

An impact of promotional and prevention activities on elimination of diabetes mellitus complications

Nizama Rudić-Aliefendić¹, Lejla Ibrahimagić-Šeper², Edin Selimović³

¹Center for Professional Care "Ruhamo" Zenica, ²Faculty of Health, University of Zenica, ³Primary Health Care Center Zenica; Zenica, Bosnia and Herzegovina

ABSTRACT

Aim To assess the frequency of oscillations in blood glucose levels in elderly persons before and after the promotional and preventive education at the Center for Professional Care "Ruhamo" Zenica in the period from January 2012 to June 2013.

Methods A descriptive retrospective analytical study used data taken from questionnaires of 108 patients who were diagnosed with diabetes mellitus. The patients were followed through a questionnaire containing basic information relating to the identification (age, gender, occupation), clinical parameters (symptoms, degree of disability arising as a complication of the disease), laboratory procedures before and after education. Education contained basic information aimed at unhealthy lifestyles and their influence on the occurrence of complications. At the end of the study a comparison of obtained results and the impact on patients' health was made. The patients received clearly structured questions.

Results The study engaged one hundred and eight patients. High blood glucose levels prior to the training were observed in 97 (89.8%) patients, while normal values were found in 11 (10.1%) respondents. In 96 (88.8%) patients without healthy lifestyle before the training abnormal baseline blood sugar was observed, while 98 (90.7%) patients showed positive examples after the education. Deterioration of the disease before the training was observed in 80 patients (74%), while stagnation of glucose was found in 60 (55.5%) patients after the training.

Conclusion Promotional and preventive activities make a basis for the improvement of the quality of life by reducing the percentage of complications.

Key words: disease, glycemia, education.

Corresponding author:

Nizama Rudić-Aliefendić
Center for Professional Care "Ruhamo"
Blatuša 34 72000 Zenica,
Bosnia and Herzegovina
Phone: +387 32 246 444;
fax: +387 32 246 665;
E-mail: nizama_ar@windowslive.com

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INTRODUCTION

Diabetes Mellitus is a chronic metabolic disorder of carbohydrate protein fat minerals and fluids due to absolute or relative deficiency of insulin secreted by the pancreas. Studies should encourage promotional activities aimed at the prevention of the disease and complications (1). The healthy lifestyles can be affected at prevention different illness.(2) The preventing and reducing the cost of the health system is basic task (3).

Fundamental problem is the lack of comprehensive education related to the disease and health promotion. The disease is a result of unhealthy eating habits (4). The diseases cause complications and represent a problem for family and society (5). A large number of diabetic patients develop serious complications like blindness, chronic renal failure, and in some cases early death (6). The risk of proliferative retinopathy is highly prevalent in diabetes (7). Twenty-five percent of one hundred people have a predisposition for developing diabetes (8). Emergence of complications (high value of blood sugar increases the risk of microvascular complications, neuropathic complications and macrovascular disease) resulting in a higher risk of ischemic heart disease, cerebral vascular disease, peripheral vascular disease with gangrene of the lower limbs, chronic renal disease and blindness, autonomic and peripheral neuropathy (9). Inadequately treated health problems in adult life lead to early pathological decompensation and disability.(10)

The aim of this research was focused on the impact of the frequency of high blood glucose levels and the consequences that may contribute to the suppression of complications. Particular attention was paid to vulnerability of elderly persons. Obtained results will help to prevent the development of complications and long-term decompensation. Promotion of healthy habits and lifestyles is a process that allows the improvement of health and prevention of premature death in early age and elimination of complications.

PATIENTS AND METHODS

The study used data taken from medical records and questionnaires of 108 patients with dia-

betes mellitus registered in the Centre for Professional Care "Ruhama" Zenica during the period between 1 January 2013 and 30 June 2013. The study was designed as descriptive, retrospective and analytical. The survey sheets were specifically designed for the research. This study used an anonymous questionnaire with clearly conceptualized issues. Questions included general demographic data (age, gender, occupation), clinical parameters (degree of disability, symptoms, complications, losing weight, thirst, frequent urination, overweight, hyperlipoproteinemia, uncontrolled blood sugar, measured glucose values before and after meals), deterioration of the disease (retinopathy, cardiomyopathy, nephropathy, polyneuropathy), eating preferences/habits (practicing inadequate nutrition, consumption of saturated fats, nicotine and alcohol consumption), physical activity, treatment of diabetes (insulin/medicaments/combination).

After the training a survey was conducted with basic question: was the measured value of glycemia normal or pathological. Every respondent answered the questionnaire and confirmed answers. Do they have a balance diet? Do they have any daily physical activity? Have they reduced nicotine intake? Have they noticed any symptoms of stagnation after the education? Have they noticed any symptoms of stagnation? Have they noticed any problems with registering high blood glucose levels? As a basis for monitoring blood glucose basic values of baseline fasting 4.2 -6.4mmol/L were taken.

RESULTS

The study included 108 respondents, 56 (51.8%) females and 52 (48.1%) male patients with diabetes mellitus. The age structure of the patients was 64 (59.2%) below 60 years of age, and 44 (40.7%) over 60 years of age. Most common type of diabetes was type II, in 80 (74%), type I in 28 (25.9%) respondents.

Before the training, a high value of blood sugar was measured in 97 (89.8%) patients. After the training 99 (91.6%) patients had normal blood sugar, while 11 (10.1%) had high-value blood sugar. After the training 86 (79.6%) patients demonstrated healthy lifestyle.

During the education there were 80 (74%)

patients with deterioration of complications, while in the remaining 20 (18.5%) it was not the case.

Before the training 98 (90.7%) patients had inadequate diet, 19 (17.5%) showed a lack of physical activity, intake of saturated fats was found in 88 (81.4%), nicotine was consumed by 98 (90.7%) patients, alcohol was consumed by four (3.7%) respondents (Table1).

Table 1. Risk factors before and after training

Risk factors	Number (%) of patients	
	Before training	After training
Physical activity	19 (17.5)	78 (72.2)
Intake of saturated fat	88 (81.4)	40 (37)
Balanced nutrition	30(27.7)	86 (79.6)
Nicotine intake	98 (90.7)	45 (41.6)
Alcohol intake	4 (3.7)	2 (1.8)

After the training, 86 (79.6%) respondents practiced healthy lifestyles (healthy eating, physical activity). The number of patients who had reduced consumption of cigarettes was recorded in 45 (41.6%) cases. The majority of patients had major symptoms of weight loss, 40 (37%), thirst was recorded in 79 (73.1%) patients, frequent urination in 80 (74%), increased body weight in 30 (27.7%), elevated blood lipids in 74 (68.5%), uncontrolled blood glucose in 97 (89.8%) patients (Table2). After the training, 97 (89.8%) patients improved the quality of life and practiced healthy lifestyles, while 3 (2.7%) patients had more disease symptoms. Complications that were observed in subjects included retinopathy in 96 (88.8%), cardiomyopathy in 60 (55.5%), nephropathy in 70 (64.8%) and polyneuropathy in 95 (87.9%) patients. The disease progression occurred in 80 (74%) patients.

Table 2. Leading symptoms in patients suffering from diabetes mellitus

Symptoms	Number (%) of patients	
	Before training	After training
Weight loss	40 (37%)	10 (9.2%)
Excess weight	30 (27.7%)	28 (25.9%)
Frequent urination	80 (74%)	20 (18.5%)
Thirst	79 (73.1%)	15 (13.8%)
Hyperlipoproteinemia	74 (68.5%)	24 (22.2%)
Unregulated glycemia	97 (89.8%)	11 (10.1%)

DISCUSSION

The results obtained by this research showed significant effects of education on changing unhealthy lifestyles in patients with diabetes. After the training there were unexpected results like full normalization of patients' life and improvement of the quality of life.

Tips about balanced diet, physical activity, reduction or quitting nicotine intake led to positive symptomatology. Expressive weight loss, thirst, frequent urination are brought to stagnation, regulation of glucose and lipid profile in reducing blood pressure. Complications and progression of diabetes mellitus due to unregulated blood glucose during the study showed a high degree of complications in the form of cardiomyopathy, nephropathy, retinopathy, polyneuropathy. Promotional activities have emerged as the basis for the prevention of high risk of non-communicable diseases and complications of decompensation. Realization of promotional and preventive actions in order to achieve target blood glucose levels showed great importance in the prevention of complications and disability in this study. The impact of presented unhealthy lifestyles is important for disease progression and complications.

This research has shown great importance for stopping the progression of the disease. The problem of prevention is that only 12-15% of the disease occurs in the family and even 85% sporadically (11). A study from 1980 showed that breastfeeding greatly reduces the risk of diabetes (12).

The risk of developing type 2 diabetes can be greatly reduced by introducing a diet regime and increasing physical activity (13). Various studies (Finish Diabetes, Prevention Study, Stockholm Diabetes, Prevention Program) have shown that the best results confirming it.

The results of this study confirmed previous research in relation to the importance of prevention activities in order to prevent complications that can lead to premature death. Trainings providing information about the disease can improve quality of life.

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