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Application of Benson's Relaxation Technique to Reduce Blood Glucose Levels in Type II Diabetes Mellitus Patients: A Case Study in Sukoanyar Village, Pakis District

Louris Sam Pratama[1], Zaqqi Ubaidillah[2]
Nursing Profession Program, Faculty of Health Sciences, Universitas Muhammadiyah Malang

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Corresponding author*:
zaqqi@umm.ac.id

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Abstract: Type II Diabetes Mellitus (T2DM) is a chronic metabolic disorder with a high prevalence that often leads to complications and reduced quality of life. Management of T2DM requires not only pharmacological therapy but also complementary non-pharmacological interventions such as Benson's relaxation technique, which may lower blood glucose levels through physiological and psychological mechanisms. This case study aimed to analyze the effectiveness of Benson's relaxation in reducing blood glucose levels in an elderly patient with T2DM. The subject was a 70-year-old woman residing in Cokro Hamlet, Sukoanyar Village, Pakis District, Malang Regency. The intervention was conducted over three consecutive days, with each session lasting 20 minutes. Data were collected through interviews, observation, and measurement of random blood glucose (RBG) before and after each intervention. The results showed a gradual reduction in blood glucose levels, from 462 mg/dL (pre) to 440 mg/dL (post) on day one, 325 mg/dL to 301 mg/dL on day two, and 164 mg/dL to 146 mg/dL on day three. The patient also reported reduced fatigue, decreased tingling, improved sleep quality, and a greater sense of calm after undergoing the therapy. These findings indicate that Benson's relaxation is a simple, safe, cost-effective, and feasible complementary intervention that can be practiced independently by patients and families at home, supporting holistic management of T2DM.

Keywords: Type II Diabetes Mellitus, Benson relaxation, blood glucose levels, non-pharmacological intervention, case study

INTRODUCTION

Diabetes mellitus (DM) is one of the most prevalent non-communicable diseases and represents a major global health challenge. This condition is characterized by chronic hyperglycemia resulting from impaired insulin production or action, which in the long term leads to multisystem complications (Kendek et al., 2023). According to the International Diabetes Federation (IDF) 2021 report, more than 537 million people worldwide were living with diabetes, and this figure is projected to reach 643 million by 2030 if effective prevention and management strategies are not implemented (Hananto et al., 2022). The increasing prevalence of diabetes is not only observed in developed nations but also in

developing countries, including Indonesia, which faces a dual burden of communicable and non-communicable diseases (Fikha, 2023).

In Indonesia, the Basic Health Research (Riskesdas) survey in 2018 reported a prevalence of 10.9% among adults, meaning that nearly one in ten adults lives with diabetes. This figure has increased compared to previous surveys and is strongly associated with lifestyle changes, unhealthy dietary patterns, and insufficient physical activity. A recent community study in Peniwen Village, Malang, in 2023 revealed undetected cases of diabetes among the elderly through random blood glucose screening. Following a health education intervention, knowledge levels among the elderly increased by 40%, highlighting the importance of preventive and educational approaches in diabetes care (Barasa et al., 2023). These findings emphasize the need for comprehensive management strategies that integrate both clinical treatment and community-based interventions.

Beyond its health implications, diabetes also imposes a substantial economic burden on healthcare systems. Treatment costs are particularly high due to long-term complications such as cardiovascular disease, diabetic nephropathy, neuropathy, and retinopathy, which not only reduce patients' quality of life but also increase the risk of premature death (Lukitasari & Adhitama, 2023). Diabetes management generally involves both pharmacological and non-pharmacological approaches. While pharmacological therapies such as oral antidiabetic drugs and insulin have proven effective in lowering blood glucose, they are often associated with adverse effects, hypoglycemia risk, and long-term dependence (Palupi et al., 2022). These limitations highlight the importance of non-pharmacological interventions as complementary strategies within holistic diabetes management.

One promising non-pharmacological intervention is the Benson relaxation technique, a simple method that integrates deep breathing, repetition of calming words or phrases, and positive suggestions to reduce stress and balance autonomic nervous system function (Puspitasari et al., 2023). This intervention is particularly relevant to diabetes pathophysiology, as chronic stress is known to increase cortisol and epinephrine secretion, which impair insulin sensitivity and stimulate hepatic glucose production (Qonita et al., 2024; Anoto et al., 2024). Consequently, stress management plays a crucial role in diabetes care, and Benson relaxation therapy has potential as a complementary approach to improve glycemic control (Sudrajat & Wati, 2023).

The Benson relaxation technique has several advantages over other methods, including ease of practice, low cost, and feasibility for independent application at home without the need for specialized equipment. Unlike pharmacological treatments, it is free from significant side effects, making it a safer option for long-term use (Robaiyani et al., 2024; Siahaan et al., 2023). Previous studies have reported the benefits of relaxation therapy in reducing stress and improving physiological balance; however, empirical evidence regarding its effectiveness in lowering blood glucose levels among diabetic patients remains limited, particularly in the Indonesian context (Mendrofa et al., 2024; Dewi et al., 2023).

Given these conditions, the central research problem is that the effectiveness of Benson relaxation therapy in reducing blood glucose levels among type II diabetes patients has not been systematically investigated at the community level. Therefore, this study aims to analyze changes in blood glucose levels before and after the implementation of Benson relaxation therapy in patients with type II diabetes. Specifically, the study seeks to provide evidence on the potential role of Benson relaxation therapy as a complementary, non-pharmacological intervention in nursing care.

The expected contributions of this study are multi-dimensional. For researchers, it offers empirical insights and expands scientific knowledge regarding the application of Benson relaxation therapy in diabetes management. For patients, it provides practical knowledge and self-management strategies to support better disease control. For healthcare services, the findings can inform the development of educational programs and non-pharmacological interventions in primary healthcare settings. Finally, this study may serve as a reference for future research, particularly large-scale clinical trials and mechanistic studies, to strengthen the evidence base for integrating Benson relaxation therapy into evidence-based nursing practice in Indonesia.

Preliminaries

Type II Diabetes Mellitus (T2DM) is a chronic metabolic disorder characterized by hyperglycemia resulting from insulin resistance and pancreatic β-cell dysfunction (Rosyidah & Cahyono, 2025). It accounts for 90–95% of all diabetes cases worldwide and is increasingly prevalent among younger populations due to sedentary lifestyles, obesity, and high-calorie diets (Hardianto, 2021). The major risk factors include genetic predisposition, aging, obesity, and unhealthy lifestyle behaviors (Harefa, 2023).

Pathophysiologically, T2DM involves multifactorial mechanisms such as insulin resistance, impaired insulin secretion, chronic inflammation, oxidative stress, lipotoxicity, and genetic susceptibility, which progressively damage pancreatic β-cell function (Galicia-Garcia et al., 2020).

The clinical manifestations of T2DM develop gradually, often remaining unnoticed until detected by laboratory tests. Classic symptoms include polyuria, polydipsia, and polyphagia, while complications encompass both microvascular (retinopathy, nephropathy, neuropathy) and macrovascular conditions (coronary artery disease, stroke, peripheral artery disease) (Setiawan, 2021; Pakaya, 2022). Diagnosis is confirmed through plasma glucose tests, HbA1c, and oral glucose tolerance tests, while routine monitoring is essential for early detection of complications (ADA, 2022). The management of T2DM involves five major pillars: patient education, nutritional therapy, physical activity, pharmacological treatment, and glucose monitoring, all aimed at achieving optimal glycemic control and preventing long-term complications (Mufidah et al., 2024).

Among non-pharmacological interventions, Benson's relaxation technique has gained attention as a complementary strategy. First introduced in the 1970s, the method elicits a relaxation response—a physiological state counteracting the stress response (Maftuhin & Yazid, 2025). It combines deep breathing, muscle relaxation, and repetition of calming words or phrases, often with a spiritual element, thereby reducing sympathetic activity and enhancing parasympathetic dominance. In the context of diabetes, this therapy helps lower stress hormones such as cortisol, adrenaline, and norepinephrine, which otherwise contribute to insulin resistance and increased blood glucose levels (Purwaningsih et al., 2025). Previous studies have demonstrated that Benson relaxation can reduce blood glucose levels, alleviate stress and fatigue, and improve sleep quality in patients with T2DM (Ratnawati et al., 2018; Sari, 2020; Saleh, 2023).

The procedure is typically conducted in about 20 minutes, beginning with preparing a calm environment and patient positioning, followed by deep breathing, muscle relaxation, and repetition of short prayers or phrases, visualization of peaceful imagery, and ending with calm breathing. Its simplicity, low cost, and potential for independent practice make it an accessible and sustainable complementary therapy in holistic diabetes management (Malisa et al., 2016; Fajria et al., 2024).

Despite its potential, empirical evidence regarding the effectiveness of Benson relaxation in reducing blood glucose levels among patients with T2DM in Indonesia

remains limited. Most existing studies have focused on psychological outcomes such as stress reduction or improved quality of life, while fewer have examined its physiological impact on glycemic control (Mendrofa et al., 2024; Dewi et al., 2023). Therefore, further research on the implementation of Benson relaxation therapy in community-based settings is essential to strengthen the scientific evidence, enrich the national literature, and provide an empirical foundation for integrating non-pharmacological interventions into evidence-based primary healthcare services for T2DM.

RESEARCH METHOD

This study was conducted in Sukoanyar Village, Cokro Hamlet, Pakis District, Malang Regency, East Java Province, from May 7 to May 9, 2025. The research design employed a case study approach focusing on a single patient diagnosed with Type II Diabetes Mellitus. The subject was Mrs. W, a 70-year-old woman residing in RT 01 RW 01, Sukoanyar Village. The subject was selected using purposive sampling, with the rationale that patients with Type II Diabetes Mellitus who do not receive adequate treatment are at high risk of developing serious complications due to uncontrolled blood glucose levels.

Data were collected through three methods: interviews, observation, and documentation. Interviews were conducted directly with the patient and her family to obtain subjective data related to health conditions, medical history, main complaints, and the patient's perception of her illness. Observation was performed to record objective data regarding the patient's physical condition and responses to nursing interventions. Documentation was carried out to systematically record and validate data obtained from interviews and observations, supported by relevant nursing records.

The collected data were analyzed descriptively using the nursing care process framework, which included assessment, diagnosis, planning, intervention, implementation, and evaluation. This analysis emphasized the factual description of the patient's condition and the effectiveness of the nursing interventions provided.

Ethical considerations were strictly applied throughout the study. Informed consent was obtained from the patient on a voluntary basis without coercion. The patient's right to privacy was respected, and confidentiality of personal information was maintained. Anonymity was ensured by referring to the patient using the initials "Mrs. W." All information gathered was solely used for research purposes and protected under confidentiality principles.

RESULT

Case Report

The study was conducted on Mrs. W, a 70-year-old female residing in Cokro Hamlet, Sukoanyar Village, Pakis District, Malang Regency, East Java. The patient had an educational background limited to elementary school and worked as a traditional herbal drink vendor twice a week. She was diagnosed with Type II Diabetes Mellitus through routine examinations at the elderly health post (*posyandu lansia*) run by Pakis Community Health Center. During the initial assessment on May 7, 2025, the patient had not been on consistent pharmacological therapy and had only received lifestyle and dietary counseling from healthcare workers.

The patient reported fatigue, tingling and numbness in her feet, sleep disturbances, and psychological stress related to family circumstances, as most of her children live far from home. Her past medical history included gout over the last six months and a fall incident in the bathroom. Family history revealed that her mother also suffered from diabetes.

Daily activities were relatively structured, although physical endurance was limited due to fatigue and neck pain. Her diet mainly consisted of rice or corn rice, tofu, tempeh, fish, and vegetables. Fluid intake was approximately 1.5 liters per day, supplemented with occasional tea or coffee. No elimination disturbances were reported. Sleep patterns, however, were poor: she slept only about 4 hours per night, often waking up and being unable to return to sleep. Personal hygiene was well-maintained, as shown by her routine bathing, tooth brushing, and nail care.

Physical examination on May 7, 2025, revealed a generally stable condition with full consciousness (compos mentis). Vital signs included blood pressure of 149/98 mmHg, heart rate of 112 beats per minute, respiratory rate of 20 breaths per minute, body temperature of 36.3 °C, and oxygen saturation of 98%. Random blood glucose (RBG) measurement indicated hyperglycemia with a level of 462 mg/dL.

Data Analysis and Nursing Diagnosis

Based on the assessment, the primary nursing diagnosis established according to the *Indonesian Nursing Diagnosis Standard* (SDKI) was **unstable blood glucose level (D.00027)** related to hyperglycemia and impaired glucose tolerance, evidenced by an RBG level of 462 mg/dL, accompanied by symptoms of fatigue, tingling, and disturbed sleep.

Nursing Implementation

Nursing care was carried out over three consecutive days (May 7–9, 2025), focusing on the application of Benson's relaxation technique as a non-pharmacological intervention to help reduce blood glucose levels. The patient was instructed to sit comfortably, close her eyes, calm her mind, and progressively relax muscle groups from the feet to the face. She was then guided to inhale deeply through the nose, hold her breath for three seconds, and exhale slowly through the mouth while reciting the prayer *"Allahumma sholli 'ala sayyidina Muhammad."* Each relaxation session lasted approximately 20 minutes and was conducted once daily.

During each intervention, blood glucose levels were measured before (pre) and after (post) therapy using a glucometer. Additional counseling was provided to the patient and her family regarding the importance of stress management, dietary control, and lifestyle adjustments.

Intervention Outcomes

The results of RBG measurements before and after the intervention are presented in Table 4.1.

Table 4.1. Random Blood Glucose (RBG) levels before and after intervention

Day	Pre (mg/dL)	Post (mg/dL)
I	462	440
II	325	301
III	164	146

On the first day, RBG decreased from 462 mg/dL pre-intervention to 440 mg/dL post-intervention. On the second day, levels declined from 325 mg/dL to 301 mg/dL. On the third day, RBG further decreased from 164 mg/dL to 146 mg/dL. These findings indicate a consistent downward trend in blood glucose levels over the course of the intervention, although reductions per session were modest.

Evaluation

Daily evaluations revealed both subjective and objective improvements. The patient reported reduced fatigue, better sleep quality, and increased feelings of calmness. She also expressed willingness to continue practicing Benson's relaxation independently. Objectively, blood glucose levels showed progressive decreases, although they remained above normal limits. These results suggest that the intervention positively impacted both physiological and psychological aspects of the patient's condition.

Discussion

The findings in Mrs. W's case demonstrate that Benson's relaxation technique can positively influence blood glucose regulation and overall well-being. Physiologically, the technique reduces sympathetic nervous system activity and enhances parasympathetic dominance, which lowers stress hormone secretion (cortisol, epinephrine, norepinephrine). This mechanism suppresses hepatic gluconeogenesis and glycogenolysis while improving peripheral insulin sensitivity (Nazari et al., 2023; Sumiati et al., 2021). Psychologically, the inclusion of prayer provided spiritual comfort, improved religious coping, and reduced anxiety. This aligns with studies showing that Benson's relaxation effectively decreases diabetes distress and enhances quality of life (Septimar et al., 2021; Montazeri et al., 2025).

These findings are consistent with previous research. Mukarromah & Kurdi (2025) reported significant glucose reduction in elderly T2DM patients after regular Benson relaxation therapy. Similarly, Komariah & Rahayu (2020) found that three consecutive days of Benson relaxation reduced blood glucose from 220 mg/dL to 190 mg/dL. Such evidence reinforces Benson's relaxation as a safe, inexpensive, and easily taught complementary therapy that patients can practice independently at home.

Recommendations for Continued Therapy

Based on the findings, it is recommended that Benson's relaxation be integrated into routine diabetes management programs. The therapy should be performed at least twice daily for 15–20 minutes per session. Continuous patient education, regular glucose monitoring, and psychosocial evaluation are crucial for sustaining long-term benefits. Family involvement as a primary support system is also essential to maintain patient motivation and adherence. Furthermore, a multidisciplinary collaboration among nurses, physicians, psychologists, and spiritual counselors is recommended to optimize the

intervention's impact, not only on clinical outcomes but also on psychological and spiritual well-being.

CONCLUSION

Conclusion

Based on the case study of Mrs. W, a 70-year-old woman diagnosed with Type II Diabetes Mellitus, it can be concluded that the application of Benson's relaxation technique had a positive impact on both physiological and psychological outcomes. The intervention, conducted over three consecutive days with a duration of 20 minutes per session, demonstrated a gradual reduction in blood glucose levels. Furthermore, the patient reported decreased tingling sensations, improved sleep quality, and a greater sense of calm and relaxation.

These findings suggest that Benson's relaxation technique is an effective, simple, low-cost, and feasible non-pharmacological intervention that can be practiced independently by patients and families at home. The results also reinforce the importance of a holistic nursing approach that integrates physiological, psychological, and spiritual dimensions in the management of Type II Diabetes Mellitus, particularly among elderly patients.

Recommendations

1. For the Community

   This study is expected to increase public awareness and knowledge regarding the importance of non-pharmacological care, particularly Benson's relaxation technique, in supporting blood glucose control among individuals with Diabetes Mellitus. Families, as the primary support system, are encouraged to actively guide and assist patients in practicing this technique regularly at home.

2. For the Advancement of Nursing Science

   The findings of this study can serve as a foundation for developing complementary nursing interventions oriented toward holistic care. Benson's relaxation therapy has the potential to be integrated into nursing practice, not only for patients with Diabetes Mellitus but also for individuals with other chronic illnesses influenced by psychological stress.

3. For Future Researchers

   This study is expected to provide a reference for future research examining the effectiveness of Benson's relaxation technique with larger sample sizes and more rigorous designs, such as quasi-experimental or clinical trials. It is also recommended that the therapy be implemented more frequently, for example twice daily, to further evaluate its effectiveness in lowering blood glucose levels and improving overall patient outcomes.

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