

## Research Article

# Reducing depression level of diabetes mellitus patient by psychoeducation by means of poster

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### ABSTRACT

**Background:** Diabetes Mellitus (DM) is a chronic, lifelong disease that requires continuous treatment and strict diet that could affect physical, psychological, and social function of an individual. Diabetes Mellitus patients tend to have chronic stress due to long period of emotional struggle that could lead to depression. One of the proven psychological interventions to treat depression is by psychoeducation.

**Methods:** This was a quantitative study, with purposive sampling and pretest-posttest design with control group method. This study used two groups, which were intervention group (group with treatment) and control group. This study was conducted at the Baki public health center, Sukoharjo, Central Java, Indonesia, from April to May 2016. The total respondent was 40 persons with mild to moderate depression level. We assessed depression level by using Patient Health Questionnaire (PHQ-9). Data analysis was calculated using paired t test, data normality test was calculated using Shapiro-Wilk statistical test.

**Results:** This study showed that depression level for respondents in intervention group before intervention was in mild category, with the average value of 7.80, then after received psychoeducation therapy, the average value declined 3.60 points to 4.20 (no depression) and P value 0.000. In control group, the depression level was in mild category, with the average value of 8.15, these value decreased by 0.2 points to 7.98 (still in mild depression) after post test with P value 0.464. The depression level of Diabetes Mellitus patient who received psychoeducation declined significantly compared to the patient in control group.

**Conclusions:** Psychoeducation intervention had significant effect on reducing depression level for Diabetes Mellitus patient.

**Keywords:** Depression, Diabetes mellitus, Psychoeducation, Poster

### INTRODUCTION

Diabetes Mellitus (DM) is a chronic, lifelong disease that requires continuous treatment and strict diet that could affect physical, psychological, and social function of an individual.<sup>1,2</sup> The major psychological effect of DM patients is the affected lifestyle. An individual who experience severe stress tends to consume fast foods that are rich with preservatives, fat, and sugar. This type of food will affect pancreas function. In addition, the stress will also increase the metabolism and improve the body's

energy requirement thus further increase the pancreas function. This lifelong struggle could lead to a depression.<sup>3,4</sup> One type of psychological interventions that has been proven effective to cope with depression is psychoeducation.<sup>5</sup> A meta-analysis shows that psychoeducation has similar effect to other treatment modalities in treating depression. In Europe, psychoeducation intervention has showed significant results in treating mild and moderate depression.<sup>6</sup>

Classification of psychoeducation intervention group is based on three fundamental treatment aspects for DM patients with depression, which are improving knowledge, promoting healthy lifestyle and beneficial habits, and developing resources for critical condition (cognitive therapy, problem solving and relaxation-breathing).<sup>6,7</sup>

The aims of this study were: (1) To analyze DM patients' depression level before treating with psychoeducation and pre-test for treatment group and control group, respectively, (2) To analyze changes in depression level before and after intervention in treatment and control groups, and (3) To analyze depression level distinction between DM patients in treatment and control groups after psychoeducation therapy.

## METHODS

This was a quantitative study, with purposive sampling and pretest-posttest design with control group method. This study used two groups, which were intervention group (group with treatment) and control group. Purposive sampling is a sample collection method in such a way to ensure desired representation based on authors' specific consideration.

This study was conducted at the Baki Public Health Center, Sukoharjo, starting from April to May 2016. This study was approved by Ethics Committee of Faculty of Medicine, University of Diponegoro and Regional Development Planning Agency for Sukoharjo region.

Population of this study was Diabetes Mellitus patients who live near Public Health Center area. Inclusion criteria were: patient with mild and moderate depression level, consented to being a respondent and completing all study procedures, was able to communicate verbally, and sickness duration was longer than one year. Exclusion criteria were: patient who was unable to complete the psychoeducation intervention and experienced other physical disease complications.

In this study, the total number of respondent was 53, yet there were 13 excluded respondents, therefore there were 40 involved respondents, as can be seen in Figure 1.

### *Study preparation stage*

In this stage, we conducted content validity test on psychoeducation material that would be displayed on poster. Poster was used by author's media of therapy to treat depression for DM patients. The information on the poster was developed from other studies and review of literatures from Miguel angel et.al dan Rocio Casanas et.al.<sup>6,8-11</sup> Then, we perform validity and depression questionnaire reliability test on 30 respondents. Validity test used Pearson Product Moment correlation formula ( $N=30$ ,  $r$  table=0.361 with significance value 5%) that resulted the number of 0.43-0.77. Reliability test used

Cronbach Alpha formula and the result was  $r = 0.70$  (reliable).

We chose two independent assessors to assess respondent's depression level. They were two medical personnel with more than 2 years work experience. Agreement level of the assessment then tested by Kappa Cohen coefficient. Test result ( $K = 0.786$ ) showed that the assessed value between two assessors had similar consistency.

### *Study implementation stage*

The first day of the study was coincided with the Public Health Center program to check the blood sugar. On this day, there were 33 respondents who agreed to participate in the study. Authors calculated the depression level score using PHQ-9 (Patient Health Questionnaire) questionnaire on 33 Diabetes Mellitus patients. The calculation showed that 20 respondents were suitable for the study while the other 13 were not. These 20 respondents then classified as intervention group. For control group, authors visited the patients' houses, explained the study to them and successfully obtained 20 suitable respondents who were consented to participate in the study. The psychoeducation intervention had three sessions. In session II and III, the authors initially gave an example and then the respondents were divided into two groups of 10 respondents. Each group has one tutor to help the respondents. In each group, every respondent alternately practiced the example that had been shown by authors.

Session I was conducted in the first week after depression pre-test with 45 minutes duration. In this session, respondents received counselling regarding Diabetes Mellitus and depression. Session II was conducted in the following week with 60 minutes duration. In this session, respondents were taught regarding daily calorie requirement calculation with the following equation. (1) Ideal body weight was calculated by  $(\text{Height} - 100) - 10\%$  weight, (2) calorie requirement was calculated by  $(\text{Ideal body weight} \times 25 \text{ for female})$  or  $(\text{Ideal body weight} \times 30 \text{ for male})$ , (3) the calculated energy requirement then used to select proper diet for the respondents. Session III was conducted on the third week with 60 minutes duration. In this session, respondents were taught regarding progressive relaxation depression management by: asking respondents to take off their glasses, watch, or belt (if wearing any), arranging respondents to sit or lie down in a way to make them feel comfortable, suggesting respondents to take a deep breath and exhale it slowly (3-5 times) and saying the word "relax" in a calm voice, suggesting respondents to identify tense muscle, then contracting it for 5-7 seconds and followed by relaxed it for 20-30 seconds. The tutor in the group demonstrated these following four exercises of contracting and relaxing muscles while taking a deep breath and exhaling slowly. Exercise 1: frowning for 5-7 seconds then relaxing for 20-30 seconds. Exercise 2: tightening the shoulder for 5-7

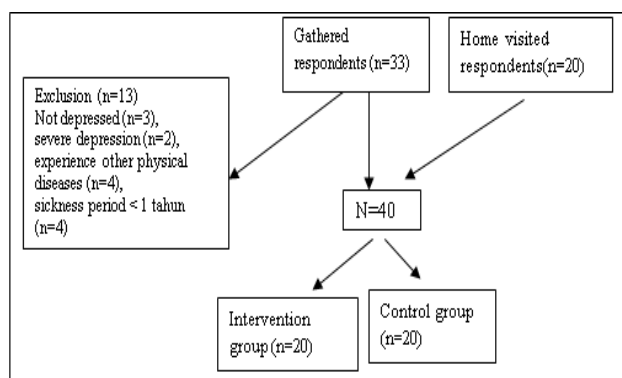
seconds then relaxing for 20-30 seconds. Exercise 3: contracting the biceps for 5-7 seconds then relaxing for 20-30 seconds. Exercise 4: tightening the calves for 5-7 seconds then relaxing for 20-30 seconds.

Post-test for intervention group was conducted one day after the last session was finished. Post test was conducted by visiting the respondents' homes and giving them poster after completion.

**Table 1: Distribution of respondents' homogeneity based on age, gender, education level, employment, monthly income compared to regional minimum wage (RMW), and marital status.**

Characteristic	Intervention Group		Control Group		Total		P Value
	(N=20)	%	(N = 20)	%	(N=40)	%	
<b>Age</b>							1.00
a. Adult	9	45	9	45	18	45	
b. Elderly	11	55	11	55	22	55	
<b>Gender</b>							0.108
a. Male	10	47.4	5	25	15	37.5	
b. Female	10	52.6	15	75	25	62.5	
<b>Education level</b>							0.096
a. Low	16	84.2	11	55	27	67.5	
b. High	4	15.8	9	45	13	32.5	
<b>Employment</b>							0.214
a. Unemployed	7	36.8	11	55	18	45	
b. Employed	13	63.2	9	45	22	55	
<b>Monthly income</b>							0.520
a. < RMW	12	63.2	14	70	26	65	
b. > RMW	8	36.8	6	30	14	35	
<b>Marital Status</b>							0.643
a. Married	17	84.2	18	90	35	87.5	
b. Divorced/ Widowed	3	15.8	2	10	5	12.5	

The results showed that there were no significant distinctions in the age, education level, employment, gender, monthly income, and marital status average between intervention and control groups. Even though other theories or studies argue that age affects an individual depression level, this study contradicts it.<sup>12</sup>



**Figure 1: Sample Research.**

**RESULTS**

Homogeneity test showed that all data in intervention and control groups were homogeneity. Normality test showed that data were distributed normally thus the subsequent data analysis was done by independent sample test and paired t test.

In this study, we found that all respondents regardless of their age felt stress when being informed they were diagnosed with chronic disease. Notoatmojo explains that education level generally influenced mindset, behavioral pattern, and decision making.

**Table 2: Homogeneity analysis of DM depression level before intervention by Paired t test (n = 40).**

Group	N	Mean	SD	Min-Max	P Value
Intervention	20	7.80	3.037	5-14	0.686
Control	20	8.15	2.346	5-14	
Total	40	7.97	2.691	5-14	

A person with higher education level will have more mature mindset and behavior.<sup>13</sup> Respondents' characteristics homogeneity was calculated by independent samples test. Statistical analysis result showed that in the homogeneity test of gender, education level,

employment, monthly income and marital status, all characteristic had p value >0.05. It means that there were

no significant differences between these two groups, or they showed homogeneity characteristics.

**Table 3: Analysis of depression level difference before and after intervention (N=40).**

Variable	Group	Therapy	Mean	SD	SE	P Value
Depression Level	Intervention	Before	7.80	3.037	0.679	0.000
		After	4.20	2.215	0.495	
		Difference	3.60	0.822	0.184	
	Control	Before	8.15	2.346	0.525	0.464
		After	7.95	2.523	0.564	
		Difference	0.2	- 0.177	- 0.039	

**Table 4: Comparison of depression level after intervention (n = 40).**

Variable	Group	N	Mean	SD	SE	P Value
Depression	Intervention Control	20	4.20	2.215	0.495	0.000
		20	7.95	2.523	0.564	

## DISCUSSION

### *Respondents data homogeneity*

The results showed that there were no significant distinctions in the age, education level, employment, gender, monthly income, and marital status average between intervention and control groups. Even though other theories or studies argue that age affects an individual depression level, this study contradicts it. In this study, we found that all respondents regardless of their age felt stress when being informed they were diagnosed with chronic disease.<sup>12</sup> Notoatmojo explains that education level generally influenced mindset, behavioral pattern, and decision making. A person with higher education level will have more mature mindset and behavior.<sup>13</sup>

### *The effects of psychoeducation on depression*

Psychoeducation is an activity for improving coping strategies of an individual or a family to overcome difficulties arisen from mental changes.<sup>14</sup> Depression is a mood swings that has several signs, such as: sadness, hopeless, pessimism, losing interest in daily activities, showing somatic symptoms, change in appetite and normal sleep pattern.<sup>5</sup> The results showed that depression level for respondents in intervention group before intervention was in mild category, with the average value of 7.80, then after received psychoeducation therapy, the average value declined 3.60 points to 4.20 (no depression) and P value 0.000. In control group, the depression level was in mild category, with the average value of 8.15, these value decreased by 0.2 points to 7.98 (still in mild category) after post-test with P value 0.464. The depression level of DM patient who received psychoeducation declined significantly compared to the

patient in control group. This shows significant effect of psychoeducation in reducing DM patient depression level.

Signs and symptoms of depression are varied for each person. General complaints of depression told by respondents in this study were difficult to concentrate, sleep pattern disturbance, change in appetite, and losing interest in daily activities.<sup>15</sup> DM is a chronic, lifelong disease that requires continuous treatment by managing proper diet, doing physical exercises, checking blood sugar level and consuming the medicine routinely. These treatments could bring positive psychological effect on the patients.<sup>10,16</sup> In this study, respondents depression level were assessed using a questionnaire for patient health questionnaire depression (PHQ-9) that comprised of 9 questions with category and score range as follows: no depression (0 - 4), mild depression (5 - 9), moderate depression (10 - 14), severe depression (>15).<sup>17</sup>

Statistical test results showed significant difference of average depression level decline for respondents in both groups. With P value 0.00, depression level for respondents in intervention group (after intervention) and control group (after post-test) were 4.20 and 7.95, respectively. All respondents were depressed before receiving psychoeducation intervention (in accordance with the inclusion criteria) with varying scores.

The study results showed that there was significant effect of psychoeducation on reducing depression level, as similarly explained by Penckofer, et al. They used group therapy psychoeducation model to treat depression based on cognitive behavior therapy principles developed for women with type 2 diabetes.

In this study, they found that psychoeducation had significant effect on treating depression for women with type 2 diabetes.<sup>18</sup>

Psychoeducation intervention in this study was conducted by various medical counselling regarding DM and depression, proper diet for DM patient, and depression management by giving progressive relaxation exercises to cope with depression. The proper diet was obtained by firstly calculating the ideal daily energy requirement for each patient.<sup>8-10,19</sup> Education intervention was given by lecture, discussion, and demonstration in small group or per person, and providing leaflet regarding DM and depression and poster explaining how to calculate daily energy requirement and example of progressive relaxation exercises.<sup>20</sup> These methods were similar to Ahmad's study where he found that proper professional support helped reducing stress and coping with depression by providing information and emotional support, De'bora, et al also explains in her study of psychoeducation intervention to assess the effect of eight session cognitive exercises and education program for DM elderly patients. This study showed significant effect of these treatments on increasing cognitive and behavior while improving knowledge of DM.<sup>21-23</sup>

## CONCLUSION

Psychoeducation intervention had significant effect on reducing depression level for DM patient with average depression decline difference was 3.60. Authors would like to give a suggestion for DM patient to use psychoeducation, especially by progressive relaxation depression management to help coping with depression.

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