Analysis of Therapy Satisfaction on the Quality-of-Life of Type 2 Diabetes Mellitus Patients at Anutapura Hospital Palu

(*Analisis Kepuasan Terapi Terhadap Kualitas Hidup Pasien Diabetes Melitus Tipe 2 di RSUD Anutapura Palu*)

Setiawati Fadhilah Zainal[1*], Amelia Rumi[1], M. Tamrin[2], Habiba Rosita[1], Abdurrahman Hasymi[3], Rugayyah Alydrus[4], Nurul Ambianti[1]

[1]*Jurusan Farmasi, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Tadulako, Palu, Indonesia.*
[2]*Departemen Farmasi Klinik, RSUD Undata Palu, Indonesia.*
[3]*Departemen Histologi, Fakultas Kedokteran, Universitas Alkhairaat, Palu, Indonesia.*
[4]*Program Studi Farmasi, Fakultas Farmasi, Universitas Megarezky, Makassar, Indonesia.*

Corresponding Author:
Setiawati Fadhilah Zainal
Jurusan Farmasi
Fakultas MIPA
Universitas Tadulako
Palu
90245
Indonesia
email: dilhongc@gmail.com

ABSTRACT

Background: Type 2 Diabetes Mellitus (Type 2 DM) is a chronic disease characterized by increased blood glucose levels caused by impaired insulin function. In Palu City, Type 2 DM is the 2nd most common in Central Sulawesi with a total of 26,204 people. **Objective:** This study aims to determine the relationship between therapy satisfaction and the quality of life of Type 2 DM patients who perform outpatient treatment at Anutapura General Hospital, Palu. **Methods:** With a random sample approach, 100 respondents were used in this cross-sectional study that employed an observational method. Data collection used instruments in the form of a DMSAT (Diabetes Medication Satisfaction Tool) therapy satisfaction questionnaire and a DQOL (Diabetes Quality Of Life) quality of life questionnaire. **Results**: The results of the study were obtained on therapy satisfaction from Type 2 DM patients with the number of respondents in the very satisfied (1.0%), satisfied (90.0%), and quite satisfied (9.0%) categories while the results of the study of the quality of life of Type 2 DM patients 2 fall into the good category (38.0%), and the bad category (62.0%). The statistical analysis test used was the Spearman Rank Correlation test. The results of the Spearman Rank Correlation test value $p = 0.037$ or $p < \alpha$ (0.05), then H0 is rejected, which means that there is a relationship between satisfaction with therapy and quality of life in patients with Type 2 DM which is very weak. **Conclusion:** The conclusion in this study is that there is a very weak relationship between therapy satisfaction and quality of life of patients.

INTRODUCTION

Type 2 diabetes melitus, also known as a metabolic disorder, is a chronic non-communicable disease characterized by elevated blood glucose levels brought on by disruption of the insulin produced's ability to function effectively, leading to persistent hyperglycemia (Zurita-Cruz et al., 2018) . The main complaints found in Type 2 diabetes mellitus patients are polyuria (frequent urination), polydipsia (feeling constantly thirsty), polyphagia (frequent eating), and unexplained weight loss. Other symptoms include tingling, body weakness, blurred vision, itching, erectile dysfunction, and itching in the male and female genitals. A diabetes diagnosis is made by checking blood glucose levels. The blood samples used can come from blood and venous tests and enzymatic blood glucose (Bingga, 2021).

Indonesia is ranked fifth as the country with the highest number of diabetes mellitus sufferers, with 19.5 million sufferers. From this data, it can be concluded that the number of diabetes mellitus sufferers in Indonesia continues to increase (Dinas Kesehatan Provinsi Sulawesi Tengah, 2016; Magliano et al., 2021). Based on research results, the prevalence of diabetes mellitus sufferers in Central Sulawesi Province is highest in Parigi Moutong district with a number of sufferers of 31,008 people and second highest in Palu City with a number of diabetes mellitus sufferers of 26,204 people, while the lowest level of diabetes mellitus sufferers is in Banggai Laut district with a total of 4,674 sufferers. The high prevalence of diabetes mellitus in Central Sulawesi Province is caused by several factors, both modifiable and non-modifiable, that can be modified, such as race and ethnicity, gender, age, family history of diabetes mellitus, and history of giving birth to a baby with a body weight greater than 4,000 grams. Meanwhile, factors that can be modified include consuming foods and drinks that are too sweet, which can increase blood glucose levels, which can cause diabetes mellitus (American Diabetes Association, 2020; Zurita-Cruz et al., 2018).

The level of success of a treatment is assessed by increasing satisfaction with therapy, which can increase self-efficacy and patient compliance with therapy. Increasing therapy satisfaction can also reduce the risk of dropping out of therapy. Thus, better therapeutic satisfaction can contribute to achieving long-term glycemic stability, which in turn can reduce the risk of developing complications related to type 17 diabetes mellitus (American Diabetes Association, 2020; Ngurah & Made, 2016). If the patient's satisfaction with therapy is assessed as low, it can cause anxiety and fear regarding the treatment, which can affect the patient's compliance with therapy and the patient's quality of life. Apart from that, so that therapy satisfaction can increase, starting with satisfaction with the patient himself, patient satisfaction is closely related to existing facilities and the physical environment. Apart from that, communication and information interactions between patients and health workers in providing

information and health services are also important factors (American Diabetes Association, 2020; Anggraeni et al., 2020).

The quality of life of Type 2 diabetes mellitus patients is low compared to non-Type 2 diabetes mellitus individuals. Based on the results of research on the quality of life of Type 2 diabetes mellitus patients at Anutapura Regional Hospital, Palu (56.7%) respondents have a good quality of life, and Anutapura (43.3%) respondents have a poor quality of life (Hastuti et al., 2019). Based on the results of observations made at the Anutapura Regional Hospital, Palu, diabetes mellitus is the disease that has the highest list of treatments, ranking 10th at the Anutapura Regional Hospital, Palu. Apart from that, the Anutapura Regional Hospital, Palu, is also one of the general hospitals that has the highest list of diabetes mellitus visits in outpatient treatment.

MATERIAL AND METHODS

Methods

This research uses an observational method and is cross-sectional in nature, with the number of respondents used being 100 using a random sampling technique. Data were collected using instruments in the form of the DMSAT (Diabetes Medication Satisfaction Tool) therapy satisfaction questionnaire and the DQOL (Diabetes Quality of Life) quality of life questionnaire.

RESULTS AND DISCUSSION

It is explained that based on the gender category of the respondents, there were 43.0% men and 57.0% women, the study's finding indicate that women are more likely than men to have type 2 diabetes mellitus (Table 1). Women are very at risk of developing Type 2 Diabetes Mellitus because women have a greater chance of increasing their BMI (body mass index). Apart from that, the decrease in the hormone estrogen during the menopause period is also the cause of many women experiencing Type 2 Diabetes Mellitus. This is due to a decrease in insulin response due to hormones. low estrogen and progesterone (Anggraeni et al., 2020).

In the age category, namely those aged 18–25 years, as much as 2.0%; those aged 26–45 years, as many as 31.0%; and those aged 46–65 years, as many as 67.0% Compared with research11, it was found that most people suffering from type 2 diabetes mellitus were aged 40 years and over. This is because diabetes mellitus and glucose tolerance disorders (GTG) increase with increasing age. This data is also in accordance with the statement from the American Diabetes Association, (2020) that people generally aged over 45 years experience a rapid decline in physiological function, resulting in insulin secretion deficiency due to disruption of pancreatic beta cells and insulin resistance.

In the BMI (body mass index) category, there were 63 Type 2 diabetes mellitus patients with normal status (63.0%), followed by those at risk of obesity and those at level 1 obesity (17.0%). This is due to calorie intake, activity level, age, and the body's ability to absorb nutrients. Diabetes is a disease that can affect blood glucose metabolism in the body. Glucose is the main source of energy for the cells that form muscles and tissue. In contrast to obesity, free fat deposits can increase cell uptake of free fatty acids and stimulate fat oxidation, which can inhibit the use of glucose in muscles (Amir et al., 2015). At the educational level, the majority of respondents did not have a bachelor's degree or diploma (69.0%), while those with a bachelor's degree or diploma were (31.0%). Education level greatly influences a person's physical activity related to their work. People who are highly educated know more about health or healthy living; with this knowledge, people will have awareness of how to maintain their health (Pahlawati & Nugroho, 2019).

The research results showed that the majority of people suffering from type 2 diabetes mellitus were people who worked (60.0%) and those who did not work (40.0%). This type of work is closely related to the incidence of type 2 diabetes mellitus. A person's work can influence the level of physical activity. The incidence of type 2 diabetes mellitus occurs more frequently in light work compared to heavy work. Working conditions are a stressor for people with type 2 diabetes mellitus, which can reduce a person's ability to solve problems. This condition will definitely worsen the condition of type 2 diabetes mellitus patients, which will have an impact on reducing self-efficacy and self-care management (Putra et al., 2017). Someone who works and doesn't work, of course, has different stress and problem-solving styles. Someone who has a job tends to forget about their body's health and tends to be stressed because of their work. Blood glucose levels depend on the activity of hormones released by the adrenal glands, namely adrenaline and corticosteroids. These two hormones regulate the body's extra energy needs when dealing with emergencies. A continuous adrenaline rush will cause insulin to be unable to regulate ideal blood glucose levels and will increase drastically (Ngurah & Made, 2016).

Table 1. Descriptive Characteristics of Respondents

Charateristic	Variables	Sample Number (n=100)	Percentage (%)
	Man	43	43.0
Gender	Woman	57	57.0
	Total	100	100
	18-25 years	2	2.0
	26-45 years	31	31.0
Age	46-65 years	67	67.0
	Total	100	100
	Normal	63	63.0
	Excess weight	0	0.0
BMI	At risk of obesity	17	17.0
	Obesity level (1)	17	17.0
	Obesity level (2)	3	3.0

	Total	100	100
	Undergraduate	69	69.0
Graduate/Diploma	Diploma	31	31.0
	Total	100	100
	Doesn't work	40	40.0
Job Level	Work	60	60.0
	Total	100	100

The largest primary diagnosis in Anutapura Hospital, Palu, was type 2 diabetes mellitus (56.0%), followed by type 2 diabetes mellitus sufferers accompanied by diabetic neuropathy (6.0%), and type 2 diabetes mellitus accompanied by hypertension (5.0%) (Table 2). Based on research results (Central Sulawesi Health Profile, 2021), in Central Sulawesi, people with type 2 diabetes mellitus in the city of Palu have the second highest prevalence after Parigi Moutong Regency. The second highest diagnosis in this study was type 2 diabetes mellitus accompanied by diabetic neuropathy. There is a significant relationship between type 2 diabetes mellitus and the incidence of diabetic neuropathy. Diabetic neuropathy causes pain as a consequence of abnormalities in the somatosensory system in Type 2 diabetes mellitus sufferers. According to the International Association for the Study of Pain (IASP), type 2 diabetes mellitus accompanied by diabetic neuropathy is related to hypertension because the mechanism of hypertension is a microvascular condition. which causes hyalinization in the basal lamina of blood vessels, causing the formation of platelets in intraneural arterioles, which results in reduced blood flow to the nerves and causes hypoxia and ischemia, resulting in diabetic neuropathy.

The most common symptom experienced by Type 2 diabetes mellitus sufferers is frequent (urination) at night (29.2%), followed by body aches (22.6%) and easy thirst (8.3%) (Table 3). Diabetes sufferers usually experience polyuria (voiding a lot) due to high blood glucose levels. The glucose that comes out of the urine has osmotic properties, namely properties that attract a lot of water to dissolve in the urine. As a result, Type 2 diabetes mellitus sufferers will experience polyuria or frequent urination. In addition, Type 2 diabetes mellitus patients can also experience nocturia (frequent urination at night) (Madani, 2021).

The treatment most received by Type 2 diabetes mellitus patients at Anutapura District Hospital is a single class of biguanide drug, namely metformin (62.26%) (Table 4). The choice of drug depends on the severity of the patient. The drug that is more widely used as the main drug is metformin, because metformin is a first-line treatment that can improve insulin sensitivity, inhibit glucose formation in the liver, reduce low-density lipoprotein (LDL) and triglycerides, and suppress appetite. Metformin has side effects, namely dyslipidemia, diarrhea, and lactic acidosis (Tampa'i et al., 2021).

Table 2. Descriptive Characteristics of Clinical Data

Main Diagnosis	Number of Patients (n=100)	Percentage (%)
DM Type 2	56	56,0
DM Type 2 + HT	5	5,0
DM Type 2 + CKD	4	4,0
DM Type 2 + Dyslipidemia	3	3,0
DM Type 2 + Dyspepsia	2	2,0
DM Tipe 2 + CAD (APS)	1	1,0
DM Type 2 + CAD+ CHF	2	2,0
DM Type 2 + CKD Stage V	3	3,0
DM Type 2 + Neuropathy Diabetic	6	6,0
DM Type 2 + Neuropathy Diabetic + CKD	1	1,0
DM Type 2 + Neuropathy Diabetic + HT	3	3,0
DM Type 2 + Neuropathy + CKD +HHD	1	1,0
DM Type 2 + Neuropathy Diabetic + CKD	1	1,0
DM Type 2 + Neuropathy Diabetic + Dyslipidemia	1	1,0
DM Type 2 + Diabetic Gastropathy	1	1,0
DM Type 2 + Diabetic Gastropathy + HT	2	2,0
DM Type 2 + Cholecystitis	1	1,0
DM Type 2 + Irreversible Pulpitis	1	1,0
DM Type 2 + Intracranial SOL	1	1,0
DM Type 2 + Ca Serviks 1b	1	1,0
DM Type 2 + TB Pulmonary + Dermatitis	1	1,0
DM Type 2 + Cardomyopathy	1	1,0
Total	**100**	**100**

Table 3. Descriptive Clinical Manifestations

Manifestation	Number (n=168)	Percentage (%)
Frequent urination at night	49	29,2
Body Pain	38	22,6
Weight Loss	9	5,4
Fever	4	2,4
Often Thirsty	14	8,3
Blurred View	6	3,6
Out of Breath	11	6,5
Insomnia	12	7,1
Cough	3	1,8
Tired Easily	6	3,6
Body Itching	1	0,6
Chest Pain	11	6,5
Stomatch Ache	1	0,6
Dizzy	3	1,8

Total		**168**	**100**

Table 4. Treatment received by Type 2 Diabetes Mellitus Patients

Drug Class	Drug Type	Number of drugs (n)	Percentage %
Single			
Insulin	Novorapid	7	**13,21**
	Levemir	3	**5,66**
Biguanid	Metformin	33	**62,26**
Sulfonilurea	Glimepiride	10	**18,87**
	Total	**53**	**100**
Combination			
ADO Combination	Metformin + Glimepiride	14	**29,79**
	Metformin + Glibenclamide	1	**2,13**
ADO + Insulin	Metformin + Levemir	4	**8,51**
	Metformin + Novorapid	1	**2,13**
Insulin Combination	Novorapid + Levemir	27	**57,45**
	Total	**47**	**100**

Table 5. Description of therapy satisfaction and quality of life for Type 2 Diabetes Mellitus patients

Quality of life	Therapy Satisfaction		Total Respondents (n)
	Good (n)	Bad (n)	
Very Satisfied	1 (1.0%)	0 (0.0%)	1 (1.0%)
Satisfied	38 (38.0%)	52 (52.9%)	90 (90.0%)
Quite Satisfied	9 (9.0%)	0 (0.0%)	9 (9.0%)
Total	47 (47.0%)	53 (53.0%)	100 (100%)

Table 6. Relationship between level of therapy satisfaction and quality of life in type 2 diabetes mellitus patients

Variabel	Test	Therapy Satisfaction	Quality of life
Therapy Satisfaction	Correlation Coefficient	1	.209*
	Sig. (2-tailed)	.	0.037
	N	**100**	**100**
Quality of life	Correlation Coefficient	.209*	1
	Sig. (2-tailed)	0.037	.
	N	**100**	**100**

*There is a relationship between therapy satisfaction and patient quality of life

Based on table 5, the results of therapy satisfaction are in the category of very satisfied and good quality of life (1.0%) while with poor quality of life (0.0%), then the results of therapy satisfaction are in the category of satisfied and good quality of life (38.0%) while with poor quality of life (52.0%), then the results of therapy satisfaction were in the category quite satisfied and good quality (9.0%) while with

poor quality of life (0.0%). The total quality of life in the good category is (47.%), while the quality of life in the poor category is (53.0%), with a total of 100 respondents (100%).

Based on table 6, the results obtained are $p = 0.037 < \alpha$ (0.05), which means that H0 is rejected, namely that there is a relationship between therapy satisfaction and the patient's quality of life. The correlation coefficient value obtained is 0.209, which is positive, meaning both therapy satisfaction and quality of life are unidirectional. With a value of 0.209, it is included in the category of a relationship, but the strength of the relationship is very weak. This is because the results obtained showed more respondents who had a poor quality of life category, but their satisfaction with therapy was in the satisfied category. This was due to the presence of complications experienced by the respondents, although the respondents were satisfied with the diabetes treatment given if the patient had other, more serious illnesses or These complications can affect the patient's quality of life. This research is in line with Katadi (2019), with a correlation coefficient value of 0.204, which is positive, meaning that both are in the same direction but are included in the category of a very weak relationship, with a significant value of $p = 0.006 < \alpha$ (0.05), namely H0 is rejected, meaning there is a relationship between therapy satisfaction and quality of life, even though the quality of life is in the poor category, so it is emphasized that there is a relationship but the strength is very weak. This is due to several factors that influence the patient's quality of life, namely the presence of disease complications and the lack of knowledge about type 2 diabetes mellitus, so that patients do not have a good quality of life.

CONCLUSION

As conclusion that there is a relationship between therapy satisfaction and quality of life in type 2 diabetes patients with a correlation coefficient value of 0.209, which is positive, meaning that both (therapy satisfaction and quality of life) are in the same direction.

CONFLICT OF INTEREST

The authors declare no conflict of interest

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