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ORIGINAL ARTICLE

FACTORS RELATED TO COMPLIANCE WITH DIET MANAGEMENT AMONG TYPE 2 DM OUTPATIENTS IN ROYAL PRIMA HOSPITAL

Faktor Yang Berhubungan Dengan Kepatuhaan Diet DM Tipe2 Pasien Rawat Jalan di RSU Royal Prima

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ABSTRACT

Background: Diabetes mellitus in Indonesia is increasing annually, with a 6.7% death rate. This is due to patients not following the recommended diet, with Type 2 DM patients having minimal dietary compliance... **Purpose:** This study aims to find out the relationship between age, gender, education, knowledge, employment status, family role, and the support of health officials to comply with the diet of outpatients type 2 DM in Royal Prima Medan Hospital. **Methods:** This research method uses *cross-sectional* methods of conducting interviews, observations, and questionnaire filling. Data were analyzed by using the *SPSS* application with the α=5% Chi-square test and the samples used in this study were patients with outpatients type 2 DM at RSU. Royal Prima Medan Hospital with a total of 64 patients in 2024. **Results:** The result, it was found that there was a significant relationship between age (OR:0.03, CI 95%: 1.67-15.17), gender (OR:0.01, CI 95%:1.28-10.14), knowledge (OR:0.02, CI 95%:0.10-0.89), family role (OR:0.05, CI 95%:0.06-0.64), and health support (OR:0.01, CI 95%:0.05-0.49) for compliance with the outpatients type 2 DM diet management. But there is no significant relationship between education (OR:0.63, CI 95%:0.29-2.11) and job status (OR:0.79, CI 95%:0.42-3.05) for conformity to the type 2 DM diet. **Conclusion:** This study found that the variable age was the most dominant risk factor for diet management type 2 DM with an OR of 18.935 with p-value (0.04).

ABSTRAK

Latar Belakang: *Diabetes melitus di Indonesia mengalami peningkatan setiap tahunnya dengan angka kematian sebesar 6,7%. Hal ini disebabkan oleh pasien yang tidak mematuhi pola makan yang dianjurkan, dengan pasien*

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DM tipe 2 yang memiliki kepatuhan diet yang minim. ***Tujuan****: Penelitian ini bertujuan untuk mengetahui hubungan antara usia, jenis kelamin, pendidikan, pengetahuan, status pekerjaan, peran keluarga, dan dukungan petugas kesehatan dengan kepatuhan diet pasien rawat jalan DM tipe 2 di RS Royal Prima Medan.* ***Metode:*** *Metode penelitian ini menggunakan metode cross-sectional dengan melakukan wawancara, observasi, dan pengisian kuesioner. Data dianalisis dengan menggunakan aplikasi SPSS dengan uji Chi-square α=5% dan sampel yang digunakan dalam penelitian ini adalah pasien DM tipe 2 rawat jalan di RSU. Rumah Sakit Royal Prima Medan dengan jumlah pasien pada tahun 2024 sebanyak 64 orang.* ***Hasil:*** *Hasil penelitian menunjukkan bahwa ada hubungan yang bermakna antara usia (OR:0,03, CI 95%:1,67-15,17), jenis kelamin (OR:0,01, CI 95%:1,28-10,14), pengetahuan (OR:0,02, CI 95%:0,10-0,89), peran keluarga (OR:0,05, CI 95%:0,06-0,64), dan dukungan kesehatan (OR:0,01, CI 95%:0,05-0,49) dengan kepatuhan manajemen diet pasien DM tipe 2 rawat jalan. Namun tidak terdapat hubungan yang signifikan antara tingkat pendidikan (OR:0,63, CI 95%:0,29-2,11) dan status pekerjaan (OR:0,79, CI 95%:0,42-3,05) terhadap kesesuaian pola makan penderita DM tipe 2.* ***Simpulan:*** *Penelitian ini menemukan bahwa variabel usia merupakan faktor risiko yang paling dominan terhadap pengelolaan pola makan penderita DM tipe 2 dengan OR sebesar 18,935 dengan nilai p (0,04).*

INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder characterized by increased blood sugar levels, which over time can cause damage to heart organs, blood vessels, eyes, kidneys, and nerves (1). Diabetes mellitus causes a significant problem in public health and is one of the priority non-communicable diseases and in the last decade, the incidence and prevalence of diabetes has continued to increase (2). Diabetes mellitus in Indonesia is the third-largest with 6.70% deaths, after stroke (21.10%) and heart (12.90%). According to the Basic Health Research (Riskesdas) of 2013, the prevalence of DM in Indonesia was 1.50%, while Riskesdas in 2018 reached 2.00%, showing a 0.50% increase in the prevalence of DM based on blood tests in patients with DM. This figure shows about 25% of newly discovered DM patients (3).

According to data on diabetes mellitus that occurred in North Sumatra in 2019, there were 249,519 diabetics who received medical care from 144,521 (57.92%) of the total diabetic patients whilst the remainder were 104,998 (42.8%) of other diabetes mellitus patients who did not receive direct treatment to the health service (4).

According to data on diabetes mellitus at RSU. Royal Prima Medan Hospital in 2024, as of January 2024, there were 64 identified cases of type two diabetes mellitus. According to a 2019 study conducted by Anggi and Rahayu (5) at the RSUD Internal Disease Poliklinik Dr. Drajat Prawiranegara, there were 417 patients indicated with diabetes mellitus type 1. The results of the interviews found 10 patients who indicated that they had obtained an explanation of diabetes mellitus type 2. About 80% of respondents still like foods and drinks that are too sweet and do not comply with the requirements of the DM diet treatment. Meanwhile, 20% of the respondents followed the instructions of the doctor, 30% of respondents said that families with DM rarely reminded them of the diabetic diet, while another 70% received family support for the diet therapy. Fifty percent said that health workers rarely provide education about the diet, and another 50% tended to disobey the recommendations of health workers.

To regulate blood sugar levels must meet the needs of the body; people with diabetes should follow a balanced diet and follow a diet program. It was found that 76.20% of diabetics were able to control their blood sugar levels by adhering to the recommended dietary patterns of diabetes, but only 23.80% of those with diabetic mellitus were regularly disciplined in implementing and running the dietary program (6).

Compliance with a diet is so important in the treatment of diabetes mellitus that there are some factors that affect dietary compliance are self-motivation, education, dietary knowledge, as well

as family support and support from health professionals. Diet compliance is defined as the degree of willingness of the patient to follow a diet recommended by a doctor or health care provider in accordance with a late-defined protocol (7).

Dietary compliance is the similarity of an individual's behavior to recommendations given by health workers relating to the regulation of eating patterns and certain activity restrictions. However, in practice, dietary compliance is very difficult to implement (8).

This study aims to find out the relationship between age, gender, education, knowledge, employment status, family role, and the support of health officials to comply with the diet of outpatients type 2 DM in Royal Prima Medan Hospital.

METHODS

This type of research uses analytical surveys and research design using quantitative methods with cross-sectional design. The location of this research was carried out at RSU. Royal Prima Medan Hospital in February 2024. The population and sample of this study are all data on patients with type 2 diabetes mellitus as many as 64 patients. Determination of the number of samples is the total sample by sampling technique using total sampling where the number of samples is equal to the population. Data collection method was using primary and secondary data. The data analysis used in this study used univariate, bivariate (Chi-square), and multivariate (multiple logical regression with the enter method) with a p-value significance level of 0.05. This study used the ethical principles of practicality, confidentiality, and justice and obtained an honest permission letter with the number 041/KEPK/UNPRI/III/2024.

RESULTS

Based on Table 1, the results of the univariate test showed that out of 64 respondents who experienced DM compliance 34 respondents (53.10%) comply and 30 respondents (46.90%) did not comply. The results of the analysis were 64 respondents of 40 respondents (62.50%) who were ≥45 years (old) and 24 respondents (37.50%) of ≤45 years (young). The analysis of 64 respondents consisted of 34 respondents (53.10%) male and 30 respondents (46.90%) female. Results of the analysis of 64 respondents showed 30 respondents (46.90%) with higher education (Senior High School) and 34 respondents (53.10%) with low education (Junior High School). The analysis of 64 respondents consisted of 40 respondents (62.50%) with good knowledge and 24 respondents (37.50%) with less knowledge. Based on the analysis of 64 respondents,31 respondents (48.40%) are working and 33 respondents (51.60%) are not working. The analysis resulted that from 64 respondents, 42 respondents (65.60%) having family roles and 22 respondents (34.40%) having no family role. The analysis of 64 respondents found 35 respondents (54.70%) received support from health workers and 29 respondents (45.30%) did not receive support from the health workers.

Based Table 2, from the Chi-square bivariate test results, five independent variables have p-values below 0.05, namely the variables of age, gender, knowledge, family role, and health support. Therefore, these variables have an association as risk factors for compliance with type 2 diabetes mellitus diet management.

Meanwhile, two variables have a p-value above 0.05: educational variables and job status variables. It means Ha is accepted, stating that there is no relationship with risk factors of compliance with type 2 diet management. These variables are not included as candidate variables for the tested multivariates because they have values p> 0.025.

Table 3 shows the result of multivariate processing using the enter logistic regression test method, providing that variables that have a value OR > 1 are a risk factor. If the OR value is < 1, then it's protective. The variable with the highest OR value is the age variable, with an OR value of 18.935. The next risk factor variables are the health support variable, the gender variable and the knowledge level variable. At the same time, the knowledge and health support level variables have OR values below < 1.

Table 1
Frequency Distribution Analysis

Variable	n	%
DM Compliance		
Comply	34	53.10
Not comply	30	46.90
Age		
≥ 45 years (old)	40	62.50
≤ 45 years (young)	24	37.50
Gender		
Man	34	53.10
Female	30	46.90
Education		
Higher education (Senior High School)	30	46.90
Low education (Junior High School)	34	53.10
Knowledge		
Good	40	62.50
Less	24	37.50
Work Status		
Working	31	48.40
Not Working	33	51.60
Family Role		
Role	42	65.60
Less of role	22	34.40
Health Support		
Support	35	54.70
Not support	29	45.30

Source: Primary data

DISCUSSION

Age Variable

The results showed that the age variable (p-value = 0.03 < 0.05) indicates that there is a significant relationship between age and compliance with the type 2 DM diet in RSU. Royal Prima Medan Hospital with value of (OR 5.044 CI 95% 1.67-15.17 (>1 risk factor) from a multivariate analysis. Other results by Priharsiwi and Kurniawati (9) using the Chi-square test show (p-value = 0.04 < 0.05), which means there is a relationship between the age with the compliance of the type 2-DM diet where age can increase the incidence of type 2 diabetes mellitus so that it affects blood glucose levels. However, this is opposite to the research by Adhanty et al (10), with the Chi-square test of (p-value = 0.106 > 0.05), meaning there is no significant relation between age to diet compliance. This is because at ≤ 45 years (young) of age there are some who are still productive in their work and have other priorities in their daily lives.

Gender Variable

The results showed that the gender variable (p-value = 0.01 < 0.05) which indicates that there is a significant relationship between gender and compliance with the type 2 DM diet in RSU. Royal Prima Medan Hospital with a value OR 3.612 CI 95% 1.28-10.14 (>1 risk factor) from a multivariate analysis. This study is consistent with Nababan et al (11) which has Chi-square p-value (0.000<0.05), which means there is a significant relationship between gender and compliance with the type 2 DM diet. This study is contradictory with the study by Susanto and Rusyani (12) that has Chi-square p-values (0.59 >0.05). It is based on a health belief theory that states that gender does not mean dietary adherence.

Educational Variable

The results showed that the educational variable (p-value = 0.63 > 0.05) which indicates that there is no significant relationship between education and compliance with the type 2 DM diet in RSU. Royal Prima Medan Hospital with a value OR 0.789 CI 95% 0.295-2.114 (<1 is protective). This study is in line with Retta et al (13) with Chi-square test results (p-value= 0.81 > 0.05) so that it does not show any relationship between education and compliance with type 2 DM diet. However, it is contradictory with the study Yulisetyaningrum et al (14) at RSUD R.A. Kartini with a Chi-square test result of (p - value= 0.03 < 0.05), which means that there is a relationship of education with the adherence to type 2 DM diets where there is an influence of the level of education on changes in attitudes and healthy life behavior based on the educational level that they have.

Knowledge Variable

The results showed that the knowledge variable (p-value = 0.02 < 0.05) which indicates that there is a significant relationship between knowledge and compliance with the type 2 DM diet in RSU. Royal Prima Medan Hospital with (OR 0.304 CI 95% 0.103-0.897) (<1 is protective). This study is consistent with Marengke et al (15) with Chi-square p-value (0.01 < 0.05), which means there is a significant relationship between knowledge and compliance with type 2 DM diet. The more knowledge people receive of diabetes mellitus, the easier it is for them to get the latest information about the type 2 diabetes diet. However, a study by Kartini et al (16) with a p-value (0.62 > 0.05) suggests that there is no significant relationship

between knowledge and compliance with type 2 DM diet.

Table 2
Chi-square Test Results of Secondary Data of Royal Prima Medan Hospital In 2024

Variable	DM Compliance				p-value	OR (CI 95%)
	Comply		Not Comply			
	n	%	n	%		
Age						
≥ 45 Years (old)	27	67.50	13	32.50	0.03	5.04 (1.67-15.17)
≤ 45 Years (young)	7	29.20	17	70.80		
Gender						
Man	23	67.60	11	32.40	0.01	3.61 (1.28-10.14)
Female	11	36.70	19	63.30		
Education						
High education (Senior High School)	15	50.00	15	50.00	0.63	0.78 (0.29-2.11)
Low education (Junior High School)	19	55.90	15	44.10		
Knowledge						
Good	17	42.50	23	57.50	0.02	0.304 (0.10-0.89)
Less	17	70.80	7	29.20		
Job Status						
Working	17	54.80	14	45.20	0.79	1.14 (0.42-3.05)
Not Working	17	51.50	16	48.50		
Family Role						
Role	17	40.50	25	59.50	0.05	0.20 (0.06-0.64)
Less of role	17	77.30	5	22.70		
Health Support						
Support	12	34.30	23	65.70	0.01	0.16 (0.05-0.49)
Not Support	22	75.90	7	24.10		

Source: Primacy data processed by SPSS in 2024

Table 3
Multivariate test result from Logistic Regression Enter Method

Variable	Sig.	Odds Ratio (OR)	95% C.I. for EXP (B)	
			Lower	Upper
Age	0.04	18.93	2.59	138.68
Gender	0.01	7.65	1.64	35.64
Knowledge	0.03	0.16	0.31	0.84
Health Support	0.04	0.10	0.02	0.49

Source: Primacy data processed by SPSS in 2024

Job Status Variable

The results showed that the job status variable (p-value = 0.79 > 0.05) which indicates that there is no significant relationship between the work status and compliance with the type 2 DM diet in RSU. Royal Prima Medan Hospital with a value of OR 0.304 CI 95% 0.103-0.897 (<1 is protective). This result is in line with a study conducted by Adhanty et al (10) using the Chi-square test (p-value= 0.21 > 0.05), which means there is no relationship between employment status and compliance with type 2 DM diet, but is contrary to a study carried out by Rohani and Ardenny (17) with the statistical test result of Chi-square (p -value = 0.04), which means that there is a significant relationship between work status and diet compliance showing 3,923 times the chance of adhering to a diet program compared to respondents who are working.

Family Role Variable

The results showed that the family role variable (p-value = 0.05 < 0.05), which indicates that there is a significant relationship between the family's role in compliance with the type 2 DM diet in RSU. Royal Prima Medan Hospital with a value (OR 1.14 CI 95% 0.42-3.05) (>1 risk factor). The results of the study by Damanik et al (18) with chi-square p-value test results (0.01<0.05) state that there is a very significant relationship between family roles and compliance with a type 2 DM diet. However, this is contrary to the study by Nugroho et al (19) with a Chi-square test p-value (0.60 >0.05).

Health Support Variable

The results showed that the health support variable (p-value = 0.01 < 0.05), which indicates that there is a significant relationship between health support to compliance with type 2 DM diet in RSU. Royal Prima Medan Hospital with a value OR 0.200 CI 95% 0.062-0.646 (<1 is protective). The results of this study Della et al (20) with Chi-square test p-value (0.02 < 0.05) means there is a significant relationship between health energy support to dietary adherence. Such health support is essential in undergoing treatment especially for type 2 DM diet treatment. However, the study lags behind the study by Simbolon et al (21) with a p-value (0.80 > 0.05), which means that there is no significant relationship between health support and compliance with type 2-DM diet.

CONCLUSION

Based on testing and analysis, the results of seven independent variables tested with the dependent variable it can be concluded that a total of five variables have a relationship with type 2 diet compliance management risk factors: age, gender type, knowledge, family role, and healthcare Support. Meanwhile, two variables have no relationship to the bound variables, namely the education and employment status variables. The age variable is a variable that has a risk of undergoing type 2 diabetes mellitus diet compliance management.

CONFLICT OF INTEREST

There is no conflict of interest in this research

AUTHOR CONTRIBUTIONS

GOS did search, analysis, and data analysis. RG and AS participated in conceptualization, supervision, editing, and reviewing. All authors read, gave critical feedback, and approved the final version of the manuscript.

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