Self-efficacy in type 2 diabetes mellitus patients and the relationship with the quality of life in Medan city

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Abstract. Behavior changes in diabetic patients are needed in the management of the disease to achieve the maintaining of blood glucose levels within normal limits. Self-efficacy of the patients will influence in making decisions about their behavior. The purpose of this study was to analyze the relationship between self-efficacy and quality of life of patients with type 2 diabetes mellitus in Tuntungan Primary Health Care (PHC) in Medan city. The study population was all patients with type 2 diabetes who came and control to Tuntungan PHC in Medan city. The samples were consecutive sampling about 83 patients who meet the criteria for inclusion and exclusion. Data were collected through interviews using a questionnaire. Data analysis used Chi-Square test. The results showed the self-efficacy of many patients in Tuntungan PHC was in the less category as many as 66 people (79.5%). While in general, the quality of life of patients is in a good category as M7 as 64 people (77.1%). Chi-square test results are known there is a relationship between self-efficacy with the quality of life DM Type 2 patients in Tuntungan PHC Medan. Appropriate and continuing education is needed to improve self-efficacy from diabetic patients.

1. Introduction

Diabetes is a complex disease that requires long-term management. People with diabetes can undergo physical and psychological changes. The physical changes that occur include changes in vision, peripheral nerves, blood vessels of the heart, the body feels weak and peripheral vascular [1]. While the psychological changes that can occur in the form of anxiety, depression, despair and complain about the situation. The complexity of the problems that occur in patients with diabetes may result in changes to the quality of life [2]. Lower quality of life and psychological problems may aggravate metabolic disorders either directly through hormonal stress reactions and indirectly through the complications that occur [3]. Some aspects of diabetes can impact the quality of life of patients nor clear, the symptoms when your blood sugar go up or
down, and the fear of complications. Previous research states that a person suffering from diabetes have a lower quality of life than someone with no chronic illnesses [4].

Therefore, patients with diabetes require self-management and self-efficacy that they can make arrangements to have diet, blood sugar control, physical exercise, medication and treatment of diabetes in general [5,6]. In the absence of self-efficacy in an individual with this chronic disease, it will adversely affect the decline in quality of life, because delete self-efficacy will help to manage and control themselves [6,7]. Self-efficacy is an individual's belief in his ability to organize and carry out certain tasks required to get the results as expected. Self-efficacy helps a person to make choices and have a commitment to maintain the chosen action. Self-efficacy can be predicted to have a good quality of life in the long term or short term [5,8].

Quality of life is an individual's perception of his position in life and cultural contexts and value systems in which he lives and his relation to individual objectives, expectations and standards, and attention [9]. Quality of life is important in the areas of health because we as physicians are not only required to do therapy but also pay attention to the quality of life of patients. Quality of life can be judged from the physical, psychological, social relationships and environment [9, 10] Improved quality of life in patients can be done by keeping the good health of the body, soul, and mind in order to be able to run everyday life. Quality of life can be affected by such factors of the motivation, knowledge, self-efficacy, stress, sex, and age [6]. Self-efficacy has a relationship with Blood Sugar Level (BGL) and level HbA1c., increasing self-efficacy will be followed by an increase in the quality of life in patients with diabetes mellitus [5, 11,12].

2. Materials and methods
This research was conducted at Tuntungan PHC in Medan. The study population was diabetes Type 2 patients at Tuntungan PHC in Medan. The number of samples is determined by using a single sample formula to hypothesis proportion of a population. The number of samples is 83 patients determined by consecutive sampling who meet the criteria for inclusion and exclusion. The study protocol was approved by the Ethical Commission of the Medical Faculty of Universitas Sumatera Utara and all patients were required to complete the approval sheet. Data collection in this study was conducted by interviewing patients using questionnaire. DMSES was used for self-efficacy assessment. Assessment of quality of life using the Medical Outcomes Study Short Form (SF-36) Health Survey. The data collected is processed and analyzed using SPSS software and the chi-square test with a degree of significance 5% (0.05).

3. Results

| Characteristics                  | Frequency | Percentage |
|----------------------------------|-----------|------------|
| **Age**                          |           |            |
| Early Adulthood (26-35 years)    | 3         | 3.6        |
| Adults Final (36-45 years)       | 36        | 43.4       |
| Elderly Early (46-55 years)      | 29        | 34.9       |
| Elderly Old (56-65 years)        | 15        | 18.1       |
| **Sex**                          |           |            |
| Female                           | 57        | 68.7       |
| Male                             | 26        | 31.3       |
| **Job**                          |           |            |
| Unemployed/ Housewife            | 36        | 36         |
Based on Table 1, it is known the age of the patient majority in the age group 36-45 years-old about 36 people (43.3%), most of them are female are 57 people (68.7%). In the educational level, about 37 patients (44.4%) is junior high school. 36 (36%) patients as a housewife, and majority suffering from diabetes less than 10 years is about 67 patients (967%).

Table 2 showed that to all patients who have a good self-efficacy have a good quality of life for as many as 17 patients while 66 patients who have low self-efficacy and about 47 patients have a good quality of life. The chi-square test results the p-value of 0.012 (p<0.05). It can be concluded that there is a significant relationship between self-efficacy and quality of life among patient with type 2 diabetes at Tuntungan PHC in Medan.

4. Discussion

4.1 The Characteristics of patients with type 2 Diabetes in Tuntungan PHC

In this research, we knew the age groups of diabetic patients who come to the clinic at most 36-45 years-old (adult end). The older a person, the higher the risk of increased BGL and impaired glucose tolerance will be. This is due to the weakening of all body organs including the pancreas cells that produce insulin. Changes in lifestyle are also a risk from suffering from diabetes, so diabetes occur at earlier age than ever before [13]. The study states that the patient of type 2 diabetes mellitus patients in this study consists mostly female, which is 57 people (68.7%) than men. This may be due to more women patients that getting control at PHC on a regular basis. Usually, the female patients who have much compliance are better than men. Besides, the health service around the sub-district health centers Tuntungan is not the only one, there are other places that provides services to serve patients with diabetes, such as medical practices and other health clinics. The survey results revealed that patients with type 2 diabetes in this study consists mostly with group of people with secondary school education level of 31 (44.6%) This is in line with research by [14],

|             | Quality of life | Total | p       |
|-------------|----------------|-------|---------|
|             | Good | Low   |       |         |
| Good        | 17   | 0     | 17    | 0.012  |
| Low         | 47   | 19    | 66    |         |
| Total       | 64   | 19    | 183   |         |
education of patients with diabetes mellitus mostly in junior graduate as many as 10 people (31.1%). The education level of the majority of patients with diabetes mellitus in India is a junior graduate as many as 162 people (45.8%) [15]. Tuntungan PHC is located in the distrivit of Tuntungan Medan that is one of the districts in the city of Medan where people have social lives and lower economic. In fact, many people who came to PHC were low education level.

4.2 Self-Efficacy of Type 2 DM Patients in Tuntungan Community Health Centers (Puskesmas) Medan

The results showed that the level of self-efficacy of type 2 diabetes mellitus patients in this study are most numerous in the group of low (less). The results are consistent with research conducted Aditama [16], which showed that the majority of patients (71.43%) with type 2 diabetes have low levels of self-efficacy while another study shows the opposite that more than half respondents (52.7%) have a good self-efficacy [6]. The existence of different results due to the efficacy of a person may change from time to time. Each patients has high levels of self-efficacy in different time.

Self-efficacy is a strong predictor of diabetes self-management behaviors. A person living with diabetes who have high levels of self-efficacy higher will participate in diabetes self-management behaviors better [17]. Self-efficacy is the belief in the individual's ability to independently manage chronic disease because it determines whether or not a person will start to perform self maintenance. A diabetes patient self-efficacy is influenced by age, education, the social and economic status of diabetics and education gained from the doctor [5]. Low self-efficacy in patients with type 2 diabetes at the health center Tuntungan could be due to the lack of understanding of patients against the disease caused by lack of adequate education provided so that the application of self-efficacy can't be applied completely in their everyday lives.

4.3 Quality of Life of Type 2 DM Patients at Tuntungan PHC in Medan

Based on the results of the study, it could be concluded that the quality of life of patients with type 2 diabetes is in a group with good quality of life. It is because one of the factors is age, the majority of adults with diabetes have late age. So that they are still in the age of reproductive age and can carry out daily activities. Many of them have not felt the impact of diabetes is very disturbing activities that they conduct. In addition, other factors may also affect the social status diabetic patient. Majority of the patients education is until junior high school. This may reflect our socio-economic level, thus making economic demands must be more active and productive.

4.4 Self-Efficacy of Relationship with the Quality of Life of Type 2 DM Patients at Tuntungan PHC in Medan

The results of this study indicate that there is a significant relationship between self-efficacy and quality of life of patients with type 2 diabetes (p <0.05). Self-efficacy related to management of diabetes in terms of self-management will impact glycemic control and certainly reducing complications and ultimately improve the life quality of patients. Patients who have a good self-efficacy will certainly have a good quality of life [8,11,18,19]. This is in line with research done by [20] and [21] which concluded that patients with Type 2 diabetes mellitus with good self-efficacy have a good quality of life (72.4%) compared to type 2 diabetes patients with poor efficacy which also has a poor quality of life (61.4%). Respondents with self-efficacy both had chances 8.9 times to get a good quality of life than those who have a poor self-efficacy (CI 95%; OR: 1.227 to 9.950).

5. Conclusion
There is a significant relationship between self-efficacy and quality of life of patients with Type 2 diabetes mellitus at Tuntungan PHC in Medan. Self-efficacy of patients with Type 2 diabetes can be increased either by doing continuous education to the patient so that patients can control their disease to have a good life quality and may prevent complications.

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