

The Correlation between the Spiritual Level of Patients with Diabetes Mellitus Diabetic Wounds DM TYPE II with the Development of Ankle Brachial Index (ABI) Values

Bayu Saputra*, Rani Lisa Indra, Sandra, T. Abdur Rasyid

Medical Surgical And Emergency Department Of Nursing Study Program, Universitas Hang Tuah Pekanbaru, Indonesia

ABSTRACT

Article Info

Article History:

Received : 29 March 2023

Revised : 30 March 2023

Accepted: 25 April 2023

***Corresponding Author :**

bayusaputra@htp.ac.id

DOI

<https://doi.org/10.37362/jch.v7i1.975>

P- ISSN : [2722-1563](#)

E -ISSN : [2580-7137](#)



This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License, which allows others to remix, tweak, and build upon the work non-commercially as long as the original work is properly cited. The new creations are not necessarily licensed under the identical terms

Diabetes mellitus is a chronic disease that can cause systemic complications in the form of diabetic ulcers. One of the measures to prevent the severity of diabetic ulcers is through non-invasive measures, namely ABI (Ankle Brachial Index) examination. The condition and development of this disease can affect one of the spiritual level indicators. The purpose of this study was to determine whether there is a relationship between the spiritual care level of diabetes mellitus diabetic patients with changes in the Ankle Brachial Index value. The sample of this study was 44 people with diabetes mellitus cases who had diabetic ulcer complications. The type of research in this study was quantitative. correlative analysis. The results of the characteristics of the Russian respondents in this study were 54.3 years. The majority of respondents in this study were female, namely as many as 30 people (68.2%), secondary education level, namely as many as 19 people (43.2%), long-suffering from moderate DM 32 (72.7%) with a moderate level of spirituality 27 people (61.4%), and a mild Ankle Brachial Index level of 22 (50%). The results obtained from the chi-square test are p-value = 0.010, which means that the p-value is <0.05 so H_0 is rejected and H_a is accepted. So it can be concluded that there is a significant relationship between the ABI value and the Spiritual level of type 2 DM sufferers.

Keywords: Ankle Brachial Index; Diabetic Ulcer; Spiritual Level

INTRODUCTION

A state of hyperglycemia with the condition of Diabetes Mellitus (DM) over a very long period will pose a danger to the body because it can cause complications such as damage to several body systems, abnormalities and failure of several different organs in the body, especially in the function of the eye, kidney, nervous system, heart, and blood vessels (ADA, 2015). As a result of DM, sufferers often occur is the occurrence of ulcers on the feet and neuropathy (PERKENI, 2021) . Case severity and complications can certainly be suppressed through a variety of the simplest examinations, and the most useful parameter in objectively determining limb arterial perfusion is using the Ankle Brachial Indexes (ABI). The Society of Cardiovascular & Intervention Radiology (SCVIR) recommends that all patients undergoing evaluation for peripheral vascular disease use

ABI measurements. ABI is an examination to diagnose peripheral arterial disease that is non-invasive, objective, inexpensive, and has high accuracy with a sensitivity of 95% and a specificity of 94-100%.

In Islamic perception, spirituality is very important and needed in dealing with crisis conditions such as chronic illness. Spirituality provides spiritual strength and awareness for DM sufferers who have diabetic ulcers that disease is only a form of test given by Allah SWT in life so that DM sufferers with diabetic ulcers can survive and be patient and have the confidence to live their lives better and an increase in the quality of life. (Bayu saputra et al., 2019). Preliminary study on September 27, 2021. In the preliminary study, 10 interviews were conducted with type 2 DM patients with diabetic ulcers. The results of the interviews found that 6 patients did not experience a decrease in spirituality, such as a willingness to accept the conditions experienced and perform worship even though they were sick, while 5 patients experienced spiritual disorders as indicated by a decrease in worship, be alone, and do not want to interact with other people and their environment because of the illness they are experiencing, self-blame, stress, and depression. Based on the description above, the researchers wanted to know the importance of the level of spirituality possessed by type 2 DM patients with ABI (Dewi et al., 2022)

MATERIALS AND METHODS

Type of research uses a descriptive research design with a correlative analytic approach method with a prospective cohort research design. The population in this study were all type II DM patients with diabetic ulcer complications with a sample of 44 respondents using purposive sampling. In this study and information was collected from respondents using a list of Spiritual level questions and an ABI examination. Data was analyzed univariately to see the frequency of the characteristics of the respondents and bivariate to see if there was a correlation between variables.

RESULTS

Based on the table 1, it can be seen that the average age of the 44 respondents in this study was 54.3 years.

Table 1 : Characteristics of Respondents

Variable	Mean \pm SD	Median	Min	Maks
Age	54,3 \pm 6,66	52,0	53	67

Based on the table 2, it can be seen that an average of 44 respondents, The majority of respondents in this study were female, namely 30 people (68.2%), secondary education level, namely 19 people (43.2%), long-suffering from moderate DM 32 (72.7%).

Table 2 : Characteristics of Respondents

Variable	Frekuensi (F)	Percentage (%)
Education		
Low	18	40.9
Intermediate	19	43.2
High	7	15.9
Gender		
Male	14	31.8
Female	30	68.2
Long Suffer DM		
Currently	32	72.7
Long	12	27.3
Total	44	100

Based on the table 3, it can be seen that the majority of respondents in this study with a moderate level of spirituality were 27 people (61.4%) with a mild Ankle Brachial Index level of 22 (50%).

Table 3 : Distribution Frequency of Respondents Based on ABI And Spritual Level

Variable	Frekuensi (F)	Percentage (%)
Ankle Brachial index		
Normal	22	50
Medium	5	11.4
Low	17	38.6
Spiritual Level		
High	17	38.6
Medium	74	61.4
Total	44	100

The table above shows that the respondents with average ABI values with high spiritual levels are 11 (65.4%), and those with average ABI values with moderate spiritual levels are 44 (63.4%). Meanwhile, respondents who had an abnormal (mild) ABI value with a high spiritual level were 1 respondent (8.3%). Respondents who had a strange (favorable) ABI value with a moderate spiritual level were 8 respondents (11.1%), respondents who had an abnormal (low) ABI value) with a high spiritual level of 5 respondents (26.3%) and also respondents who had a strange (low) ABI value with a medium, spiritual level of 22 respondents (25.5%) The results obtained from the chi-square test are p-value = 0.000 which means p-value <0.05 so that Ho is rejected and Ha is accepted. So it can be concluded that there is a significant relationship between the ABI

value and the spiritual level of type 2 DM sufferers..

Table 4. Correlation between Spiritual Level with Development of Ankle Brachial Index (ABI) Values

<i>ABI</i> Values	Spiritual Level				Total	<i>P=</i> value
	High		Medium			
	n	%	n	%		
Normal	11	65.4	44	63.4	22	100
Medium	1	8.3	8	11.1	5	100
Low	5	26.3	22	25.5	17	100
Total	17	100	74	100	44	100

DISCUSSION

Based on the frequency distribution of the characteristics of the respondents, which have been described in table 4.1, out of a total of 44 respondents, the average age was 54 years. The period in this study is included in the productive period because the range is between, meaning that in formative age, the nurse can carry out routine activities (National Family Planning Coordinating Agency, 2013). According to Fadare et al. (2014), from research conducted with respondents aged between 37-41 years usually have spiritual distress problems in patients with chronic diseases, one of which is DM with diabetic ulcers. Characteristics of respondents according to gender, the highest was female, namely 27 respondents (61.36%). The gender distribution of the respondents showed that most were women. This is in line with Liana Safitri's research (2017) regarding the quality of life and adherence of type 2 DM patients, the majority (78.7%) of whom are women.

Researchers assume that the level of education influences a person's behavior in seeking care and treatment for their illness and choosing and deciding what action or therapy to take to deal with their health problems. The highest duration of suffering from DM was in the moderate category (5-10 years), namely 32 respondents (72.7%). This is to research by Arnadi et al. that most cases of DM will experience PAP complications after the course of the disease > 5 years ($P = 0.044$). If the blood glucose level is high, there will be complications related to the nerves and blood flow to the feet. Vascular abnormalities are a pathological manifestation of DM rather than a difficulty because they are closely related to abnormal blood glucose levels, while infections such as tuberculosis or diabetic gangrene are more easily a complication (Safitri & Nur Rosyid, 2018).

Average ABI values were obtained at most, namely, 22 respondents (50%), while respondents with mild ABI values were 17 respondents (11.4)% and respondents who

had moderate ABI matters were 5 respondents (11.4%). This aligns with (Safitri & Nur Rosyid, 2018) study regarding the relationship between ABI values and ulcer incidence. The most normal ABI values were obtained in 22 patients (57.9%), followed by moderate vascular obstruction (8 patients - 21.1%), mild ischemia (7 patients - 18.4%), and only 1 patient (2.6%) with severe vascular obstruction. This study found average ABI values in grade 1 and 3 ulcers (77.8% and 75%); vascular obstruction was only found in grade 5 (RISKESDAS, 2018).

The highest spiritual level was 27 respondents (61.4%). This aligns with Siti Syarifah et al.'s 2020 study concerning the Relationship between Spiritual Coping and Self Monitoring, which showed promising results in 72 patients. The most were 22 patients (57.9%), followed by moderate vascular obstruction (8 patients - 21.1%), mild ischemia (7 patients - 18.4%), and only 1 patient (2.6%) with severe vascular obstruction. In this study, average ABI values were primarily found in grade 1 and 3 ulcers (77.8% and 75%), whereas severe vascular obstruction was in grade ulcers (RISKESDAS, 2018).

Based on the research, the results obtained from the chi-square test were $p\text{-value} = 0.010$, which means the $p\text{-value} < 0.05$, then rejected, and H_a was accepted. So it can be concluded that there is a significant relationship between ABI values and the spiritual level of type DM sufferers. The results of this study were with previous research conducted by Silitonga (2013) concerning the Relationship between Ankle Brachial Pressure Index and Cognitive Function in the Elderly at the Neurology Polyclinic at HAM Hospital. The results showed that there was no significant relationship between the ankle-brachial index. They decreased cognitive function ($p = 0.855$), and Susanti's research (2016) in elderly patients who went to the neuro polyclinic at DR M Djamil Hospital, Padang, found no significant relationship between the ankle-brachial index and decreased cognitive function ($p = 0.165$). Found 6 In contrast to the study in Chicago with a sample of 1601, the ABI score had a significant relationship with cognitive decline ($p = 0.001$ with $r = 0.09$).

Research by also gave the same results when it was associated with ABI values on the right and left body parts (right, $p = 0.017$. Left, $p = 0.000$). 20, 21 Differences in research results This could be due to the different ABI measurement methods of the researchers. The American Heart Association (AHA), in A Scientific Statement: Measurement and Interpretation of the Ankle-Brachial Index, states that the best method for checking ABI is to use doppler ultrasound. 4 This study found no association between

the Ankle Brachial Index and cognitive function in general. After analysis, this was possible because this study had a small number of samples. In addition, this study only conducted one examination without reviewing ABI values and cognitive function for the next few years. This study has several drawbacks, namely, the small number of samples and the type of vascular disease suffered by the example is not classified as vascular disease.

Spirituality can help hyperglycemia patients manage diabetes optimally to improve their quality of life and lives. DM patients with a high spiritual level can use faith to overcome illness, pain and pressures of life. Religion and spirituality are the basis of meaning and purpose for many people. Spirituality allows DM sufferers to interpret their illness as a positive life event. Nursing care aims to maintain the quality of life of DM patients while increasing adherence to therapeutic management. An excellent spiritual level can reduce the negative impact caused by bad vascularization. Spirituality can increase the patient's sense of acceptance, maintain the patient's resistance to illness, provide calm, increase self-confidence, and make self-image positive(Onyishi et al., 2021).

Spirituality is also associated with reduced levels of depression, increased hope and self-improvement, and positively correlates with the quality of life in general. The existence of an exemplary aspect of spirituality in patients with abnormal vascularization problems with ABI will affect the level of stress they experience. This also plays a role in the mechanism for wound repair, which starts with an excellent spiritual level that can make a person feel relaxed and at ease. The autonomic nervous system and the central nervous system are within the human nervous system. The function of the central nervous system is to control the desired movements, for example, the activities of the hands, feet, neck and fingers. Meanwhile, the autonomic nervous system functions to control automatic movements, for example, digestive functions, cardiovascular processes, and sexual arousal, so that when the body feels relaxed, the performance of the parasympathetic nerves are stimulated, thereby suppressing the operation of the sympathetic nerves so that blood circulation can flow smoothly and prevent the mechanism of deceleration. Diabetic ulcer healing as previously described. This causes improvements to develop physically and also psychologically with good spiritual presence in the patient (Hardiyanti, 2022) .

CONCLUSIONS

The sample of this study was 44 people with diabetes mellitus who experienced

complications of diabetic ulcers. The results of the characteristics of the age of the respondents in this study were 54.3 years. The majority of respondents in this study were female, namely, 30 people (68.2%), secondary education level, namely 19 people (43.2%), long-suffering from moderate DM 32 (72.7%) with an average spiritual group of 27 people (61%) .4%), and a mild Ankle Brachial Index level of 22 (50.%). The results obtained from the chi-square test are p-value = 0.010, which means that the p-value is <0.05, so H_0 is rejected, and H_a is accepted. So it can be concluded that there is a significant relationship between the ABI value and the spiritual level of type 2 DM sufferers.

REFERENCES

- American Diabetes Association (ADA) (2015). Diagnosis and classification of diabetes mellitus. *American Diabetes Care*, Vol.38, pp: 8-16.
- Bayu saputra, Sofiani, Y., & Irawati, D. (2019). The effect bibliotherapy on depression and anxiety level of breast cancer patient at Arifin Achmad Regional General Hospital of Riau Province: The effect bibliotherapy. *Jurnal Kesehatan Komunitas*, 5(3), 248–253. <https://doi.org/10.25311/keskom.Vol5.Iss3.466>
- Damayanti, S. (2018). Perbedaan Keefektifan Pendidikan Kesehatan Metode Ceramah Dengan Leaflet Terhadap Pengetahuan Dan Sikap Perawatan Kaki Diabetik Di Puskesmas Ngaglik I Sleman Yogyakarta. *Jurnal Keperawatan Respati Yogyakarta*, 5(1),331–338. <http://dx.doi.org/10.35842/jkry.v5i1.180>
- Dewi, S. M., Saputra, B., & Daniati, M. (2022). Relationship Of Alcohol Consumption And Sleep Quality To The Event Of Hypertension: Hubungan Konsumsi Alkohol Dan Kualitas Tidur Terhadap Kejadian Hipertensi. *Jurnal Keperawatan Hang Tuah (Hang Tuah Nursing Journal)*, 2(1), 49–62. <https://doi.org/10.25311/jkh.Vol2.Iss1.564>
- Diani, N., Waluyo, A., & Sukmarini, L. (2013). Pengetahuan Klien tentang diabetes melitus Tipe 2 Berpengaruh Terhadap kemampuan Klien Merawat Kaki. *Jurnal Keperawatan Indonesia*, 16(2), 120-127. <https://doi.org/10.7454/jki.v16i2.11>
- Fatmawati, B, R., Suprayitna, M., & Prihatin, K. (2020). Pengaruh pendidikan kesehatan terhadap sikap dan tindakan pencegahan ulkus diabetik pada pasien diabetes mellitus tipe 2. *Jurnal Kesehatan Qamarul Huda*, 8(1), 34–41. <https://doi.org/10.37824/jkqh.v8i1.2020.189>
- Hardiyanti, R. (2022). *Relationship between Spirituality and Coping Strategies in*

- Diabetes Mellitus Patients at Tk IV Hospital Aryoko Sorong. 5(1).*
- International Diabetes Federation. (2019). *International diabetes atlas 9Th. in edition international diabetes federation.*
<https://doi.org/10.4337/9781845420765.00011>
- Kementrian Kesehatan. (2012). *Diabetes fakta dan angka.*
<http://www.p2ptm.kemkes.go.id/dokumen-ptm/fakta-dan-angka-diabetes>
- Notoatmodjo, S. (2012b). *Promosi kesehatan dan perilaku kesehatan.* Jakarta: Rineka Cipta.
- Onyishi, C. N., Ilechukwu, L. C., Victor-Aigbodion, V., & Eseadi, C. (2021). Impact of spiritual beliefs and faith-based interventions on diabetes management. *World Journal of Diabetes, 12(5)*, 630–641. <https://doi.org/10.4239/wjd.v12.i5.630>
- PERKENI. (2021). Pedoman Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 Dewasa di Indonesia. In Global Initiative for Asthma (pp. 1–119).
www.ginasthma.org.
- Purwanti, L. E., & Magfirah, S. (2016). Faktor resiko komplikasi kronis (kaki diabetik) dalam diabetes melitus tipe 2. *The Indonesian Journal Of Health Science, 7(1).*
<https://doi.org/10.32528/the.v7i1.382>
- Rahman, H. F., Santoso, A. W., & Siswanto, H. (2020). Pengaruh edukasi perawatan kaki dengan media flip chart terhadap perubahan perilaku klien diabetes melitus. *Jurnal nasional Ilmu Kesehatan (JNIK). Vol. 2, Ed. 3.* 151-168.
<https://journal.unhas.ac.id/index.php/jnik/article/view/8627>
- Rahmawati, R., Umah, K., & Ani. R. I. A. (2020). Pengaruh pendidikan kesehatan terhadap perilaku penderita diabetes melitus. *Journal of nersa Community. 11(1)*, 108-121.
<http://dx.doi.org/10.5281/j%20ners%20communityv11i1.1067>
- Riset Kesehatan Dasar. (2018). Laporan_Nasional_RKD2018_FINAL.pdf. In *Badan Penelitian dan Pengembangan Kesehatan* (pp. 123–143).
[http://labdata.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan Nasional RKD2018 FINAL.pdf](http://labdata.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan_Nasional_RKD2018_FINAL.pdf)
- Safitri, L., & Nur Rosyid, F. (2018). Hubungan Nilai Ankle Brachial Index Dengan Kualitas Hidup Penderita Diabetes Melitus Tipe 2. *Jurnal Berita Ilmu Keperawatan, 11*, 51–56. <https://doi.org/10.23917/bik.v11i2.10578>
- Soegondo, S., soewondo, P., & Subekti, I. (2015). *Penatalaksanaan Diabetes Melitus Terpadu. Edisi 2. Cetakan ke-10, balai Penerbit FKUI:Jakarta.*

- Soelistijo, S., Novida, H., Rudijanto, A., Soewondo, P., Suastika, K., Manaf, A., et al. (2015). Konsesus pengelolaan dan pencegahan diabetes melitus tipe2 di indonesia 2015. *Jakarta: PB Perkeni*, 1-93. <https://pbperkeni.or.id/wp-content/uploads/2019/01/4>.
- Srimiyati, S. (2018). Pengetahuan pencegahan kaki diabetik penderita diabetes melitus berpengaruh terhadap perawatan kaki. *MEDISAINS*, 16(2), 76-82. <http://dx.doi.org/10.30595/medisains.v16i2.2721>
- Wawan, A., & Dewi, M. (2011). *Teori & pengukuran pengetahuan, sikap, dan perilaku manusia*. Yogyakarta: Nuha Medika.
- Yosmar, R., Almasdy, D., & Rahma, F. (2018). Survei risiko penyakit diabetes melitus terhadap masyarakat Kota Padang. *Jurnal sains farmasi & klinis*, 5(2), 134-141. <https://doi.org/10.25077/jsfk.5.2.134-141.2018>