

HASIL CEK_Mahanggoro, Akrom, Wahyuni_Diabetes Mellitus type 2; Therapy Satisfaction; TSQM; cross- sectional; primary health care.

by Tri Pitara Mahanggoro, Akrom, Titits Indri Wahyuni Satisfaction Level
Of Anti-dm Medicine

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Satisfaction level of anti-DM medicine in DM patients in primary health service in Yogyakarta



Tri Pitara Mahanggoro^{1*}, Akrom Akrom², Titis Indri Wahyuni³

ABSTRACT

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1 **Introduction:** Satisfaction with anti-DM drug therapy can affect the effectiveness of and adherence to treatment in diabetic patients. This study aims to determine the description of satisfaction with anti-DM drug therapy for type 2 D.M. patients in primary care.

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1 **Method:** The design of this study was a cross-sectional study of D.M. Patients. We included 109 DM Patients Participants. Data is collected from a perspective and carried out by face-to-face interviews using a questionnaire. We used the Therapy Satisfaction Questionnaire Medicine (TSQM) for assessing satisfaction with anti-DM drug therapy. We performed uni- and bivariate data analysis using the free-to-play version of SPSS. Characteristic of subject and TSQM scores were presented descriptively.

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1 **Result:** The results of calculations with the help of SPSS version 25 are TSQM mean effectiveness domain 61.583 ± 11.598 , side effects domain 54.011 ± 32.340 , comfort domain 66.883 ± 8.805 , global satisfaction domain 55.715 ± 11.274 . Based on the research data, it is known that the level of global satisfaction therapy of D.M. patients in primary health facilities is sufficient. The lowest therapeutic domain of satisfaction is the domain of side effects, and the highest domain is the domain satisfaction with comfort in drug therapy.

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1 **Conclusion:** The level of D.M. patient satisfaction with anti-DM drug therapy is sufficient. Patients need to be educated about the possible emergence of side effects due to drug use.

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1 **Keywords:** Diabetes Mellitus type 2; Therapy Satisfaction; TSQM; cross-sectional; primary health care.

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INTRODUCTION

Diabetes is a severe chronic disease because the pancreas does not produce enough insulin (a hormone that regulates blood sugar or glucose) or when the body cannot effectively use insulin.¹ Diabetes mellitus is a chronic metabolic syndrome, one of the leading causes of death globally. Diabetes mellitus (D.M.) is a significant risk factor for cardiovascular disease, heart failure, stroke, and kidney failure. According to the American Diabetic Association (ADA), diabetes is divided into four classes: type 1 diabetes mellitus, type 2 diabetes mellitus, gestational diabetes mellitus (diabetes due to pregnancy), and other types of diabetes. Diabetes mellitus is a chronic disease requiring long-term treatment.² Research on diabetes patients in Asia (Malaysian, Indian and Chinese) showed that 57% of patients did not adhere to medication.³

Research in Indonesia shows that non-adherence to taking antidiabetic drugs ranges from 50- 69.7%.⁴ Many studies on the factors that play a role in medication adherence to chronic diseases. Several studies have shown a relationship in medication adherence, characteristics of age, gender, education, employment status, payment for treatment, comorbidities, duration of illness, and drug factors (frequency and number of drugs) in age, education, employment status, payment for treatment.^{5,6}

A previous study shows that out of 50 respondents, 44 respondents who experienced type 2 diabetes also experienced hypertension. Seven out of ten patients with D.M. will have complications that will ultimately reduce the quality of life and cause death.⁷ A study using the pill count method at

the urban Community Health Center reported that 54.35% of diabetes mellitus patients were not adherent to treatment.⁸ Research in primary health care in Indonesia shows a relationship between non-adherence to taking medication with hypercreatininemia in patients with metabolic syndrome.⁸ One of the complications of diabetes mellitus is a kidney disease characterized by above regular creatine.⁹ Adherence to taking medication is one of the keys that play a role in preventing disease complications. The success of therapy is characterized by controlled blood sugar and blood pressure levels and is associated with patient compliance. SM patients with a higher level of adherence, the higher the success rate of patient therapy in controlling blood sugar levels.^{10,11}

Patient satisfaction is related to facilities

and the physical environment, but the interaction between patients and officers in providing health services is also an essential factor. The terminology of patient satisfaction is the patient's expectation that arises from the actions of health workers because of the performance of health services during the process of interacting to provide services.¹² The results of patient therapy satisfaction in the comfort domain were 41 patients satisfied with their diabetes therapy, their lifestyle conditions were high, and the medical controls were comfortable. Convenience participation of patient opportunities to be healthy, to improve the quality of life in a person is an active aging process.^{6,13} Although therapeutic satisfaction is closely related to the quality of life of D.M. patients, the therapeutic satisfaction of D.M. patients at public health centers in Indonesia has not been widely studied.¹⁴ The objectives of this study were (i) to determine the demographics of patients with type 2 diabetes mellitus at Jetis I Public Health Center (PHC), Bantul. (ii) Knowing the level of therapy satisfaction of type 2 diabetes mellitus patients at Jetis I PHC, Bantul, Yogyakarta based on age and gender.

METHODS

This type of research is analytical observational research, using a cross-sectional approach. This research was conducted at Jetis I PHC, Bantul in October 2019 - November 2019. We received Ethical Clearance from The Research Ethics committee of Ahmad Dahlan University (no: 011909098).

The target population in this study were all patients with type 2 diabetes mellitus who were treated at Jetis I PHC, Bantul. The affordable population in this study were all type-2 diabetes mellitus patients who were treated at the Jetis I PHC, Bantul in the January - November 2019 period.

The samples of this study were all study populations that met the inclusion criteria. Determination of the sample size (sample size) using an open epi (online) calculator (www.openepi.com), Z_a was determined at 1,96 (significance of 95%), Z_b was determined at 0,84 (Power of test of 80%). Ratio of control to case was determined at 1:1, with a rate of controls exposed equal

to 0.36 (taken from previous research data) and rate of a case with exposure was 0.63 then the results of the sample size calculation using the open epi application are 96.⁸

The inclusion criteria were (i) patients with type 2 diabetes mellitus without or with comorbidities treated at the outpatient clinic of Jetis I PHC, Bantul; (ii) patients, both male and female, aged 18 - 85 years; (iii) receiving one or more antidiabetic drugs, both oral and insulin; and (iv) willing to participate in this study by signing informed consent. The exclusion criteria for the subjects of this study were (i) pregnant type 2 D.M. patients; (ii) type 2 D.M. patients who are blind; and (iii) D.M. type 2 patients who are deaf.

The types of data in this study are primary and secondary data. Primary data were obtained through interviews using a structured questionnaire. Meanwhile, secondary data in patient characteristics were taken from medical records. The instruments used in this study included: (i) Data collection form, used to collect primary data in addition to questionnaires. The data collection form consists of: (i) Health assessment sheets to obtain patient characteristics data. (ii) Forms of medical records to collect secondary data, including age, sex, diagnosis data at health centers, medication. (iii) The questionnaire used is the Satisfaction questionnaire. Therapy satisfaction was assessed using the Indonesian Treatment Satisfaction Questionnaire for Medication (TSQM 1.4). TSQM1.4 consists of 14 question items. The validation test of patient therapy satisfaction using the TSQM questionnaire has been carried out on patients with chronic disease in America. The results show that the questionnaire is valid and can be used as a good predictor of patient satisfaction with various types of treatment. In Indonesia, the TSQM questionnaire has been tested for validity and reliability on 29 diabetic patients with hypertension, with results showing that the TSQM questionnaire is valid and reliable.¹⁵

Based on the medical record database, researchers selected prospective subjects using the selection criteria as written in the research protocol. After choosing the

prospective Subjects, then on the day of the routine visit, the researcher met with the prospective Subjects to explain the research plan and asked their willingness to be involved as volunteers. If the candidate states their desire to become a volunteer, they are asked to sign a statement of commitment.

Each interviewed Subject was asked about patient characteristics including gender, age, education, marital status, comorbidities, dietary habits, exercise habits, smoking habits, and received a satisfaction questionnaire (TSQM) conducted by researchers and located at Jetis I PHC. and each patient's residence.

All Respondents were given a satisfaction questionnaire (TSQM). All respondents were asked the willingness to participate in the research by filling in the informed consent then making an appointment to visit the house in the context of an interview to fill out a questionnaire tested for validity and reliability from previous research.

The data is presented in tables or diagrams. The frequency and percentage of diabetes patients are calculated based on gender, age, education level, marriage, accompanying diseases, dietary habits, exercise habits, and smoking habits. Several questionnaires that the patient has filled in carried out several testing methods (i). Patient socio-demographic data used frequency analysis and indicated by the mean \pm S.D. or median (minimum-maximum). (ii) TSQM (Treatment Satisfaction Questionnaire For Medication) scoring after obtaining a score, then analyzed using frequency analysis, descriptive analysis.

RESULTS

This study was conducted prospectively in patients with type 2 diabetes mellitus who were undergoing outpatient care or had previously visited Jetis I PHC Bantul, who used one or more anti-diabetes drugs. The subjects who participated in this study from the beginning to the end were 109 patients. Table 1 presented the characteristic Subject.

Based on the patient characteristics data presented in Table 1, it can be seen that based on gender, the majority of study subjects were women (76.1%), aged 46-64

Table 1. Characteristics of type 2 diabetes mellitus patients at Jetis I PHC, Bantul.

Characteristic	Number (n=109)	Percentage
Sex		
Male	26	23.9
Female	83	76.1
Age (year)		
30 – 45 year	9	8.3
46 – 64 year	82	75.2
≥ 65 year	18	16.5
Education		
Uneducated	8	7.3
Elementary school	58	53.2
Middle education level	37	33.9
University	6	5.5
Marriage status		
Marriage	109	100.0
Un Marriage	0	0
Comorbidity status		
Yes	61	56
No	48	44
Diet		
Salt	0	0
Carbohydrate	74	67.9
Cholesterol	0	0
Salt & sugar/cholesterol	35	32.1
Exercises		
No	50	45.9
Yes	59	54.1
Smoking status		
Yes	6	5.5
No	103	94.5

years (75.2%), level of primary education (53.2%), and all of them are married.

One of the main problems in the management of D.M. in primary care is the unsatisfactory success rate of therapy and an increase in the referral rate due to complications. Patients are one of the primary keys to realizing the effectiveness of D.M. management in the community. In contrast to the management of D.M. patients in hospitals, the management of D.M. in primary services is directed at increasing the awareness and independence of patients in disease management. One of the factors closely related to the success of D.M. therapy is the satisfaction factor. Therapeutic satisfaction is one example of results from patient reports about health conditions and treatment. Measurement of therapy satisfaction is essential because

therapy satisfaction is more remarkable with patient adherence to a given regimen.

In patients with type 2 diabetes mellitus, increased therapeutic satisfaction is associated with better adherence and blood sugar control; in other words, increased satisfaction will usually provide better clinical outcomes and quality of life. The average therapeutic satisfaction score can be seen in Table 2. Based on the results of the assessment of therapeutic satisfaction using the TSQM questionnaire in general and based on the therapeutic satisfaction domain on the number of subjects, namely 109 samples, the mean value of the satisfaction level for the effectiveness domain was 61.583 ± 11.598 for the side effects domain the average level of satisfaction was 54.011 ± 32.340 , for the average level of satisfaction in the

comfort domain is 66.883 ± 8.805 . For the global satisfaction domain, the average satisfaction level is 55.715 ± 11.274 .

The therapy satisfaction test score has the highest value in the comfort domain with the interpretation of satisfaction. The overall mean category of patient diabetes therapy satisfaction is satisfied. Overall, the patient's response to diabetes therapy that he has undertaken is in the comfortable category

The satisfaction level is related to the success of therapy. Many factors influence the level of satisfaction. It is necessary to analyze the level of patient satisfaction with demographic characteristics. The satisfaction level of treating D.M. patients at Jetis I PHC, Bantul is presented in Table 3. From Table 3, it is known that gender is not associated with all satisfaction domains, except for the global satisfaction domain. In general, the satisfaction of male D.M. patients is higher than female patients, but it is not statistically significant.

Based on the median age value, the respondents' age was classified into two groups: less than or equal to 57 years and more than 57 years. The satisfaction level of D.M. patients at Jets 1 PHC based on the two classifications of these age groups is presented in Table 4.

Based on Table 4, it is known that the level of satisfaction in the patient group of less or equal to 57 years is higher than that of patients in the older age group. On the global satisfaction, aspects of belief and treatment were significantly higher in patients in the younger age group.

The results of the assessment showed that the level of therapy satisfaction of type 2 diabetes mellitus patients at the Jetis I PHC was as follows: the mean obtained for the effectiveness dimension was 61.683 ± 11.598 , for the side effect dimension, it was 54.011 ± 32.340 , for the comfort dimension, namely 66.883 ± 8.805 for global satisfaction. 55.715 ± 11.274 , then from the mean level of satisfaction of type 2 D.M. patients, is satisfied. Male patients and patients less than 57 years of age had higher satisfaction scores when compared to female patients and patients older than 57 years, but this difference was not statistically significant.

Table 2. Description of the satisfaction level of D.M. patients with D.M. treatment at Jetis I PHC, Bantul.

Domains and sub-domains of satisfaction	N	Min	Max	Mean
The domain of satisfaction with side effects				
satisfaction score with functional side effects	14	.00	100.00	58.92±34.81
side effect satisfaction score	14	.00	100.00	54.01±32.34
satisfaction score with overall side effects	14	.00	100.00	57.14±37.24
Satisfaction score on DM treatment side effects	109	00	100.00	00 (0-100)
satisfaction score with drug side effects	14	.00	100.00	50.00±37.97
satisfaction score with physical health side effects	14	.00	100.00	51.78±35.98
The domain of convenience				
satisfaction score with the comfort of using the drug	109	50.00	100.00	69.73±10.89
satisfaction score with the comfort of using the drug	109	50.00	100.00	67.29±10.11
satisfaction score with the comfort of taking medication	109	33.30	83.30	63.62±10.68
overall comfort score	109	44.43	88.90	66.88±8.80
Effectiveness domain				
satisfaction score with DM drugs	109	16.70	83.30	61.63±14.07
satisfaction score with DM treatment	109	33.30	83.30	62.09±12.60
satisfaction score with the number and frequency of drug administrators	109	16.70	83.30	61.02±12.47
satisfaction score with overall drug effectiveness	109	27.76	83.30	61.58±11.59
Global Satisfaction Domain				
global satisfaction score	109	25.00	100.00	58.94±14.64
global drug confidence satisfaction score	109	.00	75.00	54.58±14.49
global treatment satisfaction score	109	4.17	79.12	53.62±14.05
final satisfaction score	109	18.05	76.37	55.71±11.27

Table 3. Satisfaction levels based on the sex of D.M. patients at Jetis I PHC, Bantul.

Parameter	Male	Female	p
satisfaction score with DM drugs	59.62±11.72	62.26±14.74	0.55
satisfaction score with DM treatment	60.27±10.63	62.66±13.16	0.35
satisfaction score with the number and frequency of drug administrators	57.06±11.73	62.26±12.51	0.23
satisfaction score with overall drug effectiveness	58.99±10.08	62.39±11.97	0.24
Satisfaction score on DM treatment side effects	0000	.0000	0.98
satisfaction score with drug side effects	100.00±36.58	46.15±37.97	0.46
satisfaction score with physical health side effects	75.00±32.23	50.00±36.79	0.53
satisfaction score for functional side effects	75.00±32.45	57.69±35.91	0.47
satisfaction score for functional side effects	83.33±31.32	51.75±32.49	0.78
satisfaction score for overall side effects	75.00±35.56	55.76±38.39	0.68
satisfaction score on the comfort of using the drug	71.16±8.86	69.28±11.47	0.58
satisfaction score with the comfort of using the drug	69.88±9.42	66.48±10.23	0.67
satisfaction score with the comfort of taking medication	64.11±10.20	63.47±10.87	0.62
overall comfort score	68.38±7.96	66.41±9.04	0.88
global satisfaction score	61.53±12.70	58.13±15.17	0.75
global drug confidence satisfaction score	54.80±15.84	54.51±14.15	0.98
global treatment satisfaction score	54.32±10.23	53.40±15.09	0.027*
final satisfaction score	56.88±8.79	55.34±11.96	0.43

Table 4. Satisfaction level based on the age group of D.M. patients at Jetis I PHC, Bantul.

Parameters	Age ≤57 year	Age > 57 year	p
satisfaction score with DM drugs	62.85±14.68	60.66±13.62	0.56
satisfaction score with DM treatment	63.55±13.16	60.94±12.13	0.38
satisfaction score with the number and frequency of drug administrators	62.86±11.00	59.57±13.43	0.69
satisfaction score with overall drug effectiveness	63.09±11.94	60.39±11.27	0.54
Satisfaction score on D.M. treatment side effects	.0000	.0000	
satisfaction score with drug side effects	62.50±44.01	40.62±32.56	0.89
satisfaction score with physical health side effects	62.50±44.01	43.75±29.12	0.78
satisfaction score for functional side effects	50.00±41.83	65.62±29.69	0.84
satisfaction score for functional side effects	59.37±41.41	49.98±25.96	0.36
satisfaction score for overall side effects	62.50±44.01	53.12±33.90	0.29
satisfaction score on the comfort of using the drug	69.80±10.66	69.68±11.16	0.39
satisfaction score with the comfort of using the drug	67.02±10.01	67.50±10.27	0.85
satisfaction score with the comfort of taking medication	64.25±8.41	63.12±12.21	0.67
overall comfort score	67.02±7.96	66.76±9.47	0.37
global satisfaction score	61.97±14.57	56.55±14.36	0.056
global drug confidence satisfaction score	57.81±14.72	52.04±13.91	0.038*
global treatment satisfaction score	57.02±13.16	50.95±14.25	0.023*
final satisfaction score	58.93±10.84	53.18±11.04	0.008**

DISCUSSIONS

Primary health research data in Indonesia shows that the prevalence of D.M. in women tends to be higher than in men.¹⁶ The estrogen hormone maintains the balance of blood glucose levels and progesterone functions to normalize blood glucose levels at any time when excess glucose intake into the body. In menopause, the stage makes women more likely to have diabetes mellitus than men.¹⁷ The World Health Organization / WHO report (2016) estimates that 422 million adults live with diabetes mellitus. By 2040 it is estimated that the number will be 642 million.¹⁸

Based on clinical characteristics, most of the participants had comorbidities (56%), had a sugar/carbohydrate diet (67.9%), exercised (54.1%), and did not smoke (94.5%). Research data show that out of 50 respondents, 44 respondents who experience type 2 diabetes also experience hypertension. Seven out of ten patients with D.M. in Indonesia will have complications that will ultimately reduce the quality of life and cause death.¹⁹ Low carbohydrate diets were shown to reduce blood glucose levels ($p = 0.025$), reduce HbA1c, and improve insulin sensitivity. Dietary factors other than the number of carbohydrates can affect blood

glucose, for example, dietary fiber, protein consumption, and compliance for sugar diet.²⁰ Consuming high-fiber foods has a 2-hour blood glucose response ($p = 0.001$) compared to eating foods low in fiber ($p = 0.05$).²¹

Exercise is one of the WHO recommendations for D.M. patients to help control blood sugar. D.M. patient, who regularly exercises/is in the moderate category, can reduce the risk of developing type II diabetes by 0.422 times compared to those who are irregular/lacking.²⁰ Less exercise causes the food that enters the body not to be burned but instead stored as internal fat. Body.²² Smoking and diabetes are related because smoking can cause diabetes, which will worsen someone's diabetes.²³ diabetes mellitus, kidney disease, cardio- and cerebrovascular diseases of subjects and their families was recorded. Blood pressure was determined as the mean of three readings in the sitting position and hypertension classified according to the Joint National Committee VII. Urinalysis was assessed using Combi 10R dipstick test. Random blood glucose and serum creatinine were measured in subjects with either hypertension, proteinuria, glycosuria and/or a history of diabetes. eGFR was calculated according Cockcroft-Gault (CG Some of the contents

of cigarettes can damage the walls of blood vessels resulting in high blood pressure, chronic kidney disease, and stroke.²⁴

CONCLUSIONS

The results showed that the characteristics of patients with type 2 diabetes mellitus at Jetis I PHC, Bantul were as follows: the sex of women who dominated diabetes mellitus at Jetis I PHC, Bantul was (76.1%) while men (23.9%). Meanwhile, the dominating age was 30-45 years (8.3%), while 46-64 years (75.2%), while those aged ≥ 65 years (16.5%). Primary education (53.2%), secondary education (33.9%), higher education (5.5%), and not going to school (7.3%). On average, the subjects were married (100). There were comorbidities (56%) and those without comorbidities (44%). In the diet habits that only diet sugar/carbohydrates (67.9%), while salt and sugar/carbohydrates (32.1), exercise habits that do not exercise (45.9%), while those who exercise (54.1 %). The smoking habit which domiciled the average non-smoking patient was (94.5%), while the patients who smoked (5.5%).

CONFLICT OF INTEREST

No potential for conflict of interest.

FUNDING

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ETHICS APPROVAL

We received Ethical Clearance from The Research Ethics committee of Ahmad Dahlan University (no: 011909098).

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AUTHOR CONTRIBUTION

TPM, AA dan TIW have equal contribution in the preparation of research plans, research design, data collection, processing, and analysis, drafting and review.

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