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The Effect of Family Empowerment Model with SEFT Therapy on Blood Glucose Control in Diabetes Mellitus Patients at Public Health Centers in Pekanbaru City

Maswarni[1], Chrismis Novalinda Ginting[2], Linda Chiuman[*3]

[1,2,*3]Faculty of Medicine, Dentistry and Health Science, Universitas Prima Indonesia, Medan, Indonesia

Center of Excellence for Phytodegenerative and Lifestyle Medicine, Faculty of Medicine, Dentistry and Health Science, Universitas Prima Indonesia, Medan, Indonesia

***Corresponding Author:**

Linda Chiuman

Email ID: lindachiuman@unprimdn.ac.id

ABSTRACT

Background: Diabetes Mellitus (DM) is a chronic metabolic disorder caused by insufficient insulin hormone due to impaired insulin secretion, insulin resistance, or both. Family empowerment is a form of active family participation in identifying needs, planning care, and making decisions related to a sick family member.

Method: This quantitative study applied a quasi-experimental design with a one-group pretest–posttest approach to examine the effect of the family empowerment model combined with Spiritual Emotional Freedom Technique (SEFT) therapy on blood glucose control in DM patients at public health centers. The study was conducted from December 2024 to January 2025 in three public health centers in Pekanbaru city, involving 59 respondents in the intervention group and 59 in the control group.

Result: Wilcoxon test results yielded a Z value of -6.763 with a P-value of 0.000, indicating a significant effect. Family empowerment was proven to enhance the active role of families in supporting patient care, positively impacting behavioral changes and patient motivation to control the disease.

Conclusion: The family empowerment model combined with SEFT therapy significantly improves blood glucose control in DM patients by strengthening family support, behavioral changes, and patient motivation.

Keywords: *Diabetes mellitus, family empowerment, blood glucose control*

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1. INTRODUCTION

Type 2 Diabetes Mellitus is a hyperglycemic disease caused by cellular insulin resistance. Insulin levels may be slightly decreased or within the normal range, as pancreatic beta cells still produce insulin; thus, type 2 diabetes is considered non-insulin-dependent diabetes mellitus (Halidah Amriyati Muchlis, 2024). Hyperglycemia is the primary symptom of diabetes, occurring due to insulin deficiency, insulin resistance, or both (Hardianto, 2022). Types 1 and 2 diabetes mellitus are heterogeneous diseases sharing genetic and environmental risk factors leading to similar chronic complications (Care & Suppl, 2022). Uncontrolled blood glucose damages heart, eye, kidney, and nerve vessels, causing cardiovascular diseases, stroke, nephropathy, blindness, kidney failure, male impotence, amputation, and infection. The number of DM cases positively correlates with the risk of DM complications (Baraz, Zarea, & Shahbazian, 2017). Increased medical costs and decreased employment among diabetic patients due to complications lead to significant economic losses for families and patients (Nam Han Cho (Chair), 2017). This impacts health status, decreases life expectancy, reduces quality of life, increases morbidity, and raises mortality rates (Nyenwe & Dagogo-Jack, n.d.). The rise correlates with increasing obesity rates, a key diabetes risk factor, from 14.8% in 2013 to 21.8% in 2018 based on RISKESDAS data. The prevalence of overweight and central obesity (waist circumference ≥90 cm in men and ≥80 cm in women) increased significantly (Perkumpulan Endokrinologi Indonesia, 2021). These data reveal a large number of DM patients in Indonesia, imposing a heavy burden that challenges specialists and healthcare workers.

According to the Indonesian Statistics Bureau in 2003, the population aged over 20 was approximately 133 million, with DM prevalence of 14.7% in urban areas and 7.2% in rural areas, estimating 8.2 million rural DM patients. Population growth projects 194 million over-20s in 2030, with 28 million urban and 13.9 million rural DM patients. The 2018 Basic Health Research by the Ministry of Health reported an increased DM prevalence of 8.5% (Soelistijo, 2021). Effective blood glucose control is crucial to reducing complications in both type 1 and type 2 DM. Achieving glycemic control requires ongoing management including education, medical nutrition therapy, physical activity, medication, and glucose monitoring. Glycemic control is assessed using hemoglobin A1c (HbA1c). Levels of HbA1c >7.0% associate with significantly increased risk of microvascular and macrovascular complications, regardless of underlying treatment. Elevated fasting and postprandial blood glucose levels directly increase complication risk, with postprandial glucose strongly predicting cardiovascular complications (Perkeni, 2021). Spiritual Emotional Freedom Technique (SEFT) therapy combines spirituality expressed through prayer, sincerity, and surrender with the Emotional Freedom Technique (EFT), which utilizes the body's energy system to help improve mental, emotional, and behavioral conditions. Negative emotions can be addressed through SEFT by using prayer-like verbal suggestions and light tapping with two fingertips on specific body points. SEFT is administered in three simple stages: set-up, tune-in, and tapping (Irfana, 2023).

Empowerment is an intervention strategy implemented to enhance control in decision-making processes related to resolving health problems for individuals, families, and communities. This strategy involves the community as active subjects in addressing their health issues. The family empowerment strategy specifically assists communities in developing problem-solving skills, lobbying, and obtaining health information and literacy (Guspianto et al., 2022). Family empowerment is an active form of family participation in identifying needs, planning care, and making decisions related to a sick family member, recognizing that patients often experience a decline in motivation to recover due to factors such as excessive fear or anxiety and unpleasant experiences (Susilowati, 2019).

2. METHODS

This study employed a quasi-experimental design using a Control Group Design approach. This design involved baseline (pretest) measurements before the intervention and final (posttest) measurements after the intervention in both experimental and control groups. Both groups were non-randomly selected. The experimental group received education regarding family social support accompanied by family involvement, whereas the control group received similar education without family involvement.

Sampling

The study involved 118 DM patients as research subjects. Respondents were recruited from three public health centers: Puskesmas Simpang Tiga, Harapan Raya, and Sidomulyo, based on Diabetes Mellitus patient inclusion criteria. The purposive sampling method was used. Sample size calculation was based on the estimated DM prevalence of 3.74% in Pekanbaru in 2022

$n=Z1-\alpha/22\times P(1-P)/d2$ $n=Z1-\alpha/22\times P(1-P)/d2$

Notation explanation:

n = Sample size

Z_{1}-α/2 = Z-score corresponding to the desired confidence level (e.g., 1.96 for 95%)

P = Estimated proportion of the population with the characteristic of interest

d = Margin of error (precision)

A minimum of 54 respondents was required per group. To account for potential attrition, the final sample size was adjusted to 59 participants in each group, totaling 118 respondents.

Ethical Approval

Ethical approval was obtained from the Health Research Ethics Committee of Prima Indonesia University (No. 031/KEPK/UNPRI/IX/2024). Research permission was granted by the Pekanbaru City Health Office.

Data Collection

Quantitative data was collected to identify family function using the APGAR family support questionnaire, capillary blood glucose measurement via glucometer, and SEFT observation sheets. The SEFT procedure includes the set-up (neutralizing negative body energy), tune-in (focusing the mind on pain sites and specific emotional issues), and tapping (light tapping with two fingertips on specific body points) (Zainuddin, 2012).

Data collection activities were conducted over four sessions in two weeks:

1. *First week*: Individual approach to build trust, demographic data collection, family APGAR questionnaire, pre-intervention SEFT explanation following SOP by Zainuddin (2012), blood glucose measurement in both groups,

and education on DM and glucose control for patients and families.

2. Educational phase: explaining SEFT procedures for preventing glucose increase with leaflets, encouraging patient and family participation in glucose control.
3. Challenging phase: health professionals shifting control to patient and family, demonstrating family assistance in glucose control through lectures, discussions, and demonstrations over a 100-minute session.
4. *Second week*: Collaborative phase involving family activity evaluation and glucose checks in the intervention group using lectures and discussions. The control group encouraged self-motivation to perform SEFT using SOP Zainuddin (2012).

Instruments

a) Family APGAR questionnaire

b) SOP for SEFT implementation including tapping steps, 9-gamut procedure, and breathing techniques

c) Blood glucose measurement using glucometer

Data Analysis

Statistical analysis examined the effect of the family empowerment model combined with SEFT therapy on blood glucose control in DM patients. Sociodemographic data were descriptively analyzed. Wilcoxon Signed Rank Test compared pretest and posttest scores between experimental and control groups to assess significant differences (Anggraini, 2025).

3. RESULTS

The study showed that the family empowerment model combined with SEFT therapy had a significant effect on optimizing blood glucose control in DM patients. Respondent characteristics and the Wilcoxon test results demonstrated this significant effect

Table 1. Sociodemographic Characteristics of Respondents

Category	Intervention Group		Control Group	
	F	%	F	%
Age				
Adult	1	1.7	0	0
Pre-elderly	40	67.8	48	81.4
Elderly	18	30.5	11	18.6
Total	59	100	59	100
Education				
Elementary School	9	15.3	13	22
Junior High School	15	25.4	28	47.5
Senior High School/ Vocational	27	45.8	15	25.4
Diploma/Bachelor Equivalent	8	13.6	3	5.1
Total	59	100	59	100
Occupation				
Housewife	31	52.5	33	55.9
Civil Servant	5	8.5	3	5.1
Unemployed	3	5.1	3	5.1
Entrepreneur	2	3.4	2	3.4
Laborer	5	8.5	13	22

Private Sector	10	16.9	4	6.8
Retired	3	5.1	1	1.7
Total	59	100	59	100
Gender				
Male	23	39	19	32.2
Female	36	61	40	67.8
Total	59	100	59	100
Duration of DM				
>4 years	55	93.2	50	84.7
<4 years	4	6.8	9	15.3
Total	59	100	59	100

Most participants in both groups were in the pre-elderly category, 67.8% in the intervention group and 81.4% in the control group. The elderly were more in the intervention group (30.5%) than the control (18.6%), while the adult category was minimal or none. Education levels varied, with the majority in the intervention group having Senior High School/Vocational education (45.8%), whereas the control group was dominated by Junior High School (47.5%). Diploma/Bachelor level was low in both groups. Most participants were housewives, constituting 52.5% in intervention and 55.9% in control. More laborers were in the control group (22%) compared to intervention (8.5%). Private sector workers were higher in the intervention group (16.9%) compared to control (6.8%). Females outnumbered males in both groups (61% intervention, 67.8% control). Most participants had diabetes for more than 4 years (93.2% in intervention, 84.7% in control).

Table 2. Frequency Distribution of Respondents' Behavior Before SEFT Therapy in Lowering Blood Glucose

Behavior	**Intervention Group**		**Control Group**	
	F	%	F	%
Implemented	0	0	0	0
Not implemented	59	100	59	100
Total	59	100	59	100

Based on this data, none of the respondents in either group applied SEFT therapy behavior before the intervention.

Table 3. Frequency Distribution of Respondents' Behavior After SEFT Therapy in Lowering Blood Glucose

Behavior	**Intervention Group**		**Control Group**	
	F	%	F	%
Implemented	48	54.2	32	81.4
Not implemented	11	45.8	27	18.6
Total	59	100	59	100

After therapy, 48 participants (54.2%) in the intervention group applied the behavior, while 11 (45.8%) did not. In the control group, 32 participants (81.4%) showed the behavior, and 27 (18.6%) did not.

Table 4. Frequency Distribution of Respondents' Blood Glucose Levels Pre-SEFT Therapy

Blood Glucose Level	**Intervention Group**		**Control Group**	
	F	%	F	%
Hyperglycemic	59	100	59	100
Normal	0	0	0	0

Hypoglycemic	0	0	0	0
Total	59	100	59	100

All respondents in both groups were hyperglycemic before therapy.

Table 5. Frequency Distribution of Respondents' Blood Glucose Levels Post-SEFT Therapy

Blood Glucose Level	Intervention Group		Control Group	
	F	%	F	%
Hyperglycemic	42	36.2	52	88
Normal	16	13.8	7	12
Hypoglycemic	0	0	0	0
Total	59	100	59	100

After therapy, 42 participants (36.2%) in the intervention group remained hyperglycemic, while 16 (13.8%) attained normal glucose levels. In the control group, 52 participants (88%) remained hyperglycemic, with only 7 (12%) achieving normal levels.

Table 6. Wilcoxon Test Results (DM Patients in the Intervention Group)

Test Comparison	Z Value	Asymp. Sig. (2-tailed)
Posttest_ti - Pretest_ti	-6.763	0.000
Posttest_gdi - Pretest_gdi	-6.681	0.000

The Wilcoxon test showed Z values of -6.763 and -6.681 for blood glucose differences before and after SEFT therapy for two different blood glucose measurements (posttest_ti vs pretest_ti and posttest_gdi vs pretest_gdi). The significance values were 0.000 (<0.05), indicating a statistically significant difference.

4. DISCUSSION

The results of this study, analyzed using Wilcoxon signed-rank test and path coefficient analysis with SPSS 22.0 for Windows, demonstrated a significant effect of family empowerment through Spiritual Emotional Freedom Technique (SEFT) therapy on blood glucose control in the intervention group of diabetes mellitus (DM) patients. The Wilcoxon test yielded a Z value of -6.763 and a P-value of 0.000. Since the probability (Sig.) 0.000 < 0.05, the null hypothesis (H0) was rejected, indicating a significant difference between pre- and post-intervention blood glucose levels after family empowerment combined with SEFT in the intervention group. This suggests that family empowerment models through SEFT therapy are critically important and effective for glycemic control in DM patients. Family empowerment acts as an intervention providing specific solutions, problem-solving, and information delivery.

In the intervention group, SEFT therapy contributed to lowering blood glucose levels, with 16 respondents achieving normal glucose levels from previously 100% hyperglycemic status. In contrast, the control group showed a smaller reduction, possibly due to non-intervention factors such as routine care or individual circumstances. Comparative analysis revealed a greater increase in respondents with normal blood glucose in the intervention group (from 0% to 13.8%) compared to the control group (from 0% to 12%). The proportion of respondents remaining hyperglycemic reduced substantially in the intervention group (36.2%) versus the control group (88%), strongly indicating the positive impact of SEFT therapy on glycemic management. SEFT therapy positively affected glucose reduction, as shown by a lower proportion of hyperglycemic patients in the intervention group relative to controls, and a higher percentage achieving normal glucose levels (13.8% vs. 12%). No hypoglycemia cases occurred in either group, indicating SEFT's safety regarding low blood glucose.

SEFT integrates psychology, acupuncture, and universal spiritual touch. It is registered as intellectual property by its inventor H. Ahmad Faiz Zainuddin, who holds academic degrees in psychology and human resource development, with innovation in digital entrepreneurship. Since 2005, SEFT has been widely taught to address drug addiction in 2,463 prisoners at Cipinang Prison and cigarette addiction among 1,428 junior high students in Jakarta, earning recognition from the Indonesian World Records Museum (Kadek, Purnamayanti, & Gayatri, 2022).

The success of SEFT therapy depends on five key factors sometimes overlooked by patients: faith, devotion, sincerity, surrender, and gratitude. These distinguish SEFT from Emotional Freedom Technique (EFT) (Zainuddin, 2020). In practice, SEFT emphasizes patient spirituality, focusing on devotion, sincerity, and surrender, assuring patients that

outcomes depend on these factors (Ahmad Faiz Zainuddin, 2010). In this study, SEFT effectively controlled emotions and reduced blood glucose. The therapy's techniques prioritize patient spirituality as key to outcomes, reinforcing the belief that sincere surrender and faith in God's healing or calming influence optimize results. The spiritual aspect makes SEFT relatively easy, simple, and safe to administer (Prabowo, 2019).

Research by Irawan (2024) supports SEFT's impact on reducing glucose levels at Sultan Iskandar Muda Regional Hospital. Initial blood glucose averaged 282 mg/dl before SEFT and decreased to 276 mg/dl post-SEFT (Irawan Agustian et al., 2024). This further underscores the importance of family empowerment with SEFT in managing DM glucose levels. Smeltzer, Bare, Hinkle, & Cheever (2008) note that chronic stress elevates stress hormones such as cortisol, epinephrine, and glucagon, increasing glucose via gluconeogenesis and glycogenolysis in the liver. SEFT reduces this stress response through acupressure point stimulation, enhancing neurotransmitter mobilization and suppressing the hypothalamic-pituitary-adrenal (HPA) axis activity, resulting in decreased stress hormone production and glucose release from the liver (Irawan Agustian et al., 2024).

Metabolic diseases like diabetes mellitus feature elevated blood glucose caused by abnormal insulin secretion, insulin action, or both. High glucose levels substantially impact health, potentially leading to cardiovascular disease, cerebral thrombosis, stroke, and renal failure. Indonesia ranks fourth globally with 8.4 million diabetics, after India (31.7 million), China (20.8 million), and the USA (17.7 million) (Ekasari & Dhanny, 2022). Physiologically, stress activates the sympathetic nervous system, triggering processes such as gluconeogenesis that increase blood glucose. Excess cortisol production inhibits insulin function, raising glucose levels; thus, high stress correlates with glucose increase (Rusnoto & Prasetyawati, 2021).

Hyperglycemia in type 2 diabetes raises blood viscosity, reducing blood flow to organs like kidneys, eyes, and especially the feet. Patients risk peripheral arterial disease severely affecting life quality, with symptoms including claudication, leg fatigue, cramps, pain during rest, slow wound healing, coldness, pallor, and poor hair and nail growth (Widya Kusuma et al., 2023). Glucose levels fluctuate daily, lowest fasting in the morning before food intake. At this time, the pancreas secretes little insulin, and glucagon is released when glucose declines, stimulating glucose reserve release; insulin and glucagon jointly maintain glucose balance (Supriadi, Kamil, Saripah, & Parmudia, 2024). Blood glucose measurement is essential for diabetes diagnosis and monitoring (Supriadi et al., 2024; Paramita, 2021). Regular, consistent glucose monitoring prevents sharp glucose spikes, aids appropriate treatment decisions, reduces severe complication risks, and improves diabetic clients' quality of life (Paramita, 2021).

5. LIMITATIONS

This study has limitations. The purposive sampling method potentially introduces bias affecting results on glucose control in diabetic patients. Furthermore, the small sample size may limit the research's generalizability and maximal findings.

Conclusions and Implications for Nursing Practice

The implementation of the family empowerment model combined with SEFT therapy represents an effective complementary approach for DM management in primary healthcare settings, especially public health centers (puskesmas). This approach can enhance patients' quality of life through family support.

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