Original Article

Comparison of the lifestyle of type 2 diabetic patients and non-diabetic people

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ABSTRACT

Diabetes is a chronic non-communicable disease and considering that lifestyle has a 50% share in controlling this disease, this study aims to investigate the lifestyle of diabetic and non-diabetic patients. The current study was a cross-sectional descriptive research. The research population consisted of type two diabetics and non-diabetics. The sample size was calculated by G.pover software, 394 people. SPSS23 software was also used for statistical calculations and data analysis. The findings of this study determined that the average of some aspects of lifestyle such as exercise and health status, physical health status, avoiding tobacco and drug use, disease prevention, weight control and nutrition, spiritual health, accident prevention, and environmental health, and the psychological level of non-diabetic people was higher than that of diabetic patients ($p<0.05$) and only their average social health did not differ. Considering the importance and fundamental role of lifestyle in the control and prevention of non-communicable diseases such as type 2 diabetes, policymakers, and managers should plan and take more measures to improve the lifestyle of patients before and after diagnosis and even in non-patients.

Keywords: Lifestyle, Non-Communicable diseases, Type 2 diabetes, Diabetic patients.

Introduction

Diabetes is the most common disease caused by metabolic disorders and the fourth cause of death in Western societies. The pathogenicity of this condition, both in terms of treatment costs and because of the very high disability, is one of the major health and treatment issues of humans, which has become more important with the change in lifestyle towards inactivity and improper nutrition. Based on the WHO (World Health Organization), the number of diabetes among adults (20-79 years old) will increase to 7.7% (439 million people) by 2030. Between 2010 and 2030, there will be a 69% increase in the number of adults with diabetes in developing countries and a 20% increase in developed countries [1-5].

The World Health Organization understood this matter a long time ago as it was declared as a latent epidemic. The increasing trend of the prevalence of diabetes in the Eastern Mediterranean region has been significant compared to other regions [1, 6, 7].

Diabetes has many complications, such as cardiovascular complications, kidney diseases, blindness, and non-traumatic amputation of the lower limb, and research shows that after 5 years, diabetes causes eye complications such as retinal bleeding in about 25% of patients. After 20 years, this figure reaches 100% of eye complications [1, 8].

Studies show that the global economic burden of diabetes is two-thirds of total direct medical costs or one-third of indirect costs, including lost productivity. The results of this study show that diabetes is not only a global health problem, but also a major problem for the national economy due to its impact on mortality, disease, and quality of life [9-11].

The World Health Organization announced that overweight, obesity and physical inactivity are the factors that cause at least two-thirds of type 2 diabetes [12, 13]. Among the factors affecting people's health, including heredity, health care, environment, and lifestyle, 51% of cases are related to lifestyle [4, 14].

Although economic growth is universally good and desirable, some of its effects on health may not be beneficial. Since it is not possible to correct many of the intervening factors in diabetes development, it seems that the simplest and easiest way to deal with diabetes is to examine the unhealthy lifestyle of people and change it towards a healthy life. Considering that, previous studies have not discussed all aspects of lifestyle and its relationship with type 2 diabetes, this research was done to investigate the lifestyle of such patients and compare it with healthy people in all aspects of lifestyle.

Materials and Methods

This cross-sectional descriptive study was done on 400 people (194 diabetic patients and 206 non-diabetic patients) of type 2 diabetic and non-diabetic patients. To select people, first, the number of diabetic people was determined, and then the sample size was estimated based on G.pover software. Finally, the sample size was equally divided between two groups of diabetic and non-diabetic patients. Multi-stage sampling was used to select the samples. In each treatment center, systematic random sampling was used to select people.

The criteria for entering the study of diabetic patients include: at least one year has passed since their type 2 diabetes was confirmed. They should be between 30-64 years old and have no neurological and mental diseases and high blood pressure. The exclusion criteria included failure to answer 80% of the questions and having specific and severe cardiovascular diseases. The criteria for entering the non-diabetic group included not having obvious symptoms of diabetes such as overeating, drinking, urinating, diabetes, and high blood pressure, not having neurological and mental diseases, and being 30-64 years old. The criteria for leaving this group was a failure to answer 80% of the questions.

The data collection tool was a lifestyle questionnaire. The reliability of the questionnaire among 30 people of the study population was checked through Cronbach's alpha and it was confirmed with 90%. The questionnaires were separate for both groups. The purpose of the research was informed to both groups, the consent of the subjects was obtained, and they were assured that the information was completely confidential. SPSS23 software was also used for statistical calculations and data analysis.

Results and Discussion

The response rate was 92% in the diabetic group and 98% in the non-diabetic group. **Table 1** shows the individual characteristics of the investigated groups. The average age of the diabetic group was 54.76 years and the non-diabetic group was 44.12 years, and it was heterogeneous in terms of age and homogeneous in terms of gender in both groups. In addition, 91% of the diabetic group and 75% of the non-diabetic group had education below diploma and they were not homogeneous in terms of education. The body mass of most people in both groups was between 25 and 30, so they were overweight. The two groups were not homogeneous in terms of body mass (P=0.002).

Table 1. Individual characteristics of non-diabetic and diabetic patient groups.

Variables		Group of diabetic patients		Non-diabetic group		P-Value
		N	%	N	%	
Age	<35	3	1.55	36	17.48	0.001
	35-45	29	14.95	78	37.86	
	45-55	72	37.11	57	27.67	
	>55	85	43.81	25	12.14	
Gender	Male	66	34.02	86	41.75	0.112
	Female	128	65.98	120	58.25	
Educational level	Under diploma	177	91	159	75	0.001
	Diploma	12	6.19	37	17.96	
	Bachelor	1	0.52	8	3.88	
	Above bachelor	0	0	1	0.49	
Body mass	18.5-25	40	20.62	58	28.16	0.002
	25-30	79	40.72	103	50	
	>30	72	37.11	44	21.36	

In this study, the lifestyle of non-diabetic and diabetic patients was investigated in 10 areas. The results reveal that there is a significant difference in the lifestyle of diabetic and non-diabetic patients. This difference is due to the significant difference between the dimensions of physical health, exercise and well-being, nutrition, weight control, and prevention of diseases, the non-diabetic group had a better condition. There was no significant difference between the non-diabetic and diabetic groups in other aspects of lifestyle **(Table 2)**.

Table 2. Comparison of the lifestyle of non-diabetic and diabetic patient groups.

Variables	Diabetic patients (Mean ± SD)	Non-diabetic patients (Mean ± SD)	P-Value
Physical health	1.65 ± 0.430	1.82 ± 0.403	0.001
Exercise and wellness	1.24 ± 0.557	1.43 ± 0.642	0.002
Weight control and nutrition	1.44 ± 0.532	1.83 ± 0.561	0.001
Avoid drugs and narcotics	2.59 ± 0.465	2.55 ± 0.619	0.501
Social health	2.06 ± 0.619	2.06 ± 0.547	0.982
Spiritual health	2.18 ± 0.573	2.20 ± 0.459	0.673
Prevention of diseases	2.10 ± 0.449	2.35 ± 0.371	0.001
Psychological health	1.87 ± 0.548	1.94 ± 0.543	0.209
Prevention of accidents	1.98 ± 0.580	2.07 ± 0.554	0.117
Environmental Health	2.07 ± 0.492	2.11 ± 0.435	0.397
Lifestyle	1.90 ± 0.366	2.03 ± 0.353	0.001

Another goal of the research was whether diabetic patients changed their lifestyle after being diagnosed with the disease.

Therefore, the results show that, in general, the lifestyle of people after the diagnosis is significantly different from before the diagnosis of the disease **(Table 3)**.

Table 3. Comparison of lifestyle of patients before and after diagnosis and care of the disease.

Variables \ Time	Before diagnosis (Mean ± SD)	After diagnosis (Mean ± SD)	P-Value
Physical health	1.65 ± 0.430	1.98 ± 0.379	0.001
Exercise and wellness	1.24 ± 0.557	1.37 ± 0.627	0.001
Weight control and nutrition	1.44 ± 0.532	2.13 ± 0.499	0.001
Prevention of diseases	2.10 ± 0.449	2.39 ± 0.323	0.001
Psychological health	1.87 ± 0.548	1.98 ± 0.513	0.001
Spiritual health	2.18 ± 0.573	2.26 ± 0.542	0.006
Social health	2.06 ± 0.619	2.18 ± 0.52	0.001
Avoid drugs and narcotics	2.59 ± 0.465	2.71 ± 0.432	0.001
Prevention of accidents	1.99 ± 0.574	2.16 ± 0.561	0.001
Environmental Health	2.08 ± 0.487	2.23 ± 0.412	0.001
Lifestyle	1.90 ± 0.366	2.13 ± 0.314	0.001

The findings of this research show that the average age of the group of diabetic patients was more than that of non-diabetics. There is a significant relationship between the age variable and type 2 diabetes, so with increasing age, the probability of developing type 2 diabetes increases. The findings showed that the risk of diabetes is not different in women and men. In addition, the results revealed that the level of literacy is a factor for type 2 diabetes, which is consistent with the findings of Narayanamurthy *et al*.'s study [15]. Jeon *et al*. [10] in a systematic review study showed that participation in vigorous and moderate physical activities such as brisk walking (2.5 hours per week) reduces the incidence of diabetes. Hu *et al*. [16] reported that moderate or vigorous activity reduces the risk of mortality among type 2 diabetes patients.

In this study, although the state of exercise and health in both groups was less than the desired value, there is a significant difference between the diabetic and non-diabetic patient groups in this regard. On the other hand, patients have stated that the amount of sports activities and wellness has improved after the diagnosis of the disease. Although there was no significant difference between before and after diagnosis. Overall, the average exercise and fitness in this study were unfavorable. This shows that even though exercise can affect type 2 diabetes, the studied community did not have an exercise plan. Torgerson *et al*.'s study [17] showed that the risk of developing type 2 diabetes is related to overweight and obesity, and the weight-reducing factor in lifestyle changes can reduce the incidence of type 2 diabetes in obese patients, so by controlling weight, the risk of developing diabetes Type 2 is reduced.

In this study, it was found that the body mass index of diabetic patients is higher than the body mass index of non-patients, but in general, the body mass index of the two groups was unfavorable. Most people in the study community are in the obese and overweight group, which is a sign of improper nutrition and lack of exercise. Considering the important relationship of weight control in the control and prevention of diabetes, continuous educational measures and basic planning should be done in this field. Laaksonen *et al*. [18] also showed in a clinical trial study that increasing physical activity is the main factor in reducing the risk of type 2 diabetes. The results of these studies prove the significant effect of weight control on the control and prevention of diabetes.

Despite the high prevalence of type 2 diabetes, not many high-quality studies have been conducted in this regard, and the results should be interpreted with caution. One of the systematic review studies shows that the consumption of vegetables, fruits, vegetable oils, and fish has a protective role against developing type 2 diabetes. Consumption of fast food and consumption of fried potatoes increases the risk of diabetes [19]. On the other hand, other systematic review studies show that the consumption of more oil seeds, fruits, and vegetables significantly reduces the risk of developing type 2 diabetes, and the use of red meat significantly decreases the risk of developing type 2 diabetes [20]. Several studies have proven that sugar consumption is associated with the risk of type 2 diabetes [21-24].

The findings of this research revealed that the nutritional status of diabetic and non-diabetic patients is different, and non-diabetic patients have a better condition, but in general, not all the studied subjects had a good nutritional status. Considering the relationship between nutrition and body mass index and diabetes, there is a need for measures to improve nutrition. Although several studies confirm the relationship between smoking and type 2 diabetes [25-28], in this research, there was no significant difference in terms of avoiding drugs and narcotics in the group of non-diabetic and diabetic patients.

Diabetic patients did not have a different condition before and after the diagnosis of the disease, and in general, the studied subjects had an almost favorable condition. If the condition of the studied subjects, whether in the group of diabetic patients or non-diabetics had a better condition than other dimensions. Although many studies emphasize the effect of spiritual and social health in preventing and dealing with diseases including type 2 diabetes [29], in this study, there is a difference between social health status, spiritual health, psychological health, disease prevention, and health. There was no significant difference between non-diabetic and diabetic patients. Although the results show that diabetic patients, were better in all aspects than before the diagnosis of the disease. The findings of this research are consistent with the findings of Zareipour *et al*. [30] in this respect that there is no relationship between spiritual health and type 2 diabetes.

In this study, patients admitted that they modified their lifestyle after being diagnosed with type 2 diabetes. Chong *et al*.'s study

showed that after the diagnosis of type 2 diabetes, there were changes in weight, consumption of vegetables, and smoking cessation [31]. In Hood *et al*.'s study, there are several features to change the behavior of patients, including providing clear and supportive information and active patient guidance, problem-solving training, participation of other providers and patients, providing recommendations according to gender, age, community ethnicity, and people's perception, and recognizing psychological factors. Effective cognition on the treatment of the disease has been presented [32].

Conclusion

In the current study, it was found that the lifestyle of non-diabetic people was higher than type two diabetic patients and even after the diagnosis of the disease, the patients modified their lifestyle. As the patients have admitted, the reasons for changing the lifestyle of the patients after the diagnosis of the disease were mostly due to the fear of the disease and its complications, which indicates the need to pay attention to the education of people and can be one of the most important factors in the prevention of this disease. The findings confirm that, in general, the lifestyle of diabetic patients was lower than non-diabetic people, and with the current measures, such as raising the awareness of patients and training in the field of disease complications and lifestyle changes for diabetic patients. After the diagnosis of the disease and active care and follow-up, the quality of life of these patients has improved. Considering the importance and fundamental role of different dimensions of lifestyle in the control and prevention of non-communicable diseases, it seems that appropriate policies should be made in different dimensions of lifestyle. Therefore, appropriate policies in different dimensions such as weight control and nutrition, physical health, exercise and wellness, psychological health, disease prevention, social health, spiritual health, accident prevention, and avoiding drugs and narcotics are necessary. Appropriate policy making in this area leads to the improvement of lifestyle and finally to the improvement of the health of non-communicable diseases such as type two diabetes.

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