THE EFFECT OF BENSON'S RELAXATION TECHNIQUE ON PATTERNS SLEEP OF DIABETES MELLITUS PATIENTS

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ABSTRAK

Gangguan kesehatan seperti gangguan metabolisme yang menyebabkan diuresis osmotik dan dehidrasi banyak dialami oleh penderita diabetes melitus, dengan manifestasi nokturia, serta gangguan stres dan kecemasan yang mengakibatkan penurunan kualitas tidur. Hal ini dapat mempengaruhi penatalaksanaan pengobatan diabetes melitus menjadi kurang optimal. Tujuan penelitian ini untuk mengetahui pengaruh relaksasi Benson terhadap pola tidur pada pasien diabetes melitus. Jenis penelitian yang digunakan adalah quasi-experiment dengan desain *pre* and *post test without control group* yang artinya desain penelitian ini tidak ada kelompok pembanding. Populasi dalam penelitian ini adalah pasien yang diagnosa diabetes melitus yang mengakibatkan gangguan pola tidur di RSU Royal Prima Medan selama satu bulan terakhir sebanyak 74 pasien. Sampel dalam penelitian ini adalah 62 orang dengan menggunakan *purposive sampling*. Pengumpulan data pada penelitian menggunakan instrumen berupa lembar observasi. Analisa data penelitian adalah analisis univariat dan bivariat dengan uji *Wilcoxon rank test*. Hasil penelitian menjelaskan pola tidur pasien diabetes mellitus sebelum dilakukan teknik relaksasi Benson diperoleh bahwa mayoritas pola tidur responden buruk sebanyak 43 orang (69,4%), pola tidur pasien diabetes mellitus sesudah dilakukan teknik relaksasi Benson diperoleh bahwa mayoritas pola tidur responden baik sebanyak 32 orang (51,6%), dan terdapat pengaruh teknik relaksasi Benson terhadap peningkatan pola tidur pasien diabetes melitus (p= 0,048). Kesimpulan penelitian ini adalah terdapat pengaruh teknik relaksasi Benson terhadap peningkatan pola tidur pasien diabetes melitus di RSU Royal Prima Medan.

Kata Kunci: relaksasi Benson, pola tidur, diabetes melitus

ABSTRACT

Health problems such as metabolic disorders, which cause osmotic diuresis and dehydration, are experienced by diabetes mellitus patients, with manifestations of nocturia, as well as stress and anxiety disorders that result in reduced sleep quality. This can influence the management of diabetes mellitus treatment to be less than optimal. The aim of this study was to determine the effect of Benson relaxation on sleep patterns in diabetes mellitus patients. The type of research used is a quasi experiment with a pre and post test design without control group, which means that this research design does not have a comparison group. The population in this study were 74 patients diagnosed with diabetes mellitus which resulted in sleep pattern disturbances at RSU Royal Prima Medan during the last month. The sample in this study was 62 people using purposive sampling. Data collection in research uses instruments in the form of observation sheets. Research data analysis was univariate and bivariate analysis using the Wilcoxon rank test. The results of the study explaining the sleep patterns of diabetes mellitus patients before using the Benson relaxation technique showed that the majority of respondents' sleep patterns were poor, 43 people (69.4%), the sleep patterns of diabetes mellitus patients after using the Benson relaxation technique, it was found that the majority of respondents' sleep patterns were

good, 32 people. (51.6%), and there was an influence of the Benson relaxation technique on improving sleep patterns in diabetes mellitus patients (p= 0.048). The conclusion of this research is that there is an influence of the Benson relaxation technique on improving the sleep patterns of diabetes mellitus patients at RSU Royal Prima Medan.

***Keywords**: Benson relaxation; sleep patterns; diabetes mellitus*

1. INTRODUCTION

Diabetes mellitus is a chronic metabolic disease characterized by increased blood sugar levels. This is caused by a lack of insulin secretion, insulin action, or both (Tinungki & Hinonaung, 2023). In addition, the endocrine system does not function normally in people with diabetes mellitus. This can be caused by abnormal glucose and fat metabolism, or decreased insulin function (Bhavana U & Punna V, 2023).

World Health Organization (2023) states that diabetes was the direct cause of 1.5 million deaths in 2019, with 48% of all deaths occurring before age 70. Diabetes caused 460,000 kidney disease deaths, and elevated blood glucose caused 20% of all cardiovascular deaths. The age-adjusted mortality rate for diabetes increased by 3% from 2000 to 2019.

International Diabetes Federation, (IDF, 2021) reported that as many as 537 million adults (20-79 years) live with diabetes worldwide, Indonesia is ranked 7th out of 10 countries with the largest number of diabetes sufferers. This number is expected to continue to increase, which is predicted in 2030 to be 643 million (1 in 9 adults) until 2045 reaching 783 million (1 in 8 adults).

Ministry of Health of the Republic of Indonesia (2022) estimates the adult diabetes population aged 20-79 years is 19,465,100 people. Meanwhile, the total adult population aged 20-79 years is 179,720,500, so if calculated from these two figures, it is known that the prevalence of diabetes in the age group between 20-79 years is 10.6%. In the age group of 20-79 years, this means 1 in 9 people with diabetes. The burden of health costs per year for people with diabetes aged 20-79 years in Indonesia. According to the 2023 Indonesian Health Survey, the prevalence of DM based on Doctor's Diagnosis in the Population of All Ages according to North Sumatra Province, data was obtained at 1.4% comparable to 48,469 people, the total population of Indonesia (Kementerian Kesehatan RI, 2023).

Diabetes mellitus patients experience health problems such as metabolic disorders that cause osmotic diuresis and dehydration with manifestations of nocturia as well as stress and anxiety disorders that reduce sleep quality. This can affect the suboptimal management of diabetes mellitus treatment (Wahyuningsih, 2020).

Sleep is an activity where it is time for the body to rest, during sleep a recovery process occurs which can return a person's stamina to its original state, which means they are tired and have stamina again. StudyAgustina and Setiawan (2021) concluded that there is an influence of Benson's relaxation technique on sleep quality that can improve sleep patterns. This relaxation is also effective in the body's recovery process making it calmer and more relaxed. Research Elmetwaly et al. (2020), there is a statistically significant effect of Benson's relaxation technique in reducing pain intensity, anxiety levels and improving sleep quality. Research Ebraheim and Ibrahim, (2022), there was a statistically significant effect of Benson relaxation therapy in reducing pain intensity, mean vital sign values, anxiety levels, and improving sleep quality.

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Study Purba (2020) showed that there was a difference in sleep quality before and after Benson relaxation. The study Wardani (2021) stated that almost all respondents who were given Benson relaxation treatment experienced an increase in sleep quality, this technique speeds up the body to achieve comfort and the brain to relax, so that it will make respondents fall asleep quickly.

Poor sleep quality can affect the ability of people with diabetes mellitus to carry out daily activities. This is due to the main symptoms of most sleep disorders, namely insomnia, pain, stopping breathing during sleep, frequent urge to urinate at night, tingling or cramps in the legs, thirst at night, hunger at night (Tentero et al., 2016). Studies reveal that 16% to 26% of patients with diabetic neuropathy experience pain that can have a negative impact on quality of life, limiting activities of daily living, self-care skills, work, sleep quality, and interpersonal relationships (Pebrianti et al., 2020). Study Saleh et al. (2022) found that most diabetes mellitus sufferers experienced anxiety (65.7%), did not experience stress (80.0%) and did not experience depression (68.6%).

Based on the last month's data from the Medical Records of the Royal Prima Medan General Hospital in 2024, there were 276 cases of diabetes mellitus with inpatient status, and in October there were 74 cases. Based on initial observations, it was found that diabetes mellitus patients often experience poor sleep patterns. Based on previous research, it is known that Benson relaxation can overcome sleep quality can create a feeling of calmer and speed up the body and mind to relax, thus making you fall asleep faster.Meanwhile, this study will examine sleep patterns. Researchers are interested in conducting research with the aim of determining the effect of Benson's relaxation technique on improving sleep patterns of diabetes mellitus patients at RSU Royal Prima Medan.

2. RESEARCH METHODS

This type of research uses a quasi-experimental research design with a Pre and post test without control group design. This research was conducted at RSU Royal Prima Medan. The population in the study were patients diagnosed with diabetes mellitus which resulted in sleep pattern disorders as many as 74 people. The sample in this study was 62 people with a sampling technique in this study using purposive sampling with inclusion and exclusion criteria.

Inclusion criteria are: 1) patients who experience sleep pattern disorders, 2) able to communicate well, 3) patients who are treated for more than 3 days. Exclusion criteria are: 1) patients who are going home, 2) patients who have been referred, 3) uncooperative patients.

The research has conducted an ethical test from the Ethics Committee of Universitas Prima Indonesia with Number: 010/ KEPK/UNPRI/XXI/2024

Data collection in this research uses instruments in the form ofobservation sheet. Data collection in this study used a questionnaire sheet. Patient sleep patterns were measured using the Pittsburgh Sleep Quality Index (PSQI) sleep quality questionnaire (Buysse et al., 1989). The researcher emphasized the time of examination or observation of variable data only once, namely during the pre-test and then carrying out the Benson relaxation treatment. Next, the researcher conducted an intervention using the Benson technique. The time for administering the Benson relaxation intervention can be 10-15 minutes, and is done 1-2 times a day before eating. The data analysis technique used was the Wilcoxon Rank Test with a degree of significance ($\alpha = 5\%$).

3. RESEARCH RESULTS AND DISCUSSION

Results

Based on the research results, it can be seen in the table below:

Table 1 1. Frequency Distribution of Respondent Characteristics

Characteristics	f	%
Gender		
Man	22	35.5
Woman	40	64.5
Age		
26-45 years	15	24.2
46-65 years	35	56.5
65 years	12	19.2
Education		
Elementary School	7	11.3
Junior High School	10	16.1
Senior High School	36	58.1
College	9	14.5
Work		
Doesn't work	7	11.3
Housewife	17	27.4
Private sector	15	24.2
employee	8	12.9
Civil Servant/	15	24.2
Retiree		
Self-employed		
Status		
Not married yet	10	16.1
Marry	40	64.5
Widow/Widower	12	19.4
Long time suffering from DM		
<10 years	45 17	72.3
≥ 10 years		27.7

Based on Table 1, it shows that based on gender, the majority of respondents were female, 40 people (64.5%) and the minority were male, 22 people (35.5%). Based on age, it was found that the majority of respondents were aged 46-65 years, 35 people (56.5%) and the minority were aged >65 years, 12 people (19.2%). Based on education, it was found that the majority of respondents had a high school education, 36 people (58.1%) and the minority had an elementary school education, 7 people (11.3%). Based on occupation, it was found that the majority of respondents were housewives, 17 people (27.4%) and the minority were civil servants/retirees, 8 people (12.9%). Marital status showed that the majority of respondents were married, 40 people (64.5%) and the minority were unmarried, 10 people (16.1%). Regarding the duration of suffering from DM, it was found that the majority of respondents had suffered from DM for <10 years, as many as 45 people (72.3%) and the minority had suffered from DM for >10 years, as many as 17 people (27.7%).

Table 2. Frequency Distribution of Sleep Patterns of Diabetes Mellitus Patients before Being Given the Benson Relaxation Technique

Sleep Patterns	Frequency (f)	Percentage (%)
Good	19	30.6
Bad	43	69.4
Total	**62**	**100.0**

Based on Table 2, it can be seen that the data on sleep patterns of diabetes mellitus patients before the Benson relaxation technique was carried out showed that the majority of respondents' sleep patterns were bad, as many as 43 people (69.4%) and the minority of respondents' sleep patterns were good, as many as 19 people (30.6%).

Table 3. Frequency Distribution of Sleep Patterns of Diabetes Mellitus Patients after Being Given the Benson Relaxation Technique

Sleep Patterns	Frequency (f)	Percentage (%)
Good	30	48.4
Bad	32	51.6
Total	**62**	**100.0**

Based on Table 3, it can be seen that the data on sleep patterns of diabetes mellitus patients after the Benson relaxation technique was carried out showed that the majority of respondents' sleep patterns were good, as many as 32 people (51.6%) and the minority of respondents' sleep patterns were bad, as many as 30 people (48.4%).

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Based on the data normality test, it was found that the p value was 0.001 (p <0.05), so it can be concluded that the data is not normally distributed. So the researcher continued by using the Wilcoxon test.

Table 4. The Effect of Benson Relaxation Technique on Improving Sleep Patterns of Diabetes Mellitus Patients at Royal Prima Medan Hospital

Variables	Average Before (Pre Test)	Post Test Average	Z	P
Improved Sleep Patterns	16	16	-1.976	0.048

Based on the results of the Paired t test, a p-value of 0.048 < 0.05, so it can be concluded that there is an effect of the Benson relaxation technique on improving the sleep patterns of diabetes mellitus patients at RSU Royal Prima Medan.

Discussion

Improving Sleep Patterns of Diabetes Mellitus Patients before Being Given the Benson Relaxation Technique

The research results explain thatBefore the Benson relaxation technique was performed, it was found that the majority of sleep patterns were poor (69.4%). The patient's nighttime sleep schedule was mostly at 21.00-23.00 WIB (64.5%). The sleep time of diabetic patients can vary greatly depending on individual habits, lifestyle, and their health conditions. Most patients often wake up from their sleep and usually only wake up every night after sleeping for about 3-4 hours (61.3%). The duration or frequency of waking up each night varies depending on several factors, including medical conditions, diabetes management, and individual sleep habits. The study Yazia and Suryani (2023) stated that there is a relationship between physical factors, stress factors, and environmental factors with sleep quality in people with diabetes mellitus.

Benson's relaxation technique has benefits and influences on psychological health, such as stress or anxiety disorders which cause sleep disorders which are experienced by many people (Nurdin & Wardani, 2024). Study Setianingsih and Diani, (2022) stated that most people with diabetes have poor sleep quality and high blood glucose levels. Other factors such as frequent waking up at night to urinate (polyuria) and other physical symptoms can disrupt sleep in diabetic patients, which in turn affects blood glucose control.

The results showed that most patients woke up at 05.00-08.00 in the morning and slept for about 3-6 hours at night (77.4%). Some patients may wake up earlier if they have morning physical activities (such as exercise) or if they have to do daily routines. Some other problems that often interfere with sleep are waking up in the middle of the night or early morning and waking up to go to the bathroom because they want to urinate 3 times a week and other reasons such as emotional stress, anxiety, or depression in diabetic patients for 1 time a week. Patients often use sleeping pills 3 times a week to overcome their sleep disorders. Patients are often sleepy when doing activities during the day 3 times a week. Patients have no desire to solve sleep disorders, and their sleep satisfaction becomes very poor.

Factors that influence sleep disorders in diabetes patients are physical and environmental factors (Simarmata et al., 2020), as well as psychosocial (Bingga, 2021). The study Ratnasari (2022) stated that the causative factor that often occurs is that patients often urinate at night (polyuria) so that patients often wake up from their sleep, this will affect the quality of the patient's sleep.

The study Sumah and Huwae (2019) stated that the effect of physical activity is directly related to the increase in the speed of muscle glucose recovery (how much muscle takes glucose from the

bloodstream). Poor sleep quality has an impact on insulin resistance and the ability of sufferers to carry out daily activities. According to Khoiriyah et al. (2021) sleep problems are resolved by consistent adherence to the activity schedule that has been created to achieve optimal sleep hygiene.

Improvement of Sleep Patterns in Diabetes Mellitus Patients after Being Given the Benson Relaxation Technique

The results of the study showed that the sleep patterns of diabetes mellitus patients after the Benson relaxation technique were performed showed that the majority of respondents' sleep patterns were good (51.6%). This is because some of the patients started sleeping at night at 20.00-22.00 WIB. Patients often wake up from their sleep and usually only wake up every night after sleeping for about 5-6 hours. Problems that often disturb patients' sleep are mostly due to waking up in the middle of the night or early morning and waking up to go to the bathroom because they want to urinate for 1 x a week and a small number of problems that often disturb their sleep such as emotional stress, anxiety, or depression in diabetes patients for 3 x a week. Patients often wake up at 06.00 - 08.00 in the morning and sleep at night for about 5-8 hours. Patients use sleeping pills once a week, often feel sleepy during the day for 1 x a week and a minority often feel sleepy when doing activities for 3 x a week.

The study Dewi et al. (2024) stated that there was a difference in the average value of sleep quality between the intervention groups after the Benson relaxation intervention was carried out. The study Wardani (2021) stated that the application of Benson relaxation can reduce sleep pattern disorders in patients with diabetes mellitus. Benson relaxation therapy has been studied as a non-pharmacological method to improve sleep quality in patients with diabetes mellitus.

The study Banuapta and Supratman, (2024) stated that the application of Benson therapy to the quality of sleep in the elderly found that the majority had good quality sleep. This technique is based on the idea that the body has a natural ability to trigger a relaxation response, which is a calm state that is the opposite of the stress response (Elmetwaly et al., 2020).

The results showed that patients were very enthusiastic about solving their sleep problems, and they reported quite good sleep satisfaction. Benson relaxation is a technique that can help improve overall quality of life, can be used with regular practice. Benson relaxation therapy has been shown to be effective in overcoming sleep pattern disorders in the elderly (Rohim, 2024).

The combination of these relaxation techniques with a healthy diet, exercise, and blood sugar management can provide more optimal results (Umam, 2019). Benson's relaxation technique can improve sleep quality. Adequate and quality sleep helps control blood sugar levels, improves insulin sensitivity, and supports overall health (Zega et al., 2023).

The Effect of Benson Relaxation Technique on Improving Sleep Patterns in Diabetes Mellitus Patients

The results of the study showed that there was an influence of Benson's relaxation technique on improving the sleep patterns of diabetes mellitus patients. The results of this study are in line with research Rachmat (2022) that Benson relaxation therapy can improve the quality of sleep in post-operative debridement patients. Disturbed sleep patterns are one of the problems often experienced by patients with diabetes mellitus. Sleep disorders in DM patients can be influenced by various factors, including unstable blood glucose levels,

diabetic neuropathy, and psychological stress (Candra et al., 2023).

Diabetes sufferers experience changes in sleep patterns due to polyuria.(Malisa et al., 2023). Polyuria will disturb the patient's sleep, in addition, the presence of ulcers can cause the patient to have difficulty sleeping (Chloranyta & Sulistyaningrum, 2024). Diabetes mellitus is a chronic metabolic disease characterized by hyperglycemia. This condition is often accompanied by sleep disturbances due to neuropathic pain, nocturia, and anxiety (Wahyuningsih, 2020).

Sleep quality before and after Benson relaxation treatment experienced statistically significant changes, with PSQI scores after treatment being lower than before treatment (Roselina et al., 2022). Benson's relaxation technique aims to reduce stress responses and induce a state of relaxation, which can ultimately improve sleep quality (Rahman et al., 2019). Study Ubaidillah et al. (2023) stated that there was an influence of Benson's relaxation technique on the sleep quality of diabetes mellitus patients.

Good sleep quality is an important aspect of managing diabetes mellitus, and several factors can help improve sleep quality in patients beyond Benson's relaxation techniques. Research shows that poor sleep quality is often associated with poor glycemic control, which can create a negative cycle between sleep and diabetes (Ayaz & Dincer, 2021). One approach that can improve sleep quality is through dietary management. Research shows that regulating protein and carbohydrate intake in food can positively affect sleep quality and glycemic control (Nouripour et al., 2021). In addition, regular physical activity has also been proven to contribute to improved sleep quality (Gothe et al., 2020). Psychological factors also play an important role in the sleep quality of diabetes patients (Alamer et al., 2022).

Improving sleep quality in patients with diabetes mellitus requires a multidimensional approach, including dietary management, increased physical activity, and psychological support. Diabetes patients can achieve better sleep quality, which positively affects glycemic control and overall quality of life. The findings of this study can be implemented in the community to help diabetes patients experiencing sleep disturbances improve their sleep quality.

4. CONCLUSION

a. Sleep patterns before intervention, before being given the Benson relaxation technique, the majority of diabetes mellitus patients had poor sleep patterns (69.4% or 43 people), while the minority had good sleep patterns (30.6% or 19 people).
b. Sleep patterns after intervention, after being given the Benson relaxation technique, there was a change where the majority of patients had good sleep patterns (51.6% or 32 people), and the minority had poor sleep patterns (48.4% or 30 people).
c. Paired t-test results, Paired t-test showed a p-value of 0.048 ($p<0.05$), which indicates a significant influence of Benson's relaxation technique on improving patient sleep patterns.

5. RECOMMENDATION

a. Implementation of Benson's relaxation technique, Hospitals and other healthcare facilities are advised to adopt Benson's relaxation technique as part of their diabetes mellitus patient care program to help improve their sleep quality.
b. Training of health workers, health workers, especially nurses

and doctors, should be given specific training on Benson's relaxation technique to ensure effective and consistent implementation.

c. Improving patient education, diabetes mellitus patients need to be educated about the importance of good sleep patterns and how Benson's relaxation technique can help improve their sleep patterns.
d. Monitoring sleep patterns, it is recommended to carry out routine monitoring of the sleep patterns of diabetes mellitus patients to evaluate the effectiveness of the Benson relaxation technique and adjust the intervention if necessary.
e. Further research, further studies with larger samples and longer observation periods are recommended to strengthen these findings and explore the long-term effects of Benson's relaxation technique on patients' sleep patterns.

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