



Relationship Between Diabetes Distress and Self Management on Type 2 Diabetes Mellitus Patients in Sumbang District Banyumas

Aulia Nur Fadillah^{1*}, Rahmawati Wulansari¹, Prasetyo Tri Kuncoro¹, Purwa Riana Isnaya¹, Ernasiwi Astri Oktavili¹, Teguh Anamani¹

¹Faculty of Medicine, Jenderal Soedirman University, Purwokerto, Indonesia

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ABSTRACT

Background: Diabetes distress is a form of anxiety, worry, fear, and perceived threat related to the struggles experienced by individuals living with diabetes mellitus. The presence of diabetes distress is associated with reduced self-care (self-management). Diabetes mellitus self-management refers to a series of actions taken by individuals to manage their medical condition, including dietary regulation, physical activity management, regular and consistent intake of diabetes medication, blood glucose monitoring, and routine foot care. **Objective:** This study aims to determine the relationship between diabetes distress and self-management in patients with type 2 diabetes mellitus in Sumbang District, Banyumas. **Method:** This research uses an analytical observational study with a cross sectional approach. The sampling technique used was a total sampling of 55 people. Data analysis using the chi-square test. **Research Results:** The results of the research showed that self-management of type 2 DM patients was mostly in the sufficient category, namely 25 people (45.5%) and diabetes distress of type 2 DM patients is in the mild category, namely 35 people (63.6%). There is a relationship between diabetes distress and self-management in type 2 diabetes mellitus patients in Sumbang District, Banyumas ($p = 0.000$). **Conclusion:** Diabetes distress is related to self-management in type 2 diabetes mellitus patients.

1. INTRODUCTION

Indonesia ranks fifth globally in terms of the number of individuals with diabetes mellitus (DM), with approximately 19.5 million people aged 20–79 years affected (IDF, 2021). Data from the International Diabetes Federation indicate that the prevalence of diabetes in Indonesia continues to increase annually. In 2019, Indonesia was ranked seventh, with 10.7 million people living with diabetes (IDF, 2019). Currently, diabetes mellitus is the third leading cause of mortality in the country, accounting for approximately 57.42 deaths per 100,000 population (IHME, 2021).

People with diabetes mellitus are at higher risk of experiencing psychological and behavioral health challenges, including depression, anxiety, eating disorders, cognitive dysfunction or dementia, diabetes distress (DD), psychological insulin resistance (reluctance or refusal to initiate insulin therapy), and a persistent fear of hypoglycemia (Onyenekwe *et al.*, 2020). Diabetes distress refers to the anxiety, worry, fear, and perceived threats associated with the ongoing struggles of living with diabetes. These challenges include disease management, the risk of complications, the potential loss of physical function, and concerns regarding access to health care (Fisher *et al.*, 2019). From a psychological perspective, diabetes distress can negatively influence self-management by reducing motivation and self-efficacy, disrupting physiological glucose regulation, generating conflict within social support systems, and fostering passive attitudes or avoidance of treatment (Morales-Brown *et al.*, 2024).

Diabetes distress is a widespread phenomenon observed across age groups and cultures worldwide. A study conducted by Nurmaguphita and Sugiyanto (2019) at PKU Muhammadiyah Bantul Hospital and PKU Muhammadiyah Yogyakarta Hospital found that among 44 patients with

*Corresponding author

E-mail addresses: aulianurfadila11@gmail.com (Aulia Nur Fadillah)

type 2 diabetes, 50% experienced mild diabetes distress, 45% moderate distress, and 4.5% severe distress. Similarly, Ma'ruf and Palupi (2021) reported that 42.4% of patients with type 2 diabetes at Surakarta General Hospital experienced mild diabetes distress, while 57.6% reported severe distress. In another study at Oesapa Primary Health Center in Kupang, 56% of patients with type 2 diabetes reported moderate diabetes distress (Nugroho *et al.*, 2024).

The presence of diabetes distress has been strongly linked to diminished self-care behaviors, or self-management. Diabetes self-management is defined as the individual's ability to address personal health problems and adopt appropriate disease management and treatment behaviors to minimize diabetes-related complications (Fadli & Uly, 2023). According to Luthfa and Fadhilah (2019), self-management encompasses dietary regulation, physical activity, blood glucose monitoring, adherence to antidiabetic medication, and routine foot care. Effective self-management is critical in type 2 diabetes care, as it contributes to maintaining blood glucose stability, preventing both acute and chronic complications, and enhancing the long-term effectiveness of treatment (Fadli & Uly, 2023; PERKENI, 2021). Furthermore, the ability to manage diabetes independently improves quality of life, reduces dependency on health services, and lowers diabetes distress by strengthening patients' sense of control and self-confidence (Morales-Brown *et al.*, 2024).

Although research examining the relationship between diabetes distress and self-management has been conducted in several regions, no study has specifically focused on patients with type 2 diabetes in Sumbang District, Banyumas Regency. Sumbang District was selected as the study site because it has the third-highest number of type 2 diabetes cases in Banyumas Regency, with 699 patients (Banyumas Regency Health Profile, 2022). Banyumas Regency itself ranks second in Central Java Province, with 23,461 patients with diabetes mellitus, reflecting a substantial disease burden. Therefore, this study is expected to provide scientific contributions and contextual evidence that may serve as a foundation for promotive and preventive interventions at the primary health care level.

2. METHOD

This study employed an observational analytic design with a cross-sectional approach, in which variables were measured at the same point in time to examine the relationship between diabetes distress and self-management among patients with type 2 diabetes mellitus (T2DM). The target population comprised all patients with T2DM, while the accessible population included patients enrolled in the *Prolanis* (Chronic Disease Management Program) for T2DM at Sumbang Primary Health Center, Banyumas, during August–September 2024. Sample size was determined using the binomial proportion formula, yielding 50 participants. An additional 10% was added to account for potential dropouts, resulting in a final sample of 55 respondents. Participants were recruited using total sampling based on predetermined inclusion and exclusion criteria. Data were collected using two validated and reliable instruments: the Diabetes Distress Scale-17 (DDS-17), which assesses distress across four domains (emotional burden, physician-related distress, regimen-related distress, and interpersonal distress), and the Self-Management Diabetes Questionnaire (SMDQ), which evaluates glucose management, dietary control, physical activity, use of health services, and overall self-care practices. Data analysis was conducted in two stages. Univariate analysis was used to describe the frequency distribution and proportions of each variable. Bivariate analysis was then performed using the Chi-square test or Fisher's exact test, as appropriate, to examine the association between diabetes distress and self-management among T2DM patients in Sumbang District, Banyumas.

3. RESULT AND DISCUSSION

Result

The measurement of self-management and diabetes distress levels was conducted among 55 patients with type 2 diabetes mellitus. The complete data are presented in the table below.

Table 1. Description of Age, Sex, Education, Duration of Diabetes, Self-Management Level, and Diabetes Distress Discussion

Variable	n	(%)
Age		
Adult (26-45 years)	1	1.8
Middle-aged (46-59 years)	25	45.5
Elderly (≥ 60 tahun)	29	52.7
Sex		
Female	45	81.8
Male	10	18.2
Education		
Primary	49	89.2
Secondary	3	5.4
Tertiary	3	5.4
Duration of Diabetes (years)		
< 5	14	25.5
5-10	18	41.8
≥ 10	23	32.7
Self-management		
Poor	14	25.5
Fair	25	45.5
Good	16	29.1
Diabetes Distress		
Moderate	20	36.4
Mild	35	63.6

As presented in Table I, the majority of respondents were categorized as elderly, comprising 29 individuals (52.7%), followed by middle-aged respondents with 25 individuals (45.5%), while only 1 respondent (1.8%) was classified as an adult. Most respondents were female, totaling 45 individuals (81.8%), compared with 10 males (18.2%). In terms of educational level, the majority had primary education ($n = 49$; 89.2%), whereas only 3 respondents (5.4%) each had secondary and tertiary education. Regarding the duration of diabetes mellitus (DM), most respondents had lived with the disease for ≥ 10 years ($n = 23$; 41.8%), followed by 18 respondents (32.7%) with a duration of 5–10 years, and 14 respondents (25.5%) with less than 5 years.

With respect to self-management levels, the majority of respondents fell into the fair category ($n = 25$; 45.5%), while respondents 16 (29.1%) demonstrated good self-management, and 14 respondents (25.5%) reported poor self-management. In terms of diabetes distress, most respondents were classified as having mild distress ($n = 35$; 63.6%), while the remaining 20 respondents (36.4%) experienced moderate distress. Bivariate analysis using the Chi-square test was conducted to examine the association between diabetes distress and self-management behaviors among patients with type 2 diabetes mellitus in Sumbang District, Banyumas.

Table 2. Association between Diabetes Distress and Self-Management among Patients with Type 2 Diabetes Mellitus in Sumbang District, Banyumas

<i>Self-Management</i>	<i>Diabetes Distress</i>						<i>p</i>
	Moderate		Mild		Total		
	f	%	f	%	f	%	
Poor	12	85,7	2	14,3	14	100,0	0,000
Fair	6	24,0	19	76,9	25	100,0	

Good	2	12,5	14	87,5	16	100,0
Total	20	36,4	35	63,6	55	100,0

Based on Table 2, there was a statistically significant association between diabetes distress and self-management among patients with type 2 diabetes mellitus in Sumbang District, Banyumas ($p = 0.000$). Among patients with poor self-management, the majority (85.7%) experienced moderate distress, while only 14.3% reported mild distress. Conversely, in the group with good self-management, most respondents (87.5%) experienced mild distress, and only 12.5% experienced moderate distress. A similar pattern was also observed in the fair self-management category, in which the majority (76.0%) of respondents reported mild distress.

Discussion

Based on Table I, the findings of this study indicate that the majority of respondents were older adults (98.2%), consistent with the characteristics of type 2 diabetes mellitus (T2DM) as a chronic and progressive disease, the risk of which increases with age due to metabolic changes and insulin resistance. Most respondents were female (81.8%), which may reflect women's greater participation in health screenings, but also their higher risk of T2DM due to hormonal fluctuations, particularly after menopause. In terms of education, the majority of respondents had only primary-level education (89.2%), a factor that may influence disease understanding and management, as health literacy has been shown to play a crucial role in successful self-care. Furthermore, 41.8% of respondents had been living with diabetes for ≥ 10 years, a duration that has been associated in several studies with declining motivation and adherence to self-management, thereby increasing the risk of complications.

With respect to disease management behavior, most patients demonstrated a fair level of self-management (45.5%), while 25.5% had poor self-management, indicating a need for further improvement in self-care capacity. Effective self-management requires consistent implementation of dietary regulation, physical activity, blood glucose monitoring, and appropriate use of health services to prevent complications such as neuropathy, nephropathy, and vascular disease. In addition, the majority of patients reported mild diabetes distress (63.6%), while 36.4% experienced moderate distress. Although relatively low, these levels of distress may still negatively impact the effectiveness of disease management. Distress is often triggered by concerns about complications, challenges in following treatment regimens, and limited access to health services, underscoring the importance of integrating both medical and psychological aspects into patient care.

Psychosocial factors are known to play an important role in the development of diabetes distress. Feelings of helplessness resulting from fluctuating blood glucose levels that are difficult to control may foster frustration and loss of perceived control over one's body. Unsupportive interactions with healthcare providers such as authoritarian communication styles or rushed consultations can also lead patients to feel undervalued and disengaged from their treatment. Similarly, overly dominant family involvement, though often well-intentioned, may hinder patient autonomy and foster resistance to medical advice. Moreover, social stigma and negative self-perceptions such as viewing diabetes as a personal failing or source of shame can further isolate patients from social networks and undermine adherence to care (Morales-Brown *et al.*, 2024).

As shown in Table II, the level of self-management was inversely related to the level of diabetes distress among T2DM patients. Of the 14 patients with poor self-management, the majority (85.7%) experienced moderate distress. In contrast, among the 25 patients with fair self-management, most (76.9%) reported mild distress. Similarly, nearly all patients with good self-management (87.5%) also reported mild distress. These findings indicate a clear trend: the better patients manage their condition, the lower their distress levels, whereas poor self-management is associated with higher psychological burden. Statistical analysis using the Chi-square test confirmed a significant association between diabetes distress and self-management behaviors.

($p = 0.000$), indicating that higher distress levels are strongly correlated with poorer self-care practices in this population.

The high levels of distress observed among patients with diabetes mellitus are often triggered by the extensive lifestyle modifications required, including dietary restrictions, regular blood glucose monitoring, adherence to medication, and consistent physical activity. Such changes demand patients to abandon long-established habits, creating major challenges in adaptation (Nuraini *et al.*, 2022). Poorly managed psychological stress can further provoke physiological responses, including activation of the sympathetic nervous system and the release of stress hormones such as adrenaline and noradrenaline. These hormones raise blood glucose levels as an adaptive stress response; however, in individuals with diabetes, this response becomes maladaptive, exacerbating metabolic dysfunction and increasing the risk of complications (Amirudin & Yunitasari, 2021; Lannon, 2024).

Consistent with these findings, previous studies have demonstrated that diabetes distress exerts a significant impact on self-management behaviors (Wahyudin *et al.*, 2024). High levels of distress may reduce motivation, cause emotional exhaustion, and weaken adherence to treatment regimens, particularly with regard to dietary control and blood glucose stabilization (Morales-Brown *et al.*, 2024; Park *et al.*, 2024). A longitudinal study by Park *et al.* (2024) further noted that patients with high distress struggled to consistently maintain HbA1c levels below 6.5% over the long term.

Given the results of this study where most patients exhibited only fair self-management, some demonstrated poor self-management, and a notable proportion reported moderate distress there is a clear need for integrated interventions addressing both psychological and behavioral aspects of diabetes care. Potential interventions include structured education programs that not only emphasize dietary management, physical activity, blood glucose monitoring, and medication adherence but also incorporate stress management strategies such as relaxation techniques, meditation, and coping skills training to reduce distress. Considering the low educational attainment of most respondents, educational efforts should be delivered using simple language, interactive methods, and practical guidance to ensure comprehension and application. Furthermore, the establishment of *Prolanis*-based support groups could provide a platform for peer sharing and emotional support, which has been shown to enhance motivation and adherence. Family involvement in educational activities is also essential to foster a supportive home environment that promotes self-management practices. By integrating medical, psychological, and social approaches into primary health care services, diabetes distress can be mitigated, patient self-management capacity can be strengthened, and the risk of long-term complications minimized.

4. CONCLUSION

The majority of type 2 diabetes mellitus patients demonstrated a moderate level of self-management, with 25 individuals (45.5%) classified in this category, while 14 patients (25.5%) exhibited poor self-management. Regarding diabetes distress, most patients reported mild distress (35 individuals, 63.6%), whereas 20 patients (36.4%) experienced moderate distress. A statistically significant association was identified between diabetes distress and self-management behaviors among type 2 diabetes mellitus patients in Sumbang District, Banyumas ($p = 0.000$).

5. REFERENCES

- ADA. 2023. *Standards of Care in Diabetes*. The American Diabetes Association's (ADA), California.
- Amirudin, I., & Yunitasari, E. (2021). Diabetes Distress dan Risiko Penyakit Kardiovaskular pada Penderita Diabetes Melitus Tipe II. *Jurnal Aisyah: Jurnal Ilmu Kesehatan*. 6:187-191.
- Aulia, M., Ismonah, I., & Handayani, P. A. 2022. Hubungan Tingkat Stres dengan *Self- management* pada Penderita Diabetes Mellitus Tipe II. *Jurnal Perawat Indonesia*. 6(3):1223–1233.
- Dinas Kesehatan Kabupaten Banyumas. 2019. *Profil Kesehatan Kabupaten Banyumas Tahun 2019*. Banyumas: Dinas Kesehatan Kabupaten Banyumas.

- Dinas Kesehatan Kabupaten Banyumas. 2022. *Profil Kesehatan Kabupaten Banyumas Tahun 2022*. Banyumas: Dinas Kesehatan Kabupaten Banyumas.
- Dinas Kesehatan Provinsi Jawa Tengah. 2022. *Profil Kesehatan Provinsi Jawa Tengah Tahun 2022*. Semarang: Dinas Kesehatan Provinsi Jawa Tengah.
- Fadli, F., & Uly, N. 2023. *Perilaku Perawatan Diri dan Diabetes Self- management Education (DSME) Pada Pasien Diabetes Melitus Tipe 2*. Pustaka Aksara, Surabaya.
- Fisher, L., Hessler, D., Polonsky, W., Strycker, L., Bowyer, V., & Masharani, U. 2019. Patient Education and Counseling toward Effective Interventions to Reduce Diabetes Distress Among Adults With Type 1 Diabetes: Enhancing Emotion Regulation and Cognitive Skills. *Patient education and counseling*, 102(8):1499– 1505.
- Hashim, S. A., Barakatun-Nisak, M. Y., Abu Saad, H., Ismail, S., Hamdy, O., & Mansour, A. A. 2020. Association of Health Literacy and Nutritional Status Assessment with Glycemic Control In Adults With Type 2 Diabetes Mellitus. *Nutrients*. 12(10):31– 52.
- Hidayah, M. 2019. Hubungan Perilaku *Self-management* dengan Kadar Gula Dalam Darah pada Pasien Diabetes Mellitus Tipe 2 di Wilayah Kerja Puskesmas Pucang Sewu, Surabaya. *Amerta Nutrition*. 3(3):176.
- IDF. 2019. *Diabetes Atlas Eighth Edition 2019 International Diabetes Federation* (9th ed.). International Diabetes Federation, Belgium.
- IHME. 2021. *Global Burden of Disease 2021: Findings From The Gbd 2021 Study*. Institute For Health Metrics and Evaluation, Washington DC.
- Ismail, L., Materwala, H., & Al Kaabi, J. 2021. Association of Risk Factors With Type 2 Diabetes: A Systematic Review. *Computational and structural biotechnology journal*. 19(1):1759–1785.
- Kautzky-Willer, A., Leutner, M., & Harreiter, J. 2023. Sex Differences In Type 2 Diabetes. *Diabetologia*. 66(6):986–1002.
- Kemenkes RI. 2013. *Hasil Riset Kesehatan Dasar Tahun 2013*. Badan Penelitian dan Pengembangan Kementerian Kesehatan RI, Jakarta.
- Lannon, R. 2024. How Stress Hormones Affect Blood Sugar Levels in Diabetes. *African Journal of Diabetes Medicine*. 32(5).
- Ma'ruf, M. A., & Palupi, D. L. M. 2021. Hubungan antara Tingkat Stres dengan Kualitas Hidup Penderita Diabetes Melitus di Wilayah Kerja Rumah Sakit Umum Surakarta. *Prosiding Seminar Informasi Kesehatan Nasional*. 1(1):400–410.
- Mansour, A., Mousa, M., Abdel Mannan, D., Tay, G., Hassoun, A., & Alsafar, H. 2023. Microvascular and Macro vascular Complications of Type 2 Diabetes Mellitus: Exome Wide Association Analyses. *Frontiers in Endocrinology*. 14(1):1–11.
- Morales-Brown, L. A., Perez Algorta, G., & Salifu, Y. 2024. Understanding Experiences of Diabetes Distress: A Systematic Review and Thematic Synthesis. *Journal of diabetes research*. 2024(1):3946553.
- Nugroho, F. C., Banase, E. F. T., Hamu, A. H., Making, M. A., Vanchapo, A. R., Nubi, L. B., & Banggut, E. D. 2024. Hubungan antara Diabetes Distress dengan Self Care Pasien Diabetes Mellitus Tipe III Puskesmas Oesapa Kota Kupang. *Jurnal Ners*. 8(1):658–666.
- Nuraini, I., Febrianti, N., Rabiah, R., & Kalla, H. 2022. Hubungan Diabetes Distress dengan Self Care pada Diabetes Mellitus. *Jurnal Kolaboratif Sains*. 5(5):278–283.
- Nurmaguphita, D., & Sugiyanto, S. 2019. Gambaran Distress pada Penderita Diabetes Mellitus. *Jurnal Keperawatan Jiwa*. 6(2):76–82.
- Onyenekwe, B. M., Young, E. E., Nwatu, C. B., Okafor, C. I., & Ugwueze, C. V. 2020. Diabetes Distress and Associated Factors In Patients with Diabetes Mellitus In SouthEast Nigeria. *Dubai Diabetes and Endocrinology Journal*. 26(1):31–37.
- Park, H. S., et al. 2024. Impact of diabetes distress on glycemic control and diabetic complications in type 2 diabetes mellitus. *Scientific Reports*. 14(1):5568.
- Pratiwi, T. I. 2022. Gambaran Tingkat Kepatuhan Minum Obat Pasien Diabetes Melitus Tipe 2 di Puskesmas Pertiwi Kota Makassar. *Wal'afiat Hospital Journal*. 03(02):156–164.

- Putra, A. J. P., Widayati, N., & Sutawardana, J. H. 2017. Hubungan Diabetes Distress dengan Perilaku Perawatan Diri pada Penyandang Diabetes Melitus Tipe 2 di Wilayah Kerja Puskesmas Rambipuji Kabupaten Jember (Correlation between Diabetes Distress and Self care Behaviour in People with Type 2 Diabetes Mellitus. *Pustaka Kesehatan*. 5(1):185–192.
- Ulfa, H. Z., Wardoyo, E., & Dijaya, J. I. 2024. Long Suffering Relationship to Self- management Behavior and Complications in Type 2 Diabetes Mellitus Sufferers. *Indonesian Journal of Global Health Research*. 6(S5):153-162.
- Wahyudin, W., Arjadi, F., Setyanto, M., Pauzi, R., Riyanto, S., & Saad, N. (2024). Pemeriksaan Glukosa Darah Dan Kolesterol Serta Penyuluhan Kesehatan Tentang Hiperkolesteronemia dan Komplikasi Diabetes Mellitus Pada Warga Dengan Overweight Dan Obesitas Di Desa Kalibagor, Kecamatan Kalibagor, Kabupaten Banyumas. *Linggamas: Jurnal Pengabdian Masyarakat*, 2(1), 28-36. doi:10.20884/1.linggamas.2024.2.1.12942
- Widiasari, K. R., Wijaya, I. M. K., & Suputra, P. A. 2021. Diabetes Melitus Tipe 2: Faktor Risiko, Diagnosis, dan Tatalaksana. *Ganesha Medicina*. 1(2):114–120.
- Wu, Y., Zhou, L., Zhang, X., Yang, X., Niedermann, G., & Xue, J. 2022. Psychological distress and eustress in cancer and cancer treatment: Advances and perspectives. *Science advances*. 8(47):7982.