Measuring the Quality of Life Patients with Type 2 Diabetes Mellitus at the North Pontianak Public Health Center and Kitamura Pontianak Clinic using the Diabetes Quality of Life Clinical Trial Questionnaire (DQLCTQ) and Diabetes Distress Scale 17 (DDS 17)

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ABSTRACT	ARTICLE DETAILS

Diabetes Mellitus (DM) is a metabolic disease characterized by hyperglycemia. Patients with diabetes mellitus tend to experience distress related to their health problems, as well as self-acceptance of the disease and the various medical actions that must be taken. The stress felt by DM patients will affect the patient's quality of life. Poor quality of life can make metabolic disorders worse, either directly through hormonal stress or indirectly through complications that can arise. This study aims to analyze differences in quality of life and stress levels of patients type 2 DM patients at the North Pontianak Public Health Center and Pontianak Kitamura Clinic. This research used observational method with a cross sectional design. This research is prospective using the Diabetes Quality of Life Clinical Trial Questionnaire (DQLCTQ) and Diabetes Distress Scale 17 (DDS 17). The population in this study were all type 2 DM patients undergoing treatment at the North Pontianak Public Health Center and Kitamura Clinic. Data collection was carried out by accidental sampling and a sample of 150 patients was obtained, consisting of 100 Public Health Center's patients and 50 Clinic's patients. The results showed that the quality of life of type 2 DM patients at the Public Health Center was higher than the patients at the Kitamura Clinic and there was a significant difference between the quality of life of type 2 DM patients at the Public Health Center and Clinics with a sig value of 0.013 ($p<0.05$). The stress indicator on the emotional burden of patients at the Clinic was higher compared to the patients at Public Health Center, but there was no significant difference between the stress levels of type 2 DM patients at the Public Health Center and the Kitamura Clinic with a sig value of 0.196 ($p>0.05$)

KEY WORDS: Diabetes Mellitus, Quality of Life, DQLCTQ, DDS 17

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INTRODUCTION

Diabetes mellitus is a chronic non-communicable disease characterized by multiple etiologies such as high blood sugar levels and disturbances in carbohydrate, lipid and protein metabolism as a result of insufficient insulin function. (Departemen Kesehatan RI, 2005; Kemenkes, 2015). Based on the International Diabetes Federation (IDF) in 2019, it is estimated that nearly 463 million people with an age range of 20-79 years in the world suffer from diabetes mellitus, equivalent to a prevalence rate of 9.3% of the total population in the world. Indonesia is the 7th country out of 10 countries with the largest population, with 10.7 million people suffering from diabetes mellitus. This has caused Indonesia to contribute greatly to the prevalence of diabetes mellitus cases in Southeast Asia (Indonesian Ministry of Health, 2020). The number of diabetes mellitus patients in West Kalimantan is 111,941 (Kementerian Kesehatan Republik Indonesia, 2020). In Pontianak, diabetes mellitus is included in the top 10 diseases that dominate the population throughout 2019, namely 12,913 cases or the equivalent of 11.5% of the total number of DM patients in West Kalimantan. (Dinkes Pontianak, 2019).

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Type 2 diabetes mellitus is a more common type when compared to the Type 1 DM. Type 2 DM patients make up 90-95% of the entire population of diabetics, generally aged over 45 years, but recently people with Type 2 DM 2 among adolescents and children the population is increasing. In patients with type 2 DM, the cells that are targeted by insulin are unable to respond normally to insulin (American Diabetes Association, 2014). Mainly, people with Type 2 DM are not aware of their disease early because the symptoms that appear are usually slow so that they cannot be felt. Patient will realize after they experience various complications and a doctor's diagnosis. This can cause sufferer reactions such as fear, anxiety, stress to depression after knowing the disease they are suffering from (Tandra, 2007).

The stress that emerging in people with type 2 diabetes mellitus can be caused by the treatment they carry out for a lifetime, such as managing their diet, controlling blood sugar, taking drugs, exercising and so on. Even the risk of complications can also affect the stress level of diabetics. Living side by side with diabetes can cause stress and will have an impact on a person's quality of life (Shahab, 2006). Based on previous studies, a person living with diabetes has a negative impact on their quality of life even without complications. Depression and stress usually occur in someone who has diabetes. Therefore, proper handling is needed to avoid serious damage that can impact the quality of life (Yudianto et al., 2008).

A good quality of life will be helpful for the treatment process carried out by DM patients. Improving the quality of life is also one of the goals of management of diabetes mellitus therapy (Adikusuma et al., 2016; PERKENI, 2015). Poor quality of life can make metabolic disorders worse, either directly through hormonal stress or indirectly through complications that can arise (Mandagi, 2010). The quality of life of diabetics is an individual's subjective view of perceived satisfaction. The impact felt by the individual is one component that is no less important in measuring the quality of life. Anxiety that comes in people with diabetes mellitus is one of the effects that can appear due to diabetes. People with diabetes mellitus tend to feel worried about their health condition in the future (Nugroho & Purwanti, 2013). This study was conducted with the aim of analyzing differences in quality of life and stress levels of patients with type 2 diabetes mellitus at the North Pontianak Public Health Center and Kitamura Pontianak Clinic.

METHODS

This form of research uses an observational method with a cross-sectional design. This prospective study used the Diabetes Quality of Life Clinical Trial Questionnaire (DQLCTQ) and Diabetes Distress Scale 17 (DDS 17). The research was conducted at the North Pontianak Public Health Center and Pontianak Kitamura Clinic. The population in this study were all type 2 diabetes mellitus patients undergoing treatment at the North Pontianak Public Health Center and the Kitamura Clinic.. Data collection was accomplished by accidental sampling, namely sampling by choosing who happened to be there or found at the research site. A sample of 150 patients was obtained, consisting of 100 Public Health Center patients and 50 Clinic patients. The obtained data was then processed using Microsoft Excel and statistical tests using the Independent T-Test to determine the relationship between quality of life and stress levels in type 2 DM patients..

RESULTS AND DISCUSSION

Table 1. Respondent Characteristics

No	Characteristics	Public Health Center		Klinik	
		Amount	Percentage (%)	Amount	Percentage (%)
1	Gender				
	Male	27	30,00	26	52,00
	Female	63	70,00	24	48,00
2	Age				
	< 40 years	6	6,67	3	6,00
	40-65 years	70	77,78	44	88,00
	>65 years	14	15,56	3	6,00
3	Education				
	Uneducated	5	5,56	4	8,00
	SD	35	38,89	16	32,00
	SMP	13	14,44	13	26,00
	SMA	28	31,11	13	26,00
	College	9	10,00	4	8,00
4	Job				
	Employed	31	34,44	24	48,00

Unemployed	59	65,56	26	52,00

Table 1 shows that most of the patients with type 2 diabetes mellitus at the Public Health Center and Clinic are women. According to Taylor, the decrease in the hormone estrogen, especially during menopause, is one of the main causes of the large number of women affected by type 2 diabetes. The insulin response decreases due to the low levels of the hormones estrogen and progesterone when menopause occurs. The hormones estrogen and progesterone have the ability to increase insulin response in the blood (Taylor CR, 2011). Patients with type 2 diabetes mellitus at the health center and clinic tend to occur in the age range of 45-65 years. According to Smeltzer, age is closely related to the increasement in blood glucose levels, the older you get, the higher the impaired glucose tolerance (Smeltzer S, 2008). Sharma's research also explained that in line with that, physical strength and the body's defense mechanisms in the age group ≥45 years tended to decrease with age. As we age the body is no longer able to cope with unhealthy lifestyle choices, which eventually results in the manifestation of diseases such as diabetes (Gautam Y., 2009).

Table 1 describes the educational characteristics of type 2 diabetes mellitus patients at the health center and clinic, which mostly occur in the education group that is still relatively low, namely elementary school. The level of education has an influence on the incidence of diabetes mellitus. Along with increasing levels of education, people will have awareness in maintaining their health. People who have higher education will usually have more knowledge about health so as to increase awareness for healthy living and pay attention to lifestyle and eating patterns (Pahlawati & Nugroho, 2019). The characteristics show that type 2 diabetes mellitus tends to occur in the unemployed group. In this study the unemployed group was dominated by housewives. According to Ernawati, housewives have a greater risk of suffering from diabetes because in addition to eating daily food, eating other foods such as finishing children's leftovers can cause an increase in the amount of fat deposits in the body. (Emawati F, 2004)

Table 2. The Quality Of Life Scores

Domain	Mean+SD	
	Public Health Center	Clinic
Physical	63,75+28,1	34,50±25,14
Energy	52,60+13,9	46,72±11,92
Health Preassure	80,37+16,9	67,80±12,79
Mental Health	71,16+13,7	64,40±11,55
Personal Satisfaction	68,48+10,2	65,07±7,54
Treatment Satisfaction	67,50+23,9	77,22±20,02
Treatment Effect	38,78+16,1	33,35±11,20
Symptoms Frequency	73,46+14,6	72,57±16,22
Quality Of Life	63,43+10,3	56,47±8,29

Table 2 shows that patients in Public Health Center have a higher quality of life (63.43) compared to patients in clinics (56.47). The lowest domain in patients at the health center is shown in the treatment effect domain (38.78), while in patients in the clinic it is shown in the treatment effect domain (33.35) and the physical domain (34.50). The stress indicator in the treatment domain illustrates that the patient does not feel the effects of the antidiabetic treatment received, and feels the side effects of the

treatment because the patient is still having difficulty following a diet, doing sports and daily activities. In addition to the treatment effect domain, the results of research on patients at the clinic also showed low scores in the physical domain which illustrated that patients were very limited in carrying out daily activities such as lifting heavy objects, participating in sports, climbing several stairs, bending, bending and other activities.

Table 3. Diabetes Distress Scale Indicator

Indicator	Mean	
	Public Health Center	Clinic
Emotional Burden	2,75	3,40
Distress related to health workers	1,59	1,25
Distress related to handling and care	2,21	2,20
Interpersonal distress	1,42	1,30

Table 3 shows that the highest stress indicator is in the emotional load indicator. However, the value of the stress indicator at the clinic (3.40) is higher than that at the Public Health Center (2.75) which illustrates that patients at the clinic feel more overwhelmed by the demands of life with diabetes and feel that diabetes controls their life. Patients with high emotional burden indicator scores are also more likely to feel fearful and/or distressed at the thought of living with diabetes and to feel that they will have serious long-term complications.

Table 4. Patients Quality Of Life

Medical Facility	Amount	Quality of Life Mean Value
Public Health Center	90	60,43
Clinic	50	56,47

Based on the results obtained from all respondents in this study, there were 90 from the Public Health Center and 50 from the Clinic. The mean value of quality of life for Public Health Center respondents (60.43) was higher than that for clinic respondents (56.47). This study showed a statistically significant difference in quality of life values between the two, $p<0.05$ (p=0.013). These results are in line with Utami's research, that most diabetes mellitus patients with diabetic ulcers have a low quality of life. The ulcer experienced by the patient has an impact on the patient's feelings about the pain experienced by the patient and pain which sometimes makes the patient unable to work as usual and hinders daily activities or routines (Utami et al., 2014).

Table 5. Patients Distress Value

Medical Facility	Amount	Stress Mean Value
Public Health Center	90	2,02
Clinic	50	2,17

Based on the results obtained from all respondents in this study, there were 90 from the Public Health Center and 50 from the Clinic. The mean value of stress for clinic respondents (2.17) is rather high than the Public Health Centerrespondents (2.02). However, there was no statistically significant difference in stress values between the two, $p>0.05$ (p=0.196).

Table 6. Male Patients Quality of Life

Medical Facility	Amount	Quality of Life Mean Value
Public Health Center	27	61,37
Clinic	26	56,38

Based on the results obtained in this study, there were 27 respondents from the Health Center and 26 respondents from the Clinic. The mean value of quality of life for respondents at Public Health Center (61.37) was higher than for respondents at clinics (56.38). However, there was no statistically significant difference in the value of quality of life between the two, $p>0.05$ (p=0.054).

Table 7. Female Patients Quality of Life

Medical Facility	Amount	Quality of Life Mean Value
Public Health Center	63	60,06
Clinic	24	56,56

Based on the results obtained in this study, there were 63 respondents in the female gender category from the P Public Health Center and 24 from the Clinic. The mean value of quality of life for respondents at Public Health Center (60.06) is higher than for respondents at clinics (56.56). However, there was no statistically significant difference in the value of quality of life between the two, $p>0.05$ (p=0.104).

Table 8. Male Patients Distress Value

Medical Facility	Amount	Stress Mean Value
Public Health Center	27	2,08
Clinic	26	2,00

Based on the results obtained in this study, there were 27 male respondents from the Public Health Center and 26 from the Clinic. The mean value of stress for clinic respondents (2.08) is higher than that for health center respondents (2.00). However, there was no statistically significant difference in stress values between the two p>0.05 (p=0.67).

Table 9. Female Patients Distress Value

Medical Facility	Amount	Stress Mean Value
Public Health Center	63	2,27
Clinic	24	2,03

Based on the results obtained in this study, there were 63 female respondents from the Public Health Center and 24 from the Clinic. The mean value of stress for clinic respondents (2.27) is higher than that for health center respondents (2.03). However, there was no statistically significant difference in stress values between the two, p>0.05 (p=0.09).

Table 10. Patients < 40 years of age Quality of Life

Medical Facility	Amount	Quality of Life Mean Value
Public Health Center	6	60,07
Clinic	3	57,59

Based on the results obtained in this study, respondents under the age category of 40 years were 6 respondents from the Public Health Center and 3 respondents from the Clinic. The mean value of quality of life for clinic respondents (60.07) was higher than for health center respondents (57.59). However, there was no statistically significant difference in stress values between the two, p>0.05 (p=0.72).

Table 11. Patients between 40-65 years of age Quality Of Life

Medical Facility	Amount	Quality of Life Mean Value
Public Health Center	70	61,02
Clinic	44	58,02

Based on the results obtained in this study, there were 70 respondents in the age category of 40-65 years from the Public Health Center and 44 from the Clinic. The mean value of quality of life for Public Health Center respondents (61.02) was higher than that for clinic respondents (58.02). However, there was no statistically significant difference in stress values between the two, p>0.05 (p=0.06).

Table 12. Patients > 65 years of age Quality of Life

Medical Facility	Amount	Quality of Life Mean Value
Public Health Center	14	58,23
Clinic	3	54,51

Based on research conducted on patients over the age of 65 years, there were 14 respondents from the Public Health Center and 3 respondents from the Kitamura clinic. The mean value of the quality of life of patients from health facilities at the Public Health Center was higher (58.23) than patients at the clinical health facilities (54.51). However, there was no statistically significant difference in the quality of life values between the two health facilities, p>0.05 (p=0.651).

Table 13. Patients < 40 years of age Distress Value

Medical Facility	Amount	Stress Mean Value
Public Health Center	6	2,42
Clinic	3	2,31

Based on research conducted on patients under the age category of 40 years, there were 6 respondents from the Public Health Center and 3 respondents from the Kitamura clinic. The average stress score of patients from health center health facilities was higher (2.42) than patients in clinical health facilities (2.31). However, there was no statistically significant difference in the quality of life values between the two health facilities, $p>0.05$ (p=0.828).

Table 14. Patients between 40-65 years of age

Medical Facility	Amount	Stress Mean Value
Public Health Center	70	1,98
Clinic	43	2,20

Based on research conducted on patients aged 40 to 65 years, there were 70 respondents from the Health Center and 43 respondents from the Kitamura clinic. The average value of patient stress from the Public Health Center health facility was lower (1.98) compared to the clinical health facility (2.20). However, there was no statistically significant difference between the two health facilities $p>0.05$ (p=0.073)

Table 15. Patients > 65 years of age Distress Value

Medical Facility	Amount	Stress Mean Value
Public Health Center	14	2,07
Clinic	3	1,96

Based on research conducted on patients over the age of 65 years, there were 14 respondents from the Public Health Center and 3 respondents from the Kitamura clinic. The average value of patient stress from the Public Health Center health facility was higher (2.07) compared to the clinical health facility (1.96). However, there was no statistically significant difference between the two health facilities $p>0.05$ (p=0.785)

CONCLUSION

Based on the research conducted, it can be concluded that the quality of life of type 2 DM patients at the Public Health Center is higher (63.43) compared to the quality of life of type 2 DM patients at the Kitamura Clinic (56.47). The statistical test results showed that there was a significant difference between the quality of life of type 2 DM patients at the Public Health Center and Clinics with a sig value of 0.013 ($p<0.05$). The stress indicator for type 2 DM patients at the Public Health Center and Clinics has the lowest average value on the same indicator, namely the indicator of emotional burden, but the emotional burden of patients at the Clinic (3.40) is higher than at the Public Health Center (2.75). Statistical test results showed that there was no significant difference between the stress levels of type 2 DM patients at the Kitamura Health Center and Clinic with a sig value of 0.196 ($p>0.05$)

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