

The Effect of Self Management Through Family E - Coaching on Decreased Blood Glucose Levels in Diabetes Mellitus Patients

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Abstract:

The purpose of this study was to determine the effect of self-management with family coaching on reducing blood glucose levels in patients with diabetes mellitus. This study used a quantitative method with a pre-experimental approach with a total sample of 30 people using a purposive sampling technique. The results of this study indicate that self-management with family coaching contributes to a decrease in blood glucose levels in diabetes mellitus patients with a significant value of $p = 0.000 > 0.05$. It can be concluded that self-management with family e coaching has an effect on reducing blood glucose levels in patients with diabetes mellitus. For future researchers, it is hoped that they can develop Android-based applications for family e-coaching.

Keywords: Self Management; Family E Coaching; Blood Glucose; Diabetes Mellitus

Introduction

Diabetes mellitus is a very dangerous chronic disease, with a prevalence that continues to increase worldwide¹. By 2021, as many as 537 million adults (20-79 years) live side by side with diabetes - 1 in 10. In fact, this number is expected to increase to 643 million in 2030 and 783 million in 2045.¹ Diabetes mellitus type 2 (T2DM) is the most common type of diabetes, around 90% -95% of all diabetes cases.² The most common risk factors for DM are increasing age, increased BMI and lack of physical activity.³

The prevalence of Diabetes Mellitus in 2019 is estimated at 9.3% (463 million people), increasing to 10.2% (578 million) in 2030 and 10.9% (700 million) in 2045.⁴ The Asian continent itself has the prevalence of DM continues to increase which is projected to increase from 78 million in 2015 to 140 million in 2040.^{4,5} Based on 2018 basic health research (Riskesmas) data, Indonesia shows an increase in DM from 6.9% in 2013 to 10.9% in 2018. The latest data for 2019 by the Indonesian Endocrinology Association (PERKENI) shows the number of DM sufferers in Indonesia has reached 9.1 million. people and ranks 7th in the world. South Sulawesi ranks 16th out of 34 provinces in Indonesia. Meanwhile, based on an initial review at the Gentungan Health Center, there are still many DM sufferers who are disobedient and do not maintain their lifestyle.⁶ There have been many interventions that have been carried out to control and even lower blood glucose in DM sufferers. By maintaining self-management of sufferers, it is hoped that their blood sugar can be controlled. Self-management activities are interconnected with each other in controlling glycemic. Physical activity, diet and medication are considered the 3 cornerstones of diabetes therapy. Increasing physical activity and improving nutritional habits in the form of a hypocaloric diet (with a varied macronutrient

composition) are very important to slow down the manifestations of DM. Regular physical activity is recommended for patients with diabetes because it has beneficial effects on metabolic risk factors for the development of diabetic complications.⁷

Remote counseling (e-coaching) using innovative technology is a promising intervention to change the behavior of patients with DM. This e-coaching is more effective in providing advice and monitoring progress at a lower cost than face-to-face education in patients with DM⁸. Results are generally positive with programs that include interventions on physical activity, nutrition based on dietary recommendations for people with DM, self-monitoring, or weight loss. However, most of the programs assessed include essential human support. In addition, the studies did not comprehensively measure their effects on dietary habits, physical activity, and metabolic parameters. E-coaching has many advantages because it can include various interventions in it including health promotion, calendars and healthy menus for people with DM.⁸⁻¹¹

Some of the studies above show direct intervention for sufferers. Researchers consider that individual intervention alone is not enough to maintain self-management so that making the family the object of this study might support blood sugar control in DM sufferers until they show positive changes. This research is in line with the focus area of Higher Education on how to maintain community health, especially in groups at risk of death such as DM.

Research Method

This study uses the type of Pre-Experimental research which aims to determine the effect that arises from the presence of certain treatments. Pre-experimental research is a research design that is given to one group only by carrying out pre- and post-intervention

measurements with a one-group pre-test and post-test design. This research is located in the Working Area of Gentungan Public Health Center, Kab. Gowa. The population in this study were all DM sufferers in the Working Area of the Gentungan Health Center. The sample in this study were 30 DM patients. The

sampling technique used was purposive sampling.

Results

The characteristics of respondents based on age, occupation, and gender can be seen in Tabl 1, 2 and 3

Table 1 Characteristics of Respondents Based on Age in 2022

Age	N	%
70-75	3	3,3
60-69	4	13.3
50-59	17	63.4
40-49	6	20
Total	30	100.0

Table 2 Characteristics of Respondents Based on Occupation in 2022

Education	N	%
Bachelor (S1)/Diploma	7	23.3
Equivalent High School	9	30
Junior High School	9	30
Primary school	5	16.7
Total	30	100

Table 3 Characteristics of Respondents Based on Gender in 2022

Gender	N	%
Male	14	23.3
Female	16	
Total	30	100

Table 3 Test t Family e - Coaching on Decreased Blood Sugar Levels in Patients with Diabetes Mellitus

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Pretest - Posttest	25.60	22.659	4.137	17.139	34.061	6.188	30	.000

Discussion

From the table above shows that the number of respondents with more dominant sex experienced by women with a total of 16 people or (53.3%). This is inversely proportional to research conducted by Hilawe et al., (2013) which explains that men are more likely to have diabetes than women.¹¹ This shows that gender does not affect the incidence of diabetes mellitus.

The table above shows that there is the most significant change in reducing blood sugar levels in DM patients after being given Family E-Coaching by looking at a significant value, namely $p = 0.00 < p = 0.05$. This is indeed very important for change for patients who experience DM. Remote counseling (e-coaching) using innovative technology is a promising intervention to change the behavior of patients with DM. This e-coaching is more effective in providing advice and monitoring progress at a lower cost than face-to-face education in patients with DM.¹² Results are generally positive with programs that include interventions on physical activity, nutrition based on dietary recommendations for people with DM, self-monitoring, or weight loss. However, most of the programs assessed include essential human support. In addition, the studies did not comprehensively measure their effects on dietary habits, physical activity, and metabolic parameters. Coaching is a collaborative, solution-focused, results-oriented and systematic process, in which the coach facilitates improvements in work performance, life experience, self-learning and personal development. Assistance is able to control blood sugar levels in DM patients.¹³ DM sufferers who have sufficient knowledge about DM, then subsequently change their behavior, will be able to control their disease conditions so they can live longer. The use of mobile applications provides significant results in reducing central blood glucose (HbA1C) and

improving self-care management of Diabetes Mellitus patients¹⁴. eHealth is a part of e-coaching with a more effective mentoring model in providing content or health materials tailored to patient needs based on unique answers given for website-based assessments.^{12,13} Modified eCoaching provides interactive customized content, visually supported content; and focuses on the different phases of behavior change, namely awareness, motivation, and self-regulation.¹¹⁻¹⁸

Remote counseling (e-coaching) using innovative technology is a promising intervention to change the behavior of patients with DM. This e-coaching is more effective in providing advice and monitoring progress at a lower cost than face-to-face education in patients with DM¹⁹. Results are generally positive with programs that include interventions on physical activity, nutrition based on dietary recommendations for people with DM, self-monitoring, or weight loss. However, most of the programs assessed include essential human support. In addition, the studies did not comprehensively measure their effects on dietary habits, physical activity, and metabolic parameters. Previous meta-analyses and systematic reviews reported the effectiveness of telemetry communication lines between health care professionals and DM patients.^{19,12}

Family support is the main key in controlling patient compliance during the independent healing process both from medication adherence, physical activity and dietary patterns. This is in line with research conducted by Arifin (2015) entitled *The Relationship between Family Support and Compliance with Type 2 Diabetes Mellitus in the Internal Medicine Polyclinic at RSUP Dr. Soeradji Tirtonegoroklaten* showed that family support has a strong relationship to dietary adherence in DM patients. In line with this research, research conducted by Mulyono

et al, (2020) concerning the Influence of Family Support Groups on Dietary Compliance in Diabetes Mellitus Patients in the Work Area of the Tangerang City Health Center also showed the same results, namely that Family Support Groups had a significant influence on Diet Compliance Diabetes Mellitus Patients. Researchers assume that by utilizing technology such as the WhatsApp application as a median Family E Coaching can provide benefits to patients' dietary adherence patterns. That way, changes in the patient's blood glucose levels can stabilize gradually. With notes, the family must be consistent in controlling the activities carried out by DM patients.

Conclusions

The results of the study show that there is an effect of Self Management through Family E Coaching on Changes in Blood Glucose in DM Patients

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