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THE EFFECT OF FREZ AND ECATA THERAPY ON GDS LEVELS IN DIABETES MELLITUS PATIENTS

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ABSTRACT
Diabetes mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia that occurs due to abnormalities in insulin secretion, insulin function, or both. Diabetes Mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia that occurs due to abnormalities in insulin secretion, insulin action, or both. The incidence of DM increases significantly every years. The aim of this study was to determine the difference in random blood sugar levels in patients before and after being given Frez and Ecata therapy. The research method used was a quasi-experimental method with a pre and post intervention and control group approach. The number of respondents in this study was 52 respondents. The sampling technique used was purposive sampling. Data collection was conducted in accordance with existing SOPs. The Zusanli foot relaxing exercise was performed once daily for one month. ECATA extract was administered in tea form at least twice daily for one month. The data analysis in this study was univariate analysis, which aims to explain each variable studied, including respondent characteristics and GDS levels. Bivariate testing used the Independent T-test. Results The results obtained in this study were changes in blood sugar levels in the intervention group after being given therapy with a p value of 0.025 and there was a difference in blood sugar levels in the intervention and control groups (p value: 0.000). Therapy to decrease blood sugar is already widely available in society. Without controlling diet, any treatment will be meaningless. One of the right ways is with Frez and Ecata therapy which changes behavior slowly and surely.

Keywords: diabetes mellitus (DM); extract centella asiata and terminali catapa (ECATA); foot relaxing exercise zusanli (FREZ); temporary blood sugar levels

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INTRODUCTION

Lifestyle changes in society, such as a sedentary lifestyle and high consumption of foods such as junk food and sweets, have led to an increase in non-communicable diseases (Hartati, 2024). One of the most common non-communicable diseases in society is diabetes mellitus (DM). Diabetes mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia that occurs due to abnormalities in insulin secretion, insulin function, or both. Diabetes Mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia that occurs due to abnormalities in insulin secretion, insulin action, or both. The incidence of DM increases significantly every year (Perkeni, 2021).

According to the International Diabetes Federation (IDF), the number of DM sufferers is predicted to increase from 463 million in 2019 to 463 million in 2045 (IDF, 2019). This also occurs in Indonesia, where Indonesia ranks 7th out of 10 countries with the highest number of DM sufferers in the world The World Health Organization predicts an increase in the number of DM sufferers in Indonesia from 8.4 million in 2000 to 21.3 million in 2030 (Perkeni, 2021). In Jambi Province, the number of DM sufferers increased from 1.2% in 2013 to 1.4% in 2018 (Dinkes Jambi, 2022). Based on the pattern of the most common diseases in Jambi Province in 2022, diabetes mellitus (DM) was the fifth most common disease with 6.05% of sufferers, and Bungo Regency had the highest prevalence, with 3,443 sufferers in 2022. (Putri, et all, 2024). The high prevalence of diabetes in the community naturally causes various problems, such as increased blood sugar levels, which can lead to wounds or ulcers (Qurniawati Dewi, 2020). Prevention is certainly a priority over

treatment, given that diabetes is a lifelong condition (Safitri, Rina dan Ahmad Syafiq, 2022). DM treatment can be pharmacological or non-pharmacological (Ilahillaili, 2017). Pharmacological DM treatment is considered effective but has several negative side effects. Non-pharmacological treatment is an alternative treatment that is considered to have many benefits and minimal negative side effects (Alfian, 2022)

Non-pharmacological therapies such as Foot Relaxing Exercise Zusanli (FREZ) and Centella Asiata Extract and Terminali catapA (ECATA) will be alternative therapies and differentiated in DM treatment, where nurses are the center of service in this complementary therapy. The combination of FREZ and ECATA therapy to lower blood sugar levels and prevent ulcers has never been attempted. Previous research has focused on acupressure of the feet at specific points without the use of additional ingredients such as Centella Asiata and Terminali Catapa extracts. Green Centella leaves can be ground or mashed and then applied to the area of the foot to be massaged for relaxation (Jumari , Agung Waluyo , Wati Jumaiyah , Dhea Natashia, 2019)

Centella is a plant in the reed family that is often used in skincare products (Lili Legiawati, 2021) This certainly has a positive effect on the moisture and elasticity of the skin of people with diabetes mellitus (DM) (Rahmaswari et al. 2023) Previous research has shown that acupressure on the feet is effective in lowering blood sugar levels (Rosanti, Erina, 2023) Previous research on Centella Asiata and Terminali Catapa is effective in treating several conditions such as gastritis and dermatitis. The advantage of this therapy is that it reduces dependence on DM medication or artificial insulin, which can have negative effects on the body when taken long-term, and it also reduces the financial burden on DM patients who have to purchase expensive medications. This complementary therapy will provide an alternative for DM sufferers that without spending too much money, just by utilizing wild plants found in plantations or forests and reflexology massage on the feet can control diabetes and prevent ulcers on the feet (Nurhayati, Rachma, 2023). The aim of this study was to determine the effect of the two therapies (FREZ and ECATA) on reducing random blood glucose levels in patients with diabetes.

METHOD

This research design employed a quantitative method using a quasi-experimental method. The research method employed a one-group pretest-posttest design. The intervention was administered to patients with diabetes mellitus (DM) who were given FREZ and ECATA therapy and compared with a control group given simple or standard care. This research was conducted in the community within the community health center (Puskesmas) in Bungo Regency. Based on data from Hanafie Regional Hospital and Rantau Ikil Regional Hospital, 273 patients with DM were identified. Purposive sampling was used to determine the sample based on the research objectives and meeting several criteria. Inclusion criteria were patients with DM with a history of wounds, an ABI between 0.9 and 1.4, able to read and write, and willing to participate by signing an informed consent. Exclusion criteria included the presence of ulcers before or during the study and hypoglycemia. The sample size, based on the pre- and post-test design, was 52 people.

The sampling technique used was purposive sampling, namely determining the sample according to the research objectives that meet several criteria. The research instrument used to measure random blood sugar levels was a glucometer with categories of hypoglycemia ≤70 mg/dl, normal 80-200 mg/dl, hyperglycemia ≥ 200 mg/dl. Meanwhile, the next instrument to assess ABI values was a sphygmanometer and doppler with categories of ≤ 0.40 severe PAD, 0.41-0.89 mild and moderate PAD, 0.90-1.39 normal, >1.4 abnormal. Data collection was carried out in accordance with existing SOPs. The implementation of foot relaxing exercise zusanli was carried out once a day for 1 month. ECATA extract in the form of tea was given at least 2 times a day for 1 month. The implementation of FREZ was also combined with crushed or ground ECATA extract. The green leaves were crushed and then applied when massaging the feet. The intervention was carried out for 1 month. GDS and ABI levels were measured before and after the FREZ and ECATA interventions. The collected data

was processed using the SPSS computer system. Afterward, the computerized system processed the data through editing, coding, processing, cleaning, and tabulating. The data analysis in this study used univariate analysis, which aimed to explain each of the studied variables, including respondent characteristics, GDS levels, and ABI. Bivariate analysis used the Independent T-test.

RESULT

Based on the research results from Freze and Ecata, the following characteristics were obtained on table 1.

Table 1.
Respondent characteristics (n= 52)

Respondent Characteristics	Intervention Group f (%)	Control Group f (%)
Gender		
1. Man	4 (15,38%)	7 (26,92%)
2. Women	22 (84,62%)	19 (73,08%)
BMI		
1. Normal	10 (38,46%)	9 (34,61%)
2. Overweight	14 (53,85)	16 (61,54%)
3. Obesitas	2 (7,69)	1 (3,85%)
hereditary history of diabetes		
1. Yes	22 (84,61%)	19 (73,07%)
2. No	4 (15,39%)	7 (26,93)
Respondent Characteristics	Intervention Group Mean±SD	Control Group Mean±SD
Age	56,46±13,13	56,88±11,16

Based on Table 1, it can be seen that the majority of respondents were female in the intervention group, namely 22 (84.62%) and the control group, namely 19 (73.08%). Furthermore, the BMI of respondents in the intervention group was overweight, namely 14 (53.85) and in the control group was overweight with 16 respondents, namely 61.54%. The next characteristic is a family history of diabetes, namely in the intervention group there was a history of the disease more as many as 22 (84.61%) and in the control group there was a history of the disease more as many as 19 (73.07%). The next characteristic is age, the average age of respondents in the intervention and control groups was 56 years and most respondents were between 45 – 67 years old. The next research results from Freze and Ecata, the difference of pre and post Freze and Ecata of intervention group and control group were obtained on table 2.

Table 2.
Difference of Pre and Post Therapy Freze and Ecata of intervention Group (n= 26)

Kelompok	Mean ± SD		P value
	Pre test	Post test	
Intervention	338,96±73,69	248,11±76,43	0,025
Control	237,65±41,16	328,57±68,19	0,128

Based on table 2, it can be described that there was a significant change in the average random blood sugar level in the intervention group with the average random blood sugar level before the action was 338 mg/dl to 248 mg/dl. There was an average decrease of 90 mg/dl in the intervention group with a standard deviation of 76.43 after the action, which means the range of respondents' blood sugar levels after the action was between 172 - 324 mg/dl. Furthermore, based on the P Value of the intervention group, which is 0.025, where if $\alpha < 0.05$, there is a difference between the random blood sugar levels in the intervention group before and after the action. The next result in the control group showed that the average random blood sugar level before the action was 237 with a standard deviation value of 41, which means the range of respondents' random blood sugar levels was between 201-278 mg-dl. Furthermore, the final check results without any treatment obtained the average blood sugar level of the control group was 328 with a standard deviation of 68, which means the respondents' blood sugar levels were between 260-396 mg/dl. Based on the PValue value: 0.128, it explains that there was no significant difference between the pre- and post-test control groups in this study.

DISCUSSION

The Freeze and Ecata study was conducted on 52 respondents. The data obtained showed a homogeneity test for respondent characteristics with a p value > 0.05, indicating that respondents in both groups were homogeneous. This is also supported by the similar characteristics of respondents in the intervention and control groups. Therefore, it can be concluded that the changes in the outcome variables in this study were due to differences in patient characteristics.

The results above indicate that the average respondent was elderly. Age is one factor associated with blood sugar levels in diabetes patients. In this study, the respondents were predominantly elderly. These results align with the statement by Golberg Coon (2016) that age is closely related to increased blood sugar levels, so that with increasing age, the prevalence of diabetes and impaired glucose tolerance increases. Furthermore, research by Robiul (2016) explains that age is a factor influencing the incidence of diabetes. As age increases, blood vessel elasticity decreases, allowing blood sugar levels to rise at any time.

The study found that there were more women than men. This finding is consistent with Shabana et al.'s (2013) study on the prevalence of diabetes mellitus in Indian hospitals, which showed a higher prevalence of women than men. Furthermore, Robiul (2016) study showed that the majority of respondents were women, although the numbers in the control and intervention groups differed slightly. Researchers believe that both men and women with type 2 diabetes are more likely to experience elevated blood sugar levels if they are overweight and have had diabetes for a long time without good glucose control. According to Chatchawan (2015), women are more likely to experience obesity due to increased estrogen levels, which cause an increase in subcutaneous fat and tissue. Therefore, women are at greater risk of developing diabetes if they have an unhealthy lifestyle.

This study found a significant difference between blood sugar levels before and after the Freeze and Ecata therapy. This therapy was administered to respondents regularly for approximately 4 weeks or 1 month prior to the time of this study until the time the consent letter to become a respondent was signed by the respondents. The findings of this study showed that there was a significant difference between the control group and the intervention group after the freeze and ecata therapy (P Value = 0.000)

The results of the first study showed a difference in changes in blood sugar levels between the intervention groups after being given Freze and Ecata therapy (P-value: 0.025). Many studies on Zusanli foot relaxation indicate that this study is indeed effective in reducing blood sugar levels, such as research from Jumari, Agung Waluyo, Wati Jumaiyah, Dhea Natashia. (2019) which explains significant changes in sugar levels up to an average of 50 mg/dl. The results of research related to Freze and Ecata are still minimal due to the lack of socialization of the positive effects of pegagan and ketapang leaves. The results of this study showed a change in blood sugar levels of almost 100 mg/dl. This combination of therapy is considered very effective considering this therapy is a very safe therapy because it is herbal. According to research from Rahmaswari et al., (2023) ketapang is effective in reducing blood sugar in respondents, while according to Nurhayati, Rachma. (2023) explained changes in blood sugar levels in mice given ketapang leaf extract. Furthermore, according to Lili Legiawati (2021), explain pegagan leaves, besides being good for the skin, can also be used to lower blood sugar.

CONCLUSION

Based on the research results, it was found that the characteristics of the respondents were mostly elderly with a majority of female gender, BMI status was more overweight and most had a family history of Diabetes mellitus. Based on the results of the independent T Test of the intervention and control groups, there were significant differences between before and after being given freeze and ecata therapy (P Value: 0.000).

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