

Acceptance and Commitment Therapy (ACT) on the Improvement of Self-Esteem and Quality of Life Sufferers of Diabetes Mellitus Type 2

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Acceptance and Commitment Therapy (ACT) on the Improvement of Self-Esteem and Quality of Life Sufferers of Diabetes Mellitus Type 2

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Abstract: Sufferers of diabetes mellitus type 2 experience physical, psychological, and sexual changes. These changes can cause problems, reduced self-esteem and quality of life. The purpose of this study was to prove the influence of Acceptance and Commitment Therapy (ACT) in improving self-esteem and quality of life of sufferers of DM type 2. This study was a quasi-experiment research using pretest posttest with control group design method. Respondents in this study were 50 sufferers of DM type 2 and were sampled using simple random sampling technique and divided into two groups, which were control group and treatment group by purposive sampling technique. Data was collected by Rosenberg Self-Esteem Scale (RSEs) and Diabetes Quality of Life (DQoL). ACT was given to the treatment group one a week for four weeks. Data was analyzed using statistical tests which were Paired t-Test and Independent t-Test, multiple linear regression, and MANOVA with significance $p < 0,05$. The analysis result showed that there was a significant difference of self-esteem and quality of life between the control group and the treatment group with $p\text{-value} = 0,000$. ACT intervention was the most influential variable for the self-esteem and quality of life of sufferers of DM type 2 with sig 0,000. ACT was more influential to the change of quality of life of sufferers of DM type 2 based on the result of multivariate analysis sig 0,000 and mean 1030,58. ACT intervention was effective to the improvement of self-esteem and quality of life of sufferers of DM type 2. ACT could be performed well because respondents and therapists were proactive, and should involve the role and support of families in future researches.

Keywords: Acceptance and Commitment Therapy, sufferers of DM type 2, self-esteem, quality of life

INTRODUCTION

Diabetes Mellitus (DM) is one of degenerative diseases which aren't contagious which will increase in the future. There are 230 million sufferers of DM type 2 in the world. Incidences



of DM type 2 in Indonesia increased by 3% or 7 million sufferers every year. The number of deaths due to DM will increase twofold between 2005 and 2030 [1]. Health change of sufferers of DM type 2 can cause changes of physical and psychological conditions in sufferers [2]. If sufferers of DM type 2 can't quickly adapt to the changes, self-esteem will decrease and personality disorders and other psychological disorders may occur. These can reduce the quality of life of sufferers and worsen their conditions [3]. Efforts to solve low self-esteem and improve quality of life of sufferers of DM type 2 are understanding changes, improving confidence on physical condition (self-image), trying to accept and adapt with changes and building commitment to face problems. These four stages are explained in Meleis's transition theory which contains nursing therapeutic concept [4].

Acceptance and Commitment Therapy (ACT) is one of Cognitive Behavior Therapies (CBT) which is quite effective in improving more flexible psychological aspects or improve the ability to face changes [5]. The cognitive changes are positive thinking, stable emotional responses, positive problem-solving, good social support between individuals in groups, good acceptance and commitment in performing tasks well [6]. The researcher attempted to prove ACT as one of the efforts to improve self-esteem and quality of life by improving clients' psyche to produce adaptive responses and coping in clients in solving health changes of sufferers of DM type 2 by using Meleis's Transition Theory approach.

MATERIALS AND METHODS

It's a quasi-experimental research with pre post test design with control group. The researcher involved a control group and a treatment group, then the control group and the treatment group were each given socialization of pillars of DM management and pre-test, which was measurement of self-esteem and quality of life, was conducted, and then ACT intervention was given to the treatment group. After four weeks, post-test was conducted on both groups. Sampling was performed on the control group and the treatment group (simple random sampling) then the division was performed as the researcher desired (purposive sampling) which was 25 people for the control group and 25 people for the treatment group.

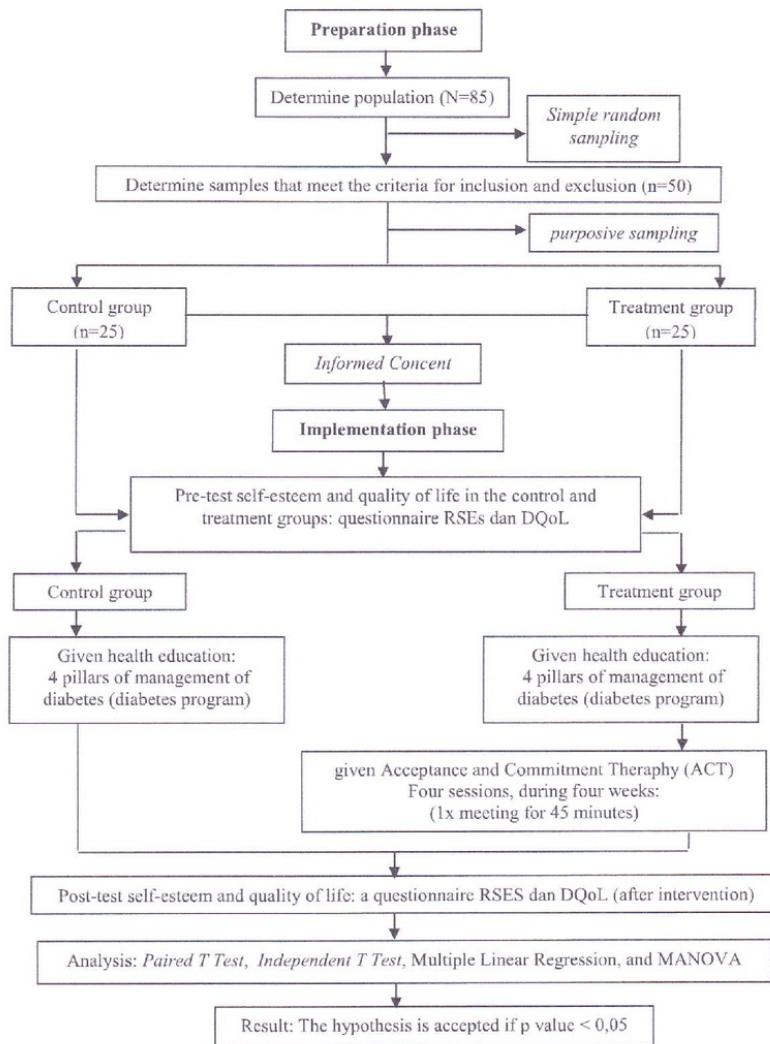


Figure 1 — Framework of Research

The research was conducted in diabetes poly of Adi Husada Medical Center, Surabaya, from May to June 2015. Research variables consisted of independent variable, which was Acceptance and Commitment Therapy (ACT), and dependent variables which were self-esteem and quality of life. Ethics in this research considered seven instructions that include: informed consent, anonymity, autonomy, confidentiality, beneficency, non maleficency, veracity, and justice. The principle of justice remain to be addressed in this research, so that in the control group will be given anyway ACT. Giving ACT will be made after the final results were presented at the Hospital.

RESULTS AND DISCUSSION

Univariate Analysis

Table 1 Frequency Distribution of Respondents' Characteristics (N=50)

No.	Characteristic	Control Group (n=25)		Treatment Group (n=25)		ρ^*
		n	%	n	%	
1	Age (year)					
	46-55	11	44	11	44	1,00**
	≤56-65	10	40	9	36	
≤66-75	4	16	5	20		
2	Sex					
	Male	6	24	8	32	0,75*
Female	19	76	17	68		
3	Last Education					
	Junior High School	13	52	11	44	0,87**
	High School	7	28	8	32	
Associate/Undergraduate/Graduate	5	20	6	24		
4	Occupation					
	Civil Servant	0	0	2	8	0,27**
	Private Employee	3	12	3	12	
	Entrepreneur	3	12	7	28	
	Retired	7	28	3	12	
Unemployed	12	48	10	40		
5	Income					
	Rp 500.000,00 - <Rp. 1.000.000,00	4	16	0	0	0,19**
	Rp. 1.000.000,00 - <Rp. 1.500.000,00	16	64	16	64	
	Rp. > 1.500.000,00	5	20	4	16	
6	Time Period of DM					
	≤1-3 years	9	36	14	56	0,37**
	≤4-6 years	11	44	7	28	
>6 years	5	20	4	16		

* $p < 0,05$ Based on Pearson Chi-Square test

** $p < 0,05$ Based on Chi-Square Fisher's Exact Test

Table 1 shows that there was no difference in respondents' characteristics which include age, sex, education, occupation, and time period of DM between the control group and the treatment group. The treatment group of self-esteem and poor quality of life based on table 1 show that majority of respondent in the age range 46-55 years old (44%), female (68%), junior high school education last (44%), most do not work (40%), and suffering DM range $\leq 1-3$ years (56%). This is in accordance with the concept of diabetes mellitus disease that most people with diabetes is in the range entering the age of the elderly. Sufferers of diabetes mellitus with a range of 1-3 years is a period which is still experiencing symptoms of physical and psychological changes that are thought to bring problems for respondents.

Bivariate Analysis

Self-Esteem

Table 2 Change of respondents' self-esteem before and after ACT

Respondent	Self-Esteem		95% CI	t	ρ^*
	Before (Mean \pm SD)	After (Mean \pm SD)			
Control Group	27,00 \pm 2,45	23,88 \pm 2,21	-4,08 ; -2,16	-6,74	0,00
Treatment Group	24,36 \pm 2,43	28,12 \pm 1,72	3,13 ; 4,39	12,25	0,00

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

Table 2 shows that the result of *paired t*-test is $p = 0,00$ while based on concept $p < 0,05$ so it was concluded that there was a significant change of self-esteem before and after the intervention. The treatment group experienced an improvement of self-esteem marked by *t* count value of 12,25 while in the control group there was a decline of self-esteem with *t* count value of -6,74.

Table 3 Difference between respondents' self-esteem before and after ACT

Self-esteem	Control Group (Mean \pm SD)	Treatment Group (Mean \pm SD)	Mean Difference	95% CI	ρ^*
Difference	-3,12 \pm 2,32	3,76 \pm 1,54	6,88	5,76 ; 7,10	0,00

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

Table 3 shows that the average difference of self-esteem change before and after ACT in the control group and the treatment group is 6,88 point. Independent sample *t*-test statistical test produced $p = 0,00$ while based on concept $p < 0,05$ so it was concluded that there were significant differences of self-esteem change before and after ACT in the control group and the treatment group.

Quality of Life

Table 4 Change of respondents' quality of life before and after ACT

Respondent	Quality of Life		95% CI	t	ρ^*
	Before (Mean±SD)	After (Mean±SD)			
Control Group	54,16±2,75	50,48±2,28	-4,68 ; -2,68	-7,58	0,00
Treatment Group	56,40±1,85	61,80±2,55	4,68 ; 6,13	15,38	0,00

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

Source: Primary Data 2015

Table 4 shows that paired t-Test statistical test produced $p = 0,00$ while based on concept $p < 0,05$ so it was concluded that there was a significant change of the quality of life of the control group and the treatment group before and after intervention. Treatment group experienced an improvement of life quality as proven by t count value of 15,38 while control group experienced a decline of quality of life as proven by t count value of -7,58.

Table 5 Difference of respondents' quality of life before and after ACT

Quality of Life	Control Group (Mean±SD)	Treatment Group (Mean±SD)	Mean Difference	95% CI	ρ^*
Difference	-3,68±2,43	5,40±1,76	9,08	7,88 ; 10,29	0,00

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

Table 5 shows that independent sample t-Test statistical test produced $p = 0,00$ while based on concept $p < 0,05$ so it was concluded that there were significant differences of change of quality of life between the control group and the treatment group.

Multivariate Analysis

Multiple linear regression of Self-esteem

Table 6 Result of bivariate analysis of risk factors related to self-esteem

Risk Factor	ρ^*
Age	0,476
Sex	0,453
ACT Intervention	0,000

* $p < 0,250$ Based on primary data 2015

The result of bivariate analysis of factors related to self-esteem shows that only one variable has $p < 0,250$ i.e. ACT intervention has $p = 0,000$. The variable will be described in multiple linear regression analysis for the variable influencing self-esteem.

Table 7 Result of linear regression of ACT intervention on self-esteem

Risk Factor	B	Beta	Sig
Constant	20,95		0,000
ACT Intervention	4,09	0,71	0,000

* $p < 0,05$ Based on linear regression

Table 7 shows that the constant value of self-esteem is 20,95 showing that there was a change of self-esteem without contribution from any variable. The analysis result was ACT intervention was the factor which most strongly influenced improvement of self-esteem. Linear regression equation: $Y = a + b_1X_1$: 20,95 + 4,09 (ACT), if ACT variable is 0 then self-esteem is 20,95. Every additional 1 frequency of ACT intervention improvement of self-esteem by 4,09.

Multiple linear regression of quality of life

Table 8 Result of bivariate analysis of risk factors related to quality of life

Risk Factor	p^*
Age	0,654
Sex	0,762
Education	0,556
Occupation	0,312
Income	0,174
Time period of DM	0,226
ACT Intervention	0,000

* $p < 0,250$ Based on primary data 2015

The result of bivariate analysis showed that the three variables which have $p < 0,250$ were income has $p = 0,174$ and time period of DM has $p = 0,226$ and then ACT intervention has $p = 0,000$. The three variables will be explained in the multiple linear regression analysis for variables influencing quality of life.

Table 9 Linear regression analysis of income, time period of DM and ACT intervention on quality of life

Risk Factor	B	Beta	Sig
Constant	40,46		0,000
Income	0,28	0,04	0,549
Time Period of DM	-0,23	-0,03	0,664
ACT Intervention	11,20	0,91	0,000

* $p < 0,05$ Based on linear regression

Table 9 shows that the constant value of quality of life 40,46, showing that there was a change of quality of life without contribution from any variable. The analysis result was ACT

intervention was the factor which most strongly influenced improvement of quality of life. Linear regression equation: $Y = a + b_1x_1 + b_2x_2 + b_3x_3$: $40,46 + 0,28$ (income) $- 0,23$ (time period of DM) $+ 11,20$ (ACT), if ACT, income, and time period of DM variables are 0, then self-esteem is 40,46. Every additional 1 rupiah of income improvement of quality of life by 0,28. Every additional 1 year of time period of DM decreased quality of life by 0,23 and every additional 1 frequency of ACT intervention improvement of quality of life by 11,20.

MANOVA

Table 10 Manova analysis of ACT intervention on self-esteem and quality of life

Variable	Mean	ρ^*
Change of self-esteem	591,68	0,000
Change of quality of life	1030,58	0,000

* $p < 0,05$ based on manova

Table 10 shows the result of multivariate analysis by manova where ACT intervention influenced self-esteem and quality of life variables. The result of manova statistical test is $p = 0,000$. $p < 0,05$ so it was concluded that there were significant improvements of self-esteem and quality of life. ACT had stronger influence on improvement of quality of life, as proven by larger mean score of change than self-esteem.

DISCUSSION

Respondent's Characteristics

This study aimed to analyze the characteristics of respondents who were sufferers of diabetes mellitus (DM) type 2, including age, sex, education, income, culture, and time period of DM. The result of measurement of respondents' characteristic variable by age showed that it was in the range of 46-55 year-old. The age range is late adulthood to elderly. Physically, at that age, bodily functions decline and degenerative problems, such as DM type 2, occur. Entering the old age, there are problems in atherosclerosis and macroangiopathy. Both influence blood circulation, including large blood vessels in the legs which easily happen in diabetes mellitus [8]. DM type 2 more often happens at the age of over 45 year-old because older cells are more resistant to insulin and because there is glucose use declines. Physiologically declining bodily functions causes the ability of the body to control high blood glucose level to be suboptimal [9].

Respondents' characteristic based on sex was largely women. This is because average fat in adult men is around 15-20% of total body weight, and 20-25% in women. So, increase lipid or blood fat level in women is higher than in men, so the risk factor of DM in women is 3-7 times higher than in men, which is 2-3 times [10].

Respondents' characteristic based on last education showed that most respondents were junior high school graduate. Education level influences health. Individual with high education have knowledge on health, so the individuals have awareness in maintaining their health. Education level generally influences the ability to process information [11].

A study by Irawan [11] states that there is a relation between education level and DM incidence. People with low education have greater risk of having DM than people with high education. People with low level of education usually have little knowledge. The higher the education, the greater the attention to health. However, some people who have high education still ignore their health for various reasons, including due to work which causes high activity, so that they have irregular lifestyle or eating pattern, causing health problems [12].

Respondents' characteristic by income showed that most had adequate income. Respondents' characteristic by occupation showed that most were unemployed. Most of the respondents were housewives. In this case, housewives are prone to mood instability. Emotional responses and assumptions about unemployed women or women who stay at home tend to be negative, e.g. worried about physical changes [13].

Unemployment also creates a risk of DM in men as well as women [14] Socio-economic status (occupation and income) influences DM incidence because low income contributes in inhibiting sufferers from accessing good and high quality health service [15] Low quality of life also has significant relation with low socio-economy [16].

Respondents' characteristic by time period of DM type 2 when the data was collected showed that most respondents had had DM type 2 for 1-3 years. DM sufferers in 1-3 year range are in a period where physical and psychological changes happened and were considered to bring problems to respondents. A study by Bernal et al [15] state that people who has had DM for a long time without complication had low self-efficacy. Having DM for a long time with complication influences quality of life.

The Influence of Acceptance and Commitment Therapy (ACT) on Self-Esteem and Quality of Life of sufferers of DM type 2

Self-esteem in Sufferers of DM type 2

The result of measurement of self-esteem variable in sufferers of DM type 2 in the treatment group showed that all respondents had increased self-esteem after ACT was given. It showed that the group which was given ACT had improvement of self-esteem, in accordance with the component of ACT program, which is acceptance, meaning accepting the condition and problems faced while having DM type 2 [18].

Pre-test data showed that nearly all respondents of the treatment group had relatively low self-esteem. It's shown in the low scores of the three measured aspects. The first image, which was self-image, showed that respondents aren't confident with physical changes, such as dry skin and itching along with drastic weight loss. It's influenced by several things: increasing age or physical factor, cognition and environmental response [19].

The influencing physical factor was degenerative aging process experienced by all respondents. Due to this condition, there was negative assumption in respondents, declining self-esteem and pride. The influencing cognitive factor was the emergence of negative assumption



due to thoughts that they're not physically attractive anymore. Negative assumption was influenced by understanding of self-image and coping ability when facing those problems [20].

The influencing environmental factor, i.e. response from the closest people, can create problems. Attraction is perceived to be entirely physical, but it's not entirely true because emotional and spiritual sides can be attractive because they're more lasting than physical attraction [19-20].

The second aspect was self-acceptance in the pre-test data, showing that nearly all respondents of the treatment group had low self-acceptance. Self-acceptance when having DM type 2 may be influenced by several factors: physical, cognitive, and social environmental factors [19]. The influencing physical factor was respondents' inability to accept their physical changes. Cognitively, the changes had negative impact on the mind of sufferers of DM type 2, so they couldn't accept their condition.

Social and environmental factors had negative impact when the environment became an inhibiting factor of improved self-acceptance in sufferers of DM type 2. Anxiety about inability to perform responsibilities in the family, worry and partners' dissatisfaction inhibited self-acceptance [18].

After being given ACT, the majority of the respondents' self-esteem improved. According to Hayes *et al* [5], ACT therapy is a therapy to improve psychological aspects to be more flexible or improve the ability to face current changes. This happened after someone joined the first to the third sessions of ACT. The first session was identification of incidences, thoughts, and feelings which emerged and remove negative thoughts (acceptance & cognitive diffusion). The emphasize of acceptance was one must first understand his/her condition, the s/he'd be able to accept his/her condition by removing negative thoughts (*cognitive diffusion*).

Sufferers of DM type 2 would accept their condition after receiving adequate knowledge on their condition and would change their perception into positive perception, so that they had positive coping as well. The second and third sessions improved respondents' self-esteem, convincing them that they had the ability to accept the incidence and establish positive values related to the management of DM type 2 by identifying positive experiences. It enabled sufferers of DM type 2 to be optimistic in planning positive activities to solve low self-esteem, so they're more accepting. In the fourth session, respondents could arrange positive activities and commit to performing those activities, improving their self-esteem [21].

Acceptance and Commitment Therapy (ACT) can change that condition, improving the self-esteem aspect. According to Eilenberg *et al*⁶, the phenomenon of improvement of self-esteem happened because of two things, which are, first, increased sense of "success" one feels about his/her life and, second, modification of hopes and life inspirations. Increased sense of "success" refers to one's attitude in improving the ability to solve everything, including problems, inhibitions, and challenges [6].

Data in the control group showed that most respondents experienced a decline of self-esteem and it's fixed. Data of pre-post test showed that the highest score is for self-acceptance aspect, and the highest is self-evaluation. It showed that the control group which didn't receive

ACT couldn't accept their changes. It was influenced by limited understanding, support from peer groups [19].

According to Meleis's Transition Theory [4], physical and psychological changes due to having DM type 2 are parts of nature of transition where sufferers of DM type 2 in that period face physical, psychological, social and environmental problems. The changes have supporting factors to produce positive responses and inhibiting factors to produce negative responses.

Acceptance and Commitment Therapy (ACT) helps sufferers of DM type 2 as a nursing intervention which is in accordance with Nursing Therapeutic principle so that negative responses, such as low self-acceptance and disability, which create negative coping on problems could be changed into positive and create commitment to perform tasks which are suitable for one's ability [5].

The result of observation during the research, there were changes of attitudes in every respondents, in good communication, ability to perform tasks, effectively sharing opinions, and touching each other, strengthening and improving self-esteem. While cognitively, the changes were negative thoughts which changed into positive thoughts, stable emotional response, positive problem-solving (praying, contemplation and working out), good social support between individuals in groups, good acceptance and commitment in performing tasks well [22].

Quality of Life in Sufferers of DM type 2

The result of measurement of quality of life variable in sufferers of DM type 2 in the treatment group showed that all respondents had improved quality of life after ACT. The result of data analysis using independent sample t-Test produced $p = 0,00$. $p < 0,05$ so it was concluded that there was significant difference in change of quality of life of the control group and the treatment group. The control group didn't experience improvement of quality of life but decreased quality of life instead.

Yusra [21] in his study states that the relation between age and quality of life shows a negative pattern, meaning the higher the age, the lower the respondents' quality of life. A study by Jelantik & Haryati [9] also states that aging process has negative effect the quality of life of sufferers of DM type 2. Individuals have rapid physiological changes after the age of 46. It could be assumed that as one aged, physical, psychological, and intellectual changes happened. This declined the self-care ability in DM management, creating health problems which reduced quality of life happen more easily [9-23].

Improvement of quality of life in the treatment group was found more often in male respondents. Yusra [21] states that there is no significant relation between quality of life and sex. It's supported by Reid & Walker [23] whose study proves that one of the demographic factors which don't contribute to low quality of life is sex. It could be assumed that men and women had the same ability in managing DM. They also had the same attitude, using coping and behaviors expected to manage their disease [23].

The research result showed that improvement of quality of life often experienced by respondents with high school education compared with respondents with junior high school

education. The result of Yusra's [21] study states that there is a significant difference between the quality of life of respondents with high education and low education. Similar to Notoadmodjo's argument, education level is an indicator that someone has gone through formal education. Someone with good education is more mature regarding changes, thus accepting positive external influences more easily, are objective, and are open to various information, including health information. It could be assumed that education was an important factor in understanding diseases and managing DM. Sufferers DM type 2 with high education could develop constructive coping mechanism in facing stressors because they had better understanding on information. Sufferers of DM type 2 who received ACT intervention had positive attitude and made correct actions which benefitted themselves, thus improving their quality of life [23-24].

Respondents' quality of life in the treatment group was mostly in the time period of DM category of 1 to 3 years. It's consistent with the study of Reid & Walker [23] that there is relation between time period of DM and respondents' quality of life with negative relation pattern. It could be assumed that the longer one had DM, the lower the quality of life. Patients' DM could cause anxiety, so having a disease for a long time could cause continuous anxiety in sufferers, reducing quality of life [24].

Another factor which influences the quality of life of sufferers of DM was social economy. The research result showed that the quality of life of sufferers of DM tended to be low in unemployed respondents and respondents with low income. A study by Gautam *et al* [14] states that low quality of life is related to low social economy of sufferers of DM [16].

Butler [24] states that social economy status and knowledge on diabetes influence someone to manage DM. Limited social economic condition in sufferers of DM limits sufferers of DM in looking for information on DM management for him/herself. Social economic status (occupation and income) influences incidence of DM because low income contributes as an inhibitor for sufferers to access good and high quality health service, so that their quality of life tend to be low [15-24].

The process of ACT program helped respondents improved their quality of life. In the first to the third sessions, respondents identified problems, understood how the problems occurred, identified their potentials to solve the problems, and were taught several techniques, whether by distraction or relaxation to lighten psychological as well as physical burdens. Distraction methods were reading *dzikir* or discussing problem solving, while relaxation method was light workout, meditation and breathing exercises to feel relaxed, fresh, fit, and healthy. Those feelings could occur instantly and relatively quickly and could be repeated [21].

All respondents also showed positive commitment to repeat in their free time or when needed, so the therapy didn't stop after the program ended. The success of the program was due to the active role of the respondents and time availability. Therapists' role was very important in coordinating participants in the group and becoming role models. Support and motivation didn't only come from themselves, but also their environment, especially family which helped tremendously in improving quality of life.



Butler [24] states that social economic status and knowledge on diabetes influence someone to manage DM. Limited social economy in sufferers of DM inhibited sufferers of DM to look for information on DM management for him/herself so his/her quality of life tended to be low [16].

Time period factor was the second most influential factor on quality of life of sufferers of DM type 2 beside ACT independently. It's consistent with the study of Reid & Walker [23] that there is relation between time period of DM and respondents' quality of life with negative relation pattern. It could be assumed that the longer one had DM, the lower the quality of life. Patients' DM could cause anxiety, so having a disease for a long time could cause continuous anxiety in sufferers, reducing quality of life [24].

The result of multivariate analysis by manova on ACT intervention influenced self-

and quality of life compared with age, sex, education, occupation, income, and time period of DM characteristic variables. Sufferers DM type 2 should join ACT program better to solve their problems quickly and should involve their families in the ACT to be more optimal and so that the sufferers of DM type 2 and their families can reap the benefits.

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