Early Detection of Diabetes Mellitus at Long BIA Health Center

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Abstract
Diabetes Mellitus (DM) is a chronic disease that remains a major public health problem due to its potential to cause serious complications if not detected and managed early. Early detection of DM is essential to prevent disease progression and improve patients' quality of life. This study aimed to describe the implementation of early detection of Diabetes Mellitus among patients at Long Bia Community Health Center. This study used a descriptive quantitative design. The sampling technique was purposive sampling with a total of 40 Diabetes Mellitus patients as respondents. Data were collected on February 18, 2026 using a questionnaire covering respondents' characteristics and DM early detection practices. Data were analyzed using univariate analysis with frequency distribution and percentages. The results showed that most respondents were in the moderate category of early detection, totaling 18 people (45%), followed by good category with 12 people (30%), and poor category with 10 people (25%). These findings indicate that DM early detection at Long Bia Health Center has been implemented, but it is not yet optimal and not consistently performed. In conclusion, the implementation of Diabetes Mellitus early detection among patients at Long Bia Health Center is still at a moderate level, indicating the need for improved health education, strengthening routine screening programs, and optimizing the role of health workers to increase patient awareness and adherence to early detection of DM.

Introduction

The global epidemiological transition period shows a significant increase in non-communicable diseases, including Diabetes Mellitus (DM), which is one of the leading causes of morbidity and mortality in the world. According to a report by the World Health Organization (WHO, 2023), more than 537 million adults are living with diabetes globally, and this number is projected to continue to increase every year. In Indonesia, the prevalence of DM is also experiencing an upward trend. Based on data from the Ministry of Health of the Republic of Indonesia through Riskesdas 2023, the prevalence of diabetes in the population aged ≥15 years reaches around 11.7%. This increase also occurred in various provinces, including North Kalimantan, West Nusa Tenggara, East Kalimantan, and Central Kalimantan, along with changes in lifestyle, consumption patterns, lack of physical activity, and low public awareness in early disease detection and control (Riskesdas, 2023).

At the regional level, Diabetes Mellitus is also one of the non-communicable diseases with a fairly high number of visits to health care facilities. This condition is also seen in the Bulungan Regency area, especially at the UPTD Long Bia Health Center, which is one of the health service facilities with a significant number of DM patients. Based on preliminary data and observations at the Long Bia Health Center, patients with uncontrolled blood sugar levels and delays in conducting routine check-ups are still found. In addition, in monthly health education activities, there is still a variation in the level of patient understanding of the importance of early detection of Diabetes Mellitus as an effort to prevent complications (Susanto et al., 2025)

Early detection of Diabetes Mellitus is an important step in preventing more serious complications. Through early detection, an increase in blood glucose levels can be detected early so that treatment can be carried out appropriately and quickly. Without good early detection, DM often goes undiagnosed until complications such as neuropathy, nephropathy, retinopathy, coronary heart disease, and stroke appear. This condition not only reduces the

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patient's quality of life, but also increases the risk of disability and premature death (Afianti et al., 2025; Ardiani et al., 2021; Suyanto & Sulistyowati, 2020)

The implementation of early detection of DM is influenced by various factors, such as individual awareness, access to health services, education level, employment, and understanding of the importance of regular health checkups. Early detection can be done through regular blood glucose level checks, identification of risk factors, and screening in at-risk groups. However, in practice, there are still many patients at the Long Bia Health Center who have not been examined regularly, either due to lack of information, low motivation, and limited time and access to health services (Bahasuan & Farapti, 2024; Shandi et al., 2024; Widiastuti et al., 2024)

Based on these conditions, this study aims to describe the implementation of early detection of Diabetes Mellitus in patients at the Long Bia Health Center. This picture includes how patients carry out health checks, regularity of control, and the use of health services in an effort to detect DM early. By knowing these conditions, it is hoped that clear information can be obtained about the extent to which the implementation of early detection has been carried out by the patient, so that it can be the basis for improving the prevention and control program of Diabetes Mellitus in the working area of the Long Bia Health Center.

Methods

This study uses a descriptive quantitative design that aims to describe the implementation of early detection of Diabetes Mellitus (DM) in patients without providing intervention or treatment for the variables studied. The research was carried out on February 18, 2026 at the UPTD Long Bia Health Center, Bulungan Regency, PT Utara.

The population in this study is all Diabetes Mellitus patients who visited or participated in health education activities at the Long Bia Health Center at the time of data collection. The sampling technique uses purposive sampling, which is the selection of respondents based on certain criteria that have been set by the researcher. The number of samples in this study was 40 respondents of Diabetes Mellitus patients who met the inclusion criteria of the study.

The inclusion criteria in this study include patients who have been diagnosed with Diabetes Mellitus, present at the time of data collection at the Long Bia Health Center, willing to be respondents by signing an informed consent sheet, and able to read and understand questionnaires. Exclusion criteria include patients with unstable general conditions at the time of data collection, not filling out a complete questionnaire, or resigning during the research process.

The research instrument used consists of two parts. First, the observation sheet was used to record the characteristics of the respondents including age, gender, education level, occupation, and length of time suffering from Diabetes Mellitus. Second, the early detection questionnaire of Diabetes Mellitus which is used to measure the implementation of early detection by patients, includes the regularity of blood sugar checks, frequency of control to health facilities, screening history, and the use of health services in efforts to detect DM. The questionnaire was compiled based on the literature and guidelines for early detection of DM from the Ministry of Health of the Republic of Indonesia as well as previous research references, then a validity and reliability test was carried out before being used in the research.

The data collection procedure began with the management of research permits to the Long Bia Health Center. On the day of implementation, respondents were given an explanation of the purpose and procedure of the research, then were asked to sign an informed consent. Furthermore, respondents fill out the questionnaire independently with the assistance of the researcher if needed. Respondent characteristic data was recorded using the observation sheet that had been prepared.

The ethical aspects of research are applied comprehensively, including the principles of informed consent, anonymity, confidentiality, veracity, and justice. Respondents were given the freedom to participate or refuse without affecting the health services received. The identity of the respondents was not included in the research report and all data was kept confidential.

The data processing process is carried out through several stages, namely editing (checking the completeness of data), scoring early detection questionnaires using a certain scale, coding, and data tabulation. Furthermore, the data is entered into the Microsoft Excel program and analyzed using SPSS version 26. The results of the early detection assessment are then categorized into good, adequate, and poor based on the percentage of scores obtained.

Data analysis was carried out in a descriptive manner (univariate). Analysis of respondent characteristics was presented in the form of frequency and percentage distributions that included age, gender, education, occupation, and length of time of DM. Univariate analysis was also used to describe the distribution of the implementation of early detection of Diabetes Mellitus in patients in the good, adequate, and poor categories. The results of this analysis are used to provide an overview of the implementation of early detection of DM in patients at the Long Bia Health Center.

Results and Discussion

Table 1. Characteristics of Respondents at Long BIA Health Center

Characteristics	Categories	Long BIA (n=40)	Total (n=40)	%
Age	< 40 years old	10	10	25%
	≥ 40 years old	30	30	75%
Gender	Male	18	18	45%
	Women	22	22	55%
Education	Elementary & Junior High School	14	14	35%
	High School	16	16	40%
	PT (Higher Education)	10	10	25%
Jobs	Farmer	12	12	30%
	Housewives	10	10	25%
	Self-employed	8	8	20%
	PNS	5	5	12,5%
	Others	5	5	12,5%
Long Suffering from DM	< 5 years	20	20	50%
	≥ 5 years	20	20	50%
Number of Respondents	-	40	40	100%

Table 2. Overview of Early Detection of DM at Long Bia Health Center

Good (n/%)	Sufficient (n/%)	Less (n/%)	Total
12 (30%)	18 (45%)	10 (25%)	40

The results showed that the characteristics of respondents at the Long Bia Health Center were dominated by the age group ≥40 years old as many as 30 people (75%), with most of them being female as many as 22 people (55%). Based on education level, the most respondents were in the high school category, which was 16 people (40%), followed by elementary and junior high schools as many as 14 people (35%), and universities (PT) as many as 10 people (25%). In addition, based on occupation, respondents mostly work as farmers as many as 12 people (30%), followed by housewives as many as 10 people (25%), self-employed people 8 people (20%), and civil servants and others 5 people each (12.5%). Meanwhile, based on the length of time they had suffered from Diabetes Mellitus (DM), the respondents were divided equally between <5 years and ≥5 years, each as many as 20 people (50%).

Based on the description of early detection of DM, the majority of respondents were in the sufficient category as many as 18 people (45%), followed by the good category as many as 12 people (30%) and the poor category as many as 10 people (25%). These results show that in general, the implementation of early detection of DM in patients at the Long Bia Health Center is still at an adequate level, which means that some respondents have made early detection efforts such as blood sugar checks or visits to health facilities, but have not been carried out optimally, routinely, and continuously.

When viewed from age characteristics, the dominance of the ≥40-year-old group indicates that most of the respondents are in the age group at risk for DM events. Physiologically, at that age there is a decrease in pancreatic function and insulin sensitivity, so the risk of glucose metabolism disorders increases. Nevertheless, although the risk increases, this is not always followed by optimal early detection behavior. Many individuals in this age group tend to do health checkups only when they have symptoms, not preventively. This condition causes early detection to not yet become a structured habit (Ambarita et al., 2022; Ferawati & Sulistyo, 2020).

Based on gender, the dominance of female respondents in this study can affect the results of early detection. Women generally have a better tendency to use health services than men, especially when it comes to routine check-ups. However, women's involvement in dual roles such as domestic work and family responsibilities can be a inhibiting factor in conducting regular health check-ups. This can lead to inconsistencies in the implementation of early detection even though early awareness is already in place (Afianti et al., 2025; Rohmatulloh et al., 2024).

Judging from the level of education, most of the respondents were in the high school category. Education is an important factor that affects an individual's ability to receive, understand, and apply health information. Respondents with a secondary education level generally already have basic knowledge about DM disease and the importance of early detection. However, this knowledge is not necessarily followed by consistent behavior, because health behaviors are also influenced by other factors such as motivation, personal experience, and social environment support. This suggests that increasing knowledge alone is not enough to optimally change early detection behavior (Ardiani et al., 2021; Julika, 2021).

Based on occupation, the majority of respondents work as farmers. This job generally has limited time in accessing health services due to work activities that depend on natural conditions and inflexible working hours. This can be one of the inhibiting factors in conducting regular health check-ups. In addition, the level of work can also affect an individual's priority for health, so early detection is often not the main need (Shandi et al., 2024).

Based on the length of time they had DM, the balanced distribution between <5 years and ≥5 years showed that some respondents had had a long experience with DM. Theoretically, the longer a person suffers from a chronic disease, the more likely they are to understand the importance of controlling and early detection of complications. However, in this study, the results of the early detection category were still dominated by the adequate category, which suggests that disease experience is not always directly proportional to the improvement of optimal early detection behavior (Fitri & Damayanti, 2024).

The results of this study are in line with various previous studies that showed that early detection behavior of DM is generally in the moderate or adequate category. This is influenced by the lack of consistency in conducting routine checkups, limited access to health services, and low compliance with periodic controls. Several studies also mention that even though people have awareness of DM, the implementation of preventive behaviors is still not optimal because it is influenced by individual and environmental factors (Fijianto et al., 2024).

Theoretically, early detection is part of secondary prevention in public health efforts that aims to find disease at an early stage before it progresses to a more severe condition or causes complications. Early detection of DM can be done through regular blood sugar checks, screening risk factors, and routine health monitoring. Based on theory Health Belief Model, early detection behavior is influenced by the perception of vulnerability, the perception of disease severity, perceived benefits, and the obstacles faced by individuals. In this study, the dominance of the category is enough to show that the respondents already have some of these perceptions, but there are still obstacles that hinder behavioral consistency, such as time constraints, access to services, and motivation (Setyaningrum & Nissa, 2021).

In addition, health promotion theory emphasizes that changing health behavior requires continuous education and community empowerment. Education carried out in health facilities needs to be strengthened with a more intensive approach, such as routine counseling, patient follow-up, and strengthening the role of health workers in reminding patients to carry out periodic check-ups. This is important so that early detection is not only knowledge, but also a habit (Rohani et al., 2023).

Based on the overall results of the study, it can be concluded that the implementation of early detection of DM in patients at the Long Bia Health Center is still in the category of sufficient and not optimal. Although some respondents have made efforts to detect early, the implementation has not been carried out regularly and continuously. Therefore, it is necessary to strengthen routine screening programs, improve health education in a more structured manner, and optimize the role of health workers in motivating patients. Thus, it is hoped that the early detection of DM can be improved so that it can prevent further complications and improve the quality of life of patients.

Conclusion and Recommendations

Based on the results of the study, it can be concluded that the characteristics of respondents at the Long Bia Health Center are dominated by the age group of ≥40 years, female, with the level of education of most high schools, and the majority work as farmers. The length of time suffering from Diabetes Mellitus (DM) is divided equally between <5 years and ≥5 years. The early detection picture of DM showed that most respondents were in the good category and in the poor category. This shows that the implementation of early detection of DM has been carried out by some respondents, but it is not optimal and has not been carried out regularly and continuously. This condition is influenced by factors of age, education, occupation, and experience of suffering from DM which have not fully encouraged the formation of consistent early detection behaviors. Therefore, it is necessary to improve health education, strengthen routine screening programs, and optimize the role of health workers to increase public awareness and compliance in conducting early detection of DM in a sustainable manner.

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