26. Analysis of factors associated with blood sugar levels

by Ismi Rajiani

Submission date: 10-Apr-2022 09:48PM (UTC-0700)
Submission ID: 1807471593
File name: 26. Analysis of factors associated with blood sugar levels.pdf (331.29K)
Word count: 3481
Character count: 17824

DOI Number: 10.5958/0976-5506.2018.01867.3

Analysis of Factors Associated with Blood Sugar Levels in Type 2 Diabetes Mellitus Patients

Bertalina[1], Amrul Hasan[1], Ismi Rajiani[2]

[1]Minister of Health Polytechnic, Tanjungkarang, Indonesia, [2]Department of Business Administration, STIAMAK Barunawati Surabaya, Indonesia

ABSTRACT

Background: The prevalence of diabetes mellitus in Indonesia ranks 7 under Russia and Mexico with diabetes rates as much as 10.0 million (8.1% -10.9%), Lampung Province ranks 8th.The purpose of this study was to determine the risk factors for blood sugar levels in type II diabetes mellitus patients.

Methods: This type of research was analytic with cross-sectional design in Persadia Bandar Lampung Hospital patients using a sample of 30 people. The research variables were blood glucose levels, knowledge, nutritional intake (carbohydrates, fiber, and vitamin C), physical activity, and dietary compliance. Chi-Square test was employed to examine the relationship.

Results: The results showed there was a relationship between simple carbohydrate intake (p = 0.002), fiber (p = 0. 000) and vitamin C (p = 0.002), physical activity (p = 0.000), compliance between types of food consumed with blood sugar level (p = 0.026). There was no correlation between total adherence (p = 4.48), schedule compliance (p = 1,000), diet compliance with blood sugar levels. .

Conclusion: Hospital should be able to increase education about nutrition as well as encourage eating fiber and vitamin C food as recommended and motivate patients to be more adherent to the diet. Further research with different methods is necessary to explore what factors cause low levels of compliance.

Keywords-*: Diabetes Mellitus, Nutritional Intake, Physical Activity, Diet Compliance, Blood Sugar Levels.*

INTRODUCTION

Diabetes erupts (DM) is a metabolic disease which is a collection of symptoms that arise in a person due to an increase in blood glucose levels above average values. The prevalence of DM in Indonesia is based on the answer that the doctor had diagnosed at 1.5%, whereas DM based on symptoms was 2.1%. The prevalence of DM in women is based on a doctor's diagnosis of 1.7% while signs based on DM are 2.3%. Meanwhile, the determination of DM based on a doctor's diagnosis was 1.4% while DM based on symptoms was 2.0%, so based on this it is concluded that female sufferers of DM were higher than men [(1)].

Fiber can improve the response of blood glucose and insulin indices. The fiber can inhibit the passage of glucose through the walls of the digestive tract to the blood vessels so that levels in the blood are not excessive. The previous study showed a significant relationship between fiber intake and blood sugar levels in diabetic patients [(2)]. Other studies have also demonstrated a link between fiber intake and blood sugar levels that the lower the fiber intake, the higher blood sugar levels [(3)].

In people with diabetes, it is essential to emphasize the importance of regularity of eating regarding meal schedule, type and amount of food, especially for those who use blood glucose-lowering drugs or insulin [(4)]. Physical exercise in people with diabetes mellitus has a critical role in controlling blood sugar levels. Increased physical activity such as physical exercise (aerobics, casual cycling, jogging, swimming, and diabetes

Corresponding author:
Bertalina
Department of Nutrition, Minister of Health Polytechnic, Tanjungkarang, Indonesia
email: ubertalina@yahoo.com

exercise) regularly results in increased use of glucose by active muscles [5].

In Pesadia Hospital Lampung Province, out of 100 patients, 30 people were suffering from diabetes mellitus. Based on the description of data above, the authors wish to examine the analysis of risk factors for blood sugar levels in type II diabetes mellitus patients in the respective hospital.

METHODOLOGY

This study is an analytical study using a cross-sectional examines the risk factors for blood sugar levels in type II diabetes mellitus patients in Persadia Adventist Hospital Bandar Lampung Unit. The population in this study were all patients with type II diabetes mellitus who were members of PERSADIA Bandar Lampung Adventist Hospital Unit in 2017 obtained as many as 30 people. The sample of this study is the total population. Data analysis was carried out with univariate analysis carried out descriptively with a frequency distribution. Bivariate analysis was performed by Chi-square test using computerization.

RESULTS

Respondents mostly were aged> 60 years of the 22 respondents (73.3%), and respondents whose aged between 41-60 years were eight respondents (26.7%). The sex of the respondents was 7 male respondents (23.3%), and as many as 23 respondents were female (76.7%). The education level of the most respondents was tertiary institutions with a total of 11 respondents (36.7%).

Most respondents work as housewives or do not work as many as 13 respondents (43.3%), while the least jobs are other jobs as many as 4 respondents (13.3%), which are included in different positions of the cook, housemaid, and foreman.

As many as 14 respondents (46.7%) had bad blood sugar, and as many as 16 respondents had good blood sugar with a percentage of 53.3%. Distribution of respondents based on knowledge showed that those with fewer categories were 12 people (40.0%) and good as many as 18 people (60%). The simple carbohydrate intake of respondents was obtained which was not good (high) which was 15 people (50.0%), while the simple carbohydrate intake of respondents was good was found in 15 people (50.0%). Besides, most of the respondents' fiber intake is in quite a category was as many as 17 respondents (56.7%), while respondents who have less fiber intake are 13 respondents (43.3%). For consumption of vitamin C intake with less intake, there were 14 respondents (46.7%), while respondents who had good vitamin C intake were 16 respondents (53.3%). Physical activity of respondent inactive was found in 12 people (40.0%), whereas the physical movement of the respondent in the good category was in 18 people (60.0%). Distribution of respondents based on the type of food obtained results from 30 respondents whose intake of non-compliant foods was 16 people (53.3%), and respondents who obeyed 14 people (46.7%). Distribution of respondents based on the meal schedule obtained the results that the respondents whose eating schedule was not obedient as many as 16 people (53.3%), while respondents who obeyed 14 people (46.7%).

Table 1.Relationship of Knowledge with Blood Sugar Levels

Variables	Blood Sugar Levels				Total		*P value*
	Poor		Good				
	N	%	N	%	N	%	
1. Knowledge							
Less	9	75	3	25	12	100	0.030
Good	5	27.8	13	72.2	18	100	
Total	14	46.7	16	53.3	30	100	
2. Fibers							
Less	11	84.6	2	15.4	13	100	0.001
Adequate	3	17.6	14	82.4	17	100	
Total	14	46.7	16	53.3	30	100	

Cont... **Table 1. Relationship of Knowledge with Blood Sugar Levels**

3. Vitamin C							
Less	12	85.7	2	14.3	14	100	0.000
Good	2	12.5	14	87.5	16	100	
Total	14	46.7	16	53.3	30	100	
4.Carbohydrate Intake							
Poor	13	86.7	2	13.3	15	100	0.000
Good	1	6.7	14	93.3	15	100	
Total	14	46.7	16	53.3	30	100	
5. Physical Activity							
Active	10	83.3	2	16.7	12	100	0.004
Inactive	4	22.2	14	77.8	18	100	
Total	14	43.3	16	56.7	30	100	
6. Compliance to portion							
Compliance	12	46.2	14	53.8	26	100	1.000
Non-compliance	2	50.0	2	50.0	4	100	
Total	14	46.7	16	53.3	30	100	
7. Compliance to types							
Compliance	11	68.8	5	31.2	16	100	0.026
Non-compliance	3	21.4	11	78.6	14	100	
Total	14	46.7	16	53.3	30	100	
8. Compliance to Schedule							
Compliance	9	56.2	7	43.8	16	100	4.48
Non-compliance	5	35.7	9	64.3	14	100	
Total	14	46.7	16	53.3	30	100	
9. Compliance to Diet							
Compliance	13	48.1	14	51.9	27	100	1.00
Non-compliance	1	33.3	2	66.7	3	100	
Total	14	46.7	16	53.3	30	100	

Respondents with insufficient knowledge revealed 75% had poor blood sugar levels and those with good knowledge indicated 27.8% with poor blood sugar levels. Based on the results of statistical tests, it obtained a p-value of 0.030 ($p < 0.05$) indicating that H_o is rejected. Thus, it is concluded that there is a meaningful relationship between knowledge and blood sugar levels.

Respondents with less fiber intake displayed 84.6% had poor blood sugar levels and respondents with adequate fiber intake indicated 17.6% had poor blood sugar levels. Based on the results of statistical tests, it is obtained a p-value of 0.001 ($p < 0.05$). This means that Ho is rejected, so it is concluded that there is a significant relationship between fiber intake and blood sugar levels.

Respondents with less vitamin C intake were 12 (85.7%) with poor blood sugar levels, and respondents with good vitamin C intake were 2 (12.5%) whose poor blood sugar levels. The statistical test results displayed the p-value of 0.000 ($p < 0.05$). This confirms that Ho is rejected showing the relationship between vitamin C intake and blood sugar levels.

There was 10 (83.3%) respondents who had activity inactive physical, not good (high) blood sugar while those who had operation 4 people active physical(22.2%) had bad blood sugar. Statistical test results obtained p-value 0.004 ($p < 0.05$) shows that there is a significant relationship between physical activity with blood sugar levels at the time.

12 (46.2%) respondents who did not adhere to the amount of food consumed had high blood sugar. Statistical test results obtained p-value 1.000 (p> 0,05) indicating that there is no significant relationship between compliance with the amount of food consumed with blood sugar levels.

11 (68.8%) respondents who did not comply with the type of food consumed had high blood sugar. Statistical test results obtained p-value 0.026 (p <0.05) indicating that there is a significant relationship between adherence to the type of food with blood sugar levels.

9 (56.2%) respondents who did not adhere to the meal schedule, have poor blood sugar, while those who were obedient 4 (35.7%) had bad blood sugar. Statistical test results obtained p-value 4.48 (p > 0.05) showed that there was no significant relationship between adherence to the meal schedule and blood sugar levels.

13 (48.1%) respondents who did not comply with their diets, did not have good (high) blood sugar. Statistical test results obtained p-value 1.00 (p > 0.05) showed that there was no significant relationship between dietary compliance with blood sugar levels.

DISCUSSIONS

Based on the results of the study, there was a significant relationship between knowledge and blood sugar levels. This research is also not much different from the results that patients with a good level of knowledge are fully compliant with the DM diet [6]. The results showed that there was a significant relationship between simple carbohydrate intake (sucrose) and blood sugar levels [7]. The consumption of sugar (simple carbohydrates) in excessive amounts encourages the neurotransmitter system to try to find sugar as continuous dopamine (sugar opium) satisfaction [8]. Therefore should the respondents with diabetes mellitus need to control the intake of sugar (sucrose), and use the alternative sugar or sweetening drinks or foods such as sugar diabetes, diabetes honey.

Based on the results of the study, it was found that there was a significant relationship between fiber intake and blood sugar levels confirming the previous research that there is a substantial relationship between fiber intake and blood sugar in patients with type 2 diabetes mellitus [2]. Fiber can improve the response of blood glucose and insulin index. These fibers can inhibit the passage of glucose through the walls of the digestive tract to the blood vessels so that levels in the blood are not excessive. Patients with type 2 diabetes must eat food following the conditions set in their diet therapy so that patients can remain productive because their sugar levels are always controlled within reasonable limits.

The study found that there was a significant relationship between intake of vitamin C and blood sugar levels. For diabetic patients, vitamin C is useful as an antioxidant. Antioxidants are helpful in reducing oxidative damage to prevent complications in patients with type 2 diabetes. Vitamin C helps prevent complications of type 2 DM by inhibiting sorbitol production. Sorbitol is a by-product of sugar metabolism that will be accumulated in cells. It is recommended for people with diabetes to consume a lot of foods containing high levels of vitamin C, including oranges, guava, green peppers, sprouts, and broccoli because high doses of vitamin C can prevent various complications of diabetes [9].

The significant relationship between physical activity with blood sugar levels supports the previous research [10] where the researchers explained if someone with a pattern of mild physical activity can lead to an increase in blood sugar levels in the body.

In contrary, the results showed no significant relationship between adherence to the amount of food consumed with blood sugar levels. Diet management in DM patients is to maintain blood glucose levels so that they are close to normal by balancing food intake with insulin with oral glucose medication and physical activity, achieving and maintaining serum lipid levels, preventing complications, and providing enough energy to keep or produce normal body weight [11]. Under this notion, it is sensible that the patients do not really with the amount of food consumed as long as they can maintain the close to average blood sugar level.

The results further showed that there was a relationship between patient adherence to the type of food consumed with blood sugar levels. Here the role of family is essential to becoming the supervisor to ensure the family members suffering from diabetes adhering to food consumed [11]. The family plays a role in reducing patient ignorance in the face of illness and disobedience caused by temptations from outside [12].

CONCLUSION

The hospital should be able to improve the education program through counseling and nutritional counseling and encourage eating fiber and vitamin C foods as recommended, and motivate patients to be in compliant with the amount and type food consumed as well as the schedule to consume the food. Also, the family members must be motivated to be more active in participating in monitoring food consumed by family members suffering from Diabetes Mellitus. Since the level of compliance is low, it is necessary to conduct further research with different methods to explore what factors cause low levels of compliance.

Ethical Clearance: Ethical clearance was obtained from The Ministry of Health Polytechnic Tanjungkarang, Indonesia. We also wish to thank all the participants who contributed to this study.

Conflict of Interest: Nil

Source of funding: Nil

REFERENCES

1. Kasmawati H. The characteristic of patients with diabetes mellitus Type 2 in all community health center, City of Kendari, southeast Sulawesi in 2016. International Journal of Green Pharmacy (IJGP). 2018 Feb 11;11(04).
2. Muliani U. Asupan zat-zat gizi dan kadar gula darah penderita dm-tipe2 di poliklinik penyakit dalam RSUD Dr. H. Abdul Moeloek Provinsi Lampung. Jurnal Kesehatan. 2016 Jan 25;4(2).
3. Bintanah S, Handarsari E. Asupan Serat Kadar Gula Darah, kadar Kolesterol Total, dan Status Gizi pada Pasien Diabetes Melitus Tipe 2 di Rumah Sakit Roemani Semarang. Semarang: UNIMUS. 2012.
4. Fatimah RN. Diabetes melitus tipe 2. Jurnal Majority. 2015 Jan 26;4(5).
5. Indriyani P, Supriyatno H, Santoso A. Pengaruh latihan fisik; senam aerobik terhadap penurunan kadar gula darah pada penderita DM tipe 2 di wilayah Puskesmas Bukateja Purbalingga. Nurse Media Journal of Nursing. 2010 Dec 22;1(2).
6. Nakamireto GP. Hubungan pengetahuan diet diabetes mellitus dengan kepatuhan diet pada pasien diabetes mellitus tipe 2 di wilayah kerja Puskesmas Gamping II Sleman Yogyakarta (Doctoral dissertation, STIKES Jenderal A. Yani Yogyakarta).2016.
7. Listiana N, Mulyasari I, Paundrianagari MD. Hubungan asupan karbohidrat sederhana dan aktivitas fisik dengan kadar glukosa darah pada penderita diabetes mellitus tipe 2 wanita usia 45-55 tahun di kelurahan Gedawang kecamatan Banyumanik kota Semarang. Jurnal Gizi dan Kesehatan. 2015;7(13).
8. Mezie-Okoye MM. Diabetes in older adults: experience from a rural community in south-east Nigeria. African Journal of Diabetes Medicine Vol. 2013 Nov 1;21(2).
9. Masoodi H, Kar TV, Coyaji KJ, Bhat DS, Kumaran K, Yajnik CS. Association of Maternal Vitamin C Status with Gestational Diabetes Mellitus. Journal of Krishna Institute of Medical Sciences (JKIMSU). 2015 Jul 1;4(3).
10. Hemmingsen B, Gimenez-Perez G, Mauricio D, I Figuls MR, Metzendorf MI, Richter B. Diet, physical activity or both for prevention or delay of type 2 diabetes mellitus and its associated complications in people at increased risk of developing type 2 diabetes mellitus. Cochrane Database of Systematic Reviews. 2017(12).
11. Astuti S, Paratmanitya Y, Wahyuningsih W. Tingkat pengetahuan dan dukungan keluarga tidak berhubungan dengan kepatuhan menjalani terapi diet penderita diabetes mellitus tipe 2 di Puskesmas Kasihan II Bantul Yogyakarta. Jurnal Gizi dan Dietetik Indonesia (Indonesian Journal of Nutrition and Dietetics). 2016 Aug 30;3(2):105-12.
12. Baig AA, Benitez A, Quinn MT, Burnet DL. Family interventions to improve diabetes outcomes for adults. Annals of the New York Academy of Sciences. 2015 Sep 1;1353(1):89-112.

DOI Number: 10.5958/0976-5506.2018.01868.5

Physical Environment of Home Affecting the Infection of Helminthiasis among Toddlers in Rural Areas

Asep Tata Gunawan[1], Budi Triyantoro[1], Agus Subagyo[1], Siti Mulidah[1], Marsum[1], Siti Kusumawati[2], Ismi Rajiani[3]

[1]Minister of Health Polytechnic, Semarang, Indonesia, [2]Minister of Health Polytechnic, Jakarta II, Indonesia
[3]Department of Business Administration, STIAMAK Barunawati Surabaya, Indonesia

ABSTRACT

Background: Helminthiasis in Indonesia are still public health problems because the prevalence is still very high between 45% -65%. Even in certain areas with poor sanitation, the prevalence can reach 80%. This study aims to determine the relationship between the variables of the physical environment of the house with the incidence of infection of worm eggs in toddlers.

Method: This type of research uses a cross-sectional design. The location of this study was in Sumbang District, Banyumas Regency, Central Java, Indonesia. The size of the research sample was 237 toddlers (age 12 months to <60 months). The process of data analysis uses univariate and bivariate analysis. Chi-Square test was employed to examine the relationship.

Results: The results of this study indicate that there is a correlation between several variables of the physical environment of the house with the incidence of worm infections in the toddler including the home yard cleanliness (p = 0.003), house floor type (p = 0.017), wastewater disposal (p = 0.000) , ownership of healthy latrines (p = 0.042), and house density (p = 0.000).

Conclusion: People can experience improver environmental sanitation conditions where toddlers have daily activities including having healthy latrines and improving access to sanitary restrooms for each family.

Keywords-*: Home, Physical environment, Helminthiasis, Infection, Toddler*

INTRODUCTION

In the village of Indonesia, worming attacks more children because their activities are more related to the soil where there are a number of species that are transmitted through the soil including roundworms (*Ascaris lumbricoides*), whipworms (*Trichuris trichiura*) and hookworms (*Necator americanus* and *Ancylostoma duodenale*) that infect humans the most [(1)]. Indonesia is one of the endemic countries of *Soil-Transmitted Helminths (STH)* with the third largest number of children aged 1-14 years in the world after India and Nigeria which is around 7% [(2)] as in certain areas with poor sanitation; worm prevalence can reach 80% [(3,4)]. Given this, the approach to prevention of worm disease through the improvement of sound environmental quality and healthy behavior is needed, so that the health risks for humans to be infected with worms can be suppressed.

Research on helminthiasis in rural areas of Central Java Province showed high rates of morbidity due to worms intestine [(5,6)].

Though worm disease is widespread in all rural and urban areas with a high prevalence and has the impact mainly on the quality of human resources, this is still a small concern for the community. Thus, this study aims to determine the relationship between the variables of the physical environment of the house with the incidence of infection with worm eggs in toddlers.

Corresponding Author:
Asep Tata Gunawan
Department of Environmental Health, Minister of Health Polytechnic, Semarang, Indonesia
email: aseptatagunawan@yahoo.co.id

26. Analysis of factors associated with blood sugar levels

ORIGINALITY REPORT

23%	21%	12%	12%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	repository.unimal.ac.id Internet Source	1%
2	eprints.kmu.ac.ir Internet Source	1%
3	www.mendeley.com Internet Source	1%
4	digilib.unila.ac.id Internet Source	1%
5	www.ejurnal.poltekkes-tjk.ac.id Internet Source	1%
6	www.ijhsr.org Internet Source	1%
7	repository.uinjkt.ac.id Internet Source	1%
8	proceeding.unikal.ac.id Internet Source	1%
9	ejournal.medistra.ac.id Internet Source	1%

10	sinta.ristekbrin.go.id Internet Source	1 %
11	Submitted to Universiti Kebangsaan Malaysia Student Paper	1 %
12	repository.binausadabali.ac.id Internet Source	1 %
13	digilib.stikesicme-jbg.ac.id Internet Source	1 %
14	Submitted to West Coast University Student Paper	1 %
15	ijnhs.net Internet Source	1 %
16	journals.plos.org Internet Source	1 %
17	Submitted to A.T. Still University - Missouri Student Paper	1 %
18	jurnal.unived.ac.id Internet Source	1 %
19	psppjournals.org Internet Source	1 %
20	Chaoqun Liu, Chunrong Zhong, Renjuan Chen, Xuezhen Zhou et al. "Higher dietary vitamin C intake is associated with a lower risk of	1 %

	gestational diabetes mellitus: a longitudinal cohort study", Clinical Nutrition, 2019 Publication	
21	E Sudihartinih, Wahyudin. "Relationship between intelligence quotient, gender, learning outcomes and geometry thinking levels", Journal of Physics: Conference Series, 2020 Publication	<1 %
22	pdfs.semanticscholar.org Internet Source	<1 %
23	uir.unisa.ac.za Internet Source	<1 %
24	www.turner-white.com Internet Source	<1 %
25	turkjphysiotherrehabil.org Internet Source	<1 %
26	repository.unhas.ac.id Internet Source	<1 %
27	riset.unisma.ac.id Internet Source	<1 %
28	Submitted to T A Pai Management Institute Student Paper	<1 %
29	etheses.uin-malang.ac.id Internet Source	<1 %

30	Hanifah Hanifah, Vike Pebri Giena, Ruri Maiseptya Sari. "THE EFFECT OF HEALTH EDUCATION THROUGH SESSION-HEALTH APPLICATION MEDIA ON BEHAVIOR MANAGEMENT BEHAVIOR OF DIABETES MELITUS IN BENGKULU CITY", Nurse and Health: Jurnal Keperawatan, 2019 Publication	<1 %
31	journal.ipm2kpe.or.id Internet Source	<1 %
32	ojs.poltekkes-medan.ac.id Internet Source	<1 %
33	Scirp.org Internet Source	<1 %
34	jddtonline.info Internet Source	<1 %
35	nusantarahasanajournal.com Internet Source	<1 %
36	repository.trisakti.ac.id Internet Source	<1 %
37	www.mejfm.com Internet Source	<1 %
38	Sri Lestari Ramadhani Nasution, Ali Napiah Nasution, Suhartomi, Sri Wahyuni Nasution. "The Effect of Habits on Wearing Footwear	<1 %

	And hand washing after playing on the ground Against Worms in Primary School Al-Wasliyah In Medan Deli", Journal of Physics: Conference Series, 2019 Publication	
39	banglajol.info Internet Source	<1 %
40	ijsab.com Internet Source	<1 %
41	repository.uhamka.ac.id Internet Source	<1 %
42	worldwidescience.org Internet Source	<1 %
43	Irwansyah Irwansyah, Ilcham Syarief Kasim, Bohari Bohari. "The RelationsThe Relationship between Lifestyle with the Risk of Diabetes Mellitus in Staff and Lecturers of Universitas Megarezky", Open Access Macedonian Journal of Medical Sciences, 2021 Publication	<1 %

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	Off		