http://ejournal.seaninstitute.or.id/index.php/healt
Jurnal Eduhealt, Volume 13, No. 01 September 2022
E-ISSN. 2808-4608

Description Of Body Mass Index In Diabetes Mellitus Patients In Mandiri Malau Malau Practice, Helvetia In 2021

Imelda Derang, Linda Simorangkir, Louise Margaretha Sihombing
STIKes Santa Elisabeth Medan, Jl. Bunga Terompet No.118 Sempakata, Kec. Medan Selayang, Kota Medan 20131, Indonesia

ARTICLE INFO

Keywords:

Body Mass Index, Diabetes Mellitus

ABSTRACT

Background: Diabetes Mellitus is a disease caused by metabolic disorders in the pancreas organ and is characterized by an increase in blood sugar or often called a hyperglycemia condition due to a decrease in the amount of insulin from the pancreas. This study aims to determine the Body Mass Index in patients with Diabetes Mellitus in the independent practice of the midwife R. Malau Medan in 2021. Methods: The design of this study used a descriptive survey with a sampling technique of 60 respondents in the independent practice of the midwife R. Malau Medan. The instrument used in data collection is a questionnaire. Result: Data analysison the results of research conducted by researchers regardingthe height of diabetes mellitus patients in the Independent Practice of the midwife R. Malau Medan 2021, the majority of the height of 151 – 160 cm were 30 people (50.0%), and the minority >170 cm were 2 people (3.3%). Conclusion: The researcher recommends that the results of this study can be used as a reference and reference material in conducting further research. This study can increase knowledge and insight about body mass index with the incidence of diabetes mellitus. For further researchers, it is also recommended to choose a total sampling technique according to the conditions and characteristics of the population

Email :
girsangimelda89@yahoo.co.id

1. INTRODUCTION

Diabetes Mellitus is a disease caused by metabolic disorders in the pancreas organ and is characterized by an increase in blood sugar or often referred to as a hyperglycemia condition (more than 100 mg/l) due to a decrease in the amount of insulin from the pancreas. Diabetes mellitus is a chronic disease when the pancreas does not produce enough insulin and the body cannot effectively use the insulin it produces(Isnaini & Ratnasari, 2018)

The first diabetes mellitus is caused by insulin dependent diabetes mellitus (IDDM).-cell destruction of the islets of langerhans due to an autoimmune process, usually diagnosed in children and adults younger than 30 years. Both Non-Insulin Dependent Diabetes Mellitus (NIDDM) or non-insulin-dependent DM are caused by relative failure of cells and insulin resistance usually occurs in individuals over 40 years of age with a greater incidence in obese people.(Furiyani et al., 2019)

The latest 2017 data from the International Diabetes Federation states that the number of people with diabetes mellitus in the world reaches 425 million adults between the ages of 20-79 years. In 2045 the number of people with diabetes mellitus will increase to 629 million people. The IDF in 2045 reported that Indonesia was included in the top 10 countries with the highest number of people experiencing diabetes mellitus with a total of 10.3 million people and is estimated to be 16.7 million people.(Mellitus et al., 2019).

The data obtained from the initial survey conducted inIndependent Practice Midwife R. Malau Medanobtained about 139 people. Among them, about 28 people said they knew about diabetes mellitus but did not regulate their diet, 35 people said that they only knew about maintaining a diet and did not know what the benefits were, 63 people only knew about diabetes mellitus, 76 people experienced disturbances in body mass index and body mass index. there is still a lack of knowledge in the community about diabetes mellitus (survey results, 2021).

Data from the Ministry of Health in 2014 found that the province of North Sumatra was one of the provinces with the highest prevalence of diabetes mellitus sufferers in Indonesia with a prevalence of 2.3% diagnosed by doctors based on symptoms. Data from Riskesdas (2013) increased from 1.1% in 2007 to 2.1% in 2013 from a total population of 250 million people (Hartono, 2018). Based on data from RISKESDAS in 2018 shows that the prevalence of diabetes mellitus in Indonesia has increased from 6.9% in 2013 to 8.5% in 2018. Riskesdas also mentions that the prevalence of diabetes in women (1.7%) is greater than in male (1.4%)(Saputri, 2020) There are risk factors for DM that are at risk but can be changed by humans, in this case they can be in the form of eating patterns, patterns of daily habits such as eating, resting patterns, activity patterns and stress management, while risk factors but cannot be changed such as age, gender. and heredity (Isnaini, 2020).

There are several diabetes control programs, including the first: eating arrangements. Meal management in people with diabetes mellitus which emphasizes regularity of eating schedule, type of food, and number of calories The recommended composition of food consists of carbohydrates that are not more than 45-65% of the total amount of energy intake needed, the recommended fat is 20-25% kcal of intake energy, protein 10-20% kcal of energy intake(Puspita et al., 2020), secondly: by means of sport. Exercise if done regularly 3-5 times a week with a time of ± 30 minutes. The recommended sport is aerobic physical exercise such as: brisk walking, leisurely cycling, jogging, and swimming in the hope of getting a normal Body Mass Index (BMI).(Puspita et al., 2020)

Body mass index is the most recommended measurement for evaluating obesity and overweight in children and adults. Body mass index values were obtained from measurements of body weight (BB) and height (TB) in meters.(Hanum et al., 2020). Body mass index is classified according to WHO, underweight <18.5 kg/m2, normal 18.5–24.9 kg/m2, overweight 25–29.9 kg/m2, and obesity > 30 kg/m2.(Gosal et al., 2020).

Obesity is one of the factors that affect the onset of type 2 diabetes mellitus. Excessive fat deposits in the body of a patient with diabetes mellitus can affect blood sugar levels and cause cells to become insensitive to insulin (insulin resistance). Insulin plays a role in increasing glucose uptake in many cells and in this way insulin also regulates carbohydrate metabolism so that if there is insulin resistance by cells, the sugar levels in the blood can also be disturbed. In measuring obesity, indicators of Body Mass Index (BMI) or Body Mass Index (BMI) are used, namely the ratio of body weight (in kilograms) to the square of height in meters which is important to describe a person's nutritional status.

The accuracy of BMI in measuring body proportions is supported by research results which found a strong correlation between BMI and the percentage of body fat as measured by the bioelectrical impedance method. In obese patients there is often an increase in total cholesterol, Low Density Lipoprotein and triglyceride levels and a decrease in High Density Lipoprotein levels. Obesity also increases glucose levels in blood plasma and increases the incidence of diabetes mellitus.(Time et al., 2020) The prevalence of a body mass index of 30.0 increased by 8 percentage points from 14.5% to 22.5% in the United States adult population aged 20 + 74 years. The average BMI level also increased from 25.3 to 26.5. The prevalence of overweight also increased sharply for children and adolescents in the United States during the same period.(Flegal & Troiano, 2000)

Data from the Basic Health Research (Riskesdas) in 2018, the incidence of body mass index by age (BMI/U) in adolescents aged 13-15 years in Indonesia is 6.8% (thin), 75.3% (normal), 11 ,2% (obese) and 4.8% (obese). The prevalence in men was 8.9% (thin), 72.3% (normal), 10.7% (fat) and 5.3% (obese) and 4.5% (thin) women, 78.6 % (normal), 11.7% (obese) and 4.3% (obese). Based on place of residence, namely urban areas as much as 6.8% (thin), 73.2% (normal), 12.3% (fat) and 5.9% (obese) and in rural areas 6.8% (thin), 77, 7% (normal), 10% (obese) and 3.6% (obese).(Daniati, 2020) Based on the above background, the researchers are interested in conducting a study with the title Overview of Body Mass Index in Patients with Diabetes Mellitus in IndonesiaIndependent Practice Midwife R. Malau Medanyear 2021

2. METHOD

The research design used is descriptive research method. This research was conducted at the Independent Practice of the midwife R. Malau, Medan in 2021. This research will be carried out in January-March 2021. The population in this study is 60 people with Diabetes Mellitus. The research was conducted using an instrument in the form of a questionnaire.

3. RESULTS AND DISCUSSION

In this chapter, we describe aboutCharacteristics of respondents in the Independent Practice of Midwife R. Malau Medan in 2021 include: age, gender, occupation, and description of body mass index in people with diabetes mellitus.

Table 1. Frequency Distribution of Respondents Based on Data on Age, Gender, and Occupation of Diabetes Mellitus Patients in the Independent Practice of the R. Malau Midwife MedanYear 2021 (n = 60)

Characteristics	Frequency (f)	Percentage (%)
Age		
36 – 45 years	6	10.0
46 – 55 years old	17	28.3
56 – 55 years old	24	40.0
>65 years old	13	21.7
Gender		
Man	19	31.7
Woman	41	68.3
Work		
Private employees	19	31.7
Housewife	15	25.0
Trader	2	3.3
Farmer	13	21.7
Self-employed	7	11.7
Teacher	4	6.7

Based on table 5.2 Frequency distribution of respondents, from 60 respondents, data on the age of respondents were obtained, namely minority age 36-45 years as many as 6 people (10.0%), age 46-55 years as many as 17 people (28.3%), majority age 56 -55 years as many as 24 people (40.0%), and age >65 years as many as 13 people (21.7%). Data on the sex of the respondents, the majority were 41 women (68.3%) and the male minority were 19 people (31.7%). And the job data of the respondents obtained the majority of private employees as many as 19 people (31.7%), housewives as many as 6 people (7.8%), private employees as many as 2 people (2.6%), housewives as many as 15 people (25.0%), as many as 2 traders (3.3%), farmers as many as 13 people (21.7%), entrepreneurs as many as 7 people (11.7%) and teachers as many as 4 people (6.7%) .

Height of Diabetes Mellitus Patients inIndependent Practice Midwife R. Malau Medan year 2021

Respondents in this study were patients with diabetes mellitus at the Independent Practice of the midwife R. Malau Medan as many as 60 people.

Table 2. Distribution of Frequency and Percentage of Height of Diabetes Mellitus Patients in the Independent Practice of R. Malau Midwife Medan in 2021

No.	Height	Frequency (f)	Percentage (%)
1.	140 – 150 cm	6	10.0
2.	151 – 160cm	22	36.7
3.	161 – 170 cm	30	50.0
4.	> 170 cm	2	3.3
	Total	**60**	**100**

Based on table 2. the distribution of the frequency and percentage of height of patients with diabetes mellitus inIndependent Practice Midwife R. Malau MedanIn 2021, the majority of the height 151 – 160 cm were 30 people (50.0%), and the minority >170 cm were 2 people (3.3%).

Weight Loss of Diabetes Mellitus Patients inIndependent Practice Midwife R. Malau Medan year 2021

Respondents in this study were patients with diabetes mellitus inIndependent Practice Midwife R. Malau Medanas many as 60 people.

Table 3. Distribution of Frequency and Percentage of Body Weight of Diabetes Mellitus Patients in the Independent Practice of the R. Malau Midwife Medan year 2021

No. Weight	Frequency (f)	Percentage (%)
1. 45 – 55 Kg	26	43.3
2. 56 – 65 Kg	29	48.3
3. > 65 Kg	5	8.3
Total	**60**	**100**

Based on table 5.4 the distribution of the frequency and weight percentage of patients with diabetes mellitus in the Independent Practice of Midwife R. Malau Medan in 2021, the majority of body weight 56-65 kg were 29 people (48.3%), and the minority >65 kg were 5 people (8 ,3%).

Body Mass Index of Diabetes Mellitus Patients inIndependent Practice Midwife R. Malau Medan year 2021

Respondents in this study were patients with diabetes mellitus at the Independent Practice of the midwife R. Malau Medan as many as 60 people.

Table 4. Distribution of Frequency and Percentage of Body Mass Index of Diabetes Mellitus Patients in the Independent Practice of the R. Malau Midwife Medan year 2021

No. Height	Frequency (f)	Percentage (%)
1. 17.0 – 18.5	26	43.3
2. 18.5 – 25.0	29	48.3
3. 25.0 – 27.0	5	8.3
4. > 27.0	1	1.7
Total	**60**	**100**

Based on table 4. distribution of the frequency and percentage of body mass index of patients with diabetes mellitus at the Independent Practice of Midwife R. Malau Medan in 2021, the majority of height 18.5 – 25.0 as many as 29 people (48.3%), and the minority > 27.0 as many as 1 person (1.7%).

Information on Diabetes Mellitus Patients inIndependent Practice Midwife R. Malau Medan **year 2021**

Respondents in this study were patients with diabetes mellitus at the Independent Practice of the midwife R. Malau Medan as many as 60 people.

Table 5. Distribution of Frequency and Percentage of Information Index of Diabetes Mellitus Patients in Independent Practice of the R. Malau Midwife Medan year 2021

No. Height	Frequency (f)	Percentage (%)
1. Less	5	8.3
2. Normal	27	45.0
3. Overweight	12	20.0
4. Obesity	16	26.7
Total	**60**	**100**

Based on table 5.4 the distribution of the frequency and percentage of information on diabetes mellitus patients at the Independent Practice of the R. Malau Midwife Medan in 2021, the majority of normal height were 27 people (45.0%), and the minority was less as many as 5 people (8.3%).

Discussion

Based on research that has been done in the field thatpicture of body mass index in people with diabetes mellitus inIndependent Practice Midwife R. Malau Medan year 2021The results show that height (TB) is a fundamental component as an indicator of nutritional status, by linking weight to height. So that measuring a person's height accurately is very important to determine the value of Body Mass Index (BMI).(Aslan et al., 2013) In the results of research conducted by researchers at the Independent Practice of the midwife R. Malau Medan in 2021 regarding the height of diabetes mellitus patients at the Independent Practice of the midwife R. Malau Medan In 2021, the majority of the height is 151 – 160 cm as many as 30 people (50.0%), and the minority >170 cm as many as 2 people (3.3%)

This research is also in line with Nurlika's research which states that the most respondents' heights in the study were between 140 cm to 159 cm. In group I, the highest respondent's height was between 150-159 cm (7 people) and the lowest respondent's height was between 170-179 cm (1 person). In group II, the highest respondent's height was between 150 - 159 cm (11 people) and the lowest respondent's height was between 140-149 cm (4 people). Ghullaisyah's response was that glucose in active muscles in this case would increase, but it was not accompanied by an increase in insulin. This is due to the increased sensitivity of insulin receptors in the muscles and an increase in insulin receptors(Ghullaisyah, 2020)

The researcher assumes that respondents at the Darussalam health center have more average height than normal so that it can cause diabetes mellitus. The results of research conducted by researchers at the Independent Practice of the midwife R. Malau Medan in 2021 regarding the weight of diabetes mellitus patients at the Independent Practice of the midwife R. Malau Medan 2021 showed that the majority of body weight 56-65 kg were 29 people (48.3%), and the minority >65 kg were 5 people (8.3%), the same as what was obtained by Widya Rizqy (2021) who said that the majority normal weight, as many as 50 (65.88%) are at risk of 7.14 times suffering from Diabetes Mellitus because there are high free fat deposits and can result in increased cell up-take of free fatty acids and stimulate fat oxidation and inhibit the use of glucose in the body. muscle.(Pratiwi et al., 2021), the majority have normal weight as many as 10 respondents (45.5%) with an average of 21.4 kg/m2, the minority with underweight body weight is 1 respondent (4.5%) with an average of 17.3 kg/m2.(Utomo et al., 2015). Rianti (2017) in her research states that the ideal body weight of 72 respondents (72%), is also a trigger for Diabetes Mellitus. This is different from(Pratiwi et al., 2021)said that most people with diabetes mellitus with obesity category 59.2%. Based on the results, the researchers found that some of the factors that trigger the occurrence of diabetes mellitus are poor diet, lack of activity, so that the risk of diabetes mellitus is due to excessive fat accumulation resulting in the lack of body calorie burning.

In the results of research conducted by researchers at the Independent Practice of midwives R. Malau Medan in 2021 regarding the Body Mass Index of Diabetes Mellitus Patients, which was carried out by observation, it showed that the majority of height 18.5 - 25.0 as many as 29 people (48.3%), and minority> 27.0 as many as 1 person (1.7%). Causes of diabetes mellitus tend to be caused by obesity with nutritional status of obesity level I as many as 10 people (33.3%) which occurs due to insulin resistance which causes glucose levels in the blood due to accumulation of body fat and can interfere with insulin work.(Eternal & Author, 2020). Desy Fortuna (2019) also said that in the BMI measurement, it was found that out of 12 subjects, 1 person (8.3%) had a BMI between >23 - 24.9 kg/m² (overweight) and 8 people (66.7%) had a BMI between 25.0-29.9 kg. /m²(obesity I) and 3 people (25%) had a BMI between >30 kg/m2(obesity II). Thus, the majority of the samples were obese as many as 8 people (66.7%).(R et al., 2019).

The main risk factor for triggering diabetes mellitus is obesity because it can make cells insensitive to insulin (insulin resistance). Insulin in the body plays a role in increasing glucose uptake in many cells and in this way insulin can also regulate carbohydrate metabolism, so that if insulin resistance occurs in the cells, the sugar levels in the blood can also be disturbed.(Budiman & Fitriani, 2018). To regulate a stable BMI, it is necessary to regulate nutritional values and routine activities because consistently regular and measurable activities will maintain and lose weight associated with increasing well-being and reducing the risk of degenerative diseases.

Diabetes Mellitus (DM) is a chronic disease that occurs because the pancreas cannot produce enough insulin or because of insulin resistance (WHO, 2016). Diabetics usually experience symptoms of frequent urination at night, often feel thirsty, often feel hungry, and blurred vision.(Fitri et al., 2018).The factors that influence the occurrence of DM are a person's characteristics (age, gender and genetics), nutritional knowledge, stress, lifestyle, physical activity, nutritional status both obesity and central obesity. Someone who has central obesity is always associated with insulin resistance. The incidence of central obesity in diabetics can also increase the risk of complications such as cardiovascular disease, stroke and diabetes.(Sa'pang et al., 2018)

The data above is supported by research by Wirato (2013) that moderate and regular exercise behavior can reduce blood sugar levels, and vice versa, poor and irregular exercise behavior causes uncontrolled blood sugar levels. Efforts to treat people with diabetes mellitus as well as to prevent complications, one of which is to do regular sports activities for people with diabetes. Exercise is expected to improve blood sugar levels. Physical activity that is also often recommended is diabetes exercise.

The results of this study are in accordance with the 2018 Basic Health Research (Riskesdas) which states that there are more women with type 2 diabetes mellitus in Indonesia, which is 18%, while the male sex is 1.2%. The age distribution of the subjects ranged from 36 - 60 years, according to the inclusion criteria, namely the age of 35 - 60 years. Body mass index in research subjects in patients with diabetes mellitus without obesity ranged from 18 to 24, 90 kg/m The researcher assumes that respondents at the Darussalam health center are at risk of developing diabetes mellitus in the female sex and experiencing weight gain or commonly referred to as obesity due to insulin resistance. Where women who are pregnant become diabetic because their insulin resistance increases.

4. CONCLUSION

Based on the results of research with a sample of 60 respondents regarding the Description of Body Mass Index in Patients with Diabetes Mellitus in the Independent Practice of the Midwife R. Malau Medan in 2021, it can be concluded Patients with Diabetes Mellittus inIndependent Practice Midwife R. Malau Medan the majority with a weight of 56-65 kg as many as 29 people (48.3%), and the minority >65 kg as many as 5 people (8.3%) Patients with Diabetes Mellitus inIndependent Practice Midwife R. Malau Medan the majority with a height of 151 - 160 cm as many as 30 people (50.0%), and the minority >170 cm as many as 2 people (3.3%). Patients with Diabetes Mellitus in the Independent Practice of the midwife R. Malau Medan are mostly agedthe majority aged 56-55 years as many as 24 people (40.0%), and age >65 years as many as 13 people (21.7%), and the minority age of 36-45 years as many as 6 people (10.0%), age 46-55 years as many as 17 people (28.3%).

REFERENCE

[1]. Budiman, H., & Fitriani. (2018). *Artikel Penelitian Pengaruh Tekanan Telapak Kaki Bagian Depan terhadap Hubungan Massa Tubuh dengan Diabetes Tipe 2 di RSUD Pemakaian Indeks Hak Tinggi dan Indeks Massa Tubuh Melitus Mahasiswi FKUI * Dosen bagian Anatomi FK UKRIDA Staf Pengajar Bagian Biol*. *24*(68), 14–19.

[2]. Daniati, L. (2020). Hubungan Aktivitas Fisik Dengan Indeks Massa Tubuh (IMT) Pada Siswa SMP Negeri 1 Padang. *Jurnal Ilmu Kesehatan Indonesia*, *1*(2), 193–198. https://doi.org/10.25077/jikesi.v1i2.100

[3]. Fitri, A., Anggraeni, N., & Juliningrum, P. P. (2018). *Pengaruh Diabetes Self-Management Education and Support (DSME / S) Terhadap Kualitas Hidup pada Pasien Diabetes Melitus Tipe 2 (The Effect of Diabetes Self Management Education and Support (DSME / S) on Quality of Life in Patients with Type 2 Diabete*. *6*(3), 453–460.

[4]. Furiyani, F., Syafril, S., & Nst, B. (2019). Hubungan kadar serum gamma-glutamyl transferase dengan profil lipid pada Diabetes Melitus-Tipe 2 (DM-2) terkontrol dan tidak terkontrol di Rumah Sakit Umum Pusat Haji, Adam Malik Medan, Indonesia. *Intisari Sains Medis*, *10*(3), 487–491. https://doi.org/10.15562/ism.v10i3.426

[5]. Ghullaisyah, B. (2020). *Naskah Publikasi Asa*. 17.

[6]. Gosal, D., Firmansyah, Y., & Su, E. (2020). Artikel Penelitian The Effect of Body Mass Index on Blood Pressure Classification at Productive Age in Medan City. *Jurnal Kedokteran Meditek*, *26*(3), 103–110.

[7]. Isnaini, N., & Ratnasari, R. (2018). Faktor risiko mempengaruhi kejadian Diabetes mellitus tipe dua. *Jurnal Kebidanan Dan Keperawatan Aisyiyah*, *14*(1), 59–68. https://doi.org/10.31101/jkk.550

[8]. Kurniawaty, E., Yanita, B., Biokimia, B., Kedokteran, F., & Lampung, U. (2016). *Faktor-Faktor*

yang Berhubungan dengan Kejadian Diabetes Melitus Tipe II Risk Factors Related Type 2 Diabetes Mellitus Evidance. *5*(April), 27–31.

[9]. Mellitus, D., Dependent, I., Melitus, D., Non, K., Dependent, I., Melitus, D., Malik, A., Square, U. C., Kunci, K., & Mellitus, D. (2019). *RSUP H ADAM MALIK MEDAN TAHUN 2019 MONICA IRIANI SIMANULLANG Elny Lorensi Silalahi , S . Kep , Ns , M . Kes ABSTRAK*.

[10]. Nursalam. (2014). *Metodologi Penelitian Ilmu Keperawatan*.

[11]. Puspita, R., sholikah agusti, T., pakha nasirochim, D., & putra erdana, S. (2020). *Buku Saku Diabetes Melitus*. *November*, 70.

[12]. Sa'pang, M., Puili, D., & Sitoayu, L. (2018). Hubungan Indeks Massa Tubuh (Imt) Dan Rasio Lingkar Pinggang Pinggul (Rlpp) Dengan Kadar Glukosa Darah Puasa Pada Penderita Diabetes Melitus Tipe Ii Di Puskesmas Kebayoran Lama, Jakarta Selatan. *Nutrire Diaita*, *10*(1), 45–50.

[13]. Saputri, R. D. (2020). Komplikasi Sistemik Pada Pasien Diabetes Melitus Tipe 2. *Jurnal Ilmiah Kesehatan Sandi Husada*, *11*(1), 230–236. https://doi.org/10.35816/jiskh.v11i1.254

[14]. Seminar, P., Keperawatan, N., & Muhammadiyah, U. (2020). *PENGARUH SELF INSTRUCTIONAL*