

The Relationship between Coping Mechanisms and the Level of Stress in Type 2 Diabetes Mellitus Patients

Zuriati¹, Rahmalia Nurul Azizah², Melti Suriya³, Zahlimar⁴

^{1,3}Nursing Study Program, Bhakti Husada Health College, Cikarang, West Java, Indonesia

²Faculty of Health, Aisyah Pringsewu University, Lampung, Indonesia

⁴Faculty of Health, Setih Setio Institute of Administration and Health, Jambi, Indonesia

Email: zuriati3781@gmail.com

Abstract

Diabetes Mellitus is a chronic disease that has a negative impact on the physical and psychological effects of sufferers, the psychological impact that occurs is like stress, Stress is twice as easy to attack diabetics, one way to adapt to stress in diabetics is with coping mechanisms. This research is to determine the relationship between coping mechanisms and the stress level of type 2 diabetes mellitus patients in Ambarawa Pringsewu. This type of research is quantitative research with a cross-sectional correlation approach design. The population of this study was 324 patients with type 2 diabetes mellitus at the Ambarawa Pringsewu Community Health Center, with a sample of 76 people taken using the Accidental Sampling technique. The research instrument used a questionnaire, and data analysis was carried out univariately and bivariately using the chi square test. The results of the analysis obtained were that the majority of respondents with maladaptive coping mechanisms were 72 (94.7%), with the category of severe stress level being 41 (53.9%). Analysis results using the chi square test obtained a result of 0.000. This means that there is a relationship between coping mechanisms and the stress level of type 2 diabetes mellitus patients at the Ambarawa Pringsewu Community Health Center. Suggestions are expected for people with type 2 diabetes mellitus to always increase their knowledge of each disease they suffer from, in order to be able to maintain the desired health and it is hoped that people with type 2 diabetes mellitus will be more diligent in checking their blood sugar every month at the nearest health service to improve their quality of life long.

Keywords: Coping Mechanisms, Stress, Diabetes

INTRODUCTION

Diabetes Mellitus (DM) is a type of metabolic disease caused by abnormalities in insulin secretion, insulin function, or a combination of both. DM is characterized by an increase in blood glucose levels (Aji Kurniawan *et al.*, 2020). Diabetes Mellitus is one of the non-communicable diseases whose prevalence is expected to rise in the

future. Changes in lifestyle and aging also contribute to the increased prevalence of Diabetes Mellitus. Approximately 25% of the population over the age of 65 suffers from Diabetes Mellitus. The most commonly encountered type is Type 2 Diabetes Mellitus, which is marked by

decreased insulin secretion due to insulin resistance (Dm, Di and Karanganyar, 2023)

According to data from the World Health Organization (WHO), the number of people with Diabetes Mellitus (DM) worldwide is expected to double to 366 million by 2030, up from 171 million in 2000. Indonesia, as part of the Southeast Asia region, is projected to rank second in the number of DM sufferers, following India, by 2030. Data from WHO also indicates that among the various types of Diabetes Mellitus, Type 2 Diabetes Mellitus has the highest prevalence, accounting for 90-95% of all cases. Approximately 80% of Type 2 DM patients are in low- and middle-income countries, with an age range of 40-59 years (Nurayati and Adriani, 2020).

Diabetes Mellitus (DM) is a chronic disease that has negative impacts on both the physical and psychological well-being of patients. Physical symptoms include polyuria, polydipsia, polyphagia, fatigue, and drowsiness (Sugiarto, 2020). Meanwhile, psychological effects may include anxiety, anger, grief, shame, guilt, hopelessness, depression, loneliness, and helplessness (Hudatul Umam, Solehati and Purnama, 2020). According to (Zuriati, 2018), blood sugar levels that are too high can harm the body, while blood sugar levels that are too low cause the body to lack energy and have the potential to cause various disorders.

The goal of DM management is to reduce the risk of microvascular and macrovascular disease complications and improve the quality of life of DM patients. Incorrect management, inappropriate efforts to prevent DM complications can potentially affect the quality of life of DM patients and one of the efforts that can be made to improve the quality of life is to involve patients in their daily physical and psychological self-care (Zuriati, Zahlimar and Suriya, 2021)

Stress is twice as likely to affect individuals with diabetes compared to those without diabetes (Desi Aprillia, Mery Tania, 2023). Sources of stress experienced by diabetes patients can be physical, such as slow-healing wounds, or mental, such as a reduced role in the household, loss of employment, and decreased income (Naibaho and Kusumaningrum, 2020). Stress triggers the release of hormones from the adrenal glands, namely adrenaline and cortisol, which affect glucose and fat levels. These substances are released by the body to provide additional energy. However, this condition adversely impacts diabetes patients as it leads to increased blood sugar levels (Sianturi, 2021) Coping mechanisms are one way to adapt to stress (Dwi Wahyuni Ambali, Handayani Mangapi and Duma', 2022).

Coping mechanisms involve cognitive changes and behavioral efforts

that are consistently employed to meet specific external and internal demands that strain or exceed an individual's resources (Senjaya *et al.*, 2022). Coping behaviors are categorized into two types: problem-focused coping and emotion-focused coping. The differences in individual coping strategies are influenced by factors such as age, gender, education level, marital status, physical health/energy, problem-solving skills, social skills, social and material support (Rosyidin, 2020).

Based on data obtained by researchers from the Ambarawa Community Health Center, in 2023, there were 1,257 patients with Type 2 Diabetes Mellitus recorded over the past year. A field survey conducted in October 2023 through interviews with 10 Type 2 Diabetes Mellitus patients revealed that the patients often experienced stress related to their required treatments. They expressed discomfort with their persistent illness, financial difficulties, and an overall sense of frustration. These conditions led to poorly managed health among diabetes patients. The impact of this situation included non-adherence to dietary recommendations, reluctance to undergo therapy, whether medication or insulin, and ultimately, uncontrolled blood sugar levels.

RESEARCH METHOD

This study is a quantitative research with a correlational design using a cross-

sectional approach. The sample consists of 76 respondents who are Type 2 Diabetes Mellitus patients at the Ambarawa Pringsewu Community Health Center, selected through accidental sampling. The research instrument is a questionnaire, and the data analysis is conducted using univariate and bivariate analyses with the chi-square test.

RESEARCH RESULT AND DISCUSSION

RESULT

a. Coping Mechanisms

Table 1. Frequency Distribution of Coping Mechanisms Among Type 2 Diabetes Mellitus Patients

Coping Mechanisms	Frequency	Presentase
Adaptif Coping	42	55,3%
Maladaptiv Coping	34	44,4%
Total	76	100%

Based on Table 1, it is known that out of 76 respondents, the majority employed adaptive coping mechanisms, with 42 respondents (55.3%) using this approach.

b. Stress Level

Table 2. Frequency Distribution of Stress Levels Among Type 2 Diabetes Mellitus Patients

Stress Level	Frequency	Presentase
Mild Stress	18	23,7%
Moderate Stress	22	28,9%
Severe Stress	36	47,4%
Total	76	100%

Based on Table 2, it is known that out of 76 respondents, more than half experienced

severe stress, with 36 respondents (47.4%) reporting high stress levels.

c. The Relationship Between Coping Mechanisms and Stress Levels in Type 2 Diabetes Mellitus Patients

Table 3. The Relationship Between Coping Mechanisms and Stress Levels in Type 2 Diabetes Mellitus Patients

Variable	Stress Levels								
Coping Mechanisms	Mild Stress		Moderate Stress		Severe Stress		Total		<i>p</i>
	N	%	N	%	N	%	N	%	
Adaptif Coping	17	40,5	8	19,0	17	40,5	42	100	0,000
Maladaptiv Coping	1	2,9	14	41,2	19	55,9	34	100	
Total	18	23,7	22	28,9	36	47,4	76	100	

Based on Table 3, it is known that 19 respondents (55.9%) with maladaptive coping mechanisms experienced severe stress. The results of the chi-square test showed a p-value of 0.000 (<0.05), indicating that the alternative hypothesis (H_a) is accepted. This suggests that there is a significant relationship between coping mechanisms and stress levels among Type 2 Diabetes Mellitus patients.

of the study showed that the largest coping mechanism was adaptive (61.5%). One of the factors that can affect the level of compliance in people with diabetes is coping mechanisms, namely how individuals face and overcome stress or challenges they face (Yasui-Furukori et al., 2019).

This is consistent with Rustandi et al. (2021), where adaptive coping mechanisms were demonstrated by patients' efforts to talk with others, seek more information about the issues they faced, connect their situation with supernatural strengths through religious activities and prayer, engage in physical exercises to reduce tension, create alternative actions to alleviate the situation, and learn from past experiences. According to (Rosliana Dewi et al., 2023) coping mechanisms are the ways individuals adapt to stress, solve problems, adjust to changes, and manage

DISCUSSION

a. Coping Mecanism

Based on Table 1, it is known that out of 76 respondents, the majority employed adaptive coping mechanisms, with 42 respondents (55.3%) using this approach. This study is in line with Wahyuni (2020), where, out of 33 respondents, 19 had poor coping mechanisms and 14 had good coping mechanisms. According to (Dahlan, Choirunissa and Misrati, 2021) the results

internal factors that limit their resources. The coping mechanisms used by diabetes mellitus patients have a strong impact on the stress or anxiety they experience. Specifically, if diabetes patients have good adjustment with their coping strategies, they are more likely to successfully overcome the challenges they face. The researcher assumes that the majority of respondents employ adaptive coping mechanisms. Coping mechanisms are the simplest strategies for problem-solving and serve to free individuals from their issues. In this study, the lowest total score was 2.2%, which was found in statement number 18 of the questionnaire, where respondents refused to believe they had a problem. It can be concluded that respondents may feel ashamed or uncomfortable discussing the issue, or they may feel that the problem can be resolved on their own

b. Levels Stress

Based on Table 2, it is known that out of 76 respondents, more than half experienced severe stress, with 36 respondents (47.6%) reporting high stress levels. This study is consistent with the research Eka Surani (2020), which found that in Type 2 Diabetes Mellitus patients, 38 respondents (50.7%) experienced severe stress, 27 respondents (36.0%) had moderate stress, and 10 respondents (13.3%) experienced mild stress.

Diabetes Mellitus itself is a chronic

disease that requires adjustment and can lead to stress (Potter & Perry, 2010). Stress caused by a disease can be managed with adaptive coping mechanisms that are positive, constructive, and rational, based on the knowledge of the patient (Keliat BudiAnna, Akemat, Helena Novy C.D., 2015). The adjustment process to chronic diseases such as diabetes mellitus will likely not go well if the patient does not have sufficient knowledge, leading to emotional stress. This emotional stress negatively impacts diabetes control as it may alter dietary habits, exercise routines, and medication adherence. This can lead to various diabetes-related complications (Smeltzer & Bare, 2002).

According to the researcher's assumption, most respondents are female, as women tend to be more sensitive and emotionally reactive than men. Stressors are therefore more likely to cause anxiety in women. Men, on the other hand, are generally more relaxed when facing problems. Additionally, high stress levels can trigger an increase in blood sugar, worsening the condition of diabetes. The higher the stress experienced by diabetes patients, the worse their diabetes may become.

In this study, the lowest total score was 2.2%, which appeared in statement number 18 of the questionnaire, where respondents indicated that they were easily

offended. This suggests that hormonal changes associated with aging can affect mood and responses to environmental stimuli, making individuals more easily irritated.

The data obtained in this study showed that most diabetes patients experience high levels of stress, even though they have had diabetes for more than five years. This is because many patients feel lonely, especially when separated from their families, and experience feelings of isolation in their households. These feelings contribute to anxiety, worry, fear, and a sense of living alone.

c. The Relationship Between Coping Mechanisms and Stress Levels in Type 2 Diabetes Mellitus Patients

Based on Table 3, it is shown that the majority of respondents with maladaptive coping mechanisms experienced severe stress, with 19 respondents (55.9%) reporting high stress levels. The chi-square test results yielded a p-value of 0.000, indicating that the p-value is less than 0.05, which means there is a significant relationship between coping mechanisms and stress levels among Type 2 Diabetes Mellitus patients

This study aligns with the research Wibowo (2020) titled "The Relationship Between Coping Mechanisms and Stress Levels in Type 2 Diabetes Mellitus Patients at Kendal Health Center, Blimbing District,

Malang City." The study found a p-value of 0.000 ($p\text{-value} < 0.05$), which means there is a significant relationship between coping mechanisms and stress levels in Type 2 Diabetes Mellitus patients. The Spearman rank test yielded a correlation coefficient of 0.365, indicating a moderate correlation between coping mechanisms and stress levels. The p-value result of 0.017 (< 0.05) further confirmed the significant relationship between stress levels and coping mechanisms.

Coping mechanisms are patterns used to withstand threatening tension (maladaptive defense) or to solve problems faced (adaptive coping mechanisms). The goal of coping mechanisms is to overcome situations and demands that are perceived as overwhelming, challenging, or taxing, exceeding an individual's available resources.

According to the theory, being diagnosed with a chronic illness like Diabetes Mellitus can lead to psychological stress, characterized by imbalances in physical, social, and psychological aspects. This stress can manifest as feelings of anxiety, fear, worry, and even depression, which can ultimately worsen the individual's health (Keliat BudiAnna, Akemat, Helena Novy C.D., 2015) Coping mechanisms are strategies individuals use to resolve problems, adjust to changes, and adapt to situations. When coping

mechanisms are successful, individuals can better adapt to the changes they face

Coping mechanisms are methods individuals use to adapt to stress, solve problems, adjust to changes, and respond to life-threatening situations by managing certain external and internal needs that limit their resources (Dewi et al., 2021). The coping mechanisms employed by Diabetes Mellitus patients strongly impact the stress or anxiety they experience. If a patient successfully adjusts with their coping strategy, they can overcome the challenges they face, and vice versa. Patients can employ various methods to effectively manage the stress and anxiety caused by Diabetes Mellitus.

Based on the assumption in this study conducted at the Ambarawa Pringsewu Health Center, a relationship between coping mechanisms and stress levels was found. Many respondents with adaptive coping mechanisms also experienced moderate to severe stress levels. This is common when respondents face problems in their family, daily environment, or workplace, leading to stress due to both physical and psychological burdens in their lives.

CONCLUSION

Patients who use maladaptive coping mechanisms are more likely to experience higher levels of stress, which can worsen

their health condition and complicate diabetes management. This study also shows that psychological factors, such as anxiety and stress, affect diabetes management. Patients who are unable to effectively manage their stress tend to neglect their diet, medication therapy, and blood sugar control.

REFERENCE

- Aji Kurniawan, A. *et al.* (2020) 'Laporan Kasus: Xerostomia pada Penderita Diabetes Mellitus Tipe 2 (Case Report: Xerostomia in Type 2 Diabetes Mellitus Patients)', *Jurnal Kedokteran Gigi*, 17(1), pp. 33–36.
- Dahlan, F.M., Choirunissa, R. and Misrati, M. (2021) 'Baby Spa Memengaruhi Perkembangan Motorik Bayi Usia 3-6 Bulan Di Jakarta Timur', *Syifa' MEDIKA: Jurnal Kedokteran dan Kesehatan*, 11(2), p. 165. Available at: <https://doi.org/10.32502/sm.v11i2.2625>.
- Desi Aprillia, Mery Tania, H.A.F. (2023) 'Hubungan Tingkat Stres Dengan Kadar Gula Darah Pada Penderita Diabetes Mellitus Di Kota Bandung', *Jurnal Kesehatan*, 3(1), pp. 12–19.
- Dm, P., Di, T. and Karanganyar, R. (2023) 'Analisis Karakteristik Luka Diabetes Mellitus Pada', 4, pp. 2601–2607.
- Dwi Wahyuni Ambali, D., Handayani Mangapi, Y. and Duma', D. (2022) 'Hubungan Dukungan Keluarga Dengan Mekanisme Koping Pada Lansia Di Lembang Rindingallo Kecamatan Rindingallo Tahun 2021', *Jurnal Ilmiah Kesehatan Promotif*, 6(2), pp. 104–120. Available at: <https://doi.org/10.56437/jikp.v6i2.64>.
- Hudatul Umam, M., Solehati, T. and Purnama, D. (2020) 'Gambaran Kualitas Hidup Pasien Dengan Diabetes Melitus Di Puskesmas Wanaraja', *Jurnal Kesehatan*

- Kusuma Husada, pp. 70–80. Available at: <https://doi.org/10.34035/jk.v1i1.419>.
- Keliat BudiAnna, Akemat, Helena Novy C.D., N.H. (2015) *Keperawatan Kesehatan Jiwa Komunitas : CMHN (basic course)*. Jakarta: EGC.
- Naibaho, R.A. and Kusumaningrum, N.S.D. (2020) 'Pengkajian Stres pada Penyandang Diabetes Mellitus', *Jurnal Ilmu Keperawatan Jiwa*, 3(1), p. 1. Available at: <https://doi.org/10.32584/jikj.v3i1.455>.
- Nurayati, L. and Adriani, M. (2017) 'Hubungan Aktifitas Fisik dengan Kadar Gula Darah Puasa Penderita Diabetes Melitus Tipe 2', *Amerta Nutrition*, 1(2), p. 80. Available at: <https://doi.org/10.20473/amnt.v1i2.6229>.
- Potter & Perry (2010) 'Fundamentals of Nursing', in A.P. Patricia Potter (ed.) *Fundamental*. 7th edn. Salemba Medika, p. 2354.
- Rosliana Dewi *et al.* (2023) 'Hubungan Mekanisme Koping Dengan Kecemasan Pasien Diabetes Melitus Tipe 2 Di Wilayah Kerja Puskesmas Karang Tengah Kota Sukabumi', *Media Informasi*, 19(1), pp. 89–95. Available at: <https://doi.org/10.37160/bmi.v19i1.48>.
- Rosyidin, Z. (2020) 'Peningkatan kualitas hidup penderita Diabetes Mellitus melalui Rational Emotive Behavior Therapy (REBT)', pp. 1–121.
- Senjaya, S. *et al.* (2022) 'Hubungan Mekanisme Koping Dengan Imun Pada Odha Selama Pandemi Covid 19', *SENTRI: Jurnal Riset Ilmiah*, 1(4), pp. 1026–1042. Available at: <https://doi.org/10.55681/sentri.v1i4.319>.
- SIANTURI, B.N. (2021) *Literatur Riview: Tinjauan Tingkat Stres Pada Lansia Penderita Diabetes Melitus Type 2*.
- Smeltzer & Bare, 2002 (2002) 'Buku Keperawatan Medikal Bedah', in *edisi 8*.
- Sugiarto (2016) '濟無No Title No Title No Title', 4(1), pp. 1–23.
- Yasui-Furukori, N. *et al.* (2019) 'Coping behaviors and depressive status in individuals with type 2 diabetes mellitus', *Annals of General Psychiatry*, 18(1), p. 11. Available at: <https://doi.org/10.1186/s12991-019-0235-5>.
- Zuriati, Z. (2018) 'Lentera Kesehatan 'Aisyiyah, 3(1): 244-249', 3(1), pp. 244–249.
- Zuriati, Z., Zahlimar, Z. and Suriya, M. (2021) 'Edukasi Kesehatan Pencegahan Resiko Diabetes Melitus Di Desa Sijau Kecamatan Rimbo Tengah Bungo', *LOSARI: Jurnal Pengabdian Kepada Masyarakat*, 3(1), pp. 21–25. Available at: <https://doi.org/10.53860/losari.v3i1.37>.