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Scientific Research

Perceptions of Psychological Domain of Quality of Life in Patients with Diabetes Mellitus

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Abstract

Introduction: Adaptation to changes that occur with diabetes mellitus is often accompanied by a variety of negative emotional responses, including anger, guilt, frustration, denial, and loneliness. Objective: The aim of this study was to assess psychological domain of quality of life for people with diabetes mellitus in relation to some of the socio-demographic variables. Methods: The study included 150 patients with diabetes mellitus from October 2011 until June 2012 year, using the questionnaire for quality of life of the World Health Organization (WHOQOL-BREF). Results: Mean score for psychological health domain was 56.28 (± 14.88), without statistically significant difference in relation to sex and with a statistic significant difference decreased with increasing of age (F = 6.715, p = 0.000) and increased with the level of education (F = 7.958, p = 0.000). Negative emotions, such as blue mood, despair, anxiety, depression were present in almost 1/2 of the respondents, "often" (32.7%), "very often" (11.3%) and "always" (4.0%) without statistically significant difference in relation to gender, age and level of education. Discussion: Mean scores for psychological health domain were lower in older and less educated patients. Conclusion: Negative feelings were present in all patients indicating the need for preventive action to soften and reduce these negative feelings.

Keywords

Diabetes Mellitus, Quality of Life, Psychological Domain

1. Introduction

Diabetes mellitus is a chronic condition and as such is characterized by long duration and slow progression [1].

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Living with a chronic disease imposes many threats and challenges to patients such as dealing with uncertainties about their present and future physical capacities, sustaining relationships with family and friends, dealing with pain and other symptoms, and concerns about their abilities to resume their former lifestyle [2] [3].

Diabetes mellitus is a demanding disease that affects a person's health-related quality of life, a person's ability to function and to desire satisfaction from doing so [4]-[6]. People with diabetes are constantly reminded of the disease on a daily basis: they have to eat carefully, exercise, test their blood glucose and based on the result decide when to schedule their next meal or medication. Furthermore, they often have to stop and check for symptoms of hypo or hyperglycemia as well as deal with the fears of the possibility of complication of the disease [7].

Many patients with diabetes mellitus may become chronically frustrated, discouraged, and/or enraged with a disease that often does not seem to respond to their best efforts, because the demands of diabetes care can have a potent impact on mood, both short-term and long-term. Frequent hypoglycemic episodes can be exhausting, debilitating, discouraging and potentially quite frightening, and the disease is often accompanied by a variety of negative emotional responses, including anger, guilt, frustration, denial, and loneliness [8].

Diabetes-related distress among people with diabetes is associated with suboptimal self-management [9] [10], which may then lead to more complications and worse blood glucose control, compared with patients who are not distressed [10] [11]. Necessary adjustments to daily life to help manage diabetes and long-term concerns can lead to people feeling that diabetes has a negative impact on many aspects of their daily life, which can impact on their emotional well-being [12].

Measuring the impact of chronic disease on quality of life of the patient is important because physiological measurements and laboratory parameters do not provide sufficient insight into the patient's psychological status and satisfaction, which is in the perception of the patient more important than objective indicators [13]. In clinical practice, a phenomenon that is often present is that two patients who meet the same clinical criteria have significantly different outcome assessment of emotional aspects of quality of life or activities of daily living [13] [14].

Therefore, tools for evaluating the quality of patients' lives are more used to monitor the clinical effects of health care interventions and planning costs of the health system [15].

Quality of life of diabetic patients decreases with presence of mental problems such as depression [16], so prevention and early detection of depression and other mental problems seem to be important in diabetic patient for prevention of excess decrease in quality of life in these patients [17].

Assessment of quality of life is also important in prevention programs.

In determining targeted prevention programs to improve the quality of life as well as their implementation, it is necessary to include a larger number of experts that would help overcome the problem of the individual, the family and the community that are expected to support those suffering from ill [18].

2. Objective

The aim of this study was to assess psychological domain of quality of life for people with diabetes mellitus in relation to some of the socio-demographic variables.

3. Materials and Methods

The study was carried out between October 2011 and June 2012 at the Clinic for the Endocrinology, Diabetes and Metabolic Diseases of the Clinical center in Banja Luka, Bosnia and Herzegovina. This survey included 150 patients treated for diabetes mellitus, type 1 or type 2.

Patients who met the inclusion criteria and who visited the clinic during this period participated in the study. Criteria for exclusion from the study were: patients younger than 18 years and patients older than 75 years, patients whose diagnosis were set less than a year ago, pregnant women, patients who had both diabetes mellitus and some other disease from the group of diseases of endocrine glands and metabolic disorders, patients who had rheumatoid inflammation of the joints, patients with malignant neoplasm's and patients with psychiatric disorder. Patients on hemodialysis were also excluded from the study.

With the approval of the ethics committee of healthcare facilities and the patients gave written consent to participate in research. Questionnaires were filled by the doctor in the form of interviews with patients.

To assess the quality of life we used the questionnaire on the quality of life of the World Health Organization

(WHO), WHOQOL-BREF, and the Serbian version [19]. The WHOQOL-BREF assesses quality of life through four specific domains which includes physical health, psychological well being, social relationships and environment. It also contains two items that are examined separately (individual's overall perception of quality of life and individual's overall perception of health). The psychological domain include six items assessing areas such as positive and negative feelings, cognitive functions, self esteem, body image and physical appearance, personal beliefs.

In the questionnaire were set a time frame of two weeks within which a person evaluates their quality of life. Responses were given on Likert scales of 1 - 5, with 1 being the least agreement and 5 indicates the highest agreement with the particles. Responses are transformed into points, in two steps, and the points for the domain are within of the scale 0 - 100. A higher score represents a higher ("better"), a smaller number of points represents lower ("worse") level of functioning [20].

Questionnaire also contained some questions about socio-demographic status (sex, age, education level).

Statistical analysis was performed using SPSS, version 17.0 and statistical software R, version 2.15.1. Descriptive statistics were calculated for all study variables with parameters: frequency, mean, standard deviation, score, tests of significance (chi-square test, t test, Men-Whitney test, Kruskal-Wallis test) with a significance level of $p < 0.05$.

4. Results

The study included 150 patients (87 male or 58%, and female 63 or 42%). More than 2/3 (78%) were aged over 50 years and the average age was 55.95 years (± 12.36). The highest percentage of patients were with secondary (48%), followed by primary (20%) and high (18.67%) level of education (**Table 1**).

The mean score for the domain of psychological health was 56.28 (± 14.88), with a higher mean score for males (57.28 ± 14.77) patients, but without statistically significant difference ($t = 0.969$, $p = 0.334$) compared to female respondents 54.89 (± 15.03). With the increase of age of patients mean score for this domain declines so it was the highest in patients younger than 30 years of 70.83 (± 8.33) and in the 30 - 39 age 68.75 years (± 12.13), with a statistically significant difference ($F = 6.715$, $p = 0.000$) compared to the patients older than 60 years of 51.34 (± 14.66). With the increase of the level of education mean scores for psychological domain of quality of life also increase, so that they are lowest in patients with unfinished primary school 44.79 (± 13.58), with a statistically significant difference ($F = 7.958$, $p = 0.000$) compared to patients with higher education 60.27 (± 13.39) (**Table 2**).

Table 1. Distribution of the sample by gender, age and the level of education.

Variables	Diabetes mellitus (N = 150)	
	N	%
Gender		
Male	87	58.00
Female	63	42.00
Age group		
<30	8	5.33
30 - 39	10	6.67
40 - 49	15	10.00
50 - 59	55	36.67
≥60	62	41.33
Min	21	
Max	75	
Me ± SD	55.95 ± 12.36	
Level of education		
Unfinished primary	20	13.33
Primary	30	20.00
Secondary	72	48.00
High/college	28	18.67

Table 2. Mean psychological domain scores in diabetic patients by gender, age and level of education.

Variables	Mean psychological domain scores (Me ± SD)	Test and level of significance
Total	56.28 (± 14.88)	
Gender		
Male	57.28 ± 14.77	T = 0.969; p = 0.334
Female	54.89 ± 15.03	
Age group		
<30	70.83 ± 8.33	F = 6.715; p = 0.000
30 - 39	68.75 ± 12.31	
40 - 49	61.39 ± 16.40	
50 - 59	56.06 ± 12.97	
≥60	51.34 ± 14.66	
Level of education		
Unfinished primary	44.79 ± 13.58	F = 7.958; p = 0.000
Primary	51.67 ± 13.61	
Secondary	59.84 ± 14.35	
High/college	60.27 ± 13.39	

The highest percentage of respondents said that they "a moderate amount" (45.3%) and "very much" (12.7%) enjoy life, male in slightly higher percentage (46.0% "moderate" and 13.8% "very much") in relation to female (44.4% "moderate" and 11.1% "very much") but without statistically significant difference. More than a half (55.4%) of respondents said they "very much" and "extremely" feel life is meaningful, in slightly higher percentage male (43.7% "very much" and 14.9% "extremely"), but without statistically significant difference compared to female (36.5% "very much" and 14.3% "extremely"). "A moderate" ability to concentrate have 2/3 of respondents (33.3%) and (37.3%) of them have "very much" ability to concentrate, in a slightly higher percentage male, but without statistically significant difference compared to female. Nearly three-quarters of respondents (74%) were able to accept their physical appearance, "mostly" (43.3%) and "completely" (30.7%). Male were in higher percentage able to accept their physical appearance (43.7% "mostly" and 33.3% "completely") than female (42.9% of "mostly", and 27.0% "completely") but without statistically significant difference. More than 1/2 of the respondents were "satisfied" (43.3%) and "very satisfied" (10.7%) with themselves in greater percentage male compared to female respondents, but without statistically significant difference. Negative feelings, such as blue mood, despair, anxiety, depression were present "quite often" (32.7), "very often" (11.3%) and "always" (4.0%) in a slightly higher percentage in female but without statistically significant difference compared to male respondents (**Table 3**).

Younger patients to the question "how much do you enjoy in life", responded with "very much" and "an extreme amount" with a statistically significant difference (p = 0.001) compared to 42% of older respondents who have answered "not at all" and "a little". To the question "to what extent do you feel life to be meaningful" 1/2 (50%) of younger respondents answered "very much" and more than 1/3 of them answered "extremely" with statistically significant difference (p = 0.050) compared to 19.3% of those with and over 60 years who responded "not at all" and "little". Ability to concentrate the majority of younger respondents assessed "very much" and "extremely" with statistically significant difference (p = 0.003) compared to more than 1/5 (20%) of older respondents who assessed their ability to concentrate with "not at all" and "little". Younger respondents "mostly" and "completely" can accept their bodily appearance with a statistically significant difference (p = 0.015) compared to 16.2% of older respondents who answered "not at all" and "little". A high percentage of younger patients were "satisfied" and "very satisfied" with themselves with statistically significant difference (p = 0.011) compared to those with and over 60 years of age. Negative emotions, such as blue mood, despair, anxiety, depression, "seldom" had a 87.5% of patients younger than 30 years, but without statistically significant difference (p = 0.387) in comparison to 45.1% of the patients with and over 60 years, who said they "quite often", "very often" and "always" have these negative feelings (**Table 4**).

Table 3. Answers of patients on questions regarding the psychological domain of quality of life by gender.

Questions of the psychological domain	Answers	Total (n = 150) (%)	Gender		Mann-Whitney test
			Male (n = 87) (%)	Female (n = 63) (%)	
How much do you enjoy life?	Not at all	14.7	11.5	19.0	2462.5 p = 0.262
	A little	21.3	21.8	20.6	
	A moderate amount	45.3	46.0	44.4	
	Very much	12.7	13.8	11.1	
	An extreme amount	6.0	6.9	4.8	
To what extent do you feel life to be meaningful?	Not at all	0.7	0.0	1.6	2595.5 p = 0.561
	A little	14.7	16.1	12.7	
	A moderate amount	29.3	25.3	34.9	
	Very much	40.7	43.7	36.5	
	Extremely	14.7	14.9	14.3	
How well are you able to concentrate?	Not at all	3.3	2.3	4.8	2443 p = 0.234
	A little	17.3	16.1	19.0	
	A moderate amount	33.3	32.2	34.9	
	Very much	37.3	39.1	34.9	
	Extremely	8.7	10.3	6.3	
Are you able to accept your bodily appearance?	Not at all	4.0	3.4	4.8	2503.5 p = 0.338
	A little	9.3	10.3	7.9	
	Moderately	12.7	9.2	17.5	
	Mostly	43.3	43.7	42.9	
	Completely	30.7	33.3	27.0	
How satisfied are you with yourself?	Very dissatisfied	0.0	0.0	0.0	2634 p = 0.667
	Dissatisfied	18.0	17.2	19.0	
	Neither satisfied nor dissatisfied	28.0	27.6	28.6	
	Satisfied	43.3	43.7	42.9	
	Very satisfied	10.7	11.5	9.5	
How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	Never	9.3	12.6	4.8	2568.5 p = 0.486
	Seldom	42.7	40.2	46.0	
	Quite often	32.7	32.2	33.3	
	Very often	11.3	11.5	11.1	
	Always	4.0	3.4	4.8	

Most patients with unfinished primary education (75%) stated that they “not at all” and “a little” enjoy life with a statistically significant difference (p = 0.001) compared to 1/3 (32.1%) of respondents with higher education who responded that they “very much” enjoy life. More than 1/3 (40%) patients with unfinished primary education “not at all” and “a little” can concentrate with a statistically significant difference (p = 0.013) compared to more than 1/2 (53.5%) of respondents with higher education who assessed their ability to concentrate with “very much” and “extremely”. Patients without primary education “not at all” and “a little” were able to accept their appearance with a statistically significant difference (p = 0.003) compared to those with higher education who answered “mostly” and “completely”. Nearly 1/2 of respondents with unfinished primary education were “dissatisfied” with themselves with a statistically significant difference (p = 0.000) compared to those with higher education who were 50% “satisfied” and 14.3% “very satisfied” with themselves. That their lives had “not at all” and “a little” sense considered more than 1/3 (35%) patients without primary education, but without

statistically significant difference (p = 0.079) compared to more than 1/2 (60.7%) of respondents with higher education who believe that their life have "very much" and "extremely" sense. Negative feelings have "very often" and "always" 30% of patients without primary education, but without statistically significant difference (p = 0.376) compared to 60.7% of patients with higher education that "never" or "seldom" have negative feelings (**Table 5**).

5. Discussion

In patients with diabetes mellitus, in our study, mean score for the psychological domain of quality of life was lower (mean score 56.28 ± 14.88) than in patients with diabetes mellitus in studies in Denmark (mean score 71.2) [21] and Emirates (mean score 61.5 ± 13.7) [22], and higher than in studies in Serbia (mean score 55.26 ± 19.2) [23], Iran (55.67 ± 11.96) [24], as well in African-Americans in Maryland, followed by the SF - 36 (mean score 69 ± 21) [25].

Table 4. Answers of patients on questions regarding the psychological domain of quality of life by age group.

Questions of the psychological domain	Answers	Age group (%)					Kruskal Wallis test
		<30	30 - 39	40 - 49	50 - 59	≤60	
How much do you enjoy life?	Not at all	0.0	0.0	0.0	16.4	21.0	18.648 p = 0.001
	A little	0.0	10.0	33.3	23.6	21.0	
	A moderate amount	62.5	30.0	33.3	47.3	46.8	
	Very much	25.0	30.0	13.3	10.9	9.7	
	An extreme amount	12.5	30.0	20.0	1.8	1.6	
To what extent do you feel life to be meaningful?	Not at all	0.0	0.0	0.0	0.0	1.6	9.485 p = 0.050
	A little	0.0	20.0	13.3	12.7	17.7	
	A moderate amount	12.5	0.0	33.3	30.9	33.9	
	Very much	50.0	50.0	26.7	43.6	38.7	
	Extremely	37.5	30.0	26.7	12.7	8.1	
How well are you able to concentrate?	Not at all	0.0	0.0	6.7	1.8	4.8	15.686 p = 0.003
	A little	0.0	0.0	20.0	21.8	17.7	
	A moderate amount	12.5	20.0	20.0	29.1	45.2	
	Very much	62.5	60.0	26.7	41.8	29.0	
	Extremely	25.0	20.0	26.7	5.5	3.2	
Are you able to accept your bodily appearance?	Not at all	0.0	0.0	0.0	3.6	6.5	12.310 p = 0.015
	A little	0.0	0.0	13.3	10.9	9.7	
	Moderately	0.0	10.0	0.0	12.7	17.7	
	Mostly	37.5	40.0	40.0	43.6	45.2	
	Completely	62.5	50.0	46.7	29.1	21.0	
How satisfied are you with yourself?	Very dissatisfied	0.0	0.0	0.0	0.0	0.0	13.105 p = 0.011
	Dissatisfied	0.0	10.0	20.0	14.5	24.2	
	Neither satisfied nor dissatisfied	0.0	20.0	33.3	29.1	30.6	
	Satisfied	62.5	50.0	33.3	45.5	40.3	
	Very satisfied	37.5	20.0	13.3	10.9	4.8	
How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	Never	0.0	0.0	6.7	7.3	14.5	4.145 p = 0.387
	Seldom	87.5	40.0	33.3	41.8	40.3	
	Quite often	12.5	60.0	40.0	32.7	29.0	
	Very often	0.0	0.0	13.3	12.7	12.9	
	Always	0.0	0.0	6.7	5.5	3.2	

Table 5. Answers of patients on questions regarding the psychological domain of quality of life by level of education.

Questions of the psychological domain	Answers	Level of education (%)				Kruskal Wallis test
		Unfinished primary	Primary	Secondary	High/college	
How much do you enjoy life?	Not at all	35.0	16.7	12.5	3.6	17.574 p = 0.001
	A little	40.0	16.7	20.8	14.3	
	A moderate amount	20.0	60.0	44.4	50.0	
	Very much	0.0	6.7	11.1	32.1	
	An extreme amount	5.0	0.0	11.1	0.0	
To what extent do you feel life to be meaningful?	Not at all	5.0	0.0	0.0	0.0	6.801 p = 0.079
	A little	30.0	13.3	13.9	7.1	
	A moderate amount	25.0	43.3	23.6	32.1	
	Very much	35.0	30.0	44.4	46.4	
	Extremely	5.0	13.3	18.1	14.3	
How well are you able to concentrate?	Not at all	10.0	3.3	1.4	3.6	10.851 p = 0.013
	A little	30.0	20.0	18.1	3.6	
	A moderate amount	30.0	46.7	26.4	39.3	
	Very much	30.0	30.0	38.9	46.4	
	Extremely	0.0	0.0	15.3	7.1	
Are you able to accept your bodily appearance?	Not at all	15.0	3.3	1.4	3.6	14.231 p = 0.003
	A little	15.0	13.3	8.3	3.6	
	Moderately	15.0	26.7	9.7	3.6	
	Mostly	40.0	40.0	43.1	50.0	
	Completely	15.0	16.7	37.5	39.3	
How satisfied are you with yourself?	Very dissatisfied	0.0	0.0	0.0	0.0	18.688 p = 0.000
	Dissatisfied	45.0	26.7	9.7	10.7	
	Neither satisfied nor dissatisfied	25.0	40.0	25.0	25.0	
	Satisfied	30.0	26.7	51.4	50.0	
	Very satisfied	0.0	6.7	13.9	14.3	
How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	Never	15.0	3.3	8.3	14.3	3.104 p = 0.376
	Seldom	30.0	40.0	45.8	46.4	
	Quite often	25.0	43.3	30.6	32.1	
	Very often	20.0	10.0	11.1	7.1	
	Always	10.0	3.3	4.2	0.0	

In our study, mean score of psychological domain of quality of life were higher in male compared to female respondents, but without statistically significant difference. The mean score for this domain of health was statistically significantly higher for male in the study Martinez *et al*. [26], as well as in the study Pal *et al*. [27] where the female had a statistically significant lower mean score on a psychological scale. Also in the study in Turkey [28] the mean score for psychological domain was statistically significant lower in female. Statistically significant differences were not found in the mean scores of psychological domain in relation to sex in studies in Nigeria [29] and Benin [7].

In relation to the age group of patients with diabetes mellitus in our study, the highest mean score for psychological domain were observed in patients younger than 30 years, and with increase of age there was a statistically significant decline in the mean score of psychological domain of health.

In a survey in the Gaza Strip [30], which was conducted among people living in exile, age strongly influenced on quality of life in patients with diabetes mellitus in the psychological domain, while age almost did not affected the quality of life in patients without diabetes mellitus. Patients with diabetes mellitus younger than 50 years had a better quality of life than older patients [30]. In patients of mean age 70.0 ± 9.9 years in the study in Greek was not found statistically significant association in the field of psychological health in relation to the age [31]. In patients with type 2 diabetes there was no statistically significant correlation between psychological domain and age in the study by Martinez *et al*. [26] and study Pala *et al*. [27].

The connection between psychological domain of health and age was not found in the study in Iran [24] as well as in study in Nigeria [29]. In a study in Mexican Americans with or without diabetes was evaluated quality of life of an elderly person (Me = 77.26) and the highest score was for the domain of mental health with no statistically significant difference compared to control without diabetes mellitus [32].

In our study, in patients with diabetes mellitus was observed a correlation between level of education and psychological domain of health. Mean scores of psychological domain were lowest in patients with unfinished primary school, and with increase of level of education, with a statistically significant difference, there was an increase in scores of psychological health domain so that the mean score were highest in patients with high education.

In a study in Iran [24] educated patients had better quality of life in all scales. Martinez *et al*. [26] found a connection between the psychological domain with the level of education, the mean score in each of the domains of quality of life has increased with increasing level of education. The level of education has not shown a significant association with psychological domain in study Pala *et al*. [27] as well as in a study in Nigeria [29].

More than a 1/2 (58%) of the respondents in our study said that they enjoy in life, “a moderate amount” (45.3%) and “very much” (12.7%) in contrast to the study by Eljedi in the Gaza Strip [33], which has questioned the quality of life in patients with diabetes mellitus (refugees and non refugees) where 67% of those who are not refugees stated that “very much” and “an extreme amount” enjoy life [33]. That their life is meaningful “very much” and “extremely” in our survey said more than a half of (55.5%) patients, which was less than in the study by Eljedi [31], in which 2/3 (73%) patients with diabetes mellitus who are not refugees reported that their life “very much” and “extremely” makes sense. That life has meaning “very much” and “extremely” answered 80% of patients in a study in Brazil [34] in which participated 50 patients with and 50 patients without diabetes mellitus.

In a study by Eljedi [33] people with diabetes mellitus who were not refugees in slightly higher percentage (60%) in relation to our study (46%), were able to “very much” and “extremely” concentrate.

Their physical appearances in our study “mostly” and “completely” were able to accept (74%) of patients, and more than 1/2 of them said they were “satisfied” and “very satisfied” with themselves. In study by Eljedi [33] 59% of people with diabetes mellitus who were not refugees were “mostly” and “completely” satisfied with their bodily appearance, and 73% of them were “satisfied” or “very satisfied” with themselves.

In a slightly higher percentage (86%) then in our study respondents in study Beltrame [34] were able to “mostly” and “completely” accept their appearance, and 88% were “satisfied” and “very satisfied” with themselves. More than 1/2 (52%) of the respondents in our study said that they “never” and “seldom” have negative feelings such as blue mood, despair, anxiety and depression which is in compliance with study by Eljedi where 58% of diabetes non-refugees “never” and “seldom” have negative feelings [33] and less than study by Beltrame [34] in which 92% of patients with diabetes “never” and “seldom” have negative feelings. In patients with diabetes mellitus was observed a correlation between level of education and psychological domain of health in our study. Most patients with unfinished primary education “not at all” and “a little” enjoy life, “not at all” and “a little” can concentrate, “not at all” and “a little” were able to accept their appearance, they were dissatisfied with themselves with a statistically significant difference compared with patients with a higher level of education. Negative feelings such as blue mood, despair, anxiety and depression were more prevalent in people without primary education, but without statistically significant difference.

Similar results were shown by studies in Iran [24] where educated patients had higher mean scores for psychological domain of quality of life.

Martinez with associates [26] found a connection between the psychological domain and the level of education, and the mean score increased with increasing levels of education. Our finding is not in line with a study Pala *et al*. [27] where the level of education did not show a significant association with psychological domain.

In a study conducted in Iran, patients with duration of education longer than 12 years reported significantly

fewer problems in the dimension anxiety/depression than those with a shorter duration of education [35]. In the domain of anxiety/depression in a study in Korea [36], patients in the elementary school or below group had lower EQ-5D index scores than those in the middle/high school and university or above groups. People with longer duration of education reported statistically significant higher mean score in the field of mental health in a study in Greece [31], while in a study in Nigeria [29] there was no significant correlation between quality of life and level of education.

6. Conclusions

The mean score of quality of life for the domain of psychological health statistically and significantly decreased with increasing of age, and statistically and significantly increased with an increase of level of education. Negative feelings such as blue mood, despair, anxiety and depression, were present in investigated patients without statistically significant difference in relation to sex, age and level of education.

To provide a complete evaluation of quality of life changes in this domain, it is necessary to examine the changes in mood and level of depression in patients with diabetes mellitus and their impact on the self-regulation of sugar. To estimate the true image of the psychological domain of quality of life, it would be good to examine the impact of support that they have/or not have from their family, the workplace, the community and society in general with regard to negative psychological feelings.

Age and level of education affect the psychological domain of quality of life of people with diabetes mellitus. Negative feelings associated with this disease are present in all patients in relation to socio-demographic variables (gender, age and level of education). This points the need for preventive action in dealing with persons suffering from diabetes mellitus to soften and reduce these negative feelings.

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