

# Spiritual-Based Motivational Self-Diabetic Management on the Self-Efficacy, Self-Care, and HbA1c of Type 2 Diabetes Mellitus

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## ABSTRACT

Low self-efficacy has an impact on self-care ability and HbA1c level. The purpose of this study was to determine the effect of spiritual-based motivational self-diabetic management on the self-efficacy, self-care, and HbA1c of adults with type 2 diabetes mellitus.

**Methods:** A quasi-experiment was conducted in this study. Total sample was collected from 80 respondents who were obtained through cluster sampling. The respondents were divided into two groups and they completed the self-care inventory-revised (SCI-R), self-efficacy questionnaires, and HbA1c blood check. The data was analyzed using parametric and non-parametric tests.

**Results:** The results showed there to be differences between the pretest and posttest values of the variables of self-efficacy, self-care, and HbA1c in the treatment group.

**Conclusions:** Spiritual-based motivational self-diabetic management as conducted by the researcher can increase the patient's self-efficacy and self-care abilities and decrease their HbA1c level.

**Keywords:** Type 2 Diabetes Mellitus; diabetes management; self-efficacy; self-care; HbA1c

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## INTRODUCTION

The prevalence of T2DM sufferers in Indonesia is ranked 5th in the world (1). The highest incidence of T2DM in Indonesia is in the East Java Province. The number of people with T2DM is increasing every year (2) Patients with Type 2 Diabetes Mellitus (T2DM) experience many acute and chronic complications (3). The emergence of complications can lead to death in people with DM due to low self-efficacy, poor self-care behavior, and uncontrolled blood sugar levels (4). About 35% of people with type 2 DM achieve glycemic control (HbA1c<7). This, if not treated, will cause complications(5). The nursing care provided at the health primary care centers focus more on nursing and collaborative interventions to fulfill the physical aspects, while the spiritual and psychological aspects of the patient have not been fulfilled.

Low self-efficacy has an impact on the successful self-care of people with T2DM. Self-efficacy, compliance, and social support, both individually and collectively, have a significant influence on the patient's glycemic profile (HbA1c) (5). Increasing the level of self-efficacy in self-management will improve the patient's self-care behavior and reduce their HbA1c level (6) (7).

Spiritual-based motivational self-diabetic management emphasizes the ongoing process of facilitating the knowledge, skills, and abilities of T2DM sufferers in relation to them conducting self-care based on spirituality and motivation (8). The management of T2DM sufferers with a motivational spiritual approach needs to be done routinely in order to grow the environment and to demonstrate the importance of motivational spirituality in T2DM management (9). The purpose of this study was to determine the effect of spiritual-based motivational self-diabetic management on the self-efficacy, self-care, and HbA1c of adults with type 2 diabetes mellitus.

## METHOD

### Design

The design used was a quasi-experiment with a pre-post-test control group.

### Population and sample

The population in this study consisted of respondents with T2DM. The sample totaled 80 adult respondents with T2DM determined using G\*Power 3.1.9.2 (each group consisting of 40 respondents) through cluster sampling. The inclusion criteria in this study were 1) respondents with a diagnosis of T2DM; 2) respondents with a diagnosis of T2DM for more than 5 years; 3) the age of the respondents being between 25 and 65 years; 4) respondents who can read and write; 5) a minimum education level of elementary school; 6) respondents do not experience vision and hearing problems. The researcher used a different area to minimize the contact, communication, and interactions between each respondent in both groups. The independent variable was spiritual-based motivational self-diabetic management. The dependent variables were self-efficacy, self-care, and the HbA1c level of adults with T2DM.

### Measurements

The spiritual-based motivational self-diabetic management instruments used modules created by the researcher under advice from their supervisors and reviewers. The self-care instrument used the Self-Care Inventory-Revised (SCI-R) (10). The instrument consisted of 14 items about the patient's perception of adherence in performing self-care. It consisted of four components namely monitoring, insulin, diet, and exercise. All of the items used a 5-point scale (never to always). The instrument for self-efficacy used the diabetes management self-efficacy scale (DMSES) (11). The instruments

consisted of 20 items categorized into four factors: nine items for diet, four items for monitoring, four items for physical, and three items for therapy regimen. The instruments were rated using a 5-point Likert score (strongly disagree to strongly agree). The HbA1c instrument used an observation sheet. Blood sampling was taken by competent nurses following appropriate procedures as many as 5ml. The examination of HbA1c (normal value 4.5 - 7.0%) used the Turbidimetric Inhibition Immunoassay (TINA) method and followed the guidelines of the International Federation of Clinical Chemistry (IFCC) standards. The results were examined at the Airlangga University Laboratory.

**Procedure**

This study received an ethical consideration certificate from the Universitas Airlangga Ethical Communication of Health Services in 2018 No. 931-KEP. The study was conducted in four Health Primary Care centers in Surabaya, Indonesia (2 treatment groups and 2 control groups). Before starting the study, the respondents in both groups were given informed consent (12). They were given an approval sheet which included an explanation including 1) the title of the study; 2) the principal investigator; 3) introduction; 4) purpose of the study; 5) the type of study intervention; 6) respondent selection; 7) voluntary respondents; 8) procedures and protocol; 9) study duration; 10) risks; 11) benefits; 12) reimbursements; 13) confidentiality; 14) sharing the results; 15) the right to refuse or withdraw; 16) alternatives to participating 17) and who to contact. After the respondent signed the informed consent sheet, the respondent was declared to be willing to undergo the study.

The treatment group was given a routine intervention at the Community Health Center, "Prolanis". This is a Chronic Disease Management Program with health checks, counseling, and gymnastics involved. The treatment group also received an intervention from the researcher with a spiritual-based motivational self-diabetic management approach. The researcher conducted meetings with the respondents over three sessions. The first meeting was held to explore the problems experienced by the respondents related to T2DM issues and to provide education related to T2DM. The second and third meetings were held to provide a spiritual and motivational debriefing in order to increase acceptance, self-awareness, and closeness to God related to the illness experienced by the respondents. The spiritual approach is carried out through the Islamic religious approach. The control group received a routine intervention from Health primary care, namely "Prolanis." The researcher provides modules and teaches interventions with a spiritual-based motivational self-diabetic management approach to health that the primary care nurses can apply to the control group after the study process is complete.

**Data analysis**

The data in this study was analyzed using IBM SPSS Statistics 25 (13). The data analysis was categorized based on data normality distribution. The data with a normal distribution was analyzed using a paired t-test and independent t-test, while abnormally distributed data was

analyzed using the Wilcoxon Signed Rank test and the Mann Whitney U test. The significance level was  $\alpha = 0.05$ .

**RESULTS**

The demographic data showed that the majority of respondents in the treatment and control group were aged 46-56 years old, with the majority being women. This is because the study was conducted in the morning, so many of the respondents that came were housewives. The majority of the respondents in both groups had a junior high school level of education. The majority of the respondents in the treatment group did not work, while the majority in the control group worked as entrepreneurs. The respondents in the treatment group had suffered from DM for 4-6 years on average, whereas in the control group, the average duration was 7-10 years [Table 1].

**Table 1.** Distribution of the respondent's characteristics (n=80)

Characteristic	Intervention (n=40)		Control (n=40)	
	n	%	n	%
Age				
36-45 years old	8	20	18	45
46-55 years old	23	57.7	21	52.2
56-65 years old	9	22.5	1	2.5
Gender				
Male	12	30	15	37.5
Female	28	70	25	62.5
Education				
Not going to school	2	5	2	5
Elementary school	6	15	10	25
Junior high school	17	42.5	19	47.5
Senior high school	13	32.5	5	12.5
University	2	5	4	10
Occupation				
Does not work	20	50	15	37.5
Entrepreneur	15	37.5	22	55
Civil servant	5	12.5	3	7.5
Length of time suffering from diabetes				
0-3 years	3	7.5	3	7.5
4-6 years	22	55	15	37.5
7-10 years	11	27.5	19	47.5
>10 years	4	10	3	7.5

The analysis test results showed that there were significant differences between the pretest and post-test values for all of the variables (self-efficacy, self-care, and HbA1c) in the treatment group. However, there was no significant difference between the self-efficacy and HbA1c variables in the control group. The results of the data analysis show that there were no significant differences between the treatment and control groups across all of the variables [Table 2].

**Table 2.** The analysis results for self-efficacy, self-care, and HbA1c (n=80)

Variable	Group		Mean ± SD	p-value	p-value
Self-efficacy	Intervention	Pre-test	38.25 ± 3.671	0.010 <sup>b</sup>	0.585 <sup>c</sup>
		Post-test	39.6 ± 4.607		
	Control	Pre-test	36.2 ± 36.5	0.122 <sup>a</sup>	
		Post-test	37.23 ± 5.801		
Self-care	Intervention	Pre-test	37.38 ± 5.381	0.005 <sup>b</sup>	0.614 <sup>d</sup>
		Post-test	38.75 ± 5.391		
	Control	Pre-test	39.5 ± 5.402	0.021 <sup>b</sup>	
		Post-test	41.33 ± 3.253		
HbA1c	Intervention	Pre-test	7.425 ± 1.1723	0.003 <sup>b</sup>	0.654 <sup>c</sup>
		Post-test	5.965 ± 1.0047		
	Control	Pre-test	7.833 ± 1.5082	0.111 <sup>a</sup>	
		Post-test	7.345 ± 1.6422		

Significantly (p<0.05); <sup>a</sup>Wilcoxon signed ranks test; <sup>b</sup>Paired t test; <sup>c</sup>Mann-Whitney u test; <sup>d</sup>Independent t test

**DISCUSSION**

This study aims to examine the effect of spiritual-based motivational self-diabetic management in the treatment of self-diabetic patients. There is an increase in self-efficacy, self-care, and an improvement in the HbA1c level. The two groups used to collect the study data were diabetics who took part in the "Prolanis" activity conducted at the health primary care centre in each region. The "Prolanis" activities were routinely carried out every week. The "Prolanis" agenda can be different each week, consisting of morning exercises, regular health checks that include BB and TB checks, blood pressure, blood sugar, health complaints, and drug administration. In the treatment group, in addition to the "Prolanis" activities, they are also additional activities, namely spiritual-based motivational self-diabetic management. The self-efficacy of the DM sufferers in the treatment group changed after getting the intervention. This is in contrast to the control group respondents who did not show a difference in self-efficacy pre- and post-intervention. In terms of the self-care variable, there are differences between pre- and post-, both in the treatment and control groups. Increased self-care in the control group which is not accompanied by changes in self-efficacy can be because the patients have been conditioned through the "Prolanis" activities (14). If the "Prolanis" activity is not carried out, then their level of self-care will drop, or the patient will not comply with their diabetes management activities properly. The self-care perspective can be seen through two frameworks, one of which is a system centered on activities that can add value when dealing with certain diseases or health problems (15). The focus on this activity can make a person's self-care appear to increase but when the activity is completed, the level of self-care will come back down. Spiritual-based motivational self-diabetic management considers the spiritual aspects of carrying out care in relation to diabetes. The spiritual aspects can stimulate motivation so then the awareness of the patient will increase (16). Self-awareness is what contributes to increasing the patient's self-efficacy and self-care together. According to O'Brien, spirituality is based on human nature, as they are both physically and psychosocially capable of experiences such as pain or suffering (17). Spirituality is a multidimensional aspect that describes

social relations and how they are transcendently related to their beliefs with or without ties to religion (18). Spirituality can integrate with self-efficacy and have a positive impact. In previous studies, self-efficacy and spirituality can improve the quality of life of someone with a chronic illness (19,20). Good self-efficacy will improve self-care because self-efficacy can help someone to understand and predict behavior. This is in addition to boosting their commitment to care for themselves when undergoing diabetes care (21,22). A person with diabetes with good self-care shows better self-care behaviors such as adjusting their eating patterns and improving their physical exercise. This is in addition to checking their blood sugar levels and being compliant when taking medication regularly (23,24). Self-care in relation to diabetes can change the lifestyle of patients with DM. This change can be seen from the effectiveness of the changes over the four weeks of treatment, assessed by looking at their ability to control and maintain their blood sugar levels and to change the mindset of patients regarding diabetes (22,25). Based on the American Association of Diabetes Educators, there are seven focus self-care points in diabetics, including physical activity, eating healthy food, taking any prescribed medicine according to any dosage and time specifications, diligently checking their health, avoiding risks that can interfere with their health, and adaptive coping (26,27). In the HbA1c examination, it was found that the changes were only in the treatment group. This shows that self-efficacy and self-care influence become essential contributors in developing self-management abilities (28). Specifically, this is demonstrated by more patients trusting and believing that they can carry out a particular regimen, thus bettering their ability to keep their blood sugar within normal limits. A study conducted by Al-Ozairi E, Al'Awadhi, Al-Ozairi, Taghadom and Ismail (29) showed that spirituality affects people with diabetes, especially when it comes to reducing their level of depression and increasing the ability to control their blood sugar. Good spirituality in a person will also have an impact on their emotional control and emotional intelligence. A study conducted by Saffari, Pakpour, Naderi, Koenig, Baldacchino and Piper (30) showed that someone with reasonable emotional control has a lower HbA1c level.

#### LIMITATIONS

The study is limited to only examining the HbA1C level. This research has not looked at the patient's cholesterol profile, insulin level and antioxidant level. In addition, more assistance is needed in terms of filling out the questionnaire when it is conducted by the respondents.

#### CONFLICT-OF-INTEREST DISCLOSURE

No potential conflict of interest relevant to this article was reported.

#### CONCLUSION

Spiritual-based motivational self-diabetic management carried out regularly by patients with type 2 diabetes mellitus can improve their self-care behavior and self-efficacy. In addition, according to the results of the blood tests, there was a decrease in their HbA1C level. This intervention can thus be considered to be applied to people with diabetes mellitus.

#### REFERENCES

- Schaper NC, Van Netten JJ, Apelqvist J, Lipsky BA, Bakker K. Prevention and management of foot problems in diabetes: A Summary Guidance for Daily Practice 2015, based on the IWGDF guidance documents. *Diabetes Res Clin Pract.* 2017;124:84–92.
- Riskesdas. Riset Kesehatan Dasar 2018. Kementrian Kesehat Republik Indones. 2018;1–100.
- PERKENI. Pengolahan dan Pencegahan Diabetes Melitus Tipe 2 Di Indonesia 2015. 2015.
- Gurmu Y, Gela D, Aga F. Factors associated with self-care practice among adult diabetes patients in West Shoa Zone, Oromia Regional State, Ethiopia. *BMC Health Serv Res.* 2018;18(732):4–11.
- Shao Y, Liang L, Shi L, Wan C, Yu S. The Effect of Social Support on Glycemic Control in Patients with Type 2 Diabetes Mellitus: The Mediating Roles of Self-Efficacy and Adherence. *J Diabetes Res.* 2017;2017:1–8.
- De Greef KP, Deforche BI, Ruige JB, Bouckaert JJ, Tudor-Locke CE, Kaufman JM, et al. The effects of a pedometer-based behavioral modification program with telephone support on physical activity and sedentary behavior in type 2 diabetes patients. *Patient Educ Couns.* 2011;84(2):275–9.
- De Souza Ribeiro M de N, Diniz CX, Perdomo SB, De Souza Ribeiro JH, Barbosa OG, De Barros KMSC, et al. Self-esteem and resilience in people with type 2 diabetes mellitus. *Mundo da Saude.* 2017;41(2):223–31.
- Lina Mahayati S, Allenidekania, Happy H. Spirituality in adolescents with cancer. *Enfermería Clínica* [Internet]. 2018 Feb 1 [cited 2018 May 14];28:31–5. <https://www.sciencedirect.com/science/article/pii/S1130862118300329>
- Darvyri P, Christodoulakis S, Galanakis M, Avgoustidis AG, Thanopoulou A, Chrousos GP. On the Role of Spirituality and Religiosity in Type 2 Diabetes Mellitus Management—A Systematic Review. *Psychology.* 2018;09(04):728–44.
- Lewin AB, Lagreca AM, Geffken GR, Williams LB, Duke DC, Storch EA, et al. Validity and reliability of an adolescent and parent rating scale of type 1 diabetes adherence behaviors: The self-care inventory (SCI). *J Pediatr Psychol.* 2009;34(9):999–1007.
- Bijl J Van Der, Poelgeest-Eeltink A Van, Shortridge-Baggett L. The psychometric properties of the diabetes management self-efficacy scale for patients with type 2 diabetes mellitus. *Lead Glob Nurs Res* [Internet]. 2001;30(2):352–9. <https://onlinelibrary.wiley.com/doi/pdf/10.1046/j.1365-2648.1999.01077.x>
- WHO. Ethics and health: templates for informed consent forms [Internet]. World Health Organization. 2019 [cited 2019 Sep 21]. [https://www.who.int/ethics/reviewcommittee/informed\\_consent/en/](https://www.who.int/ethics/reviewcommittee/informed_consent/en/)
- SPSS I. IBM SPSS Statistics Vers 25 [Internet]. 2019 [cited 2019 Feb 23]. Available from: <https://www.ibm.com/id-en/marketplace/spss-statistics/details>
- Pyatak EA, Carandang K, Vigen CLP, Blanchard J, Diaz J, Concha-Chavez A, et al. Occupational therapy intervention improves glycemic control and quality of life among young adults with diabetes: The resilient, empowered, active living with diabetes (REAL Diabetes) randomized controlled trial. *Diabetes Care.* 2018;41(4):696–704.
- Singh D, Ham C. Improving care for people with long-term conditions: a review of UK and international frameworks. Birmingham: University of Birmingham. Heal Serv Manag Cent. 2006;
- Kusnanto. Meningkatkan Respons Psikososial-Spiritual Pada Pasien Diabetes Melitus TIPE 2 Melalui Aplikasi Model Self Care Management. *J Ners.* 2013;8(1):47–55.
- Cordova CM. The Lived Experience of Spirituality among Type 2 Diabetic Mellitus Patients with Macrovascular and / or Microvascular Complications A Dissertation Submitted to the Faculty of the School of Nursing Of The Catholic Univer. 2011;
- Moberg DO. The Development of Social Indicators for of Life Quality Research. *Sociol Anal.* 1979;40(1):11–26.
- Choi SA, Hastings JF. Religion, spirituality, coping, and resilience among African Americans with diabetes. *J Relig Spiritual Soc Work* [Internet]. 2019;38(1):93–114. <https://doi.org/10.1080/15426432.2018.1524735>
- Sukartini T, Arifin H, Rohmah UN, Ramadhani DR. Health-related quality of life for patients with cardiovascular disease after a coronary artery bypass graft: A systematic review. *Indian J Public Heal Res Dev* [Internet]. 2019;10(8):2606–10. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85073510459&doi=10.5958%2F0976-5506.2019.02261.7&partnerID=40&md5=27969397c1ee4294c6017acfd174ff2f>
- Dehghan H, Charkazi A, Kouchaki GM, Zadeh BP. General self-efficacy and diabetes management self-efficacy of diabetic patients referred to diabetes clinic of Aq. 2017;10–4.

22. Hood KK, Peterson CM, Rohan JM, Drotar D. Association Between Adherence and Glycemic Control in Pediatric Type 1 Diabetes: A Meta-analysis. *Pediatrics*. 2009;124(6):e1171-9.
23. Stewart C. The Influence on Spirituality on Substance Use of College Students. *J Drug Educ*. 2001;31(4):343-51.
24. Sukartini T, Theresia Dee TM, Probowati R, Arifin H. Behaviour model for diabetic ulcer prevention. *J Diabetes Metab Disord* [Internet]. 2020 Jan 3; <http://link.springer.com/10.1007/s40200-019-00484-1>
25. Menting J, Tack CJ, Knoop H. Prevalence and correlates of pain in fatigued patients with type 1 diabetes. *J Psychosom Res* [Internet]. 2017;95:68-73. <http://dx.doi.org/10.1016/j.jpsychores.2017.02.010>
26. AADE. AADE guidelines for the practice of diabetes self-management education and training (DSME/T). Vol. 35, *The Diabetes Educator*. SAGE Publications Sage CA: Los Angeles, CA; 2009.
27. Saleh F, Mumu SJ, Ara F, Hafez MA, Ali L. Non-adherence to self-care practices & medication and health related quality of life among patients with type 2 diabetes: A cross-sectional study. *BMC Public Health*. 2014;14(1):1-8.
28. Fallahi S, Shirinabadi Farahani A, Rassouli M, Sefidkar R. The effect of spiritual care on self confidence of adolescents with type 1 diabetes. *Iran J Endocrinol Metab*. 2018;20(3):127-34.
29. Al-Ozairi E, AlAwadhi MM, Al-Ozairi A, Taghadom E, Ismail K. A prospective study of the effect of fasting during the month of Ramadan on depression and diabetes distress in people with type 2 diabetes. *Diabetes Res Clin Pract*. 2019;153:145-9.
30. Saffari M, Pakpour AH, Naderi MK, Koenig HG, Baldacchino DR, Piper CN. Spiritual coping, religiosity and quality of life: A study on muslim patients undergoing haemodialysis. *Nephrology*. 2013;18(4):269-75.