# Empowerment of Posbindu Cadres in Improving Self-Care Activity in Diabetes Mellitus Based on Levine Conversation

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Abstract: Management of diabetes mellitus requires the active participation of patients, families and communities. One of them is the empowerment of Posbindu cadres in each region, this needs to be done to improve the ability of cadres Posbindu to manage and run the health service work. The purpose of this study is to determine the effect of empowerment of health cadres with self-care activity of people with diabetes mellitus. This research used quasi experiment method with design of Non-Randomized Control Group Pretest-Postest design. The population was all health cadres and people with Diabetes mellitus. The results showed that there were significant differences between self-care activity treatment group and control group due to the application of levine based health education by Posbindu cadre with independent t test result on Self Care Activity t value was 24.680 (p = 0.000). For the conclusion is the application of Levine Conservation based health education to the cadre give a significant influence in the improvement of self-care activity, because the conservation of Levine in Posbindu cadre role maximally can influence the way of thinking (cognitive) , motivational, and selection of behavioural care.

## 1 BACKGROUND

Diabetes mellitus (DM), better known as diabetes, is a group of metabolic diseases characterized by high levels of glucose in the blood (hyperglycemia) due to insulin secretion abnormalities, insulin abnormalities, or a combination of both (American Diabetes Association 2010). The condition of this hyperglycemia if it persists will result in damage and failure of various organs especially the eyes, kidneys, nerves, heart, and blood vessels (American Diabetes Association 2012). The results of various epidemiological studies indicate a tendency to increase incidence rates and prevalence of type 2 DM in various corners of the world. The World Health Organization (WHO) predicts an increase in the number of people with DM in Indonesia from 8.4 million in 2000 to about 21.3 million by 2030 (PERKENI 2011).

The national prevalence of Diabetes Mellitus is 1.1%. East Java Province is included in provinces in Indonesia that have a prevalence of DM disease above the national prevalence. DM also shows a tendency to always be in the top ten diseases with the highest number of visits in Sentinel Puskesmas in East Java Province in the period 2010-2012. Jombang regency is one of the districts in East Java where Diabetes Mellitus disease is included in the list of 15 major diseases with the highest number of cases, especially in 2016 and 2017 as many as 16,380 cases (Dinkes Jombang, 2017). Puskesmas Mojoagung is a Puskesmas in Jombang Regency which has a group of people with Prolanis. The number of cases of DM in Kesamben Puskesmas in 2017 is as many as 559 cases (Dinkes Jombang District, 2017).

Education to patients and their families aims to provide insights into the course of the disease, prevention, complications and management of DM, which will greatly help increase family participation in improving management outcomes. The existence of organizations of associations of people with diabetes such as PERKENI, PERSADIA, PEDI, and others become very necessary, because the association can help improve the knowledge of people with diabetes about their illness and increase their active role in modifying DM treatment. Controlling blood glucose is paramount in the control and management of DM in addition to education. Poor DM control can lead to long-term

hyperglycemia, which triggers some serious macrovascular or microvascular complications such as heart disease, peripheral vascular disease, renal failure, neurological damage and blindness (PERKENI 2011).

One of the nursing models that has been developed in nursing care is the conservation model developed by Mira E. Levine. The model is oriented towards energy conservation, structural integrity, personal integrity, and social integrity, which focuses on enhancing the client's ability to adapt as closely as possible to achieve optimal quality of life. The conservation model approach pioneered by Myra Estrin Levine is appropriate to improve self-care behavior of patients so that management of diabetes can be optimal.

This conservation model enables nurses to help individuals achieve their own integrity. This model provides guidance on how nurse-client relationships focus on the influence and response of clients to promote client integrity through conservation principles. Interventions to maintain network integrity, energy conservation, personal and psychosocial integrity (Levine 1966).

## 2 METHODS

### 2.1 Study Design

This research type was quasi experiment research with design of Nonequivalent Control Group Design or Non-Randomized Control Group Pretest-Postest Design, which was pseudo experiment by dividing the existing group without distinguish control and group significantly by still referring to the existing natural form.

### 2.2 Study Population, Sampling and Variables

Population in this research was all patient of type 2 DM who registered to member of Prolanis at Puskesmas Kesamben that is as much as 38. Based on formula of sample for analytical numerical pairs obtained sample 16 respondents for each group. This research used purposive sampling method.

Variable in this research consist of two variables, namely independent variable (free) and dependent variable (dependent). The independent variable in this research is Levine Conservation model application. While the dependent variable is self-care activity.

### 2.3 Intervention

The study was conducted in two stages, i.e. by allocating the sample into two groups (treatment group and control group). Furthermore, the researchers conducted pre-test of self-efficacy and quality of life in the treatment group and control group. The study was conducted for 2 months. According to research conducted by Shi (2010) changes in self-care activity can be seen immediately after the implementation of an intervention and changes in quality of life can be seen after 1-2 weeks after the implementation of the intervention.

### 2.4 Data Analysis

The data analysed by using Kolmogorov–Smirnov Test for normality testing and Paired T test and Independent T test for different test with $\alpha=0.05$.

## 3 RESULTS

The result showed that the level of self-care activity of respondents in the treatment group before the intervention, mostly in the medium category, i.e. 9 respondents (56.3%). After intervention, the level of self-efficacy of respondents increased, i.e. most respondents i.e. 8 people (50%) had self-efficacy level in high category. While for the level of self-care activity responder in control group during pre-test mostly were in medium category that were 9 respondent (56.3%). While at post-test, most of self-care activity level of respondent was in high category as many as 15 respondents (93.8%) (see table 1).

While in table 2 it can be seen that the increase of self-care activity that occurs in the treatment group was higher than in the control group, that is the average increase of self-efficacy value in the treatment group by 19 compared to the control group which was only 0.15.

Based on the results of normality test by using Kolmogorov-Smirnov test on Self-care activity variable in treatment group and control group it can be seen that p> $\alpha$ (0.05) so it can be stated that all data is normally distributed. Meanwhile, based on homogeneity test results as listed in table 5.16 using Levine's Test on self-efficacy and quality of life in the treatment group and control group, it can be seen that p> $\alpha$ (0.05) so it can be stated that all data is homogeneous.

The result of paired t test in the treatment group with t value of -8.061 and p 0.000 <0.05 ($\alpha$), meaning there is difference of self-care activity before

Table 1: the level of self-care activity.

| Self-Care Activity | Intervention | | Control | |
|---|---|---|---|---|
| | Pre test | Post test | Pre Test | Post test |
| | % | % | % | % |
| Very weak | - | - | - | - |
| Weak | 31.2 | - | 25 | - |
| Moderate | 56.3 | 37.5 | 56.3 | 93.8 |
| High | 12.5 | 50 | 18.8 | 6.2 |
| Very high | - | 12.5 | - | - |
| Total | 100 | 100 | 100 | 100 |

Table 2: The increasing of self-efficacy value.

| Variabel | Mean | | Mean Difference |
|---|---|---|---|
| | Awal | Akhir | |
| Self-care activity intervention group | 106 | 125 | 19 |
| Self-care activity Control group | 106.75 | 106.9 | 0.15 |

intervention with after intervention. The negative value at t indicates that the pre-test value was lower than the post-test value. Based on table 5 also known result of paired t test in control group obtained t value arithmetic -0.051 and p 0.960> 0.05 (α), meaning there was no difference of self-care activity during pre-test and post-test.

Where the negative value on t arithmetic shows that the value of pre-test is lower than the post-test value. The results of independent t test of self-care activity variable between treatment and control group, that was t value 25.055 with p 0.000 <0.05 meaning there were difference of self-care activity significant between treatment group and control group. A positive value on t shows that the value of self-care activity in the treatment group is higher than in the control group.

## 4 DISCUSSION

The results showed that self-care activity in the treatment group increased after intervention (Conservation Levine). The Levine Conservation Model focuses on individuals as holistic beings that interact with the environment. In patients with DM there is a decrease in quality of life, it is caused by the consequences of the physical illness, the treatment process, and the complications it causes. DM may decrease physical functioning due to long-term complications arising, because of the disease itself, and the health conditions associated with DM. Another thing is due to the frequent therapeutic demands that cause a patient to feel restricted in his life.

The results showed that there was a difference of self-care activity level in both groups during pre-test, i.e. in treatment group was lower than control group (treatment group mostly in medium category, control group mostly in high category). This was due to differences in predisposing factors in both groups, i.e. differences in length of sickness and income levels in both groups, the average length of illness in the control group was longer and the average income was greater than the treatment group. This difference makes the difference in self-care activity between the two groups at the pre-test. In addition, higher income levels also contribute to self-care activities as they will have the economic resources to access health services. In addition, in the treatment group, the number of male respondents was less than the control group, so this had an effect on the difference of self-care activity in both groups. This is in accordance with research (Mystakidou et al. 2010) said that men have higher self-care activity than women.

Increased self-care activity that occurred in the control group, although lower than the treatment group was caused because the control group also received health education at the Puskesmas. Although health education is given only slightly for 1 month, but still there is information about the disease and management of the disease. So it will contribute in improving the patient's self-care activity in the control group.

## 5 CONCLUSIONS

Implementation of Levine Conservation-based health education has a significant effect on increasing self-care activity of DM type 2 patients because Levine Conservation improves the ability to adapt to the conservation of energy, structural, personal and social integrity in achieving wholeness through change process. Implementation of Levine conservation-based health education also has a significant effect on improving the quality of life of patients with type 2 DM, because Levine Conservation affects the way individuals think (cognitive), feel (affective), motivational, and selection of behavioral care chosen by individuals.

Nurses can apply Levine conservation in conducting health education in patients with type 2 diabetes so that it will further improve the management of diabetes independently by patients and families. Longer follow-up studies, such as longitudinal or randomized control trial studies with larger samples, may be performed to evaluate the

effect of Levine conservation on self-care activity and quality of life for type 2 DM patients.

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