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The Relationship Between Stress Levels and Disease Perception in DM-TB Comorbid Patients in Gorontalo City

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ABSTRACT

Diabetes mellitus (DM) and tuberculosis (TB) are chronic diseases that remain major public health problems and frequently occur concurrently as DM–TB comorbidity. This condition not only worsens patients' physical status but also affects psychological aspects, particularly stress levels and illness perception. Patients living with two chronic diseases simultaneously tend to experience stress due to long-term treatment burdens, complications, and demands for therapeutic adherence. High stress levels may influence how patients perceive their illness, reduce motivation, and shape negative illness perceptions, which can ultimately hinder optimal disease management. This study aims to analyze the relationship between stress level and illness perception among patients with DM–TB comorbidity in Gorontalo City. This study employed a quantitative, cross-sectional design. The sample consisted of patients with DM–TB comorbidity undergoing treatment at several community health centers in Gorontalo City. Stress level was measured using the Perceived Stress Scale (PSS), while illness perception was assessed using the Brief Illness Perception Questionnaire (BIPQ). Data were analyzed using statistical tests to determine the relationship between stress level and illness perception. The results showed that most patients experienced moderate to high stress levels and tended to have negative illness perceptions. Statistical analysis indicated a significant relationship between stress level and illness perception among patients with DM–TB comorbidity. The higher the patients' stress levels, the more negative their perception of the illness. It can be concluded that psychological aspects play an essential role in the management of patients with DM–TB comorbidity; therefore, health interventions should integrate clinical and psychosocial approaches to improve treatment adherence and patients' quality of life.

1. INTRODUCTION

Diabetes mellitus (DM) and tuberculosis (TB) are two chronic diseases that remain major public health problems at the global, national, and regional levels. The World Health Organization (WHO) reports that TB remains one of the leading causes of death from infectious diseases, with more than 10.7 million cases and approximately 1.6 million deaths in 2021. At the same time, the number of DM sufferers worldwide is estimated to reach 537 million and will continue to increase until 2030 (World Health Organization, 2024). This condition makes DM-TB comorbidity an increasingly important health issue, as the two diseases often occur together and worsen each other's disease course.

Biologically, the relationship between DM and TB is bidirectional. DM patients experience impaired cellular immunity due to decreased Th-1 lymphocyte activity and cytokine production, increasing susceptibility to Mycobacterium tuberculosis infection. Conversely, TB infection can worsen glycemic control through inflammatory responses and metabolic stress (Kahar et al., 2022). When DM and TB co-occur as comorbid DM–TB, patients not only face clinical complexity and long-term treatment but also experience a greater psychological burden than patients with either chronic disease alone.

This burden is reflected in the high epidemiological prevalence of DM–TB comorbidities. Global studies indicate that approximately 13–15% of TB patients also suffer from DM, and

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individuals with DM have a 2–3 times greater risk of developing TB compared to the general population (Happyanto et al., 2024). In Indonesia, the prevalence of DM as a comorbidity in TB patients is recorded at approximately 4.2% of the total national TB cases. At the regional level, data from the Gorontalo Provincial Health Office in 2025 showed 257 cases of DM–TB, with the highest concentration of cases in Gorontalo City, particularly in several community health centers (Puskesmas) such as Dungigi, Kota Tengah, Sipatana, and Kota Barat (Gorontalo Provincial Health Office, 2025). These data confirm that DM–TB comorbidity is a real and relevant problem locally. In addition to the physical impacts, DM–TB comorbidity also carries significant psychological consequences, particularly related to stress levels.

Stress levels are understood as an individual's psychological response to perceived demands or pressures exceeding adaptive capacity, encompassing emotional, cognitive, and physiological aspects (Nur & Mugi, 2021). In patients with comorbid DM and TB, stress arises from long-term treatment, demands for adherence to dual therapy, medication side effects, activity limitations, and concerns about complications and treatment failure. Research by (Zainuddin, Nur Ayun R. Yusuf, Yulian Hunowu, 2025) showed that in DM patients, chronic stress is associated with poor glycemic control, while uncontrolled metabolic conditions exacerbate stress. However, this research was limited to DM patients without considering comorbid TB. The stress experienced by patients subsequently influences how they interpret and understand their disease, known as disease perception.

Disease perception is an individual's cognitive and emotional representation of their illness, encompassing beliefs about the cause, duration, consequences, severity, and controllability of the disease and treatment (Leventhal et al., 1980). Negative disease perceptions can shape the view that the disease is severe, long-lasting, difficult to control, and highly life-threatening. Research by (Hidayat & Firdhania, 2023) shows that pulmonary TB patients tend to perceive the disease as a serious threat to their health, which has implications for low motivation for self-management. However, this study has not examined the comorbid condition of DM–TB, which carries a more complex psychological burden.

Theoretically, stress and disease perception are interconnected. High stress can disrupt cognitive and emotional processes, causing patients to focus more on the threat of the disease and develop negative disease perceptions. Conversely, negative disease perceptions can exacerbate the stress experienced by patients. In patients with comorbid DM and TB, this relationship is further exacerbated because the dual disease burden increases psychological distress and worsens the patient's perspective on their health. Thus, stress acts as an important psychological mechanism bridging the physical conditions of comorbid DM and the formation of disease perceptions.

Although various studies have examined the psychological aspects of patients with diabetes mellitus or tuberculosis separately, most previous studies still have limitations. Previous research generally focused on stress or disease perception in a single chronic disease, without considering the comorbid conditions of DM and TB, which have a more complex physical and psychological burden. Furthermore, some studies have emphasized clinical aspects and treatment adherence, while the psychological mechanisms linking stress levels to disease perception have not been widely explored empirically. Another limitation is the limited research examining the relationship between these two variables in a local context, thus not fully reflecting the social and cultural conditions of DM and TB patients at the regional level. These limitations highlight the need for research specifically analyzing the relationship between stress levels and disease perception in patients with comorbid DM and TB.

Based on the above description, this study is novel in that it places stress levels as the primary psychological factor influencing disease perception in patients with comorbid DM–TB, particularly in the local context of Gorontalo City. This study is expected to contribute scientifically to the development of a holistic approach to DM–TB patients by integrating clinical and psychosocial aspects. Therefore, the aim of this study is to analyze the "Relationship between Stress Levels and Disease Perception in Patients with Comorbid Diabetes Mellitus and Tuberculosis in Gorontalo City."

2. METHOD

This study is a quantitative study with a descriptive correlational design and a cross-sectional approach that aims to determine the relationship between stress levels as an independent variable and disease perception as a dependent variable in patients with DM–TB comorbidities. The study population was all DM–TB patients in Gorontalo City, with a sample size of 70 respondents determined using a total sampling technique based on inclusion and exclusion criteria. Stress levels were measured using the PSS-10 questionnaire consisting of 10 questions, while disease perception was measured using the Brief Illness Perception questionnaire whose validity and reliability have been tested. Data analysis was carried out univariately and bivariately using the Chi-Square test with a significance level of α = 0.05. This study was conducted with due regard to research ethics principles, where respondents were given an explanation of the purpose and procedures of the study and were asked to sign an informed consent form, and the confidentiality of respondents' identities was fully maintained.

3. RESULT AND DISCUSSION

Result

Responden Characteristics

Table 1. Frequency Distribution of Respondent Characteristics Based on Gender

Gender	(n)	(%)
Male	39	55,7
Famale	31	44,3
Total	**70**	**100**

Based on the table, it shows that the majority of respondents were male, namely 39 respondents (55.7%).

Table 2. Frequency Distribution of Respondent Characteristics Based on Age

Age	(n)	(%)
46-55 tahun (Early Elderly)	28	40,0
56-65 tahun (Late Elderly)	32	45,7
> 65 tahun (Seniors)	10	14,3
Total	**70**	**100**

Based on the table, it can be seen that the age group with the largest number of respondents is 56-65 years old (late elderly) with 32 respondents (45.7%), while the second largest is 46-55 years old (early elderly) with 28 respondents (40.0%).

Table 3. Frequency Distribution of Respondent Characteristics Based on Education Level

Education	(n)	(%)
Elementary School	26	37,1
Junior high school	31	44,3
Senior High School	11	15,7
Applied Bachelor	1	1,4
Bachelor's Degree	1	1,4
Total	**70**	**100**

Based on the table, it shows that the highest level of education for the respondents was junior high school with 31 respondents (44.3%), while the second highest level was elementary school with 26 respondents (37.1%).

Table 4. Frequency Distribution of Respondent Characteristics Based on Occupation

Occupation	(n)	(%)
Housewife	31	44,3
Self-Employed	27	38,6
Farmer	10	14,3
Retired	2	2,9
Total	**70**	**100**

Based on the table, it shows that the most common occupation of respondents is housewife with 31 respondents (44.3%), while the second most common occupation is self-employed with 27 respondents (38.6%).

Table 5. Frequency Distribution of Respondent Characteristics Based on Marital Status

Marital status	(n)	(%)
Have a partner	56	80
Widow/widower	14	20
Total	**70**	**100**

Based on the table showing marital status, the majority of respondents have a life partner, as many as 56 people (80%), while respondents with widow/widower status number 14 people (20%).

Table 6. Frequency Distribution of Respondent Characteristics Based on the Complaints Studied

Complaints Reviewed	(n)	(%)
No complaints	25	35,7
Cough	9	12,9
Weak	1	1,4
Cough & Shortness of Breath	6	8,6
Cough & Weakness	4	5,7
Cough & Fatigue	1	1,4
Cough, Weakness, Shortness of Breath	11	15,7
Shortness of breath, cough, fatigue	7	10,0
Sesak, Mudah Lelah, Lemas	1	1,4
Shortness of breath, Cough, Tired Easily, Weak	4	5,7
Congested	1	1,4
Total	**70**	**100**

The table shows that the majority of respondents, 25 (35.7%), had no complaints. Meanwhile, for those who did have complaints, a combination of coughing, weakness, and shortness of breath was the most common complaint, occurring in 11 respondents (15.7%).

Table 7. Frequency Distribution of Respondent Characteristics Based on Treatment History

Treatment History	Frekuensi (n)	Persentase (%)
1st month	5	7,1
2nd month	10	14,3
3rd month	18	25,7
4th month	15	21,4
5th month	9	12,9
6th month	13	18,6
Total	**70**	**100**

The table shows that the highest number of respondents' treatment history occurred in Month 3, with 18 respondents (25.7%). Conversely, the lowest number of respondents occurred in Month 1, with a total of 5 respondents (7.1%).

Univariate Analysis

Table 8. Frequency Distribution of Respondent Characteristics Based on Stress Level (*Perceived Stress Scale*)

Stress Level	**(n)**	**(%)**
Mild Stress	0	0%
Moderate Stress	59	84,3
Severe Stress	11	15,7
Total	**70**	**100**

Based on the table, it shows that the stress level (perceived stress scale) of the respondents was mostly at a moderate stress level with a total of 59 respondents (84.3%), while the rest experienced severe stress with a total of 11 people (15.7%).

Table 9. Frequency Distribution of Respondent Characteristics Based on *Brief Illness Perception*

Perception of Illness	**(n)**	**(%)**
Positive Perception	17	24,3
Medium Perception	22	31,4
Negative Perception	31	44,3
Total	**70**	**100**

The table shows that the majority of respondents' brief illness perceptions were negative, with 31 respondents (44.3%), while 22 respondents (31.4%) had moderate perceptions and 17 respondents (24.3%) had positive perceptions.

Bivariate Analysis

Table 10. The Relationship Between Stress Levels and Disease Perception in DM-TB Comorbid Patients in Gorontalo City

Perceived Stress Scale (PSS)	***Brief Illness Perception***						**N**	***P-value***
	Positive Perception		Medium Perception		Negative Perception			
	n	%	n	%	n	%		
Mild Stress	0	0	0	0	0	0	0	
Moderate Stress	17	24,3	22	31,4	20	28,6	59	0,000
Severe Stress	0	0,0	0	0,0	11	15,7	11	
Total	17	24,3	22	31,4	31	44,3	70	

Source: Primary Data, 2025

The table shows that out of 70 respondents, 59 experienced moderate stress, 17 respondents (24.3%) had a positive perception of the disease, 22 respondents (31.4%) had a moderate perception, and 20 respondents (28.6%) had a negative perception. Meanwhile, 11 other respondents experienced severe stress, all of whom had a negative perception of the disease, amounting to 11 respondents (15.7%). In this severe stress category, no respondents were found to have a positive or moderate perception of the disease (0%).

Discussion

The results of a study conducted on DM-TB comorbid patients in Gorontalo City regarding stress levels showed that the stress level (perceived stress scale) of respondents was at a moderate level with a total of 59 respondents (84.3%), and the rest experienced severe stress with a total of 11 people (15.7%). Meanwhile, based on research data conducted on DM-TB comorbid patients in Gorontalo City regarding disease perception (in short, disease perception), it showed

that most respondents were in the negative perception category with a total of 31 respondents (44.3%). Meanwhile, respondents with a moderate perception category numbered 22 people (31.4%) and a positive perception category numbered 17 people (24.3%).

Based on the results of the study, out of 70 respondents, 59 respondents experienced moderate stress, 17 respondents (24.3%) had a positive perception of the disease, 22 respondents (31.4%) had a moderate perception, and 20 respondents (28.6%) had a negative perception. The relationship analysis was conducted using the Chi-Square test. However, because 50% of cells had an expected count value <5, the basis for decision making used the Fisher's Exact Test value. The test results showed a p value = 0.000 (p <0.05), so it was concluded that there was a significant relationship between stress levels and disease perception in TB-DM comorbid patients.

Diabetes mellitus (DM) and tuberculosis (TB) are two chronic diseases that remain major public health problems in Indonesia and globally. The two have a complex and interconnected relationship (Suryoadji et al., 2025). DM sufferers experience decreased cellular immunity due to decreased Th-1 lymphocyte activity and cytokine production. Hyperglycemia creates a favorable environment for the growth of Mycobacterium tuberculosis, which increases the risk of TB infection. Therefore, when these conditions occur together, known as comorbid DM and TB, they can worsen the disease course (Kahar et al., 2022).

Global epidemiological studies indicate that approximately 13–15% of TB patients also live with diabetes, a figure nearly double the prevalence of diabetes in the general population. This indicates that DM–TB patients constitute a significant and epidemiologically significant population. Therefore, DM–TB is recognized as a global public health problem that requires serious attention from researchers and policymakers (Noubiap et al., 2019). The prevalence of DM and TB in Indonesia in 2024 is expected to increase, significantly impacting the number of TB cases. Individuals with DM are 2 to 3 times more likely to develop TB than those without DM. According to information from the Indonesian Health Insurance (Jaminan Kesehatan Indonesia) in 2021, the prevalence of DM as a comorbidity in TB patients at the national level was recorded at approximately 4.2% of total TB cases . A study conducted by Zainuddin, Nur Ayun R. Yusuf, and Yulian Hunowu (2025) showed that in individuals with diabetes mellitus (DM), chronic stress tends to make it difficult to maintain glycemic control, while uncontrolled blood sugar actually exacerbates stress levels. With long treatment durations and the need for discipline in taking medication, patients often experience signs and symptoms such as boredom, depression, fatigue, insomnia, irritability, and loss of motivation. Furthermore, social stigma also adds to psychological stress for TB patients, which can lead to psychological stress such as anxiety, feelings of low self-esteem, and social withdrawal. However, this study only targeted patients with diabetes mellitus, without considering other conditions such as TB. (Maruf & Palupi, 2021).

Patients with TB and DM not only experience the physical challenges of two chronic illnesses simultaneously, but also develop specific perceptions about their condition. Illness perception is how patients view their illness, including beliefs about its cause, consequences, duration, perceived personal control, treatment effectiveness, and how they understand the illness (Syamsuddin et al., 2024). These perceptions are crucial in determining what patients do to maintain their health, how compliant they are with their treatment, and the methods they choose to cope. Research shows that patients with negative perceptions, such as believing the disease is difficult to treat, long-lasting, or has detrimental consequences, tend to experience higher and more severe levels of stress, are less compliant with medication, and perform poorer self-care, both in cases of TB and DM (Budiman et al., n.d.).

These results are also supported by the results of a similar study by Sinurat (2024), where 71.2% of respondents demonstrated high levels of compliance in following all instructions from health workers regarding treatment and never forgetting to take their medication. He also stated that adherence to medication is crucial for every DM-TB patient. If patients fail to comply, they are required to start treatment from the beginning.

Based on this description, researchers assume that the level of stress depends heavily on how patients define their illness (illness perception). When patients view their illness as a painful identity, with far-reaching consequences, and beyond their control, coping mechanisms collapse, triggering the highest levels of stress. In this situation, the lack of hope for recovery becomes a

catalyst for the patient's mental health to deteriorate. If the illness perception remains negative, the emotional burden will continue to trigger stress, which can physiologically damage the metabolic state of DM and TB immunity.

4. CONCLUSION

Based on the research results, the stress level in patients with DM-TB comorbidities in the Gorontalo City area based on the research results showed that most respondents experienced stress in the moderate category amounting to 59 respondents (84.3%) and the severe stress category amounting to 11 respondents (15.7%). and Perception of disease in DM-TB comorbid patients in the Gorontalo City area based on the research results showed that most were in the negative perception category with a total of 31 respondents (44.3%). Meanwhile, respondents with moderate perceptions amounted to 22 people (31.4%) and positive perceptions amounted to 17 people (24.3%). The results of the analysis using the chi-square test showed a p value = 0.000 ($p < 0.05$), so it was concluded that there was a significant relationship between stress levels and disease perceptions in DM-TB comorbid patients in Gorontalo City. This study has several limitations, the measurement of stress levels and disease perceptions used a self-report questionnaire, which is highly dependent on the respondents' honesty, understanding, and psychological state at the time of completion. This potentially introduces subjective bias. The study was also conducted in a limited area in Gorontalo City, so the results cannot be broadly generalized to the population of DM-TB comorbid patients in other areas with different social and cultural characteristics. Furthermore, this study did not consider other factors such as social support, duration of illness, disease severity, and treatment adherence, which may also influence patients' stress levels and disease perceptions.

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6. REFERENCES

Adam, L., & Tomayahu, M. B. (2019). Tingkat Stres Dengan Kadar Gula Darah Pada Pasien Diabetes Melitus. Jambura Health and Sport Journal, 1(1), 1–5. https://doi.org/10.37311/jhsj.v1i1.2047

Anggraini, fika tri, Kadang, Y., Hermanto, H., Anggraini, F. T., Nasution, D. E., Susanti, F., Hamdani, H., Irnawan, S. M., Tafwidhah, Y., Setiawan, D. I., Syah, A. Y., Hidayat, E., & Ashra, F. (2025). Metodologi Penelitian Dalam Keperawatan. In Cv.Eureka Media Aksara.

Budiman, L. T., & Dewi, T. K. (2024). Hubungan Antara Persepsi Penyakit Dengan Kualitas Hidup Penderita Diabetes Melitus. Skripsi, Universitas Airlangga, Fakultas Psikologi.

Budiman, L. T., Dewi, T. K., Psikologi, F., & Airlangga, U. (n.d.). Hubungan Antara Persepsi Penyakit Dengan Kualitas Hidup Penderita Diabetes Mellitus. 1–13.

Darmawati. (2020). Hubungan tingkat stres dengan siklus menstruasi pada remaja di institut teknologi dan kesehatan (itekes) bali.

Daturrahmah, Z. (2023). Tingkat stres, kecemasan dan penyesuaian diri pada lansia yang di tinggal pasangan hidup. 5(1), 39–50.

Dewi Nuralita, A., & Mardiah, B. D. (2023). Keperawatan Jiwa.

Obbarius, N., Fischer, F., Liegl, G., Obbarius, A., & Rose, M. (2021). A Modified Version of the Transactional Stress Concept According to Lazarus and Folkman Was Confirmed in a Psychosomatic Inpatient Sample. 12(March), 1–12. https://doi.org/10.3389/fpsyg.2021.584333

Pardede, J. A. (2021). Teori Dan Model Adaptasi Sister Calista Roy : Pendekatan Keperawatan. Teori Adaptasi Callista Roy.

Prabowo, S. K., & Huwae, A. (2022). Illness Perception Dan Kepatuhan Pengobatan Pada Illness Perception And Medication Adherence With. 15(2), 66–75. https://doi.org/10.30813/psibernetika

Sulistiyono, 2021. (2021). Mengelola stres pada masa pandemi.

Syamsuddin, S., Limoa, E., Jaya, M. A., Karsa, N. S., Akbar, & Pratama. (2024). Buku Ajar Psikogeriatri. Nas Media Pustaka.

Tukatman, Agus Dwi, H. M. K. (2023). Buku Keperawatan jiwa, ilmu dasar keperawatan jiwa.

Elyta, T., & Sari Octarina Piko. (2022). Penatalaksanaan Senam Kaki Diabetik Terhadap Kadar Gula Pada Asuhan Keperawatan Pasien Diabetes Melitus. INSOLOGI: Jurnal Sains Dan Teknologi, 1(2), 127–132. https://doi.org/10.55123/insologi.v1i2.250

Feng, Y., Guo, J., & Zhang, Z. (2024). Exploring anxiety in elderly pulmonary tuberculosis inpatients using propensity score matching method. BMC Pulmonary Medicine, 24(576), 1-6.

Fiamanda, W. E., & Widyaningsih, S. (2024). Hubungan Lama Pengobatan Dengan Tingkat Stres Pasien Tuberkulosisdi Kecamatan Kalibagor. Jurnal Promotif Preventif, 7(3), 504–508. http://journal.unpacti.ac.id/index.php/JPP

Happyanto, M. R., Ivone, J., Nurazizah, S., Studi, P., Dokter, P., Kedokteran, F., Kristen, U., Ilmu, B., Masyarakat, K., Kedokteran, F., & Kristen, U. (2024). Gambaran Faktor Risiko dan Komorbiditas pada Pasien TB Paru di Puskesmas Sukatani Periode 2020-2023 An Overview of Risk Factors and Comorbidities Patients of Lung Tuberculosis at Sukatani Public Health Center Purwakarta Regency Period 2020-2023. 6(2), 22–30.

Harahap, L. Z. (2023). Hubungan Self Efficacy Dengan Kepatuhan Minum Obat Pada Pasien Dengan Diagnosa Tuberkulosis Paru Di UPTD Puskesmas Griya Antapani Bandung. Skripsi, Stikes Dharma Husada Bandung, Program Studi Sarjana Keperawatan.

Hidayat, T., & Firdhania, N. (2023). Hubungan Antara Persepsi Ancaman Terhadap Kesehatan Dengan Tingkat Kepatuhan Minum Obat Pada Penderita Tb Paru. Jurnal Ilmu Kesehatan Insan Sehat, 11(2), 31–34. https://doi.org/10.54004/jikis.v11i2.132.

Hizkia, I., Karo, M. B., & Keliat, I. E. B. (2024). Gambaran Pengetahuan Dan Sikap Masyarakat Tentang Diabetes Melitus Di Susun Viii Delitua Barat Tahun 2024. Jurnal Cakrawala Ilmiah, 24(7), 28–42.

Irawan, D. (2025). Hubungan Persepsi Penyakit Diabetes Melitus Tipe Ii Kabupaten Aceh Tamiang The Relationship Of Perceptions Of Type Ii Diabetes Mellitus With Self-Management Behavior In The Region Bandar Pusaka Puskesmas Uptd Work. 14756–14766.

Kahar, F., Purlinda, D. E., & Setyowatiningsih, L. (2022). Profil Diabetes Mellitus Pada Penderita Tuberculosis. Prosiding Seminar Nasional UNIMUS, 5, 1086– 1095.

Kaltsum, S. N., Supodo, A. T., Puspitasari, A. F., Dewi, N. P., & Fakhirah, N. I. (2025). Hubungan Antara Stigma Sosial Dan Kepatuhan Terhadap Terapi Tuberkulosis: Literature Review. Jurnal Medika Hutama, 6(4), 4255-4269.

Lisco, G., Giagulli, V. A., Pergola, G. D., Guastamacchia, E., Jirillo, E., Vitale, E., & Triggiani, V. (2024). Chronic Stress as a Risk Factor for Type 2 Diabetes: Endocrine, Metabolic, and Immune Implications. Endocr Metab Immune Disord Drug Targets, 24(3), 321-332.

Ludiana, Hasanah, U., Sari, S. A., Fitri, N. L., & Nurhayati, S. (2022). Faktor Stres dan Depresi Dengan Kadar Gula Darah Penderita Diabetes Mellitus Tipe 2. Jurnal Wacana Kesehatan, 7(2), 61-67.

Maruf, 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, 2(1), 400–410.

Miftahul, D., Khairunnisa, J., Kadri, H., Pebrianti, D. K., & Yesni, M. (2023). Hubungan Pengetahuan dan Sikap Masyarakat dengan Upaya Pencegahan Tuberkulosis Paru. 12(September), 337–343.

Mobini, S., Allahbakhshian, A., Shabanloei, R., & Sarbakhsh, P. (2023). Illness Perception, Self-Efficacy, and Medication Adherence in Patients With Coronary Artery Disease: A Path Analysis of Conceptual Model. SAGE Open Nursing, 12(9).

Mohammadi, F., Tehranineshat, B., Farjam, M., Rahnavard, S., & Bijani, M. (2022). The Correlation between Resilience, Self-efficacy and Illness Perception in Patients with Type 2 Diabetes: A Cross-Sectional Study. Clinical Diabetology, 11(3), 175-182.

Mohammedhussein, M., Hajure, M., Shifa, J. E., & Hassen, T. A. (2020). Perceived stigma among patient with pulmonary tuberculosis at public health facilities in southwest Ethiopia: A cross-sectional study. Plos One, 15(12), 1-11.

Nugrah Utama. (2025). Memahami Definisi,Penyebab Dan Gejala Diabetes Melitus,Kegiatan Penyuluhan Masyarakat. Jurnal Pengabdian IKIFA Vol. 4 No. 1 Februari 2025 Sekolah Tinggi Ilmu Kesehatan IKIFA, Jakarta Timur Muhammadfathan@ikifa.Ac.Id, 4(1), 1–23.

Nur, L., & Mugi, H. (2021). Stres, Definisi Stres. Jurnal Ilmu Manajemen, 18(1), 20–30. https://journal.uny.ac.id/index.php/jim/article/view/39339/15281.

Panjaitan, M., Oktarina, Y., & Subandi, A. (2023). Hubungan Efikasi Diri Terhadap Kepatuhan Minum Obat Pada Pasien Penyakit Tuberkulosis Di Puskesmas Putri Ayu Kota Jambi. Jurnal Ners, 7(2), 1793-1800.

Pearl, R. L., Saunders, D., Groshon, L. C., Li, Y., Shonrock, A., Puhl, R. M., . . . Lou, X. Y. (2025). Feasibility and Acceptability of a Psychological Intervention for Internalized Health-Related Stigma Among Adults With Chronic Health Conditions: Preliminary Investigation. JMIR Formative Research, 9, 1-12.

Pratiwi, K. (2021). manifestasi dan komplikasi Management pada Pasien Diabetes Mellitus Di Puskesmas 2 Denpasar Barat Tahun 2021. 7–32.

Pratiwi, R. D. (2020). Gambaran Komplikasi Penyakit Tuberkulosis Berdasa.

Jurnal Kesehatan Al Irsyad, XIII(2), 93–101.

Reynolds, D. P., Chalder, T., & Henderson, C. (2025). The mediating role of psychological inflexibility on internalized stigma and patient outcomes in a sample of adults with inflammatory bowel disease. Journal of Crohn's and Colitis, 19(5), 1-15.

Rista, Cynthia Eka Fayuning Tjomiadi, O. A. D. M. (2024). Gambaran Persepi Penyakit Penderita DM Tipe 2 di Puskesmas.

Rumi, A., & Salsabila, A. (2023). Pasien Diabetes Melitus Tipe Ii Di Rumah Sakit Umum Daerah Torabelo. Jurnal Sains Dan Ilmu Farmasi, 8(1), 49–64.

Ruriyanty.R, N. R., . S. R., Mohtar, M. S., & . M. B. (2023). Hubungan Tingkat Stres Dengan Kualitas Tidur Mahasiswa Kesehatan Tingkat Akhir Di Universitas Sari Mulia. Jurnal Keperawatan Suaka Insan (Jksi), 8(2), 184– 189.

Saputri, T. A. (2021). Hubungan Self Efficacy Dengan Kepatuhan Minum Obat Pada Pasien Tuberkulosis Paru di Puskesmas Pekayon Jaya Kecamatan Bekasi Selatan Kota Bekasi. Jurnal Kesehatan, 7(2), 97-112.

Sartika, Zainuddin, Sri Yulian Hunowu Keperawatan, J., & Olahraga dan Kesehatan, F. (2025). Implementasi Pendidikan Kesehatan dan Senam Kaki untuk Cegah Komplikasi Diabetes Mellitus pada Lansia. Journal Homepage, 4(Dm), 90.

Sinurat, S. E. (2024). Hubungan Self Efficacy Dengan Kepatuhan Minum Obat pada Pasien TB Di Rumah Sakit Paru Pemprovsu Medan. Skripsi, Sekolah Tinggi Ilmu Kesehatan Santa Elisabeth, Program Studi Ners, Medan.Budiman, L. T., Dewi, T. K., Psikologi, F., & Airlangga, U. (n.d.). Hubungan Antara Persepsi Penyakit Dengan Kualitas Hidup Penderita Diabetes Mellitus. 1–13.

Darmawati. (2020). Hubungan tingkat stres dengan siklus menstruasi pada remaja di institut teknologi dan kesehatan (itekes) bali.

Daturrahmah, Z. (2023). Tingkat stres, kecemasan dan penyesuaian diri pada lansia yang di tinggal pasangan hidup. 5(1), 39–50.

Dewi Nuralita, A., & Mardiah, B. D. (2023). Keperawatan Jiwa.

Obbarius, N., Fischer, F., Liegl, G., Obbarius, A., & Rose, M. (2021). A Modified Version of the Transactional Stress Concept According to Lazarus and Folkman Was Confirmed in a Psychosomatic Inpatient Sample. 12(March), 1–12. https://doi.org/10.3389/fpsyg.2021.584333

Pardede, J. A. (2021). Teori Dan Model Adaptasi Sister Calista Roy : Pendekatan Keperawatan. Teori Adaptasi Callista Roy.

Prabowo, S. K., & Huwae, A. (2022). Illness Perception Dan Kepatuhan Pengobatan Pada Illness Perception And Medication Adherence With. 15(2), 66–75. https://doi.org/10.30813/psibernetika

Setyaningrum, R., Sudiyanto, A., Wiyono, N., & Fanani, M. (2018). Pengaruh Cognitive Behaviour Therapy Terhadap Derajat Depresi Dan Aktivitas Perawatan Diri Pada Pasien Diabetes Mellitus DM Tipe 2. Mandala Of Health, 11(1), 31-43. doi:10.20884/1.mandala.2018.11.1.569

Suardi, S., Ernawati, E., Oktaviana, D., Alwi, A., Patmawati, P., Dewiyanti, D., Wahyudin, W., Zainuddin, Z., Ilham, R., & Thalib, A. (2025). Effectiveness Of Yoga Therapy Education On Knowledge And Attitudes Of T2DM Patients In Takalar Regency. Mandala Of Health, 18(1), 88-97. doi:10.20884/1.mandala.2025.18.1.15820

Sulistiyono, 2021. (2021). Mengelola stres pada masa pandemi.

Syamsuddin, S., Limoa, E., Jaya, M. A., Karsa, N. S., Akbar, & Pratama. (2024). Buku Ajar Psikogeriatri. Nas Media Pustaka.

Tukatman, Agus Dwi, H. M. K. (2023). Buku Keperawatan jiwa, ilmu dasar keperawatan jiwa.

World Health Organization. (2024). 2024 Global Tuberculosis (TB) Report.

Zainuddin, Nur Ayun R. Yusuf, Yulian Hunowu, S. (2025). Hubungan Dukungan Emosional Keluarga dengan Tingkat Stres pada Pasien Diabetes Melitus Tipe 2 di Wilayah Kerja Puskesmas Bulango Selatan. Mando Care Jurnal, 4(1), 1–15.