MINH
MALAHAYATI INTERNATIONAL JOURNAL OF NURSING AND HEALTH SCIENCE
ISSN 2620-9152 (Print)
ISSN 2621-4083 (Online)
DOI: 10.33024

Nomor: 79/E/KPT/2023

ARTICLE INFORMATION
Received: January, 02, 2025
Revised: January, 30, 2025
Available online: January, 30, 2025
at : https://ejurnal.malahayati.ac.id/index.php/minh

Effectiveness of a combination of acupressure and foot bath on Ankle Brachial Index (ABI) in type II diabetic patients

Krissantus Adimas Deby*, Taadi, Sri Endang Windiarti

Program Pasca Sarjana Magister Terapan Keperawatan, Poltekkes Kemenkes Semarang
Corresponding author: *E-mail: Krissantus_deby@yahoo.co.id

Abstract

Background: Diabetes is a chronic disease that will be suffered for life and can have an impact on complications, one of which is Peripheral Arterial Disease (PAD) which is characterized by a decrease in the value of the Ankle Brachial Index (ABI) and is the main cause of the increasing number of gangrene incidents and amputations. To prevent these complications, it is necessary to have therapy that can increase the value of the Ankle Brachial Index (ABI), which is by combining acupressure therapy and warm water foot soak (hydrotherapy).
Purpose: To analyzing the effectiveness of the combined therapy of acupressure and warm water foot soak towards Ankle Brachial Index (ABI) value in type II diabetes mellitus.
Methods: Using a quasi-experimental design with a pretest-posttest design approach with 51 participant. The participant were taken using simple random sampling technique and divided into 3 intervention groups. The first group is acupressure (n = 17), the second group is warm water foot soak (n = 17) and the third group is a combination of acupressure and warm water foot soak (n = 17). The normality test in this study was conducted using the Shapiro Wilk test, the dependent t test was used to determine any changes in each group while comparing the effectiveness of Ankle Branchial Index (ABI) values of each group using the one way anova test.
Results: The use of acupressure therapy can have an effect on the value of the Ankle Brachial Index (ABI) with a significance value of p: .000. The group receiving warm water foot soak therapy also experienced changes but the change in the Ankle Brachial Index (ABI) value was not too significant because the significance value was obtained p: 0.002. While in the group with the combination of acupressure and warm water foot bath has a significance value of p: 0.000
Conclusion: The combination therapy of acupressure and warm water foot soak provides an effective influence on the ankle branchial index with a significance value of p: 0.000 ($p < 0.05$) compared to warm water foot soak therapy which has a significance value of p: 0.002. ($p< 0,05$). By combining acupressure therapy and warm water foot soak, sclerosed blood vessels can stretch due to the effect of heat which causes vasodilation of blood vessels which has an impact on smooth blood flow and can carry oxygen and nutrients well, especially to the feet.

Keywords: Ankle Brachial Index (ABI) Value; Peripheral Arterial Disease (PAD); Type II DM.

INTRODUCTION

Diabetes Mellitus (DM) is a chronic metabolic disease characterized by high blood glucose levels (Surya, & Desnita, 2020). The frequency of diabetes continues to increase in the world and in Indonesia, making this disease a serious problem. The increase in the prevalence of DM cannot be separated from several risk factors, including age, obesity, physical inactivity, hypertension, dyslipidemia, smoking habits, and stress management (Utomo, Rahmah, & Amalia, 2020). According to the American Diabetes Association (ADA) in 2020, the prevalence of type II DM ranges from 90-95% of the total number of DM

DOI: https://doi.org/10.33024/minh.v7i11.582

patients in the world (Shen, Sun, Kong, & Wu, 2020). Indonesia ranks at the 5th place based on the International Diabetes Federation (IDF) in 2021 (Fu, Wang, Li, Huang, Gao, Xu, & Zhang, 2024). In Semarang City itself according to the Semarang City Health Profile in 2022, type II Diabetes Mellitus ranks 4th in the top ten largest number of health center diseases with 424.697 people (Komariah, & Rahayu, 2020). People with Type II DM if the blood sugar level continues to increase it will damage blood vessels, nerves and other internal structures. High blood sugar causes the walls of blood vessels to thicken which will result in plaque buildup, this is what causes obstructed blood flow, if this occurs in type II DM patients. In the long run it can cause complications (Samsuri, & Rahayu, 2023). According to the results of the study on the description of complications of diabetes mellitus in people with diabetes mellitus, it was found that the most complications experienced by diabetic patients included cardiovascular system disorders as much as 39.2%, compared to complications of neuropathy 21%, retinopathy 20.3%, and nephropathy 19.6% (Rif'at, Hasneli, & Indriati, 2023).

Due to the thickening of blood vessels, the blood flow, especially to the skin and nerves, will be reduced, causing microvascular complications including retinopathy, nephropathy, and neuropathy, while macrovascular complications include coronary artery disease, cerebral vascular damage and also damage to the peripheral blood vessels of the limbs commonly referred to as diabetic foot or Peripheral Arterial Disease (PAD) (Artikaria, & Machmudah, 2022). Peripheral Arterial Disease (PAD) is an impairment of blood supply to the upper or lower extremities due to obstruction, obstruction caused by atherosclerosis (Said, Novianti, & Fety, 2021). The process of atherosclerosis in peripheral vascular disease causes a decrease in blood flow to the lower extremities, and is characterized by a decrease in the Ankle Brachial Index (ABI) value (Arania, Triwahyuni, Esfandiari, & Nugraha, 2021). A decrease in the Ankle Brachial Index (ABI) value will cause necrotic complications that disrupt blood flow to the lower extremities and lead to an increased incidence of peripheral arterial occlusive disease in diabetic patients which is the main cause of gangrene and amputation (Nugroho, 2020). Preventive efforts that can be made to prevent further complications of diabetic foot problems or Peripheral Arterial Disease (PAD) by educating about diet and blood sugar control, educating about foot care and modifying risk factors such as smoking cessation and the use of special footwear can also be added with complementary therapeutic measures to improve peripheral circulation and increase Ankle Brachial Index (ABI) values with acupressure therapy (Surya, & Rekawati, 2018).

Acupressure is a special type of massage that relies on the use of thumbs, fingers and palms to press points on the body (Arda, Hanapi, Paramata, & Ngobuto, 2020). The World Health Organization has acknowledged acupressure as a treatment to activate nerve cells in the nervous system, stimulate endocrine glands to increase insulin secretion and provide energy to complex organs. Acupressure is a nursing action in the classification of nursing interventions and can be carried out (Nelyanti, & Anwar, 2020). There is also a warm water foot soak which is a therapy by immersing the feet at a limit of 10-15 cm above the ankles using warm water with the aim of increasing blood flow in the legs (Sudaryanto, & Sowwam, 2020), besides being easy to do and at a low cost, it can even be done at home with simple tools and materials soaking body parts in warm water can improve circulation, reduce edema and increase muscle relaxation circulation. Since heat can cause dilatation of blood vessels which can result in increased blood circulation (Maryama, Sulistini, & Ikob, 2021).

Non-pharmacological therapeutic measures are important for patients with diabetes millitus so that they can avoid the incidence of gangrene which is difficult to heal and the incidence of amputation which will have an impact on impaired social interaction. So that complementary therapy, a combination of acupressure therapy and warm water foot bath (hydrotherapy), can be done because it is simple and easy to apply for nurses and nursing care independently. Based on the description above, the researcher is interested in examining the effectiveness of the combination of acupressure and warm water foot baths in type II diabetes patients.

RESEARCH METHOD

The research design used a quasi-experimental design with a pretest-posttest design approach. The sample consisted of 51 people divided into 3 groups,

Krissantus Adimas Deby*, Taadi, Sri Endang Windiarti

Program Pasca Sarjana Magister Terapan Keperawatan, Poltekkes Kemenkes Semarang
Corresponding author: *E-mail: Krissantus_deby@yahoo.co.id

DOI: https://doi.org/10.33024/minh.v7i11.582

the first group was acupressure, the second control group was warm water foot soak and the third group was a combination of acupressure and warm water foot soak. Each group was treated 6 times for 3 weeks with 2 treatments a week. The acupressure group was given massage therapy at points LR3, KI3, SP6, ST36 and SP10 using the thumb for 2 minutes at each point. The warm water foot soak group soaked the feet 10 cm deep above the ankles with a temperature that remained stable at 380C - 400C for 10 minutes. The combination group of acupressure and warm water foot soak was given a massage on the feet for 2 minutes at each point and also given a warm water foot soak for 10 minutes with a temperature of 380C - 400C. The normality test in this study used the Shapiro Wilk test, the dependent t test was used to determine any changes in each group while comparing the effectiveness of *Ankle Branchial Index* (ABI) values between groups using the one way anova test. This study has received permission and recommendations from the Health Research Ethics Committee of the Health Polytechnic of the Ministry of Health Semarang calculated in letter number 0146/EA/KEPK/2024.

RESEARCH RESULTS

Table 1. Characteristics of Partisipant (N=51)

Variable	Group			p value
	Control 1 (n=17)	Control 2 (n=17)	Control 3 (n=17)	
Age (n/%)				
(Mean±SD)(Range)(Year)	(54.6±8.9)(35-65)	(57.7±6.2)(35-65)	(53.7±9.1)(35-65)	
<50 years old	4/23.5	2/11.8	5/29.4	
>50 years old	13/76.5	15/88.2	12/70.6	
Gender (n/%)				0.07*
Female	12/70.6	11/64.7	14/82.4	
Male	5/29.4	6/35.3	3/17.6	
Years suffering from DM (n/%)				0.058*
5-10 years old	11/64.7	14/82.4	10/58.8	
>10 years old	6/35.3	3/17.6	7/41.2	

* Levene's test of Homogeneity p>0.05

Based on Table 1, it is known that the pada kelompok usia partisipan >50 years old, pada kelompok kontrol 1 (13/76.5%), kelompok kontrol 2 (15/88.2%), kelompok kontrol 3 (12/70.6%). The youngest age range was 35 years, and the oldest age was 65 years, the average age value of group 1 was 54.6 years, control group 2 was 57.7 years, control group 3 was 53.7 years. While the standard deviation in control group 1 was 8.9, control group 2 was 6.2, control group 3 was 9.1. The gender of the participants was mostly women, in control group 1 (12/70.6%), control group 2 (11/64.7%), and control group 3 (14/82.4%). Participants struggled with DM mostly between 5-10 years, in control group 1 (11/64.7%), control group 2 (14/82.4%), control group 3 (10/58.8%). Characteristics of partisipant in the three groups, namely control group 1, control group 2 and group 3 are both homogeneous (p>0.05).

Krissantus Adimas Deby*, Taadi, Sri Endang Windiarti

Program Pasca Sarjana Magister Terapan Keperawatan, Poltekkes Kemenkes Semarang
Corresponding author: *E-mail: Krissantus_deby@yahoo.co.id

DOI: https://doi.org/10.33024/minh.v7i11.582

Table 2. T-test Results

Variable	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Before and After Acupressure								
Pair 1	pre-post							
	-.07524	.02563	.00562	-.07613	-.06437	-13.826	17	.000
Before and After Foot Soak								
Pair 1	pre-post							
	-.06582	.03124	.00644	-.06356	-.05425	-12.746	17	.002
Before and After the Combination								
Pair 1	pre-post							
	-.05627	.03672	.00592	-.06528	-.07253	-13.645	17	.000

Table 2 shows the results of the paired T test of the Acupressure group obtained a significance value (p value) of = 0.000 (p < 0.05). This value indicates that there are changes in *the Ankle Brachial Index* (ABI) value before and after acupressure therapy. Results of the paired T test of the warm water foot soak group obtained a significance value (p value) of = 0.002 (p < 0.05). This value indicates that there is a change in *the Ankle Brachial Index* (ABI) value before and after acupressure therapy. Results of the paired T test for the combination of acupressure and warm water foot bath, the significance value (p value) is = 0.000 (p < 0.05). This value indicates that there is a change in the *Ankle Brachial Index* (ABI) value before and after the intervention.

Table 3. One-Way ANOVA Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14254.500	3	6524.645	9.327	.001
Within Groups	25436.500	51	635.227		
Total	39691.000	54			

In table 3 Anova above, the F value is 9.327 with a significance of 0.001. It is evident that the treatment results in the three groups have significant differences in changes in ABI values.

DISCUSSION

Type II DM is found more in women than men. Women at the age of more than 40 years are more at risk of suffering from type II DM because women who have experienced menopause, blood sugar levels are difficult to control due to decreased production of the hormones esterogen and progesterone. The hormones estrogen and progesterone have the ability to increase insulin response in the blood. When menopause occurs, the insulin response decreases due to low estrogen and progesterone hormones (Arania et al., 2021). The decrease in estrogen hormone concentrations in menopausal women causes an increase in body fat reserves, especially in the abdominal area, which will increase the release of free fatty acids, this condition causes insulin resistance.

Age is one of the factors associated with blood sugar levels in DM patients. These results are in line with previous research stating that age is closely related to the increase in blood sugar levels, so that the increasing age, the prevalence of diabetes and impaired glucose tolerance is higher, the aging

Krissantus Adimas Deby*, Taadi, Sri Endang Windiarti

Program Pasca Sarjana Magister Terapan Keperawatan, Poltekkes Kemenkes Semarang
Corresponding author: *E-mail: Krissantus_deby@yahoo.co.id

DOI: https://doi.org/10.33024/minh.v7i11.582

process causes the ability of pancreatic β-cells to produce insulin to decrease (Baynes, 2015).

The length of suffering from DM is the duration of time from the initial diagnosis until the time of the study. Partisipant who have suffered for ≥ 10 years have good self-efficacy, because the longer someone suffers, it means that the longer the opportunity to learn to deal with problems that arise related to their illness so that it can improve their quality of life compared to someone who suffers < 10 years (Ady, Aprilyadi, Kumalasari, & Oktalia, 2022). Patients who suffer from DM for longer will be better able to understand the situation they feel, both in terms of physical, psychological, social relationships, and the environment. And this understanding arises because patients are more knowledgeable and experienced with their disease so that it will encourage patients to be better able to anticipate if there is an emergency.

In this study, it was found that there was an effect of acupressure therapy on the value of the Ankle Brachial Index. In this study obtained p value = .000 (p value) means that this study shows a significant effect of the effectiveness of Acupressure Therapy on Increasing the value of Ankle Branchial Index (ABI) in Type II Diabetes Mellitus Patients at the Mijen Health Center, Semarang City. With acupressure therapy, blood circulation will run smoothly as stated by (Ady et al., 2022). Acupressure therapy is given the response that arises is decreased stress, blood circulation becomes smooth and relaxed, conditions that make it easier for blood pressure to gradually drop, decreased blood pressure especially systolic brachialis which is directly related to the value of the Ankle Brachial Index (ABI) (Lestari, Pahrul, Fatriansari, & Desvitasari, 2023). Acupressure has a weakness, namely the provision of acupressure therapy will not change the shape and structure of sclerosed blood vessels. Acupressure therapy only improves blood circulation, while the structure of blood vessels is not improved. So that other therapies are needed that can affect blood vessels so that sclerosed blood vessels can widen and blood flow that carries nutrients and oxygen can run smoothly (Misnadiarly, 2006).

In this study, it was found that there was an effect of warm water foot bath therapy on the value of the Ankle Bracnhial Index (ABI). In this study obtained p value = 0.002 means that this study shows a significant effect of the effectiveness of Warm Water Foot Soak on Increasing Ankle Branchial Index (ABI) in Type II Diabetes Militus Patients at Mijen Health Center, Semarang City. The cause of deabetic ulcers is due to decreased peripheral blood circulation. Decreased blood flow to the periphery results in tissue necrosis and causes peripheral ischemia which causes a decrease in oxygen and nutrient supply (Oktavianti, & Insani, 2022). Warm water soaking is soaking body parts in warm water whose function can improve circulation, reduce odema, increase muscle relaxation, and become a way to mendedridemen wound (Sulistyowati, Arwani, Indriyawati, Adi, & Mardiyono, 2022). So it can be concluded that warm water soaks have an influence on reducing the value of the Ankle Branchial Index (ABI). Based on previous research, there is a significant difference in systolic and diastolic blood pressure before and after warm soak hydrotherapy in hypertensive patients, which was conducted on Partisipant as many as 20 hypertensive patients (Beaumier, Murray, Despatis, Patry, Murphy, Jin, & O'Sullivan-Drombolis, 2020). In this study it was found that there was an effect of a combination of acupressure and warm water foot soak on the value of the Ankle Brachial Index with a p value of = .000 (P <0.05), so it can be concluded that the combination of acupressure and warm water foot soak has an influence on changes in the Ankle Branchial Index (ABI). Because acupressure massage at certain points can stimulate nerves so that blood will flow smoothly and by soaking the feet of warm water the heat from the water will cause dilation of blood vessels so that blood carrying nutrients and oxygen will easily flow.

Massage at certain points in acupressure therapy can stimulate nerve waves so that they can smooth blood flow (Xu, Wu, Yu, & Lu, 2018). Especially massage performed at meridian points at the end of nerves and blood vessels, can improve the flow of blood circulation in the body, especially in the legs. Acupressure massage on the foot area of the Ankle Branchial Index (ABI) value, the results of the analysis show that there is a significant difference in ABI values between before and after acupressure therapy (p = 0.001).

The effect of foot soaking using warm water produces heat energy which is dilating and blood

Krissantus Adimas Deby*, Taadi, Sri Endang Windiarti

Program Pasca Sarjana Magister Terapan Keperawatan, Poltekkes Kemenkes Semarang
Corresponding author: *E-mail: Krissantus_deby@yahoo.co.id

DOI: https://doi.org/10.33024/minh.v7i11.582

circulation also stimulates the nerves in the feet of the blood to be smooth and helps oxygen and nutrients spread (Lestari et al., 2023). By soaking the feet with hot water the Ankle Branchial Index (ABI) value can increase this is in accordance, doing a warm water foot soak can change the ABI value with an increase in the average Ankle Branchial Index (ABI) of 0.281 with a p value = 0.001 smaller than the α value (0.05) which means that there is an effect of Warm Water Foot Soak on changes in Ankle Brachial Index in Diabetes Mellitus clients (Maryama et al., 2021).

In this combined assessment using the one-way ANOVA test, the F value is 9.327 with a significance of 0.001. these results indicate that in the three groups there is a significant difference in the effectiveness of the ABI value results. Based on the discussion and results of data analysis, it can be seen that the provision of acupressure therapy can have an influence on the value of the Ankle Brachial Index (ABI). with a significance value of p: .000. Group. The provision of warm water foot soak therapy also changed but the change in the Ankle Brachial Index (ABI) value was not too large because the significance value was obtained p: 0.002. While in the combination group acupressure and warm water foot soak has a significance value of p: 0.000, which means that there is an effect of giving warm water soak therapy on the value of the Ankle Brachial Index (ABI) in patients with diabetes mellitus. It is hoped that the combination therapy of acupressure and warm water foot soak will be an alternative therapy that can be used for diabetics to avoid Peripheral Arterial Disease (PAD) (Jiang, Li, Luo, Luo, Che, Lu, & Cai, 2023).

CONCLUSION

Combination therapy of acupressure and warm water foot bath provides an effective effect on ankle branchial index with a significance value of p: 0.000 ($p < 0.05$) compared to warm water foot bath therapy which has a significance value of p: 0.002. ($p<0.05$) By doing a combination of acupressure therapy and warm water foot soak, sclerosed blood vessels can stretch due to the effect of heat which causes vasodilation of blood vessels which has an impact on smooth blood flow and can carry oxygen and nutrients well, especially to the feet.

REFERENCES

Ady, A. I., Aprilyadi, N., Kumalasari, I., & Oktalia, T. (2022). Penerapan Terapi Akupresur untuk Mencegah Risiko Perfusi Perifer Tidak Efektif pada Penderita Hipertensi. *Jurnal Ilmiah Permas: Jurnal Ilmiah STIKES Kendal*, *12*(3), 393-400.

Arania, R., Triwahyuni, T., Esfandiari, F., & Nugraha, F. R. (2021). Hubungan antara usia, jenis kelamin, dan tingkat pendidikan dengan kejadian diabetes mellitus di Klinik Mardi Waluyo Lampung Tengah. *Jurnal Medika Malahayati*, *5*(3), 146-153.

Arda, Z. A., Hanapi, S., Paramata, Y., & Ngobuto, A. R. (2020). Kualitas hidup penderita diabetes mellitus dan determinannya di Kabupaten Gorontalo. *Jurnal Promotif Preventif*, *3*(1), 14-21.

Artikaria, W., & Machmudah, M. (2022). Peningkatan ankle brachial index pada pasien diabetes mellitus tipe 2 yang dilakukan senam kaki diabetes. *Ners Muda*, *3*(2), 133-140.

Baynes, H. W. (2015). Classification, pathophysiology, diagnosis and management of diabetes mellitus. *J diabetes metab*, *6*(5), 1-9.

Beaumier, M., Murray, B. A., Despatis, M. A., Patry, J., Murphy, C., Jin, S., & O'Sullivan-Drombolis, D. (2020). Prevention and management of Peripheral arterial Ulcers.

Fu, Y., Wang, Y., Li, Z., Huang, K., Gao, Y., Xu, S., & Zhang, G. (2024). Evidence mapping of traditional Chinese medicine in diabetic peripheral neuropathy treatment. *Frontiers in Pharmacology*, *15*, 1325607.

Jiang, P., Li, Q., Luo, Y., Luo, F., Che, Q., Lu, Z., & Cai, Y. (2023). Current status and progress in research on dressing management for diabetic foot ulcer. *Frontiers in Endocrinology*, *14*, 1221705.

Komariah, K., & Rahayu, S. (2020). Hubungan usia, jenis kelamin dan indeks massa tubuh dengan kadar gula darah puasa pada pasien diabetes melitus tipe 2 di klinik pratama rawat jalan proklamasi, Depok, Jawa Barat. *Jurnal Kesehatan Kusuma Husada*, 41-50.

Krissantus Adimas Deby*, Taadi, Sri Endang Windiarti

Program Pasca Sarjana Magister Terapan Keperawatan, Poltekkes Kemenkes Semarang
Corresponding author: *E-mail: Krissantus_deby@yahoo.co.id

DOI: https://doi.org/10.33024/minh.v7i11.582

Lestari, L., Pahrul, D., Fatriansari, A., & Desvitasari, H. (2023). Pengaruh Terapi Rendam Kaki Air Hangat Terhadap Perubahan Tekanan Darah Pada Penderita Hipertensi. *Jurnal Riset Media Keperawatan*, *6*(1), 15-22.

Maryama, N., Sulistini, R., & Ikob, R. (2021). Pengaruh Rendam Kaki Air Hangat Terhadap Ankle Brachial Idex Pada Pasien Diabetes Melitus. *JKM: Jurnal Keperawatan Merdeka*, *1*(1), 1-7.

Misnadiarly. (2006). D*iabetes Mellitus: Mengenali Gejala, Menanggulangi, dan Mencegah Komplikasi*. Pustaka Populer Obor.

Nelyanti, D. A., & Anwar, M. C. (2020). The Effectiveness of Acupressure and Smart Gymnastic on Fasting Blood Sugar Levels among Patients with Type II Diabetes Mellitus. *International Journal of Nursing and Health Services (IJNHS)*, *3*(6), 687-694.

Nugroho, Y. W. (2020). Pengaruh Rendam Air Hangat Di Kaki Untuk Mencegah Terjadinya Ulkus Pada Penderita Diabtes Mellitus di Dusun Kedungringin Desa Giripurwa Wonogiri. *Jurnal Keperawatan GSH*, *9*(2), 59-65.

Oktavianti, D. S., & Insani, P. D. (2022). Penurunan Tekanan Darah Dengan Penerapan Terapi Rendam Kaki Menggunakan Air Hangat Pada Pasien Hipertensi. *Madago Nursing Journal*, *3*(1), 15-21.

Rif'at, I. D., Hasneli, Y., & Indriati, G. (2023). Gambaran Komplikasi Diabetes Melitus Pada Penderita Diabetes Melitus. *Jurnal Keperawatan Profesional*, *11*(1), 52-69.

Said, A., Novianti, A. D., & Fety, Y. (2021). Deteksi Dini Peripheral Artery Disease melalui Pemeriksaan Ankle Brachial Index pada Kelompok Prolanis di Puskesmas Poasia. *Health Information: Jurnal Penelitian*, *13*(1), 11-19.

Samsuri, T., & Rahayu, U. M. (2023). Soursop Leaf Nanoparticles On Blood Glucose Levels And Ankle Brachial Pressure Index (ABPI) Values In Type-2 Diabetes Mellitus Patients. *Jurnal Riset Kesehatan*, *12*(2), 98-103.

Shen, Z., Sun, X., Kong, X., & Wu, Y. (2020). Early intervention of diabetic peripheral neuropathy with TCM footbath. *International Journal Of Clinical And Experimental Medicine*, *13*(12), 9593-9599.

Sudaryanto, S., & Sowwam, M. (2020). Perawatan Kaki melalui Rendam Kaki dalam Meningkatkan Intergritas Jaringan Perifer pada Asuhan Keperawatan Diabetes Mellitus. *Jurnal Keperawatan CARE*, *10*(1).

Sulistyowati, D. I. D., Arwani, A., Indriyawati, N., Adi, W. S., & Mardiyono, M. (2022). Aplikasi Hasil Penelitian Pelatihan dan Penerapan Akupresur untuk Meningkatkan Daya Tahan Tubuh dan Mengurangi Kecemasan pada Ibu Hamil dan Menopouse pada Era Adaptasi Covid 19. *Jurnal Pengabdian Ilmu Kesehatan*, *2*(3), 104-111.

Surya, D. O., & Desnita, R. (2020). Efektifitas Terapi Akupresur Terhadap Derajat Neuropati Pada Pasien Diabetes Melitus. *Malahayati Nursing Journal*, *2*(3), 606-613.

Surya, D. O., & Rekawati, E. (2018). Akupresur Efektif Meningkatkan Nilai Ankle Brachial Index Pada Diabetisi. *Jurnal Endurance*, *3*(2), 408-414.

Utomo, A. A., Rahmah, S., & Amalia, R. (2020). Faktor risiko diabetes mellitus tipe 2: A systematic review. *AN-NUR: Jurnal Kajian dan Pengembangan Kesehatan Masyarakat*, *1*(1), 44-53.

Xu, C. H., Wu, Y., Yu, N. T., & Lu, J. (2018). Clinical observation on tuina plus foot bath with Chinese medicine for diabetic foot in early stage. *Journal of Acupuncture and Tuina Science*, *16*(6), 402-407.

Krissantus Adimas Deby*, Taadi, Sri Endang Windiarti

Program Pasca Sarjana Magister Terapan Keperawatan, Poltekkes Kemenkes Semarang
Corresponding author: *E-mail: Krissantus_deby@yahoo.co.id

DOI: https://doi.org/10.33024/minh.v7i11.582