THE IMPACT OF STRESS IN QUALITY OF LIFE AT THE PATIENTS WITH DIABETES

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ABSTRACT

Stress has become a discussing subject among psychologists and professionals of mental health. Stress is present in human's life at any time and its influence on human life is undoubtedly multi-dimensional. Stress triggers different physical and mental reactions in women and men with diabetes in which case comes to decrease of life quality. So in this paper we wanted to determine the impact of stress in quality of life at the patients with diabetes.

Keywords: Stress, quality of life, diabetes, mental health.

INTRODUCTION

Diabetes is a disorder of glucose metabolism caused by a lack of the pancreatic hormone insulin, which results in the accumulation of sugar in the bloodstream (hyperglycemia) and the appearance of sugar in the urine. Symptoms include thirst, fatigue, weight loss, and excessive urination. The failure to metabolize glucose leads to the breakdown of fats in the body as an alternative source of energy; this process disturbs the acid-base balance in the body and results in the accumulation of ketones in the blood (ketosis) which, if untreated, can lead to convulsions, coma, and death. There are two main categories of the disease: Type 1, or insulin-dependent diabetes mellitus (IDDM) and Type 2, non-insulin-dependent diabetes mellitus (NIDDM). In Type 1 diabetes, which begins in childhood or adolescence, genetic factors and autoimmune processes damage the insulin-producing (beta) cells in the pancreas, so that patients depend on insulin injections for their survival. Type 2, also called 'mature onset diabetes', generally appears after the age of 40 and also has a hereditary component; Type 2 diabetics usually retain some beta cell function but show insulin resistance, often exacerbated by obesity. In the initial stages of the disease, Type 2 diabetes may be treatable with a combination of diet and exercise alone; in more severe or advanced cases, oral hypoglycemic and, eventually, insulin injections may be required.

There is no evidence that stress causes diabetes. However, stress may sometimes unmask diabetes, by causing blood glucose levels to rise (Kahn and Weir, 1996). The body gears up to take action in response to stress. This preparation is called the fight-orflight response (ADA, 2007). Repeated stress may lead to failing rheostat phenomenon of hypothalamus leading to less efficient hormonal control through feed-back mechanisms (Dilman,1986).

In people who have diabetes, the fight-or-flight response does not work well. Insulin is not always able to let the extra energy into the cells, so glucose piles up in the blood (ADA, 2007). Making things worse, many sources of stress are not short-term threats. For example, it can take many months to recover from surgery. Stress hormones that are designed to deal with short-term danger stay turned on for a long time. As a result, long-term stress can cause long-term high blood sugar levels. Many long-term sources of stress are mental. Like

physical stress, mental stress can be short term from taking a test to getting stuck in a traffic jam. In mental stress, the body pumps out hormones to no avail. Physical stress, such as illness or injury, causes higher blood glucose levels in people with either Type of diabetes. Stress blocks the body from releasing insulin in people with Type 2 diabetes. The diagnosis of diabetes usually comes as a shock and is certainly a stressful time *(Wijenaike, 2002; ADA, 2007).*

In particular, stress can have an influence on glycemic control in different ways, especially in some "stress reactive" individuals (*RIAZI et al…2004).* Diabetes itself is an important cause of stress in these patients. In fact, this disease involves life style changes, diet, frequent medical examinations, drugs, serious complications. All these components affect the quality of life of diabetics. Changes in lifestyle including stoppage of smocking, diet and learning to manage injections may all contribute in addition to the worry regarding chronic illness *(Davis et al., 1999).*

Quality of life (QOL) is a concept increasingly appreciated as an outcome variable in bio-behavioral research. It is viewed as a multidimensional, dynamic concept related to but distinct from, well-being, health status, life satisfaction and hope (KING CR,, 1998). The expression health related quality of life (HRQOL), refers to quality of life associated with health conditions. HRQOL is the value assigned to duration of life as modified by the impairments, functional states, perceptions and social opportunities influenced by disease, injury, treatment or policy. (*Shumaker S. Naughton M, 1995)*

QOL in diabetes is like a formalized way of talking about the personal side of diabetes, the felt burden of living with the illness *(Polonsky W.2004*). Different clinical features of diabetic patients and type of complications can be critical components of the global individual perception of quality of life. However, diabetes can compromise not only physical function (e.g. decreased energy, limitations and physical suffering) but also psychological status (e.g. depression and stress, as above) and social relationships *(Von et al.. 2005*) . All these components affect the QOL and the illness perception of diabetics. Certainly, stress, like other patients' psychological features and conditions , is a critical component of QOL but also personal socio-demographic components and gender, too, can interfere concurrently (WANDELL E, 2000) and be closely associated with self-rated health *(Jonnson. P et al…2001*). For this purpose, some components that can have an influence on QOL, associated and socio-demographic elements, are considered and related to stress.

METHODOLOGY

Aims of the research

The purpose of this paper is to determine the correlation between the level of stress and quality of life in patients with diabetes.

Question of research

Does the stress level affect the life quality of patients with diabetes?

Hypothesis

H1- There were statistically significant differences on the degree of stress and quality of life.

Participants

In this prospective, observational, comparative, randomized (random selection) and controlled clinical study 100 patients were analyzed. There were 50 males and 50 females. Aged from 35 to 70 years. All had been treated in the Tetovo Clinical Hospital and admitted to the Endocrin Unit Hospital of the Internal Diseases Department. Patients are diagnosed with Type 1 and Type 2 of diabetes .The research was conducted during period of November 2014 to Mars 2015.

Instruments of research

Perceived Stress Scale (PSS, Cohen, Kamarach , Mermelstein, 1983) is one of the more popular tools for measuring psychological stress. It is a self-reported questionnaire that was designed to measure "the degree in which individuals appraise situations in their lives is stressful" (Cohen et al, 2007). The PPS items evaluate the degree to which individuals believe their life has been unpredictable, uncontrollable and overloaded during the previous month.

PPS is a 10 item scale measuring the perception of stress on a 5 point scale from never to quite (from 0-4) of ten. The PPS total scores ranges from 0 to 40. The score equal between 0 and 13 corresponds with low level of stress, but the score greater than 20 corresponds with a high perceived stress. Questions are directed on feeling and thoughts during the last month. It is not a diagnostic instrument, but intended to make comparisons of subjects' perceived stress related to current, objective events. The higher the degree and longer duration of self-perceived stress, indicated by a higher score, is considered a risk factor for clinical psychiatric disorders (Cohen, 1983). The WHOQOL-BREF was used to determine the level of QOL [WHOQOL group, 1998]. WHOQOL-BREF is an abbreviated version of the WHOQOL-100 quality of life assessment survey. It consists of 25 questions; items are scored between 1 and 5, so that higher scores indicate better QoL. The WHOQOL-BREF total scores ranges from 0 to 120. Subjects with scores $\geq$ 96 were classified as having good QOL.

The reliability of a translated questionnaire can be tested by testing internal consistency and reliability test-retest. The Alpha Cronbach or reliability coefficient can be used to measure internal reliability. As a rule, alpha Cronbach over 0.70 is considered as an acceptable reliability coefficient. However, in certain cases, values over .6 or .5 are accepted. The grater alpha or the reliability coefficient the more reliable is the generated scale.

Table 1. The value of Alpha Cronbach for questionnaire reliability.

Instrument	Nr. of Items	Alpha - Cronbach
Cohen	10	.519
Bref	26	.933

From table no.1 we can see that the value of Alpha Cronbach for Bref's questionnaire for measuring the quality of life is very high .933, while Cohen's questionnaire for measuring stress has a lower value .519, but it is acceptable for the test reliability.

RESULTS

Tabel 2. Descriptive demographic variables:

		Number
Gender	M/F	50/50
Country	V/C	33/67
Age	30-40 / 41-50 / 51-60 / 61/70	18/31/28/23
Marriage	M/S/D	90/8/2
Employed	Y/N	51/49
Economic status	L/M/H	30/59/11
Type of Diabetes	1/2	61/39
	Education	
No education		2
Primary		39
Secondary		36
High		23
Up to 1 year		14
From 1 to 5 years		19
Over 5 years		67

The clinical research studied:50 males and 50 females; age from 30 to 70 years - 30-40 were 18 patients; 41-50 were 31; 51-60 were 28; 61-70 were 23;), 33 of patients are living in village an 67 in city; 8 of patients were single, 90 married, 2 divorced; 2 of patients werw with no education, 39 with primary education, 36 with secondary education and 23 with high education; 51 of patients were employed and 49 unemployed; 30 patients were with low social-ecomomic status, 59 with secondary status and 11 with high status; 61 were Type 1 of Diabetes and 39 with Type 2 of diabetes; About the duration of illness- 14 of patients were up to 1 year, 19 patients from 1 to 5 five years and 67 of patients were more than 5 years; 13 of patients have visited the psychologist and 87 haven't.

Table 3. Demographic characteristics of the patients with diabetes compared to the mean scores of stress and quality of life.

Variables	**N**	**M/Stress**	**M/QOL**	***p*-value S**	***p*-value QOL**
Gender	100			2.58**	-4.26**
Male	50	18.80	84.2		
Female	50	20.94	70.46		
Age					
30-40	18	17.39	91.39		-3.66**
41-50	31	20.32	77.48		
51-60	28	21.50	70.86		
61-70	23	19.22	73.61		
Country					
Village	33	20.48	74.00		
City	67	19.57	78.84		
Education				*-3.41***	*.506***
No education	2	22.50	59.50		
Primary	39	21.12	70.03		

Secondary	36	19.78	77.67			
High	23	17.57	90.35			
Marriage						
Maried	90	19.78	76.80			
Single	8	20.38	83.13			
Divorced	2	22.00	73.50			
Employed						*-.318***
Yes	51	19.12	82.20			
No	49	20.65	72.08			
Economic status						
Low	30	22.57	66.87	*-.507***		*.504***
Medium	59	19.31	79.49			
High	11	15.55	93.45			
Duration of illness					*.255**	*-.373***
Up to 1 year	14	17.64	91.00			
Ffrom 1- 5 years	19	19.11	79.68			
Over 5 years	67	20.55	73.67			
Type of Diabetes						*.264***
Type 1	61	20.28	73.89			
Type 2	39	19.23	82.49			

The gathered results from the demographic data, in table 1 we got the following values: the mean value of stress at male patients is *M=18*, while QoL is *M*=84 unlike female patients where the mean value of stress is *M*=20, while QoL M=70; the highest scale of stress is at patients of the age 51-60, respectively *M*=21.50 and lower QoL, namely *M*=70.86; less stress is experienced by younger patients *M*=17.39 and QoL *M*=91.39. Patients who live in urban areas have better QoL, namely *M*=78.84 and less stress *M*=19.57 unlike patients living in villages where the mean score of stress is *M*=20.48 and QoL *M*=74.0. Higher scale of stress and lower quality of life is noted at divorced individuals, *M*=22 for stress values and *M*=73.50 for QoL, while the best value for QoL appears at single individuals, respectively *M*=83.13; patients which work have better QoL, namely *M*=82 and lower stress scale M=19.12, unlike unemployed patients where the value of QoL is *M*=72.08 and stress M=20.65; the level of education plays a role in QoL at patients with diabetes, where the patients with a higher level of education have better QoL namely *MI*=90.35 and lower stress scale *M*=17.57 unlike uneducated patients where the value of QoL is *M*=59.50 and stress is *M*=22.50; differences are noted regarding the economic status of the patients with diabetes where patients with lower economic status have QoL with the value *M*=66.87 and higher stress scale *M*=22.57 unlike the patients with higher economic status where QoL value is *M*=93.45 and stress *M*=15.55; and the last finding is related to the type of diabetes where better values of QoL is noted at patients with Type 2 namely *M*=82.49 and stress *M*=19.23, unlike Type 1 where the value of QoL is *M*=73.89 and stress scale is *M*=20.28.

Pearson's correlation is positively significant between stress and gender r=2.58, p<0.5, as well as between stress and length of disease r=2.55, p<0.5; while there is a negatively significant relation between stress and the level of education r=-3.41 and between stress and economic status r=-.507, p<01.

Pearson's correlation is positively significant between QoL and the level of education r=.506. p<01, QoL and economic status r=.504, p<01, QoL and the type of diabetes r=.264, p<0.5; while there is a negatively significant relation between QoL and gender r=-.426, p<0.5. QoL and employment r=-318, p<0.5, QoL and length of disease r=-373, p<0.5. There weren't significant correlation between stress& village& marriage& employed & type of Diabetes and between QOL &village & marriage.

DICUSSION

In our research were included 100 patients separated in homogenous groups according to gender, respectively 50 male and 50 female patients. Our study shows that men have a better quality of life compared to women, with statistically important difference in the domain of vitality and pain. Better social life and physical activity might contribute to higher satisfaction levels in men. Studies have shown that men were more confident of their ability to control diabetes and reported a higher quality of life and were less likely to get stress compared to women *(Romain, et al.. 2012*). Female mental and physical structure, in addition to subjectivity of the self administered quality of life score, may justify this finding. Also, women tend to be more expressive and thus are more likely to complain about a poor quality of life. Significant effect of gender on the QOL in diabetes patients has been demonstrated in other studies (Wexler etal.2006).

The patients of the age group 30-40 showed lower scale of stress and better quality of life, and this is because young patients are more carefree, optimistic and they have a positive outlook on life. Previous studies have also concluded that younger patients with diabetes enjoyed similar quality of life to older patients (Lori, MB,2003). The results of this study show statistically important impact of the level of education on the level of stress and life quality of patients with diabetes, which was accordance with other studies have confirmed the linear correlation between the level of education and quality of life (*Varghese RT, et al.2007, Nejhad ZH, et al. 2013*). The results of our research also revealed a statistically significant relation between economic status and level of stress and quality of life, the lower the economic status, the higher is the level of stress and lower quality of life. Patients with diabetes are more dependent on economic conditions due to the regime that they should follow when keeping diets and eating healthy food, normally for this good economic conditions are necessary therefore our patients in poor economic conditions have resulted with high stress scale and low quality of life.

The length of illness was also a factor that plays a role in the level of stress and life satisfaction in patients with diabetes, our results showed a statistically significant positive relation between the degree of stress and the length of disease, which means that the longer the disease lasts the more stressed become the patients and in contrary we have significant negative relation with quality of life, which means that the longer the disease lasts the lower is the quality of life. Other studies also have got almost similar results (*Honish A, et al.2006*)

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