

The Effect of Benson Relaxation and Asmaul Husna Chanting on Blood Glucose Levels in Patients with Diabetes Mellitus: A Quasi-Experimental Study

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Abstract

Background: Diabetes mellitus is one of the most prevalent non-communicable diseases worldwide and remains a major public health concern due to its increasing incidence and risk of severe complications. Uncontrolled blood glucose levels may lead to cardiovascular, renal, neurological, and visual impairments. In addition to pharmacological management, complementary non-pharmacological interventions such as Benson relaxation and the chanting of *Asmaul Husna* may contribute to glycemic control by reducing psychological stress and promoting physiological relaxation. **Aims:** This study aimed to determine the effect of a combined Benson relaxation and *Asmaul Husna* chanting intervention on blood glucose levels among patients with diabetes mellitus. **Methods:** A quasi-experimental study with a one-group pretest–posttest design was conducted at Dr. Soekardjo Regional General Hospital, Tasikmalaya, Indonesia. Twenty-one patients with diabetes mellitus were recruited using purposive sampling. Participants received a combined intervention consisting of Benson relaxation and audio-guided *Asmaul Husna* chanting for 20 minutes per session, three times within one week. Random blood glucose levels were measured before the first intervention and after the final session using a calibrated point-of-care testing (POCT) glucometer. Data were analyzed using the Wilcoxon signed-rank test with a significance level of $p < 0.05$. **Results:** The mean pre-intervention blood glucose level was 310.48 ± 86.57 mg/dL, which decreased to 216.62 ± 43.04 mg/dL following the intervention. The average reduction in blood glucose level was 93.86 mg/dL. Statistical analysis demonstrated a significant difference between pre- and post-intervention measurements ($p = 0.001$). **Conclusion:** The combination of Benson relaxation and *Asmaul Husna* chanting was effective in reducing blood glucose levels among patients with diabetes mellitus. This intervention may serve as a complementary nursing strategy to support glycemic control alongside standard medical treatment. Further studies employing larger sample sizes and controlled experimental designs are recommended to strengthen the evidence for its clinical effectiveness.

Keywords: diabetes mellitus, blood glucose levels, benson relaxation, asmaul husna



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Introduction

Non-communicable diseases (NCDs) are diseases not caused by pathogenic microorganisms or that are not transmitted between individuals, such as heart disease,

diabetes, chronic obstructive pulmonary disease, and cancer. The main risk factors for NCDs include unhealthy lifestyles such as poor diet, lack of physical activity, smoking, and excessive alcohol consumption. One of the

NCDs that can cause the most deaths is diabetes mellitus (Wahidin et al., 2023). Diabetes mellitus is a disease that occurs when the body cannot properly regulate blood glucose levels due to disorders in insulin production or insulin utilization. This disease is often associated with an unhealthy lifestyle, such as a diet high in sugar and fat, and a lack of physical activity. Diabetes can lead to serious complications such as organ damage, circulatory disorders, and a high risk of heart disease (Sartika et al., 2020).

The increasing prevalence of diabetes mellitus worldwide is a serious global health problem with major implications for society and the healthcare system. Data from the International Diabetes Federation (IDF) shows that the number of people living with diabetes in Indonesia increases annually, starting in 2020 with 18 million and increasing to approximately 19.5 million in 2021. This annual increase has resulted in Indonesia's ranking as the country with the highest number of people living with diabetes in the world, from 7th to 5th. Therefore, this trend has become a serious health issue. The annual increase in diabetes requires attention, including dietary habits, a healthy diet, and obesity (Kusnaningsih, 2019).

Diabetes mellitus is a significant health problem in Indonesia. According to the 2018 Basic Health Research (Riskesmas), the prevalence of diabetes in Indonesia is approximately 6.9 percent of the adult population. Meanwhile, in West Java, the prevalence of diabetes was 1.3% in 2013 and increased to 1.7% in 2018. The highest prevalence of diabetes is found in urban areas, with 1.9% and 1.0% in rural areas (Bangun & Ningsih, 2021).

According to data from the Tasikmalaya City Health Office, there were 4,928 residents with diabetes mellitus in January 2021 (Falah et al., 2023). Data compiled by the Medical Records Department at Dr. Soekardjo Regional Hospital in Tasikmalaya showed that 305 people were hospitalized with diabetes between January and November 2023. This indicates an annual increase, with diabetes ranking fifth among the top 10 inpatient illnesses. One sign of diabetes mellitus is elevated blood glucose levels (BG). Blood glucose levels are a source of energy for cells in the body. Monitoring or controlling blood glucose levels can be done through diet, regular exercise, and medication. High blood glucose levels over a long period of time can cause various problems. Some of the effects of elevated blood glucose levels include blood vessel damage, nerve damage (neuropathy), kidney problems, and even vision impairment. Therefore, proper treatment is necessary to lower blood glucose levels (Sulastri, 2022).

Complaints experienced by DM patients, including elevated blood glucose levels, can cause stress or anxiety. Stress can trigger biological responses, such as increased

adrenocorticotrophic hormone (ACTH) and cortisol, which impact insulin function, thus worsening blood glucose level management. Possible treatments include pharmacological treatments (e.g., taking medication) and non-pharmacological treatments (e.g., Spiritual Emotional Freedom Technique (SEFT), Quranic recitation, progressive muscle relaxation, aromatherapy, Benson relaxation, and the Asmaul Husna (the Beautiful Names of Allah). Benson relaxation therapy can reduce anxiety and induce a relaxing effect, thus reducing anxiety and lowering blood glucose levels (Ratnawati et al., 2018).

Research (Sumiati, Jumari, & Purnama, 2021) concluded that there was a significant decrease in blood glucose levels after Benson relaxation treatment in patients with Type 2 Diabetes Mellitus. Research conducted by (Dewi et al., 2020) concluded that Benson Relaxation can lower blood glucose levels in patients with Type 2 Diabetes Mellitus. This aligns with research (Sahwan & Hirdayanti, 2023) that Asmaul Husna is a complementary therapy in nursing that can reduce blood glucose levels. The effects of reciting Asmaul Husna can lead to a sense of inner peace, an increased connection with God, remembrance and reflection on God's beautiful and noble attributes, and the purification of the heart and soul from negative traits. This treatment can lower blood glucose levels, as stress and anxiety can trigger physiological responses by activating the parasympathetic nervous system, which helps the body return to a relaxed state.

Conceptually, combining these two techniques has a better impact on controlling blood glucose levels. This is evidenced by research conducted by Cahyati et al. (2020), which concluded that there was a difference in average blood glucose levels before and after Benson Relaxation and Aromatherapy in patients with type 2 diabetes mellitus. Another study conducted by Sari and Sajili (2020) also concluded that Benson Relaxation and Quranic recitation therapy of Surah Ar-Rahman can reduce blood glucose levels in diabetes patients.

To the best of our knowledge, no research has combined Benson Relaxation with the recitation of the Asmaul Husna (the Beautiful Names of Allah). Therefore, we are interested in combining Benson Relaxation with the recitation of the Asmaul Husna (the Beautiful Names of Allah). Based on preliminary studies, data from Dr. In addition to being unheard of, this complementary therapy has not been widely publicized due to the hospital's focus on medication or insulin. Therefore, researchers were interested in combining Benson relaxation therapy with the recitation of the Asmaul Husna (the Beautiful Names of Allah) to reduce blood glucose levels in patients with diabetes mellitus.

This study aims to determine the effect of Benson relaxation combined with the recitation of the Asmaul

Husna (the Beautiful Names of Allah) on reducing blood glucose levels in patients with diabetes mellitus at Dr. Soekardjo Regional Hospital, Tasikmalaya.

Methods

This study employed a quantitative approach with a quasi-experimental one-group pre-test and post-test design. The research was conducted at Dr. Soekardjo Regional General Hospital, Tasikmalaya, from March 25 to April 6, 2024. A total of 21 respondents were selected using a non-probability purposive sampling technique based on specific criteria. The inclusion criteria were Muslim patients diagnosed with diabetes mellitus, presenting with random blood glucose levels >200 mg/dL, and actively consenting to participate. Exclusion criteria included patients with severe hearing impairments, diagnosed psychiatric disorders, or those who chose to withdraw during the study timeline.

Intervention Protocol and Instrumentation The intervention combined standard Benson Relaxation Standard Operating Procedures (SOP) with the simultaneous audio-delivered chanting of the Asmaul Husna via headphones. Each respondent underwent the session for 20 minutes per day, three times a week, administered consecutively by the primary researcher to ensure standard implementation. Random blood glucose levels were measured immediately before the first session (pre-test) and right after the completion of the final session of the week (post-test). Blood glucose measurements were performed using a calibrated point-of-care testing (POCT) glucometer (Accu-Chek Performance model) utilizing identical batch test strips for all participants to preserve device instrumentation consistency.

Statistical Analysis Data were analyzed using the statistical package software. Prior to hypothesis testing, a Shapiro-Wilk normality test was executed, which revealed that the blood glucose dataset was not normally distributed ($p < 0.05$). Consequently, the non-parametric Wilcoxon signed-rank test was chosen to determine the significance of differences between pre-intervention and post-intervention mean values, utilizing a statistical significance threshold of $p < 0.05$. The study approval was obtained from Komisi Etik Penelitian Kesehatan Fakultas Ilmu dan Teknologi Kesehatan Universitas Jenderal Achmad Yani Cimahi (Approval number: 043/KEPK/FITKes-Unjani/II/2024 on 23 Februari 2024).

Results

Table 1 presents the distribution of participant characteristics, including age, gender, educational attainment, and duration of diabetes mellitus. The majority of participants were aged 46–60 years (adult/degenerative age group), accounting for 15 individuals (71.4%), while those aged above 60 years represented 6 individuals (28.6%). Regarding gender distribution, most participants were male, comprising 13 individuals (61.9%), whereas female participants numbered 8 (38.1%). In terms of educational attainment, the majority had completed elementary school education, totaling 16 individuals (76.2%), while 5 individuals (23.8%) had secondary education or higher. Based on the duration of diabetes mellitus, most participants had been diagnosed for less than 5 years, representing 18 individuals (85.7%), whereas only 3 individuals (14.3%) had a disease duration of 5 years or more. Overall, the data indicate that the study population was predominantly composed of middle-aged adults, male participants, individuals with low educational attainment, and those with a relatively short duration of diabetes mellitus.

Table 1. Demographic Characteristics of Participants (n = 21)

Characteristic	Frequency (n)	Percentage (%)
Age Group		
46–60 years (Adult/Degenerative Age)	15	71.4
>60 years (Elderly)	6	28.6
Gender (Final Included Sample)		
Male	13	61.9
Female	8	38.1
Educational Attainment		
Elementary School (SD Graduate)	16	76.2
Secondary Education/Higher	5	23.8
Duration of Diabetes Mellitus		
<5 Years	18	85.7
≥ 5 Years	3	14.3

The results of the statistical test obtained a p-value = 0.001 (p -value < 0.05), so it can be concluded that there is a difference in the average blood glucose levels before and after the intervention (Table 2).

Table 2. The average distribution of blood glucose levels of patients with diabetes mellitus

Variabel	Mean	SD	Min-Max	Differences	p.value
Blood glucose levels before	310.48	86.572	209-600	93.86	0.001
Blood glucose levels after	216.62	43.041	168-326		

Discussion

Respondent characteristics

The majority of respondents were aged 46-60 years. Several theories suggest that the risk of developing diabetes mellitus increases with age. This risk is often diagnosed after age 45, as the aging process decreases the tissue's ability to manage blood glucose levels (Gayatri et al., 2022). Other studies also indicate that certain diseases are more common in adults (>40 years), one of which is diabetes mellitus. People over 40 are more susceptible to developing diabetes mellitus, especially those who are overweight and rarely engage in physical activity. This is because age 40 and above is categorized as a degenerative age. Degenerative processes lead to a decline in the function of beta cells in the pancreas, which produce insulin, and reduced insulin production (Sulastris, 2022).

The gender distribution in this study showed that the majority of participants were male (61.9%), while females accounted for 38.1% of the sample. This finding reflects the characteristics of respondents who met the inclusion criteria. Although previous studies suggest that women may have a higher risk of developing diabetes mellitus due to hormonal changes such as menopause, which can lead to increased fat accumulation (Febrinasari et al., 2020), the distribution in this study may be influenced by the sampling method and specific inclusion criteria applied.

Physiologically, women experience a more rapid increase in body weight or body mass index (BMI) compared to men. Men have higher calorie needs due to their greater activity levels, which leads to increased muscle calorie requirements. Although men and women weigh the same, there is a 10% difference in calorie needs between men and women (Murtiningsih et al., 2021).

In this study, the majority of respondents had only an elementary school education. People with diabetes mellitus with low education often lack broad and specific health knowledge, making them less able to maintain their health (Paris et al., 2023). These findings align with research conducted by Dewi et al. (2019), which found that the majority of respondents (56.3%) had a primary education (SD). This finding corroborates the link between education and dietary adherence in diabetes mellitus patients at the Ploserejo Giribangun Matesih Community Health Center in Karanganyar Regency. The aforementioned findings align with research conducted by Hanapi (2023), which found that the majority of respondents had a primary education (73.0%). Education is a crucial factor in life, both for health and other aspects.

A person with a higher education will have broader knowledge in several aspects, including health. A higher education also provides a broader knowledge of health, which reduces the risk of various diseases, including diabetes mellitus.

Regarding the duration of diabetes mellitus, the study conducted at Dr. Soekardjo Regional Hospital in Tasikmalaya found that the majority of patients had less than 5 years. The above research aligns with research by Diani et al., 2019, which found that the average duration of diabetes in this study was 5 years, with the lowest duration being 1 year and the highest being 12 years. Respondents with long-standing diabetes mellitus are at higher risk of complications than newly diagnosed patients. However, if the duration of diabetes is balanced with a healthy lifestyle, a good quality of life will be achieved (Sasombo et al., 2021).

Another study conducted by Paris et al., 2023, found that the majority of people living with diabetes were less than 3 years old. The longer the duration of diabetes mellitus, the worse the quality of life. Poor quality of life is also associated with poor adherence to diabetes management, which includes regular blood glucose monitoring.

Benson Relaxation and Asmaul Husna Recitation on Lowering Blood Glucose Levels

The results of this study indicate that the average blood glucose level before the intervention was relatively high, with a random blood glucose level exceeding 200 mg/dl. Many risk factors for diabetes mellitus contribute to elevated blood glucose levels, particularly an unhealthy diet. Blood glucose levels are a form of sugar or carbohydrate present in the bloodstream. Blood glucose is the primary source of energy for cells in the body. When blood glucose levels increase, it can lead to metabolic disorders, so maintaining adequate nutrition is crucial for maintaining stable blood glucose levels (Jiwintarum et al., 2019). Complaints experienced by diabetes mellitus patients, including elevated blood glucose levels, can cause stress or anxiety. Stress can trigger a biological response, including increased adrenocorticotrophic hormone (ACTH) and cortisol, which can impact insulin performance, thus worsening blood glucose level management (Ratnawati et al., 2018).

This aligns with a journal that states that stress can also increase the stimulation of endocrine organs to release epinephrine. Epinephrine has a very powerful effect in

causing gluconeogenesis in the liver, thereby releasing large amounts of glucose into the blood within minutes (Mustaqim et al., 2023). Research (Fitri et al., 2021) shows that the risk of developing diabetes mellitus caused by anxiety or stress can negatively impact physical and mental health. Therefore, relaxation therapy is necessary to lower blood glucose levels. Research (Sari, 2020) concluded that there was an effect of Benson Relaxation on reducing blood glucose levels in the Plaju Palembang Community Health Center work area with a p-value of 0.001 (<0.05), indicating that Benson Relaxation can lower blood glucose levels in older adults with diabetes mellitus.

This is in line with research by Ratnawati et al., 2018, which found that Benson Relaxation reduced blood glucose levels in the Limo Depok Community Health Center (Puskesmas Limo Depok) with a p-value of 0.001 (<0.05), indicating that modified Benson Relaxation was effective in controlling blood glucose levels in elderly patients with diabetes mellitus.

Furthermore, research conducted by Dewi et al., 2019, showed an increase after Benson Relaxation therapy, with the average blood glucose level increasing from 218.40 mg/dl to 206.72 mg/dl, with a p-value of 0.001, indicating a difference in blood glucose levels before and after the intervention. This study used relaxation therapy, namely Benson Relaxation, combined with the recitation of the Asmaul Husna (Asmaul Husna). Benson Relaxation can reduce anxiety and increase relaxation, which can suppress the release of epinephrine. Epinephrine acts on the liver to increase the conversion of glycogen to glucose under stress. Meanwhile, cortisol secretion can inhibit the metabolism of glucose, amino acids, lactate, and pyruvate, which are converted in the liver into glucose for energy storage.

Glucagon can raise blood glucose levels by converting glycogen in the liver, a carbohydrate stored in mammals, into glucose. This can raise blood glucose levels by stimulating ACTH (also known as cortisol) and glucocorticoids located in the adrenal cortex, thereby increasing the formation of new glucose in the liver. Benson's method activates the parasympathetic nervous system, leading to a state of relaxation. This relaxation reduces physical and psychological stress and decreases the release of stress hormones such as epinephrine and cortisol, which are known to increase blood glucose levels through gluconeogenesis and glycogenolysis in the liver. By reducing these hormones, glucose production is suppressed, ultimately contributing to lower blood glucose levels. Additionally, relaxation may improve insulin sensitivity, allowing glucose to be more effectively utilized by body cells (Khairani et al., 2023).

Chanting the Asmaul Husna (the Beautiful Names of Allah) can lower blood glucose levels, particularly for health. When heard, the sound stimulation or chanting

of the Asmaul Husna increases the release of endorphins, which induce relaxation. When relaxed, the breathing rate slows, the brain becomes clearer for thinking, emotions are controlled, and metabolism improves. Therefore, a healthy metabolism can result in lower blood glucose levels (Sahwan & Hirdayanti, 2023). The results of this study are supported by a literature review conducted by researchers in seven journals. It was found that pharmacological treatment or medication prescribed by a doctor alone is not sufficient to lower blood glucose levels in diabetes mellitus patients. However, Benson relaxation combined with the recitation of the Asmaul Husna (Asmaul Husna) can be an alternative, complementary, non-pharmacological effort to control blood glucose levels in diabetes mellitus patients.

This study has limitations, including a small sample size ($n = 21$) and the absence of a control group, which may limit generalizability and causal interpretation. In addition, several physiological variables that may influence blood glucose levels, such as dietary intake, physical activity, stress levels, and medication adherence, were not fully controlled in this study. Future studies are recommended to use larger samples and more rigorous designs, such as randomized controlled trials, while also controlling for these potential confounding factors to confirm these findings.

Conclusion

The combination of Benson relaxation and Asmaul Husna chanting was significantly associated with a reduction in random blood glucose levels among patients with diabetes mellitus at Dr. Soekardjo Regional Hospital, Tasikmalaya. The clinical cohort experienced a meaningful reduction in mean blood glucose levels from 310.48 mg/dL to 216.62 mg/dL. Given the limitations of the one-group pre-test–post-test design and small sample size, these results support the intervention as a viable complementary nursing option rather than a replacement for standardized medical regimens. Future researchers should undertake multi-centered controlled studies with larger samples to firmly isolate causal impacts.

Declaration of Conflicting Interest

No conflict of interest to declare.

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Author's Contribution

ERA: contributed to the study's conception and design, data acquisition, and data analysis, and wrote the first draft of the manuscript. YC: Revised the final draft and gave final approval of the version to be published. AR: Revised the final draft

Data Availability Statement

The dataset generated during and analyzed during the current study is available from the corresponding author upon reasonable request.

Declaration of Use of AI in Academic Writing

The author used ChatGPT/Gemini in the writing process to improve readability and remove grammatical errors. However, he took full responsibility for the content.

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