

ASSESSMENT OF QUALITY OF LIFE IN PATIENTS WITH TYPE 2 DIABETES MELLITUS AND DIABETIC POLYNEUROPATHY

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Abstract: Diabetes mellitus is a chronic disease that has a great effect on the quality of life of patients. It is one of the most progressively increasing chronic diseases of the 21st century. Modern medical practice defines the disease as an important risk factor for the development of severe debilitating complications, reduced quality of life. Predominant among the health-related complications reducing the quality of life is diabetic neuropathy. It is a serious and frequent complication of diabetes mellitus, with a chronic progressive course of development, which without adequate treatment can lead to potentially life-threatening complications, significant morbidity and increased mortality among people with diabetes. The aim of the present study was to assess satisfaction and health-related quality of life in individuals suffering from type 2 diabetes and a realized neurological complication. Researched and surveyed during the period November 2022 – April 2023, there are 20 patients, respectively 10 men and 10 women with type 2 diabetes mellitus and a diagnosed complication - diabetic neuropathy. With the help of a questionnaire consisting of 69 questions, divided into 3 groups of previously formulated questions, the patients were surveyed. Medical records were also used. Regarding general health, 80%(8) of men and 80%(8) of women rated it as good. 20%(2) of men and 20%(2) of women rated it as poor. 60% (6) of men and 20% (2) of women have no difficulty in daily walking of more than 1 mile (1.6 km) as a result of the disease and the complication. 40%(4) of women report very limited motor activity as a result of the polyneuropathy. 40%(4) of men and 40%(4) of women reported minor difficulties in motor activity. When asked if they had experienced pain in the last 4 weeks, 40%(4) of men answered that it was mild. 40% (4) of men and 100% (10) of women reported moderate pain, 20% (2) of men reported experiencing very severe pain in the past 4 weeks. Patients with DM and a realized neurological complication are not only physically sick, but also have a lower self-assessment of quality of life, compared to the healthy population. Diabetes has an effect on patients' quality of life. Pain, discomfort and impaired mobility are among the most common complaints that alter the quality of life.

Keywords: diabetes mellitus, diabetic neuropathy, quality of life
Field: Medical Sciences and Health

INTRODUCTION

Diabetes mellitus is one of the most common chronic diseases, which has an effect on the patient's quality of life, especially when they have other co-morbidities(Fowler, M.J., 2008). Globally, more than one in 10 adults are currently living with diabetes mellitus (IDF, 2021). Diabetes mellitus is one of the chronic diseases with the most progressively increasing frequency during the present century.

Diabetes is a global problem that also affects our country. Currently, in Bulgaria there is an increase in the prevalence of diabetes by 20.88% over a period of 6 years, or an average of 3.5% per year (Borisova, A.M., 2019).

In recent decades, the term "quality of life" has become increasingly popular in the field of medicine and healthcare. It is the subject of a number of international studies. Many factors influence the evaluation of the quality of life, i.e. the physical, spiritual and health condition of the individual, depending on the value system of the person, what cultural environment he belongs to, etc. Different concepts of quality of life are interconnected, indicating the three different components – health, happiness and lifestyle and are part of an international study International Quality of Life Assessment (IQOLA) (Nestorova, D., 2009).

In 1997, the World Health Organization (WHO) introduced the first definition of health as "a state of complete physical, mental and social well-being and not merely the absence of disease". WHO defines quality of life (QoL) as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. Therefore, apart from the definition of a person's physical health, QoL includes a psychological state, a person's level of independence, social life and personal beliefs (WHOQOL, 1998).

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Modern medical practice defines the disease as an important risk factor for the development of severe debilitating complications, correspondingly, a reduced quality of life, requiring significant economic costs. Patients with diabetes mellitus have a worse quality of life (QoL) compared to people without diabetes (Rubin, R., 1999).

Health-related quality of life (HRQoL) is one of the most widely measured outcomes of the self-report approach to the health effects of chronic disease treatment and monitors the physical, psychological, and social aspects of personal health. It is influenced by the individual's expectations, beliefs, perceptions and experiences (Megari, K.,2013).

All aspects of the quality of life depend on demographic factors such as age, sex, marital status, education level, employment status, and duration of illness.(Olukotun, O. et al, 2021)

In a Dutch study of adult female patients with type 2 diabetes mellitus, insulin treatment, obesity and presence of complications were associated with lower HRQoL (Redekop, W.K. et al. 2002).

A deterioration in the QoL of patients with diabetes mellitus is reported when complications begin to develop or comorbidities exist. Predominant among the health-related complications in reduced quality of life (HRQoL) but not related to risk factors (genetic, birth weight or other) is coronary artery disease, followed by renal failure, blindness and a combination of micro- and macrovascular complications and in some studies and sexual dysfunction. However, no increased rates of mild mental disorders were found among patients with diabetes, but when comorbid symptoms were usually more severe (Viinamäki, H. et al., 1995).Furthermore, neuropathy has been found to predict the onset of psychiatric disorders (Shim, Y.T. et al., 2012).

One of the most common complications of diabetes is neuropathy.It is one of the most unpleasant health problems that interferes with the life and daily routine of diabetics. Diabetes complications are directly related to quality of life: the higher the number of complications, the worse the patients' QoL becomes.The duration of the disease is one of the main factors that has an effect on the quality of life. The longer the duration, the worse the QoL(Jing, X et al, 2018). In chronic disease management, assessment of patients' QoL is considered an important outcome measure (Prajapati, V.B. et al., 2018).

Cerebrovascular disease and neuropathy had a negative impact on overall HRQoL in both types of diabetes, while coronary artery disease had an impact on those with type 1 diabetes.

Diabetic neuropathy is defined as the presence of symptoms and/or signs of impaired peripheral nervous system function after exclusion of other causes.Diabetic neuropathy is a serious and frequent complication of diabetes mellitus, characterized by a chronic progressive course of development, which without adequate treatment can lead to potentially life-threatening complications, significant morbidity and increased mortality among people with diabetes.It is a clinical condition of nerve damage in which the patient reports complaints (pain, paresthesias) or has evidence of a neurological deficit that leads to the development of problems such as impaired sensation in the feet. Diabetic neuropathy is found in 35-50% of patients with diabetes mellitus, and when using electrophysiological tests, the frequency can increase to 80% (Tankova, Tz., 2013).Patients with this pathology more often report symptoms such as paresthesia and pain (Gylfadottir, SS. et al., 2022).

Patients with diabetic neuropathy have worse QoL compared to those without complication (Benbow, S.J. et al., 1998). Painful neuropathy reduces quality of life (QoL), which appears to be mediated by increased anxiety, depression, physical exertion, emotional disturbances, and mobility limitation. Relief of neuropathic pain with pharmacological agents has been shown to improve QoL (Moore, A. et al, 2014).

People with diabetes mellitus have a worse quality of life than those without diabetes, especially in terms of physical functioning and well-being.(Hayes, A. et al., 2016).

MATERIALS AND METHODS

The aim of the present analysis is to investigate satisfaction and health-related quality of life in individuals suffering from type 2 diabetes and a diagnosed neurological complication - diabetic polyneuropathy. 20 patients, 10 men with an average age of 57.4 ± 7.7 years and 10 women with an average age of 68.8 ± 5.11 years, with established type 2 diabetes mellitus and a diagnosed complication - diabetic neuropathy, were examined and surveyed. The patients were surveyed using a questionnaire that is an extended version of the SF36, composed of 69 questions, divided into 3 groups of pre-formulated questions. The SF 36 is a general instrument that measures various health concepts: general health, limitations in physical functioning, physical health problems, bodily pain, vitality, social functioning, emotional changes, and mental health. Determined total SF 36 score, with higher scores reflecting better QoL.

In order to clarify the patient's medical status and history of the disease and accompanying complications and treatment, the patient's medical file was used. The study period is November 2022–April 2023. Statistical analysis included descriptive statistics, Student's t-test, and Spearman's correlation analysis. A value of $p < 0.05$ is accepted for statistical dependence.

RESULTS

The demographic characteristics of the study group of patients are presented in Table 1

Table 1. Sociodemographic characteristics and therapeutic approach in the analyzed patients with diabetic polyneuropathy

Demographic characteristic (n=20)	Values
Sex (%)	
male	50
female	50
Age at onset, years (mean years \pm SD)	
male	57.4 \pm 7.7
female	68.8 \pm 5.11
Duration of diabetes (mean years \pm SD)	4.9 \pm 5.51
Type of therapy (%)	
metformin	25
sulfanilurea	25
metformin with sulfanilurea	50
HBA1C (%)	7,9 \pm 1.97
Fasting blood sugar (mmol/l)	9,0 \pm 2.16
BMI (kg/m ²)	31 \pm 5,21
Waist measurement	102,3 \pm 14,48

In the studied group of patients, the duration of diabetes mellitus was 4.9 ± 5.5 years, BMI was 31.0 ± 5.21 kg/m², waist circumference was 102.3 ± 14.48 sm. The antidiabetic therapy in the surveyed patients was as follows: - Metformin - 25% (n=5), SUP - 25% (n=5) and SUP + Metformin - 50% (n=10). All respondents had suboptimal glycemic control of diabetes - respectively HBA1C-7.9 \pm 1.97% and fasting blood sugar - 9.0 \pm 2.16 mmol/l.

Regarding their general health, 80% (n=8) of men and 80% (n=8) of women rated it as good; 20% (n=2) of men and 20% (n=2) of women rate it as weak (Fig.1)

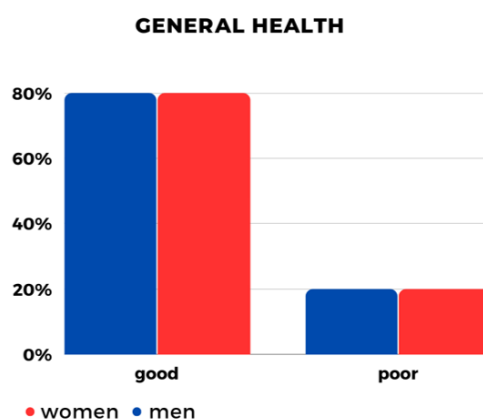


Fig.1

Compared to the state 1 year ago, 20% (n=2) of men and 20% (n=2) of women define their health as slightly better now; 40% (n= 4) of men and 20% (n=2) of women defined it as the same; 40% (n=4) of men and 60% (n=6) of women think that their health is slightly worse now compared to 1 year ago (Fig. 2).

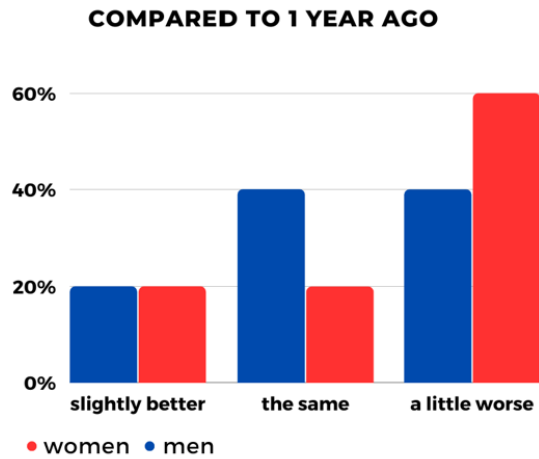


Fig.2

When asked about their activities of daily living, 60% (n=6) of men and 20% (n=2) of women had no difficulty in their daily walking of more than 1 mile (1.6 km) as a result of the disease and complication; 40% (n=4) of women reported very limited motor activity as a result of the polyneuropathy; 40% (n= 4) of men and 40% (n=4) of women reported minor difficulties in motor activity (Fig. 3).

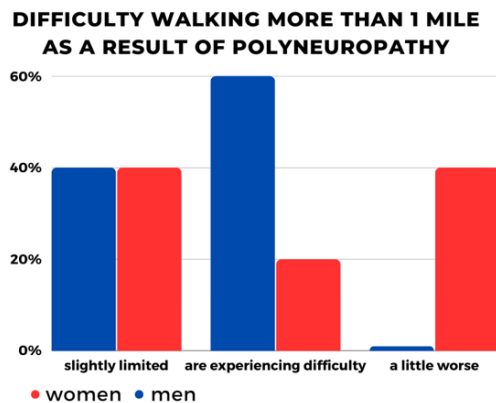


Fig.3

When asked if they had experienced pain in the last 4 weeks, 40% (n=4) of men answered that it was mild; 40% (n=4) of men and 100% (n=10) of women reported moderate pain, 20% (n=2) of men reported very severe pain in the past 4 weeks; 20% (n=2) of the men surveyed reported that the pain experienced in the last 4 weeks did not prevent them from fulfilling their work duties, 20% (n=2) of the men did, but relatively little. Moderate difficulties as a result of the pain syndrome were experienced by 60% (n=6) of men and 100% (n=10) of women (Fig. 4).

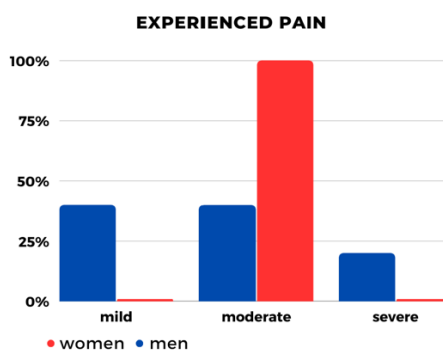


Fig.4

Regarding glycaemic control, 30% (n=6) of the respondents had satisfactory glycaemic control - HBA1C below 7.0%, 30% (n=6) had poor glycaemic control - HBA1C between 7.0 and 8.0% and 40% (n=8) of the patients had very poor glycaemic control - HBA1C above 8.0%. Depending on the level of glycaemic control, there is a difference in the responses given. 30% (n=6) of respondents with HBA1C above 8.0% rated their health as poor and slightly worse now compared to one year ago. 10% (n=2) of respondents with HBA1C above 8.0% rated their health as good. 30% (n=6) of them with HBA1C between 7.0 and 8.0% rated their health as good, and the remaining 30% (n=6) with HBA1C below 7.0% also rated their health as good. All patients with HBA1C below 7.0% rate their health slightly better now compared to 1 year ago. Of the group of patients with HBA1C between 7.0 and 8.0%, respectively, 30% (n=6) consider their health to be slightly worse compared to one year ago, and 10% (n=2) with HBA1C above 8.0% thought it was the same.

Regarding the three treatment groups, we did not find a significant difference in the answers given by the patients in the survey.

DISCUSSION

Data from our study confirm the relationship between the quality of life of patients with type 2 diabetes mellitus and diagnosed polyneuropathy. Patients with type 2 diabetes mellitus and a realized neurological complication are not only physically sick, but also have a lower self-assessment of quality of life. The reasons for this are most often related to the altered sensibility of these patients, frequent complaints of paresthesias and pain symptoms, and also due to altered motor activity in many cases. A limitation of our study is the relatively small number of patients followed, as well as the therapy they received. Until now, the patients have not received treatment to maximize the therapeutic effect (so far they have only been treated with the metformin and SUP groups) and no one has received the so-called newer therapeutic classes (such as GLP1 agonists, SGLT2 inhibitors and DPP4 inhibitors). Follow-up and assessment of quality of life for improvement in control after inclusion of treatment with any of the representatives of the indicated groups is pending. The main drawback of the study is the limited number of patients included and the need for additional and more thorough research.

CONCLUSION

QoL in patients with type 2 diabetes mellitus and polyneuropathy can be affected at different levels. Pain, paresthesias and mobility are the main problems that affect the QoL of patients with diabetes. It is believed that modern antidiabetic therapy providing strict glycaemic control is the key to prevent the occurrence of complications and their negative impact on QoL in patients with type 2 diabetes. Regular assessment of QoL would provide an indication for prompt intervention in patients with the aim of improving their emotional well-being, self-esteem and overall disease control.

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