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

The Effect of Spiritually-Based Acupressure Modification on Blood Sugar and Stress in Patients with Type 2 Diabetes Mellitus at the Pekanbaru Health Centre

Emul Yani[1], Gusbakti Rusip[2], Tiarnida Nababan[3], Fadlun Apsari Putri[4]
[1]Doctoral Study Program in Medical Sciences, Faculty of Medicine, Dentistry and Health Sciences, Prima
Indonesia University
[2,3] Faculty of Medicine, Dentistry and Health Science, Prima Indonesia University
[4]Faculty of Nursing, Pekanbaru State Umbrella Health Institute

*E-mail : emulyaniemulyani@gmail.com,gusrusip@gmail.com, iarnidanababan@unprimdn.ac.id apsariput13@gmail.

ABSTRACT

Background: Type 2 Diabetes Mellitus (DM) is a chronic disease with rising prevalence, including in Pekanbaru, where the Garuda Health Centre reports the highest cases. Beyond blood sugar control, DM patients often experience stress due to long-term therapy and complication risks. Complementary therapies such as acupressure and spiritual approaches (dhikr) may help reduce stress and improve glycemic regulation. Objective: To determine the effect of spirituality-based acupressure modification on blood sugar and stress levels in type 2 DM patients at the Garuda Pekanbaru Health Centre. Methods: A quasi-experimental study with a non-equivalent control group design was conducted on 42 patients (21 intervention, 21 control) selected by purposive sampling. Stress was measured using the Depression Anxiety Stress Scale (DASS), and blood sugar levels were measured using a glucometer. The intervention combined dhikr and acupressure therapy administered for three days. Data were analyzed using Independent t-test and Linear Mixed Model. Results: Before the intervention, no significant difference was found in blood sugar levels ($p=0.617$), while stress levels differed significantly ($p<0.001$). After the intervention, the intervention group showed a significant reduction in stress ($p=0.030$) and blood sugar levels ($p=0.027$) compared to controls. Linear Mixed Model analysis confirmed significant time×group interactions for both stress ($p<0.001$) and blood sugar ($p<0.001$), indicating greater decreases in the intervention group. Conclusion: Spirituality-based acupressure modification effectively reduces stress and blood sugar levels in type 2 DM patients, suggesting its potential as a holistic, affordable, non-pharmacological therapy in healthcare practice.

Keywords: *Type 2 Diabetes Mellitus, Acupressure, Dhikr, Spiritual, Stress, Blood Sugar*

INTRODUCTION

Health problems are now dominated by non-communicable **diseases (NCDs)**, one of which is Type **2 diabetes mellitus**, which is a chronic disease due to insulin resistance or inadequate insulin production. (Jevtic, 2021; Tomic et al., 2022).

At the local level, the prevalence of DM in Riau Province increased from 85% (2021) to 98% (2022). In Pekanbaru City, the figure rose from 37% to 95% in the same period. The Pekanbaru City Health Office (2023) noted that the Garuda Health Centre has the highest number of type 2 DM patients, namely 1148 people.

Risk factors for type 2 diabetes include genetic factors, obesity, unhealthy lifestyle, age, and hormonal factors. Treatment includes lifestyle changes, oral drug therapy, and insulin (Rafiei et al., 2023; Lim et al., 2021). People with DM often experience stress due to long-term medication, dietary arrangements, blood sugar control, exercise, and the risk of complications. Therefore, stress management is important in DM control (Ajele et al., 2021).

Nomor ISSN: 3124-1115

Stress management aims to improve the quality of life of sufferers (Duke, 2021). Spiritual approaches may improve medication adherence and religious motivation in the control of type 2 DM (Tomic et al., 2022). One of the forms is dhikr therapy, which is a religious relaxation technique by reciting the sentences thayibah, asmaul husna, prayer, and listening to dhikr chanting regularly (Anjastya & Yuniartika, 2022). In addition to the spiritual approach, acupressure is also effective for reducing stress and lowering blood sugar by stimulating the meridian point(Mihardja and Harja, 2021; Kusra et al., 2022).

A preliminary survey conducted by the author on February 28, 2024, at the Garuda Health Centre showed that there were 47 visits to Type 2 Diabetes Mellitus patients during January and February 2024. The author conducted interviews with 10 patients with Type 2 DM related to blood sugar levels at the patients' last examination. Based on patient information, almost 90% of patients have abnormal blood sugar levels. Patients do not do any therapy in an effort to overcome Diabetes Mellitus, other than pharmacological treatment and elderly gymnastics from the Garuda Health Centre. This is the reason why the researcher chose the Puskesmas as the location for the research.

Spiritual-Based Acupressure Modification is one of the preferred therapies that can be done independently, easily, and cheaply, and does not require special time. Based on the above background, the researcher is interested in conducting a study entitled The Effect of Spiritually-Based Acupressure Modification on Blood Sugar and Stress in Type 2 Diabetes Mellitus Patients at the Garuda Pekanbaru Health Centre

METHODS

Quantitative research with *a quasi-experiment* approach, with *the design of the non-equivalent group design*. The design of this study was carried out in the control group and the experimental group. The research was conducted for 3 days in the Garuda Pekanbaru Health Centre area. The research sample of Diabetes Mellitus patients at the Garuda Health Centre amounted to 42 people, consisting of 21 people from the control group and 21 people from the experimental group. This study uses *purposive sampling* techniques. The research instrument used to assess stress is the DASS (*Depression Anxiety Stress Scale),* which consists of 11 questions related to stress. The instrument measures blood sugar using a glucometer. Spiritually-based acupressure modification therapy is carried out using a combination of standard operating procedures (SOP) of dhikr and acupressure therapy. The analysis was carried out using an Independent t-test aa nd a Linear Mixed Model.

RESULTS

Respondent Characteristics

The majority of respondents in the experimental group were male (68.2%), while the control group was dominated by women (59.1%). Most of the respondents were in the adult age category of 19–59 years, which was 88.1% overall. The education level of the respondents was relatively high with half of the total respondents having a college education (50.0%), while the rest had a high school education (35.7%) and junior high school (14.3%). Based on the length of time they had suffered from Diabetes Mellitus, the majority of respondents had suffered for less than 10 years (64.3%), while those who had suffered more than or equal to 10 years amounted to 35.7%. This distribution illustrates that the study respondents were generally in the productive age group with a relatively high educational background, which

supported the acceptance of spiritual-based acupressure modification interventions in the management of diabetes. The frequency distribution of respondents can be seen in Table 1 below.

Table 1 Frequency Distribution of Respondent Characteristics

No	Characteristics	Frequency (n)		Percentage (%)	
		Intervention	Control	Intervention	Control
1	**Gender**				
	Male	14	9	68,2	40,9
	Female	7	12	31,8	59,1
2	**Age**				
	Adult (19-59 years)	17	20	81,8	95,5
	Elderly (> 59 years)	4	1	18,2	4,5
3	**Education**				
	Junior High School	5	1	22,7	4,5
	Senior High School	7	8	36,4	36,4
	College	9	12	40,9	59,1
4	**Long Suffering from Diabetes**				
	< 10 years	12	15	54,5	72,7
	≥ 10 years	9	6	45,5	27,3
Total		**21**	**21**	**100**	**100**

Source : Primary Data Analysis in 2024

Overall, the distribution of respondents' characteristics showed that the majority were in groups with profiles that were sufficiently supportive of the success of the intervention, both in terms of age, education, and length of illness. This reinforces the interpretation that the decrease in stress and blood sugar levels observed after spiritual-based acupressure modification therapy is influenced not only by demographic characteristics, but also by the effectiveness of the intervention itself.

Pre-intervention stress levels (prestress)

The results of the Independent t-test showed a significant difference between the intervention group and the control group before the intervention ($t(42)=10.41$; $p<0.001$). The mean difference in stress levels between the two groups was 6.82 (95% CI: 5.49–8.14). This suggests that in the initial condition, there was a significant difference in stress values between the intervention group and the control group. The results can be seen in Table 2 below:

Table 2 Stress levels before the intervention

	t	Df	Sig. (2-tailed)	*Mean* Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper

Prestress	Equal variances assumed	10.405	42	.000	6.81818	.65525	5.49582	8.14054
	Equal variances not assumed	10.405	39.317	.000	6.81818	.65525	5.49315	8.14322

Post-intervention stress levels

The results of the Independent t-test after the intervention also showed a significant difference between the two groups (t(42)=–2.24; p=0.030). The mean stress value in the intervention group was 1.36 points lower than in the control group (95% CI: –2.59 to –0.14). This suggests that after the administration of spiritually-based acupressure modifications, there was a significant reduction in stress levels in the intervention group compared to the control group. The results can be seen in Table 3 below:

Table 3 Stress levels after the intervention

		t	**Df**	**Sig. (2-tailed)**	***Mean* Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
							Lower	**Upper**
Post-Stress	Equal variances assumed	-2.243	42	.030	-1.36364	.60790	-2.59042	-.13685
	Equal variances not assumed	-2.243	41.904	.030	-1.36364	.60790	-2.59051	-.13677

These results indicate that spirituality-based acupressure modification interventions have a significant effect on stress reduction in Type 2 Diabetes Mellitus patients. These findings support the hypothesis that a spirituality-based acupressure approach may be one of the complementary strategies to reduce patient stress.

An independent t-test analysis was also conducted to determine the difference in blood sugar values between the intervention group and the control group before and after the spirituality-based acupressure modification intervention.

Blood sugar before intervention (GDSpre)

The results of *the Independent t-test* showed **that there was no significant difference** between the intervention group and the control group before the intervention (t(42)=–0.50; p=0.617). The mean difference in blood sugar between the two groups was –4.73 mg/dl (95% CI: –23.65 to 14.19). This means that the initial condition of blood sugar when the two groups were relatively the same before the intervention was given. The results can be seen in Table 3 below:

Table 4: Blood sugar before the intervention

		t	Df	Sig. (2-tailed)	*Mean* Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
GDSpre	Equal variances assumed	-.504	42	.617	-4.72727	9.37580	-23.64839	14.19385
	Equal variances not assumed	-.504	36.895	.617	-4.72727	9.37580	-23.72627	14.27173

Blood sugar after intervention (GDS)

The results of *the Independent t-test* showed that there was a significant difference between the intervention group and the control group after the intervention (t(42)=–2.29; p=0.027). The blood sugar value in the intervention group was lower by 20.55 mg/dl than in the control group (CI 95%: –38.67 to –2.42). This shows that spirituality-based acupressure modification interventions affect blood sugar reduction in patients with Type 2 Diabetes Mellitus. The results can be seen in Table 5 below:

Table 5: Blood sugar after the intervention

		t	Df	Sig. (2-tailed)	*Mean* Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
GDS	Equal variances assumed	-2.288	42	.027	-20.54545	8.97937	-38.66656	-2.42435
	Equal variances not assumed	-2.288	41.908	.027	-20.54545	8.97937	-38.66774	-2.42317

The results showed that before the intervention, there was no significant difference in blood sugar values between groups (p=0.617), while after the intervention, there was a significant decrease in the intervention group compared to the control group (p=0.027). These findings suggest that spirituality-based acupressure modification affects lowering blood sugar during Type 2 Diabetes Mellitus.

After this analysis was carried out, the results were obtained. Before the intervention, there was no significant difference between the two groups on both variables (stress and blood sugar at the time), and after the intervention, there was a significant difference in both stress and blood sugar at the time, where the intervention group had lower values than the control group. These findings show that spirituality-based acupressure modification has a positive effect on reducing stress levels and blood sugar in Type 2 Diabetes Mellitus patients at the Pekanbaru Health Centre.

Nomor ISSN: 3124-1115

Then a mixed-effects model (Linear Mixed Model) was analysed to assess the effects of Time (Pre vs Post), Group (Intervention vs Control), and Time x Group interaction for both variables: Stress and Blood Sugar During (GDS).

Significant interaction coefficients ($p < 0.001$) showed changes from pre- - post differed between the intervention and control groups. In practical terms, the intervention group experienced a large decrease in stress scores from Pre-Post (0.97 - 0.35), while the control group did not decrease (it increased slightly: 0.41 - 0.50). This supports the effect of the intervention on stress reduction. Summary of the main results (coefficients, significance), mean/descriptive per group x time. The results can be seen in Table 6 below.

Table 6: Descriptive Summary (mean ± SD; n=21 per group)

Variable	Group	Pre (Red ± SD)	Post (Red ± SD)
Stress	Intervention	0.97 ± 0.15	0.35 ± 0.14
	Control	0.41 ± 0.14	0.50 ± 0.14
GDS	Intervention	180.62 ± 35.87	157.33 ± 33.83
	Control	175.76 ± 25.25	188.71 ± 31.09

Analysis using a linear mixed-effects model (random intercept per subject) showed a significant effect of time x group interaction on stress score (interaction coefficient = -0.701, SE = 0.044, $p < 0.001$). The average stress score in the intervention group decreased from 0.97 (SD 0.15) to 0.35 (SD 0.14) after the intervention, while the control group did not decrease (Pre 0.41, SD 0.14 - Post 0.50, SD 0.14). These findings suggest that spirituality-based acupressure modifications significantly lower stress scores in Type 2 DM patients. The results can be seen in Table 7 below.

Table 7. Results of Linear Mixed Model Analysis (Outcome ~ Group × Time)

Parameters	Estimate	ONE	p-value
Intercept (Intervention, Post)	0.354	0.030	< 0.001
Group (Control vs Intervention, Post)	0.142	0.042	0.007
Time (Pre vs Post) on Intervention	0.616	0.031	< 0.001
Group Interaction (T.Control): Time	-0.701	0.044	< 0.001

Analysis using the mixed-effects model showed a significant interaction of time x group on blood sugar levels at the time (interaction coefficient = -36.24, SE = 9.70, $p < 0.001$). The intervention group experienced a decrease in mean blood sugar from 180.62 mg/dL (SD 35.87) to 157.33 mg/dL (SD 33.83), while the control group increased from 175.76 mg/dL (SD 25.25) to 188.71 mg/dL (SD 31.09). These results support the positive effect of the intervention on lowering blood sugar over time. The results can be seen in Table 8 below.

Table 8. Results of Linear Mixed Analysis of Blood Sugar Current Model (Outcome ~ Group × Time)

Parameters	Estimate	ONE	p-value
Intercept (Intervention, Post)	157.33	6.76	< 0.001
Group (Control vs Intervention, Post)	31.38	9.57	0.0010
Time (Pre vs Post) on Intervention	23.29	6.86	< 0.001
Group Interaction (T.Control): Time	-36.24	9.70	< 0.001

The results of the analysis in Figure 1 show that there is a difference in changes in stress score and Blood Sugar at Time (GDS) between the intervention group and the control group from the pre-test to the post-test time. In panel A, it was seen that the intervention group

Nomor ISSN: 3124-1115

experienced a significant decrease in stress scores after treatment, while the control group showed a tendency to increase stress scores in the same period. This suggests that the interventions administered were effective in lowering participants' stress levels compared to the control group.

Meanwhile, panel B illustrates the change in GDS values. The intervention group showed a decrease in GDS levels from pre-test to post-test time, while the control group experienced an increase in GDS levels. This opposite direction of change confirms that the intervention not only has a positive impact on the psychological aspect (stress reduction), but also on the physiological aspect in the form of improving blood sugar regulation at the same time.

Overall, these findings indicate that the interventions given had a protective effect and provided greater benefits than the control group, both in terms of mental health and metabolic health. Figure 1 can be seen below.

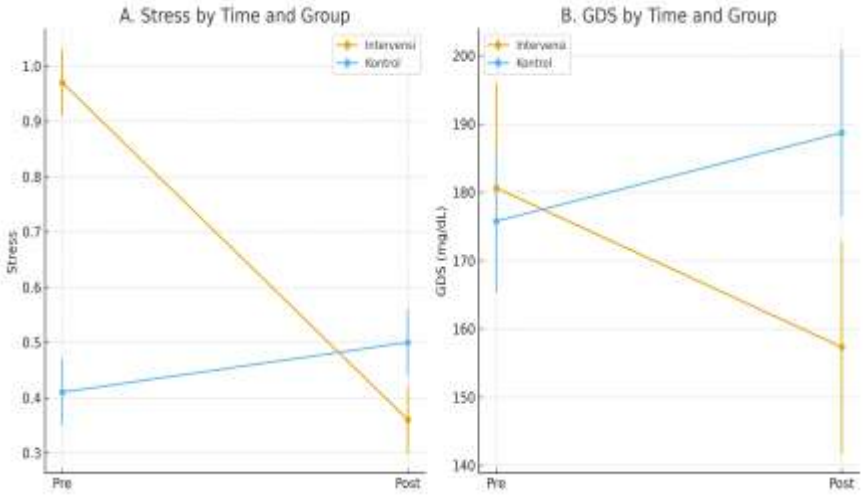

Figure 1. Stress and GDS by time and group

DISCUSSION

Difference in Average Values *of Pre-test* and *Post-test* Spiritually-Based Acupressure Modification Against Stress and Blood Sugar in Type 2 Diabetes Mellitus Patients at Garuda Pekanbaru Health Centre

Spiritually-based acupressure modification therapy has been proven to reduce the stress level of Type 2 Diabetes Mellitus (DM) patients, so stress needs to be a concern in the treatment of this disease. (Kusra et al., 2022). Stress in DM patients is associated with anxiety, worry, emotional burden, and access to care, including the threat of complications and loss of bodily functions. (Sari et al., 2017).

The results showed that patients' stress levels were higher before compared to after therapy. Dhikr plays a role in cognitive (positive understanding), affective (optimism, calmness), and spiritual (surrender to Allah SWT), thereby reducing anxiety and improving mental health (Widyastuti et al., 2019). Acupressure stimulates certain points to release the body's energy, relieve pain, and trigger the production of endorphins that reduce pain while causing positive feelings, thus effectively reducing stress and anxiety (Anggarraeni & Wahyuningsih, 2022).

Nomor ISSN: 3124-1115

This therapy also affects blood sugar levels by activating metabolic enzymes, improving the function of the pancreas, target cell receptors, and insulin sensitivity, so that glucose utilisation in cells increases and blood sugar levels decrease (Masithoh et al., 2016). Other research supports that dhikr therapy is effective in reducing stress in DM patients, including in the ICU. (Anjastya and Yuniartika, 2022)

Overall, there were significant differences between the control and experimental groups, suggesting that spirituality-based acupressure modification therapy had a positive effect on comfort, calmness, and stress reduction in Type 2 DM patients.

Difference in Average Value *of Post-test* of Spiritually-Based Acupressure Modification Therapy on Blood Sugar During Experiment and Control Group in Type 2 Diabetes Mellitus Patients at Garuda Pekanbaru Health Centre

Blood sugar is the main source of energy that is tightly regulated by the body, with the mechanism of insulin from the pancreas preventing excessive rise (Muzhaffarah et al., 2024). The reduction of blood sugar through this therapy is influenced by the combination of dhikr and acupressure. Dhikr as a religious relaxation technique stimulates the HPA axis so as to reduce CRF, ACTH, and cortisol levels. A decrease in cortisol increases glucose uptake by cells and suppresses gluconeogenesis and lipolysis, so that blood glucose levels decrease. (Hariani et al., 2020).

Acupressure plays a role through the activation of the enzyme glucose-6-phosphate, stimulation of the pancreas in insulin synthesis, enhancement of target cell receptors, as well as improving insulin sensitivity and GLUT-4 expression, which ultimately accelerates the use of glucose in cells (Masithoh et al., 2016). Results in line with research (Kusra et al., 2022) found significant differences in fasting blood sugar levels, where the intervention group was more effective at lowering blood sugar than controls through acupressure and active stretching.

In general, spiritually based acupressure modifications make patients more relaxed, calm, and comfortable, while strengthening the spiritual aspects that contribute to lowering blood sugar. This confirms the benefits of integrating complementary therapies in nursing and healthcare practice, as well as the importance of nurse training in alternative techniques to improve patients' quality of life.

However, the study had limitations because the researchers were unable to fully control respondents' activity during a 30-minute break after the intervention, which could potentially affect blood sugar levels.

CONCLUSION AND SUGGESTION

Based on the results of a study on the Effect of Spiritually-Based Acupressure Modification on Blood Sugar and Stress in Type 2 Diabetes Mellitus Patients at the Garuda Pekanbaru Health Centre, it can be concluded that:

1. There was a difference in stress levels before and after therapy in both the experimental and control groups, with p-values of 0.000 and 0.024.
2. There was a difference in blood sugar levels before and after therapy in the experimental group ($p = 0.018$), but not in the control group ($p = 0.116$).

Nomor ISSN: 3124-1115

3. There was a significant difference in stress levels and blood sugar levels between the control and experimental groups after therapy, with p-values of 0.030 and 0.027, respectively.

Overall, spirituality-based acupressure modification therapy has been shown to have a positive effect in the form of lowering blood sugar and stress in Type 2 DM patients.

The results of this study have important implications for nursing practice and health policy. Spiritually-based acupressure modification therapy can be considered an effective and affordable non-pharmacological approach in the management of diabetes mellitus. The integration of this therapy into patient care programs at Puskesmas and other health facilities has the potential to improve the quality of life of patients. Therefore, health workers, especially nurses, are advised to obtain training in acupressure techniques and spiritual approaches as part of holistic ministry.

For further research, it is recommended:

1. Use a more rigorous research design (e.g. RCTs) with larger sample sizes to make the results more generalizable.
2. Exploring the biological and psychological mechanisms of the combination of acupressure and dhikr on blood sugar regulation and stress.
3. Examining the long-term impact of this therapy on quality of life, mental health, and prevention of complications of diabetes mellitus.

REFERENCES

Ajele, W. K., Oladejo, T. A., Akanni, A. A., & Babalola, O. B. (2021). Spiritual intelligence, mindfulness, emotional dysregulation, depression relationship with mental well-being among persons with diabetes during the COVID-19 pandemic. *Journal of Diabetes and Metabolic Disorders*, *20*(2), 1705–1714. https://doi.org/10.1007/s40200-021-00927-8

Anggarraeni, K., & Wahyuningsih, N. (2022). Descriptive Study: Knowledge Level of Nursing about Stress Management during the COVID-19 Pandemic with Acupuncture and Acupressure Technique. *National Journal of Health Research*, *6*(1), 1–6.

Anjastya, H. A., & Yuniartika, W. (2022). Spiritual Spiritual Therapy (Dhikr) can Decrease Blood Sugar Levels in Diabetes Mellitus Patients in the Intensive Care Unit (ICU): A Study Literature. *Classics*, *2*(01), 16–26. https://doi.org/10.46233/klasics.v2i01.545

Arania, R., Triwahyuni, T., Esfandiari, F., & Nugraha, F. (2021). The relationship between age, gender, and education level with the incidence of diabetes mellitus at the Mardi Waluyo Clinic in Central Lampung. *Journal of Malahayati Medicine*, *5*(3), 146–153. https://doi.org/10.1007/s00712-023-00827-w

Beshyah, S. (2019). *Textbook of diabetes* (Vol. 03, Issue 04).

Blonde, L., Health, O., Orleans, N., Pharmaceuticals, J., Pharmaceuticals, S., Umpierrez, G. E., Nordisk, N., Leaders, T., Reddy, S. S., Pleasant, M., Mcgill, J. B., Ingelheim, B., Lilly, E., Bionics, B., Nordisk, N., Members, T. F., Berga, S. L., Health, M., Board, A., ... Galindo, R. J. (2023). *HHS Public Access*. *28*(10), 923–1049. https://doi.org/10.1016/j.eprac.2022.08.002.Address

Dietzel, J., Hörder, S., Habermann, I. V., Meyer-Hamme, G., Hahn, K., Ortiz, M., Roll, S., Linde, K., Irnich, D., Hammes, M., Nögel, R., Wullinger, M., Wortman, V., Hummelsberger, J., Willich, S. N., Schröder, S., & Brinkhaus, B. (2021). Acupuncture in diabetic peripheral neuropathy—protocol for the randomized, multicenter ACUDPN trial. *Trials*, *22*(1), 1–12. https://doi.org/10.1186/s13063-021-05110-1

Duke, N. (2021). Type 2 diabetes self-management: spirituality, coping and responsibility. *Journal of Research in Nursing*, *26*(8), 743–760. https://doi.org/10.1177/17449871211026958

Fatimah, R. (2019). Type 2 Diabetes Mellitus. *MAJORITY* |, *27*(2), 74–79.

Fatimah, S. (n.d.). Learning in the New Normal Era. In *Journal of Chemical Information and Modeling*. Faculty of Teacher Training and Education, Lambung Mangkurat University.

Habiburrahman, H., Hasneli, Y., & Amir, Y. (2019). The Effectiveness of Dhikr Therapy on Blood Glucose Levels in Patients with Type II Diabetes Mellitus. *Indonesian Journal of Nurses*, *9*(1), 132. https://doi.org/10.31258/jni.8.2.132-144

Hardani, Andriani, H., Ustiawaty, J., Utami, E., Istiqomah, R., Fardani, R., Sukmana, D., & Auliya, N. (2020). *Qualitative & Quantitative Research Methods*. CV Pustaka Ilmu Group.

Hariani, Abd. Hady, Nuraeni Jalil, & Surya Arya Putra. (2020). The Relationship of Long Suffering and Complications of Dm to the Quality of Life of Type 2 Dm Patients in the Batua Health Center Area, Makassar City. *Scientific Journal of Health Diagnosis*, *15*(1), 56–63.

Hertuida, C. (2018). The Relationship of Education and Knowledge with Self-Management Behaviors of Type 2 Diabetes Mellitus. *Health Bulletin: Scientific Publications in the Health Sector*, *2*(2), 49–58.

Rib Putri Lestari, & M. Rizqon Al Musafiri. (2023). Implementation of Al-Quran Sound Healing Therapy to Reduce Stress. *At-Taujih Journal*, *3*(2), 70–82. https://doi.org/10.30739/jbkid.v3i2.2607

James W, Elston D, T. J. et al. (20 C.E.). 済無No Title No Title No Title. *Andrew's Disease of the Skin Clinical Dermatology.*, 122–140.

Jevtic, M. (2021). Motivation for change, cornerstone of diabetes self-management in patients with type 2 diabetes. *European Journal of Public Health*, *29*, 362–363.

Kusra, A, I. N., Sudirman, Widiyanto, B., Supriyana, & Ta'adi. (2020). The Effectiveness of Acupressure Pen and Active Stretching (Acupenas) on Fasting Blood Sugar Levels among Type 2 Diabetes Mellitus Patients. *International Journal of Nursing and Health Services (IJNHS), 3*(6), 687–694.

Lim, S., Bae, J. H., Kwon, H. S., & Nauck, M. A. (2021). COVID-19 and diabetes mellitus: from pathophysiology to clinical management. *Nature Reviews Endocrinology*, *17*(1), 11–30. https://doi.org/10.1038/s41574-020-00435-4

Lin, C., Cai, X., Yang, W., Lv, F., Nie, L., & Ji, L. (2020). Age, sex, disease severity, and disease duration difference in placebo response: implications from a meta-analysis of diabetes mellitus. *BMC Medicine*, *18*(1), 1–23. https://doi.org/10.1186/s12916-020-01787-4

Made Kurnia Widiastuti Giri. (2023). Self-Spiritual Healing Therapy on Anxiety Conditions in Type II Diabetes in the Lovina Tourism Area. *JST (Journal of Science and Technology), 12*(1), 11–16. https://doi.org/10.23887/jstundiksha.v12i1.59711

Makhmur, S., & Rath, S. (2023). Effectiveness of Gratitude Therapy in Diabetes Management: A Qualitative Study. *Health Psychology Research*, *11*, 1–11. https://doi.org/10.52965/001c.88400

Masithoh, R. F., Ropi, H., & Kurniawan, T. (2016). Effect of Acupressure Therapy on Blood Sugar Levels in Type II Diabetes Mellitus Patients. *Journal Of Holistic Nursing Science*,

3(2), 26–37. http://journal.ummgl.ac.id/index.php/nursing/article/view/872

Mihardja, H., & Harja, K. P. (2021). Acupuncture for Treating Hypertension and Type 2 Diabetes Mellitus as Comorbidities in Patients with COVID-19. *Medical Acupuncture*, *33*(3), 197–202. https://doi.org/10.1089/acu.2020.1475

Muzhaffarah, S. F., Simamora, R. S., & Roulita. (2024). The Relationship of Family Support with Blood Sugar Control Compliance in Patients with Diabetes Mellitus (DM). *Journal of Professional Nurse Practitioners*, *6*(4), 1539–1548.

Naba, O. S., Adu, A. A., & Tedju Hinga, I. A. (2021). Description of Characteristics of Diabetes Mellitus Patients in the Working Area of the Sikumana Health Center, Kupang City. *Public Health Media*, *3*(2), 186–194.

Purnama, R. (2017). Rahmad Purnama, Stress Solution Through..... *Al-AdYan*, *12*, 70–83.

Rafiei, S., Souri, S., Nejatifar, Z., & Amerzadeh, M. (2023). The relationship between spiritual intelligence and self-management in patients with type 1 diabetes. *BMC Endocrine Disorders*, *23*(1), 1–7. https://doi.org/10.1186/s12902-023-01482-4

Resti, H. Y., & Cahyati, W. H. (2022). The incidence of diabetes mellitus at productive age at the Pasar Rebo District Health Center. *Higeia Journal Of Public Health Research And Development*, *6*(3), 350–361. http://journal.unnes.ac.id/sju/index.php/higeia

Rita, N. (2018). The relationship between sex, exercise and obesity with the incidence of diabetes mellitus in the elderly. *Jik- Journal of Health Sciences*, *2*(1), 93–100.

Rohtih, W. A., & Mahmud, A. (2021). Quranic healing on the trauma of women Victims of the terrorist bombing of the Wonocolo Sidoarjo Rusunawa. *Multicultural Journal of Islamic Education*, *5*(1), 24–40. https://jurnal.yudharta.ac.id/v2/index.php/ims/article/view/2732%0Ahttps://jurnal.yudharta.ac.id/v2/index.php/ims/article/download/2732/1955

Sari, G. P., Samekto, M., & Adi, M. S. (2017). Factors Affecting the Occurrence of Hypertension in Patients with Type II Diabetes Mellitus (Study in the Pati Regency Health Center Area). *Journal of Research and Development: Information Media for Research, Development and Science and Technology*, *13*(1), 47–59.

Soelistijo, S. (2021). Guidelines for the Management and Prevention of Type 2 Diabetes Mellitus in Indonesia 2021. *Global Initiative for Asthma*, 46.

Sugiyono, D. (2020). Qualitative quantitative research methods and R&D. In *Alphabet Publishers*.

Sulifan, Y., Suroso, S., & Muhid, A. (2014). The Effectiveness of SEFT (Spiritual Emotional Freedom Technique) Therapy to Reduce Smoking Behavior in Adolescent Middle-Aged. *Journal of Psychology Tabularasa*, *9*(1), 86–95.

Tomic, D., Shaw, J. E., & Magliano, D. J. (2022). The burden and risks of emerging complications of diabetes mellitus. *Nature Reviews Endocrinology*, *18*(9), 525–539. https://doi.org/10.1038/s41574-022-00690-7

Wahyuningsih, A. S., & Tamimi, T. (2021). Dhikr Therapy for Changes in Stress Level in Diabetes Mellitus Patients. *Journal of Psychiatric Nursing (JKJ) PPNI, 9*(1), 69–78.

Widyastuti, T., Hakim, M. A., & Lilik, S. (2019). Zikir Therapy as an Intervention to Reduce Anxiety in the Elderly. *Gadjah Mada Journal of Professional Psychology (GamaJPP), 5*(2), 147. https://doi.org/10.22146/gamajpp.13543

Wijaya, I. N., Faturrohmah, A., Yuda, A., Giovani, S., Tesa, K., & Dina, W. A. (2019). Profile of Drug Use in Diabetes Mellitus Patients at the East Surabaya Regional Health Center.

Journal of Community Pharmacy, *2*(1), 23–28.

X, F., X, S. I., X, R. N. S., X, N., X, F. R., & X, N. (2023). The Effect of Qur'anic Healing Therapy with Glasgow Coma Scale and Vital Signs on Patients with Decreased Consciousness at dr. Zainoel Abidin Hospital. *Journal of Medical Science*, *4*(1), 1–7. https://doi.org/10.55572/jms.v4i1.74