INTERNATIONAL CONFERENCE
ON LIFESTYLE DISEASES AND NATURAL MEDICINE (ICOLIFEMED)
Nomor ISSN: 3124-1115

The Relationship Between Spirituality and Health Perception on the Quality of Life of Diabetes Mellitus Patients Undergoing Hemodialysis at RSUD Arifin Achmad, Riau Province

Muhammad Irwan[1], Chrismis Novalinda Ginting[1], Linda Chiuman[1]
[1]Doctoral Program in Medical Science, Universitas Prima Indonesia, 28115, Medan, Indonesia
*E-mail : muhamadirwan615@yahoo.com

ABSTRACT
Uncontrolled diabetes mellitus can lead to serious complications, one of which is kidney failure requiring hemodialysis therapy. Patients undergoing hemodialysis often face significant challenges, both physically, mentally, and emotionally. Therefore, improving their quality of life becomes crucial. Factors such as spirituality and health perception play a significant role in influencing the quality of life of these patients. This study aims to analyze the effect of spirituality and health perception on the quality of life of diabetes mellitus patients undergoing hemodialysis. A quantitative method with a non-experimental approach was used on 156 respondents at RSUD Arifin Achmad, Riau Province. Data were collected through questionnaires and analyzed using Partial Least Squares (PLS). The results showed that spirituality and health perception have a positive and significant effect on patients' quality of life. Spirituality provides inner strength and meaning in life, while a positive perception of health condition increases patients' motivation and confidence in managing their illness. The integration of spiritual care and education tailored to the culture and needs of patients is highly recommended to improve quality of life. This study provides an important basis for the development of holistic care for diabetes mellitus patients undergoing hemodialysis therapy.

Keywords: *Spirituality, Health Perception, Quality of Life, Diabetes Mellitus, Hemodialysis*

INTRODUCTION
Diabetes mellitus (DM) is a chronic metabolic disorder characterized by blood glucose levels exceeding normal thresholds due to impaired insulin secretion or insulin resistance (Decroli, 2019). The World Health Organization (WHO, 2022) reports that approximately 422 million people worldwide live with diabetes, and it is projected to become one of the top ten leading causes of global mortality by 2027. According to the International Diabetes Federation (IDF, 2022), the number of people with diabetes is expected to rise to 643 million by 2030 and 784 million by 2045, with 44% of cases remaining undiagnosed.

Type 2 DM is the most predominant form, accounting for 90–95% of cases (WHO, 2022). This condition carries a high risk of severe complications such as diabetic nephropathy, cardiovascular disease, neuropathy, and retinopathy (Sidartawan, 2018). These complications can lead to end-stage renal disease (ESRD), requiring renal replacement therapies such as transplantation, peritoneal dialysis, or hemodialysis (Giawa & Novalinda, 2019).Research on the efficacy of topically applied kaffir lime leave extract cream for treating incised wounds in animal models is limited. This study investigated the wound-healing efficacy of kaffir lime leave extract cream at three concentrations (10%, 20%, and 30%) in a Wistar rat model of incised wounds. This study contributes to the scientific basis for using locally sourced plants in wound care.

In Indonesia, the IDF (2022) recorded 41,817 cases of DM, with the majority of patients aged between 20 and 59 years. Riau Province shows an increasing trend in DM prevalence from

Nomor ISSN: 3124-1115

1.9% in 2018 to 2.1% in 2023 (BKPK, 2023). RSUD Arifin Achmad, as a referral hospital in Riau, reported that out of 1,969 DM patients treated in 2023, 132 underwent hemodialysis, increasing to 256 by mid-2024. Diabetes patients undergoing hemodialysis often face a heavy psychological burden. Some patients report a loss of meaning in life, infrequent religious worship, and perceive hemodialysis as merely a routine rather than an effort to improve quality of life (Damayanti et al., 2023). Interviews with dialysis room nurses also revealed that about 70% of hemodialysis patients have diabetes, and many are not accompanied by family during therapy.

Spirituality also plays a crucial role in the psychological balance of DM patients. According to Khotimah et al. (2021), spirituality is an inner motivation that provides meaning in life and encourages adherence to self-care. Several studies even indicate that higher spirituality is directly associated with blood glucose control and physiological improvement (Siallagan et al., 2023; Habiburrahman et al., 2019).

Patients' perception of their illness also determines the approach to disease management. Positive perceptions enhance self-efficacy and metabolic control, whereas negative perceptions are linked to depression and lower quality of life (Mobini et al., 2023; Kiriella et al., 2021). Weinman (2021) states that illness perception consists of dimensions such as impact, personal control, treatment effectiveness, symptom identity, and emotional response.

Although many studies have addressed the relationship between spirituality and illness perception on quality of life separately, very few have combined these two variables in one analysis, especially among DM patients undergoing hemodialysis in Indonesia. A holistic approach is highly relevant in the context of chronic diseases (Kalzan et al., 2020; Rosyadi et al., 2021). Based on local data from RSUD Arifin Achmad and phenomena involving patients experiencing social isolation, low spiritual motivation, and negative health perceptions, this study aims to analyze the relationship between spirituality, family health perception, and quality of life of DM patients undergoing hemodialysis in Riau Province.

METHODS

This study is a quantitative research with a non-experimental approach, aimed at explaining the relationship between independent variables (spirituality and health perception) and the dependent variable (patients' quality of life). The study was conducted from September to October 2024 in the Hemodialysis Room at RSUD Arifin Achmad, Riau Province. The population consisted of 256 diabetes mellitus patients undergoing hemodialysis, and the sample was determined using Slovin's formula with a 5% margin of error, resulting in 156 respondents. The spirituality variable was measured using the Daily Spiritual Experience Scale (DSES), which consists of 15 core items and 1 additional item, with categories of low, moderate, and high scores. Health perception was measured using the Brief Illness Perception Questionnaire (B-IPQ), which consists of 9 items and is rated on a 0–10 scale. Meanwhile, quality of life was measured using the WHOQOL-BREF questionnaire, which includes four domains (physical, psychological, social, and environmental) and 26 questions. All instruments have undergone validation and reliability testing and have been proven valid in previous studies.

The research process began with obtaining ethical approval and respondent consent. Data collection was carried out through questionnaires answered directly by the patients, with assistance from the researchers if needed. The data processing stages included editing, coding, entry, cleaning, and data tabulation. Data analysis was performed using Smart PLS software (Partial Least Squares), which allows testing relationships between variables even with a small sample size. Measurement model evaluation was conducted through convergent and discriminant validity tests, as well as instrument reliability via composite reliability and Cronbach's alpha. The structural model test used R-square, path coefficient, and T-statistics to examine the significant influence among variables. Interpretation of results was done by comparing these values with established criteria (e.g., T > T-table at $\alpha = 0.05$), thus supporting or rejecting the formulated hypotheses.

Nomor ISSN: 3124-1115

RESULTS

This section presents the research results, including an overview of the characteristics of the respondents who participated in the study. Demographic characteristics such as age, gender, education level, religion, ethnicity, duration of diabetes, and length of hemodialysis treatment are important factors to provide context for further analysis. Understanding the respondents' profile is essential as a basis for interpreting the research findings, especially in examining the relationship between spirituality, health perception, and quality of life of diabetes mellitus patients undergoing hemodialysis.

Table 1. Frequency Distribution of Respondent Characteristics

Characteristic	Category	Frequency	Percentage (%)
Age	26-35 years	9	6
	36-45 years	52	33
	46-55 years	59	38
	56-65 years	28	18
	≥ 66 years	8	5
Gender	Male	48	30.77
	Female	108	69.23
Education	Elementary School	42	26
	Junior High School	14	9
	Senior High School	82	52
	Diploma	3	2
	Bachelor's Degree	15	10
Religion	Islam	126	81
	Christian	30	19
Ethnicity	Javanese	53	34
	Batak	43	28
	Malay	32	20
	Minangkabau	28	18
Duration of Diabetes	1-5 years	80	51
	6-10 years	48	31
	11-15 years	28	18
Duration of Hemodialysis	<1 year	51	31
	1-3 years	55	35
	4-6 years	28	18
	7-10 years	10	6
	≥10 tahun	12	9

The majority of respondents were aged between 46 and 55 years (38%) and 36 to 45 years (33%), reflecting a dominance of middle-aged to early elderly groups who are more vulnerable to diabetes complications requiring hemodialysis. Most respondents were female (69.23%), consistent with previous studies indicating that women are more frequently diagnosed with type 2 diabetes, although men tend to experience faster decline in kidney function.

Regarding education, the majority of respondents were high school graduates (52%), followed by elementary school graduates (26%). This indicates that most have a moderate level of

Nomor ISSN: 3124-1115

education, which may influence their understanding and management of the disease. The majority of respondents were Muslim (81%), reflecting the local population composition and allowing for further research on the relationship between religious practices and chronic disease management.

Ethnically, Javanese (34%) and Batak (28%) groups predominated, with cultural traditions that may influence dietary patterns and lifestyles related to diabetes management. In terms of duration of diabetes, half of the respondents had been diagnosed for 1–5 years (51%), and the majority had undergone hemodialysis for 1–3 years (35%), suggesting that kidney complications may develop relatively early if diabetes is not well controlled. This interpretation supports the importance of early screening and education, especially among younger and middle-aged groups, to prevent chronic kidney damage.

Table 2. Respondents' Frequency Regarding Spirituality

No	Indicator	Frequency			Total
		No	Doubtful	Yes	
1.	Relationship with God	19	98	39	156
2.	Relationship with oneself	22	103	31	156
3.	Relationship with Nature	25	98	33	156
4.	Relationship with fellow humans	18	105	33	156
5	Total	84	404	136	624
6	Average	21	101	34	156

The data shows that most respondents have a positive level of spirituality, especially in the indicators of relationship with God and relationship with oneself, where the number of respondents answering "Yes" and "Doubtful" is significantly higher than those choosing "No". On average, respondents tend to experience daily spiritual experiences, which can play an important role in supporting their well-being and quality of life.

Table 3. Frequency Distribution of Respondents' Perception of Health Status

No	Indicator	Frequency			Total
		Poor	Fair	Good	
1.	Cognitive Response to Illness	14	101	41	156
2.	Emotional Response	17	106	33	156
3.	Understanding of the Illness	16	101	39	156
4.	Total	47	308	113	624
5.	Average	16	103	38	156

The majority of respondents have a fairly good perception of their health status, with the highest numbers falling into the "Fair" and "Good" categories. This indicates a relatively good awareness of their illness condition, both cognitively and emotionally, although a small portion still assesses their health condition as less than optimal.

Table 4. Frequency Distribution of Respondents' Quality of Life

No	Indikator	Frequency					Total
		Very Poor	Poor	Fair	Good	Very Good	
1.	Physical	26	65	52	13		156
2.	Psychological	-	26	91	39	-	156
3.	Social Relations	-	28	89	39	-	156
4.	Environment	-	39	78	26	13	156
5.	Total	26	158	310	117	13	624

Nomor ISSN: 3124-1115

6.	Average	7	39	78	29	3	156

The results show that respondents' quality of life varies across domains. In the physical domain, the majority fall into the "Poor" and "Moderate" categories, while in the psychological and social relations domains, most respondents fall into the "Moderate" and "Good" categories. The environmental domain shows similar results, with most respondents classified as "Moderate." Overall, these data indicate that the physical aspect of respondents' quality of life still requires more attention, whereas the psychological and social aspects are relatively better.

The inner model test aims to measure the extent to which the independent variables in the model explain the variability of the dependent variable. The R-Square value is crucial for assessing the overall predictive ability of the model.

Table 5. R-Square Model

	R Square	R Square Adjusted
Quality of Life (Y)	0.324	0.316

An R-Square value of 0.324 indicates that the research model explains approximately 32.4% of the variance in the quality of life variable among patients. This suggests that independent variables such as family support, spirituality, and health status perception play a significant role in predicting the quality of life. However, the remaining 67.6% of the variance is attributed to other factors not included in the current model, which could involve variables like economic status, environmental influences, psychological conditions, or healthcare accessibility.

The Adjusted R-Square value of 0.316 further confirms the model's robustness by accounting for the number of predictors and sample size, indicating that the explanatory power is not inflated by model complexity. According to general statistical guidelines, an Adjusted R-Square around 0.3 is considered moderate, reflecting a fairly good predictive capability. Nonetheless, there remains substantial room for improvement. Future research could enhance the model's accuracy by incorporating additional relevant variables or exploring interaction effects between existing predictors. This improvement would provide a more comprehensive understanding of the multifaceted factors influencing patients' quality of life and could guide more targeted interventions in clinical practice.

Nomor ISSN: 3124-1115

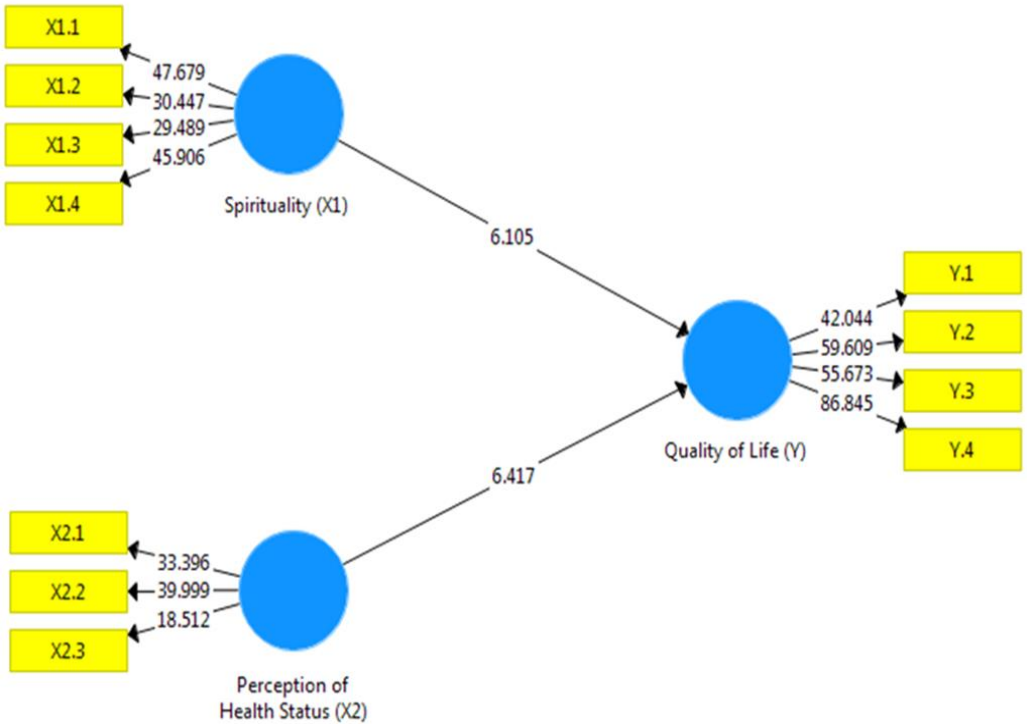

Figure 1. Inner Model Test

Table 5. Microscopic Observation of Incisional Wound Healing

Group	Fibroblast and Collagen Scoring (M ± SD)	P-value
P0	1,4 ± 0,89	
P1	1,8 ± 1,1	
P2	1,4 ± 0,89	0,75
P3	1,4± 0,89	
P4	1,4 ± 0,89	

The diagram illustrates the relationships among latent variables, namely Spirituality (X1) and Perception of Health Status (X2) as independent variables, and Quality of Life (Y) as the dependent variable.

1. The t-statistic value for the path from Spirituality (X1) to Quality of Life (Y) is 6.105.
2. The t-statistic value for the path from Perception of Health Status (X2) to Quality of Life (Y) is 6.417.

Nomor ISSN: 3124-1115

Both t-statistic values are much greater than the critical t-value (usually 1.96 at $\alpha = 0.05$), indicating that the effects of Spirituality and Perception of Health Status on Quality of Life are statistically significant. The hypothesis test results of this study are as follows:

H1: Spirituality has a significant effect on Quality of Life. Accepted, because t-statistic = 6.105 > 1.96 (significant), indicating that the relationship between spirituality and quality of life is significant at the 95% confidence level.

H2: Perception of Health Status has a significant effect on Quality of Life. Accepted, because t-statistic = 6.417 > 1.96 (significant), indicating that the relationship between perception of health status and quality of life is also statistically significant

Tabel 6. Results of the Inner Model Test

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Spirituality (X1) -> quality of life (Y)	0.346	0.345	0.057	6.105	0.000
perception of health status (X2) -> Quality of Life (Y)	0.398	0.398	0.062	6.417	0.000

1. Correlation of Spirituality with Quality of Life
   The path coefficient (Original Sample) value of 0.346 indicates that spirituality has a positive effect on quality of life. The t-statistic value of 6.105 (> 1.96) and p-value of 0.000 (< 0.05) show that this relationship is statistically significant. Therefore, the second hypothesis is accepted. This means spirituality significantly affects the quality of life of diabetes mellitus patients undergoing hemodialysis.
2. Correlation of Perception of Health Status with Quality of Life
   The path coefficient (Original Sample) value of 0.398 indicates that perception of health status has a positive effect on quality of life. The t-statistic value of 6.417 (> 1.96) and p-value of 0.000 (< 0.05) show that this relationship is statistically significant. Hence, the third hypothesis is accepted. Perception of health status has a significant positive influence on the quality of life of the patients.
3. Correlation of Spirituality and Perception of Health Status with Quality of Life
   The R-Square value for the quality of life variable is 0.324, indicating that the combination of spirituality and perception of health status explains 32.4% of the variance in the quality of life of diabetes mellitus patients undergoing hemodialysis. The remaining 67.6% is influenced by other factors not included in this research model. The Adjusted R-Square value of 0.316 reflects model adjustment considering the number of variables and sample size, indicating that the model remains fairly stable. Thus, spirituality and perception of health status together significantly contribute to influencing patients' quality of life. The fourth hypothesis is accepted. However, most of the variability in quality of life is still affected by factors outside this model. Moreover, socio-demographic factors such as age, gender, education, ethnicity, and religion may act as moderators influencing the relationship between spirituality, perception of health status, and quality of life. For example, age or gender might strengthen or weaken the influence of spirituality on quality of life, while

Nomor ISSN: 3124-1115

cultural and religious backgrounds may modify patients' responses to spiritual aspects and health perceptions.

DISCUSSION

1. **Correlation of Spirituality with Quality of Life**

   This study confirms that spirituality has a positive and significant influence on the quality of life of diabetes mellitus patients undergoing hemodialysis. Spirituality serves as a source of psychological strength that helps patients manage anxiety, uncertainty, and frustration caused by chronic illness and exhausting medical procedures. By providing meaning and hope in life, spirituality assists patients in accepting their condition and maintaining motivation to undergo treatment with greater optimism. This finding aligns with those of Handayani et al. (2022) and Siallagan et al. (2023), which show that higher levels of spirituality correlate with improved quality of life and inner peace in patients.

   Moreover, research by Hartiti et al. (2022) confirms that spiritual care from nurses provides positive psychospiritual support to kidney failure patients undergoing dialysis, enhancing quality of life across physical, psychological, and social dimensions. Other systematic studies also show that spirituality and religiosity consistently have a positive impact on the quality of life of end-stage renal disease patients undergoing dialysis therapy (Burlacu et al., 2019). Fradelos et al. (2022) add that meaning in life and inner peace, as spiritual aspects, significantly improve the psychosocial well-being of hemodialysis patients.

2. **Correlation of Perception of Health Status with Quality of Life**

   The results indicate that perception of health status has a positive and significant effect on the quality of life of diabetes mellitus patients undergoing hemodialysis. Patients with a positive perception of their physical and emotional condition tend to be more optimistic, confident, and active in following treatment and adopting a healthy lifestyle. Conversely, negative perceptions often lead to anxiety and decreased motivation, which adversely affect quality of life, consistent with findings by Al-Kayyis & Perwitasari (2018) and Sofiani et al. (2022).

   A good health perception helps patients manage stress and chronic disease challenges more effectively, particularly through health education, psychological counseling, and strong social support networks. This holistic approach enables patients to accept their condition with a more positive attitude, thus improving physical, psychological, and social aspects of daily life. However, inaccurate perceptions of medical conditions may cause disappointment, making realistic communication from healthcare providers essential to managing patients' expectations.

3. **Correlation of Family Support, Spirituality, and Perception of Health Status with Quality of Life**

   The findings show that spirituality has a positive and significant influence on the quality of life of diabetes mellitus patients undergoing hemodialysis. Spirituality provides inner strength that helps patients accept their illness, face challenges with optimism, and find meaning in life, as supported by Rosyada et al. (2023) and adaptive coping theory. Hartiti et al. (2022) and Burlacu et al. (2019) also emphasize that spiritual support contributes to improvements in the physical, psychological, and social quality of life of kidney failure patients, highlighting the importance of

Nomor ISSN: 3124-1115

integrating spiritual aspects into nephrology care. Fradelos et al. (2022) further add that meaning in life and inner peace derived from spirituality significantly enhance the psychosocial well-being of hemodialysis patients, strengthening their resilience in facing chronic illness.

In addition to spirituality, perception of health status has a positive and significant influence on quality of life among diabetes mellitus patients undergoing hemodialysis. Patients with positive perceptions of their physical and emotional conditions tend to feel more optimistic, confident, and engaged in treatment and healthy lifestyle practices. Conversely, negative perceptions often lead to anxiety, stress, and reduced motivation, negatively impacting patients' quality of life. These findings are in line with studies by Al-Kayyis & Perwitasari (2018) and Sofiani et al. (2022), which stress the importance of fostering positive perceptions through education and psychological support to improve patients' physical and emotional well-being.

In conclusion, both spirituality and perception of health status have positive and significant effects on the quality of life of diabetes mellitus patients undergoing hemodialysis. Integrating spiritual aspects and enhancing positive health perceptions through education and psychological support are important strategies for supporting the physical, emotional, and social well-being of patients, thereby improving their overall quality of life.

CONCLUSION

This study demonstrates that spirituality and health status perception have a positive and significant impact on the quality of life of diabetes mellitus patients undergoing hemodialysis. Spirituality serves as a source of inner strength that helps patients accept their condition, face challenges with optimism, and find deeper meaning in life. A positive perception of health status increases patients' motivation to maintain a healthy lifestyle and adhere to treatment, while reducing anxiety and stress that can diminish quality of life. Therefore, integrating spiritual support and education to foster positive health perceptions is essential in holistic care to enhance the physical, psychological, and social well-being of diabetes mellitus patients receiving hemodialysis therapy. Several recommendations can be made as follows:

1. Integration of spiritual care in treatment: Healthcare facilities, especially those managing diabetes mellitus patients undergoing hemodialysis, should incorporate spiritual care programs as part of holistic care. Spiritual support such as counseling, prayer, or meditation can significantly improve patients' quality of life..
2. Enhancing education and psychological support: Healthcare providers should focus on empowering patients to develop a positive perception of their health condition. Consistent psychological support and education can help patients manage anxiety and stress, thereby increasing their motivation to adhere to treatment and maintain a healthy lifestyle..
3. Personalized and culturally sensitive approaches are essential; spiritual interventions and health education should be tailored to the patient's cultural background, religion, and individual needs to be more effective and relevant in improving quality of life.
4. Further research is recommended to include additional variables such as family support, socioeconomic status, and environmental factors in order to gain a more comprehensive understanding of the factors affecting the quality of life of diabetes mellitus patients undergoing hemodialysis

ACKNOWLEDGEMENT

The author expresses sincere gratitude to all parties who have provided support and assistance during this research. Special thanks are extended to Arifin Achmad Regional General Hospital, Riau Province, for granting permission and providing facilities during data collection. It is hoped that the results of this study will contribute to the advancement of scientific knowledge and the improvement of care quality for diabetes mellitus patients undergoing hemodialysis.

REFERENCES

Al-Kayyis, H. K., & Perwitasari, D. A. (2018). Illness perception and quality of life in type 2 diabetes mellitus patients in Lampung, Indonesia. ***Global Journal of Health Science, 10***(7), 136. https://doi.org/10.5539/gjhs.v10n7p136

Burlacu, A., Artene, B., Nistor, I., Buju, S., Jugrin, D., Mavrichi, I., & Covic, A. (2019). Religiosity, spirituality and quality of life of dialysis patients: A systematic review. ***International Urology and Nephrology, 51(***5), 839–850. https://doi.org/10.1007/s11255-019-02129-x

Damayanti, F. E., Rahmawan, F. A., & Yudari, N. L. A. L. (2023). Relationship between family support, motivation to adhere to diabetes diet, and blood glucose levels in diabetes mellitus patients. ***Nursing Information Journal, 2***(2), 98–103. https://doi.org/10.54832/nij.v2i2.316

Decroli, E. (2019). ***Diabetes Mellitus Type 2.*** Pusat Penerbitan, Department of Internal Medicine, Faculty of Medicine, Andalas University.

Fradelos, E. C., Alikari, V., Tsaras, K., Papathanasiou, I. V., Tzavella, F., Papagiannis, D., & Zyga, S. (2022). The effect of spirituality on quality of life of hemodialysis patients. ***Journal of Religion and Health, 61(***3), 2029–2040. https://doi.org/10.1007/s10943-020-01153-x

Giawa, A., Ginting, C. N., Tealumbanua, A., Laia, I., & Manao, T. C. (2019). Improvement of quality of life in chronic kidney failure patients undergoing hemodialysis through coping strategies at RSU Royal Prima Medan in 2019. ***Jurnal Ilmiah Keperawatan,*** 5(2), 115–121. https://doi.org/10.52943/jikeperawatan.v5i2.319

Habiburrahman, H., Hasneli, Y., & Amir, Y. (2019). Effectiveness of dhikr therapy on blood glucose levels in patients with type II diabetes mellitus. ***Jurnal Ners Indonesia, 9*(1**), 132. https://doi.org/10.31258/jni.8.2.132-144

Handayani, S., Hasneli, Y., & Amir, Y. (2022). The relationship between spirituality level and quality of life in diabetes mellitus patients during the Covid-19 pandemic. ***Indonesian Journal of Nursing Research, 5(***2), 117–126. https://doi.org/10.35473/ijnr.v5i2.1820

Hartiti, T., Silfiyani, L. D., Rejeki, S., Pohan, V. Y., & Yan, A. (2022). Relationship of spiritual caring with quality of life for hemodialysis patients: A literature review. ***Macedonian Journal of Medical Sciences, 9***(T5), 85–89. https://doi.org/10.3889/oamjms.2022.7835

IDF. (2022). ***IDF Annual Report 2022.***

Kalzan, N. A. I., Hasneli, Y., & Indriati, G. (2020). Relationship of family support with quality of life in diabetes mellitus patients. ***Jurnal Ilmu Keperawatan, 9***(1).

Khotimah, K., Siwi, A. S., & Muti, R. T. (2021). Relationship between spirituality and self-efficacy with coping strategies in type II diabetes mellitus patients in Karanggedang Village, Sidareja Subdistrict. ***Seminar Nasional Penelitian dan Pengabdian Masyarakat, 039,*** 422–432. https://prosiding.uhb.ac.id/index.php/SNPPKM/article/view/865

Kiriella, D. A., Islam, S., Oridota, O., Sohler, N., Dessenne, C., de Beaufort, C., Fagherazzi, G., & Aguayo, G. A. (2021). Unraveling the concepts of distress, burnout, and depression in type 1 diabetes: A scoping review. ***EClinicalMedicine, 40,*** 101118.

https://doi.org/10.1016/j.eclinm.2021.101118
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, 9.*** https://doi.org/10.1177/23779608231171772
Rosyadi, A., Hapsari, I., & Utami, P. I. (2021). The effect of lifestyle, spiritual, and family support on diabetic mellitus patients with chronic kidney disease complication. ***PHARMACY: Jurnal Farmasi Indonesia, 18***(2), 422. https://doi.org/10.30595/pharmacy.v18i2.13255
Siallagan, A., Sinurat, S., & Gulo, P. (2023). Spirituality and quality of life of diabetes mellitus patients in the working area of Puskesmas Balam Medan. ***Gema Kesehatan, 15***(2), 130–138. https://doi.org/10.47539/gk.v15i2.42
Sidartawan, P. S. (2018). ***Integrated management of diabetes mellitus***. FKUI.
Sofiani, Y., Kamil, A. R., & Rayasari, F. (2022). The relationship between illness perceptions, self-management, and quality of life in adults with type 2 diabetes mellitus. ***Jurnal Keperawatan Padjadjaran, 10***(3), 187–195. https://doi.org/10.24198/jkp.v10i3.2135
Weinman, K., J., & Petrie, K. J. (2021). Patients' perceptions of their illness: The dynamo of volition in health care. ***Current Directions in Psychological Science, 21(***1). https://doi.org/10.1177/09637214114294
World Health Organization. (2018). ***World health statistics 2018: Monitoring health for the SDGs, sustainable development goals***