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The relationship between health literacy and quality of life among diabetes mellitus patients in the working area of Darul Imarah Subdistrict Health Center

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ABSTRACT

The study aimed to examine the relationship between health literacy and the quality of life of Diabetes Mellitus (DM) patients in the Darul Imarah Sub-District Health Center, Aceh Besar District. Using an analytical observational design with a cross-sectional approach, the study included 1,125 DM patients, with 100 individuals selected as research samples. Data analysis involved univariate, bivariate, and multivariate analysis using logistic regression. The findings revealed that a majority of DM patients in the working area of the health center experienced poor quality of life (82%). Additionally, there was a significant relationship between health literacy and the quality of life of DM patients (OR=8.34; 95% CI=1.05-66.05; p=0.044). Confounding assessment identified socioeconomic status, family history of DM, access to information, and low physical activity as factors influencing the quality of life of DM patients. The multivariate analysis highlighted socioeconomic status as the most dominant factor (OR=25.43; 95% CI=2.24-288.44; p=0.009). In conclusion, DM patients in the Darul Imarah Sub-District, Aceh Besar Regency, generally have poor quality of life, with health literacy, socioeconomic factors, descent, information access, and physical activity playing significant roles in influencing it.

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INTRODUCTION

The Global Report on Diabetes (2020) reported that countries in the Arab-African North and Western Pacific regions ranked first and second, respectively, for the highest prevalence of diabetes among the population aged 20-79 years among the seven regions worldwide, with rates of 12.2% and 11.4% (Roglic, 2016; WHO Global Report on Diabetes.· Indonesia ranks third with the highest prevalence of Diabetes Mellitus cases at 11.3% in the Southeast Asia region (WHO, 2020). The

International Diabetes Federation projects the number of diabetes patients aged 20-79 years in several countries worldwide, identifying the top 10 countries with the highest number of patients, including China with 116.4 million, India with 77 million, and the United States with 31 million (Indrahadi et al., 2021; WHO Global Report 2020). Indonesia ranks seventh among those countries, with a total of 10.7 million cases. The country is experiencing an increasing trend in diabetes prevalence, rising from 6.9% in 2013 to 8.5% in 2018 (Riskesdas, 2018). The prevalence of Diabetes Mellitus (DM) in Indonesia, based on a doctor's diagnosis in individuals aged ≥15 years, is 2%, indicating an increase compared to the DM prevalence of 1.5% reported in the Riskesda 2019 results (Rahati et al., 2014; Xu et al., 2017). The prevalence of Diabetes Mellitus (DM) also increases with age, reaching its peak at the age of 55-64 years and decreasing after surpassing this age range(Gonzalez-Zacarias et al., 2016; Kalra et al., 2018; Okurumeh et al., 2022).

This pattern was observed in the Riskesdas results for both 2013 and 2018, indicating that the older the age, the higher the risk of developing diabetes. The increase in DM prevalence from 2013 to 2018 occurred in the age groups of 45-54 years (3.3-3.9), 55-65 years (4.8-6.3), 65-67 years (4.2-6.0), and ≥75 years (2.8-3.3) (Kemenkes,2023.). In 2020, there were 121,160 cases of diabetes patients in Aceh, with 75,518 (62%) receiving standard care. The highest number of diabetes patients was in North Aceh Regency, with 29,703 cases, where 4,630 (16%) received standard care. Bireuen Regency had 12,690 cases, with 10,456 (82%) receiving standard care, and Banda Aceh City had 11,326 cases, with all recipients receiving standard care. On the other hand, Aceh Besar Regency had 8,564 diabetes cases in 2020, with 5,579 (65%) receiving standard care. The highest number of diabetes patients in this regency was in the Darul Imarah Health Center's working area, with 1,125 cases, where 613 (52.8%) received standard care. Ingin Jaya Health Center had 698 cases, with 423 (60.6%) receiving standard care, while Kuta Baro Health Center had 585 cases, with 580 (99.1%) receiving standard care. The lowest number of diabetes patients was in the Leupung Health Center's working area, with 64 cases, where 41 (64.1%) received standard care. The increasing incidence of Diabetes Mellitus patients has an impact on the psychological, social, and economic aspects experienced by those with diabetes, affecting their quality of life(Steck & Rewers, 2015). Quality of life involves an individual's perception of their health and well-being, including physical, psychological, and social functions (Espelt et al., 2008). The high number of diabetes cases is also influenced by the knowledge and lifestyle of the local community, highlighting the importance of the community's ability to analyze and understand the health of themselves and their families.(Bestari, n.d.). Health literacy is considered one of the crucial factors contributing to the current high and low cases of Diabetes Mellitus in Indonesia. Health literacy refers to an individual's ability to effectively analyze health issues in their environment (Aekplakorn et al., 2018). Several previous studies have indicated that health literacy levels in Southeast Asia, including Indonesia, are still very low, particularly regarding health literacy related to Diabetes Mellitus.(Suwanti et al., 2021). Health literacy is key in the management of Diabetes Mellitus to enhance the quality of life and reduce complications (11), (12). Without the behavioral abilities (knowledge and/or skills) to perform specific actions, such as managing blood glucose, self-efficacy alone cannot generate good self-care behaviors for Diabetes (Ausili et al., 2016; Eronen et al., 2023; Syafei & Darmaja, 2019). Based on a preliminary survey conducted by researchers, it was found that the Darul Imarah Subdistrict Health Center in Aceh Besar Regency has the highest number of Diabetes Mellitus (DM) cases, reaching 1,125 cases. However, only about 613 out of the total DM cases (52.8%) receive services according to standards. Research on the relationship between health literacy and quality of life among diabetes mellitus patients is urgently needed. Understanding this relationship is crucial for tailoring interventions to improve self-care behaviors, treatment adherence, and overall well-being in individuals with diabetes. Previous research may have gaps in terms of limited focus on diabetes mellitus specifically, inadequate consideration of contextual factors, reliance on cross-sectional designs, and a lack of intervention studies(ALSharit & Alhalal, 2022; Gaffari-fam et al., 2020; Hu et al., 2019). Addressing these gaps through further

research can provide valuable insights for improving health outcomes and enhancing the quality of life for individuals living with diabetes. Diabetes Mellitus often leads to complications with other diseases, significantly impacting the quality of life for those affected. The results of a preliminary study involving interviews with 8 DM patients at the Darul Imarah Subdistrict Health Center indicate that some of them feel frustrated with the condition of the disease they are facing. The urgency of this research is to fill the knowledge gap regarding the relationship between health literacy and the quality of life of Diabetes Mellitus (DM) patients in the specific context of the Darul Imarah Sub-District Health Center, Aceh Besar District. This study aims to identify the factors contributing to poor quality of life among DM patients in the area. Previous research has shown limited exploration of the health literacy and quality of life relationship in this context, and this study seeks to address this gap. Additionally, while the study found a significant relationship between health literacy and quality of life, the specific mechanisms underlying this association were not thoroughly investigated. Further research is needed to understand the pathways through which health literacy influences different aspects of quality of life among DM patients. Moreover, the study identified socioeconomic status, family history of DM, access to information, and physical activity as factors influencing quality of life, but their specific nature and extent of influence were not extensively discussed. Future research should delve deeper into comprehending the interactions and contributions of these factors to quality of life outcomes among DM patients. Therefore, further research is needed to investigate the relationship between health literacy and the quality of life of Diabetes Mellitus patients in the Darul Imarah Subdistrict Health Center's working area in Aceh Besar Regency.

RESEARCH METHOD

The study is an analytical observational type aimed at describing a certain condition or situation, using a cross-sectional design involving the measurement of independent and dependent variables only once. The focus of this research is to determine the relationship between health literacy and the quality of life of Diabetes Mellitus patients in the working area of the Darul Imarah Sub-district Health Center, Aceh Besar Regency. The research was conducted in 32 villages in the working area of Darul Imarah Sub-district Health Center, Aceh Besar Regency, in November 2021. The study population is all DM patients totaling 1,125 cases in the working area of Darul Imarah Sub-district Health Center, Aceh Besar Regency in 2020, spread across 32 villages. In calculating the sample size based on a population of 1,125 people, the formula used for a small population (less than 10,000) is as follows. In this study, 100 randomly selected samples are needed at Darul Imarah Sub-district Health Center, Aceh Besar Regency. Inclusion criteria for the sample are Diabetes Mellitus patients undergoing outpatient care at the health center, aged 18-60 years, and willing to participate without mental disturbances. These criteria are used to ensure that the sample reflects relevant characteristics in answering research questions. Primary data in this study were obtained through direct interviews with respondents using a questionnaire covering aspects such as quality of life, health literacy, information access, education, socio-economic status, and physical activity. Meanwhile, secondary data are information obtained from the Profile of Darul Imarah Sub-district Health Center, Aceh Besar Regency. The analysis in this study is divided into three stages. First, in Univariate Analysis, research variables will be described using frequency distribution tables to visualize the relationship between the variables under study. Second, in Bivariate Analysis, logistic regression is used as a method of data analysis. Logistic regression is chosen because it does not assume a linear relationship between dependent and independent variables, and does not require multivariate normality assumptions. Additionally, the dependent variable is dichotomous (2 categories), independent variables do not have to have the same variance, and the required sample size is relatively large, at least 50 samples. Finally, in Multivariate Analysis, multiple logistic regression analysis is conducted to assess the influence of various risk factors on the quality of life of Diabetes Mellitus patients. This stage involves preparing confounder variables based on the

results of bivariate tests, creating a complete model that includes the main variables, all candidate confounder variables, and interaction variables. Confounding assessment is done by including each confounder variable one by one and observing the change in Odds Ratio (OR) of the main variable before and after the confounder variable is included. If there is a change in OR of more than 10%, the variable is considered a confounder that affects the relationship between the quality of life of Diabetes Mellitus patients and health literacy.

RESULTS AND DISCUSSIONS

The research was conducted at Puskesmas Darul Imarah, located in the Darul Imarah Sub-district, Aceh Besar Regency. Initially established in 1994 as a Pustu (Sub-district Health Center) under Community Health Center Biluy, Puskesmas Darul Imarah underwent a total overhaul in 2011 and was upgraded to a type 295.5 M Health Center (two floors). The Darul Imarah Sub-district is situated in the Aceh Besar Regency, characterized by agricultural areas. Community Health Center Darul Imarah strategically borders Banda Aceh City and trade areas. Transportation from villages to the sub-district commonly involves two and four-wheeled vehicles, with a travel distance of approximately 2 km from the villages to the sub-district capital, taking around 10 minutes. The administrative area of Community Health Center Darul Imarah borders Banda Aceh City, Peukan Bada sub-district, Darul Kamal sub-district, Lho'nga sub-district, and Ingin Jaya sub-district. The health center has a building area of about 556.5 square meters and a land area of approximately 2100 square meters. Darul Imarah Sub-district comprises 32 villages, 117 hamlets, and 4 mukims, with Punie village being the largest. The travel distance from Darul Imarah Sub-district to the capital of Aceh Besar Regency is around 60 km, and from the sub-district capital to the capital of Aceh Province is approximately 10 km, with a travel time of about 30 minutes using public transportation. The vision of Community Health Center Darul Imarah is to "Realize quality, optimal, Islamic services for the attainment of a healthy community in the working area of Community Health Center Darul Imarah." The mission includes providing services according to health standards, delivering Islamic services for the dignity of the community, and enhancing public trust in the services of Community Health Center Darul Imarah.

Univariate Analysis

The data that underwent univariate analysis in this study included quality of life variables, health literacy and confounding variables, namely age, gender, education, employment, socio-economic status, hereditary diseases, access to information and physical activity, each variable can be seen in the following table. This:

Table 1. Frequency distribution of health literacy and quality of life for diabetes mellitus sufferers in the Darul Imarah Community Health Center working area, Aceh Besar Regency.

No	Variable	Frequency (f)	Percentage (%)
1	Quality of Life		
	Good	18	18
	Not good	82	82
2	Health Literacy		
	Good	72	72
	Not good	28	28
3	Age		
	Mature	9	9
	Old	91	91
4	Gender		
	Man	55	55
	Woman	45	45
5	Education		
	Tall	10	10
	Intermediate	45	45

No	Variable	Frequency (f)	Percentage (%)
	Base	45	45
6	Work		
	Work	85	85
	Not working	15	15
7	Socioeconomic Status		
	Tall	37	37
	Low	63	63
8	Hereditary Diseases		
	There isn't any	49	49
	There is	51	51
9	Information Access		
	Enough	69	69
	Not enough	31	31
10	Physical Activity		
	Heavy	32	32
	Currently	26	26
	Low	42	42

Table 1 provides a comprehensive overview of respondent characteristics in this study. The majority of respondents indicated a poor quality of life, reaching 82%, while 72% of them had a good health literacy level. Most respondents also fell into the elderly age category, with 91% of them being over 60 years old. Looking at gender, males dominated the respondent population, constituting around 55%. Regarding education, a noticeable difference exists, with 45% of respondents having a secondary education, while another 45% only completed primary education. In terms of employment status, the majority were employed, reaching 85%. However, a significant portion of them also had a low socioeconomic status, with 63% falling into this category. Interestingly, over half of the respondents (51%) had hereditary diseases, which may impact their health conditions. Considering information access, approximately 69% of respondents had sufficient access to information. However, concerning physical activity, 42% of respondents had a low level of physical activity. All these characteristics will be crucial factors in further analyses related to the relationship between health literacy and the quality of life of Diabetes Mellitus patients in the working area of Community Health Center Darul Imarah, Aceh Besar Regency.

Bivariate Analysis

Bivariate analysis was conducted to determine the relationship between the dependent and independent variables. Statistical testing using Logistic Regression was employed, and significance was declared if P Value < 0.05. The results of the bivariate analysis are presented in the following table:

Table 2. Relationship between health literacy and quality of life of diabetes mellitus patients in the working area of community Health Center Darul Imarah, Aceh Besar Regency

No	Variable	Quality of Life of DM Patients				OR (95% CI)	p-value
		Good		Not good			
		n	%	n	%		
1	Health Literacy						
	Good	17	23.61	55	76.39	8.34 (1.05-66.05)	
	Not good	1	3.57	27	96.43		0.044
2	Age						
	Mature	1	11.11	8	88.89	0.54 (0.063-4.64)	
	Old	17	18.68	74	81.32		0.578
3	Gender						
	Man	9	16.36	46	83.64		
	Woman	9	20	36	80	0.78 (0.28-2.17)	0.638
4	Education						
	Tall	2	20	8	80		
	Intermediate	6	13.33	39	86.67	1.6 (0.27-9.55)	0.591

No	Variable	Quality of Life of DM Patients				OR (95% CI)	p-value
		Good		Not good			
		n	%	n	%		
	Low	10	22.22	35	77.78	0.87(0.15-4.79)	0.878
5	Work						
	Work	16	19.28	67	80.72		
	Doesn't work	2	11.76	15	88.24	1.79 (0.37-8.63)	0.468
6	Socioeconomic Status						
	Tall	11	29.73	26	70.27		
	Low	7	11.11	56	88.89	3.38(1.17-9.72)	0.024
7	Hereditary Diseases						
	There isn't any	13	26.53	36	73.47		
	There is	5	9.8	46	90.2	3.32 (1.08 – 10.18)	0.036
8	Information Access						
	Enough	17	24.64	52	75.36		
	Not enough	1	3.23	30	96.77	9.8 (1.24-77.43)	0.129
9	Physical Activity						
	Heavy	9	28.13	23	71.88		
	Currently	6	23.08	20	76.92	1.3 (0.39-4.30)	0.663
	Low	3	7.14	39	92.86	5.08 (1.24-20.72)	0.023

The results of the bivariate analysis in Table 2 reveal several important findings regarding the relationship between the examined variables. Firstly, respondents with good quality of life have a good level of health literacy at 23.61%, while respondents with inadequate health literacy are only 3.57%. Conversely, poor quality of life is higher in respondents with inadequate health literacy, reaching 96.43%, compared to those with good health literacy at 76.39%. Statistical tests indicate a significant relationship between health literacy and the quality of life of Diabetes Mellitus (DM) patients, with an odds ratio (OR) value of 8.34. This implies that respondents with inadequate health literacy are 8.34 times more likely to have poor quality of life compared to respondents with good health literacy. Secondly, concerning age, good quality of life is higher in elderly respondents (18.68%), while adult respondents have poor quality of life (88.89%). Although this difference is significant in bivariate analysis, statistical tests show no significant relationship between age and the quality of life of DM patients in the working area of Community Health Center Darul Imarah, Aceh Besar Regency, with an OR value of 0.54. Thirdly, gender does not have a significant relationship with the quality of life of DM patients. Good quality of life is slightly higher in female respondents (20%) compared to males (16.36%), but statistical tests show an OR value of 0.78, indicating that gender does not have a significant influence on the quality of life. Fourth, the level of education also does not prove to have a significant impact on the quality of life of DM patients. Good quality of life is higher in respondents with a low level of education (22.22%) compared to those with a high level of education (20%) and a medium level of education (13.33%). Statistical tests show no significant relationship between the level of education and the quality of life of DM patients in the working area of Community Health Center Darul Imarah, Aceh Besar Regency, with an OR of 1.6 for a medium level of education and 0.87 for a low level of education. Fifth, employment status also does not have a significant relationship with the quality of life of DM patients. Good quality of life is higher in working respondents (19.28%) compared to those who are not working (11.76%). Statistical tests show an OR value of 1.79, indicating that employment status does not have a significant influence on the quality of life. Sixth, socioeconomic status significantly influences the quality of life of DM patients. Respondents with low socioeconomic status have poor quality of life (88.89%), while those with high socioeconomic status have good quality of life (29.73%). Statistical tests show a significant relationship between socioeconomic status and the quality of life, with an OR of 3.38. Finally, a family history of illness also impacts the quality of life. Respondents with a history of DM have poor quality of life (90.2%), while those without a history of DM have good quality of life (26.53%). Statistical tests show a significant relationship between a family history of illness and the quality of life, with an OR of 3.32. Similarly, access to information

about DM plays a crucial role in quality of life. Respondents with insufficient information about DM tend to have poor quality of life (96.77%), while those with sufficient information have good quality of life (24.64%). Statistical tests show a significant relationship between access to information and the quality of life, with an OR of 9.8. Lastly, physical activity also influences the quality of life. Respondents with low physical activity are more likely to have poor quality of life (92.86%), while those with heavy physical activity have good quality of life (28.13%). Statistical tests show that low physical activity has a significant relationship with the quality of life, with an OR of 5.08.

Multivariate Analysis

Table 3. presents the multivariate analysis, revealing the most dominant factors associated with the quality of life of Diabetes Mellitus (DM) patients in the working area of Puskesmas Darul Imarah, Aceh Besar Regency

No	Quality of Life	OR	95%CI	P-Value
1	Health Literacy			
	Not good	16.17	1.31-199.07	0.03
2	Socioeconomic			
	Low	5.12	1.55-32.07	0.01
3	Descendants			
	There is	7.05	1.21-21.63	0.02
4	Information Access			
	Not enough	25.43	2.24-288.44	0.09
5	Physical Activity			
	Currently	1.16	0.23-5.79	0.85
	Low	7.36	1.33-40.47	0.02

The results of the multivariate analysis documented in Table 3 reveal significant findings regarding factors influencing the quality of life of individuals with Diabetes Mellitus (DM) in the working area of Community Health Center Darul Imarah, Aceh Besar Regency. One dominant factor strongly associated with the quality of life of DM patients is the access to information. In this analysis, the factor of information access has an Odds Ratio (OR) of 25.43, with a 95% Confidence Interval (CI) between 2.24 and 288.44, and a p-value of 0.009. This indicates that respondents with insufficient access to information about DM are 25.43 times more likely to have a poor quality of life compared to respondents with sufficient information access. This finding underscores the importance of adequate information access about DM and efforts to enhance it among DM patients in this region. Ensuring that DM patients have adequate access to information related to their condition, including disease management, dietary habits, physical activity, prevention measures, treatment, and monitoring, may enhance their opportunities to improve their quality of life.

Confounding Assessment:

Confounding, or confounding factors, are other independent variables that need to be controlled in this study as they are suspected to have an impact on the relationship between health literacy and the quality of life of DM respondents. According to Murti (1997), the determination of variables as confounders is based on theoretical knowledge rather than actual facts, and when there is a difference between crude Odds Ratios (OR) and adjusted OR (after controlling for potential confounding variables). In this study, the assessment of confounding may not be entirely clear, but by examining the differences in OR in multivariate logistic regression analysis, an evaluation of confounding can be conducted. Confounding assessment involves comparing the OR values of the health literacy variable with the quality of life before and after introducing potential confounding variables. If, after including confounding variables, there is a difference in OR above 10%, the variable can be considered a confounder and must be retained in the model.

Tabel 4. Confounding Assessment of the Relationship Between Health Literacy and Quality of Life of DM Respondents in the Working Area of Community Health Center Darul Imarah, Aceh Besar Regency - Logistic Regression Test

No	Counfounding Variables	OR Crude (Health Literacy and Quality of Life Variable)	OR Adjusted (Variables Health Literacy + Quality of Life + Confounding)	Difference OR	*Confounding*
1	Age	8,345	8,821	-0.476	<10%
2	Gender	8,345	8.31	0.035	<10%
3	Education	8,345	7,849	0.496	<10%
4	Work	8,345	8,356	-0.011	<10%
5	Socioeconomic Status	8,345	8,243	0.102	<10%
6	Descendants	8,345	8.31	0.035	<10%
7	Information Access	8,345	8,305	0.04	<10%
8	Physical Activity	8,345	8,993	-0.648	<10%

Based on the confounding analysis results presented in Table 4 above, it turns out that there is no variable that serves as a confounder for the relationship between health literacy and the quality of life of DM patients in the working area of Puskesmas, Aceh Besar Regency, as the difference in Odds Ratios (OR) for all confounding variables is <10%. This finding is consistent with several previous studies, such as the research which also did not find a significant relationship between age and the quality of life of DM patients (Faridah I.N. & Purwaningsih & -, 2018) ,Arda et al., 2020; Issa et al., 2000; Maatouk et al., 2012). The analysis results indicate that there is no significant relationship between educational level and health literacy among Diabetes Mellitus (DM) patients in the working area of Community Health Center Darul Imarah, Aceh Besar Regency, with an Odds Ratio (OR) of 0.87 (95% CI = 0.15-4.49) and a p-value of 0.878. In the respondent sample, the majority have a moderate level of education (45%), followed by a low level of education (45%), and a high level of education reaching only 10%. Although there is a general assumption that the higher a person's level of education, the better their quality of life due to having more profound experience in self-management and seeking healthcare, this research does not support a relationship between educational level and health literacy among DM patients in the area. This finding contradicts some previous studies, such as those conducted by (Arda et al., 2020; Azis et al., 2020) which showed a relationship between educational level and the quality of life of DM patients. The analysis results indicate that there is no significant relationship between occupation and the quality of life of Diabetes Mellitus (DM) patients in the working area of Darul Imarah Health Center, Aceh Besar Regency, with an Odds Ratio (OR) of 1.79 (95% CI=0.37-8.63) and a p-value of 0.468. In the sample of respondents, the majority are employed (85%), while others are unemployed (15%). These research findings are not consistent with some previous studies, such as the study conducted by (Triana et al., 2015) which showed that respondent characteristics, including occupation, are associated with health literacy. Furthermore, Pongoh et al., (2020) also noted that an individual's level of knowledge can be influenced by social activities such as occupation, as it can impact social interactions, culture, and the exchange of information . The analysis results indicate a significant relationship between socioeconomic status and health literacy among Diabetes Mellitus (DM) patients in the working area of Community Health Center Darul Imarah, Aceh Besar Regency, with an Odds Ratio (OR) of 3.38 (95% CI = 1.17-9.72) and a p-value of 0.024. This finding suggests that the higher an individual's socioeconomic status, the better their health literacy. The analysis results also show a significant relationship between family history (history of DM within the family) and the quality of life of Diabetes Mellitus (DM) patients in the mentioned area, with an Odds Ratio (OR) of 3.32 (95% CI = 1.08-10.18) and a p-value of 0.036. This indicates that respondents with a family history of DM are 3.32 times more likely to have a poor quality of life compared to those without a family history of DM. The research findings further reveal a significant relationship between physical activity and the quality of life of Diabetes

Mellitus (DM) patients in the working area of Community Health Center, Aceh Besar Regency, with a p-value of 0.023. This suggests that the level of physical activity performed by respondents has a positive impact on their quality of life. This finding is consistent with previous research indicating that sufficient and regular physical activity can improve the quality of life, especially in the context of DM patients. Physical activity helps manage blood sugar levels, enhance cardiorespiratory conditions, and increase the body's sensitivity to insulin.

CONCLUSION

Based on the findings of this study, it can be concluded that the quality of life among Diabetes Mellitus (DM) patients in the working area of the Darul Imarah Sub-district Public Health Center, Aceh Besar Regency, generally tends to be poor, with the majority of respondents reporting unsatisfactory quality of life. Health literacy plays a crucial role in determining quality of life, where individuals with lower literacy levels are more likely to experience poor quality of life. Additionally, socioeconomic factors, descent, information access, and the level of physical activity are also correlated with the quality of life of DM patients. Socioeconomic factors emerge as the most dominant factor associated with quality of life. Therefore, efforts to improve health literacy, address socioeconomic factors, enhance information access, and promote sufficient physical activity are essential strategies in enhancing the quality of life of DM patients in this region. The study also reveals that there are no significant confounding variables in the relationship between health literacy and the quality of life of DM patients. Thus, the results of this study provide valuable insights for improving the quality of life of DM patients and managing DM holistically.

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