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Original Research Paper

# The Relationship of Emotional Intelligence with the Quality of Life of Diabetes Mellitus Patients in West Purwokerto Health Center

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**ABSTRACT**

**Background:** The quality of life of Diabetes Mellitus (DM) patients is an essential aspect that must be considered throughout the treatment process. Psychological factors significantly influence the quality of life and can be better managed if patients possess good emotional intelligence. **Objective:** This study aimed to determine the relationship between emotional intelligence and the quality of life of DM patients at the Purwokerto Barat Health Center. **Methods:** This quantitative study employed a correlational analytic design with a cross-sectional approach. A total of 115 DM patients were selected using proportionate stratified random sampling. Data were collected using the Emotional Intelligence Scale (EIS) and the Diabetes Quality of Life (DQOL) questionnaire. Data analysis was performed using the chi-square test. **Results:** The majority of DM patients were elderly (81.7%), female (65.2%), had a basic education level (51.3%), had an income below the regional minimum wage (90.4%), had an average disease duration of 77.41 months (6.2 years), and had no other complications (71.3%). Most patients had good emotional intelligence (92.2%) and good quality of life (93%). **Conclusion:** There is a significant relationship between emotional intelligence and the quality of life of DM patients at the Purwokerto Barat Health Center.

## Introduction

Diabetes Mellitus (DM) is a chronic, non-communicable disease that contributes significantly to global morbidity and mortality rates[1]. According to the World Health Organization (WHO), DM is one of the most common chronic diseases worldwide, characterized by abnormal blood glucose levels that require continuous management to prevent long-term complications[2]. The prevalence of DM has been increasing globally and nationally. In Indonesia, the Basic Health Research (Riskesdas) reported that the prevalence of DM rose from 6.9% (approximately 12.2 million people) in 2013 to 8.5% (approximately 15 million people) in 2018[3]. In Central Java, the prevalence also increased from 1.6% to 2.1% over the same period. In Banyumas Regency, the number of DM cases rose from 1,599 cases in 2014 to 1,686 cases in 2021, with a notable increase in type 1 DM patients[4]. DM requires long-term medical attention to prevent complications, improve quality of life, and reduce morbidity and mortality[5].

One of the significant impacts of DM is its effect on patients' quality of life, particularly through the development of physical and psychological complications[6]. Quality of life is an essential parameter in evaluating the success of chronic disease management, including DM[7]. Psychological disturbances, including high levels of stress and anxiety, are common among DM patients[8]. Studies show that individuals with chronic diseases are 2.6 times more likely to experience emotional and mental disorders, which can lead to disability, reduced productivity, and premature death[9,10,11].

Previous studies also indicate that psychological disorders in chronic patients can exacerbate physical symptoms, leading to a further decline in quality of life[12,13]. Mental-emotional problems can, however, be mitigated if DM patients possess good emotional intelligence[14]. Emotional intelligence (EI) refers to the ability to recognize, manage, and regulate one's emotions, as well as to understand and influence the emotions of others[15].

Several studies have demonstrated the importance of emotional intelligence in improving health outcomes and quality of life in chronic disease management[16]. Patients with high emotional intelligence are better equipped to cope with stress, adhere to treatment, and maintain positive social relationships[17]. Conversely, low emotional intelligence may result in excessive anxiety, social withdrawal, fear, feelings of rejection, sadness, and depression, which can severely impact quality of life[18,19]. Although the relationship between emotional intelligence and quality of life in DM patients has been studied in various settings, there remains a lack of research focusing on primary healthcare centers in smaller regions such as Purwokerto Barat. This study offers novelty by investigating this relationship in a specific community-based healthcare setting using the Emotional Intelligence Scale (EIS) and the Diabetes Quality of Life (DQOL) questionnaire, which have rarely been integrated in previous research within this population.

Based on preliminary data from the Purwokerto Barat Health Center in 2023, there were 1,150 registered DM patients, of whom only 71 actively participated in the Prolanis program (a chronic disease management initiative). Coverage data indicated that Kelurahan Rejasari had the lowest DM management participation at 93%, followed by Kelurahan Bantarsoka at 97%. An initial survey using the DQOL questionnaire among 10 DM patients showed that 60% had poor quality of life, while the EIS revealed that 50% had moderate emotional intelligence and 30% had low emotional intelligence[20]. This finding raises the primary research question: "Is there a significant relationship between emotional intelligence and the quality of life of DM patients at the Purwokerto Barat Health Center?" The purpose of this study is to determine this relationship and provide insights into the psychological factors affecting DM management at the primary healthcare level.

The findings of this study are expected to have practical implications for DM management strategies, particularly in primary healthcare settings. If emotional intelligence is found to significantly impact quality of life, interventions aimed at improving emotional intelligence could be integrated into routine DM care to enhance patient outcomes. Furthermore, this research could contribute to the development of more holistic chronic disease management models that address both physical and psychological aspects, ultimately improving the overall well-being and productivity of DM patients.

## Materials and Methods

### *Research Design*

This study employed a correlational analytic design with a cross-sectional approach. The research was conducted from December 2023 to July 2024 at the Purwokerto Barat Health Center area. This design was chosen to analyze the relationship between emotional intelligence and the quality of life of Diabetes Mellitus (DM) patients at a specific point in time.

### *Sample*

The population in this study included all DM patients registered in the working area of the Purwokerto Barat Health Center in 2023, totaling 1,150 patients. The sample size consisted of 115 respondents, determined using the G-Power application with a random

selection method (lottery system). The inclusion criteria were DM patients who were able to read and write, while the exclusion criteria were DM patients who were taking psychiatric medications such as antidepressants or those with physical disabilities that hinder participation.

### *Data Collection Techniques*

Data were collected using two validated instruments. Emotional intelligence was measured using the Emotional Intelligence Scale (EIS), which categorizes scores into three levels: Poor (23–45), Moderate (46–68), and Good (69–92). The quality of life was assessed using the Diabetes Quality of Life (DQOL) questionnaire, which classifies the results into two categories: Poor (< 54.12) and Good (≥ 54.12). Both questionnaires were administered directly to the respondents. The Emotional Intelligence Scale (EIS) consists of items that assess self-awareness, self-management, self-motivation, empathy, and relationship management, while the DQOL questionnaire evaluates physical health, psychological well-being, social relationships, and environmental factors related to the daily life of DM patients. Respondents were guided by trained research assistants to ensure accurate completion of the questionnaires and to minimize misunderstandings during data collection. The total time required to complete both instruments was approximately 30 to 45 minutes per respondent.

### *Data Analysis Techniques*

The data analysis process included both univariate and bivariate analyses. Univariate analysis was used to describe the characteristics of respondents, emotional intelligence levels, and quality of life scores. Bivariate analysis was performed using the chi-square test to determine the relationship between emotional intelligence and the quality of life of DM patients. All statistical analyses were conducted using SPSS version 26.

### *Ethical Consideration*

This research obtained ethical approval from the Health Research Ethics Committee of Universitas Harapan Bangsa, with approval number No. B.LPPM-UHB/705/07/2024. All respondents were informed about the purpose, procedures, benefits, and potential risks of the study, and provided informed consent before participation. The confidentiality and anonymity of respondents were strictly maintained throughout the study.

## Results

This study aimed to analyze the relationship between emotional intelligence and the quality of life of Diabetes Mellitus (DM) patients in the working area of Purwokerto Barat Health Center. Data were collected from 115 respondents who met the inclusion criteria. The results are presented in several tables that describe the characteristics of the respondents, the distribution of emotional intelligence levels, the distribution of quality of life categories, and the relationship between emotional intelligence and quality of life. The analysis includes univariate and bivariate results, which provide an overview of the demographic profile, emotional intelligence levels, quality of life status, and the statistical relationship between these two key variables. The detailed findings are shown in Tables 1 to 5 below.

Based on Table 1, it can be seen that the majority of Diabetes Mellitus (DM) patients in the working area of the Purwokerto Barat Health Center are in the late elderly age category (> 55 years), accounting for 81.7%. This indicates that DM is predominantly experienced by older adults who are physiologically at higher risk of developing complications. In terms of gender, most respondents were female (65.2%), suggesting

that the prevalence of DM among females is higher than that of males in this population. Regarding education level, more than half of the respondents had only completed primary education (51.3%), and approximately 20.9% had no formal education, which may affect their understanding of DM management and their ability to make informed healthcare decisions. In terms of economic status, the majority of respondents (90.4%) had incomes below the regional minimum wage, indicating that most DM patients in this area belong to lower socioeconomic groups, which may present barriers to optimal access to healthcare services. Based on the history of complications, most respondents (71.3%) did not experience complications, although approximately 28.7% had developed complications that could negatively affect their quality of life. Overall, these characteristics illustrate that most DM patients in the region are elderly women with low educational backgrounds and limited economic conditions, which may present unique challenges in disease management and quality of life improvement.

**Table 1.** Frequency Distribution of DM Patient Characteristics in the Working Area of Purwokerto Barat Health Center in 2024

| Characteristics | Category | Frequency (f) | Percentage (%) |
|---|---|---|---|
| Age | Late Adolescence (17–25 years) | 2 | 1.8% |
| | Early Adulthood (26–35 years) | 5 | 4.3% |
| | Late Adulthood (36–45 years) | 14 | 12.2% |
| | Early Elderly (46–55 years) | 0 | 0% |
| | Late Elderly (> 55 years) | 94 | 81.7% |
| Gender | Male | 40 | 34.8% |
| | Female | 75 | 65.2% |
| Education | No Education | 24 | 20.9% |
| | Primary Education | 59 | 51.3% |
| | Secondary Education | 29 | 25.2% |
| | Higher Education | 3 | 2.6% |
| Economic Status | Below Minimum Wage (< UMR) | 104 | 90.4% |
| | Minimum Wage or Above (≥ UMR) | 11 | 9.6% |
| Complications | Present | 33 | 28.7% |
| | None | 82 | 71.3% |
| **Total** | | **115** | **100%** |

**Table 2.** Duration of Diabetes Mellitus Among DM Patients in the Working Area of Purwokerto Barat Health Center, 2024

| Characteristic | Duration (Months) |
|---|---|
| Mean | 77.41 |
| Median | 60 |
| Minimum | 4 |
| Maximum | 267 |

Table 2 shows that the respondents had an average duration of Diabetes Mellitus (DM) of 77.41 months, which is approximately 6.2 years. The median duration was 60 months (5 years), indicating that half of the patients had been living with DM for five years or less, while the other half had been managing the disease for longer periods. The shortest reported duration of DM among respondents was 4 months, while the longest duration was 267 months (approximately 22 years and 3 months). These findings suggest that the

sample included both newly diagnosed patients and those with long-standing DM, providing a wide variation in disease experience and management. The relatively long average duration of illness indicates that many respondents had been living with DM for several years, which may influence their emotional resilience, complication risk, and overall quality of life.

**Table 3.** Frequency Distribution of Emotional Intelligence Among DM Patients in the Working Area of Purwokerto Barat Health Center, 2024

| Emotional Intelligence Level | Frequency (f) | Percentage (%) |
|---|---|---|
| Good | 106 | 92.2% |
| Moderate | 9 | 7.8% |
| Poor | 0 | 0% |
| **Total** | **115** | **100%** |

Table 3 shows that the majority of DM patients (92.2%) in the working area of Purwokerto Barat Health Center had a good level of emotional intelligence. Only 7.8% of respondents were in the moderate category, and notably, no respondents were categorized as having poor emotional intelligence. These results indicate that most DM patients in this study possessed a strong ability to recognize, manage, and regulate their emotions, as well as maintain good social interactions and self-motivation. A high level of emotional intelligence may contribute positively to their ability to cope with the psychological demands of living with a chronic disease like DM and may support better self-management, decision-making, and adaptation to their health condition.

**Table 4.** Frequency Distribution of Quality of Life Among DM Patients in the Working Area of Purwokerto Barat Health Center, 2024

| Quality of Life | Frequency (f) | Percentage (%) |
|---|---|---|
| Good | 107 | 93.0% |
| Poor | 8 | 7.0% |
| **Total** | **115** | **100%** |

Table 4 shows that the majority of DM patients (93.0%) in the working area of Purwokerto Barat Health Center had a good quality of life, while only 7.0% of respondents were categorized as having a poor quality of life. These results suggest that most DM patients in this study were able to maintain their physical, psychological, and social well-being despite living with a chronic condition. The high proportion of good quality of life may be influenced by factors such as effective disease management, strong emotional intelligence, and adequate social support. However, the presence of a small percentage of patients with poor quality of life indicates that there are still individuals who may require additional psychological, medical, or social interventions to improve their overall well-being.

**Table 5.** The Relationship Between Emotional Intelligence and Quality of Life Among DM Patients in the Working Area of Purwokerto Barat Health Center, 2024

| Emotional Intelligence | Quality of Life: Good | | Quality of Life: Poor | | Total | | p-value |
|---|---|---|---|---|---|---|---|
| | f | % | f | % | f | % | |
| Good | 104 | 90.4 | 2 | 1.8 | 106 | 92.2 | 0.000 |
| Moderate | 3 | 2.6 | 6 | 5.2 | 9 | 7.8 | |
| Poor | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | |
| **Total** | **107** | **93.0** | **8** | **7.0** | 115 | 100.0 | |

Table 5 shows a significant relationship between emotional intelligence and the quality of life among DM patients in the working area of Purwokerto Barat Health Center, with a p-value of 0.000 ($p < 0.05$). Among patients with good emotional intelligence, the majority (90.4%) also had a good quality of life, while only 1.8% had a poor quality of life. In contrast, among those with moderate emotional intelligence, only 2.6% had a good quality of life, while a higher proportion (5.2%) experienced poor quality of life. Notably, no respondents were categorized as having poor emotional intelligence. These findings indicate that higher emotional intelligence is strongly associated with a better quality of life among DM patients. The ability to manage emotions, motivate oneself, and build healthy social relationships appears to contribute significantly to how well patients adapt to their chronic condition and maintain their overall well-being. This result emphasizes the importance of emotional support and psychological interventions in diabetes management to improve patients' quality of life.

## Discussion

### *Characteristics of DM Patients*

This study found that most DM patients in the working area of Purwokerto Barat Health Center were in the late elderly category (>55 years), totaling 81.7% of respondents. Additionally, most respondents were female (65.2%), had a basic education (51.3%), and an economic status below the regional minimum wage (90.4%). The average duration of suffering from DM was 77.41 months (6.2 years), and most did not experience complications (71.3%). Aging is known to increase the risk of DM because the body's immune system declines and physical activity becomes limited in the elderly[21]. Age-related anatomical, physiological, and biochemical changes, starting at the cellular level, contribute to reduced homeostasis, making older adults more susceptible to chronic diseases such as DM[22].

### *Gender and DM Prevalence*

Interestingly, this study found a higher prevalence of DM in females compared to males. Although lifestyle factors such as smoking and alcohol consumption are more common in men, women, especially those who are menopausal, are more susceptible to DM due to hormonal changes that affect insulin sensitivity[23]. Menopause reduces estrogen levels, which is essential for insulin receptor gene expression and glucose uptake. Women with chronic high blood sugar levels are also prone to complications such as recurrent vaginal infections and an increased risk of cervical cancer[24]. These biological and hormonal factors make DM more prevalent among older women.

### *Emotional Intelligence in DM Patients*

The majority of respondents in this study demonstrated good emotional intelligence (92.2%). High emotional intelligence can help DM patients manage the psychological stress associated with chronic disease management[25]. Emotional intelligence, particularly in self-regulation, plays a crucial role in fostering positive feelings toward oneself and others. The ability to self-motivate, as indicated by the highest scores in the "self-motivation through learning" domain, supports the patient's drive to continuously improve[26]. Previous studies have shown that approximately 24-47% of chronic disease patients experience mental-emotional disorders. Without good emotional intelligence, DM patients are at risk of developing anxiety, depression, social withdrawal, and decreased quality of life[27].

### *Quality of Life in DM Patients*

This study revealed that most DM patients had a good quality of life (93%). Quality of life is an essential criterion for assessing the success of chronic disease management. Physical

function scored the highest in the DQOL questionnaire, indicating that patients were relatively able to maintain physical activities. However, the psychological domain scored the lowest, especially regarding feelings of being embarrassed in public due to diabetes, highlighting the importance of addressing social stigma and emotional well-being[28]. Previous studies by Puspasari and Ferera (2021)[29] showed that over half of DM patients (56.82%) had a poor quality of life, indicating that despite good physical management, psychological and social aspects still require attention.

### *Relationship Between Emotional Intelligence and Quality of Life*

The statistical analysis showed a significant relationship between emotional intelligence and quality of life (p = 0.000), where DM patients with good emotional intelligence tended to have a good quality of life. This finding aligns with previous research by Putri et al (2024)[30], which demonstrated a significant correlation (p = 0.020) between emotional intelligence and quality of life in DM patients. Similarly, Susanti (2024)[31] found a positive correlation (r = 0.298; p = 0.000), emphasizing that emotional intelligence directly contributes to improving life satisfaction and adaptive coping strategies in chronic disease patients. Good emotional regulation can reduce the risk of physical disability, improve productivity, and prevent premature death in DM patients[32].

### *Additional Factors Influencing Quality of Life*

Several other factors also influence the quality of life in DM patients, including age, marital status, duration of illness, and medication adherence. Banilai and Sakundarno (2023)[33] found that older age, being unmarried, longer duration of DM, and poor treatment adherence significantly affected the quality of life. Family support, especially from a spouse, plays an essential role in enhancing the emotional well-being of DM patients. Nabilah Hanifah (2022)[34] confirmed that knowledge, physical activity, medication adherence, and family support significantly impact DM patients' quality of life. Insufficient knowledge and poor self-management often result in poor treatment adherence and reduced quality of life.

### *Psychological and Mental Health Implications*

Mental health is a critical factor affecting the quality of life in DM patients. Alwhaibi M (2024)[35] demonstrated that anxiety significantly impacts the quality of life of DM patients. Chronic disease patients are 2.6 times more likely to develop emotional and mental disorders, which can worsen their physical condition and limit daily activities[36]. Poor emotional intelligence exacerbates these mental health problems, leading to excessive anxiety, loneliness, sadness, and a tendency toward depression[37]. This study reinforces the need for integrating emotional intelligence training, psychological support, and family involvement in DM management to enhance both physical and mental health outcomes.

## Conclusion

This study found that most DM patients in the working area of Purwokerto Barat Health Center were late elderly, female, with a basic education level, low economic status, and an average duration of DM of 6.2 years without significant complications. The majority of respondents demonstrated good emotional intelligence and a good quality of life. A statistically significant relationship was found between emotional intelligence and quality of life in DM patients (p = 0.000), indicating that better emotional intelligence contributes to improved quality of life. Emotional intelligence plays a vital role in supporting DM patients in coping with chronic disease management, reducing psychological distress, and improving

daily functioning. These findings emphasize the importance of integrating emotional, psychological, and social support into comprehensive DM management to improve patient outcomes.

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**References**

1. Hossain MdJ, Al-Mamun Md, Islam MdR. Diabetes mellitus, the fastest growing global public health concern: Early detection should be focused. *Health Science Reports*. 2024;7(3):e2004. doi:10.1002/hsr2.2004
2. World Health Organization. *Global Report on Diabetes*. World Health Organization; 2016. Accessed July 6, 2025. https://iris.who.int/handle/10665/204871
3. Kemenkes RI. Laporan Nasional Riskesdas 2018. Published online 2019.
4. Dinkes Banyumas. Profil Kesehatan Tahun 2021. Published online 2022.
5. Richardson CR, Borgeson JR, Harrison RV, et al. Management of Type 2 Diabetes Mellitus. *UMHS*. Published online 2021.
6. Yuliawati AN. Knowledge and Quality of Life in Type 2 Diabetes Mellitus Patients also its Related Factors. *Diabetes Mellitus*. 2022;12.
7. Alshahrani JA, Alshahrani AS, Alshahrani AM, Alshalaan AM, Alhumam MN, Alshahrani NZ. The Impact of Diabetes Mellitus Duration and Complications on Health-Related Quality of Life Among Type 2 Diabetic Patients in Khamis Mushit City, Saudi Arabia. *Cureus*. Published online August 27, 2023. doi:10.7759/cureus.44216
8. Jahan N, Kauser S, Maruf MM, Ahmad S. Stress and anxiety among people with type 2 diabetes mellitus. *Birdem Med J*. 2022;12(2):136-141. doi:10.3329/birdem.v12i2.59620
9. WHO. World health statistics 2024: Monitoring health for the SDGs, Sustainable Development Goals. Published online 2024.
10. Moons P, Van Bulck L, Daelman B, Luyckx K. Mental health in adult congenital heart disease. *International Journal of Cardiology Congenital Heart Disease*. 2023;12:100455. doi:10.1016/j.ijcchd.2023.100455
11. OECD. *A New Benchmark for Mental Health Systems: Tackling the Social and Economic Costs of Mental Ill-Health*. OECD; 2021. doi:10.1787/4ed890f6-en
12. Defar S, Abraham Y, Reta Y, et al. Health related quality of life among people with mental illness: The role of socio-clinical characteristics and level of functional disability. *Front Public Health*. 2023;11:1134032. doi:10.3389/fpubh.2023.1134032
13. Abdin E, Chong SA, Vaingankar JA, et al. Impact of mental disorders and chronic physical conditions on quality-adjusted life years in Singapore. *Sci Rep*. 2020;10(1):2695. doi:10.1038/s41598-020-59604-0

14. Pérez-Fernández A, Fernández-Berrocal P, Gutiérrez-Cobo MJ. The Relationship Between Emotional Intelligence and Diabetes Management: A Systematic Review. *Front Psychol*. 2021;12:754362. doi:10.3389/fpsyg.2021.754362

15. Ikart EM. Emotional Intelligence: Why its Matters in Change Leadership and Innovation in the 21st Century Styles of Work. *International Journal of Business Innovation*. Published online December 30, 2023:e34732 Páginas. doi:10.34624/IJBI.V2I4.34732

16. Masià-Plana A, Sitjar-Suñer M, Mantas-Jiménez S, Suñer-Soler R. The Influence of Emotional Intelligence in Quality of Life in Patients Undergoing Chronic Hemodialysis. Published online January 16, 2024. doi:10.20944/preprints202401.1193.v1

17. Zeidner M, Matthews G, Roberts RD. The Emotional Intelligence, Health, and Well-Being Nexus: What Have We Learned and What Have We Missed? *Applied Psych Health & Well*. 2012;4(1):1-30. doi:10.1111/j.1758-0854.2011.01062.x

18. Kulkarni PY, Velhal G. Low Emotional Intelligence: A Precursor of Mental Health Derangements Among Adolescents. *Cureus*. Published online October 1, 2023. doi:10.7759/cureus.46321

19. Brandt L, Liu S, Heim C, Heinz A. The effects of social isolation stress and discrimination on mental health. *Transl Psychiatry*. 2022;12(1):398. doi:10.1038/s41398-022-02178-4

20. Dinkes Banyumas. Profil Kesehatan Tahun 2023. Published online 2024.

21. Chia CW, Egan JM, Ferrucci L. Age-Related Changes in Glucose Metabolism, Hyperglycemia, and Cardiovascular Risk. *Circulation Research*. 2018;123(7):886-904. doi:10.1161/CIRCRESAHA.118.312806

22. Li Z, Zhang Z, Ren Y, et al. Aging and age-related diseases: from mechanisms to therapeutic strategies. *Biogerontology*. 2021;22(2):165-187. doi:10.1007/s10522-021-09910-5

23. Kautzky-Willer A, Leutner M, Harreiter J. Sex differences in type 2 diabetes. *Diabetologia*. 2023;66(6):986-1002. doi:10.1007/s00125-023-05891-x

24. Kim IS. Current Perspectives on the Beneficial Effects of Soybean Isoflavones and Their Metabolites for Humans. *Antioxidants*. 2021;10(7):1064. doi:10.3390/antiox10071064

25. Sari CWM, Hilmi DR, Purnama D. Support of Family For Type 2 Diabetes Mellitus Patients in Primary Health Center During The Covid-19 Pandemic. *JNSU*. 2023;11(1):100-108. doi:10.21776/ub.jik.2023.011.01.12

26. Antonopoulou H. The Value of Emotional Intelligence: Self-Awareness, Self-Regulation, Motivation, and Empathy as Key Components. *Technium Education and Humanities*. 2024;8:78-92. doi:10.47577/teh.v8i.9719

27. Kalra S, Jena B, Yeravdekar R. Emotional and psychological needs of people with diabetes. *Indian J Endocr Metab*. 2018;22(5):696. doi:10.4103/ijem.IJEM_579_17

28. Guo X, Wu S, Tang H, et al. The relationship between stigma and psychological distress among people with diabetes: a meta-analysis. *BMC Psychol*. 2023;11(1):242. doi:10.1186/s40359-023-01292-2

29. Puspasari S, Farera DR. Quality of Life Among Patients with Type 2 Diabetic Mellitus in Outpatient Department,

General Public Hospital, West Java. *KLS*. Published online March 15, 2021:897-906. doi:10.18502/kls.v6i1.8767

30. Putri ARC, Ladesvita F, Burmanajaya B. Relationship between Lifestyle with Quality of Life in Breast Cancer Patients. *bik*. 2024;17(2):170-179. doi:10.23917/bik.v17i2.5256
31. Susanti N, Rahayu S, Mawarni D, Sabila W. Faktor Risiko dan Penatalaksanaan Diabetes Melitus Tipe 2. *Healthy Tadulako Journal (Jurnal Kesehatan Tadulako)*. 2024;10(4):713-721.
32. Kumar VK, Tahmaseb-McConatha J, eds. *Life Satisfaction and Psychological and Physical Well-Being*. MDPI; 2023. doi:10.3390/books978-3-0365-6821-8
33. Banilai PAS, Sakundarno M. Systematic Review: Faktor-Faktor yang Berhubungan dengan Kejadian Diabetes Melitus (DM) pada Penderita Tuberkulosis (TB). *HTJ*. 2023;9(2):205-217. doi:10.22487/htj.v9i2.739
34. Nabilah Hanifah N. Pemberian Diet Diabetes MilitusV(1900 kkal)H (Pra Bedah) dan Diet Diabetes MilitusVI(2100 kkal)H(Pasca Operasi) Pada Pasien Penyakit Kanker Hati Dengan Penyakit Riwayat Kencing Manis: Sebuah Laporan Kasus. *Healthy Tadulako Journal (Jurnal Kesehatan Tadulako)*. 2022;8(2):78-83.
35. Alwhaibi M. Depression, Anxiety, and Health-Related Quality of Life in Adults with Type 2 Diabetes. *JCM*. 2024;13(20):6028. doi:10.3390/jcm13206028
36. Rao A. The Complex Relationship Between Chronic Diseases and Mental Health. *Research on Chronic Diseases*. 2023;7(4):087-089.
37. Kupferberg A, Hasler G. The social cost of depression: Investigating the impact of impaired social emotion regulation, social cognition, and interpersonal behavior on social functioning. *Journal of Affective Disorders Reports*. 2023;14:100631. doi:10.1016/j.jadr.2023.100631