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# Characteristics of Patients with Diabetes Mellitus Regarding Efforts to Prevent Complications at the Internal Medicine Polyclinic

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## Abstract

**Background:** Diabetes mellitus is a chronic disease that can affect a patient's quality of life if not properly managed. Patients require long-term care, making the prevention of complications essential, given the high potential for diabetes mellitus to cause complications in any organ of the body.
**Objective:** This study aimed to describe the characteristics of patients with diabetes mellitus in the context of efforts to prevent diabetes complications at an internal medicine outpatient clinic.
**Methods:** This study employed a descriptive survey using a cross-sectional design. A sample of 84 respondents was selected using a non-random, purposive sampling technique. Data were collected using a questionnaire designed to assess the characteristics of patients with diabetes mellitus. Univariate analysis was performed following the data collection procedure. Respondents received a study explanation, and ethical research principles were upheld throughout the process.
**Results:** Univariate analysis revealed the following profile of the diabetes mellitus patients: the majority were male (n=48; 57.1%) and aged between 45 and 64 years (n=47; 56.0%); the most common education level was junior high school (n=26; 31.0%); 19 respondents (22.6%) were civil servants; 31 respondents (36.9%) weighed between 61 and 80 kg; the majority (n=55; 65.5%) had a family history of diabetes mellitus; and the most common duration of the disease was 6–10 years (n=30; 35.7%).
**Conclusion:** This study was limited to describing the characteristics of patients with diabetes mellitus regarding efforts to prevent complications; future research should investigate the relationship between these characteristics and the prevention of diabetes complications.

**Keywords**: Characteristics, Complications, Diabetes Mellitus, Patients, Prevention,

## INTRODUCTION

Diabetes mellitus (DM) is a chronic disease that affects a patient's health. It negatively impacts patients' physical, psychological, and social well-being, leading to a diminished quality of life. Unstable glucose control is linked to quality of life and exacerbates the patient's condition (1–3).

DM is a serious chronic disease requiring long-term treatment (2). Poorly controlled DM leads to complications such as cardiovascular disease, neuropathy, nephropathy, and retinopathy (4). Healthcare professionals play a crucial role in helping patients effectively manage the disease and minimise the risk of complications (2,5,6).

The global prevalence of DM rose between 2011 and 2021, with the incidence rate increasing from 6.5% to 9.8%. In 2019, approximately 1.5 million deaths annually were directly attributed to DM. By 2022, an estimated 537 million people worldwide were living with the disease (3).

DM is increasing rapidly worldwide; uncontrolled hyperglycemia leads to multi-organ complications resulting from vascular endothelial damage (2,6). Disease severity can be influenced by delayed diagnosis and treatment, as well as the presence of comorbidities. DM carries significant public health implications across all levels of healthcare services (7).

The rising prevalence of DM poses a global threat to public health. This increase can be driven by lifestyle factors, obesity, and increased consumption of red meat and processed foods (8). Efforts to improve DM management are essential to prevent future complications (9). Diligent screening and appropriate treatment are critical for the early prevention of DM-related complications (10,11).

Diabetes mellitus (DM) treatment aims to lower and stabilise blood glucose levels. Effective long-term blood glucose control can help prevent both microvascular and macrovascular DM complications. Providing the most appropriate treatment at the optimal time for each individual can enhance the prevention of DM complications (2,6,11).

Given the risks of overtreatment and potential hypoglycemia in the elderly, treatment must be carefully monitored and tailored to patient needs to avoid complications. Physiological decline places elderly patients at high risk for DM complications (2,3,12). The primary goals of DM treatment are to prevent complications and improve the patient's quality of life. Patients must understand the impact of various DM complications; therefore, patient characteristics play a crucial role in prevention efforts (13,14).

Patient characteristics determine the success of complication prevention (14). Rising rates of overweight and obesity make preventing DM complications more challenging. Data regarding age and gender indicate that adolescent females (aged 12–19) are affected by overweight and obesity, placing them at high risk for DM complications (15). Based on this background, the researcher is interested in conducting a study to describe patient characteristics in the context of preventing diabetes mellitus complications at the Internal Medicine Clinic of Raden Mattaher Regional General Hospital (RGH) in Jambi.

## METHODS

This study employs a research methodology; an explanation of the methods used during the activities is provided below:

### Study Design

This study employs a descriptive survey method aimed at characterising the research problem. It seeks to describe the characteristics of patients with DM regarding efforts to prevent DM complications at the Internal Medicine Outpatient Clinic of Raden Mattaher RGH in Jambi. A cross-sectional approach is used, involving observations made at a single point in time (16,17).

### Participants

This study was conducted at the internal medicine outpatient clinic of Raden Mattaher RGH in Jambi, with a population consisting of all patients with DM receiving outpatient care at the facility. A sample size was determined to represent this population, resulting in a total of 84 DM patient respondents. A non-random sampling technique-specifically purposive sampling-was employed based on the researcher's judgment. The inclusion criteria for the study were DM patients who were willing to participate as respondents, were literate (able to read and write proficiently), and had not yet developed complications resulting from DM. The exclusion criterion was a medical diagnosis other than DM (16,18).

**Instrument**

A questionnaire served as the research instrument, specifically designed to gather data on the characteristics of respondents with DM. Seven respondent characteristics were measured: gender, age, education level, occupation, body weight, DM history, and duration of the condition. In addition to the questionnaire on respondent characteristics, an informed consent form was used to provide information and obtain the respondents' agreement to participate in the study. Once the respondents had completed the informed consent form and the questionnaire, the data were processed and subsequently analysed (17).

**Data Collection procedure**

Data processing is a necessary step to be performed before the data obtained during the research is analysed. The process begins with editing to check for data completeness, followed by data coding; at this stage, patient data is assigned identification numbers for entry into SPSS. Subsequently, the coded data is entered into SPSS for processing. Once entered, the data undergoes a verification process-known as data cleaning-to identify coding errors or data entry mistakes (17).

**Data Analysis**

The analysis employed in this study is univariate analysis, used to examine the characteristics of patients with DM regarding efforts to prevent DM complications. Seven respondent characteristics were analysed: gender, age, education level, occupation, body weight, DM history, and duration of the condition. These characteristics are discussed individually below (16–18).

**Ethical Considerations**

Throughout the research process, the researchers consistently adhered to ethical principles that prioritise a humane approach toward the respondents. While the study posed no general risk of harm to patients, the researchers strictly observed established research ethics. Specifically, the study applied the following principles: respect for human dignity, respect for privacy and confidentiality, respect for justice and inclusiveness, and the balancing of harms and benefits (17).

## RESULTS

This study presents univariate results describing the characteristics of patients with DM who were seeking treatment at the Internal Medicine Outpatient Clinic of Raden Mattaher RGH in Jambi and were involved in efforts to prevent DM complications. The findings are presented below. Data regarding the characteristics of the 84 respondents participating in this study are shown in Table 1.

The univariate analysis of respondent characteristics revealed the following profile of individuals with diabetes mellitus (DM): the majority (n=30; 35.7%) had lived with the condition for 6–10 years; most (n=55; 65.5%) had a family history of DM; and the largest group (n=31; 36.9%) weighed between 61 and 80 kg. Regarding employment, 19 respondents (22.6%) were civil servants; the most common education level was junior high school (n=26; 31.0%); and the majority were aged 45–64 years (n=47; 56.0%) and male (n=48; 57.1%).

**Table 1. Demographic Characteristics of Respondents (n = 84)**

| Characteristics | Frequency | Percentage |
|---|---|---|
| Gender | | |
| Male | 48 | 57.1 % |
| Female | 36 | 42.9 % |
| Age | | |
| 20-44 years old | 23 | 27.4 % |
| 45-64 years old | 47 | 56.0 % |
| > 65 years old | 14 | 16.7 % |
| Education Level | | |
| Elementary School | 15 | 17.9 % |
| Junior High School | 26 | 31.0 % |
| Senior High School | 24 | 28.6 % |
| Higher Education Institution | 19 | 22.6 % |
| Occupation | | |
| State Civil Apparatus | 19 | 22.6 % |
| Retired | 16 | 19.0 % |
| Honorary | 6 | 7.1 % |
| Private Sector Job | 14 | 16.7 % |
| Self-employed | 12 | 14.3 % |
| Housewife | 9 | 10.7 % |
| Honorary | 8 | 9.5 % |
| Body Weight | | |
| 40-60 Kg | 16 | 19.0 % |
| 61-80 Kg | 31 | 36.9 % |
| 81-100 Kg | 24 | 28.6 % |
| 101-120 Kg | 13 | 15.5 % |
| Medical History DM | | |
| Have | 55 | 65.5 % |
| Do Not Have | 29 | 34.5 % |
| Long-term Suffering DM | | |
| 0-1 Year | 15 | 17.9 % |
| 2-5 Year | 18 | 21.4 % |
| 6-10 Year | 30 | 35.7 % |
| > 10 Year | 21 | 25.0 % |

## DISCUSSION

### Gender

The study results indicate that the majority of participants were male (n=48; 57.1%). Gender influences the signs and symptoms of the disease, diagnosis, disease progression, and the potential for diabetes mellitus (DM) complications. Men tend to be diagnosed with DM at a younger age and with a lower body mass index compared to women (19). Our research findings suggest that gender can influence cardiovascular risk determinants in individuals with DM (20).

Diabetes mellitus complications occur more frequently in women (10). DM has a greater impact on cardiovascular disease risk in women than in men. The general female population typically bears a lower burden of cardiovascular

disease, largely due to the protective effect of estrogen before menopause. However, this estrogen-mediated cardiovascular protection is absent in women with type 2 DM, leading to an increased cardiovascular risk at a younger age. Women with type 2 DM face a three to six-fold higher risk of cardiovascular disease compared to women without DM, whereas men face a two- to four-fold increased risk (21,22).

Women are at higher risk of developing DM complications compared to men. Women without DM have a lower risk of cardiovascular disease due to the protective effect of estrogen before menopause—protection that is absent in women with DM. Women with DM require special attention to prevent DM-related complications.

**Age**

This study indicates that the majority of respondents (n=47; 56.0%) were aged 45–64 years. Other research suggests a link between age and both the prevention of DM complications and DM treatment (23). Age influences the impact of exercise intensity on glycemic control and cardiovascular disease risk factors, as well as the role of physical training in enhancing muscle strength, aerobic capacity, and functional capacity in DM patients to prevent complications. A combination of resistance and endurance training is the most effective exercise intervention for comprehensively improving physical fitness in elderly patients (24).

Beyond age, there are other critical factors for DM patients to consider. While this study found 98% awareness regarding DM, a comprehensive understanding was lacking. There are diverse perceptions of DM and significant gaps in complication prevention practices that could be addressed through targeted educational programs. Such programs should focus on fostering the understanding that DM complications can be prevented through proper management and routine monitoring. Education regarding healthy lifestyle choices, comprehensive DM care awareness, appropriate medication use, and physical activity is crucial for preventing DM complications (25).

Elderly DM patients experiencing physical frailty require multicomponent exercise programs that include strength, power, and balance training. When providing care to elderly patients, nurses must take the patient's physical strength into account. It is concluded that younger DM patients are generally more capable of engaging in exercise and more intensive physical training than elderly DM patients in the effort to prevent DM complications.

**Education Level**

The largest group of respondents (26 to 31.0%) had a junior high school education; however, this figure is not vastly different from the number of respondents with a higher education background (19 to 22.6%), indicating that a significant portion of the study participants possessed a college-level education. Education level can influence a patient's understanding of DM, efforts to prevent DM complications, and overall quality of life. This study reinforces the view that a key approach to effective and efficient DM management involves increasing patient knowledge regarding the disease, its management, and the prevention of complications (26). Understanding a patient's education level assists nurses in designing complication prevention and management strategies, as well as in selecting appropriate health education methods tailored to the patient's background; this ensures that the information and knowledge provided by the nurse are effectively conveyed and prove beneficial to the patient (26,27).

Targeted educational programs need to be developed to improve DM management. Blood sugar control must be prioritised to prevent DM complications (25). A patient's ability to effectively comprehend education provided by nurses is influenced by their education level. A patient's education level impacts their understanding of the education delivered by nurses (27).

Nurses must take a patient's education level into account when providing education on preventing DM complications. Nurses can select specific strategies for patients with lower education levels versus those with higher education levels, as this choice influences the patient's level of understanding regarding the education provided. It is expected that by considering the patient's education level, patients will better understand the education provided by nurses regarding the prevention of DM complications.

**Occupation**

The majority of respondents in this study were State Civil Apparatus, accounting for 19

individuals (22.6%). Employment-as a social factor-influences how patients with DM prevent complications (28). Occupation plays a crucial role in preventing DM complications; individuals with a background in the healthcare sector tend to have a better understanding of the disease and the prevention of its complications (26). Furthermore, shift work places healthcare workers at risk of developing DM and its complications (29).

Shift work systems are associated with an increased risk of DM and its complications, a trend frequently observed among males. Further research is warranted in this area. Researchers need to better standardise shift work schedules and examine gender-related differences associated with shift work (29).

This study indicates that the majority of patients were Civil Servants-a role that often involves shift work-suggesting a need for effective complication prevention strategies; however, being a Civil Servant does not necessarily imply a background as a healthcare worker subject to shift work systems. Further research is required to identify specific occupations that place patients at risk of DM complications, particularly healthcare roles involving shift work.

**Body weight**

This study found that the most common weight range among respondents with DM was 61-80 kg, accounting for 31 individuals (36.9%). Patients with excess body weight are at risk of developing DM-related complications (10). Education regarding DM and the prevention of its complications should focus on promoting weight management and regular physical activity. Furthermore, enhancing comprehensive DM treatment and care-including the management of body fat levels and blood pressure-is crucial for preventing complications. Adopting a healthier diet and engaging in regular exercise are highly beneficial for weight management and for improving overall strategies to prevent DM complications affecting various bodily systems (25,30).

Body weight is a key factor in preventing DM complications, controlling blood sugar, and addressing other health issues (28,31). Obesity in DM patients and the use of insulin injections-or a combination of insulin and oral medication-are significant factors in the prevention of DM complications. These findings provide a basis for nurses to formulate nursing care plans for managing DM patients, aiming to achieve optimal blood sugar control, improve complication prevention, and enhance the patients' quality of life (28,30,32).

Nurses important role in preventing DM complications. They can provide comprehensive nursing care to obese patients to control blood sugar levels and improve their quality of life. Additionally, nurses can educate patients on weight management, blood sugar control, and body fat management; such efforts facilitate effective complication prevention, help patients avoid complications, and ultimately improve their quality of life.

**Medical History DM**

This study found that the majority of respondents (55 or 65.5%) had a history of DM. Other research indicates that women with a history of gestational DM are at risk of developing DM in the future. Individuals with a family history of DM are at risk of developing the disease later in life if effective preventive measures are not taken. Furthermore, clinical factors such as lifestyle, genetics, and gestational DM also influence the likelihood of developing DM (33).

This literature review found a link between family history of DM and an increased risk of family members developing the disease. There is a need for community-level screening that specifically targets individuals with a family history of DM to facilitate disease prevention and the prevention of DM-related complications (34). Additionally, other studies have found that individuals with a family history of DM exhibit high serum adiponectin levels; serum adiponectin levels are notably higher in obese children. Children with a positive family history of DM may show alterations in salivary and serum parameters, particularly regarding serum adiponectin. These changes have the potential to serve as indicators of specific hormonal and metabolic shifts contributing to the development of DM (35).

It is recommended that healthcare services, such as community health centres, conduct community screening to identify family histories of DM. Individuals with a family history of DM are at risk of developing the disease in the future; therefore, such screening should be implemented to help prevent DM and its

complications through the adoption of a healthy lifestyle. DM is a hereditary disease-meaning it is influenced by genetic factors-and can occur in children whose parents have a history of the condition.

**Long-term Suffering DM**

The study results indicate that the majority of respondents (30; 35.7%) had been living with DM for 6-10 years. The duration of the disease is a factor influencing a patient's understanding of normal blood glucose levels compared to those without the condition. Patients with a long history of DM should ideally possess good knowledge regarding the prevention of DM complications (26,27). Furthermore, the longer a patient has lived with DM, the higher their risk of developing complications (10). Consequently, efforts must be made to improve knowledge and adopt a healthy lifestyle to prevent DM-related complications affecting various body organs (2,26).

A longer duration of DM increases the potential risk of developing complications (10). Patients with long-standing DM require special attention to improve their quality of life through regular treatment and adherence to their treatment regimen. Healthcare professionals must pay close attention to patient behaviour regarding treatment and provide effective education on the benefits of treatment adherence (30).

Nurses must pay special attention to patients who have lived with DM for a long time. These patients are at high risk of developing complications if effective preventive measures are not taken. Through adequate knowledge, effective and consistent long-term treatment, and an understanding of the benefits of proper DM management, it is hoped that patients with long-standing DM can successfully prevent complications.

## CONCLUSION

In conclusion, the study found that the majority of respondents were male and aged 45-64; most had a junior high school education and were employed as civil servants. The most common weight range was 61-80 kg, and the majority had a history of DM, with a duration of illness ranging from 6 to 10 years. Future researchers are encouraged to further investigate the relationships between these respondent characteristics and efforts to prevent DM complications, as the current study was limited to describing the characteristics of DM patients in the context of complication prevention.

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## Conflict of Interest

I encountered issues regarding variables during the study; certain characteristics were not measured because they were not included in the questionnaire. The study also encountered patients who were unwilling to participate as respondents. A larger sample size would have been preferable to capture data from more respondents, though the study was constrained by time limitations.

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