Indonesian Journal of Global Health Research
Volume 6 Number 4, August 2024
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

CHARACTERISTICS OF PATIENTS WITH TYPE 2 DIABETES MELLITUS

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ABSTRACT

Diabetes mellitus patients are included in a vulnerable group with a higher risk of developing other diseases, thus requiring dynamic and continuous treatment Treatment options for diabetes mellitus include insulin therapy, diabetes medications, trying alternative treatments, undergoing surgery, and improving lifestyle (healthy eating habits and exercise) by consuming nutritious or healthy foods and engaging in physical activity. Self-management of diabetes refers to individual actions taken to control the condition, including treatment and prevention of complications. Some aspects of diabetes self-management include dietary regulation, physical activity/exercise, blood sugar monitoring, medication adherence, as well as self-care/foot care. Objective to determine the Characteristics of Diabetes Mellitus Patients in the Simpang Periuk Community Health Center area. The type of this research is quantitative with a descriptive design approach. The research design utilized in this study is a cross-sectional research design, which is a method involving measurements or observations at the same time and the sample size in this study consists of 36 respondents with Type 2 Diabetes Mellitus. Data was collected through interviews using a questionnaire to gather research variable data, including gender, age, education level, employment status, duration of diabetes, BMI/body mass index, and self-management. The data was then analyzed using univariate analysis. The processed data was subsequently presented in tabular form, accompanied by explanations. The research results show that more than half of the respondents are male (72.2%), and female (27.8%). The most common age group among respondents (41.7%) is 46-55 years old. Education levels also vary, with the majority (52.6%) having completed high school. In terms of occupation, (36.1%) are self-employed. The duration of having type 2 diabetes mellitus for most respondents (77.8%) is less than three years. The majority (69.4%) have a normal body mass index. More than (72.2%) of the respondents have poor self-management.

Keywords: characteristics; self-management; type 2 diabetes mellitus

First Received	Revised	Accepted
01 June 2024	10 June 2024	18 June 2024
Final Proof Received		**Published**
23 June 2024		01 August 2024

How to cite (in APA style)
Aprilio, R., Sabri, R., & Mahathir, M. (2024). Characteristics of Patients with Type 2 Diabetes Mellitus. Indonesian Journal of Global Health Research, 6(4), 2463-2470. https://doi.org/10.37287/ijghr.v6i4.3676.

INTRODUCTION

Diabetes mellitus is a chronic progressive metabolic disease characterized by hyperglycemia due to insufficient insulin hormone, primarily in type 2 diabetes mellitus (T2DM). According to data from the International Diabetes Federation (IDF) 2021, the incidence rate of T2DM reaches 90% of the total number of diabetes mellitus patients worldwide. Indonesia continues to show an increasing trend. Indonesia ranks sixth in the world after China, India, the United States, Brazil, and Mexico, with around 10.3 million individuals aged 20-79 suffering from diabetes (PERKENI, 2021).

The Basic Health Research (Kemenkes, 2018),) indicates a significant increase in the prevalence of diabetes, from 6.9% in 2013 to 8.5% in 2018, estimating the number of diabetes patients in Indonesia to be over 16 million. The number of diabetes mellitus patients in South Sumatra Province in 2021 was 279,345 people, an increase compared to 172,044 people in 2020. In the city of Lubuk Linggau alone, there were 4,561 cases. According to data from the

Health Office of Lubuk Linggau City in 2022, the community health center (puskesmas) with the highest number of visits by diabetes mellitus patients in 2022 was the Simpang Periuk Community Health Center, with 347 cases.

Diabetes mellitus occurs due to damage to the beta cells of the pancreas. Insufficient insulin reduces the efficiency of glucose utilization in the periphery and increases glucose production, affecting the entire body. Blood vessels in various tissues in the body begin to experience functional disturbances and structural changes, resulting in insufficient blood supply to tissues due to insulin retention, metabolic syndrome, and other factors such as obesity. This occurs as an attempt by the beta cells of the pancreas to compensate for the decreased tissue sensitivity to the metabolic effects of insulin, known as insulin resistance (Hall, 2019). Diabetes mellitus patients are included in a vulnerable group with a higher risk of developing other diseases, thus requiring dynamic and continuous treatment (Marzel, 2021). Treatment options for diabetes mellitus include insulin therapy, diabetes medications, trying alternative treatments, undergoing surgery, and improving lifestyle (healthy eating habits and exercise) by consuming nutritious or healthy foods and engaging in physical activity (Lestari et al., 2021).

Based on preliminary data from the Puskesmas Simpang Periuk over the last three months, the number of type 2 diabetes mellitus patients from April to June was 36 individuals. Interviews with the nurse in charge of the diabetes program revealed that patients typically come for check-ups around three times a month, but this frequency is inconsistent because most patients only return to the health center when problems arise. Interviews with four diabetes patients who underwent check-ups at the health center indicated that three out of four only take medication when they experience symptoms, while one out of four expressed boredom with taking the same medication for several years herefore, this research aims to identify the profile of diabetes mellitus patients based on their characteristics in the working area of the Simpang Periuk Health Center in Lubuklinggau City.

METHOD

The type of this research is quantitative with a descriptive design approach. The research design utilized in this study is a cross-sectional research design, which is a method involving measurements or observations at the same time. The location of this research was conducted in the working area of Puskesmas Simpang Periuk, Lubuklinggau city. According to Sugiyono (2020), population is the generalization area consisting of objects or subjects with specific qualities and characteristics applied by researchers for study and subsequent conclusions. Based on the aforementioned opinion, the population in this study consists of 36 cases of Type 2 Diabetes Mellitus. Sampel is a subset of the population's total number and characteristics, and the technique of selecting samples is called sampling. According to Sugiyono (2020), the sampling technique used in this research is total sampling. Total sampling is a sampling technique where the sample size is equal to the population size. The reason for choosing total sampling is because the population size is less than 100. Therefore, the sample size in this study consists of 36 respondents with Type 2 Diabetes Mellitus. Data was collected through interviews using a questionnaire to gather research variable data, including gender, age, education level, employment status, duration of diabetes, BMI/body mass index, and self-management. The data was then analyzed using univariate analysis. The processed data was subsequently presented in tabular form, accompanied by explanations.

RESULTS

The research results show that more than half of the respondents are male (72.2%), and female (27.8%). The most common age group among respondents (41.7%) is 46-55 years old.

Education levels also vary, with the majority (52.6%) having completed high school. In terms of occupation, (36.1%) are self-employed. The duration of having type 2 diabetes mellitus for most respondents (77.8%) is less than three years. The majority (69.4%) have a normal body mass index. More than (72.2%) of the respondents have poor self-management.

Table 1.
Respondent characteristics (n= 36)

Respondent Characteristics	f	%
Gender		
Man	26	72,2
Woman	10	27,8
Age		
36-46 Years Old	7	19,4
46-55 Years Old	15	41,7
56-65 Years Old	9	25,0
> 65 Years Old	5	13,9
Education		
Not attending School	0	0
Elemntary School	0	0
Junior High School	1	2,8
Senior High School	19	52,6
College	16	44,4
Occupation		
Not working/retired	12	33,3
Farmer	0	0
Trader	0	0
Government employees	11	30,6
Self-employed	13	36,1
Duration of Diabetes		
< 3 Years	28	77,8
≥ 3 Years	8	22,2
Body Mass Index (BMI):		
Severe degree of underweight	2	5,6
Normal	25	69,4
Mild degree of overweight	5	13,9
Severe degree of overweight	4	11,1
Self-Management		
Good	10	27,8
Bad	26	72,2
Blood glucose management		
Good	23	63,9
Bad	13	36.1
Diet control		
Good	16	44,4
Bad	20	55,6
Physical activity		
Good	25	69,4
Bad	11	30,6
Health care		
Good	22	61.1
Bad	14	

DISCUSSION

In this study, regarding age characteristics, it was found that (41.7%) of respondents were aged 46-55 years, (25%) were aged 56-65 years, (19.4%) were aged 36-45 years, and (13.9%) were over 65 years old. The risk of developing diabetes increases with age, especially over the age of 40. This happens because individuals over 40 years old tend to have less physical activity, reduced muscle mass, and increased body weight (Tandra, 2017). The study by (Asiimwe et al., 2020) found that the age group 61-65 years has a high risk of developing type 2 diabetes mellitus, consistent with the findings of (Cho et al., 2018) where adults aged 45-64 years are the age group most frequently diagnosed with type 2 diabetes mellitus. Research by (Tomic et al., 2022) showed that diabetes management is directly influenced by gender and age, with women and adults over 60 being affected due to coexisting medical conditions involving the heart and kidneys, leading to limitations and shortages in medical prescriptions.

Regarding gender characteristics, it was found that (72.2%) of respondents were male and (27.8%) were female. According to Hasanuddin et al. (2020),, women are 3-7 times more at risk compared to men who are 2-3 times at risk of developing diabetes mellitus due to the fat content in adult men, which averages between 15-20% of total body weight, compared to about 20-25% in women. This study's results are in line with research conducted by (Cho et al., 2018), which showed that the prevalence of diabetes in women (18-99 years) in 2017 was estimated at 8.4%, lower than in men (8.9%). About 12.3 million more men (231.7 million) than women (219.3 million) live with diabetes, so the prevalence of diabetes in men and women will increase to 9.9% by 2045. This is due to health behaviors between men and women, where women generally pay more attention to their health and seek medical treatment more often than men. Other factors contributing to the increased risk of diabetes mellitus in men include habits like smoking and alcohol consumption (Mildawati et al., 2019).

In this study, it was found that the majority of respondents' education levels were at the high school level (52.6%), followed by higher education (44.4%), and junior high school (2.8%). According to research by (Pahlawati & Nugroho, 2019), individuals with lower education levels have a 4.895 times higher risk of developing diabetes mellitus compared to those without diabetes. Education is believed to be an important factor for understanding management, compliance with blood sugar control, addressing emerging symptoms with appropriate handling, and preventing complications. Generally, education is related to knowledge. Patients with higher education have better knowledge about diabetes and its effects on health, leading them to respond positively and make efforts accordingly.

In the study by Fandinata et al. (2020), it was found that a person's knowledge can affect medication adherence, as the higher the education level, the easier it is to receive information. Based on this, it contrasts with the research by Silalahi (2019), which states that individuals with higher education levels are expected to have high knowledge as well. However, this is not absolute. Not all individuals with lower education levels have low knowledge. Knowledge is not only obtained from formal education but also from non-formal education. Much of human knowledge is acquired from experience, which can come from oneself or others.

Regarding employment characteristics, (33.3%) of respondents were unemployed or retired, (36.1%) were self-employed, and (30.6%) were government employees. According to Suiraoka (2012) in Arania et al., (2021), occupation affects the risk of diabetes mellitus; jobs with low physical activity lead to less energy burning by the body, resulting in excess energy being stored as fat, which is a risk factor for diabetes mellitus. American Diabetes Associaton, (2018) states that working individuals have significant benefits because blood glucose levels

can be controlled through physical activity, preventing complications. Occupation affects the risk of diabetes mellitus significantly; jobs with light physical activity result in less energy burning, causing excess energy to be stored as fat, a risk factor for diabetes mellitus (Djendra et al., 2019). This is consistent with research by (Arania et al., 2021), which found that most samples were housewives (59.5%). There is a significant relationship between non-working status and type 2 diabetes mellitus. This contradicts the study by Manurung & Christopher, (2019) where most respondents were employed (70.7%) and had diabetes mellitus. This aligns with this study, where 66.7% of diabetes mellitus patients were employed compared to 33.3% who were not.

Regarding the duration of having diabetes, (77.8%) of respondents had diabetes for less than 3 years, and (22.2%) for more than 3 years. This can be associated with the disease progression in diabetes mellitus patients, where initial symptoms may be mild and often go unnoticed. According to Yulia Dewi Putri, 80% of blood sugar levels are uncontrolled, attributed to uncontrolled diets and non-compliance with medication, resulting in persistent hyperglycemia activating glucose metabolism pathways (Devi Putri & Eltrikanawati, 2022). Long-term diabetes causes damage to blood vessels, nerves, and other internal structures, leading to peripheral blood supply obstruction (to the feet and hands), resulting in neuropathy characterized by loss of foot sensitivity. The most common diabetes complication is neuropathy, affecting nerves in the extremities, especially the feet (Rahayu et al., 2023). Sensory disturbances occur symmetrically, causing gradual sensory impairment and numbness, contributing to ulceration due to external trauma and/or uneven internal bone pressure distribution (diabetic foot) (Beata et al., 2018).

Regarding body mass index (BMI), (69.4%) of respondents had a normal BMI, (13.9%) were slightly overweight, (11.1%) were significantly overweight, and (5.6%) were underweight. Research by Bahendeka et al., (2016) reported that lifestyle and eating habits leading to overweight and obesity are major causes of type 2 diabetes. Obesity is a risk factor for diabetes and a continuing risk factor for complications in diabetic individuals. Excessive weight gain is associated with cardiovascular risk factors, such as dyslipidemia, glucose intolerance, type 2 diabetes mellitus, hypertension, and kidney failure (Martin-Rodriguez et al., 2015). The increasing prevalence of obesity worldwide is linked to rising morbidity and mortality rates (Tahmasebi et al., 2015). Neural mechanisms are involved in the pathogenesis of obesity and insulin resistance, particularly the imbalance between sympathetic and vagal activities, which plays a key role in the complex bidirectional relationship (Russo et al., 2021). Among many mechanisms connecting obesity and insulin resistance with autonomic nervous system imbalance.

Another factor affecting blood glucose levels in type 2 diabetes patients in this study is self-management. The results showed that (72.2%) of respondents had poor self-management, while (27.8%) had good self-management. According to Hidayah (2019), diabetes self-management involves individual actions to control diabetes, including treatment and complication prevention. Aspects of diabetes self-management include diet regulation, physical activity/exercise, blood glucose monitoring, medication adherence, and self-care/foot care. In this study, self-management was classified into four domains: blood glucose management, diet control, physical activity, and healthcare. The results showed that (63.9%) of respondents had good blood glucose management, (44.4%) had good diet control, (69.4%) had good physical activity, and (61.1%) had good healthcare. It was found that diet control had the lowest percentage in this study, indicating that many respondents had poor diet control (55.6%).

Self-management is a process where individuals cope with diabetes mellitus in their daily lives, encompassing a range of behaviors crucial for diabetes patients to manage their condition. These behaviors include taking medication, regulating diet, engaging in physical activity, self-monitoring blood glucose, and maintaining good foot care (Susilawati et al., 2023).According to Kakade et al. (2016), self-management is an effective long-term factor for diabetes patients, improving clinical status (blood glucose levels, blood pressure, and cholesterol), enhancing health status, reducing the risk of complications, and improving quality of life.

Based on the research conducted by Ramadhani et al. (2019), self-management affects blood glucose levels, with patients exhibiting good self-management being 3.349 times more likely to have good glucose control compared to patients with poor self-management. Poor self-management tends to increase blood glucose levels, potentially leading to serious complications (Susilawati et al., 2023).Implementing self-management in the lives of patients is essential because patients know themselves and their situations best. If patients actively participate in the program, designing and executing it with healthcare providers, their nutritional status can be achieved (Andriani & Maria, 2022).

CONCLUSION

The majority of respondents are male (72.2%), while females make up 27.8%. The largest age group of respondents is 46-55 years old, comprising 41.7% of the sample. The education levels vary, with the highest proportion (52.6%) having completed high school. Regarding employment, 36.1% of respondents are self-employed. 77.8% of respondents have had type 2 diabetes mellitus for less than three years. 69.4% of respondents have a normal BMI. Over 72.2% of respondents have poor self-management practices.

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