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CLINICAL AND SOCIODEMOGRAPHIC CHARACTERISTICS IN PATIENTS WITH DIABETES AND THE RELATION WITH THEIR PERCEIVED QUALITY OF LIFE

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Abstract: *The present study explores the relation among the medical condition such as type, duration and complications present in patient with diabetes along with sociodemographic characteristics for instance age, gender, socioeconomic status and patients' quality of life. Thirty one patients were questioned using Ferrans and Power's Quality of life index (1985). Clinical and demographic data were also collected. Type 1 diabetes, multiple complications low glicemic control were all associated with lower quality of life. The type of treatment (injectable or non-injectable) showed a difference in quality of life near significance while the duration of the diagnosis revealed no difference. Higher level of study and being professional active were associated with better quality of life. Gender was not a significant parameter. Implications of the results and further developments are also discussed.*

Key words: *diabetes, quality of life, type of diabetes.*

1. Introduction

One of the most often diseases individuals deal with are of a chronic nature and diabetes is becoming a major concern as being one of them. A chronic disease is a physiological long-term illness as a result of genetic, physical, environmental and behavioural factors interacting (WHO, 2017).

Diabetes mellitus is a chronic disease characterized by hyperglycemia (glycemic levels above normative levels) (Nihal, Jachin & Senthil, 2016, p. 26) due to a pancreatic incapacity of producing (enough) insulin or when the body cannot utilize insulin efficiently. There are two types of diabetes, type 1 (T1DM) and type 2 (T2DM), the main difference between the two is that the former is due to an absolute insulin deficiency, whereas the latter is due to a relative deficiency. The main underlying causes (T1DM is autoimmune); T2DM appears due to an unhealthy, sedentary lifestyle, rich in carbohydrates and lipids (Nihal, Jachin & Senthil, 2016). The main symptoms are polyuria, polydipsia and polyphagia, but also frequent infections and a slow rate of healing of open wounds (FADR, 2016). The main concern in diabetes is maintaining a certain level of glycaemia and for that reason, injecting insulin is necessary in T1DM, and

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sometimes in T2DM in more severe cases; other treatments include antidiabetic agents, physical exercise and a diet tailored to the patient. Poor glycaemic control leads to diabetic complications, the most common being cardiovascular diseases, neuropathy, nephropathy, foot ulcerations and retinopathy (Holt & Kumar, 2010) that can severely damage the patient's health and ultimately can lead to death (WHO, 2017).

There has been an increasing concern in research about the quality of life of patients with diabetes. The concept of quality of life is large, reflecting an individual's physical and psychological health, his level of independence, his social network and the relationship of all aforementioned factors with salient environmental factors (Ogden, 2012). In the context of health, not only does it refer to the absence of diseases, but also the presence of wellbeing on a physical, psychological and social level (WHO, 2010). Salient clinical characteristics associated with quality of life in diabetes were studied throughout the years, such as the glycaemic control (Penfocker et al., 2012; Rose, Fliege, Hildebrandt, Schirop & Klapp, 2002), duration of diagnostic (Rubin & Peyrot, 1999), type of diabetes (Jakobson, de Groot, Samson, as cited in Rubin & Peyrot, 1999), the number of diabetic complications (Rose, Fliege, Hildebrandt, Schirop & Klapp, 2002), type of treatment (Redekop et al, 2002), and nutritional status.

Sociodemographic characteristics related with the quality of life included gender (Abraham, 2017; Svenningsson, Marklund, Attvall & Gedda, 2011; Unden et al, 2008), age (Nihal, Jachin & Senthil, 2016, p. 26), and socioeconomic status (Friedman, 2002; Bearman & La Greca, 2002).

2. Objectives

The aim of the study was to identify the characteristics of clinical and sociodemographic nature related to the level of quality of life in patients with diabetes mellitus type 1 and 2 in an attempt to create a predictive model. The expected outcomes were that (1) there are significant differences between T1DM and T2DM concerning the perceived quality of life, (2) the duration of the diagnostic is negatively associated with the perceived level of quality of life, (3) there are significant differences in regards to gender in the perceived quality of life (4) there are significant differences in regards to the type of treatment in the perceived quality of life (5) there are significant differences in regards to the number of diabetic complications in the perceived quality of life, (6) glycaemic control is positively associated with the level of quality of life perceived, (7) there are significant differences concerning the professional status in the perceived quality of life, (8) there are significant differences in regards to educational level in the perceived quality of life and finally, (9) the nutritional status is negatively associated with the perceived quality of life in patients with diabetes mellitus.

3. Material and Methods

In order to test the research questions, the research was design as a cross-sectional correlational type of study, using a convenience sample of 31 patients with diabetes mellitus, 41.94% of which reported having been diagnosed with type 1. Other characteristics of the participants are: there were seventeen males and fourteen females, thirteen of them graduated high school, eighteen have graduated college, seventeen of them are still employed, and fourteen of them are retired (ten out of fourteen as age limit

and only four due to the disease). Data was collected in the Diabetes and Nutrition section of the Emergency Hospital of Brasov and also from three general physicians. In order to boost the low response rate (16.6%), an online version of the instruments using Google Forms was created and shared on social media.

To measure the level of quality of life, the Quality of Life Index Version III Diabetes (Ferrans & Powers, 1985) was used. This questionnaire measures a global score of the quality of life, but also different dimensions, specifically health and functionality, social and economic, spiritual and psychological, and family. As the sociodemographic and clinical aspects were concerned, a general information survey was designed.

4. Results

4.1. Clinical Characteristics

Out of 9 research questions, only the relevant ones that have been confirmed will be discussed as follows.

First, findings show that there is a significant difference between the level of quality of life as the type of diabetes is concerned. This means, as shown in Table 1, that patients with T1DM report a lower quality of life than patients with T2DM; it is to be noted that the difference is significant for all dimensions except for social and economic and family.

Table 1

Quality of life differences compared by diabetes type (values represent Mann-Whitney non-parametric test for two independent samples)

QLI	Z	p	r (=Z/√N)	Me (T1DM)	Me (T2DM)
Global quality of life	-2.16	.031	.39	15.64	20,63
Health and functionality	-2.44	.015	.44	12.60	18.32
Social and economic	-.82	.41	.18	18	22.33
Spiritual and psychological	-2.28	.02	.41	15.83	20.85
Family	-.92	.35	.17	20.90	23.10

As number of complications is concerned, the findings show that the quality of life perceived by patients with diabetes is only associated with the health and functionality dimension. It is also to be noted, as shown in Table 2, that overall level of perceived quality of life are higher in patients with no complications, lower in those with one diabetic complication and lowest in those with two or more. This reflects that health problems patients with diabetes deal with are associated with the perceived level of quality of life, especially in the health and functionality dimension.

As the glycemic control was concerned, the values from the last glycemic value measured and glycosylated hemoglobin (Hb1ac) were tested for correlations. The findings show that only the glycaemia is negatively associated with the level of perceived quality of life for health and functionality, as seen in Table 3, reflecting that the higher the glycaemia levels, the lower the quality of life is perceived by patients with diabetes mellitus, in terms of health and functionality.

Table 2

Quality of life differences compared by number of complications (values represent Kruskall Wallis for three or more indepedent samples)

QLI	χ2	p	Range average one no complications	Range average one complication	Range average two or more complications
Global quality of life	5.17	.07	19.43	17.00	10.11
Health and functionality	7.05	.03	21.00	16.57	9.56
Social and economic	.93	.63	15.57	16.89	13.28
Spiritual and psychological	4.58	.10	19.43	16.75	10.50
Family	4.25	.12	16.79	18.07	10.50

Variation in Quality of life by glycaemic control Table 2

	Glycaemia (mg/dl)	Global quality of life	Health and functionality	Social and economic	Spiritual and psychological	Family
Glycaemia (mg/dl)	rho 1	-.33	-.42*	-.31	-.23	-.09
	p	.06	.01	.08	.19	.60

4.2. Sociodemographic Characteristics

In this section the professional status and educational level related to the quality of life reported by patients will be analysed. Firstly, the findings revealed a significant difference in terms of the professional aspect related to the way diabetic patients perceived their level of quality of life. As such, retired patients seem to present a lower level of quality of life than the ones who are still professionally active, as shown in the Table 4.

Secondly, the educational level seems to be related with the quality of life reported by diabetic patients, for all dimensions analysed, but somehow contrary to our expectations, as Table 5 reveals. More specifically, patients with elementary studies perceive their level of quality the highest, followed by university level and lastly, the high-school level of education of participants. This might be explained by different expectations and knowledge of disease of participants in each category.

Table 3

Quality of life compared by professional status of the patients (Mann-Whitney test)

QLI	Z	p	r (=Z/√N)	Me (Active)	Me (Inactive)
Global quality of life	-2.69	.007	-.48	21.31	15.17
Health and functionality	-2.57	.010	-.46	19.91	14.43
Social and economic	-2.10	.036	-.38	22.17	17.58
Spiritual and psychological	-2.29	.022	-.41	21.93	15.83
Family	-2.63	.009	-.47	24.00	19.80

Table 4

Quality of life compared by level of education in patients with diabetes (Kruskall Wallis test)

QLI	$\chi 2$	p	Range average elementary level studies	Range average high-school level studies	Range average university level studies
Global quality of life	10.72	.005	25.50	9.09	19.17
Health and functionality	8.52	.014	25.00	9.91	18.72
Social and economic	13.55	.001	25.75	8.14	19.72
Spiritual and psychological	11.42	.003	25.75	8.86	19.28
Family	10.01	.007	23.00	9.14	19.42

5. Discussion

Although creating a predictive model of quality of life in patients with diabetes mellitus was not possible due to decreased number of respondents, the present study did reveal some interesting findings.

The most salient aspect that needs to be highlighted would be that there was an approximately equal number of patients with T1DM and T2DM, which is not in accordance with the general tendency (1 in 10 patients have T1DM) on a national level. This result might be explained in several ways: first can be assumed that there must have appeared a confusion between the type of diabetes (insulin-dependent and non-insulin dependent) and the type of treatment. Another explanation might be a poor doctor-patient communication and even more so, a poor diabetes-related level of education. And a third explanation might be higher addressability of patients with type one diabetes in physicians' offices, leading to a greater response in questionnaires.

Another interesting finding is the similar level perceived of quality of life in patients with diabetes mellitus, regardless of the type of treatment prescribed, that can be explained by some elements that might mediate the level of quality of life that were not analysed, or particularities in individuals that interfered.

As the professional level is concerned, the fact that professionally active patients have a higher level of quality of life may be due to the fact that they have a more integrated on a social level and also financially satisfied, which could mean better medical care. On the other hand, professionally inactive patients were mostly retired individuals, which can mean that in general they have a lower health status, low mobility, a high risk of becoming ill, a slower recovery rate and lower immunity, all of these factors could contribute to an overall lower quality of life.

Nutritional status also needs to be brought into discussion as a large part of the sample was overweight. Although not proven by the present study, this might reflect a concerning problem of eating disorder that takes a heavy toll on the health. This overweight tendency might be the case due to a low importance given to a healthy nutrition and also physical exercise in order to maintain the body weight under control.

The findings contribute to a better understanding of the quality of life in patients and the related variables that are associated with it. The careful analyses included in the present study is rarely found in similar ones, but nevertheless more investigations are necessary.

Limitations of the study include a low number of participants, which did not allow removing extreme values in the data collected, which skewed general tendencies and as such, non-parametric tests were used. Data collection was done in different formats and so it might have influenced the general experience and authenticity of the answers provided. Another limitation to be considered was the fact that other individual characteristics of participants have not been considered, such as illness coping mechanisms, the level or resilience, health related type of personality or personality traits, such as anxiety and depression symptoms).

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