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Original Article

Comparison of Ramadan-specific education level in patients with diabetes seen at a Primary and a Tertiary care center of Karachi-Pakistan

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ABSTRACT

Aims: To compare Ramadan-specific education level in fasting patients with diabetes at a Primary and a Tertiary care center.
Methodology: An observational study was conducted in the Outpatient departments of a Primary care center and a Tertiary care center in Karachi-Pakistan. Recruitment of patients started at the end of Ramadan 2011 and continued till three months after Ramadan 2011. All patients with diabetes who observed fast during the month of Ramadan 2011 were included in the study. In Primary care center, patients were attended by physicians only, while at Tertiary care center patients were seen by physicians, diabetes educator and dietician. For data collection, standardized questionnaire based interview was conducted on one to one basis by trained healthcare professionals. Same questionnaire was used at both the centers.
Results: A total of 392 and 199 patients with diabetes recruited at Primary and Tertiary care centers, respectively. Ramadan-specific diabetes education received by 213 (55%) and 123 (61.80%) patients with diabetes at Primary and Tertiary care centers, respectively. Compared to Primary care center, patients at Tertiary care centers were more aware about components of Ramadan-specific diabetes education such as signs and symptoms of hypoglycemia and hyperglycemia, dose of medicines/insulin during Ramadan fasting, dose of medicines/insulin when not fasting, self-monitoring of blood glucose, dietary modifications, physical activity, adequate nutrition and adequate hydration during Ramadan ($p < 0.05$).
Conclusion: It was observed that Ramadan-specific education level of patients at Tertiary care center was significantly better compared to patients at Primary care center.

1. Introduction

Fasting in the month of Ramadan is one of the five pillars of Islam [1]. Ramadan is the ninth month of the Islamic calendar [2]. During Ramadan all healthy Muslims are obligated to fast. However, if the health of the individual is adversely affected by fasting or when one is ill, the Quran exempts that individual from fasting [3]. Muslims who fast must abstain from drinking, eating, smoking and use of oral medications from sunrise to sunset; however, there is no restriction on fluid or food intake between sunset and sunrise [4].

It is estimated that more than 50 million people with diabetes worldwide fast during the month of Ramadan [4]. A population-based epidemiological study among 12,243 people with diabetes from 13 Islamic countries demonstrated that 43% of patients with

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type 1 diabetes and 79% of patients with type 2 diabetes fast during Ramadan. In this study it was observed that only 68% of the patients with type 1 diabetes and 62% of those with type 2 diabetes received recommendations from their health care providers about fasting and diabetes during Ramadan [1].

Education of patients is identified as the cornerstone of safe fasting which is needed on both an individual and large-scale level and this is the responsibility of health care professionals involved in the care of patients with diabetes [5]. Clear and comprehensive advice should be provided to all patients with diabetes who intend to hold fast during the month of Ramadan [6]. It is suggested that Pre-Ramadan education should not only contain standard diabetes education but should also include specific advice regarding Ramadan-related issues such as the possible risk of complications during fasting, the importance of capillary blood glucose monitoring, when to break the fast, meal planning and physical activity during fasting hours [7].

Studies have been conducted in patients with diabetes showing the importance of Ramadan-specific education for safe fasting [8,9]. However, to the best of our knowledge none of the studies compared whether the Ramadan-specific education delivery is uniform in patients seen at Primary and Tertiary care centers. Hence, a study was planned to compare Ramadan-specific education level in fasting patients with diabetes at Primary and Tertiary care centers.

2. Methodology

An observational study was conducted in the Outpatient departments of a Primary care center and a Tertiary care center in Karachi, Pakistan. Ethical approval for the study was obtained from the Institutional Review Board (IRB) of the Tertiary care center. After obtaining informed consent, recruitment of the patients for the study started at the end of Ramadan 2011 (Islamic year 1432) and continued till three months after Ramadan 2011.

All patients with diabetes who attended the outpatient departments of the two centers, observed fast during the month of Ramadan 2011 and gave informed consent were recruited in the study. Patients with severe complications of diabetes, children, pregnant women and hospitalized individuals were excluded.

In Primary care centers, patients were attended by the physicians only, while at Tertiary care centers patients were seen not only by physicians but also by diabetes educator and dietician. At Tertiary care centers patients also had provision of 24 h telephonic helpline service for any assistance needed during Ramadan.

2.1. Data collection

For data collection a standardized questionnaire based interview was conducted on one to one basis by trained healthcare professionals. Same questionnaire was used at the Primary and Tertiary care centers. The questionnaire included information regarding demographic and anthropometric data, type and duration of diabetes, treatment, information regarding pre-Ramadan diabetes education and readjustment of medication dosage.

Questionnaire also included questions regarding specific education about signs and symptoms of hypoglycemia and hyperglycemia, target blood glucose levels, self-monitoring of blood glucose (SMBG), fluid intake and physical activity during fasting. Knowledge about Ramadan fasting of the study population was also assessed. Responses were categorized as correct or incorrect on the basis of religious and medical guidelines obtained from the literature.

2.2. Statistical analysis

Data was analyzed using Statistical Package for Social Sciences (SPSS), version 13.0. Data presented in the form of frequency and percentage, Mean ± SD. $p < 0.05$ considered as statistically significant.

3. Results

A total of 392 and 199 patients with diabetes were recruited at the Primary and Tertiary care centers respectively. Table 1 shows baseline characteristics of the study population. Mean age of patients at Primary care center was 49.85 ± 15.26 years while at Tertiary care center the patients were older with the mean age of 51.58 ± 11.68 years. Mean duration of diabetes of patients seen at Primary and Tertiary care center was 10.04 ± 7.15 years and 9.34 ± 6.15 years, respectively.

Regarding educational background; around 43% of the patients seen at Primary care center had no formal education compared to 24% of patients seen at Tertiary care center. About 23% patients at Primary care center and 4% at Tertiary care center could only read and write. Whereas, 17% of patients at Primary care center and 22% of patients at Tertiary care center were educated up to 10th grade. Around 23% of the patients were graduates and 12% were post graduates at Tertiary care center compared to 7% graduates and 1% postgraduates at Primary care center.

Ramadan-specific diabetes education was received by 213 (55%) and 123 (61.80%) patients with diabetes at Primary and Tertiary care centers, respectively. In Primary care center Ramadan-specific education was imparted mainly by physicians (92.92%), while at Tertiary care center education was given mainly by diabetes educator (90.24%). Drug dosage and timings were altered in 51.92% patients with diabetes at Primary care center compared to 94.97% patients at Tertiary care center ($p < 0.000$). In Primary care center drug dosage and timings were altered by physicians in all (100%) the patients whereas it was changed by physician in 76.19% in Tertiary care center ($p < 0.000$) as shown in Table 2.

Table 1
Baseline characteristics of the study population.

	Primary care center	Tertiary care center
n	392	199
Male	93 (23.72%)	99 (49.75%)
Female	299 (76.27%)	100 (50.25%)
Age (years)	49.85 ± 15.26	51.58 ± 11.68
<25	34 (8.7%)	6 (3%)
25–35	44 (11.3%)	9 (4.6%)
36–45	35 (9%)	36 (18.3%)
>45	277 (71%)	146 (74.1%)
Type of diabetes		
Type 1	46 (11.8%)	10 (5%)
Type 2	346 (88.2%)	189 (95%)
Duration of diabetes (years)	10.04 ± 7.15	9.34 ± 6.15
<5	100 (26.2%)	49 (24.6%)
5–10	100 (26.2%)	59 (29.6%)
>10	182 (47.6%)	91 (45.7%)
Body Mass Index (kg/m^2)	28.06 ± 6.35	29.22 ± 4.95
<25	129 (33.2%)	39 (19.9%)
≥25	259 (66.8%)	157 (80.1%)
Type of treatment		
Diet and exercise	6 (1.53%)	3 (1.50%)
Oral hypoglycemic agents (OHA)	152 (38.77%)	51 (25.63%)
Insulin	196 (50%)	79 (39.7%)
OHA + insulin	38 (9.7%)	66 (33.16%)

Values are n (%), Mean ± SD; $p < 0.05$ considered as statistically significant.