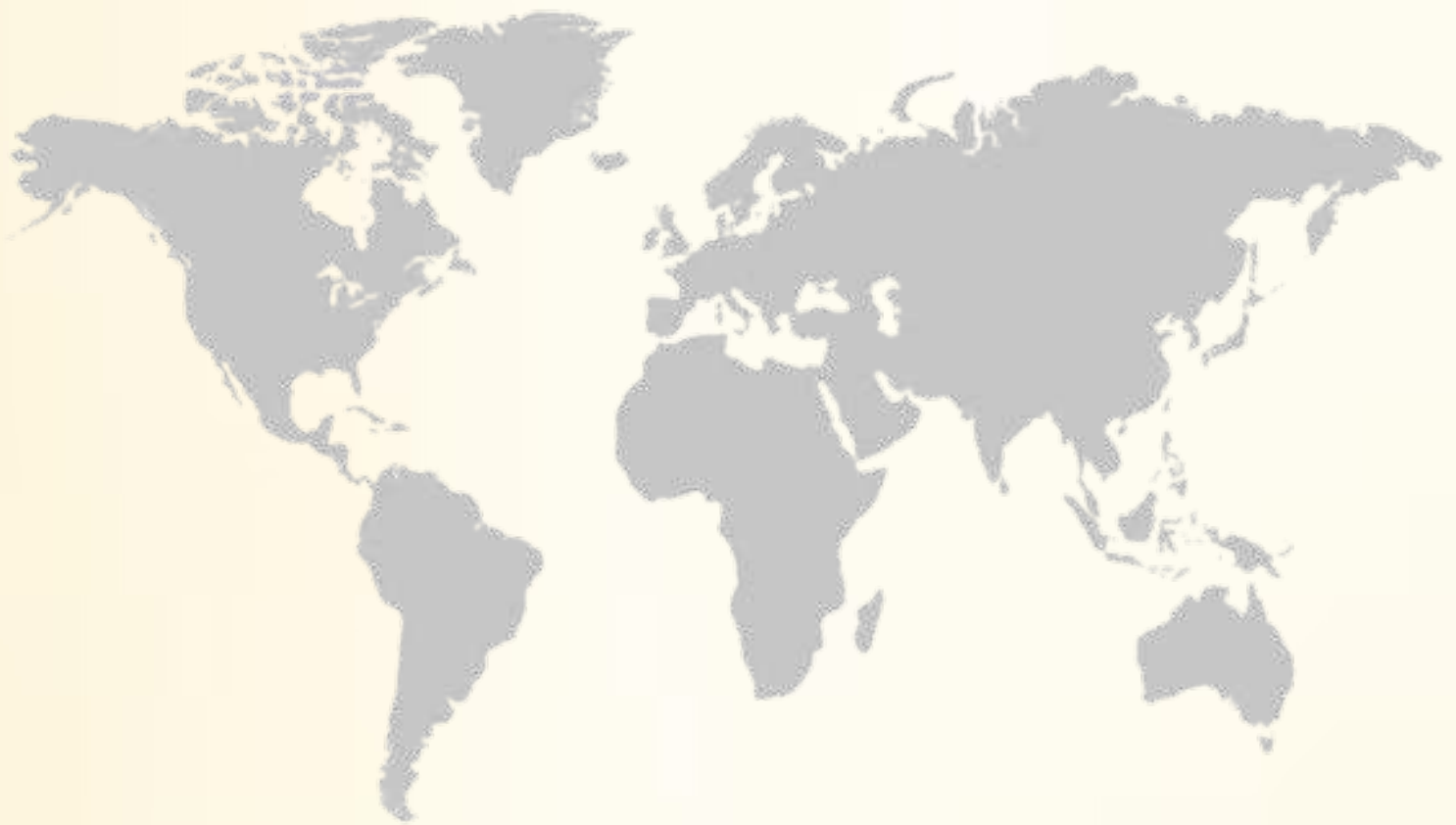


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Autogenic Relaxation as a Supportive Nursing Intervention in Type 2 Diabetes Mellitus: A Single-Patient Case Study

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Abstract

Background: Type 2 diabetes mellitus is often accompanied by unstable blood glucose levels and is closely related to daily self-care. Psychological stress may activate sympathetic and counter-regulatory hormonal responses that can worsen glycemic control, supporting stress management as one component of comprehensive diabetes care.

Objective: This case study aimed to describe the application of autogenic relaxation as a supportive nursing intervention for a patient with type 2 diabetes mellitus and unstable blood glucose levels.

Methods: A descriptive single-patient case study, reported with reference to the CARE guideline, was conducted in the Tawang Alun inpatient ward of Blambangan Banyuwangi Regional General Hospital in 2025. The case was selected because the patient had type 2 diabetes mellitus with hyperglycemia, symptoms of glucose instability, and willingness and ability to follow relaxation instructions. Nurse-guided autogenic relaxation was provided once daily for three consecutive days (10–15 minutes/session) using a consistent sequence. Blood glucose, subjective complaints, vital signs, peripheral perfusion, and wound condition were observed descriptively alongside insulin therapy, dietary management, glucose monitoring, wound care, and health education. Written informed consent for publication of anonymized clinical information was obtained from the patient. Formal research ethics approval was not sought because the report retrospectively describes routine, non-experimental nursing care; the intervention formed part of care and no additional research procedure was performed.

Results: At the initial nursing assessment, the patient reported weakness, dizziness, thirst, nocturia, and tingling in both feet, with blood glucose of 378 mg/dL. Documented pre-/post-session values were 329/320 mg/dL (day 1), 303/296 mg/dL (day 2), and 160/150 mg/dL (day 3). These changes occurred during comprehensive inpatient care that included insulin, dietary management, wound care, education, and monitoring; therefore, the contribution of relaxation cannot be isolated. The patient reported feeling stronger and no longer dizzy by day 3.

Conclusion: Autogenic relaxation was feasible and completed as a supportive nursing intervention in this single case. Effectiveness cannot be inferred from one uncontrolled case, and the observed improvement cannot be attributed to relaxation alone. Medication, dietary control, glucose monitoring, wound and foot care, education, and follow-up remain central to comprehensive diabetes management.

Keywords: Autogenic relaxation; blood glucose; case study; nursing care; type 2 diabetes mellitus.

INTRODUCTION

Type 2 diabetes mellitus is frequently encountered in inpatient nursing care and involves more than elevated blood glucose alone. Glycemic stability is influenced by dietary intake, medication adherence, physical activity, glucose monitoring, and stress management. When these components of self-care are inconsistent, blood glucose may fluctuate and increase the risk of microvascular and macrovascular complications (1,2).

In this case, an older adult woman presented with weakness, dizziness, nausea, frequent thirst, nocturia, and tingling in both feet. She had lived with diabetes mellitus for approximately ten years. Random blood glucose was 397 mg/dL in the emergency unit and 378 mg/dL during the nursing assessment. These findings supported unstable blood glucose as the priority nursing problem. Ineffective peripheral perfusion and impaired skin integrity were also addressed as components of comprehensive diabetes nursing care because a wound was present on the right great toe (3–5).

Diabetes care needs more than medication. The Indonesian Endocrinology Association describes education, meal planning, physical activity, adherence to treatment, and blood glucose monitoring as important pillars of diabetes management (1). In the ward, nurses are in a good position to translate these principles into simple actions that patients can understand and repeat. This is where non-pharmacological interventions become useful, especially when they are safe, low-cost, and realistic for the patient.

Autogenic relaxation is one supportive option in nursing care. The technique combines regulated breathing, body awareness, and calming self-statements. By promoting parasympathetic relaxation and reducing sympathetic arousal, it may attenuate stress-related release of counter-regulatory hormones such as cortisol and catecholamines, which can contribute to increased hepatic glucose output and insulin resistance. It requires no special equipment and may be performed while sitting or lying down. Previous intervention studies and clinical applications have reported lower blood glucose after repeated autogenic relaxation, particularly when combined with education; however, differences in design, duration, and concurrent treatment limit direct comparison (6–8).

Nevertheless, autogenic relaxation should not be presented as a rapid or independent glucose-lowering treatment. Prior reports have often evaluated repeated relaxation sessions or combined interventions, while the practical integration of the technique into daily inpatient nursing care and the influence of concurrent insulin, diet, and monitoring are not always described clearly (6–8). This report therefore describes feasibility, implementation, and observed responses in one inpatient case without making causal or effectiveness claims.

METHODS

Study Design

This article used a descriptive single-patient case-study design and was structured with reference to the CARE case report guideline (9). The aim was not to test efficacy or a statistical relationship, but to describe the nursing process, feasibility of autogenic relaxation, and the patient's observed response in an inpatient setting.

The case study was conducted in the Tawang Alun inpatient ward of Blambangan Banyuwangi Regional General Hospital in 2025. The ward provided hospital-based nursing and collaborative medical care for adult patients. The focus was unstable blood glucose in a patient with type 2 diabetes mellitus; wound and peripheral-perfusion care were retained as components of comprehensive diabetes management.

Participants

The participant was one 70-year-old woman admitted on September 27, 2025 with type 2 diabetes mellitus and hyperglycemia. Nursing assessment was performed on September 30, 2025. Potentially identifying sociodemographic details not essential to interpretation were omitted.

The case was selected because the patient had type 2 diabetes mellitus with hyperglycemia, weakness and dizziness, and willingness and ability to follow autogenic relaxation instructions. She had a ten-year diabetes history and reported prior use of metformin and glimepiride. The available source record did not document whether the pre-admission oral agents were continued, withheld, or replaced, nor whether the patient had previously practiced relaxation; these missing clinical

details are acknowledged as limitations. Tingling in both feet and a right great-toe wound were managed as concurrent diabetes-related nursing problems.

Intervention protocol

The intervention was nurse-guided autogenic relaxation, delivered once daily for three consecutive days for approximately 10–15 minutes in a quiet area at the bedside. The patient was positioned comfortably, guided to slow her breathing, focus on bodily sensations, imagine warmth and heaviness, repeat a calming statement, and return gradually to normal awareness. The same sequence was used each day. The same nurse-guided sequence was used on all three days; however, the source record did not document formal competency training, a

fidelity checklist, or exact session times relative to meals and insulin.

Autogenic relaxation did not replace medical therapy. The patient simultaneously received collaborative insulin therapy, a hospital diabetes diet, health education, glucose monitoring, wound care, and observation for hyperglycemia. The source record confirmed collaborative insulin therapy and a hospital diabetes diet but did not contain insulin type, dose, administration times, caloric order, or the inpatient status of metformin/glimepiride. These omissions limit interpretation of glucose trends. Because these concurrent interventions likely influenced glucose values, the relaxation component is interpreted only as supportive (10,11).

Table 1. Key autogenic-relaxation steps used for replication

Step	Standardized nurse guidance
1. Preparation	Confirm willingness and comfort; reduce avoidable interruptions; position sitting or supine.
2. Breathing	Guide slow, regular breathing and invite attention to each breath.
3. Body focus	Guide awareness of heaviness and warmth in the limbs without forcing sensation.
4. Calming statement	Repeat a short statement such as “I feel calm and peaceful.”
5. Completion	Return attention gradually, assess comfort, and document completion and response.

Table 2. CARE-style clinical timeline

Date/phase	Clinical care and observation	Information needed for final chronology
27 Sep 2025	Hospital admission for type 2 diabetes mellitus with hyperglycemia; emergency-unit glucose 397 mg/dL.	Insulin and meal times were not available in the source record.
30 Sep 2025	Nursing assessment: glucose 378 mg/dL; day-1 relaxation; documented pre/post values 329/320 mg/dL; wound and perfusion care.	Clock times and relationship to insulin/meals were not available in the source record.
1 Oct 2025	Day-2 relaxation; documented pre/post values 303/296 mg/dL; comprehensive care continued.	Clock times and relationship to insulin/meals were not available in the source record.
2 Oct 2025	Day-3 relaxation; documented pre/post values 160/150 mg/dL; symptoms improved; patient demonstrated relaxation sequence.	Discharge details were not available; no post-discharge follow-up was documented.

Instrument

The instruments used in this case were the nursing assessment form, implementation and evaluation notes, blood glucose measurement records, vital sign observation, and wound assessment. The data recorded included subjective complaints, general condition, blood pressure, pulse, temperature, respiratory rate, oxygen saturation, blood glucose, peripheral perfusion, and wound condition.

Nursing diagnoses, outcomes, and interventions were arranged using the Indonesian nursing standards, namely SDKI, SLKI, and SIKI (12,13). The main diagnosis discussed in this article was unstable blood glucose level, with glucose stability as the expected outcome and hyperglycemia management supported by autogenic relaxation as the intervention focus.

Data Collection Procedure

Data were collected through patient and family interviews, clinical observation, physical examination, medical-record review, laboratory data, and nursing implementation/evaluation notes. Available documentation included glucose values before and after each relaxation session across three days. Because timing was not fully documented in the source material, immediate pre-/post-session comparisons should be interpreted cautiously.

The patient's response was evaluated from several aspects: subjective complaints, ability to follow the instructions, vital signs, glucose records, and daily nursing evaluation notes. Peripheral perfusion and wound condition were also observed because both problems were closely related to diabetes management.

Data Analysis

The data were analyzed descriptively. Changes in blood glucose were presented in tables and then read together with the patient's subjective and objective responses during the three-day care period. No inferential statistical test was performed because this was a single-patient case study.

The decrease in blood glucose was not interpreted as an isolated effect of autogenic relaxation because insulin, hospital diet, education, wound care, and clinical monitoring were delivered concurrently. This confounding, together with the single-case design and incompletely standardized measurement timing, prevents causal inference. Autogenic relaxation

is therefore presented as a feasible complementary nursing intervention within a broader care package.

Ethical Considerations

The patient's identity was protected by using initials. Clinical data were presented only to the extent needed for scientific reporting. The intervention was non-invasive, did not require special equipment, and could be stopped whenever the patient felt uncomfortable.

Written informed consent for publication of the anonymized clinical information was obtained from the patient. Formal research ethics committee approval was not sought because this retrospective case report describes routine, non-experimental nursing care and introduced no research-specific procedure. Patient identity and unnecessary identifying details were withheld in accordance with confidentiality principles.

RESULTS

The findings are presented in three parts: patient characteristics, nursing problems, and changes in blood glucose after autogenic relaxation was integrated into nursing care. The presentation is kept focused so that the clinical course can be followed without losing the main data from the case.

At the beginning of care, the patient showed common signs of hyperglycemia, including weakness, dizziness, thirst, nocturia, and tingling in both feet. She was cooperative during all relaxation sessions and was able to repeat the exercise with guidance.

The main nursing problem was unstable blood glucose level related to hyperglycemia or insulin resistance. The diagnosis was supported by weakness, thirst, nocturia, a long history of diabetes, the habit of consuming sweet foods and drinks, and blood glucose of 378 mg/dL at the initial nursing assessment.

After three days of comprehensive care, the blood glucose value after relaxation decreased from 320 mg/dL on the first day to 296 mg/dL on the second day and 150 mg/dL on the third day. At the final evaluation, the patient said she felt stronger, was no longer dizzy, and could continue the relaxation exercise independently. Peripheral perfusion also improved, shown by warmer extremities and capillary refill time of less than two seconds. The wound remained clean, without pus or necrotic tissue, and early granulation was observed.

Table 3. Patient Characteristics and Initial Clinical Findings

Variable	Finding
Initials	Mrs. M
Age and sex	70 years old, female
Education and occupation	Elementary school graduate, housewife
Admission diagnosis	Type 2 diabetes mellitus with hyperglycemia
History of diabetes	Approximately 10 years
Body mass index	31.1 kg/m ² , interpreted as obesity
Main complaints	Weakness, dizziness, nausea, thirst, nocturia, and tingling in both feet
Blood glucose at emergency unit	397 mg/dL
Blood glucose at nursing assessment	378 mg/dL
Vital signs at assessment	BP 140/90 mmHg; pulse 87/min; temperature 36.7°C; RR 20/min; SpO ₂ 100%
Wound condition	Open wound on right big toe, approximately 2 x 2 cm, moist, reddish, without pus

Note: BP = blood pressure; RR = respiratory rate; SpO₂ = peripheral oxygen saturation.

Table 4. Nursing Problems and Supporting Data

Nursing Diagnosis	Main Supporting Data	Nursing Target
Unstable blood glucose level	Weakness, dizziness, thirst, nocturia, blood glucose 378 mg/dL	Blood glucose level improves; weakness and dizziness decrease
Ineffective peripheral perfusion	Tingling feet, cold extremities, cyanotic skin, CRT > 2 seconds, hemoglobin 10.6 g/dL	Peripheral perfusion improves; extremities become warmer; CRT improves
Impaired skin/tissue integrity	Open wound on right big toe, approximately 2 x 2 cm, reddish and moist	Tissue damage decreases; wound remains clean; infection signs are prevented

Note: CRT = capillary refill time.

Table 5. Blood Glucose Levels Before and After Autogenic Relaxation

Day/date	Before session (mg/dL)	After session (mg/dL)	Subjective response	Nursing evaluation
Day 1 / 30 Sep 2025	329	320	Still weak and dizzy	Problem not resolved
Day 2 / 1 Oct 2025	303	296	Still weak, no dizziness	Partially resolved
Day 3 / 2 Oct 2025	160	150	Body feels better; no weakness or dizziness	Resolved

Note: Initial nursing assessment blood glucose was 378 mg/dL. The patient also received insulin therapy, dietary management, wound care, and health education according to the care plan.

DISCUSSION

This case demonstrates that autogenic relaxation could be delivered and completed as a supportive nursing intervention during inpatient care for type 2 diabetes mellitus with unstable blood glucose. Blood glucose decreased from 378 mg/dL at assessment to 150 mg/dL on day 3 while the patient received comprehensive care. The case supports feasibility and patient

acceptance, not clinical effectiveness or an independent glucose-lowering effect.

Theoretically, autogenic relaxation helps the body move into a calmer state through breathing control, positive suggestion, and awareness of body sensations. This calmer state may reduce excessive stress responses. In patients with diabetes, stress can influence glucose regulation through counter-regulatory hormones and also

through changes in self-care behavior. For that reason, stress management is reasonable to include in diabetes care, particularly when a patient feels that stress makes glucose control more difficult (2,14–16). Previous intervention studies and clinical applications have reported reductions in blood glucose after repeated autogenic relaxation. Their designs, intervention durations, comparison conditions, and concurrent education differed from this uncontrolled single case, so direct efficacy comparisons are inappropriate. Here, insulin therapy, dietary regulation, education, wound care, and monitoring most likely acted together; the specific contribution of relaxation cannot be separated (17–19). The practical strength of autogenic relaxation is its simplicity: it required 10–15 minutes, no special equipment, and could be taught at the bedside. The patient completed three guided sessions and repeated the sequence without intolerance. However, standardized assessments and post-discharge follow-up were unavailable, limiting evaluation of home practice and longer-term acceptability over time.

Education remained central to care and covered limiting sweet foods and beverages, taking medicines as prescribed, activity within tolerance, glucose monitoring, follow-up attendance, foot and wound care, and stress management (20,21). Understanding was assessed by asking the patient to restate key advice and demonstrate the relaxation sequence. The family was interviewed during data collection, but the extent of family participation in discharge education was not documented. The patient could repeat the relaxation sequence; no standardized education-adherence score was used. Ineffective peripheral perfusion and impaired skin integrity were managed as concurrent diabetes-related nursing problems, not as outcomes of autogenic relaxation. Tingling, cold extremities, delayed capillary refill, and the toe wound required foot care, wound care, infection prevention, medical collaboration, and education. Their inclusion illustrates the comprehensive care context in which relaxation was delivered.

Implication

Autogenic relaxation can be included in routine nursing care as a low-cost, non-invasive, and easy-to-teach intervention. It may be useful for patients who experience stress, anxiety, or difficulty resting during hospitalization. Nurses can combine this technique with diabetes

education and discharge planning so that patients have a simple self-care strategy to continue at home.

Limitation

This case study involved one patient observed for three days without a comparison group, HbA1c measurement, standardized glucose monitoring, or follow-up. Concurrent interventions limited attribution of effects. Future controlled studies should include larger samples, standardized assessments, and longer follow-up

CONCLUSION

Autogenic relaxation was feasible and completed across three nurse-guided sessions in a patient with type 2 diabetes mellitus and unstable blood glucose. Blood glucose decreased from 378 mg/dL at assessment to 150 mg/dL on day 3 during comprehensive inpatient care, accompanied by reduced weakness and dizziness. This single uncontrolled case demonstrates feasibility and observed improvement but does not establish effectiveness or causation.

Autogenic relaxation may be used as a supportive nursing intervention because it is simple, safe, and feasible for patient self-care. Nevertheless, it should remain part of comprehensive diabetes management, including medication, dietary control, physical activity, glucose monitoring, wound care, foot care, and routine follow-up.

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Conflict of Interest

The authors report no financial, personal, or professional conflicts of interest that may have affected the preparation of this article.

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