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By Bangun Wijonarko

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The effect of hypnotherapy on diabetic foot ulcer pain among patients with diabetes mellitus

Bangun Wijonarko*, Siti Wasliyah, Dina Sri Mawadda

Politeknik Kesehatan Kementerian Kesehatan Banten
Corresponding author: *E-mail: javanez83@gmail.com

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Abstract

Background: Diabetes mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia that occurs due to abnormalities in insulin secretion and insulin action. One of the complications of diabetes mellitus is problems with the feet which are usually called diabetic feet. Diabetic feet that are not properly cared for will easily become injured and will quickly develop into foot ulcers. People who suffer from diabetes mellitus are at higher risk of experiencing foot problems due to reduced local pain sensation (neuropathy), which makes sufferers unaware of and often ignore the injuries that occur. One of the primary prevention efforts in the management of diabetic feet has the aim of preventing foot injuries early, to avoid further damage and prevent ulcers from forming which could result in amputation.

Purpose: To determine the effect of hypnotherapy on diabetic foot ulcer pain among patients with diabetes mellitus.

Method: This research method is an analytical survey with one group pretest – posttest design. The sample for this research was 16 diabetic ulcer patients using a total sampling technique for. Data was obtained by distributing questionnaires. Univariate and bivariate data analysis using the t test.

Results: The results of the mean difference test obtained a p value of 0.000 or $p < 0.05$ which can be interpreted as significant. These results indicate that providing hypnotherapy can have an effect on reducing pain in diabetic ulcer sufferers in wound care clinics.

Conclusions: results of the Giving hypnotherapy can have an effect on reducing pain in diabetic ulcer sufferers in wound care clinics.

Keywords: Diabetic Foot Ulcer; Diabetes Mellitus; Hypnotherapy; Pain.

INTRODUCTION

In Indonesia, non-communicable diseases are the leading cause of death, with lifestyle changes being a contributing factor to the problem. One of the non-communicable diseases that we encounter is diabetes mellitus. Diabetes mellitus is the third largest contributor to death out of the top 10 causes of death in Indonesia (Cibertain, Rhinehart, Shaefer, & Neuman, 2016). Diabetes mellitus (DM) is a collection of metabolic diseases characterized by hyperglycemia that occurs due to abnormalities in

insulin secretion and insulin action (American Diabetes Association, 2014).

The International Diabetes Federation states that the global prevalence rate of people with DM in 2014 was 8.3% of the total population in the world and increased in 2014 to 387 million cases (International Diabetes Federation, 2015). Indonesia is a country that ranks 7th with 8.5 million DM sufferers. There was an increase in the number of DM sufferers from 1.1% in 2007 increasing to 2.4% in 2013 from a total population of 2,250 million. One of the complications

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of diabetes mellitus is foot problems commonly called diabetic foot. The percentage of diabetic foot patients ranks 5th in complications of diabetes mellitus at 8.7% (As'adi, 2011).

The prevalence of diabetes mellitus in 2015 was 415 billion people (International Diabetes Federation, 2015). The prevalence of diabetic foot ulcers is around 15% with a 30% amputation risk, 32% mortality rate, and in Indonesia diabetic foot ulcers are the biggest cause for hospitalization at 80%. Awareness of diabetic foot health issues in Indonesia is also still lacking. Facilities for diabetic foot services are still limited. The lack of trained health workers on diabetic foot care causes foot care for diabetic patients in Indonesia is still lacking (Syabariyah, & Nurachmah, 2015).

Diabetic feet that are not properly cared for will easily develop wounds, and will quickly develop into foot ulcers. People with diabetes mellitus have a higher risk of developing foot problems due to reduced local pain sensation (neuropathy), which makes patients unaware and often ignore the wounds that occur. One of the primary prevention efforts in diabetic foot management has the aim of preventing foot wounds early, to avoid further damage and not develop ulcers that can result in amputation. Actions that must be taken in foot care are to identify foot abnormalities early (Monalisa & Gultom, 2019).

From the results of interviews with 5 patients with diabetic ulcers in the wound house. The results of the interview showed that patients did not carry out routine treatment, because they were afraid and could not bear the pain. In this case pain is very influential on the healing of diabetic ulcer patients. Various methods are being developed in reducing pain in diabetic ulcer patients in minimizing pain in wound care. Among them through non-pharmacological therapy. One of the non-pharmacological therapies is complementary therapy. In connection with the issuance of the regulation of the Minister of Health of the Republic of Indonesia number HK.02.02/MENKES/148/1/2010 concerning the license and implementation of nurse practice, complementary therapies can be carried out in health care facilities. Complementary therapies that can be applied in the clinic include health acupuncture, aromatherapy, relaxation therapy, herbal therapy and hypnotherapy (Rodrigues, Oliveira, Silva, & D'Almeida, 2017).

Hypnotherapy is carried out by means of hypnosis, which is a change in the state of consciousness when the individual's concentration is focused and distraction is minimal, hypnosis can also be used to control pain, that hypnosis can prevent pain stimuli in the brain from penetrating the conscious mind, certain theories state that hypnosis works by activating nerves in the brain which causes the release of morphine-like substances called enkephalins and endorphins. These opioids change behavior and pain perception (Fernando, Crowther, Pappas, Lazzarini, Cunningham, Sangla, & Golledge, 2014). There is a significant influence between hypnotherapy users on pain intensity during diabetic wound care (Fatimah, 2015).

RESEARCH METHOD

The research method used is quasi-experimental research with a One group pretest-posttest design. The sample for this study was 16 people suffering from diabetic ulcers using a total sampling technique. Data was obtained by distributing questionnaires. Univariate and bivariate data analysis used the t test. The research was carried out after obtaining permission from Kesbangpol and the Tangerang City wound care clinic. Data collection was carried out in June - September 2019. Before carrying out hypnotherapy, the researcher conducted an apperception with a research assistant regarding the implementation of hypnotherapy. The implementation of hypnotherapy was carried out by 1 research assistant with nurse qualifications and CHT certification.

Next, the researcher identified the sample according to the inclusion criteria. After carrying out identification according to the inclusion and exclusion criteria, the researcher provides an explanation about the research and provides informed consent. The pain scale is divided into the Moderate category by looking at it before hypnotherapy is given. The mean value is 4.56, standard deviation 1.209, with a minimum value of 4 and a maximum value of 7. While the severe category is seen after hypnotherapy is given, the mean value is 2.50, standard deviation 1.549, minimum value 1 and a maximum value of 4.

Next, the researcher measured the pain scale (pre test), after that the patient was given hypnotherapy for 25 – 40 minutes, after being given hypnotherapy, the researcher then took the pain scale measurement (post test). This research has been approved by the code of ethics No.206/EA/KEPK/2019 issued by Politeknik Kesehatan Kementerian Kesehatan Semarang.

Bangun Wijonarko*, Siti Wasliyah, Dina Sri Mawadda

Politeknik Kesehatan Kementerian Kesehatan Banten
Corresponding author: *E-mail: javanez83@gmail.com

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RESEARCH RESULTS

Table 1. Characteristics of Participants (N=16)

Variable	Result
Age (Mean±SD) (Range) (Years)	(55.0±10.0)(46-65)
Age (n/%)	
46-55	14/87.5
56-65	2/12.5
Gender (n/%)	
Male	8/50.0
Female	8/50.0
Education (n/%)	
Junior high	1/6.3
Senior high	8/50.0
University	7/43.7
Pre-Test Pain Characteristics (n/%)	
Moderate Pain	13/81.2
Severe Pain	3/18.8
Post Test Pain Characteristics (n/%)	
Moderate Pain	8/50.0
Severe Pain	8/50.0

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Table 1 shows that the mean age is 55 years, with a standard deviation of 10.0 years. The lowest age is 46 years and the oldest age is 65 years. The majority of participants were aged 46-55 years, as many as 14 people (87.5%). Gender distribution has the same number, namely men totaling 8 (50%) and women totaling 8 (50%). The distribution of participants education is mostly high school education as many as 8 (50%). Before being given hypnotherapy most (81.3%) participants felt moderate pain. While the respondent's pain after being given hypnotherapy has the same value as much as 50%.

Table 2. Distribution of Pain Scores Before and After Hypnotherapy (N=16)

Variable	Min	Max	Mean ±SD
Pre test	4	7	4.56 ± 1.209
Post test	1	4	2.50 ± 1.549

Based on table 2, it can be seen that before hypno therapy the mean value is 4.56, standard deviation 1.209, with a minimum value and a maximum value of 7. while after hypnotherapy the mean value is 2.50, standard deviation 1.549, minimum value 1 and maximum value 4.

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Table 3. Shapiro Wilk Normality Test

Variable	Significant	Result
Pre test	0.089	Normal
Post test	0.084	Normal

Based on table 3, shows the results of the Saphiro-Wilk normality test showed a sig value of 0.089 on the pretest and 0.084 on the posttest, the value > 0.05 so that the value is normally distributed.

Table 4. Mean Difference Test of Hypnotherapy

Variable	(Mean±SD)	Std Error Mean	95% confideece interval of difference		t	df	Sig (2-tilled)
			Lower	upper			
Pretest-postest	2.18760±142449	.35612	1.42844	2.94656	6.143	15	0.000

Based on table 4, shows the results of the average difference test obtained p value 0.000 or p < 0.05 can be interpreted as significant. these results indicate that the provision of hypnotherapy can have an effect on reducing pain in diabetic ulcer patients at the wound care clinic.

DISCUSSION

The results of the frequency distribution of age categories in this study showed that all participants were aged ≥ 45 years, namely 46-55 years as much as 87% and 12.5% aged 56-65 years. The age group 45 years and over is a group at high risk of DM (Asmadi, 2018). Age above 30 years blood sugar will rise 1-2mh / dl / year during fasting and rise 5.6-13 mg / dl at 2 hours mg / dl at 2 hours after eating. There is an association between age and the incidence of DM (Sinno, & Prakash, 2023). The age group < 45 years is a group that is less at risk for type 2 DM. the risk in the age group < 45 years is 72 percent lower than the age group ≥ 45.

Increasing age affects the wound healing process, which is related to the ability of cells or organs to degeneratively deteriorate. The ability of supporting systems or organs such as vascular, anti-body, decreased function of the liver, pancreas and other organs will result in the lengthening of the wound healing cycle. The phases of wound healing starting from homeostatis to the remodeling phase will slow down and increase the risk of more severe infection in the wound due to various things ranging from inflammation due to platelet aggregation, decreased secretion of growth factors, delayed epithelialization,

failure in angiogenesis, collagen deposition and reduced collagen turnover due to increasing age will affect the decrease in wound strength (Basri, 2021; Jannaim, Dharmajaya, & Asrizal, 2018).

The age at risk of type 2 DM is ≥ 45 (Apriyani, 2015). Old age affects diabetes mellitus because physiological body function decreases and there is a decrease in insulin secretion or retention so that the body's ability to function towards high blood glucose control is less than optimal. The results of the frequency distribution of age categories in this study, the majority had a high school education as many as 8 (50%). Education level is a factor associated with the incidence of type 2 DM (Frykberg, Zgonis, Armstrong, Driver, Giurini, Kravitz, & Vanore, 2016). There is an attachment between people with a high level of education will be more able to accept themselves as sick people if they experience symptoms associated with a disease compared to community groups with lower education (Subekti, 2019).

Groups with a high level of education are also indicated to be quicker to seek help from the health team compared to people with lower social status. Groups of people with higher education levels will usually have more knowledge about health and with this knowledge, groups of people who have high knowledge will have awareness in maintaining their health. Based on the results of this study, it was found that people who have a high level of education tend not to get type two Diabetes Mellitus because they usually have a lot of knowledge about health.

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According to the results of this study, diabetic ulcer patients who come to the wound care clinic have a high school education (Layantara, 2021). This is in accordance with the researcher's assumption that patients who come to the clinic on average have a higher social status and have a higher education. This is due to the costs incurred for wound care for these patients. The results of the average difference test obtained a p value of 0.000 or $p < 0.05$ can be interpreted as significant. These results indicate that the provision of hypnotherapy can have an effect on reducing pain in diabetic ulcer patients at the wound care clinic. This is in accordance with previous research, that hypnotherapy effectively reduces pain intensity during diabetic wound care (Sherwood, 2020). Hypnosis is more effective in reducing osteoarthritis than relaxation, and Hypnotherapy is effective for treating various kinds of chronic pain (Smeltzer, Bare, Hinkle, Cheever, Townsend, & Gould, 2018).

The physiology of pain in debredement patients is that pain begins as a response received by peripheral nerves. Chemicals such as substance P, bradykinin, and prostaglandins are released. Then stimulate the peripheral nerves, helping to deliver pain stimuli from the injured area to the brain. Pain signals from the injured area travel as electrochemical impulses along the nerves to the dorsal spinal cord (the area on the spinal cord that receives signals from the rest of the body). The message is then relayed to the thalamus, the sensory center in the brain where sensations such as heat, cold, pain and touch are first perceived. Then the message is relayed to the cortex where the intensity and location of pain is perceived. Pain healing starts as a sign from the brain and then goes down the spinal cord. In the dorsal part, chemicals such as endorphin are released to reduce pain in the injured area (Suddarth, 2015).

Comfort food intervention, namely hypnotherapy, is an intervention made to maintain homeostasis and control pain. The condition of hypnosis or trance has the main characteristics of deep physical relaxation. The relaxed state can increase endorphin levels which function to inhibit the transmission of pain impulses and will interact with pain input in the posterior cornu of the spinal cord (Hartman, & Zimberoff, 2011). Endorphin can suppress pain impulses in the posterior cornu of the spinal cord as the door can open and close to channel pain, and

ultimately have an impact on decreasing pain perception (Prasetyo, 2020). This is in accordance with the theory that hypnosis is a change in the state of consciousness when the individual's concentration is focused on one thing and ignores others, requiring cooperation with the respondent without losing consciousness or control of the respondent. Hypnosis techniques can assist in providing pain relief by activating neural pathways in the brain that cause the release of natural morphine substances called enkephalins and endorphins that help change pain perception and behavior (Smeltzer et al., 2018).

Although in this study shows that there is a decrease in pain intensity from a moderate scale to a mild scale, but the pain intensity of participants after being given hypnotherapy no one shows no pain and there is 1 respondent who does not experience a decrease in pain intensity. This can be influenced by different individual focus abilities, anxiety, different levels of understanding and emotional states that can result in suggestions given less optimally. In addition, it can also be influenced by the hypnotherapy stages carried out by researchers that are less than optimal (Sherwood, 2020).

CONCLUSION

The results of the analysis showed a decrease in pain intensity from a moderate scale to a mild scale, but the pain intensity of participants after being given hypnotherapy did not show no pain at the Tangerang City Wound Care Clinic. This can be influenced by different individual focus abilities, anxiety, different levels of understanding and emotional states that can result in suggestions given less optimally.

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