

# Physical activity and nutrition habits by patients with Diabetes Mellitus in municipality Kavadarci

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Received: October 23, 2018; Accepted: November 20, 2018; Published: December 12, 2018

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## Abstract

Diabetes mellitus (DM) is epidemic diseases from 21st century. In our society and Health system, all patients with diabetes mellitus have medical treatment after registration in data base. Aim of our research was to access the health system for patients with DM and their own care for nutrition habits and physical activity like a personal medical culture to live with DM.

**Material and methods:** For realization of our goals, we make one investigation on medical data bases, for nutrition diets and physical activity assessment protocols for patients with DM, and after that designed one questioner.

**Results:** The interview was made to 250 patients from the Kavadarci diabetes center, 110 male and 140 female. The most percentage 36% was aging people, and 24% were in working condition. More of 10 years have DM, 130 (52%) and use insulin. The 76% of patients have overweight, female intake more fruits than male, total 52%, but only 20% in optimal range, and optimal vegetables only 4%. Fish no consumed 52%, and 48% only one per week. Percentage of beans intake is very high 72%. Physical active were 80%, and no active at all 12%.

**Discussion:** Over the past decade, diabetes prevalence has risen faster in low- and middle-income countries than in high-income countries. In our health system patients have all medication and treatment of complication from DM. There are some educational programs in DM centers. Prevention of DM is very low, because many young people are overweight. Alternative methods like Yoga for stress management is not involve in daily practice.

**Conclusion:** Our health system has a high care for people with DM, funder Public Health activity must be in direction to promote healthy diet and regular physical activity by age and condition. That can be realized from physical therapist.

**Key Words:** diabetes mellitus patients; nutrition habits; physical activity;

## Introduction

Diabetes mellitus is epidemic diseases from 21st century. [1] In our society and Health system (HS), all patients with diabetes mellitus (DM) have medical treatment after registration in HS data base. [2] They can take pills and insulin injection on receipt without own participation. Family doctor is caring about

glucose level labor control, and prescription of therapy. Doctor from internal medicine, subspecialist for endocrinology is competent for dosage of therapy and evaluation of it. There are special centers for diabetes on regional establishment, who have place in distribution of medicaments and insulin, and education of patients. In our HS, it is organizing well, by government and Ministry of health. [3]

Diabetes mellitus type [2] can be prevented with programs of promotion of health life style, by young people. There are more young people with high body mass index and sedentary life style. In the future the percents of people with DM shall be increase. Treatment of people with DM. Weigh HS, and more patients shall need more money. [4] Complications from DM like poly neuropathy, capilaropathy and retinopathy shall weight HS more in addition. [5] The complications of diabetes can lead to heart attack, stroke, blindness, kidney failure and lower limb amputation. For example, rates of lower limb amputation are 10 to 20 times higher for people with diabetes.

Patients with DM, is necessary to take medicaments, control glucose level and have diet and physical activity to have good quality of life and less complications from DM. [6]

Aim of our research was to access the health system for patients with DM and their own care for nutrition habits and physical activity like a personal medical culture to live with DM.

## Material and Methods

For realization of our goals, we make one investigation on medical data bases, for nutrition diets and physical activity assessment protocols for patients with DM. We have designed one questioner consisted of [5] parts. Part1- personal data, sex, age and type of diabetes, Part2- frequentation of glucose measure, and medicaments intake, and co morbidity. Part3- assessment of healthy nutrition habits. Part 4- assessment of alternative medicine and supplements intake and Part 5- assessment of physical activity. To realize our goals, we have made a prospective research, by population of patients with Diabetes mellitus. The interview was made to 250 patients from the Kavadarci diabetes

center; The Patients accessed on a voluntary basis at random. Each part of data was analyzed separately and represent in percents. Assessment of proper nutrition and physical activity is done with a score of maximum positive habits and results obtained: moreover 0-25%, minimal, 26-50% medium, 51-75% very good, and 76-100% excellent.

**Questionnaire is following:**

**Part 1**

Personal data Sex Male Female Age in years

1. How many years have DM?
2. What type of DM Type 1 Type 2

**Part 2**

3. What form of treatment a) pills b)insulin c)pills and insulin
4. Do they have own devise for glucose measure? Yes No
5. How much time measure glucose weekly?
6. Do they have co morbidity
  - a) High blood pressure b) circulatory disturbances c) pain d) cardiac abnormalities
  - e) Carcinoma g) osteoarthritis

**Part 3**

7. Did they educate for nutrition? Yes No
8. Daily intake of fruits 0-5
9. Daily intake of vegetables 0-5
10. Weekly intake of fish 0-4

11. Weekly intake of beans 0-4

**Part 4**

12. Did he intake b-complex vitamins pills?
13. Did he intake cinnamon?
14. Did he intake supplements for diabetes?
15. Did he intake OMEGA 3 pills?
16. Did he intake herbal drops for increase of circulation?
17. Did he use acupuncture, laser or Yoga?

**Part 5**

18. Do they have some sport activity? If yes, which, and how long weekly?
19. How often do you walk a day?
  - a) Less of 30 min. b) 30-60 min. c) more of 60 min.

**Results**

The interview was made to 250 patients from the Kavadarci diabetes center, 110 male and 140 female. Data by sex and age is showing in Table 1. Body mass index and category of weight is showing in Table 2.

Frequentation of patients with duration of DM, and type of treatment of DM is showing in Table 3.

More of 10 years have DM, 130 (52%) from them 130 or 100% use insulin. This data is showing a great need of money for buying it. The 76% of patients have overweight, and that means more needs of international units of insulin.

**Table 1: Frequentation by age and sex**

Age	25-30	46-50	51-55	56-60	61-65	66-70	71-75
<b>Male n=110</b>	10	/	10	30	10	30	20
<b>Female n=140</b>	/	10	10	30	10	60	20
<b>Total</b>	10	10	20	60	20	90	40
<b>%</b>	4	4	8	24	8	36	16

The most percentage 36% was aging people, and 24% were in working condition

**Table 2: BMI by sex**

BMI	Decreased	Normal	Obese 1st degree	Obese	Total increase BMI
<b>Male</b>	/	30	40	40	80
<b>Female</b>	10	20	80	30	110
<b>Total</b>	10	50	120	70	190
<b>%</b>			48	28	76

From those data we can see that 76%, of patients with DM have increase BMI.

**Table 3: Duration of diagnosed DM, and type of treatment**

Age	<2	2-5	6-10	11-15	16-20	>20
<b>Male n=110</b>	10	30	10	20	10	30
	P=10	I=20,P=10	P=10	P=10,P/I=10	P/I=10	I=20,P/I=10
<b>Female n=140</b>	40	10	20	20	30	20
	P=30P/I=10	P=10	I=20	I=10,P/I=10	I=30	I=20
<b>Total 250</b>	50	40	30	40	40	50

P-pills, I-insulin, P/I-pills and insulin

In Table 4 is showing their nutrition habits of vegetables, fruits, fish and beans. [Table-4]

Female intake more fruits than male, total 52%, but only 20% optimal 20%, and optimal vegetables only 4%. Fish no consumed 52%, and 48% only one per week. Percentage of beans intake is very high 72%.

Habits of alternative medicine use and supplements are showing in Table 5.

The score of positive nutritional and physical activity habits is 24%, its mean, they have moreover.

**Table 4: Nutrition habits by sex**

	0	1	2	3	4	5
<b>Daily intake of fruits 0-5</b>						
<b>Optimal 5</b>						
<b>Male</b>	10	/	30	40	20	10
<b>Female</b>	10	20	10	40	20	40
<b>Total</b>	20	20	40	80	40	50
<b>%</b>				32		20
<b>Daily intake of vegetables 0-5</b>						
<b>Male</b>	10	10	40	30	20	/
<b>Female</b>	20	20	40	30	20	10
<b>Total</b>	30	30	80	60	40	10
<b>%</b>			32			4
<b>Weekly intake of fish 0-4</b>						
<b>Male</b>	60	50	/	/	/	
<b>Female</b>	70	70	/	/	/	
<b>Total</b>	130	120				
<b>%</b>	52	48				
<b>Weekly intake of beans 0-4</b>						
<b>Male</b>	/	/	30	70	10	
<b>Female</b>	/	10	30	60	40	
<b>Total</b>	/	10	60	130	50	
<b>%</b>				52	20	

**Table 5:** Use of alternative methods of treatment

Therapy	Male	Female	Total
B vitamins	70	30	100(40%)
Cinnamon	/	/	/
DM supplements	10	/	10(4%)
Omega-3	30	10	40 (16%)
Herbal drops	/	/	/
Acupuncture	/	/	/
Yoga	/	/	/
Laser therapy	/	/	/
Spec. exercises	/	/	/
<b>Total</b>	<b>110</b>	<b>40</b>	<b>150</b>

Physical active were less of 30 min. daily 8%, 30-60 min. (44%), more of 60 min. (36%) and no active at all 12%.

**Table 6:** Result of scoring is showing in

Max. score point	Found state	Percentage
Max. score points of fruit intake 1250	230	18
Max. score point of vegetable intake 1250	240	19
Max. score points of fish intake per week 500	120	24
Max. score point of beans intake 1000	250	25
Max. score 30-60 min. and more, of day physical active 250 points	200	80
<b>Total score 4250</b>	<b>1030</b>	<b>24</b>

**Discussion**

The global prevalence (age-standardized) of diabetes has nearly doubled since 1980, rising from 4.7% to 8.5% in the adult population. This reflects an increase in associated risk factors such as being overweight or obese. Over the past decade, diabetes prevalence has risen faster in low- and middle-income countries than in high-income countries [7].

In 2012, about 1.5 million deaths were directly caused by diabetes. More than 80% of diabetes deaths occur in low- and middle-income countries. According to the WHO projections, diabetes will be the 7th major cause of death in 2030

National capacity to prevent and control diabetes as assessed in the 2015 NCD Country Capacity Survey varies widely by region and country-income level. Most countries report having national diabetes policies, as well as national policies to reduce key risk factors and national guidelines or protocols to improve management of diabetes. In some regions and among lower-income countries, however, these policies and guidelines lack funding and implementation. [1, 3]

All of our respondents receive regular medication therapy, regulated by law, and medicines available, as shown by the survey, which is also in line with the WHO attitudes, because we are a middle economy country.

Data on diabetes patients in the Republic of Macedonia Macedonia for 2013 is the latest available to us on the PHI website. [8] In 2013, there were 52,917 registered people with diabetes mellitus, of whom 3,663 people were deprived of insulin, or 177 cases per 100,000 inhabitants and 49254 non-insulin dependents or 2386 cases per 100,000 inhabitants.

Most of the population in the Republic of Macedonia does not exercise physical activity according to the recommendations of WHO for people over 18 years of age (at least 150 minutes of moderate physical activity per week). According to data from PHI of Macedonia.8 In our research total inactivity was 12%, and under 30 minutes 8, or a total of 20%. The remaining 80% were active. This is probably due to the characteristic of the population of this part of the country that grows a vine and works agriculture. The highest percentage of our respondents with DM were over the age of 60, 60%, which is an indicator along with the indicator of physical activity that are active.

Increased body weight goes with a high risk of DM occurrence. In our research they were represented with 76%, and because they were physically active, the risk is in the irregular diet, which was shown by the low intake of fruits, vegetables and fish. Our country has a Mediterranean climate, in which fruits and vegetables are successful and not at a high price. By contrast, beans are our national dish and are consumed 3-4 times a week

in 72% of the examinees. We used these simple lifestyle measures have been shown to be effective in preventing or delaying the onset of type 2 diabetes. To help prevent type 2 diabetes and its complications, people should: achieve and maintain healthy body weight; be physically active – at least 30 minutes of regular, moderate-intensity activity on most days. More activity is required for weight control. [10] Eat a healthy diet, avoiding sugar and saturated fats intake, is one of educational program for people with DM. [11]

Some alternative medicine methods like Yoga and herbal therapy can increase quality of life and increase stress. [12, 13] in our population intake of B-vitamins is high, because doctors are suggest and prescribe it. Herbal drops is actual, because they were promote on television, without side effects and it production is from plants from our sauranding. [14, 15]

## Conclusion

Our health system has a high care for people with DM, but it is in increase incidence like epidemic of bad nutrition habits and no physical activity. Furred Public Health activity must be in direction to promote healthy diet and regular physical activity, thereby reducing the growing global problem of overweight people and obesity.

## References

1. Diabetes Mellitus – epidemiology. 2. Diabetes Mellitus – prevention and control. 3. Diabetes, Gestational. 4. Chronic Disease. 5. Public Health. I. World Health Organization. 2016; ISBN 978 92 4 156525 7 (NLM classification: WK 810).
2. Colin D Mathers and Dejan Loncar. Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Med.* 2016; 3(11):442. Doi:10.1371/journal.pmed.0030442
3. Law on contributions from compulsory social insurance. Official Gazette of RM no. 142/2008; 64/2009; 256/2009; 166/2010; 53/2011; 185/2011; 44/2012; 150/2012; 15/2012; 91/2013 and 170/2013.
4. Health Strategy of the Republic of Macedonia 2020.(2012).: Reliable efficient and equitable health system, Skopje February 2007, available from URL: rodovaplatforma.mk → 4... Health Protection Law. Fig. Journal of the Republic of Macedonia no. 43/2012, 145/2012, 87/2013, 164/2013.
5. Gale EA. The rise of childhood type 1 diabetes in the 20th century. *Diabetes.* 2002 ;51(12):3353-3361.
6. Emerging Risk Factors Collaboration, Sarwar N, Gao P, Seshasai SR, Gobin R, Kaptoge S, et al. Diabetes mellitus, fasting blood glucose concentration, and risk of vascular disease: a collaborative meta-analysis of 102 prospectively studies. *Emerging Risk Factors Collaboration. Lancet.* 2010; 375(9733):2215-2222. Doi: 10.1016/S0140-6736(10)60484-9.
7. Global status report on non communicable diseases 2014. Geneva. World Health Organization 2014;
8. Public Health institute of Macedonia. Report for health. 2014;
9. Global Burden of Metabolic Risk Factors for Chronic Diseases Collaboration. Cardiovascular disease, chronic kidney disease and diabetes mortality burden of cardio metabolic risk factors from 1980 to 2010: a comparative risk assessment. *Lancet Diabetes Endocrinology.* 2014;2( 8):L634–647. Doi:10.1016/S2213-8587(14)70102-0
10. Knowler WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or motorman. *N Engle J Med.* 2002; 346(6):393–403. Doi:10.1056/NEJMoa012512
11. Lindstrom J, Ilanne-Parikka P, Peptone M, et al. Sustained reduction in the incidence of type 2 diabetes by lifestyle intervention: follow-up of the Finnish Diabetes Prevention Study. *Lancet.* 2006; 68(9548): 1673–1679.
12. Praveen Angadi, Aarti Jagannathan, Arun Thulasi, Vinod Kumar, K Umamaheshwar, Nagarathna Raghuram. Adherence to yoga and its resultant effects on blood glucose in Type 2 diabetes: A community-based follow-up study. *Int J Yoga.* 2017;10(1):29–36. Doi: 10.4103/0973-6131.186159
13. Innes KE and Selfe TK. Yoga for Adults with Type 2 Diabetes: A Systematic Review of Controlled Trials. *J Diabetes Res.,* 2016; 6979370. Doi: 10.1155/2016/6979370
14. Beshar Gharaibeh and Loai Tawalbeh. Beliefs and Practices of Patients with Diabetes toward the Use of Herbal Therapy. *AIMS Public Health.* 2017; 4(6): 650–664. Doi: 10.3934/publichealth.2017.6.650.
15. Chang CL, Lin Y, Bartolome AP, Chen YC, Chiu SC, Yang WC. Herbal Therapies for Type 2 Diabetes Mellitus: Chemistry, Biology, and Potential Application of Selected Plants and Compounds. *Evid Based Complement Alternate Med.,* 2013;378657. Doi: 10.1155/2013/378657.