Risk Factors of Type II Diabetes Mellitus in RSUD Padangsidimpuan

Nurul Hidayah Nasution[(✉)], Han Melisa Pane, and Mhd. Arsyad Elfiqoh Rambe

Universitas Aufa Royhan, Padangsidimpuan, Indonesia
nurulhidayah.nasution09@gmail.com

Abstract. Diabetes mellitus is a degenerative disease that has risk factors. Physical activity and eating habits are risk factors for diabetes mellitus. The purpose of this research was to determine the relationship between physical activity and eating habits with type II diabetes mellitus. The research method is quantitative with a cross sectional research design. The population in this study were all patients who came for treatment to the Internal Medicine Poly Hospital of Padangsidimpuan City. The research sample was 50 people. Univariate and bivariate data analysis with chi-square test. The results showed that there was a relationship between physical activity (p-value = 0.001 < 0.05) and eating habits ((p-value = 0.003 < 0.05) with the incidence of type II diabetes mellitus. There was a relationship physical activity and eating habits with the incidence of type II diabetes mellitus.

Keywords: activity physical · diabetes mellitus type II · eating habit

1 Introduction

Diabetes Mellitus is one of the chronic degenerative diseases which in its journey will continue to increase both its prevalence and the state of the disease, starting from an early stage that is at risk of diabetes mellitus because of its nature it must involve many parties, both from health workers and from patients and their families and the community.

Data from the World Health Organization (WHO), there are 422 million people in the world suffering from diabetes mellitus, an increase in cases of about 8.5% in the adult population. The death rate from diabetes mellitus before the age of 70 is estimated at 2.2 million people. The increase in cases is estimated to increase by around 600 million people by 2035 (Ministry of Health Republic of Indonesia / Kemenkes RI 2018).

Data for Basic Health Research (Riskesdas) in 2018, Indonesia is one of the countries with the fourth largest cases in the world after India, China and the United States. Cases of type II diabetes mellitus with a prevalence of 8.6% million people in 2000 to 21.3 million people in 2030. The highest prevalence of diabetes mellitus in Indonesia is in DKI Jakarta and the lowest is in East Nusa Tenggara Province (NTT) (Kemenkes RI, 2018).

The prevalence of people with diabetes mellitus in North Sumatra Province based on a doctor's diagnosis in the population aged > 15 years has increased from 1.8% in 2013 to 2.0% in 2018 (Ministry of Health Republic of Indonesia / Kemenkes RI 2018).

Data on patients with type II diabetes mellitus in Padangsidimpuan City in 2020 were 2227 people and people with diabetes mellitus who received health services according to standards were 1,983 people (89.04%) (Padangsidimpuan City Health Office, 2020).

Type II diabetes mellitus is a degenerative disease that is closely related to diet. Diet is related to the type, amount and composition of foodstuffs eaten every day by a person. Urban lifestyles with eating habits that are high in eating, excessive salt and sugar lead to various diseases including diabetes mellitus. Changes in lifestyle by utilizing sophisticated means of transportation such as elevators, escalators and electric motors are one of the triggering factors, especially in carrying out physical activities for people who are physically active. Not enough (Rumajar, Rompas, Babakal, 2015 and Kemenkes RI, 2018).

Diabetes mellitus often results in chronic complications such as eye damage (Pudiastuti, 2013), nerves (Gogio and Rao, 2017), kidneys, diabetic ulcers (Waspadji, 2009), coronary heart disease (Sudoyo, 2009), hypertension (Tandra, 2008), lung disorders (Lathifah, 2017) and stroke (Pinzon, 2019). Complications in people with diabetes mellitus occur when they ignore the four pillars of proper diabetes mellitus management, such as education, meal planning, physical activity and pharmacological therapy. Physical activity is one of the recommended treatments for diabetes mellitus therapy (Perkeni, 2011).

The results of Ramadhani's research (2020), there is a relationship between physical activity and blood sugar levels in diabetes mellitus patients at the Asri Wound Care Center clinic in Medan. The results of the research by Alianatasya and Khoiroh (2020) stated that there was a relationship between diet and controlled blood sugar levels in patients with type II diabetes.

A preliminary survey that was conducted at the Internal Medicine Polyclinic of the Padangsidimpuan City Hospital was 80 people with diabetes mellitus. The results of interviews conducted on 10 people with diabetes, it is known that 7 people with diabetes mellitus said they did not know the cause of type 2 diabetes mellitus.

The purpose of this research was to determine the relationship between physical activity and eating habits with the incidence of type II diabetes mellitus in Padangsidimpuan City Hospital.

2   Method

This type of research is quantitative with analytical descriptive approach. The research design was cross sectional. The study was conducted in the internal medicine room at the Padangsidimpuan City Hospital. The population and sample in this study were all patients who came for treatment in the internal medicine room at the Padangsidimpuan City Hospital. The population is 120 people. The number of samples is 55 people. Data collection technique is accidental sampling.

The research instrument used a questionnaire. Sources of research data are primary data in the form of a questionnaire about eating habits and secondary data in the form of medical records related to the incidence of diabetes mellitus. Data processing starts from the process of editing, coding, scoring, and tabulating. Data analysis used univariate and bivariate analysis with chi square test ($\alpha = 0.05$).

3 Result

The results of Table 1 show that the majority of respondents' gender is male as many as 32 people (58.2%). The majority of respondents' education is low (SD-SMP) as many as 26 people (47.3%). The majority of respondents' occupations are Entrepreneurs/ traders as many as 24 people (43.6%).

The results of Table 2 show that the majority of respondents' eating habits are bad as many as 47 people (85.5%). The majority of respondents' physical activity was good as many as 32 people (58.2%). The majority of respondents experienced the incidence of diabetes mellitus, namely 30 people (54.5%).

The results of data analysis on the physical activity variable obtained a value of $0.001 < 0.05$, then H0 is rejected, meaning that there is a relationship between physical activity and the incidence of type II diabetes mellitus. The results of data analysis on the variable eating habits obtained a value of $0.003 < 0.05$ then H0 is rejected, meaning that there is a relationship between eating habits and the incidence of type II diabetes mellitus.

Table 1. Frequency Distribution of Respondents' Identity in the Internal Medicine Room at the Padangsidimpuan City Hospital

Variable	N	Persentase
Age		
Middle Adult	28	50,9
Early Adult	27	49,1
Gender		
Man	32	58,2
Woman	23	41,8
Education		
Low (SD-SMP)	26	47,3
Currently (SMA–D1,D2)	21	38,2
High (S1, S2, S3)	8	14,5
Profession		
Retired/not working	2	3,6
PNS/TNI/POLRI/BUMN	4	7,3
Entrepreneur/trader	24	43,6
Private employees	7	12,7
Farmer	11	20,0
Housewife	7	12,7
Total	**55**	**100**

Table 2. Distribution of Frequency of Eating Habits, Physical Activity and the Incidence of Type II Diabetes Mellitus in the Internal Medicine Room at Padangsidimpuan City Hospital

Variable	N	persentase
Eating Habit		
Bad	47	85,5
Good	8	14,5
Physical Activity		
Bad	23	41,8
Good	32	58,2
Incidence of Type II Diabetes Mellitus		
Yes	30	54,5
No	25	45,5

Table 3. Relationship between eating habits and physical activity with the incidence of type II diabetes mellitus

Variable	Incidence of Type II Diabetes Mellitus				Total		p-value
	Yes		No				
	f	%	f	%	f	%	
Physical Activity							
Bad	19	34,5	4	7,3	23	41,8	0,001
Good	11	20,0	21	38,2	32	58,2	
	30	54,5	25	45,5	55	100	
Eating Habit							
Bad	30	54,5	17	31	47	85,5	0,003
Good	0	0	8	14,5	8	14,5	
	30	54,5	25	45,5	55	100	

4   Discussion

4.1   The Relationship Between Physical Activity and the Incidence of Type II Diabetes Mellitus

The majority of respondents' physical activity is good, the activity that is often done by respondents is walking, which is 79% with a frequency of 1 x a week. Therefore, according to the results of data analysis, there were 21 respondents (38.2%) who did good physical activity and did not experience type II diabetes mellitus. Meanwhile, the respondents who did poor physical activity and experienced type II diabetes mellitus were 19 people (34.5%).

The results of the analysis of physical activity data obtained a value of $0.001 < 0.05$ then H0 is rejected, meaning that there is a relationship between physical activity and the incidence of type II diabetes mellitus. The results of this study are in line with Ramadhani's research (2020) which states that there is a relationship between physical activity and blood sugar levels in diabetes mellitus patients at the Asri Wound Care Center clinic in Medan. Sundari's research (2016) which states that low physical activity has a relationship with the incidence of Type II Diabetes Mellitus.

Low physical activity causes low energy consumption so that there is a buildup of excess energy in the body in the form of fat. If left for a long time it will cause excess weight.

Physical activity can control blood sugar/glucose, glucose will be converted into energy when doing physical activity, this causes insulin to increase so that blood sugar levels will decrease. People who rarely exercise, food substances that enter the body are not burned but are stored in the body as fat and sugar. If insulin is not sufficient to convert glucose into food energy, it will cause diabetes mellitus.

Physical exercise/sports can maintain fitness, lose weight and improve blood glucose control. Regular exercise 3–5 times a week for 30–60 min will improve insulin circulation by increasing cell and blood vessel dilation so that it helps the entry of glucose into cells (Riyadi, 2008).

4.2 Relationship Between Eating Habits and the Incidence of Type II Diabetes Mellitus

The majority of respondents have bad eating habits as many as 30 people (54.5%). Therefore, according to the results of data analysis, there are 30 respondents (54.5%). While respondents who have good habits and do not have type II diabetes mellitus are 8 people (14.5%). The results of data analysis on the variable eating habits obtained a value of $0.003 < 0.05$ then H0 is rejected, meaning that there is a relationship between eating habits and the incidence of type II diabetes mellitus.

The results of this study are in line with research by Rahmawati (2011) which states that there is an increase in blood glucose in patients with type II diabetes mellitus in respondents who have a poor diet, which is 87.9% and shows that there is a relationship between diet and the incidence of type II diabetes mellitus. $p = 0.001 < 0.05$).

Food plays an important role in increasing blood sugar levels. In the process of eating, the food consumed will be digested and converted into sugar called glucose (Nurrahmani, 2012).

5 Conclusions

1. The majority of respondents' gender is male as many as 32 people (58.2%). The majority of respondents' education is low (SD-SMP) as many as 26 people (47.3%). The majority of respondents' occupations are Entrepreneurs/traders as many as 24 people (43.6%).
2. The majority of respondents' eating habits are bad as many as 47 people (85.5%). The majority of respondents' physical activity was good as many as 32 people (58.2%).

The majority of respondents experienced the incidence of diabetes mellitus, namely 30 people (54.5%).

3. There was a relationship physical activity and eating habits with the incidence of type II diabetes mellitus.

References

Alianatasya dan Khoiroh. 2020. Hubungan Pola Makan dengan Terkendalinya Kadar Gula Darah Pada Penderita Diabetes Melitus Tipe II di RSUD Abdul Wahab Sjahranie Samarinda. Borneo Student Research. 1(3).

Dinas Kesehatan Kota Padangsidimpuan. 2020. Profil Kesehatan Kota Padangsidimpuan Tahun 2020. Bidang Penyakit Tidak Menular : Padangsidimpuan.

Kementerian Kesehatan Republik Indonesia. 2018. Riset Kesehatan Dasar (Riskesdas) Tahun 2018. Badan Penelitian dan Pengembangan Kesehatan : Jakarta.

Lathifah, Nur. 2017. Hubungan Durasi Penyakit dan Kadar Gula Darah dengan Keluhan Subyektif Penderita Diabetes Mellitus. Jurnal Berkala Epidemiologi. 5(2).

Nurrahmani. 2012. Stop Hipertensi. Familia : Yogyakarta.

Perkeni, 2011. Pengelolaan dan Pencegahan Diabetes Melitus Tipe II di Indonesia. Perkumpulan Endokrinologi Indonesia. Jakarta.

Pinzon, Rizaldy. 2019. AWAS STROKE! Pengertian, Gejala, Tindakan, Perawatan, Pencegahan. CV. ANDI OFFSET. Yogyakarta.

Pudiastuti. 2013. Penyakit-Penyakit Mematikan. Nuha : Yogyakarta

Rahmawati. 2011. Hubungan Pola Makan dan Aktivitas Dengan Kadar Gula Darah Penderita Diabetes Melitus Tipe II Rawat Jalan di RSUP Dr. Wahidin Sudirohusodo Makassar. Skripsi : Makassar.

Ramadhani. 2020. Pengaruh Aktivitas Fisik Terhadap Kadar Gula Darah pada pasien Diabetes Melitus di Klinik Asri Wound Care Centre Medan. Skripsi. Universitas Sumatera Utara : Medan.

Riyadi. 2008. Teknologi Fermentasi. Graha Ilmu : Yogyakarta

Rumajar, Rompas, Babakal .2015. Faktor-faktor yang mempengaruhi obesitas pada anak TK Providensia Manado. E-Journal Keperawatan, 3(3): 1-8.

Sudoyo. 2009. Buku Ajar Ilmu Penyakit Dalam Jilid 3 Edisi 4. Jakarta : FKUI.

Sundari. 2016. Pemanfaatan dan Efisiensi Kurkumin Kunyit (Curcuma Domestica Val) sebagai Indikator Titrasi Asama Basa. Jurnal Teknologi Industri. 22(8).

Tandra, Hans. 2008. Segala Sesuatu yang Harus Anda Ketahui Tentang Diabetes. Jakarta : Gramedia Pustaka Utama.

Waspadji. 2009. Buku Ajar Penyakit Dalam : Komplikasi Kronik Diabetes, Mekanisme Terjadinya, Diagnosis dan Strategi Pengelolaan, Jilid III, Edisi 4. Jakarta : FKUI.