. Because diabetes is a chronic disease, the non-fulfillment of fasting for diabetics is allowed by religion. However, many patients are reluctant and decide to fast even if it is against their doctors' medical advice, because fasting Ramadan is the religious ritual that is most observed among Muslims. In Morocco, like other Muslim countries, physicians have difficulties managing patients who insist on fasting against medical advice or those who do not fast but have feelings of guilt and exclusion. These physicians should advise and assist their patients regardless of their decision (3,6). To our knowledge, there are scarce data that address patients' compliance to medical advice in regard to Ramadan fasting.

The aim of this study was to describe behavior of patients with type 2 diabetes toward Ramadan fasting. A secondary purpose was to identify the reasons given by these patients to explain their behavior even against their doctors' advice.

### **Participants and Methods**

A prospective longitudinal study was conducted at the department of Endocrinology and Metabolic Diseases of Marrakesh University Hospital. Target population consisted of Muslim type 2 diabetic patients in Morocco. The study reviewed all consecutive patients who were managed during the month of August 2009, which was the month preceding the month of Ramadan. Total duration of the study corresponded to the period of the month preceding the month of Ramadan that year and one month after its end (from August to October 2009). Patients hospitalized during the study period and those who did not complete follow-up were excluded. Prior to their inclusion, eligible patients had expressed their consent to participate to the study.

Collected data included socio-demographic (sex, age,

educational level and professional activity) and medical characteristics (disease duration, treatment regimen and quality of glycemic control). Data collection was performed using a questionnaire administered by the attending physician during two visits. The first visit took place during the month that preceded Ramadan. Investigators evaluated glycemic control and discussed with the patient the possibility of fasting. Glycemic control was assessed using glycosylated hemoglobin dating from a month before the first visit. Threshold value was 7%; glycemic control was considered good when glycosylated hemoglobin value was less than or equal to 7%. Medical decision related to the permissibility of fasting was based on glycemic control, the presence or absence of degenerative complications, and quality of patients' self-monitoring and control. During the second visit, which was scheduled after the month of Ramadan, physicians asked patients if they fasted or not and what was their reasons for fasting against medical advice (if it was the case). Statistical analysis was performed using Epi Info software version 6.

### **Results**

#### ***Characteristics of the Study Population***

A hundred patients, including 79 women were enrolled. Their mean age was  $54.9 \pm 9.9$  years, ranging from 30 to 78 years. Illiterate patients accounted for 74% of the sample, and 73% had no professional activity. Mean disease duration was  $6.1 \pm 5.3$  years, with a minimum of one year and a maximum of 27 years. Twenty seven patients were treated with insulin, including 15 in combination with oral medications. Oral hypoglycemic agents were prescribed alone in 73% of patients.

#### ***Patients Attitudes and practices***

Fifty patients were not allowed to fast. After Ramadan, 79 patients reported they observed fasting. Among the 50 patients who were not permitted to fast, 31 (62%) had observed the fast. Their mean age was  $56.2 \pm 9.0$  years versus  $56.6 \pm 9.4$  years for those who did not fast. Illiteracy was reported in 25 cases (80.6%) versus 15 (78.9%). Twenty-four (77.4%) from those patients who fasted against medical advice and 15 (78.9%) of those who respected medical advice, had no occupational activity. Among this group, seven were treated with insulin, including 4 in combination with oral medications. The reasons for fasting against medical advice were varied: seven patients reported they were used to fasting, three had personal conviction to observe fasting. Other reasons were, socio-cultural imperative (n=3), feeling ability to tolerate fasting (n=2)

while religious imperative was reported by one patient. Fifteen patients did not express the reasons for their fasting against medical advice.

### ***Metabolic Control and Outcomes***

Before the month of Ramadan, glycosylated hemoglobin mean was  $8.2 \pm 1.8\%$  and ranged from 5 to 15%. Patients with  $HbA1c \leq 7\%$  accounted for 30% of the study sample. Among the 31 patients who fasted against their doctor's advice, the number of fasting days ranged from 1 to 30 days with a median of 30 days. Eighteen patients (58%) had completed the fasting month and 25 (81%) had observed fasting for 15 days or more. Patients who interrupted fasting during the month presented with complications such as hyperglycemia (n=7), one patient had reported hypoglycemia, while three patients complained from tiredness.

### **Discussion**

Available data suggest that many patients with diabetes practice fasting during Ramadan. In our study, 62% of the patients who were cautioned against fasting by their physician had fasted. These results are comparable to those of EPIDIAR study, in which 78.7% of type 2 diabetic patients fasted for at least 15 days (11). Another study reported results from 100 type-2 diabetic Moroccan patients, who despite having a condition that precluded fasting, 60 of them decided to fast (12). Patients who practiced fasting against doctor's advice were mostly illiterate; but our study design does not allow us to prejudge a link between socio-cultural background and non-adherence to medical recommendations concerning Ramadan fasting.

A number of reasons for fasting against medical advice among patients with diabetes are reported in literature. They include the psychological impact of non-fasting in the form of feeling of exclusion associated with the denial of the disease, and the feeling of medical opposition to divine power and spiritual imperatives (13). The reasons identified in our study relate the weight of the socio-cultural constraints, the religious imperative being cited by only one patient. On the other hand, many patients abstain from responding to this question, which may be meaningful. We, therefore believe that depth answers to these questions can only be drawn by qualitative investigations.

To advise and manage diabetic patients, physicians may refer to available recommendations (2,3,6,8). A consensus conference was held in 1995 in Casablanca by Hassan

II Foundation for Scientific and Medical Research on Ramadan, under the theme "Diabetes and Ramadan". These recommendations help identify patients who can be allowed to fast. Those are patients with type 2 diabetes, obese or with normal weight, well balanced under oral hypoglycemic agents and adhering to dietary measures. Moreover, these patients must not have a degenerative complication of diabetes. On the other hand, patients who should not be allowed to fast; are insulin-treated patients, those with uncontrolled diabetes, or with degenerative complications. Finally, the elderly, regardless of diabetes type as well as pregnant or lactating women should not be allowed to fast (2,3).

From the religious point of view, fasting practice should not alter patient's health. Religious authorities in Morocco usually recommend to patients at the approach of Ramadan to refer to their doctors who are the only qualified persons to judge the potential fasting effects' on their health and to comply with their advice. These messages are broadcasted in both media and mosques.

A common situation may arise for clinicians; patients may insist on fasting. In this case, the physician should discuss treatment goals and negotiate with his patient patterns such as: the need for fasting, any changes to treatment, diet and blood glucose self-monitoring (13). For example, it is recommended to perform multiple daily glycemic controls to prevent hypoglycemia risk during the day (2). In all cases, diabetic patients' education must be tailored to the particular context of this religious practice.

The large proportion of diabetic patients who wish to fast during Ramadan emphasizes physicians' responsibility; they must intensify these patients' education before the fast. On the other hand, and given the significant responsibility of patients in the success of therapeutic strategies, religious messages can be very persuasive. Consensus recommendations are clear and should guide physicians in their decisions. However, if some patients insist on fasting, physicians must accompany them. It seems to us that convincing diabetic patients not to observe the fast in order to preserve their health is probably linked to a better understanding of the psycho-social and cultural rather than religious imperatives and constraints that often shape inadequate attitudes. In addition, further research may be justified for qualitative investigation of such questions poorly explored by quantitative methods.

The longitudinal design of this study allowed us to prospectively assess patients' behavior towards fasting in regard to medical advice. However, the main limitation of the study is patients' recruitment in a public health-care unit, which may differ from the private sector in terms of patients' characteristics and disease management; and may have led to a selection bias.

Learned lessons from this work emphasize the relevance of the consultation to muslim patients with diabetes before the month of Ramadan and the need to consider the socio-cultural representations rather than purely biomedical aspects. Moreover, managing these issues should concern not only the patients and health professionals but also religious authorities, patients' families, patients' associations, and the entire society.

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