

THE RELATIONSHIP KNOWLEDGE AND OBEDIENCE DIET WITH BLOOD SUGAR LEVELS IN PATIENTS WITH TYPE II DIABETES MELLITUS IN THE DEPARTAMENT SURGICAL AND OUT PATIENT CONSULTATION, HNGV, DILI, TIMOR-LESTE 2023

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Abstract

According to the IDF in 2017 stated that the number of DM in 2017 reached 425 million people, for adults ranging from ages 20-79 (IDF, 2017) in 2019 the prevalence of DM cases in the world continues to increase to reach 436 million people in the world (IDF, 2019) global DM prevalence in 2021 will reach 536 million with a total mortality of 6.7 million people (OMS, 2021). East Timor population 1,5 % suffers from the disease diabetes mellitus, based on the result of the national survey that was implemented by the Ministry of Health with UNTL in 2014 on the risk of non-infected diseases in East Timor. MdS (2015). Agreement on the last date that WHO published in relation to service with MdS in 2020 mortality rate of diabetes mellitus in East Timor reaches number 156 or 2,21 % with total mortality 22.46 % 100.000 inhabitants klasifika East Timor occupies number 104 in the World (WHO & MdS 2020). To identify the relationship between level of knowledge and obedience with diet against glucose level to the patient with DM type II in the Departament Surgical and Outpatient Consultation, HNGV, Dili, of 2023 year. The research desing uses quantitative corelational analytical study type with its cross sectional. Based on the result analyzes test statistics Spearman Rank P value 0,000 demonstrates that value is less than 0,05 means that there is a relationship between knowledge with blood glucose level and result with correlation value $r = 0,539$ which located between 0,50-0,74 category to strong correlation. And the relationship between obedience, diet and blood glucose level, the result analyzes a statitital test that uses Spearman Rank P value 0,000, which shows that a value of 0,000 is less than 0,05 and a result with a correlation value of $r=0,785$, which is located between 0,75-0,99 category is the strongest correlation. This survey sample has a positive and significant relationship between knowledge and obedience to diet agaist blood glucose level with DM type II in the Department of Surgery and External Consultation and Ambulatory HNGV,Dili,year 2023.

Keyword: Knowledge, obedience diet, Blood glucose.

INTRODUCTION

Diabetes mellitus is a disease that is not unique and serious, but it has become a global health problem due to its high mortality rate according to the World Health Organization. The incidence of diabetes mellitus is always increasing worldwide (OMS, Wicakson, 2015). Diabetes mellitus is a metabolic disease characterized by hyperglycemia, which occurs due to abnormal insulin secretion (ADA, 2020).

According to the International Diabetes Federation (IDF) data in 2017, the total number of diabetes mellitus patients worldwide in 2017 reached 425 million adults aged 20-79 (IDF, 2017). In 2019, the prevalence of diabetes mellitus cases worldwide increased significantly to reach 463 million (IDF, 2019). The global prevalence of diabetes mellitus in 2021 reached 536 million people with a total mortality rate of 6.7 million (WHO, 2012).

Research shows that type II diabetes mellitus is more prevalent in the Asian population compared to Europe, with 60% of type II diabetes mellitus cases occurring in Asia. According to global data, Indonesia has a significant number of incidents of type II diabetes mellitus (IDF, 2013). According to Riskesdas data in 2018, the prevalence of diabetes mellitus in 17 provinces in Indonesia increased from 1.5% in 2013 to 2.3% in 2018, out of a total population of 250 million (Riskesdas, 2018).

The population of Timor-Leste reached 1,318,445 in the year 2022 according to UN data. The population of Timor-Leste is 0.02% of the total population in the world. (Embassy of Democratic Republic of Timor-Leste And Globescope, Inc, 2007-2002).

Based on the national research results from the Ministry of Health (Mds) and the National University of Timor Lorosa'e (UNTL) in 2014 regarding the risk of disease. It is estimated that 1.5% of the population of Timor-Leste suffers from diabetes. According to recent data collected by the WHO in collaboration with the Ministry of Health in 2020, the mortality rate from diabetes mellitus in Timor-Leste reached a number of 156, or 2.21% of the total mortality rate of 22.46 per 100,000 inhabitants, ranking Timor-Leste at number 104 in the world.

According to data from the National Hospital Guido Valadares (HNGV), there were a total of 236 patients with diabetes mellitus in the In-patient Department (IPD), Out Patient Department (OPD), and Bed Days Used (BDU) from January to December 2016. Of these, 141 were female and 95 were male. In the months of January to October 2017, there were a total of 453 patients with 275 females and 178 males. And in the months of January to December 2018, there were a total of 235 patients with diabetes mellitus, 134 females, and 101 males, making a total of 924 cases (Mds-HNGV, Dili, 2018).

I have collected files and archived them at the National Hospital Guido Valadares until 2023 from January to June, registering a total of 49 cases of type II DM, with 20 males and 29 females in the Surgery Department, Emergency Surgery Unit, and Elective Surgery unit. In June, there were 67 cases of DM, with 27 males and 40 females, who sought consul

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tation in the External Consultation and Ambulatory Department (Secondary Data HNGV, 2023).

Diabetes mellitus is a condition where the glucose level in our blood increases. Our pancreas has beta cells that produce insulin hormone for our blood to help with the glucose we consume from our food into our cells. Patients who suffer from DM may experience signs and symptoms such as increased thirst, frequent urination, constant hunger, weight loss, fatigue, blurred vision, and slow healing. If left untreated, diabetes can lead to serious complications such as heart disease, stroke, eye problems, kidney failure, and nerve damage (Kemenkes RI, 2020).

In another part, Internal Medicine Doctor Celia Alexandra Gusmão said that we need to prevent quickly from the beginning, we cannot wait for a large number," she said. She acknowledged that many communities still lack proper knowledge about preventing and controlling diseases. Meanwhile, World Health Organization representative Rajesh Pandav said that diabetes is a serious illness characterized by high blood sugar levels. In order to prevent this disease, everyone must avoid sweet foods, smoking and drinking alcohol, as these activities increase the risk of getting diabetes. He also asked the community to control their diet, consume fruits and vegetables regularly, and exercise daily. In addition, the WHO has produced pamphlets in the local language to inform the community about diabetes and its complications. According to WHO data, millions of people worldwide have already suffered from diabetes. From these numbers, 96 million people come from the Southeast Asia region.

Knowledge about the Diabetes Mellitus diet is the first step in increasing patient obedience in relation to their diet. Patient obedience in the diabetes process in terms of diet is the key to achieving a balanced state of health for patients with diabetes mellitus (Nemes et al, 2009). Obedience in the diet is a factor that contributes to stabilizing blood glucose levels and preventing complications. There are also factors that cause problems in the diabetes diet due to lack of knowledge (Purwanto, 2011). To maintain stable blood glucose levels, it is necessary to control eating patterns. The rules for eating for DM patients aim to care for and improve the optimal level of health and allow for common activities and usual diets as the first step in controlling blood glucose levels for people with DM (Hadribroto, 2015).

RESEARCH METHODOLOGY

This research uses a quantitative correlational analytical study type, which conducts a research that is similar to a quantitative method, such as a study that is conducted and collects data and numbers using statistical methods with its cross-sectional approach as a type of research that exceeds the criteria or observes the independent and dependent variables at a specific time or a single instance (Notoatmodjo, 2018).

There is one study that the researcher uses a technique to define a sample, which is a technique called NonProbability Sampling, which is like picking or selecting a sample without giving an opportunity to the population members to become a sample but only some of them to represent the population. The sampling technique is Total Sampling, which means

picking the entire population to become a sample for the research, because the population is less than 100 people (Arikuntu, 2012).

RESEARCH RESULTS

Frequency Distribution Based on Gender

Frequency Distribution Based on Gender Table 1.1. Frequency Distribution from respondents based on gender in the Department of Surgery and Outpatient Clinic, HNGV, in 2023.

Gender	Frequency (f)	Percentage (%)
F	30	60%
M	20	40%
Total	50	100%

Sources: Research results in the Department of Surgery and OPD, 2023.

Based on Table 1.1. shown above, it indicates that respondents from female patients with type II Diabetes in the Department of Surgery with Outpatient Clinics and Ambulatory at HNGV are the majority, with a total of 30 and a percentage of 60%. Meanwhile, male respondents with a total of 20 and a percentage of 40% are in the minority.

Frequency Distribution from respondents based on education

Frequency Distribution from respondents based on education level in the Department of Surgery and Outpatient Clinic, HNGV, in 2023.

Education Level	Frequency (f)	Percentage (%)
Primary	9	18%
Pre-sekundary	5	10%
Secundary	17	34%
University	2	4%
Bachelor's degree	6	12%
Master's degree	11	22%
Total	50	100%

Sources: Research results in the Department of Surgery and OPD, 2023.

Based on Table 1.2. above, it indicates that respondents from Type II Diabetes Mellitus patients in the Surgery Department with External Consultations and Outpatient services at HNGV majority have a secondary education level with a total of 17 respondents and a percentage of 34%, while a minority have a university education level with a total of 2 respondents and a percentage of 4%.

Frequency Distribution based on the profession

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Table 1.3. shows the Frequency Distribution based on the profession of the respondents in the Surgery Department and External Consultations and Outpatient services at HNG V, in the year 2023.

Profession	Frequency (f)	Percentage (%)
Office worker	23	46%
Homemaker	9	18%
Farmer	4	8%
Unemployed	8	16%
Business person	2	4%
Driver	2	4%
Student	2	4%
Total	50	100%

Sources: Results of research in the Surgery and OPD Department, in 2023

Based on Table 1.3. above shows that the respondents are from patients with Type I Diabetes Mellitus in the Surgery Department with External Consultations and Outpatient Clinics at the HNGV. The majority of respondents have the profession of office workers, totaling 23 with a percentage of (46%), while the minority professions were business persons, drivers, and students totaling 2 with a percentage of (4%).

Specific Data

Univariate Analysis

Frequency Categorization Distribution Research Variable Independent Variable Level of Patient Knowledge (X1)

Frequency distribution of respondents' knowledge level in Surgery Department, External Consultation, and Outpatient Department at HNGV, Dili in 2023.

Knowledge	Frequency (f)	Percentage (%)
Good	7	14%
Average	16	32%
Average	27	54%
Total	50	100%

Sources: Research results in the Surgery and OPD Department, year 2023.

Based on Table 1.4. above, it shows that the respondents from Type II Diabetes Mellitus patients in the Surgery Department with External Consultations and Ambulatory HNG

V, the majority of respondents had less knowledge with a total of 27 (54%) and a minority had good knowledge with a total of 7 (14%).

Independent Variable: Patient Diet Obedience (X2)

Table 1.5. above shows the frequency distribution of respondents based on patient diet obedience in the Surgery Department and Outpatient Clinics and Ambulatory at HNGV in Dili in the year 2023.

Diet Obedience	Frequency (f)	Percentage (%)
Obedying	5	10%
Less obedient	14	28%
Disobeying	31	62%
Total	50	100%

Sources: Results of research in the Department of Surgery and OPD, year 2023.

Based on Table 1.6. above, it shows that respondents from Type II Diabetes Mellitus patients in the Department of Surgery with External Consultations and Ambulatory at HNGV, the majority of respondents came with total disobedience of 31 with a percentage of 62%, and the minority came with total obedience of 5 with a percentage of 10%.

Dependent Variable Blood Glucose Level of Patients (Y)

Table shows the Frequency Distribution of respondents based on their blood glucose level in the Surgery and External Consultation Department and Ambulatory in HNGV, Dili, in the year 2023.

Blood Glucose Level	Frequency (f)	Percentage (%)
Normal	13	26%
Hiperglikemia	37	74%
Total	50	100%

Sources: Research results in the Surgery Department and Outpatient Department (OPD), 2023.

Based on Table 1.7. above, it indicates that respondents with Type II Diabetes Mellitus patients in the Surgery Department with External Consultations and Outpatient Clinics, HNGV, the majority of respondents had a total hyperglycemia level of 37 with a percentage of 74% and the minority had a total normal blood glucose level of 13 with a percentage of 26%.

Bivariate Analysis

Bivariate analysis is used to examine the relationship or correlation between two variables (Notoadmodjo, 2012). In this research, the researcher wants to examine the relationship between the independent variables of knowledge, obedience to the diet, and the dependent variable of the level of blood glucose.

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Analyse of the crosstable about the relationship of knowledge and obedience to diet against fasting blood glucose levels. Table 4.11 shows the results of the analysis of the relationship between knowledge and fasting blood glucose levels for Type II Diabetes Mellitus patients in the Surgery Department and External and Ambulatory Consultations at HNGV, Dili, in the year 2023.

Variabel	Blood Glucose Level				Total		P value	Spearman Rank
	Hiperglikemia		Normal		n	%		
Knowledge	n	%	n	%	n	%		
Good	3	42,9	4	57,1	7	100		0,539
Average	10	62,5	6	37,5	16	100	0,000	(0,50-0,74)
Less	24	88,9	3	11,1	27	100		
Total	37	70,0	13	30,0	50	100		

Sources: *Result Teste Analiza Spearman Rank*

The result of the analysis from table 1.8. shows that out of the total of 7 respondents who had good knowledge, 3 respondents with a percentage of 42.9% had high blood glucose level (hyperglycemia). According to the good knowledge and blood glucose level value, 4 respondents with a percentage of 57.1% had normal blood glucose level. After analyzing 16 respondents with less knowledge, 10 respondents with a percentage of 62.5% had high blood glucose level, while 6 respondents with a percentage of 37.5% had normal blood glucose level. Lastly, out of 27 respondents with less knowledge, 24 respondents with a percentage of 88.9% had high blood glucose level, and 3 respondents with a percentage of 11.1% had normal blood glucose level. After using 27 respondents with a total of 24 (88.9%) having a high blood glucose level, the combined knowledge of 3 respondents (11.1%) resulted in a normal blood glucose level.

Based on the statistical test using Spearman Rank with $\alpha = 0.05$ (5%), there is a relationship between knowledge and blood glucose levels in the Surgery Department and External Consultation and Ambulatory at HNGV, Dili in 2023 with a significant value (ρ) of 0.000 ($\rho < 0.05$). The conclusion is that the alternative hypothesis (H_a) is accepted, meaning that there is a relationship between knowledge and blood glucose levels in the Surgery Department and External Consultation and Ambulatory. The data analysis resulted in a correlation value (r) of 0.539, indicating a strong correlation within the coefficient interval of 0.50-0.74 between knowledge and blood glucose levels.

Table 1.9 Result of the analysis of the relationship between diet compliance and blood glucose level for Type II Diabetic patients in the Surgery Department and External Cons

ultations and Ambulatory at the National Hospital Guido Valadares (HNGV), Dili, in the year 2023.

Variavel	Blood Glucose Level				Total		Spearman Rank	
	Hiperglikemia		Normal		P value		Coefisiente Corelation	
Obedient Diet	n	%	n	%	n	%		
Obedient	1	20,0%	4	80,0%	5	100%	0,785	
Less obediente	6	42,9%	8	57,1%	14	100%	0,000	(0,75-0,99)
Desobedient	30	96,8%	1	3,2 %	31	100%		
Total	37	66,0%	17	34,0%	50	100%		

Sources: Result Test Analisis Spearman rank

The result of the analysis from Table 1.9. shows that out of 5 respondents who obey the diet, only 1 respondent with a percentage of 20.0% had high blood glucose levels (hyperglycemia), while the remaining 4 respondents with a percentage of 80.0% had normal blood glucose levels. After analyzing 14 respondents who were less obedient, 6 respondents with a percentage of 42.9% had high blood glucose levels, while the remaining 8 respondents with a percentage of 57.1% had normal blood glucose levels. Out of 31 respondents who were disobedient, 30 respondents with a percentage of 96.8% had high blood glucose levels, while only 1 respondent with a percentage of 3.2% had normal blood glucose levels due to disobedience to the diet.

Based on a statistical test of the Spearman Rank with $\alpha = 0.05$ (5%), there is a relationship between obedience to a diet and the glucose level in the blood in the Department of Surgery and External and Ambulatory Consultation at HNGV, Dili in 2023, with a significant value (p) of 0.000 ($p < 0.05$) and the conclusion that the alternative hypothesis (H_a) is accepted, meaning that there is a significant relationship between obedience to a diet and the glucose level in the blood in the Department of Surgery and External and Ambulatory Consultation. From the analysis of data, the correlation value (r) is 0.785, indicating a strong correlation between obedience to a diet and the glucose level in the blood, falling within the coefficient interval of 0.75-0.99.

Discussion

Results Discussion The researcher's results discussion will focus more on the variables that have been chosen as independent variables such as knowledge and obedience to diet, as well as the dependent variable which is the glucose level in blood, in the Surgery Depart

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tment and External Consultation and Ambulatory Department at the HNGV in Dili in the year 2023.

Knowledge

Knowledge is the result of understanding, and it occurs when someone teaches and understands an object that is experienced through the five human senses, meaning it is related to feelings towards vision, hearing, smell, taste, and touch. Most human knowledge is acquired through learning and using the knowledge attained from experience and education. This area is very important for training a person's behavior. According to Mubarak (2007), knowledge is influenced by certain factors such as age, education, work/experience, sources of information, intelligence, and socio-culture.

Based on Table 1.4, it shows that patients' total good knowledge is 7 with a percentage of 14%, and their total no knowledge is 16 with a percentage of 32%, and the total decreased knowledge is 27 with a percentage of 54%. The results of this research indicate that the majority of respondents have a total decreased knowledge of 27 with a percentage of 54%, and a minority of 7 with a percentage of 14% have good knowledge. This means that Type II Diabetes Mellitus patients in the Surgery Department with External Consultation and Outpatient have a majority of decreased knowledge

According to Niven (2013), obedience is a condition that exists where patients rely on information provided by healthcare professionals. Following a specific diet is key to achieving treatment objectives for diabetes mellitus. According to Tesa (2019), some factors that contribute to levels of obedience are communication, knowledge, and access to healthcare facilities.

Obedient diet

Based on Table 1.5., it shows that patients' obedience to their diet based on the obese category, a total of 5 patients (10%) were obedient, a total of 14 patients (28%) were less obedient, and a total of 31 patients (62%) were disobedient. The result of this research indicates that the majority of respondents, a total of 31 patients (62%) were disobedient, and the minority, a total of 5 patients (10%) were obedient. This means that patients with Type II Diabetes Mellitus in the Surgery Department with External Consultations and Outpatient Clinics, mostly were disobedient.

Based on the research results from Sri Unik (2012) in Semarang, it shows that the obedience to the respondents' diet was indicated to be 45.3%, while 54.7% did not obey the diet. The level of knowledge in the process of diet obedience was shown to be at 26.4%, which falls below the national category of 35.8%, but still relatively good at 37.7%.

Blood Glucose Level

According to Baron (2017), blood glucose is a carbohydrate with a monosaccharide model which is found in the blood. Glucose is the first substance that is burned in body tissue with its function to produce energy. The level of blood glucose can increase beyond normal due to a decrease in diet obedience, stress, obesity, less physical exercise, age, and control of blood glucose levels. Those who suffer from diabetes mellitus need to control their consumption of glucose, food, and medicine. (Suyono 2009)

Based on Table 1.8, it shows that the majority of the respondents' blood glucose level is hyperglycemia with a total of 37 (74%) and a minority of normal blood glucose level with a total of 13 (26%). This means that Type II Diabetes Mellitus patients exist in the Surgery Department with External Consultation and Outpatient, with the majority having hyperglycemia in their blood.

The research carried out by Aulia in 2016 showed that the total normal blood glucose level is 18 with its percentage being 38.9% and the total hyperglycemia blood glucose level is 13 with its percentage being 36.1%. The research result at Puskesmas Tawangrejo Kota Madiun is the same as Aulia's research, with the same total percentage (50.0%), because during the DM diet, the patient did not follow the personal health rules, so the blood glucose level exceeded the normal level.

Relationship between knowledge and blood glucose level in the Surgery Department and External Consultations and Outpatient Clinic, HNGV, Dili, in 2023.

This study aims to determine whether there is a relationship between knowledge and blood glucose levels in the Surgery Department and External Consultations and Outpatient Clinic, HNGV, Dili, in 2023. Based on the results of the Spearman Rank test for variable X1 and variable Y, it is shown that the frequency for the good category was a total of 7 with a percentage of (14%) for knowledge, while the total for moderate knowledge was 16 with a percentage of (32%), and the total for poor knowledge was 27 with a percentage of (54%). The variable Y hyperglycemia was a total of 37 with a percentage of (74%), and the minority had normal blood glucose levels, with a total of 13 and a percentage of (26%).

The statistical test exam of Rank's correlation coefficient showed that there is a relationship between the level of blood glucose and knowledge in the Surgery Department and External Consultations and Ambulatory of HNGV in Dili in 2023, with a correlation coefficient value of 0.539 and a significance value of 0.000. Therefore, this research managed to prove the hypothesis that there is a relationship between knowledge and blood glucose level in the Surgery Department and External Consultations and Ambulatory of HNGV in Dili in 2023.

Relationship between obedience to diet and blood glucose levels in the Surgery Department and External Consultation and Outpatient Department, HNGV, Dili, in 2023.

This research aims to understand the relationship, or lack thereof, between obedience to diet and blood glucose levels in the mentioned departments. Based on results from the Spearman Rank test for variable X2 and Y, data shows that there is a frequency of 5 (10%) for total obedience in the category, 14 (28%) for partial obedience, and 31 (62%) for disobedience. In variable Y, there are a total of 37 cases of hyperglycemia.

A percentage (74%) and a minority have normal blood glucose levels with a total of 13 people and their percentage (26%). A statistical test called Spearman Rank test showed that there is a relationship between dietary obedience and blood glucose levels in the Surgery Department and External Consultations and Ambulatory of the National Hospital Guido

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Valadares in Dili in the year 2023, with a correlation coefficient value of 0.785 and a significance value of 0.000, indicating an impact. This research managed to test the hypothesis that there is a relationship between dietary obedience and blood glucose levels in the Surgery Department and External Consultations and Ambulatory of the National Hospital Guido Valadares in Dili in the year 2023.

CONCLUSION

The research conducted by Norma Risnasari in 2015 showed that obedience to the diet with changes in blood glucose level for diabetic patients was at a total of 56.14%. Following the diet well can cause a change in the blood glucose level - where it can return to normal and if not followed, the blood glucose level will not be normal.

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