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Implementation of Diabetic Foot Exercises in Lowering Blood Glucose Levels in Diabetes Mellitus Patients Type 2

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Abstract : Diabetes Mellitus (DM) is a disease marked metabolic with improvement level glucose blood consequence disturbance insulin secretion or insulin work . One of the therapy non-pharmacological which can help lower level glucose blood is diabetic foot exercise . The aim of the study case This is For know application of diabetic foot exercises in lower level glucose blood in patients with Diabetes Mellitus Type 2 in Beurawe Village Kuta Alam District, Banda Aceh City. Research This use method descriptive with approach studies case of two subjects Woman Type 2 DM sufferers. Intervention done for 5 days consecutive with frequency once a day . Research results show that application of diabetic foot exercises effective in lower level glucose blood on both Subject . Subject I (Mrs. N, 48 years old) experienced decline level glucose blood from 450 mg/dL to 202 mg/dL. Subject II (Mrs. P, 50 years old) experienced decline from 320 mg/dL to 190 mg/dL. Research conclusion This show that diabetic foot exercises effective help lower level glucose blood in patients with Diabetes Mellitus Type 2.

Keywords: Diabetes Mellitus Type 2, Diabetic Foot Exercises, Blood Glucose Levels

Introduction

Diabetes mellitus (DM) is a disease caused by disruption of metabolic processes glucose in the body accompanied by various abnormalities metabolic consequence hormonal disorders, which cause various complications chronic in the eyes, kidneys, and blood vessels blood, accompanied by lesions on the basement membrane with characteristics hyperglycemia (American Diabetes Association, 2023).

Prevalence of Diabetes Mellitus Type II has increase dramatically in countries with all level income . Approximately 422 million people worldwide suffer from diabetes, resulting in 1.5 million death caused by directly by diabetes every year . Indonesia occupies ranking fifth of 10 countries with amount the highest number of DM sufferers in 2021 (International Diabetes Federation, 2023).

Banda Aceh City Health Office (2024) noted amount Diabetes Mellitus sufferers as many as 15,404 people, with only 4,613 people (29.95%) received it service health in accordance standards in community health centers . A very common problem occurs in diabetes mellitus is blood sugar instability consequence No balanced diet, exercise physical, and medication .

Diabetic foot exercises is a series designed exercises special For help guard foot health in people with diabetes. This exercise aim For increase circulation blood, strengthen muscles, and improve flexibility in the foot area, which can prevent complications like neuropathy peripheral, foot ulcers, and infections (American Diabetes Association, 2020).

Based on results of the initial data collection survey in Gampong Beurawe Kuta Alam District, Banda Aceh City, on October 21, 2025, data on diabetes mellitus sufferers was obtained for 3 months final is 35 people. Five respondents were interviewed state own level glucose blood above 200 mg/dL and not yet Once do diabetic foot exercises . Based on matter said, researchers interested For do studies case about Implementation of Diabetic Foot Exercises in Lowering Blood Glucose

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Levels in Diabetes Mellitus Patients Type 2 in Beurawe Village Kuta Alam District, Banda Aceh City.

Method

Types of research This is study descriptive with use method approach studies case study care - oriented nursing with the approach implemented in a way comprehensive, where the form the reporting more to explain in a way deep one action focus in accordance problem from plan action nursing (Adiputra, 2021).

Subject studies case This are two women Type 2 Diabetes Mellitus sufferers who live in Gampong Beurawe Kuta Alam District, Banda Aceh City. Criteria subject includes : willing and cooperative, has blood sugar level ≥ 200 mg/dL, aged 45-56 years, type sex women, and No own contraindications on diabetes mellitus foot exercises .

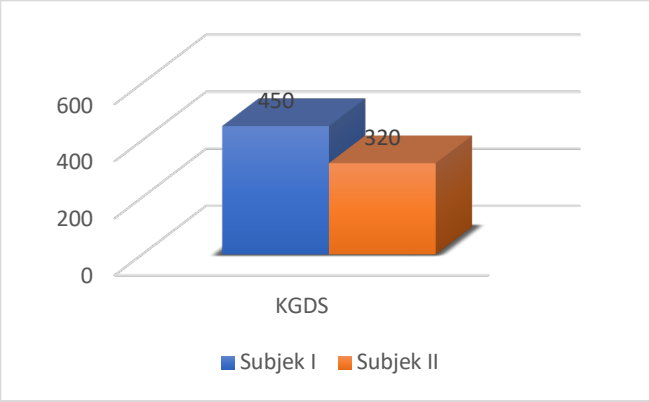
Established interventions is implementation of diabetic foot exercises as much as once a day (afternoon 16.00-16.30 WIB) for 5 days consecutively . Diabetic foot exercise procedures includes 10 movements standardized covering flexion and extension toes, rotation ankle, movement plantarflexion and dorsiflexion, as well as movement circular, each of which is done as many as 10 repetitions.

Measurement level glucose blood (KGD) is performed use digital glucometer that has calibrated, in the morning day before session exercise started in condition subject has fasting for at least 8 hours. Data presented in form text and diagrams.

Results and Discussion

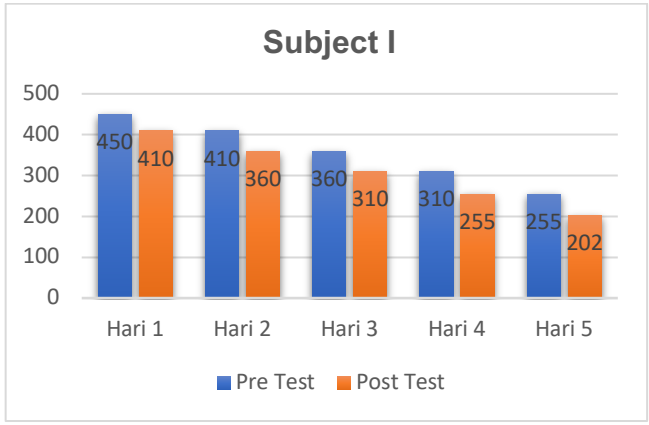
Study held in Gampong Beurawe, Kuta Alam District, Banda Aceh City from March 8 to by March 18, 2026. In the study case This 2 women were selected as subjects suffering from Type 2 Diabetes Mellitus.

Diagram 4.1 Results of the study beginning



Based on diagram 4.1, it is obtained results intervention implementation of diabetic foot exercises provided for 5 days consecutively in the afternoon for subjects I and II, then stage evaluation is carried out day 5th after implementation .

Diagram 4.2 Results of Blood Glucose Levels in Diabetes Mellitus Patients Type 2 Application of Diabetic Foot Exercises on Subject I



Based on diagram 4.2, it is obtained that existence decline Blood Glucose in subject I gradually in the day first 450 mg/dl to day the fifth with results end Natural Blood Glucose obtained in subject I, namely 202 mg/dl.

Research result show that application of diabetic foot exercises for five days consecutive capable lower level glucose blood on both subject sufferers of Type 2 Diabetes Mellitus. In Subject I (Mrs. N) there was decline level glucose blood from 450 mg/dL to 202 mg/dL, while in Subject II (Mrs. P) there was decline from 320 mg/dL to 190 mg/dL.

Diabetic foot exercises is exercise designed physical For increase circulation blood, strengthen muscles, and maintain flexibility joints in people with Diabetes Mellitus. Contraction muscle during exercise stimulate translocation of Glucose Transporter Type 4 (GLUT-4) to membrane cell so that increase taking glucose by cells muscle without depends entirely on insulin. The mechanism the help lower level glucose blood at a time reduce risk complications chronic (Perkeni, 2021).

This matter in line with research by Sudirman et al . (2023) which concluded that diabetic foot exercises capable repair circulation blood peripheral, strengthening muscles small on the feet, increasing endogenous insulin secretion, and prevents apoptosis of pancreatic beta cells . Research by Pradana et al . (2021) on 30 respondents with Type 2 Diabetes Mellitus also found decline significant mean KGD of 38.6 mg/dL after 5 days leg exercise intervention .

Based on results research, found a number of factor supporters success application of leg exercises: (1) support optimal family in both subject, (2) routine and intensity performing leg exercises every day day for 5 days consecutively, (3) levels high school education that facilitates understanding subject to procedure therapy, and (4) activities physique additions made outside session therapy structured .

Unhealthy eating patterns controlled is factor risk significant in both subject before diagnosed with DM. Proven with occurrence temporary increase in KGD in Subject I on day 3 as a result consumption sweet foods (serabi), which cause KGD to increase from 228 mg/dL to 230 mg/dL, although return decreased in the days next . This is in line with research by Cahyani and Purbowati (2022) that food indexed glycemic tall cause rapid and large increase in KGD .

Conclusion

Based on results research, can concluded that application of diabetic foot exercises for five days consecutive effective help lower level glucose blood levels in Type 2 Diabetes Mellitus patients. In Subject I, the levels glucose blood decrease from 450 mg/dL to 202 mg/dL, while in Subject II it decreased from 320 mg/dL to 190 mg/dL. This result show that diabetic foot exercises can made into as one of the intervention non-pharmacological in help control level glucose blood in patients with Type 2 Diabetes Mellitus .

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