THE RELATIONSHIP BETWEEN PATIENTS' KNOWLEDGE LEVELS AND FAMILY SUPPORT ON DIET COMPLIANCE OF DM PATIENTS IN DR. M.M DUNDA LIMBOTO REGIONAL PUBLIC HOSPITAL

Nurananda P. Sono[1]**, Rita Amini Warastuti**[2]**, Astria Lolo**[3]
[1.]Bina Mandiri University Gorontalo
[2.]Bina Mandiri University Gorontalo
[3.]Bina Mandiri University Gorontalo
E-mail: naaansn16@gmail.com

ABSTRACT

This study aims to determine the relationship between the level of patients' knowledge and family support on the dietary compliance of DM patients in Dr. M.M Dunda Limboto Regional Public Hospital.

The method of the research used was quantitative research. The sampling technique used was an accidental sampling system with total sample of 66 respondents, then analyzed using *Chi Square* statistical test.

The results of the research showed that there was no significant relationship (0,993>0,05) between the patients' level of knowledge and dietary compliance of DM patients, so H_{a1} hypothesis was rejected and H_{01} hypothesis was accepted, and there was a significant relationship (0,043<0,05) between family support with the dietary compliance of DM patients, then H_{02} hypothesis was rejected and H_{a2} hypothesis was accepted, with the conclusion that the research results showed that there was no relationship between the patients' level of knowledge on the dietary compliance of DM patients and there was a relationship between family support and dietary compliance of DM patients in Dr. M.M Dunda Limboto Regional Public Hospital.

Keywords: Knowledge, Support, Compliance, Diabetes Mellitus.

INTRODUCTION

Non-transferable infections or known as non-communicable diseases (NCDs) are a leading cause of death that kills 36 million people every year, which occurs in low- and middle-income countries with a prevalence of 80%, these deaths are due to non-communicable diseases. with a prevalence of 73%, of which 6% of them are caused by chronic respiratory disease, and another 6% due to diabetes mellitus, 12% due to cancer, 35% due to coronary disease, and 15% due to other non-communicable infections, non communica ble infections. Humans are divided into 4 types, namely, cardiovascular infections, cancer, chronic respiratory infections and diabetes mellitus [6].

Based on regional data on the prevalence of diabetics for the population between the ages of 20-79 years, the most prominent are Arab and North African countries with a prevalence of 12.2%, then the West Pacific with a dominance of 11.4% which is not much different from that in Asia. Southeast Asia, which is in the third largest position with a dominance of

11.3%, followed by North America-Caribbean with a prevalence of 11.1%, which for Latin America the prevalence is 8.5%, and in other countries the prevalence is 8.5%. In European countries the prevalence is 6.3% and in Africa, the prevalence is 4.7%. The largest number of people with diabetes from 10 countries in 2019 for Indonesia was in 7th place from China, India, also the United States, Pakistan, Brazil, and also Mexico, where the prevalence for Indonesia itself was 10.7%. and in the next order, namely Germany, Egypt and also Bangladesh [11].

Diabetes mellitus is one of the causes of death which has become a world health crisis within a period of 10 to 21 centuries. The largest number of diabetics from 10 countries in 2019 for Indonesia itself ranks 7th, and from all provinces in Indonesia, it shows that there is an increase in diabetes mellitus. the prevalence of DM from year to year, namely from 2013 to 2018, apart from East Nusa Tenggara province which has the smallest dominance of 0.9%, which is also followed by Maluku and Papua with the same amount of dominance, namely 1.1%, there are four regions with the most prominent dominance, namely in the Yogyakarta area, the DKI Jakarta area, in the North Sulawesi region, and the East Kalimantan region, and from all these provinces there are 5 provinces that experienced an increase in the prevalence of 0.9% from 2013 to 2018, namely the province DKI Jakarta, Riau, West Papua, Banten and Gorontalo [18].

There was a very large increase in cases of diabetes mellitus, of which 977 cases occurred in 2015, and 1,250 cases occurred in 2016, and there was a very large increase in 2017 with 3,072 cases [5].

Diabetes mellitus (DM), which is usually referred to as diabetes, is a chronic, non-communicable disease characterized by high glucose levels, due to damage to the insulin-making factory called pancreatic beta cells, where the chemical insulin cannot be used properly in the body can cause diabetes. interfere with the body's metabolism and cannot regulate the balance of sugar levels in the blood [7].

Diabetes mellitus is an infectious disease that can be suffered throughout life, and what patients can do is to form appropriate behavior with the disease, such as self-care and eating, and to avoid instability of blood glucose levels in the body that makes hyperglycemia occur until more serious complications occur, it is important to carry out self-care such as doing physical exercise or sports, diet or eating patterns and controlling glucose levels and medication to prevent the incidence of complications in people with diabetes mellitus [10].

There are 3 types of prevention, namely primary prevention, secondary prevention and tertiary prevention, for primary prevention focused on those who have risk factors for developing DM, by changing the recommended lifestyle by changing diet, by adjusting the number of calories to be consumed following body weight, regular and balanced intake of complex carbohydrates, less saturated fat and more soluble fiber, then increased activity, exercise, smoking cessation, for groups at high risk for diabetes require pharmacological [7].

In secondary prevention, patients who have been diagnosed with DM are treated before other problems occur, appropriate activities by consuming foods low in sugar, high in fiber and water, and regular exercise. Whereas tertiary prevention focuses on DM patients with other problems, rehabilitation is carried out early and gives direction to patients and their families about efforts to recover to have an ideal quality of life, and requires joint efforts from health specialists in their fields who also require affordable health services. and coordinated at the referral clinic [7].

All treatment actions that will continue to be carried out for life are difficult and

become challenges for people with diabetes mellitus, fatigue or feelings of saturation can occur at any time and cause sufferers to not be able to control or focus on the self-care actions they take [9].

Dietary compliance can change a person's behavior and actions, it will also be difficult to do without supporting factors, supporting factors so that compliance can be successful, namely support from family, and also the level of knowledge, family support factors are expected to increase the motivation of DM sufferers to be able to comply and have the confidence to continue taking self-care actions [4].

The word obedience means obedience or order, an obedient person is the attitude of someone who is seen from the extent of conformity with the provisions drawn up or made by medical personnel [3].

Strategies that can be used to increase compliance in individuals consist of, first is the patient aspect, at this point someone who has DM does not only do physical exercise or exercise, regulate diet or diet and undergo a healing process but also requires an additional treatment consisting of 4 the following points [21].

A. Improving self-control

DM sufferers who can control themselves can remain obedient in the healing process and regulate their diet, which includes food, emotional control, and body weight to remain obedient in undergoing the disease healing process.

B. Improving self-efficacy

An individual who pays attention to themselves can more easily carry out eating pattern activities and is also obedient to the healing process of his illness which is also quite complex, the ability to meet the desired results is believed to be a predictor needed in complying with treatment.

C. Looking for information about DM treatment

People with DM should know more about the problems they experience about the disease by reading more information about the treatment and also the treatment or healing of disease, knowledge can be obtained from *cellphones,* news or television programs, newspapers and others as well as from counseling, consultation obtained from the place of treatment.

D. Improving self-monitoring

Patients need to pay more attention to their condition, for example from their weight, glucose levels and everything they experience, so it is important to monitor themselves to find out their condition.

The second is in terms of medical personnel where individuals who suffer from DM can continue to adhere to every diet and healing process through several efforts that can be done as follows:

1. Developing communication skills as a technique to further develop correspondence between patients and medical experts or doctors, there are many a method that can be used to increase a person's compliance by utilizing communication as effectively as possible with sufferers.

2. A clear explanation is given related to the disease that is suffered and also at the stage of healing to the patient which is carried out by medical experts where most sufferers can accept what is conveyed directly by the expert that what is said is something valid.

3. Provide social support, especially the medical staff who must-have steps to improve this form of support, where families are also involved to be able to help develop obedient consistency from sufferers, by doing this in the

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form of giving such as love, guidance and good attention to the patient's health.

4. Collaboration between medical pers onnel and their families or collaboration in developing compliance with DM patients and discussing the treatment they are undergoing, with suggestions that patients can do *self-management* for themselves.

Diet can contain an explicit understanding of food control for health, and most of the recommendations from doctors, from starting to regulate the dose consumed to maintain health in people who have certain diseases, one of which is DM or just to get the desired weight [20].

In the 4 pillars of disease management, DM is one of them, the patient's diet must be considered properly, seeing the obstacles that are often found when eating arrangements are made, the feeling of saturation felt by the patient, the most important point of the diet is the number of calories consumed, the type of food, and meal schedules [15].

There are 3 dietary patterns, including the right type, amount, and schedule, some subjects have chosen each food ingredient according to their illness and applied it at every meal, it's just that the number and schedule of the diet pattern have not been fully implemented by the subject. Then it was concluded that the consistency of eating patterns could be influenced by many aspects which then required cooperation between patients, families and medical experts, to maintain consistency in eating arrangements that could be done well during the diet or healing process [15].

Knowledge is also needed because self-care activities based on knowledge or insight can be easier to do or live than without knowledge so that by having knowledge someone will understand, know and be aware of the steps that must be taken in preventing, treating, or handling yourself [14].

Knowledge, namely theoretical and practical understanding, which has a role in the survival, and progress of every society, association and individual, cognitive becomes a very important domain where knowledge is obtained by someone based on action, as well as experience and exploration [19].

Knowledge can be possessed by a person in several steps including:

a. How to try wrong.

This technique is used for the possibilities that exist in each problem dealing with the assumption that the possibility does not work, then try with another opportunity, if it fails again, uses another opportunity, second and so on [17].

b. Based on personal experience

Using the experience of an individual when obtaining information by repeating experiences that have occurred before when dealing with problems in the past [17].

c. Through the mind

Developments continue to occur in mankind so that humans have been able to acquire various knowledge by using their minds [17].

In addition to knowledge, other supporting factors that can help in regulating diet or diet to remain compliant is support from family.

Family support is centered on close collaboration between the community in socializing and is assessed by individuals, besides that family support is an attitude or recognition of the family to their relatives, where family members see that individuals with supportive nature are always ready to help if needed [16].

Family support is divided into several parts :

a. Informational

Support Family support in the form of information can be used to spread

news or news, where the role of each family is to provide advice or data that can be used to reveal a problem, for example reminding clients for routine medical check-ups [16].

b. Instrumental Support Instrumental Support becomes an easy and concrete element to ease the burden on sick family members by using clothing, food and shelter, this form of support needs to prepare sufficient time and rest for sick families in carrying out every day. treatment as well as activities of daily living if needed [16].

c. Emotional Support and Self-Esteem
In this third support what needs to be done is to give praise, give attention, sympathy, provide the safest place to rest, and involve the sick family in the decisions they want to take, and provide a good response to their responses and feelings [16].

DM cases in hospitals are ranked fourth in 2020, where this ranking is the same as from previous years such as 2019 with 197 people in 2020 and 799 people in 2019, there was a decrease in the number of DM cases because in 2020, a rule to reduce hospital visitors was made, which is only 10 people who can be given services, and this is due to the Covid-19 pandemic, so the hospital makes rules for reducing visitors, in addition to the rules for the treatment of Large Scale Social Restrictions or PSBB, so most people carry out activities, care and treatment at home.

Researchers chose outpatients because they saw the patient's condition both physically and psychologically, where outpatients were easier to receive good information, besides that outpatients could still be invited to interact such as talking, could still answer well and according to what was asked, no have serious problems such as those experienced by inpatients, besides that outpatients make their seating arrangements according to the variables studied by researchers, where dietary compliance is seen from the seating arrangements at home which involve the family, if you choose inpatients then compliance the diet will be more regulated by hospital staff not from the family or the patient himself.

This research was conducted in 2021 where each visitor restriction rule of only 10 people was replaced by compliance with health protocols so that hospital appointment had begun to increase. The research was carried out for approximately 5 weeks by collecting data using questionnaires and distributing it to outpatient DM patients, before collecting data the main thing was to complete the research permit requirements and then continue with initial observations in the outpatient room where services were carried out only from Monday-Friday from 08.15-13.00.

The outpatient workday will be filled with patients where every patient who comes will queue using the personal data of each patient is collected at the queue table and will be processed by the doctor's assistant, before the patient enters the doctor's room according to the queue, blood pressure checks will be carried out first , then the patient will wait for the name to be called according to the queue to meet the doctor.

Researchers can collect data assisted by a doctor's assistant who also handles personal data of patients who come for treatment and consultation, where when the patient's data is processed by a doctor's assistant and checking blood pressure, the researcher will be notified that which one is a patient with DM, after checking The researcher's blood pressure was directed to directly distribute the questionnaire before the patient entered the doctor's room.

RESEARCH METHODS

This type of research is a quantitative study, with an approach using a design *cross sectional,* which was carried out from June 17 to August 17 at Hospital Dr. M.M Dunda Limboto. the population is DM patients who come for outpatient treatment at Dr. M.M Dunda Limboto, with a total of 197 people, and the sampling technique used *accidental sampling* with the number of samples obtained using the Slovin formula as follows:

$$n = \frac{N}{1+N\,(d^2)}$$

Note : N = Population sizesize
       n = Sample
      d = Precession or the degree of confidence is 10%

$$= \frac{197}{1+197\,(0,1)}$$

$$= \frac{197}{1+197\,(0.01)}$$

$$= \frac{197}{1+1.97}$$

$$= \frac{197}{2.97} = 66 \text{ Respondents}$$

From the results of the calculation of determining the sample, the number of samples obtained is 66 respondents, with Data collection was obtained by chance or was available from the hospital understudy until the data was sufficient for 66 respondents.

At the data collection stage, this study used a questionnaire as a data collection tool by giving questions arranged according to the informant who answered, a questionnaire that matched this variable was given to patients diagnosed with DM undergoing outpatient treatment at the hospital.

On the measurement scale of each variable consisting of the level of knowledge, and family support as well as dietary compliance of DM patients, it has been arranged where to measure the level of knowledge of the informants using a questionnaire consisting of ten statements, if the numbers 1, 2, 5, 6, 8, 9 are answered YES then the value is 1, while the number 3,4,7,10 if answered NO then the value is 1 so that the overall score is 10.

Then the good and poor categories are explained below:
1. Knowledge is good if the informant can answer correctly 76-100%, according to the number of answers to questions.
2. Knowledge is lacking if the informant can answer <76% according to the number of answers to the question.
    Respondents' family support was measured by being given 12 questions, with the score using 4 comparisons with scores from 1 to 4, and in the first (never), second (rarely), third (often) and fourth (always) scores, with a total score of the highest total is 48 and the lowest is 12.

Furthermore, it will be categorized as good and poor with the following definition:
a. Family support is good if the informant can answer 76-100% correctly, on all answers to questions.
b. Family support is lacking if the informant can answer <76% of all answers to questions.

And the compliance variable is measured by being given 10 questions, where the questions consist of three components, the first is the type of food that is in questions number 1, 2, and 3, then for the schedule, with the questions in numbers 6,7 and 10, at Question number 10 if answered no will get a score of 1, for the last one is the number of calories, the questions are numbered 4,5,8, and 9, the highest score given is ten and the lowest is zero.

Furthermore, it will be categorized as obedient and non-compliant with the definition using diet compliance, obedient if the respondent can answer correctly >50%, of the total answers to questions,

then for dietary compliance, non-compliant if the respondent can answer 50%, of the total answers to questions.

There are two criteria used in this study, namely inclusion and exclusion criteria in DM patients, the first is inclusion criteria consisting of:
1) DM patients with an age range of 30 years to 60 years.
2) Patients who have received DM diet consultation.
3) DM patients who live at home with their families.
4) DM patients can read and write.
5) DM patients who have attended at least elementary school.
6) DM patients want to participate as respondents.

And for the exclusion criteria, the first DM patients aged < 30 years or > 60 years, the two DM patients were not at home with their families, the three DM patients had never received DM diet consultation, then DM patients who could not read and write, also DM patients who never attended school, and also DM patients did not want or refused to participate in the study as respondents.

In the technique of data analysis, it is divided into two parts: first, univariate analysis in this analysis aims to describe each characteristic of the variable, and it is also carried out to see the percentage of each column of the frequency distribution table. And the second is the bivariate analysis where the function of bivariate analysis is to see the relationship between the dependent variable and the independent variable, using the statistical test *Chi-Square,* with a significance <0.05 and a 95% confidence level.

RESEARCH RESULTS

Table 1. Distribution of Characteristics of Respondents by Age, Gender, Last Education, and Occupation.

Characteristics of Respondents	Total	%
Age		
30-40 years	8	12.1
41-50 years	44	66.7
51-60 years	14	21.2
Gender		
Male	31	47.0
Female	35	53.0
Last Education		
Elementary	9	13.6
Junior	11	16.7
SchoolHigh	28	42.4
School	18	27.3
PT		
Employment		
Labor	10	15.2
Private	4	6.1
Entrepreneur	17	25.8
PNS	10	15.2
IRT	22	33.3
Others	3	4.5

Source : Primary Data 2021

From the data on the characteristics of informants, it shows that most of the informants are aged 41-50 as many as 44 respondents (66.7%), of the sex more women, namely 35 respondents (53.0%), for the last high school education owned by more respondents as many as 28 respondents (42.4%), and seen from the work of more IRT that is 22 respondents (33.3%).

Table 2. Categories of Patient Knowledge Levels about Diabetes Mellitus

Categories of Patient Knowledge Levels	Total	%
Less	49	74.2
Good	17	25.8

Source: Primary2021 The

Metadata in table 2 shows that the knowledge of the informants is categorized as less with a total of 49 informants and the percentage is 74, 2%.

Table 3. Family Support Category Family Support

Category	Total	%
Less	16	24.2
Good	50	75.8

Source: Primary Data 2021

From the family support table, almost all informants give good support to DM patients with a total of 50 informants and their percentage (75.8 %).

Table 4. Category of Dietary Compliance of DM Patients Diet Compliance Category of DM

Patients	Total	%
Not Adhering	31	47.0
Compliant	35	53.0

Source: Primary Data 2021

In the compliance table most of the patients have adhered to their diet totaling 35 respondents and the percentage (53 ,0%).

Table 5. Cross Tabulation between Knowledge Level of Patients with DM Patient Compliance Diet

Knowledge Level	Diet Compliance DM patients		Total			
	Complying		Not Complying			
	f	%	f	%	f	%
Less	26	53.1	23	46.9	49	100
Good	9	52.9	8	47.1	17	100
Total	35	53.0	31	47.0	66	100
p-value (chi-square) = 0.993						

Source: Primary Data 2021

The results of the statistical test *(Chi-Square)* obtained a *P-value* of 0.993 meaning this value is *alpha* (0.05) Thus, it can be concluded that H_{01} is accepted and H_{a1} is rejected, meaning that there is no relationship between the patient's level of knowledge and the dietary compliance of DM patients.

Table 6. Cross-tabulation between Family Support and Diet Compliance of DM Patients

Family Support	Dietary Compliance of DM Patients				Total	
	Compliance		Not Adhering			
	F	%	f	%	F	%
Less	12	75.0	4	25.0	16	100
Good	23	46.0	27	54.0	50	100
Total	35	53.0	31	47.0	66	100
p-value (chi-square) = 0.043						

Source: Primary Data 2021

The results of the statistical test *(Chi-Square)* obtained a *P-value* of 0.043 meaning this value is *alpha* (0.05) with Thus it can be concluded that H_{02} is rejected and H_{a2} is accepted, meaning that there is a relationship between family support and dietary compliance of DM patients.

DISCUSSION

A. Patient Knowledge Level

From the results obtained that most of the informants have less knowledge with a total of 49 informants (74.2 %), this agrees with the review it is said that most informants and their level of knowledge are classified as lacking with a percentage of 64, 3% [7].

Knowledge is an element of theoretical and practical understanding, and knowledge is a very important domain where any knowledge can be obtained by someone based on action, experience and research [19].

B. Family Support

Results for family support were categorized as good with a total of 50 informants (75.8%), which obtained other results, that most of the families provided good support to informants with a percentage of 68.6% [3].

The form of support from the social environment, especially family, is beneficial and connected with cognitive function, physical, emotional health, decreased mortality, and faster recovery from pain [22].

C. Dietary Compliance of DM Patients

Results of the dietary compliance variable were in the obedient category with a total of 35 respondents (53.0%), and the same as other results that most of the informants had adhered to their diet with a percentage of 66.2% [12].

This compliance becomes a stage for everyone with DM to be able to carry out every stage of healing and change attitudes that have been directed by medical personnel towards him [12].

D. Cross Tabulation between Patient Knowledge Level and Diet Compliance DM Patients

Data from the level of knowledge in the category of less in number 49 informants (74.2%), and compliance for the obedient category as many as 26

respondents with a percentage (53.1%) some of the respondents are not compliant in running the diet where the number of obedient and non-compliant only differs slightly, namely 23 respondents (46.9%), the test result is *Chi-Square* 0.993, meaning that there is no relationship between the level of patient knowledge and dietary compliance of DM patients, where the number of DM patients who are obedient in carrying out their duties diet is almost the same as those who do not adhere to the diet program.

The discovery of the causative factors, one of which is age or age where most of the respondents are 41-50 years old as many as 44 people with a total percentage of (66.7%), and diet compliance is easily affected by internal indications that also affect adherence to a diet, people who move adults to old age will experience a decrease in the ability of memory and knowledge [12].

Another cause is the result of the patient's level of knowledge which is categorized as less with a total of 49 informants (74.2%), the first stage of an individual in choosing an action and character is from his insight, therefore insight affects the actions taken, the insight that good and lots of it has a good impact on his attitude and character when doing something.

From the review that has been done, it cannot show the relationship between the two variables, in which the act of choosing food does not come from the ideas or insights of the informants, although having more insight, not all of them can be realized, so apart from having a lot of insight it is not certain that it can be applied. as consistency, according to the answers from the informants in this study where informants with good knowledge as many as 12 informants knew that drinking sweet drinks, or syrup and soda

could increase glucose levels, but the informants were unable to reduce snacking habits.

Informants who also have less knowledge and are obedient to the diet they have done due to support from their families and motivation from themselves as well as from medical personnel are quite high as evidenced by data from the level of support from families as many as 50 informants (75.8%). and from the data obtained that most patients always do regular health checks and regulate their food portions according to the doctor's recommendations, although some informants still can't regulate their meals but most of them can do according to their diet.

The variables studied are following those that have been previously tested with the test results being that there is no relationship between nutritional knowledge and dietary compliance [4].

And it shows that there is no relationship between knowledge and compliance in eating settings [2].

Other test results are different, namely there is a significant relationship between the level of knowledge and dietary compliance [13].

E. Cross-tabulation between Family Support and Diet Compliance of DM Patients

This variable has obtained results as many as 50 informants with a percentage of 75.8% of the support obtained is classified as good, and with the level of compliance for the non-adherent category with a total of 27 respondents with a percentage (54.0 %), these results indicate that the better the support that has been obtained, the better the patient's dietary adherence. After going through testing with SPSS obtained a value of 0.043 which indicates there is a relationship between family support and dietary compliance.

The elements that have an effect are informational support, emotional support and self-esteem from the family, as evidenced by data where patients often even always get attention in the form of information such as being reminded to regulate their diet, take medication and have regular check-ups with the doctor, and apart from family. paying attention to helping take care of daily needs while still loving and caring for patients when they are sick.

While the informants who received support from families who also did not comply were 27 informants, the cause was due to the lack of family support in the form of instrumental support according to the data where respondents stated that the treatment in terms of costs and facilities was mostly done alone, some other respondents were busy with providing food for family because the respondents in this study who mostly work are housewives, totaling 22 informants with a percentage of (33.3%), with the need to eat and drink more according to the family diet.

There are several forms of family support consisting of informational support, instrumental support, and emotional support and self-esteem, and based on this research it is known that the support provided by families is through empathy, caring, encouraging them to stay motivated to fight disease, as well as informational support in the form of DM-related knowledge that has been found from various media, while on instrumental support most of the relatives or family have not done it, or cannot apply this type of instrumental support well [16].

Another test with the results showed similar results to those that have been studied by researchers that there is a significant relationship between

family support and adherence to the 3J diet [13].

Other results which are also the same as the results that have been studied, obtained a value of 0.035, meaning that there is a significant relationship between family support and dietary compliance [1].

But it is different from other results that are not the same as those studied in which the results do not show a relationship between family support and compliance [2].

CONCLUSION

From the results studied, the following conclusions were obtained:

A. Most of the DM patients with the characteristics showed that more were aged 41-50 with a percentage (66.7%), from gender, most of them were women with a percentage (53.0%), for most of the respondents graduated from high school with a percentage (42.4%), and seen from the occupation, more respondents worked as household workers with a percentage (33.3%).

B. Most DM patients have a low level of knowledge with a percentage (74.2%), and support from a family with a good percentage (75.8%), and a good level of compliance with a good percentage (53.0%).

C. There is no relationship between the patient's level of knowledge with DM patient's dietary compliance.

D. There is a Relationship between Family Support and Diet Compliance of DM Patients.

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