Original Article

Effects of Motivational Interviewing on the Self-Efficacy of Type 2 Diabetes Mellitus Patients

Siska Puji Lestari[1], Titin Andri Wihastuti[2], Dina Dewi Sartika Lestari Ismail[2]

[1]Graduate Student at Master of Nursing Program, [2]Lecture and Researcher, at School of Nursing, Faculty Medicine, Brawijaya University, Malang, Indonesia

Abstract

Diabetes mellitus is a metabolic disease that cannot be fully cured, thereby needing continuous treatment. As poor lifestyles increase in number and variation, the prevalence of diabetes mellitus is increasing every year. The purpose of this study is to determine the effects of motivational interviewing on the self-efficacy of type 2 diabetes mellitus patients. This study is an experimental study using Non-Randomized Control Group Pretest Posttest Design. The population was type 2 diabetes mellitus patients receiving treatment at Polres Tuban Polyclinic. Sample collection was performed purposively with a sample size of 58 patients. This study utilized univariate and bivariate analyses using the t-test for two dependent means. The results of statistical analyses showed the effects of motivational interviewing on the self-efficacy of type 2 diabetes mellitus patients in which there was an increase in the mean score of the intervention group from 27.3 to 36.8 (p=0.000). We concluded that motivational interviewing has an effect on improving the self-efficacy of type 2 diabetes mellitus patients.

Keywords: *diabetes mellitus, motivational interviewing, self-efficacy*

Introduction

Diabetes mellitus (DM) is a disease where the level of blood sugar exceeds the normal threshold. This is linked to lifestyles such as poor diet and activity habits. The risk is elevated in individuals with hereditary diabetes mellitus, uncontrolled hypertension, lack of exercise and activity and poor diet and an unhealthy lifestyle[1]. It is currently the 6th deadliest disease in the world. In 2015, 1.58 million deaths are caused directly by diabetes (2.8% of all deaths in the world) and annually as many as 1.6 million deaths are directly attributed to diabetes mellitus[2]

WHO (2016) in 2015 revealed that Indonesia ranked seventh for country with the highest prevalence of diabetes mellitus after China, India, United States, Brazil, Russia, and Mexico[3]. Diabetes with complications is the third leading cause of death in Indonesia. 2013 Data of the Basic Health Research showed a high prevalence of diabetes mellitus in Indonesia, increased from 1.1% in 2007 to 2.4% in 2013 of the total population of 250 million[4].

Corresponding author :
Siska Puji Lestari
Master Program of Nursing, Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia
Postal address : Veteran street, Malang East Java Indonesia, Postcode: 62381
Email: siskapuji96@student.ub.ac.id

Type 2 DM is a chronic disease that cannot be fully cured, leading to increasing prevalence every year[5]. Study by Dante et al. (2020) expressed that without proper treatment, diabetes patients in general have worse quality of life than non-patients due to the risk of complications[6].

Diabetes treatment depends not only on how patients manage their health but also on support from health workers who provide diabetes management education about lifestyle changes in managing the disease[7]. The core purpose of the treatment is not to cure the disease but to improve patient's functional status, lessen symptoms of complications, prolong life through secondary prevention and improve quality of life[8]. Self-efficacy requires further study because by understanding self-efficacy, one can assist health workers to guide the determination of intervention in accordance with patient conditions[9].

The management of DM into 4 primary components namely education, nutritional therapy, physical activity, and pharmacological interventions[10]. One intervention to help transform patient behaviors by taking advantage of interpersonal relationship is motivational interviewing[11]. There is a difference between the group given motivational interviewing and the control group, where a significant difference of $p < 0.05$ was found for HbA1C measure, that is, the intervention is able to affect the quality of life of DM patients. Women with type 2 diabetes mellitus showed that medical nutritional intervention with motivational interviewing approach is proven to improve glycemic control and self-confidence of respondents[12].

The number of DM patients at the Polres Tuban Polyclinic, severe burden caused by DM and its complications, its effects to patient's quality of life, and the lack of studies focusing on interventions through counseling with the motivational interview approach combined with physical activity encourage the researchers to investigate the effects of motivational interviewing on the self-efficacy of type 2 diabetes mellitus patients in the region.

Result and Method

Location and Research Design

The study was conducted at the Polres Tuban Polyclinic using Quasi Experimental design with Non-Randomized Control Group Pretest Posttest from March 1 to April 1, 2021.

Population and Sample

The population was all type 2 diabetes mellitus patients receiving treatment at the Polres Tuban Polyclinic in 2021. The sample size was 58 patients selected using purposive sampling technique.

Data Collection Method

Data collection began with secondary data which were type 2 DM patient data recorded in the medical records of the Polres Tuban Polyclinic. During the administration, data were obtained through direct interviews with the respondents during pretest and posttest using the GSE (General Self-Efficacy) questionnaire which has been tested for validity and reliability on the questionnaire in Indonesian. During the intervention stage, respondents in the intervention group were given motivational interviewing counseling by the counselor while the control group were be given a module containing the life guide of DM patients.

Data Analysis

Data analyses were performed univariately and bivariately. Univariate analysis was used to identify respondent characteristics presented in the table. Bivariate analysis was used to describe the differences between independent and dependent variables using Wilcoxon test with a level of significance (alpha-α) 5%. To determine the difference between mean values of two paired groups (two samples), manwithney test was performed.

Results

Respondent Characteristics

Table 1 shows respondent characteristics based on age group, gender, employment, marital status, family history and routine blood checks. For age group, most respondents belong to age groups 51-60 years and 41-50 years, where 17 (58.6%) respondents from the intervention group belong to both age groups and 14 (48.2%) from the control group belong to both age groups. Of the total 29 respondents in the intervention group, 80% (24 respondents) of them are women, while 63% (19 respondents) of the respondents in the control group are women. In terms of employment, most of the respondents in the intervention and control groups are housewives with the proportions of 60% (18 people) and 46.7% (14 people), respectively. Based family history of DM, 33.3% (10 people) in the intervention group and 30% (9 people) in the control group have a history of DM. According to the status of routine blood sugar checks, 3.3% (1 person) of the intervention group respondents said they did not routinely check their blood sugar at the health care center, while in the control group, 23.3% of the respondents stated the same

Table 1 Characteristics of Respondents

Characteristics of Respondents	Intervention Group		Control Group	
	Frequency	%	Frequency	%
Age				
30-40	1	3.44	1	3.44
41-50	9	31.03	5	17.24
51-60	17	58.62	14	48.27
61-70	2	6.89	9	31.03
Gender				
Male	6	20.68	11	37.93
Female	23	79.31	18	62.06
Work				
Civil servants	3	10.34	1	3.44
Private employees	1	3.44	1	3.44
Self employed	3	10.34	5	17.24
Farmer	4	13.79	8	27.58
Housewife	18	62.06	14	48.27
Family history of diabetes mellitus				
Yes	10	34.48	9	31.03
No	19	65.51	20	68.96
Routine blood check				
Yes	28	96.55	22	75.86
No	1	3.44	7	24.13

Table 2 shows respondent distribution based on statistical values which are the minimum and maximum values of pretest and posttest scores, the average value (mean) and standard deviation. The mean value in the self-efficacy domain for the intervention group during the pretest was 27.3 with a standard deviation of 1.16, rising to 36.8 with a standard deviation of 1.28. The lowest score during the pretest was 24 and the highest was 29, while the lowest score during the posttest was 34 and the highest was 39. The control group's result shows that the mean value of the self-efficacy domain during the pretest was 28.5 with a standard deviation of 1.27, dropping to 28.3 with a standard deviation of 0.82. The lowest score during the pretest was 27 and the highest was 32, while the lowest score during the posttest was 26 and the highest was 30.

Table 2 Distribution of respondents by self-efficacy statistical value

Statistical value	Pretest	Posttest
Intervention group		
Minimum	24	34
Maximum	29	39
Mean	27.3	36.8
Standard deviation	1.16	1.28
Control group		
Minimum	27	26
Maximum	32	30
Mean	28.5	38.3
Standard deviation	1.27	0.82

Table 3 shows the difference in means for the pretest and posttest of the self-efficacy domain for both groups. There was a difference between the two groups, where the mean value for the intervention group increased from 27.3 at the pretest to 36.8 at the posttest. While the control group decreased from 28.5 at the pretest to 28.3 at the posttest. The results of statistical tests show a p value of 0.000 ($p < 0.05$) for the intervention group, meaning that that there is a difference in the respondents' self-efficacy values before and after being given motivational interviewing. For the control group, the statistical test shows a p value of 0.368 ($p > 0.05$), meaning that there is no difference in self-efficacy values during the pretest and posttest. The difference in the mean self-efficacy scores between the intervention and control groups at the posttest was 8.5.

Discussion

Our results show an increase in the mean score of the self-efficacy variable at the pretest and posttest for the intervention group after being given motivational interviewing. The statistical test shows p value < 0.05, demonstrating a significance difference of 8.5 in the

mean value of self-efficacy between the intervention and control groups, leading to a conclusion that motivational interviewing has an effect on the self-efficacy of type 2 DM patients.

This self-efficacy is related to individual probability to lead a healthy lifestyle. People who lack conviction that they can practice a behavior supportive of their health will tend to be reluctant to make an attempt[13]. The essential behavior for diabetes patients is medication adherence, where it is very closely related to the willingness and belief of the patient themselves. Self-efficacy varies from situation to situation depending on the competencies required for different activities and the presence of other people[14].

Our results are in line with the study by Renate et al. (2013) on type 2 diabetes mellitus patients in Netherlands, demonstrating that the experimental group who was given motivational interviewing through motivational and cognitive enhancement therapy showed a significant improvement in terms of quality of life physically and mentally compared to the control group that displayed no improvement throughout the research[14].

Study by Fathi (2018) in Sudan found a positive significant relationship between physical activities and the score of Health-Related Quality of Life on the dimensions of physical function, vitality and general health of type 2 DM patients[15]. However, these results are not in line with the study by Catherine (2014) in Toronto that found no significant intervention based a web to support self management, the self efficacy score did not improve (p value = 0.263)[9]. Furthermore, a quasi-experiment by Hasan et al (2021) on diabetes mellitus patients obtained similar significant the intervention group given a counselling the self efficacy score is 91 ($p<0.05$)[16].

Chen found that counselling positively affects domain self management, glycemics outcomes and psychological of type 2 DM patients where a significant mean the intervention groups was found with p value = 0.001 ($p < 0.05$)[17]. Li (2014) also found intervention through motivational interviewing to be effective in improving self-management (including activity, diet and medication aspects) and glycemic control in type 2 diabetes mellitus patients[18].

Study by Song et al. (2014) on diabetic patients aged >18 year in Chinese revealed that scores in all dimensions of Health-Related Quality of Life (HRQoL) were significantly higher ($p < 0.05$) in the moderate and high physical activity group compared to the love physical activity group, and also a significant correlation between the five dimensions in HRQoL and physical activity level ($p < 0.001$)[19]. The experimental study by Kamal et al. (2017) on 50 group intervention namely motivational interviewing arm the score was significant p=0.0001 patients with type 2 diabetes overweight and obesity to be effective in increasing weight[20].

Conclusion

There is an increase in the self-efficacy of type 2 DM patients at the Polres Tuban Polyclinic (intervention group) before and after the administration of the motivational interviewing program. Consistency is the key for type 2 DM patients in carrying out physical activities (exercise) routinely and continuously along with innovations in the management of DM patients through effective counseling. The polyclinic needs to develop a program for applying the intervention method of DM management through the motivational interviewing approach which could facilitate the internalization of self-management and independence for better quality of life.

Ethical Clearance : Ethical clearance was taken from Faculty Medicine of Brawijaya University No.51/EC/KEPK-S2/02/2021

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