

RELATIONSHIP OF TYPE 2 DIABETES MELITUS WITH QUALITY OF LIFE IN PRE ELDERLY AND ELDERLY

Nur Apriyan^{1*}, Atik Kridawati^{2,3}, Tri Budi W. Rahardjo³

¹Health Science Faculty, Universitas Respati Indonesia

²Post Graduate Public Health Program, Universitas Respati Indonesia

³Centre of Family and Ageing Studies, Universitas Respati Indonesia

*corresponding author: nr_bay@yahoo.co.id

Abstract.

Type 2 diabetes mellitus is a non-communicable disease caused by increased blood sugar levels. Type 2 diabetes mellitus at this time is very much experienced by pre elderly and the elderly who can affect their quality of life both physically and mentally. The purpose of this study was to determine the relationship between type 2 diabetes mellitus and the quality of life in pre elderly and elderly people in Primary Health Care in Cipayung District. Type of analytic survey research using cross sectional design. The population in this study were all pre elderly and elderly patients (aged > 45 years) who visited at Primary Health Care in Cipayung District. The number of samples is 101 respondents, sampling with Accidental sampling technique. Data collection was conducted by interview using the WHOQOL-OLD questionnaire. This study showed that from the results of bivariate analysis with the chi square test it was found that there was a relationship between type 2 diabetes mellitus and quality of life in pre elderly and an elderly with $p = 0.037$, while unrelated variables: age group $p = 0.747$ and history of diabetes descent $p = 0.136$. The results of the Multiple Logistic Regression test indicate that the diabetes variable is the variable most associated with pre elderly and elderly quality of life. The conclusion that diabetes mellitus is related to quality of life in pre elderly and elderly. For pre elderly and elderly people who have been affected by diabetes should always control their blood sugar levels so that complications do not occur so that the quality of life is good maintained.

Key words: quality of life , diabetes mellitus, pre elderly, elderly

1. INTRODUCTION

Diabetes mellitus is a non-communicable disease which is currently a disease that is commonly found in pre-years and the elderly and its incidence is increasing every year. Diabetes mellitus is a chronic condition that is characterized by an increase in blood glucose concentration accompanied by the emergence of distinctive main symptoms, namely urine that tastes sweet. An abnormality which is the underlying cause of diabetes mellitus is the relative or absolute deficiency of the hormone insulin. Insulin is the only hormone that can reduce glucose levels in the blood [1]. According to data from the World Health Organization (WHO), it is predicted that cases of diabetes mellitus in the world will double by 2030 with 366 million people with diabetes mellitus. The prevalence of diabetes mellitus in the world population is calculated annually to reach 125 million and predictions multiply to 250 million in the next 10 years. The prevalence of diabetes mellitus cases will increase in developing countries compared to developed countries (2). The study of the prevalence of diabetes by the International Diabetes Federation (IDF) that 85-95% of cases of type 2 diabetes in the world are mostly adults. In North America cases of diabetes mellitus are more common among the elderly. In Europe the prevalence of diabetes mellitus ranges from 1.6% in Iceland to 7.9%, while in the UK the incidence of Diabetes Mellitus reaches 2.9% [1]. The results of the 2018 basic health research (Riskesdas) show that the prevalence of diabetes mellitus in Indonesia reaches 2.0% while the results of basic health research in 2013 reached 2.1%, meaning that in 2018 the prevalence of diabetes mellitus has decreased by 0, 1%, but according to the Indonesian endocrinology association the prevalence of diabetes mellitus in 2013 reached 6.9% while in 2018 the prevalence of diabetes mellitus reached 8.5%, this proves that the prevalence of diabetes mellitus is increasing every year[2].

The prevalence of diabetes mellitus in Yogyakarta reaches 3.1%, while in East Kalimantan the prevalence reaches 3.1%, Central Sulawesi 3.0%. The highest prevalence of diabetes mellitus is in DKI Jakarta Province as much as 3.4%, when viewed from the age characteristics the prevalence of diabetes mellitus patients is the highest at the age of 55-64 years the prevalence is 6.29% while in the age of 65-74 years the prevalence reaches 6, 03% [3]. In the work area of the Cipayung District Primary Health Care in 2017 there were 1070 people with the highest diabetes mellitus in the age group of 45-59 years, there were 473 people with a percentage of 44.2% and after 60-69 years there were 403 people with a percentage of 37.7% whereas in 2018 people with diabetes mellitus increased to 1116 people and in the age group of 45-59 the most suffered from diabetes mellitus reached 543 people with a percentage of 48.7% while in the age group 60-69 years there were 375 people with a percentage of 33, 6% [4]. The World Health Organization in 2006 issued a module to measure the quality of life for the elderly. The WHOQOL-OLD module consists of 6 domains namely "Sensory Abilities" (SAB), "Autonomy" (AUT), "Past, Present, and Future Activities" (PPF), "Social Participation" (SOP), "Death and Dying" (DAD), "Intimacy" (INT)[5]. Diabetes mellitus greatly affects the quality of life of every person if type 2 diabetes mellitus is not treated properly there will be an increase in cases of diabetes mellitus. While in people with uncontrolled diabetes mellitus can cause diabetic ketoacidosis characterized by hyperglycemia, hyperketonemia and metabolic acidosis can even occur early complications such as hyperalbuminuria, background retinopathy, neuropathy, medial arterial calcification, hypertension while further complications such as kidney failure (renal failure), proliferative retinopathy, gangrene, amputation, coronary heart disease [2]. Therefore this study was conducted to determine the relationship between diabetes mellitus and pre elderly and elderly quality of life so that the quality of pre elderly and elderly life is better.

2. MATERIAL AND METHODS

Type of analytic survey research using cross sectional design. The population in this study were all pre elderly and elderly patients (aged > 45 years) who visited the Primary Health Care in the Cipayung District. Respondents in this study were pre elderly and elderly who visited the Primary Health Care in Cipayung District. The number of samples is 101 respondents, sampling with Accidental sampling technique. Data collection was conducted by interviewing using the WHOQOL-OLD questionnaire consisting of 6 domains namely Sensory Abilities (SAB), Autonomy (AUT), Past, Present, and Future Activities (PPF), Social Participation (SOP), Death and Dying (DAD), Intimacy (INT) with 24 questions and using a Likert scale. When taking blood sugar samples when the respondent is not fasting, a blood sample is taken through a finger and measured using a glucometer. This research was conducted in June 2019. Respondents who were said to have good quality of life when the respondents' total score was ≥ 85 and their quality of life was not good if the respondent's total score was < 85 . Respondents including diabetes mellitus when blood sugar levels were ≥ 200 mg/dl and not diabetes mellitus when < 200 mg/dl. Age was grouped into two, namely pre elderly aged 45-59 years and elderly ≥ 60 years and respondents who included a history of diabetes if parents, grandparents, grandmothers, siblings suffered from diabetes mellitus while respondents who did not have a history of diabetes descent were respondents have no family suffering from diabetes mellitus. In this study to analyze the relationship between two variables using the chi square test and to analyze the most related variables or the most dominant ones using the Double Logistic Regression test.

3. RESULTS AND DISCUSSIONS

Tabel 1 Frequency Distribution of Diabetes Mellitus, Quality of Life, Age, and History of Prevalence of Pre Elderly and Elderly Diabetes in the Work Area of Cipayung District Primary Health Care in 2019

| Number | Variable | Frequency | % |
|--------|--------------------------|-----------|------|
| 1 | Diabetes Mellitus | | |
| | Yes | 84 | 83,2 |
| | No | 17 | 16,8 |
| 2 | Quality of life | | |
| | Good | 50 | 49,5 |
| | Not good | 51 | 50,5 |

| Number | Variable | Frequency | % |
|--------|----------------------------|-----------|------|
| 3 | Age Group | | |
| | Pre Elderly | 41 | 40,6 |
| | Elderly | 60 | 59,4 |
| 4 | History of Diabetes | | |
| | Yes | 48 | 47,5 |
| | No | 53 | 52,5 |

Based on table 1, the results of univariate analysis found that those suffering from diabetes mellitus in the work area of the Cipayung Sub-district Primary Health Care were 83.2%, of which there were 49.5% good quality of life, and 47.5% with pre elderly diabetes there are 41.6% and 59.4% elderly.

Table 2 Recapitulation of the Results of Bivariate Analysis with Quality of Life in Pre Elderly and Elderly People in the Work Area of Cipayung District Primary Health Care in 2019

| Variable | Quality of life | | | | Total | | P value |
|----------------------------|-----------------|------|----------|------|-------|-----|---------|
| | Good | | Not Good | | n | % | |
| | n | % | n | % | | | |
| Diabetes Mellitus | | | | | | | |
| Yes | 46 | 54,8 | 36 | 45,2 | 84 | 100 | 0,037 |
| No | 4 | 23,5 | 13 | 76,5 | 17 | 100 | |
| Age Group | | | | | | | |
| Pre Elderly | 19 | 46,3 | 22 | 53,7 | 41 | 100 | 0,747 |
| Elderly | 31 | 51,7 | 29 | 48,3 | 60 | 100 | |
| History of Diabetes | | | | | | | |
| Yes | 28 | 58,3 | 20 | 41,7 | 48 | 100 | 0,136 |
| No | 22 | 41,5 | 31 | 58,5 | 53 | 100 | |

Based on table 2 the results of bivariate analysis found that the variable diabetes mellitus was related to quality of life with a value of $p = 0.037$, but there were variables not related to quality of life in pre elderly and elderly, namely the age group with $p = 0.747$ and history of diabetes descent ($p=0.136$).

Table 3 Final Model of Multivariate Analysis Results

| Variable | P value | OR | 95% CI | | R ² (%) |
|-------------------|---------|-------|--------|--------|--------------------|
| Diabetes Mellitus | 0,025 | 3,934 | 1,185 | 13,066 | 7,4 |

In table 3 it can be seen that the dominant variable related to quality of life in pre elderly and elderly is diabetes mellitus with a p value of 0.025 and Odd ratio (OR) 3,934 means that people suffering from diabetes mellitus have 4 times worse quality of life than with people who do not suffer from diabetes mellitus. The contribution of diabetes mellitus to the quality of life in pre elderly and elderly is 7.4% in the final model of this study

3.1. RELATIONSHIP BETWEEN DIABETES MELLITUS AND QUALITY OF LIFE

The results of this study indicate that pre elderly and elderly who suffer from diabetes mellitus but have a good quality of life there are as many as 54.8% while those who do not suffer from diabetes who have good quality of life there are as much as 23.5%. the quality of life is not good there are 45.2% and those who do not suffer from diabetes mellitus but have poor quality of life there are as many as 76.5%. The results of bivariate analysis proved that there was a significant relationship between the variables of diabetes mellitus and quality of life with a value of $p = 0.037$

and the results of multivariate analysis of diabetes mellitus were the most dominant variable in the quality of life in the pre elderly and elderly contributed 7.4%. According to Coons and Kaplan said that everyone has a different quality of life depending on each individual in addressing the problems that occur in him. If you face positively it will also be good quality of life, but if the problem is faced with negativity it will also be bad quality of life [6]. The results of this study are in line with the research conducted by Chintya et al., 2017 in Kolongan Village, Tomohon Tengah District, Tomohon City. That there is a relationship between diabetes mellitus and quality of life where the elderly who have a poor quality of life are 22.8% from the results of this study explaining that the elderly who have poor quality of life is one of the causes of diabetes mellitus [7]. Likewise the results of research conducted by Fera, in 2017, Khairah, 2007 and Landis 2018, the results of his research prove that people affected by diabetes mellitus have poor health conditions as evidenced by the results of research that people with diabetes mellitus have a poor quality of life good there are as much as 56% [8,9,10].

Research conducted by Utami, 2018, and Nguyen, 2019 proved that respondents who had diabetes mellitus and had comorbidities or complications more than one disease had a lower quality of life compared to people who did not have diabetes complications [11,12]. The results of the research conducted by Gunardi, 2018 to improve the quality of life of the elderly one of which is required high self-motivation of each elderly so that the quality of life of the elderly will change for the better [13]. In the opinion of the researchers that pre elderly and elderly who suffer from diabetes mellitus but do not control their blood sugar levels can cause diabetic ketoacidosis which is characterized by hyperglycemia, hyperketonemia and metabolic acidosis so complications can occur such as hyperalbuminuria, background retinopathy, neuropathy, kidney failure, proliferative retinopathy, gangrene, amputation. The impact of these complications affects pre elderly and elderly health conditions so that the quality of life becomes poor. But for pre elderly and elderly people who always control their blood sugar levels regularly can reduce the risk of complications so that the quality of pre elderly and elderly life is maintained properly.

3.2. RELATIONSHIP BETWEEN AGE AND QUALITY OF LIFE

The results of this study indicate that in the pre elderly group who have good quality of life there are as many as 46.3% while in the elderly who have good quality of life there are 51.7% and in pre elderly who have poorer quality of life there are 53.7% while in the elderly who have poor quality of life are 48.3%. The results of the bivariate analysis proved that there was no relationship between age and pre elderly quality of life and the elderly. The results of this study are in line with the research conducted by Margaretha in 2017 at the Puskesmas in Kupang City showing that a person's age does not affect quality of life [14]. Likewise the results of research conducted by Meidikayanti, 2017 and Ningtyas, 2013, that age does not affect quality of life if diabetics have experienced complications only then the quality of life is disturbed [15,16]. The results of this study are not in line with the research conducted by Herdianti, 2017, Imayama, 2011 and Yusra, 2011.

The results of his research show that there is a relationship between age and quality of life where increasing age increases the risk of poorer quality of life [17,18,19]. According to the Indonesian Endocrinology Association (PERKENI), the age group of more than 45 years is an age group that is at high risk of developing diabetes mellitus. Age has a very close relationship with type 2 diabetes mellitus because the more age increases the risk of developing type 2 diabetes mellitus increases and the aging process can result in changes in the anatomical and physiological and biochemical systems of the body, one of which is decreasing the function of the pancreas in producing insulin and the impact of this can cause insulin resistance [20]. The results of a study conducted by Wikanada, 2017 and Retnowati, 2015 that the quality of life is less or worse is related to the age group > 70 years, which means that increasing age increases the quality of life [21,22,23].

In the opinion of researchers that increasing age for each person does not necessarily decrease the quality of life but if pre elderly and the elderly do not maintain good quality of life such as not doing regular exercise activities and always consume foods that are high in carbohydrates and fats most likely have a risk of diabetes mellitus quality of life.

3.3. RELATIONSHIP TO HISTORY OF DIABETES OFFSPRING WITH QUALITY OF LIFE

The results of this study prove that in pre elderly and elderly who have a history of descent of diabetes mellitus there are as many as 58.3% who have good quality of life while those who do not have a history of diabetes descent there are as many as 41.5% who have good quality of life while among pre elderly and elderly having a history of diabetes descent there were as many as 41% who had poorer quality of life and in pre elderly and the elderly who did not have a history of descent of diabetes mellitus but who had a poor quality of life were 58.5%. The results of this study are different from the results of a study conducted by Jariana in 2018 that there is a relationship between the history of heredity and diabetes mellitus so that people who suffer from diabetes mellitus have a poor quality of life [23]. According to Waspadji, 2009 and Masriadi, 2016, that heredity clearly influences the occurrence of diabetes mellitus. People who suffer from diabetes when their parents suffer from diabetes are clearly more likely to develop diabetes mellitus compared to normal people [24,25]. In the opinion of pre elderly and elderly researchers who have a history of diabetes offspring, their quality of life is not good in this study proving that pre elderly and elderly who have a history of diabetes or no descent history of diabetes mellitus have equal opportunities to reduce their quality of life because this is a lot of diabetes mellitus suffered by people who do not have a hereditary history of diabetes mellitus because the food consumption patterns contain too much carbohydrate.

4. CONCLUSION

The results of this study prove that diabetes mellitus has the most dominant relationship to the quality of life in pre elderly and the elderly and has a contribution to quality of life of 7.4%. Variables not related to quality of life are age and history of diabetes.

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