

Spiritual diabetes self-management health coaching on self-efficacy, self-care, and blood glucose levels in type 2 diabetes mellitus patients



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ABSTRACT

Introduction: Self-management, which rests on self-efficacy and self-care, is the cornerstone of diabetes mellitus treatment in managing blood sugar levels. Healthy behavior affects how a disease develops, therefore it's crucial to develop strategies for sustaining self-management. This study looked at the impact of spiritual diabetes self-management health coaching on patients with type 2 diabetes mellitus' levels of self-efficacy, self-care, and blood sugar.

Methods: This study was designed as a quasi-experiment with a pre-post control group. There were 210 patients with diabetes mellitus overall in the Surabaya A-Yani Islamic Hospital. 120 respondents were included in the research sample, including 60 in the intervention group and 60 in the control group. For one month, Spiritual Diabetes Self-Management Health Coaching was provided to the intervention group once daily for 60 minutes. The control group, meanwhile, received a program in accordance with hospital protocols. a parametric test is used in data analysis.

Results: The intervention group's self-efficacy, self-care, and blood sugar levels differed between the pretest and post-test results. According to the findings, the intervention group's pretest and posttest scores for the variables of self-efficacy, self-care, and blood sugar levels varied.

Conclusion: Spiritual Diabetes Self-Management Health Coaching can improve the self-efficacy and self-care of the type 2 diabetic patients; also reduce their blood sugar levels.

Keywords: Blood Glucose Level, Self-Care, Self-Efficacy, Spiritual Diabetes Self-Management Health Coaching, Type 2 Diabetes Mellitus.

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INTRODUCTION

Diabetes mellitus is still a growing global problem, affecting 463 million people worldwide.^{1,2} Indonesia is ranked 5th in the world for the prevalence of type 2 DM (DMT2) patients. Patients are required to comply with medication recommendations and healthy lifestyle behaviors to reduce the impact of the disease's complications. However, research shows that many patients do not do this.¹ The most elevated rate of T2DM cases in Indonesia is in East Java Territory and the quantity of DMT2 victims keeps on expanding each year.^{3,4} Results from perceptions and meetings of 50 DMT2 patients at the Short term Center of the Islamic Medical clinic Surabaya A-Yani 76% had low self-viability, 78% needed taking care of oneself, and 80%

glucose levels were not controlled. Diabetes Mellitus Type 2 causes numerous difficulties, both intense and constant, which can lessen the personal satisfaction of the victim. Low self-efficacy leads to complications, and poor self-care habits make it hard to control blood sugar levels. This, in the event that not treated and execute appropriately self-administration, the most terrible effect is the rise of confusions that can prompt death.⁵⁻⁷

When nursing care is offered, primary healthcare for T2DM patients focuses primarily on nursing and collaborative interventions to meet solely the bodily needs of the patient, leaving the patient's spiritual and psychological needs unmet. Low self-efficacy DMT2 patients will have an effect on the success of self-care. The

stability of blood sugar levels is significantly influenced by self-efficacy, compliance, and social support.^{8,9} Patient self-care will increase as their self-efficacy in managing their diabetes increases, allowing them to better regulate their blood sugar levels and overall health.¹⁰⁻¹²

Health coaching-based spiritual diabetes self-management places an emphasis on a continuous procedure that is helpful in facilitating the knowledge, talents, and skills of DMT2 patients connected to carrying out self-care with spiritual components.^{13,14} It is necessary to frequently self-manage DMT2 patients' diabetes using a spiritual strategy based on health coaching in order to build the environment and demonstrate the value of spirituality and health coaching.^{15,16}

This study looked at the impact of spiritual diabetes self-management health coaching on patients with diabetes mellitus' levels of self-efficacy, self-care, and blood sugar. This study is urgent because of the impact that diabetic self-management health coaching has on patients' self-efficacy, self-care, and blood sugar levels. Interventional Diabetes Therapy By boosting self-efficacy in self-care skills used to maintain blood sugar levels, spiritual self-management health coaching aims to increase the patient's independence in carrying out self-management of diabetes mellitus so they can avoid the effects of complications and maintain their health status.

METHOD

Study design

With a dependent pre-test and post-test sample design and an untreated control group, this study employed a quasi-experimental research methodology. In June–July 2022, this study was carried out in the Islamic Hospital Surabaya A-Yani.

Sampling

The population in this study were all diabetes mellitus type 2 patients at the A-Yani Surabaya Islamic Hospital who met the inclusion and exclusion criteria of the study. Sampling was done by using probability sampling technique with random sampling, where each patient meets the predetermined criteria. Inclusion Criteria: Patients with Type 2 DM who are undergoing a treatment program with fasting blood sugar (GDP) >126 mg/dl and temporary blood sugar/postprandial blood sugar (GDPP) >200 mg/dl, DM patients productive age 18-65 years old, able to carry out independent activities, able to communicate verbally well, able to read and write, suffer from DM 1 year, religious Islam, Patients receive rapid action insulin therapy (regular insulin) or oral hyperglycemic drugs regularly consume them and adhere to the DM diet as a recommended doctor. Exclusion criteria: Type 2 DM patients who have physical and mental or cognitive limitations (blind, deaf, mentally disabled), Type 2 DM patients who have complications (chronic kidney failure, heart failure, visual impairment), patients

who are undergoing other complementary therapies.

Instruments

The instrument used in this study Self-efficacy were measured by the Diabetes Management Self-Efficacy Scale (DMSES) from Bijl et al¹⁷ with a validity of 0.370-0.805 and reliability of 0.939,¹⁸ Self-care were measured by Self-Care Inventory-Revised (SCI-R) from Khagram et al,¹⁹ with validity 0.340-0.59 and reliability 0.850,²⁰ while blood sugar levels were measured using a Glucometer with the name easy touch brand, meter dimensions H x W x D (mm): 88 X 64 X 22, sugar measuring range 20-600 mg/dl (1.1-33.3 mmol/L), measuring time 10 seconds, battery type 3 V (CR2032), battery life ± 1000 x inspection, the technology used is an electrode-based biosensor.

Data collection procedures

This research was carried out in June 2022. The researcher first held a coordination meeting on the management and benefits of the research with medical personnel and prospective respondents, then asked the respondents for permission and distributed questionnaires through a form assisted by an internal medicine specialist poly room nurse. The pre-test was carried out one day before the intervention. Researchers act as therapists who are assisted by nursing staff as research assistants where the intervention group gets Spiritual Diabetes Self-Management Health Coaching, therapy is carried out 3 times every week for 1 month with a duration of ±60 minutes per meeting consisting of 5 stages (Check-in, Pre Visit, Visit, Post-Visit and Between Visits). The control group was not given any intervention, only running the program from the hospital. The post-test was carried out one day after one month of the intervention. Ethical considerations: This study was approved by the Health Research Ethics Committee of the Surabaya Islamic Hospital A-Yani (No. 023.EC.KEP.RSIAY.06.22) All patients were informed about the study objectives, procedures, and risks and signed informed consent before the study was conducted. Codes are used to identify research respondents used to ensure privacy and confidentiality.

Data analysis

In this study, the data analysis of self-efficacy, self-care, and blood sugar levels before and after the intervention in the intervention group and control group was carried out using a paired t-test statistical test. The post-test data of the intervention group and the control group were analyzed using an independent statistical t-test with a hypothesis of $p < 0.05$ using SPSS 26.0.0 (IBM SPSS Statistics).

RESULTS

Table 2 shows the characteristics of the research respondents who obtained results, that almost half (48.3%) and (45%) were in early old age (46-55 years) in the intervention group and the control group. For gender in the intervention group and control group, almost all of them were female (80% and 71.1%). Based on educational background, half of the intervention group (50.9%) and control group (55%) were in the secondary education category with employment status in the intervention group half (50%) were housewives (IRT) and the control group was almost half (43.3%) work as self-employed. Based on the characteristics of the duration of suffering from diabetes mellitus, it was found that in the intervention group and the control group most (53.3% and 56.7%) had diabetes mellitus for 4-5 years.

Table 3. The average self-efficacy in the intervention group before the action was 49.38 (low self-efficacy) and after the action, the average was 70.57 (medium self-efficacy). The mean value of self-care in the intervention group before the action was 37.83 (low self-care) after the action the average was 54.17 (medium self-care). The average blood sugar level obtained before the procedure is 312.72 mg/dl and after the procedure, the average blood sugar level is 220.07 mg/dl with a p -value = 0.000 which means there is an increase in self-efficacy, self-care, and a decrease in blood sugar levels. significant before and after being given the Spiritual Diabetes Self-Management Health Coaching intervention. While in the control group, the average self-efficacy value before action was 49.00 (low self-efficacy) and 48.38 after action (low self-efficacy) with a p -value = 0.158. In self-care before the

Table 1. Spiritual Diabetes Self-Management Health Coaching Stages Procedure

Stage	Action	Method	Time
Check-in	1. Assessing the perception of diabetes mellitus patients about self-management of diabetes mellitus 2. Assessing the barriers faced by patients with diabetes mellitus in carrying out self-management of diabetes mellitus 3. Assessing self-efficacy, self-care, and blood sugar levels	Structured interview using a questionnaire	10 menit
Pre-visit	1. Conduct assessment and physical examination (health status, vital signs, and blood sugar levels) 2. Reviewing the understanding of self-management programs for people with diabetes mellitus (education, diet, physical exercise, pharmacologic interventions, checking blood sugar levels) 3. Setting the self-management agenda that will be carried out	Structured interviews, observation sheets, and discussions with booklet media tools	10 menit
Visit	1. Improving the patient's perception of the concept of self-management of diabetes mellitus 2. Increase self-efficacy towards choices and self-ability coupled with spiritual elements (prayer, dhikr) in carrying out diabetes mellitus self-management programs that are under their conditions 3. Improving self-care combined with spiritual assistance in every planned program (education, diet, physical exercise, pharmacologic interventions, checking blood sugar levels) 4. Regular monitoring of sugar levels every two days	Structured interviews, observation sheets, and discussions with booklet media tools	30 menit
Post-Visit	1. Patient re-teaching from the program implemented but the patient still finds it difficult 2. Action planning and evaluation of the next program to be implemented	Structured interviews, observation sheets, and discussions with booklet media tools	10 menit
Between visits	1. The health coach calls or sends messages to patients every day regarding action plans, medication adherence, diet compliance, sports activities, appointment reminders, and preparation for clinic visits 2. The health coach communicates with the patient once a day and meets every other day	Telephone (WhatsApp, Telegram, Zoom)	5-30 menit

action, the average value was 37.98 (low self-care) and after the action, the average was 37.81 (low self-care) with a p-value = 0.015. Meanwhile, for blood sugar levels before the procedure, the average value was 312.32 mg/dl and after the procedure, the average blood sugar level was 305.88 mg/dl with a p-value = 0.017, which means that there was no increase in self-efficacy, self-care and a decrease in blood sugar levels blood in the control group.

Table 3 shows that from the results of data analysis, the p-value = 0.000 on self-efficacy, self-care, and blood sugar levels, which means that there are differences in self-efficacy, self-care, and blood sugar levels, before and after Spiritual intervention. Diabetes Self-Management Health Coaching.

DISCUSSION

This study found that the Spiritual Diabetes Self-Management Health Coaching intervention which was carried out for 1 month had a significant effect on increasing self-efficacy, self-care, and

Table 2. Demographic Characteristics of study groups

Characteristic	Intervention Group (n=60)		Control Group (n=60)		p-value
	f	%	f	%	
Age (Years)					
Early adulthood (26-35)	4	6.7	5	8.3	
Late adulthood (36-45)	16	26.7	19	31.7	0.444
Early old age (46-55)	29	48.3	27	45	
Late old age (56-65)	11	18.3	9	15	
Sex					
Male	12	20	17	28.3	0.290
Female	48	80	43	71.1	
Education					
Basic	25	41.7	24	40	0.899
Intermediate	30	50	33	55	
High	5	8.3	3	5	
Profession					
Civil servants	6	10	6	10	
Entrepreneur	17	28.3	26	43.3	0.216
House Wife	30	50	23	38.3	
Does not work	7	11.7	5	8.3	
Long DM					
1-3 years	13	21.7	18	11.7	
4-5 years	32	53.3	66	56.7	0.170
>5 years	15	25	26	31.7	

Table 3. Self-Efficacy, Self-Care, and Blood Sugar Levels Pre and Post in the Intervention and Control Group

Variable	Group	Pre	Post	t	n	p value
		Mean ± SD	Mean ± SD			
Self-Efficacy	Intervention	49.38 ± 13.09	70.57 ± 10.09	-17.52	60	0.000
	Control	49.00 ± 13.50	48.38 ± 12.12	1.430	60	0.158
Self-Care	Intervention	37.83 ± 8.794	54.17 ± 11.41	-14.94	60	0.000
	Control	37.98 ± 8.905	37.83 ± 8.952	1.218	60	0.228
Blood Sugar Level	Intervention	312.72 ± 49.84	220.07 ± 31.84	11.44	60	0.000
	Control	312.32 ± 50.03	310.45 ± 51.66	0.483	60	0.631

* $p < 0,05$ Based on paired *t*-test

Table 4. Difference Value of Self-Efficacy, Self-Care and Pre and Post Blood Sugar Levels in the Intervention and Control Group

Variable	Group	Mean ± SD	SE	n	Mean Difference	t	p value	
							Pre	Post
Self-Efficacy	Intervention	70.57 ± 10.09	1.30	60	22.18	10.89	0.875	0.000
	Control	48.38 ± 12.12	1.56	60				
Self-Care	Intervention	54.17 ± 11.41	1.47	60	16.33	8.72	0.926	0.000
	Control	37.83 ± 8.95	1.15	60				
Blood Sugar Level	Intervention	220.07 ± 31.84	4.11	60	-90.38	-11.53	0.965	0.000
	Control	310.45 ± 51.66	6.67	60				

* $p < 0,05$ Based on independent *t*-test

blood sugar levels in the intervention group. This is different from the control group, which only received the program from the hospital, and did not show any difference before and after the intervention. From the results of interviews, most of the respondents in the intervention group stated that there was assistance when running a therapy program that contained spiritual elements through Spiritual Diabetes Self-Management Health Coaching therapy. the challenges of implementing proper self-care and achieving control of blood sugar levels. This support was previously never felt by the patient during self-management, thus making self-efficacy low, which ultimately was unable to carry out self-care properly and had an impact on uncontrolled blood sugar levels. According to Coon & Curtain, health coaching has a very big role in helping patients gain knowledge, skills, and confidence to become active participants in their care to improve their health status.²¹ In addition, health coaching plays a role in glycemic control of patients with type 2 diabetes mellitus which is inseparable from self-care education programs for patients so that they can change lifestyles starting from diet and exercise and self-monitoring, where patients must be able to manage their condition independently

to achieve glycemic control goals.^{14,21,22} The importance of self-care education programs in controlling glycemic control in T2DM patients greatly affects the incidence of DM complications so that they can improve the self-management, self-efficacy, and quality of life of patients (Green et al., 2020). The importance of self-care education programs in controlling blood sugar levels of patients with type 2 diabetes mellitus will have an impact on the emergence of complications of diabetes mellitus so that it will improve the self-management, self-efficacy, and quality of life of patients.^{11,23}

The spiritual successor of diabetes self-management health coaching in increasing self-efficacy and self-care to controlling blood sugar levels cannot be separated from patients who play an active role in managing diabetes mellitus who are accompanied by health workers as health coaching in the health education process and run management programs. Diabetes mellitus is appropriate and by what is desired by the patient as shown by his enthusiasm and motivation in maintaining the recommended diet, exercising regularly, and controlling blood sugar levels regularly. Yao et al. state that assistance is very important and needed by patients who are useful as supporters

in increasing self-efficacy and self-care in maintaining self-management behavior so that they can control blood sugar levels.²⁴ Health coaching in the implementation of therapy supports patients in building and improving one's self-efficacy so that they can initiate and maintain the desired behavior. Health coaching is also motivating in generating strong reasons for change and articulating a clear vision of their health goals.^{23,25} In addition, spiritual diabetes self-management health coaching that considers spiritual aspects in treating diabetes mellitus patients can stimulate motivation so that patient awareness increases.²⁶ This awareness in the patient greatly contributes to increasing self-efficacy and self-care of patients together so that they can carry out self-management well. This is in accordance with the research of Pirbaglou et al which states that education is effective when combined with self-management support guided by health coaching or professional support that focuses on self-efficacy and goal setting, problem-solving, and obstacle management skills. cognitive and emotional.¹

According to de Diego-Cordero et al,²⁷ spirituality in difficult times will serve as a source of hope and well-being that helps people get through difficult

times. Spirituality can integrate with self-efficacy and have a positive impact. The results of previous studies stated that self-efficacy and spirituality can improve the quality of life of someone who suffers from chronic diseases.^{14,28,29} This is per the respondent's statement, where almost all of the intervention group respondents stated that spirituality is a source of calm and strength for themselves while carrying out treatment and dealing with difficult situations as a result of their illness. Good self-efficacy affects increasing self-care because self-efficacy can help a person understand and change behavior and increase his commitment to self-care while undergoing diabetes management. Diabetes mellitus patients who have good self-care make better self-care behavior which is indicated by maintaining a diet, increasing physical exercise, taking medication, and checking blood sugar levels regularly.³⁰ Incorporating spiritual guidance in carrying out nursing care can improve mental health and patient satisfaction with the care provided.²⁷

Self-care is closely related to changing the lifestyle of people with diabetes mellitus. Changes in the lifestyle of the intervention group respondents were very different from the control group during the four weeks of carrying out the intervention, which showed that the intervention group had a higher frequency of exercise or physical activity intensity, maintained a good diet, and increased self-efficacy in carrying out self-efficacy management to be able to control and maintain blood sugar levels within normal limits and change the mindset about diabetes. These results are in line with other diabetes health coaching studies.^{1,22} Based on the American Association of Diabetes Educators, where there are 7 focal points in self-care for people with diabetes mellitus physical exercise is not the only one that affects blood sugar levels, other health behaviors such as diet, medication according to the prescribed dose, and time, diligent in health checks, avoiding risks that can interfere with health and adaptive coping.^{31,32}

In the results of the examination of blood sugar levels in the intervention group, it was found that the respondents were able to control and control

blood sugar levels. This shows that the influence of self-efficacy and self-care is very important in its contribution to developing self-management.¹⁰ The majority of respondents stated that when their self-efficacy increases, coupled with the presence of someone who assists in the process of implementing diabetes self-management, it will foster a belief that they can carry out certain therapeutic regimens of diabetes self-management well, thereby increasing their ability to manage diabetes. keep blood sugar levels within normal limits.

CONCLUSION

Spiritual Diabetes Self-Management Health Coaching which is carried out regularly for patients with diabetes mellitus can increase self-efficacy and self-care. In addition, from the results of the examination of blood sugar levels, there is a decrease in blood sugar levels within normal limits. So that this intervention can be used as a patient program that can be applied to people with diabetes mellitus.

AUTHORS CONTRIBUTION

All six authors had equivalent contribution in the making of this manuscript.

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CONFLICT OF INTEREST

The authors declare no competing interests.

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