Nurse Update

The Effect Of Benson Relaxation Techniques And Aromatherapy On The Sleep Quality Of Patients With Diabetes Mellitus

Muhammad Ibrahim Jawa Janata [1], Suyanto Suyanto [1], Indah Sri Wahyuningsih [1]

Nurse Update, Vol 1 No 1, Januari 2025

Abstract

Background: Diabetes Mellitus patients generally often experience sleep disorders. Several pharmacological interventions are recommended to improve sleep. However, it can causem side effects when used long term. One non-pharmacological therapy for sleep disorders uses Benson relaxation combined with aromatherapy. The Benson relaxation technique is a relaxation technique combined with confidence, and combined with aromatherapy which has a relaxing effect which ultimately affects the quality of sleep.
Objective: To determine the effect of combined Benson relaxation therapy and aromatherapy on the sleep quality of diabetes mellitus patients.
Method: This research used a quasi experiment with a Pre Test Post Test Control Group Design with a sample size of 30 people. 15 people in the control group and 15 people in the intervention group. Sampling in this research used purposive sampling technique. In this study, the inclusion criteria were, patients with diabetes, willing to be respondents, willing to take part in Benson relaxation therapy and aromatherapy from start to finish, and had no allergies to lavender aromatherapy. For exclusion criteria, namely, patients with decreased consciousness, patients with impaired nasal function/sense of smell, patients refusing to continue the study.
Results: The results of this study showed that there was no difference in sleep quality before and after Benson relaxation therapy and aromatherapy in the control group and there was a difference in sleep quality before and after Benson relaxation therapy and aromatherapy in the intervention group. Meanwhile, there were differences in the quality of sleep in patients after Benson relaxation therapy and aromatherapy in the control group and intervention group.
Conclusion: There is a significant effect of the combination of Benson relaxation therapy and aromatherapy on the sleep quality of diabetes mellitus patients.

Keywords:
Relaxation; aromatherapy; sleep disorders; diabetes mellitus

1. Faculty of Nursing, Sultan Agung Islamic University, Indonesia

Corresponding author:
Muhammad Ibrahim Jawa Janata
Email: ibrahimadja14@gmail.com

Received: 16 January 2025
Revision received: 23 January 2025
Accepted: 27 January 2025
Published: 31 January 2025

Introduction

Diabetic Mellitus patients generally often experience sleep disturbances caused by physical discomfort such as, nocturia, frequent feeling of thirst, frequent feeling of hunger, itching of the skin, tingling, cramps in the legs, and pain. Pathologically, sleep disorders in patients with diabetes mellitus are related to problems with insulin production and use, which affect glucose metabolism in the body such as Hyperglycemia, diabetic neuropathy, obesity and Sleep apnea. In the study on the Prevalence of Sleep Disorders in 355 Diabetic Mellitus Patients, 63.7% stated that they had poor sleep quality (Alamer, 2022)

To treat sleep problems, several medications such as antidepressants, antipsychotics, melatonin, and dopamine agonists are often used. While they can help, they also have unpleasant side effects, such as headaches, dizziness, drowsiness, and the risk of respiratory infections. Safer alternatives are non-pharmacological interventions such as aromatherapy, cognitive behavioral therapy, exercise, and meditation. In addition to minimal side effects, these methods are also more cost-effective and effective in improving sleep quality (Irbar, 2023). In 2021, Indonesia ranked fifth among the countries with the highest number of diabetic cases with 19.5 million cases, and is expected to increase to 28.6 million by 2045,

according to data from the International Diabetes Federation (IDF) (IDF, 2021).

Benson Relaxation is a technique that combines breathing exercises with religious beliefs, which can have a positive impact on the spirituality of the elderly. This technique helps them to further increase their self-awareness of God, so that it can be the right approach to overcome various discomfort problems they feel (Al Ghazali, 2023). In addition to Benson's relaxation, lavender aromatherapy can also be a non-pharmacological treatment option. Lavender aromatherapy, which is currently popular as a complementary therapy in various clinical practices, makes use of lavender essential oil that has a calming effect. This effect helps reduce anxiety and improve sleep quality, as aromatherapy creates an atmosphere of relaxation that makes it easier for patients to fall asleep (Hussain, 2020).

The results showed that there was a significant improvement in the patient's sleep quality after the application of the Benson relaxation technique. The mean sleep quality score increased from 18.83 before the intervention to better after the intervention, with a p value < 0.001 (Tentero IN, 2023). In the study conducted as many as 31 participants aged 40 to 65 years were given lavender and ylang ylang 3 aromatherapy % over two weeks, a significant improvement in sleep quality P < 0.001. It is explained that lavender essential oil contains linalool, which can provide a relaxing, relaxing effect and calm the nervous system. Lavender essential oil is a popular essential oil aroma (Faridah, 2020).

The results of a preliminary study conducted from April to June at Sunan Kalijaga Demak Hospital, there were 177 inpatient patients with diabetes mellitus. Interview results obtained of the 8 patients with diabetes mellitus who are being hospitalized, there are 5 patients with a percentage (62.5%) who show that the patient has sleep disturbances due to nocturia or frequent urination at night, excessive thirst caused by high blood glucose levels, and pain related to deabetic neuropathy and 3 patients with a percentage (37.5%) show that the patient is not too bothered by his sleep quality problems or has good sleep quality. Researchers are interested in investigating how Benson's relaxation techniques and aromatherapy may affect the sleep quality of patients with diabetes mellitus, based on the information that has been presented.

Methods

Research Design and Approach

The research method used is quantitative, with a research design in the form of quasi-experiments using the Pre-Test Post-Test Control Group Design approach. The study design involved two randomly selected groups, where both will be measured before and after the treatment (pre-test and post-test). Aiming to analyze the effect of Benson relaxation therapy and Aromatherapy techniques on the sleep quality of Diabetes Mellitus patients, this study will be carried out at Sunan Kalijaga Demak Hospital in July-December 2024.

Participants

The population in this study is patients with diabetes mellitus who were hospitalized in July-December 2024 at Sunan Kalijaga Demak Hospital. This study uses a non-probability sampling technique with a purposive sampling method. And the results were obtained from 30 respondents, 15 respondents from the control group and 15 respondents from the intervention group. The inclusion criteria in this study are Patient with Diabetes, Willing be a respondent, willing to take Benson relaxation therapy and aromatherapy from start to finish, and Have no allergy to lavender aromatherapy. As for the exclusion criteria, namely Patients with decreased consciousness, Patients with impaired nasal function/sense of smell and Patients who refuse to continue the research.

Instruments and Measurement

To measure the sleep quality of diabetic mellitus patients, this study uses a questionnaire as a data collection tool. The questionnaire is the Pittsburgh Sleep Quality Index (PSQI) questionnaire using a score of 0 = No sleep disorders, scores 1-7 = mild sleep disorders, scores 8-14 = moderate sleep disorders, scores 15-21 = severe sleep disorders. There were 19 questions that assessed various aspects of sleep quality. The questions are divided into 7 components, namely the quality of a person's sleep, the amount of time needed to sleep, the duration of sleep, the efficiency of sleep habits, sleep problems, the use of sleeping pills, and impaired function during the day. In all seven components, the PSQI score has a coefficient with validity (r = 0.73) and reliability (Cronbach's α =0.83) which means that this shows that each question item contained in the questionnaire is valid and reliable.

Data Analize

The data in this study was analyzed using SPSS software. Univariate analysis was used to describe each variable, such as the respondent's age, gender, and sleep quality category, by displaying their distribution and percentage. For hypothesis testing, bivariate analysis was carried out. The Paired t-test and Wilcoxon test were applied to paired data, while the Independent t-test and Mann-Whitney were used for unpaired data. A significance level of 0.05 is used as a decision-making limit, where Ha Accepted if the p-value < 0.05, and rejected if the p-value > 0.05.

Results

The results presented in Table 1 provide a comprehensive overview of the demographic characteristics and sleep quality of respondents at Sunan Kalijaga Hospital during the period from July to December 2024. The sample consisted of 30 respondents, divided into two groups: the intervention group and the control group.

Age Distribution

In terms of age, the intervention group comprised individuals aged 51-60 years (66.7%) and 61-70 years (33.3%), with no respondents in the 40-50 and 71-80 age brackets. Conversely, the control group included respondents aged 51-60 years (20%), 61-70 years (40%), 71-80 years (33.3%), and a small percentage (6.7%) in the 71-80 age range. This indicates a notable difference in age distribution between the two groups, with the intervention group being predominantly older.

Gender Distribution

Regarding gender, the intervention group consisted of 33.3% males and 66.7% females, while the control group had a slightly higher proportion of males (40%) compared to females (60%). This suggests a relatively balanced gender distribution across both groups, although the intervention group had a higher percentage of female respondents.

Sleep Quality (Pre-Intervention)

Before the intervention, the sleep quality of respondents was assessed. In the intervention group, none reported no sleep disturbances, while 40% experienced mild sleep disorders, 53.3% had moderate sleep disorders, and 6.7% suffered from severe sleep disorders. In contrast, the control group had similar results, with 0% reporting no disturbances, 33.3% with mild disorders, 46.7% with moderate disorders, and 20% experiencing severe sleep disorders. This indicates that both groups had a significant prevalence of sleep disturbances prior to the intervention.

Sleep Quality (Post-Intervention)

Post-intervention results showed a marked improvement in sleep quality for the intervention group, with 66.7% reporting mild sleep disorders and 33.3% with moderate disorders, while no respondents reported severe sleep disorders. The control group, however, showed a slight increase in the percentage of respondents with mild sleep disorders (33.3%) and moderate disorders (60%), with 6.7% still experiencing severe sleep disorders. This suggests that the intervention had a positive effect on the sleep quality of the intervention group, reducing the severity of sleep disturbances.

Statistical Analysis

Table 2 further elucidates the differences in sleep quality between the two groups. The pre-intervention mean sleep quality score for the intervention group was 8.40 (±3.35), while the control group had a higher mean score of 9.67 (±4.16). Post-intervention, the intervention group showed a significant improvement with a mean score of 7.27 (±3.41), compared to the control group's mean score of 9.87 (±3.46). The p-value of 0.048 indicates a statistically significant difference in sleep quality between the two groups post-intervention, suggesting that the intervention was effective in improving sleep quality among the respondents.

The data indicates that the intervention positively impacted sleep quality, particularly in the intervention group, while the control group showed less improvement. The findings highlight the importance of targeted interventions in addressing sleep disturbances, especially in older populations.

Table 1
Frequency distribution of respondents by age and gender, and sleep quality of respondents at Sunan Kalijaga Hospital in July-December 2024 (n=30)

Indicators	Group			
	Intervension		Control	
	n	%	n	%
Age				
40-50	0	0	3	20
51-60	10	66,7	6	40
61-70	5	33,3	5	33,3
71-80	0	0	1	6,7
Gender				
Male	5	33,3	6	40
Female	10	66,7	9	60
Sleep quality (Pre)				
No sleep disturbances (0)	0	0,00	0	0,00
Mild sleep disorders (1-7)	6	40,0	5	33,3
Moderate sleep disorders (8-14)	8	53,3	7	46,7
Severe sleep disorders (15-21)	1	6,7	3	20,0
Sleep quality (Post)				
No sleep disturbances (0)	0	0,00	0	0,00
Mild sleep disorders (1-7)	10	66,7	5	33,3
Moderate sleep disorders (8-14)	5	33,3	9	60,0
Severe sleep disorders (15-21)	0	0,00	1	6,7

Table 2
Differences in sleep quality between the control group and the intervention group

Indicators	Group		p (Independent)
	Intervension Mean (±SD)	Control Mean (±SD)	
Sleep quality (Pre)	8.40 (±3.35)	9.67 (±4.16)	-
Sleep quality (Post)	7.27 (±3.41)	9.87 (±3.46)	**0.048**[a]
p	**0.016**[b]	**0.582**[b]	

[a] Independent analysis
[b] Dependent analysis

Discussion

Results of pre-control sleep quality analysis and post-control sleep quality analysis

The results of the Paired sample t-test showed a significant value (p sign = 0.582) which concluded that the value of 0.582 was greater than <0.05 which showed that there was no difference between pre-control sleep quality and post-control sleep quality. The results of the analysis showed that there was no significant change in the sleep quality of diabetic melitus patients in the control group after the post test period.

Poor sleep quality in patients with diabetes mellitus is often caused by physical symptoms such as neuropathic pain, increased frequency of urination (polyuria), and anxiety related to disease management (Arifin, 2020). Poor sleep quality can have an impact on diabetic patients' glycemic control, with studies showing a positive relationship between sleep quality and blood glucose levels (Hussain, 2020). Factors such as age, duration of diabetes, and the presence of complications contributed to sleep quality, but the results showed that there was no significant difference in sleep quality in diabetic patients who were not given Benson relaxation interventions and aromatherapy (Tsai Y. e., 2019). Therefore, it is important to identify and treat the factors that cause sleep disorders in patients with diabetes mellitus more comprehensively.

The analysis showed that there was no significant change in the sleep quality of the diabetic melitus patients in the control group. This confirms the need for a more holistic approach to addressing sleep problems in patients with diabetes mellitus, including the management of physical and psychological symptoms that may contribute to sleep disorders.

Results of pre-intervention sleep quality analysis and post-intervention sleep quality

The results of the Wilcoxon test showed a significant value (p sign = 0.016) where it can be concluded that the value of 0.016 is smaller than <0.05 which shows that there is a difference

between the quality of pre-intervention sleep and the quality of post-intervention sleep after the Benson relaxation action and aromatherapy, The results of the analysis show that the application of Benson relaxation and aromatherapy significantly improves the sleep quality of patients with diabetes mellitus, Sleep quality is an important factor that affects the health of patients with diabetes mellitus. Sleep disturbances that are common in patients with diabetes mellitus can worsen their glycemic control and quality of life.

Improving sleep quality through this intervention is essential for the management of diabetes mellitus. Previous research has shown that poor sleep quality is closely related to uncontrolled blood glucose levels in diabetic patients. With the improvement of sleep quality, it is hoped that there will be improvements in the patient's glycemic control, thereby reducing the risk of long-term complications (Dewi Nanda Demur D. (., 2019). These interventions not only improve sleep quality but also potentially improve glycemic control in diabetic patients. Therefore, the application of relaxation and aromatherapy techniques can be recommended as part of holistic diabetes management (Alshahrani S. e., 2023). The results of the analysis showed that Benson's relaxation intervention and aromatherapy were effective in improving the sleep quality of patients with diabetes mellitus. The significant decrease in PSQI scores reflects that this method can be used as an additional strategy in diabetes management melitus to improve the overall quality of life of patients.

Differences in sleep quality between the control group and the intervention group

Based on the results of the Mann Whitney test, it was concluded that the value of 0.048 was smaller than 0.05, which showed that there was a difference between the sleep quality of the control group and the sleep quality of the intervention group. So it can be concluded that Ha is accepted. This means that "there is an effect of benson relaxation therapy and aromatherapy on the sleep quality of diabetic mellitis". The results of the analysis showed that the application of Benson relaxation and aromatherapy significantly improved sleep quality in patients with diabetes mellitus in the intervention group, while the control group showed no significant changes. A decrease in PSQI scores in the intervention group indicated that the patients had better sleep quality compared to the control group.

Benson Relaxation This technique focuses on reducing stress through meditation and deep breathing, which has been shown to be effective in improving sleep quality by reducing anxiety and tension, patients can fall asleep more easily (Mason, 2019). Lavender essential oil is known to have soothing properties that can help reduce anxiety and improve sleep quality. Aromatherapy can create an environment that supports relaxation, making it easier for patients to fall asleep (Hussain A., 2020). This analysis provides an in-depth understanding of how non-pharmacological approaches such as relaxation and aromatherapy can contribute to the management of diabetes mellitus through improving the quality of sleep of patients, as well as opening up opportunities for further research in this area to find other effective methods to improve the health of patients with diabetes mellitus.

Conclusion

Based on the results of the study, the provision of Benson relaxation techniques and aromatherapy has been proven to improve the sleep quality of diabetic mellitus patients. In conclusion, patients with diabetes mellitus can use Benson relaxation and aromatherapy as one of the independent ways to address their sleep problems.

Acknowledgement

The author expresses gratitude to all the respondents who participated in this research. The author also thanks all parties who have assisted in the implementation of the research and the publication of its results.

References

Adi Diantari, N. (2022). *Overview of Sleep Quality of Type II Diabetes Mellitus Patients at Mengwi III Health Center, Badung Regency.*

Al Ghazali, S. E. (2023). *Literature Review: Benson Relaxation Therapy Affects Sleep Quality of the Elderly.*

Alamer, W. M. (2022). *Prevalence of Sleep Disorders Among Patients With Type 2 Diabetes Mellitus in Makkah City: A Cross-Sectional Study. Cureus.*.

Alshahrani, F. &. (2022). *Association between quality of sleep and health-related quality of life in persons with type 2 diabetes mellitus. Diabetes Care. .*

Alshahrani, S. e. (2023). *Effect of Aromatherapy on Sleep Quality: A Systematic Review. International Journal of Nursing and Health Services, 6(5), 728–735.*

Arifin, Z. &. (2020). *Sleep Quality and Blood Sugar Levels in Type II Diabetes Mellitus Patients. .*

Dewi Nanda Demur, D. (2019). *The Relationship between Sleep Quality and Blood Sugar Levels in Type II Diabetes Mellitus Patients. .*

Faridah, I. A. (2020). *The Effect of Aromatherapy on Sleep Quality, Quality of Life, Fatigue and Anxiety in Diabetic Mellitus Patients*.

Hussain, A. (2020). *The Effect of Lavender Oil on Sleep Quality: A Systematic Review. Journal of Ethnopharmacology, 254.*

Irbar, I. D. (2023). *Non-Pharmacological Intervention in Diabetic Mellitus Patients with Sleep Disorders. .*

Kekenusa, R. S. (2020). *Age Relationship with the Incidence of Type 2 Diabetes Mellitus. .*

Khan, M. A. (2020). *Prevalence of Diabetes Mellitus and Its Associated Factors in Bangladesh.*.

Mason, M. &. (2019). *(2019). The Effects of Mindfulness and Relaxation Techniques on Sleep Quality in Patients with Diabetes. Diabetes Spectrum, 32(4), 293-29*.

Mazzone, T. e. (2022). *Influence of Gender in Diabetes Mellitus and Its Complication. Diabetes Research and Clinical Practice, 183, 109157.*

Najioh, S. (2020). *Relationship between Age, Gender, Body Mass Index and Blood Sugar Levels in Patients with Type Diabetes Mellitus 2 at the Pahandut Health Center in Palangka Raya.*

Ramdini, W. A. (2020). *The Relationship between Age and Gender to the Incidence Rate of Type 2 Diabetes Mellitus at Karsa Husada Hospital, Batu City.*

Rohmatulloh, V. R. (2024). *Age and Sex Relationship to the Incidence Rate of Type 2 Diabetes Mellitus Based on Diagnostic Criteria at the Internal Medicine Polyclinic of Karsa Husada Hospital, Batu City.*

Saroh, S. K. (2021). *Age and Sex Relationship to the Incidence Rate of Type 2 Diabetes Mellitus*, 2528-2543.

Tentero IN, P. D. (2023). *Benson's Relaxation Techniques to Improve Sleep Quality in Diabetes Mellitus Patients*.

Tsai, Y. e. (2019). *Sleep Quality and Its Association with Glycemic Control in Patients with Type 2 Diabetes Mellitus. Journal of Clinical Endocrinology & Metabolism.*

Vigg, A. e. (2018). *Sleep Quality in Patients With Type 2 Diabetes Mellitus: A Cross- Sectional Study. Journal of Diabetes Research*.