Study of Intrinsic and Extrinsic Factors with Diabetes Mellitus Classification

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Abstrack

Diabetes mellitus is a group of metabolic diseases characterized by chronic hyperglycemia due to defects in insulin secretion, insulin action or both. The purpose of this study was to determine the relationship between intrinsic and extrinsic factors with the classification of diabetes mellitus. This research method is an analytic survey, with a cross sectional approach. The population is the entire number of outpatient diabetes mellitus patients as many as 4,365 people in 2019 and the sample in this study was 98 respondents, the sampling technique used a random sampling technique, analyzed univariate and bivariate using the chi-square test. The results showed that there was a significant relationship between social environmental factors (P-value: 0.000<0.05), cultural and religious environmental factors (P-value: 0.012<0.05), economic environmental factors (P-value: 0.037<0 0.05), emotional association factor (P-value: 0.000 < 0.05), physical and psychological state factors (P-value: 0.021<0.05), more assessment factor on food quality (P-value: 0.021<0.05) with the classification of diabetes mellitus. We are recommended for patients to take treatment as directed by health workers by using the 3J technique, namely paying attention to the type of food, amount of food and meal schedule to control blood sugar levels to avoid complications due to diabetes mellitus.

Keywords: Culture; Diabetes Mellitus; Extrinsic; Intrinsic.

Introduction

Diabetes mellitus (DM) is a metabolic disease characterized by chronic hyperglycemia resulting from changes in insulin secretion or action. Modern lifestyle including unhealthy diet, sedentary lifestyle and stress contribute to the incidence and progression to type 2 diabetes mellitus (Kaur & Kochar, 2017). The prevalence of DM in the world has increased enormously. The International Diabetes Federation (IDF) noted that diabetes in the world rose to 425 million people in 2017, in 2018 as many as 34.2 million people of all ages or 10.5% of the United States population suffer from diabetes. The global diabetes prevalence in 2019 is estimated at 9.3% (463 million people), increasing to 10.2% (578 million) in 2030 and 10.9% (700 million) in 2045 (International Diabetes Federation (IDF), 2017).

Based on data from the Ministry of Health of the Republic of Indonesia, the proportion of diabetes mellitus in Indonesia as a result of the 2013 National Health Survey was 6.9%. In 2017 it was 4.8%, in 2018 it was 8.5%. If the estimated population of Indonesia aged 15 years and over in 2013 was 176,689,336 people. In 2019 the number of sufferers was 3,941,698 people with the number of DM sufferers who received health services according to standards as many as 2,687,994 (68.19%) people. (Ministry of Health RI, 2019).

Health services for people with DM are health services according to standards for all people with Diabetes Mellitus aged 15 years and over as a secondary prevention effort in their work area within one year. Includes blood sugar measurements carried out at least once a month in health care facilities, in 2017 there were 45,209 DM patients, in 2018 there were 97,033 DM patients with DM sufferers in Aceh.

69% (Aceh Health Office, 2019). While Nagan Raya Regency in 2018 the number of DM sufferers was 1,548 people, in 2018 the number of DM patients was 1,548 people, 2019 the number of DM sufferers was 3,374 people and in 2020 the number of DM sufferers was 3,769 people. Health services for people with Diabetes Mellitus, lifestyle changes and/or nutrition, as well as referrals if needed and Pharmacological Therapy, then the number of DM patients receiving health services according to standards is 2.868 (85%) people (Dinkes Nagan Raya, 2019).

Based on secondary data from the information system of the Sultan Iskandar Muda Hospital, Nagan Raya Regency that the number of outpatients with diabetes mellitus in 2017 was 3,144 people, in 2018 the number of outpatients with diabetes mellitus was 3,879 people, in 2019 the number of outpatients with diabetes mellitus was 4,365 people and in 2020 as many as 3,438 people (Sultan Iskandar Muda Hospital, (2020)

Preliminary studies conducted by researchers that the social environment, cultural and religious environmental factors, economic environment, emotional association factors and physical and psychological conditions and more assessment factors of food quality consider foods such as eggs and meat to be more dominant and of good quality for their nutritional value, less consumption of vegetables. Foods contain calcium and other vitamins.

Methods

This research method is a quantitative method, an analytical survey with a cross sectional design. This study aims to examine the This study aims to examine the Social Environmental Factors, Cultural and Religious Environment, Economic Environmental Factors, Emotional Association Factor, Factors of Physical and Mental Conditions, Food Quality Rating Factor, with the classification of diabetes mellitus at Sultan Iskandar Muda Hospital Nagan Raya Regency which was carried out on September 2021 at Sultan Iskandar Muda Hospital with a population of all Outpatient diabetes mellitus patients were 4,365 people, while the sample was 98 people.

Results

Table 1.1. Frequency Distribution

Variable	N	Percentage(%)
Social Environmental Factors		
Well	41	41,8
Not Good	57	58,2
Cultural and Religious Environment		
Well	38	38,8
Not Good	60	61,2
Economic Environmental Factors		
Well	28	28,6
Not Good	70	71,4
Emotional Association Factor		
Well	42	42,9
Not Good	56	57,1
Factors of Physical and Mental Conditions		
Well	29	29,6
Not Good	69	70,4
Food Quality Rating Factor		
Well	37	37,8
Not Good	61	62,2
Diabetes Mellitus		
DM 1	45	45,9
DM 2	53	54,1

Based on table 1 descriebe that 98 respondents who had poor social environmental factors as many as 57 respondents (58.2%), while respondents who had good social environmental factors were 41 respondents (41.8%). Then out of 98 respondents who had poor social environmental factors as many as 57 respondents (58.2%), while respondents who had good social environmental factors were 41 respondents (41.8%). Of the 98 respondents who had bad cultural and religious environmental factors as many as 60 respondents (61.2%), while respondents who had good cultural and religious environmental factors were 38 respondents (38.8%). There were 70 respondents (71.4%), with unfavorable economic environmental factors, 28 respondents (28.6%) having good economic environment factors. Of the 98 respondents who had poor emotional association factors, 56 respondents (57.1%), while 42 respondents (42.9%). Then 98 respondents who had physical and psychological factors in the sick category were 69 respondents (70.4%), while respondents who had physical and psychological factors in the healthy category were 29 respondents (29.6%). It is known that out of 98 respondents who have more assessment factors of poor food quality as many as 61 respondents (62.2%), while respondents who have more assessment factors of good food quality are 37 respondents (37.8%). That of 98 respondents who experienced diabetes mellitus 2 as many as 53 respondents (54.1%), while respondents

who experienced diabetes mellitus 1 were 45 respondents (45.9%)

Table 2. Bivariate Analysis

Variable	P-Value	PR
Social Environmental Factors		
Well	0,000	5.068
Not Good		
Cultural and Religious Environment		
Well	0,012	3.184
Not Good		
Economic Environmental Factors		
Well	0,037	2.867
Not Good		
Emotional Association Factor		
Well	0,000	5.577
Not Good		
Factors of Physical and Mental Conditions		
Well	0,021	3.142
Not Good		
Food Quality Rating Factor		
Well	0,021	2.912
Not Good		

Based on table 2 showed that 41 respondents who have good social environmental factors, there are 28 respondents (68.3%) who have diabetes mellitus 1. On the contrary, from 57 respondents who have unfavorable social environmental factors, there are 40 respondents (70.2%) who have diabetes mellitus 2. Results Chi square statistical test obtained P value = 0.000 and this is smaller than = 0.05 (P-value = 0.000 < = 0.05) so that there is a relationship between social environmental factors related to the classification of diabetes mellitus in Sultan Iskandar Muda Hospital, District Nagan Raya. Based on the results of the Prevalence Ratio of 5.068, it can be concluded that respondents who have unfavorable social environmental factors will have a 5,068 chance of experiencing diabetes mellitus compared to respondents who have good social environmental factors. Of the 38 respondents who had good cultural and religious environmental factors, there were 24 respondents (63.2%) who had diabetes mellitus 1. In contrast, of the 60 respondents who had poor cultural and religious environmental factors, 39 respondents (65.0%) experienced diabetes mellitus 2.

The results of the chi square statistical test obtained P-value = 0.012 and this is smaller than = 0.05 (P-value = 0.012 < = 0.05) so that there is a relationship between cultural and religious environmental factors related to the classification of diabetes mellitus in Sultan Hospital Iskandar Muda, Nagan Raya Regency. Based on the results of the prevalence ratio of 3.184, it can be concluded that respondents who have poor cultural and religious environmental factors will have a chance of 3,184 times experiencing diabetes mellitus compared to respondents who have good cultural and religious environmental factors.

Discussion

Social Environmental Factors

The social environment is the place where daily activities take place. The social environment is a determining factor for behavioral changes that occur in each individual or group. The social environment includes the family environment, peers, and living environment, which will shape behavior in each individual. A good social environment will form a good personality, because a person's behavior and personality are a reflection of the social environment he occupies. The family is the social environment that an individual is first known to before plunging into another larger social environment (Tamara, 2016). According to the results of the chi square statistical test, there is a relationship between social environmental factors and the classification of diabetes mellitus in Sultan Iskandar Muda Hospital, Nagan Raya Regency. with P value = 0.000.

Based on the assumptions of the researchers in the field, the researchers found that respondents who had good social environmental factors experienced diabetes mellitus because the staple food they consumed was rice, when breakfast, if they did not eat rice, they did not feel full and had to eat rice again. the head of the family must be given food that is still hot and in a separate place. While respondents who have unfavorable social environmental factors experience diabetes mellitus because respondents have the habit of eating large portions of rice when eating schedules, cannot replace staple food in the form of rice with other foods, when eating the order of eating at home after the new head of the family, children and wife, and consume rice in a day more than 3 times.

According to Suharjo (2017) the social environment provides a clear picture of differences in eating habits. Each nation and ethnic group has different eating habits in accordance with the culture adopted from generation to generation. said that "Socio-cultural elements are able to create a hereditary eating habit that is difficult to change".

This study is in line with Dewi (2016) research, in Karanganyar District Hospital where there is a

relationship between diabetes and behavioral risk with a P value = 0.000. This is also in line with the Ramadhan Research (2017), at Dr Wahidin Sudirohusodo Hospital and Hasanuddin University Hospital Makassar where there is a relationship between diabetes and the social environment with a P value = 0.001. This is also in line with the research of Kurniawaty and Yanita (2016), in hospitals where there is a relationship between diabetes and the environment with a P value = 0.001. This is also in line with Hamzah and Sulistiadi's research (2016), at Puskesmas X, South Tangerang City where there is a relationship between diabetes and the environment with a P value = 0.000.

Cultural and Religious Environment

Culture is a system of knowledge that includes ideas or ideas that exist in human thought. The purpose of culture is to help humans in carrying out social life. In everyday life, culture is abstract and manifested in behavior and tangible objects such as: behavioral patterns, language, living equipment, social organization, religion and art. Eating culture is a series of customs and food traditions that lead to the movement of thinking and feeling as desired. Socio-cultural factors have a very large role in food, nutrition and health issues, where program policies in food, nutrition and health should also reach socio-cultural issues. The role of culture on public health, especially people with diabetes mellitus, is in shaping, regulating and influencing the actions or activities of individuals in a social group to meet various health needs (Burhan, 2019). According to the results of the chi square statistical test, there is a relationship between cultural and religious environmental factors with the classification of diabetes mellitus in Sultan Iskandar Muda Hospital, Nagan Raya Regency. with P value = 0.012.

Based on the assumptions of the researchers in the field, the researchers found that respondents who had both cultural and religious environmental factors suffered from diabetes mellitus because respondents consumed food every day according to their nutritional needs, always had breakfast before doing activities, preferred to consume processed vegetables and fruit, always eat according to religious advice to eat before you are hungry and stop before you are full. Meanwhile, respondents who have unfavorable cultural and religious environmental factors suffer from diabetes mellitus because the respondent has a culture that influences the choice of food to be consumed, will comply if there is a prohibition on a food ingredient that is not allowed to be consumed in belief/belief and has taboos in habits. dietary habit.

This study is in line with the research of Kurniawaty and Yanita (2016), where there is a relationship between diabetes mellitus and culture with a P value = 0.000. This is also in line with the Meiwarnis Research (2016), at Puskesmas X, South Tangerang City where there is a relationship between diabetes and the cultural environment with a P value = 0.000. This is also in line with the research of Betteng, et al (2016), at the Wawonasa Health Center where there is a relationship between diabetes and the cultural environment with a P value = 0.000. This is also in line with the research of Sitompul et al (2016), in Pekalongan Regency where there is a relationship between diabetes and the cultural environment with a P value = 0.000.

Economic Environment

Several factors play an important role in the development of cases of diabetes mellitus. Advances in technology have led to changes in lifestyle such as the availability of various technological products that provide convenience so that human activities become less mobile. Changes in behavior and eating patterns that lead to fast food with high energy, fat and low fiber content contribute greatly to the increase in the prevalence of diabetes mellitus (Yarmaliza, 2017). According to the results of the chi square statistical test, there is a relationship between social environmental factors and the classification of diabetes mellitus in Sultan Iskandar Muda Hospital, Nagan Raya Regency. with P value = 0.000.

Based on the assumptions of the researchers in the field, the researchers found that respondents who have good economic environmental factors suffer from diabetes mellitus because respondents use most of their income to meet their daily needs, where the diet is sufficient to eliminate hunger, often eat fatty foods such as poultry when the respondent's economy is increasing, can only eat meat on Eid day, excessive consumption of meat during Eid because only at that time the respondent has the income to buy it. While respondents who have poor economic environment factors suffer from diabetes mellitus because respondents tend to eat more when the economic level increases, only eat nutritious food when the family's economic level improves, eating habits that provide nutritional value are below adequate quantity and quality when the family economy weakens.

Eating habits are also very much determined by community groups according to their economic level. Strong economic groups have eating habits that tend to be a lot, with an average consumption exceeding the adequacy rate. On the other hand, the weakest economic community, who are generally food

producers, have eating habits that provide nutritional value below adequate quantity and quality (Suhardjo, 2017).

This study is in line with the research of Pathak & Ashima (2012), where there is a relationship between diabetes mellitus and life style with a P value = 0.000. It is also in line with Hestiana's research (2017), in Semarang City where there is a relationship between diabetes and the economic environment with a P value = 0.042. This is also in line with Dewi's research (2016), in Karanganyar District Hospital where there is a relationship between diabetes and the economic environment with a P value = 0.000. It is also in line with the Wulandari Research (2016), in Tugurejo Hospital Semarang where there is a relationship between diabetes and the economic environment with a P value = 0.000.

Emotional Association

Emotion is any activity or agitation of feelings, thoughts, passions, any intense and overwhelming mental state. Emotions also refer to a distinctive feeling and thoughts, a biological and psychological state of a series of tendencies to act (Goleman, 2016). According to the results of the chi square statistical test, there is a relationship between emotional association factors and the classification of diabetes mellitus in Sultan Iskandar Muda Hospital, Nagan Raya Regency. with P value = 0.000.

Based on the assumptions of the researchers in the field, the researchers found that respondents who had good emotional association factors suffered from diabetes mellitus due to the respondent's appetite according to mood, for example, they did not like eating meat because they did not like it. While respondents who have poor emotional association factors suffer from diabetes mellitus because respondents only eat certain foods when the mood is good/supportive, have unhealthy snacking habits when in a bad mood.

This study is in line with the research of Putri, et al (2019), where there is a relationship between diabetes mellitus and diet with a P value = 0.000. It is also in line with the Ningrum Research (2019), at the Kraton Pekalongan Hospital where there is a relationship between diabetes and emotionality with a P value = 0.000. This is also in line with Maulida's research (2018), in the Surabaya area where there is a relationship between diabetes and emotionality with a P value = 0.003. This is also in line with Andriani's research (2016), at the Bintuhan Health Center, Kaur Regency where there is a relationship

between diabetes and emotions with a P value = 0.001.

Physical and Mental Conditions

Food habits are also strongly influenced by factors in one's health status. In addition, feelings of boredom, disappointment, hopelessness, stress are psychological imbalances that can affect eating habits. The effect will have an impact on reducing appetite and vice versa, namely increasing appetite (Suhardjo, 2017). According to the results of the chi square statistical test, there is a relationship between physical and psychological factors with the classification of diabetes mellitus at Sultan Iskandar Muda Hospital, Nagan Raya Regency. with P value = 0.021.

Based on the assumptions of the researchers in the field, the researchers found that respondents who have physical and psychological factors in the healthy category suffer from diabetes mellitus because when the respondent is sick, their eating patterns change and decrease, when they are healthy their eating habits will return to normal and increase. While respondents who have physical and psychological factors in the sick category suffer from diabetes mellitus because respondents have a habit of eating fatty foods when they are sick, only likes high carbohydrate foods even though they have a family with a history of DM, have high blood pressure above normal but do not maintain their diet when sick.

This study is in line with the research of Putri, et al (2020), where there is a relationship between diabetes mellitus and activity with a P value = 0.000. This is also in line with Maynardo's research (2016), in Gedongtengen District where there is a relationship between diabetes and physical condition with a P value = 0.000. This is also in line with Eliska's research (2016), in the Work Area of the Kutambaru Nursing Health Center, Southeast Aceh Regency where there is a relationship between diabetes and physical condition with a P value = 0.001. This is also in line with the research of Badjree and Muniroh (2017), in the office of one airline in the city of Surabaya where there is a relationship between diabetes and physical condition with a P value = 0.000.

More Rating on Food Quality

In terms of nutrition, there are good eating habits that support the fulfillment of nutritional adequacy, but some are not good, namely those that hinder the fulfillment of nutritional adequacy. Bad eating habits include taboos that are contrary to

nutritional concepts, such as children being forbidden to eat meat/fish on the grounds that they will get worms later. Therefore, in the nutrition improvement program or in the food diversification program, good eating habits should be maintained and bad eating habits as well as contrary to nutritional concepts must be abandoned little by little through various means, especially by improving function (Communication, Information and Communication). , and Education (KIE) (Suhardjo, 2017).According to the results of the chi square statistical test, there is a relationship between the assessment factors that are more on food quality and the classification of diabetes mellitus in Sultan Iskandar Muda Hospital, Nagan Raya Regency, with a P value = 0.021.

Based on the assumptions of the researchers in the field, the researchers found that respondents who had more assessment factors of food quality in the good category suffered from diabetes mellitus because respondents with diabetes mellitus consumed foods containing carbohydrates and sources of glucose in excess, then blood glucose levels rose so that a good diet was needed. , has a history of drinking formula milk (cow milk) as a baby in excess, unhealthy eating habits and accompanied by lack of physical activity so that he has diabetes. Meanwhile, respondents who have an excessive assessment of the quality of food in the poor category suffer from diabetes mellitus because the respondent consumes food according to his preferences, even though it is not in accordance with nutritional concepts, only likes food such as meat, does not like to eat vegetables as a substitute for meat. ,DM sufferers are caused by unhealthy eating patterns because respondents lack knowledge about how to eat well.

This study is in line with the research of Ramachandran A, Ma RC, S. C. (2015), where there is a relationship between diabetes mellitus and food with a P value = 0.000. This is also in line with Anggraini's research (2016), at the University of Indonesia Depok Dormitory where there is a relationship between diabetes and diet with a P value = 0.002. This is also in line with Nurjannah's research (2017), at SMK Negeri 4 Yogyakarta where there is a relationship between diabetes and diet with a P value = 0.002. This is also in line with the Women's Research (2016), in SMA Negeri 4 where there is a relationship between diabetes and diet with a P value = 0.000. amount of food and meal schedule to control blood sugar levels so as to avoid complications due to diabetes mellitus.

Conclusion

Based on the results of the study there were significant results between social environmental factors, cultural and religious environmental factors, economic environmental factors, emotional association factors. factors of physical and psychological conditions, the assessment factor is more on the quality of food, with the Classification of Diabetes Mellitus at Sultan Iskandar Muda Hospital, Nagan Raya Regency.

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Author Contribution and Competing Interest

Contributing authors for this research are interested compiling the manuscript.

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