



## Research Paper

# Relationship of treatment satisfaction to health-related quality of life among Palestinian patients with type 2 diabetes mellitus: Findings from a cross-sectional study



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## ARTICLE INFO

## Article history:

Received 10 January 2015

Received in revised form

6 March 2015

Accepted 24 March 2015

## Keywords:

HRQoL

Treatment satisfaction

Diabetes mellitus

TSQM

Quality of life

## ABSTRACT

**Objectives:** The aims of the current study were to assess the association between health-related quality of life (HRQoL) and treatment satisfaction in a sample of diabetic patients from Palestine, and to determine the influence of socio-demographic and clinical factors on HRQoL.

**Methods:** It was a cross-sectional study performed during the period June 2013 to October 2013. The Arabic version of Treatment Satisfaction Questionnaire for Medication (TSQM 1.4) was used to assess treatment satisfaction, and the Arabic version of European Quality of Life scale (EQ-5D-5L) was used to assess HRQoL. Multiple linear regression was used to estimate which variables were the most important related to HRQoL.

**Results:** A total of 385 diabetic patients were included. There were modest positive correlations between the total score on the Overall Satisfaction domain and EQ-5D-5L ( $r = 0.14$ ;  $p = 0.005$ ). After adjusting multiple covariates by multiple linear regression, the association between the Overall Satisfaction and HRQoL was not statistically significant ( $p = 0.075$ ); ( $R = 0.495$ ; adjusted  $R^2 = 0.245$ ;  $F = 10.3$ ;  $df = 12$ ;  $p < 0.001$ ). The results showed that elderly patients, being unemployed, and number of comorbid diseases, were significantly associated with HRQoL.

**Conclusions:** Overall, these results indicate that elderly patients, being unemployed, and those with comorbid diseases, are independent risk factors for poor HRQoL. Furthermore, it emerges that HRQoL and treatment satisfaction are both probably influenced by socio-demographic and clinical characteristics. In fact, to improve diabetic patients' quality of life, elderly patients were recommended to receive more attention in their health and economic status.

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## Introduction

Type 2 diabetes mellitus (DM) is a common chronic metabolic disorder causing a significant burden of many complications that are associated with high morbidity and mortality. The total number

of patients with DM worldwide is expected to increase from about 170 million in 2000 to about 370 million in 2030 [1]. In addition to diabetes-related complications, with their substantial impact on health, life style changes (e.g. physical function, social interaction, and mental well-being) are considered the most important cause of impairing health-related quality of life (HRQoL) [2–5].

Treatment satisfaction and HRQoL concepts are commonly used in clinical and policy research to improve treatment outcomes related to pharmaceutical care [6,7]. It has been found that higher patient treatment satisfaction was associated with improving HRQoL [4,8,9]. In addition, HRQoL refers to self-reported measures

Competing interests: The authors declare that they have no competing interests.

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of physical and mental health that are affected by a person's beliefs, perceptions, experiences, and expectations [10]. Reducing the risk of hypoglycemia by individualized care may improve glycemic control by enhancing treatment satisfaction and patients' quality of life [11]. Therefore, assessment of the association between treatment satisfaction and HRQoL may help healthcare providers to recognize the causes that affect quality of life and to identify the aspects of DM management that needs to be enhanced to improve treatment outcomes. Although many studies were done to evaluate of the relationship between HRQoL and treatment satisfaction [6–8], no study in the Arab world has been conducted to assess the association between treatment satisfaction and HRQoL among patients with type 2 DM. The aims of the current study were to assess the association between treatment satisfaction and HRQoL in a sample of diabetic patients from Palestine, and to determine the influence of socio-demographic and clinical factors on the quality of life.

## Materials and methods

### Study design and study area

A cross-sectional descriptive study was carried out between June 2013 and October 2013. Patients from two outpatient clinics, Al-Watani Hospital and Al-Makhfyah primary health care clinic, Nablus, West Bank, Palestine.

### Participants and setting

The estimated sample size was 379 patients out of the 25,752 eligible diabetic patients who attend the primary clinic in Nablus district [12]. Patients were included if they were: (1) 18 years old and above; (2) diagnosed with type 2 DM; (3) initiated on treatment at least six months before enrollment into the current study; (4) able to recognize their medications and understand their use; and (5) agreed to participate in the study.

### Data collection instrument

The method was chosen as it was used in previous similar studies developed by the principle investigators in different populations [13–15]. Data collection was done using a structured, written questionnaire. Four main domains of variables were used: (1) HRQoL profile of patients with type 2 DM (2) treatment satisfaction profile of those patients (3) socio-demographic data such as age, gender, residency (village, city, and Palestinian refugee camps), occupation (employed or unemployed), marital status (single, married, divorced, and widowed), income (low, moderate, and high), educational level (no formal, primary or secondary school, and university), and height and weight information were provided by participants with body mass indexes (underweight, normal, overweight, and obese) calculated later based on this information by study personnel; and (4) clinical DM related data such as duration of disease per year (<1, 1–3, 4–5, and >5), type of therapy (monotherapy versus combination therapy), Insulin use (i.e. yes or no), total number of chronic co-morbidities (0, 1, 2, 3, ≥4), and total number of medications used (1–3, 4–6, and ≥7) (Table 1). We developed the data collection form based on several published studies [2–4,16–18]. The HRQoL in diabetic patients was measured using the EQ-5D-5L scale. This scale consists of two instruments: the descriptive EQ-5D-5L system, and the EQ visual analogue scale (EQ-VAS). The Arabic (national language of Palestine) version of the EQ-5D was offered by EuroQoL Group. The study was registered with EuroQoL who granted permission for its conduct. Treatment satisfaction among diabetic patients was evaluated using the Arabic

version of the Treatment Satisfaction Questionnaire for Medication (TSQM 1.4), which was permitted for use by Quintiles Strategic Research Services. This scale is a 14-item, reliable and valid instrument providing scores on four domains which are Effectiveness, Side effects, Convenience, and Overall Satisfaction [7]. The TSQM 1.4 domains were scored and calculated as recommended by the instrument's authors and as explained in previous studies [19,20]. A detailed description is provided in [Supplemental Methods and Materials in Additional file 1](#). Data were collected by clinical pharmacists in face-to-face interviews with the diabetic patients. A convenience sample of 385 eligible patients with type 2 DM was included in the final analysis. The data collection form was pre-tested by a pilot sample of 30 patients who were excluded from the main study and the form was modified accordingly; the last modified version was evaluated by a panel of experts to assess its content and construct validity.

### Ethical approval

All study aspects, including patient information use, were approved by the local institutional review board (IRB) and the local health authorities before the beginning of this study. Informed verbal consent from each eligible patient was obtained before beginning the interviews; however, and the requirement for written informed consent was waived.

### Statistical analysis

The data collected were entered into and analyzed using the Statistical Package for Social Sciences (SPSS), (SPSS Inc., Chicago, IL, USA) program version 15. Internal consistency was assessed using Cronbach's alpha. Continuous variable was presented as mean ± standard deviation (SD), whereas the categorical variable was presented as frequency and percentage. Data that are not normally distributed were expressed as a median with a range of values (lower-upper quartiles). Data were not normally distributed and analyzed by the Mann–Whitney *U* test or Kruskal–Wallis test. Variables were evaluated if they are normally distributed by the Kolmogorov–Smirnov test. In addition, Spearman's correlation coefficient was used to assess if there was a correlation between the reported EQ-VAS scores, EQ-5D-5L index values and TSQM scores. Multiple linear regression was used to estimate which variables were the most important related to HRQoL (dependent variable). The independent variables were socio-demographic variables, DM related clinical variables, and reported TSQM scores. All statistical tests were performed using a level of significance of 0.05.

## Results

### Demographic and diabetes related data

A total of 408 diabetic patients were met, among them 23 patients were excluded after data collection due to insufficient information about treatment satisfaction or quality of life. The patients' mean age was  $59.3 \pm 11.2$  years, ranging from 19 to 83 years, with 55.1% females. Their mean duration of DM was  $12 \pm 8.8$  years. About 78.4% were married and 60.0% used combination therapy to control diabetes. The median number of total medications per day was 5.0 (interquartile range: 4.0–6.0). Table 1 describes the socio-demographic characteristics of the study population.

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