

Investigating Diabetes Mellitus Impact on Various Aspects of Patients' Quality of Life

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Abstract. The aim of the study was to evaluate the quality of life (QoL) of patients with diabetes mellitus (DM) Methods: A cross-sectional study was conducted using the Audit of Diabetes-Depended Quality of Life (ADDQoL) questionnaire. The study included adult patients with diabetes mellitus type 1 (DM 1) or type 2 (DM 2). Results: A total of 253 patients were enrolled in the study. Despite the fact that the majority of participants stated a good QoL, DM has a negative impact on all 19 domains of ADDQoL. The greater negative impact referred to the domain “freedom to eat”. There was no relation between overall score of QoL and age, gender or type of DM. On the contrary, we found statistically significant relation between age, gender, type of DM, presence of comorbidities and specific domains of QoL. Conclusions: Our findings, which are in accordance with the literature, highlight the great negative impact of DM on QoL of diabetics and they could be used by health professionals and policy makers to improve patients' well-being.

Keywords. Diabetes mellitus, quality of life, working life, physical health

1. Introduction

Diabetes Mellitus (DM) is a major concern to public health (573 million patients in 2021 worldwide) related with remarkable negative impact and limitations on patients' daily life [1]. Thus, evaluation of patients' QoL is recognized as a reliable indicator of the effectiveness of provided healthcare [2] and these results are anticipated to support health professionals' and healthcare policy makers' efforts to improve patients' well-being [3]. In Greece, prevalence of DM was estimated to 9.6% (736,100 cases) in 2021 and despite the fact that the main causes of death in Greece remain strokes and coronary heart disease, DM has been an emerging chronic disease for the last decades as prevalence is increasing alarmingly [3].

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Thus, the aim of the study was to estimate the QoL of patients with DM 1 and DM 2 in Greece and to investigate whether the general QoL or specific domains are related with demographics or other factors, such as type of DM and comorbidities.

2. Methods

A cross-sectional study was conducted between February and September 2021, involving adults who had been diagnosed with DM 1 or DM 2 for at least one year and had been receiving stable treatment for at least six months. Participants were patients who attended endocrinology outpatient clinics of the First Department of Internal Medicine of “Laiko” General Hospital of Athens, of the diabetes outpatient clinics of Kallithea Health Center and of the diabetes outpatient clinics of Tzaneio Hospital of Piraeus. Patients who gave informed consent were asked to complete the Audit of Diabetes Dependent Quality of Life (ADDQoL) questionnaire. Moreover, patients living in various other cities in Greece and abroad were interviewed via phone calls by independent field researchers. This sub-group of patients gave their informed consent to the provider who delivered the continuous glucose monitoring system they used, in order to forward their contact details to the independent field researchers. Patient enrollment in the study was initiated following the research protocol approval by the Bioethics Committee of the Nursing Department and the Scientific Committees of the study centers/hospitals. The ADDQoL consists of a specific Likert scale instrument for evaluating the QoL. It consists of two parts: in the first part, two questions evaluate the generic overall QoL, while in the second part 19 questions measure the impact of DM on several domains of life (Table 1). In this second part of ADDQoL, patients are asked to evaluate how their life would be in case they were not dealing with DM (impact rating ranges from -3 to +1), as well as how important each domain is (importance rating ranges from 0 to +3). A weighted impact (WI) score for each domain is calculated by multiplying the impact rating with the importance rating (ranging from -9 to +3). The lower the value of WI, the worse the QoL. Analysis included Pearson’s and Spearman’s correlation coefficients. Differences between subgroups were determined using students’ t test. Multivariate linear regression was performed when more than two independent variables were statistically significant at the level of 0.2 ($p < 0.2$). The two-sided significance level was set at 0.05.

3. Results

A total of 253 patients were enrolled in the study. More than half of the participants (54%) were men. The mean age of the participants was 56.4 years (standard deviation=18.81). The majority of patients were diagnosed with DM 2 (65.6%), lived permanently in Attica (75.1%) and chose to be treated by public health care units (57.8%). In relation to comorbidities, 38% suffered from hypertension, while complications of DM (retinopathy, nephropathy, neuropathy) were rare. Present QoL was characterized as “good”, “very good” and “excellent” by 79% of the participants, while 78% declared that their life would have been “a little better”, “much better” and “very much better”, in case they were not suffering from DM. DM has a negative impact on all ADDQoL domains. The mean WI, as well as standard deviations are presented in Table 1. The greater negative impact was the domains “freedom to eat”, “holidays” and “physical health”. The least negative impact was “people’s reaction”, “financial situation” and

“physical appearance”. General QoL was not related to age ($p=0.679$), gender ($p=0.379$) or type of DM ($p=0.127$). Age was found negatively correlated to domains: “working life” ($p=0.03$), “physical health” ($p=0.02$), “family life” ($p=0.02$), “friendship and social life” ($p=0.003$), “motivation” ($p=0.02$), “dependence on others” ($p=0.04$), and “freedom to eat” ($p=0.02$). Women reported statistically significant better “sex life” than men ($p=0.004$). However, they reported worse QoL in terms of “physical appearance” ($p=0.04$) and “dependence on others” ($p=0.02$) compared to men. Patients with DM 1 seem to have experienced more dietary restrictions compared to patients with DM 2, as they had worse QoL as far as domain “freedom to eat” was concerned ($p=0.01$). Comorbidities were found negatively associated to “leisure activities” ($p=0.001$), “journeys” ($p=0.007$), “holidays” ($p=0.03$), “family life” ($p=0.04$), “physical appearance” ($p=0.01$), “living conditions” ($p=0.02$) and “freedom to eat” ($p=0.04$).

Table 1. Distribution of ADDQoL responses by WI

Domain	Mean WI (-9 to +3) (SD)
Leisure activities	-2.2 (2.9)
Working life	-2.1 (2.8)
Journeys	-2.2 (2.7)
Holidays	-2.6 (2.8)
Physical health	-2.5 (3)
Family life	-2 (2.8)
Friendship and social life	-1.5 (2.6)
Personal relationship	-1.7 (2.8)
Sex life	-1.9 (2.7)
Physical appearance	-1 (2.3)
Self-confidence	-2 (2.9)
Motivation	-1.7 (3)
People’s reaction	-0.8 (1.9)
Feelings about future	-2.3 (2.9)
Financial situation	-1 (2.1)
Living conditions	-2.4 (2.8)
Dependence on others	-2 (2.8)
Freedom to eat	-4 (3.3)
Freedom to drink	-2 (2.7)

4. Discussion

Despite the fact that the majority of participants stated good or very good current QoL, DM has a negative impact on all 19 domains of the ADDQoL. DM had the greater negative impact on the domain “freedom to eat”. This was found in almost all previous studies ([4]-[8]). The next domain on which DM had a negative impact was “holidays”. According to the literature, DM certainly has a negative effect on the quality of holidays ([4], [6], [7], [10]), but not as much as participants in the present study reported. This could be explained by the fact that holidays are an essential part of life of Greeks. Additionally, previous studies report a correlation between aging and deterioration in general QoL, due to the occurrence of complications ([7], [8], [10]). However, in our study no such correlation was found. Furthermore, the effect of comorbidities is unclear. A study in Taiwan showed that QoL is affected by complications, but not by comorbidities [11]. Our results also showed no correlation between comorbidities and generic overall score of QoL. Although no correlation was found between age, gender and type of DM with general QoL, our results indicate that these factors, as well as

existence of comorbidities and overall generic QoL score, were correlated with negative impact on specific domains of diabetics' life.

5. Conclusions

Our study comes to similar conclusions with previous studies, demonstrating that DM negatively affects several aspects of patients' life. More specifically, the greater negative impact concerns "freedom to eat", with the majority of patients experiencing dietary restrictions. Furthermore, age, gender, type of DM, comorbidities and overall generic QoL score were negatively associated to many domains of patients' life. Given that QoL is related to effective diabetes's management and a long-term well-being, improvements of both disease management and QoL of diabetics should be the focus of interest for health professionals and policy makers.

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