THE RELATIONSHIP BETWEEN CONSUMPTION PATTERNS AND DIABETES MELLITUS DISEASE IN CEMPEDAK GROOVE VILLAGE

[1]Nurul Azmi [2]Putra Apriadi Siregar [3]Sindi Julfa Saphira [4]Nurida Sipahutar
[5]Ardiansyah Pratama Sitorus [6]Fitri Handayani
Universitas Islam Negeri Sumatera Utara, Medan, Sumatera Utara
nurulazmi2902@gmail.com

Abstrak

Diabetes melitus (DM) merupakan suatu kondisi medis yang serius. Berdasarkan data penelitian internasional, prevalensi diabetes melitus mencapai 8,8% Selama tahun 2015 dan menyerang 415 juta orang pada seluruh dunia. Pada tahun 2040, angka ini diproyeksikan meningkat menjadi 642 juta. Penyakit Diabetes Mellitus merupakan ranking keenam penyebab kematian di Dunia. Di Indonesia Prevalensi DM sekitar 4.8%. Sasaran pada riset ini yaitu akan mengkaji factor asosiasi terhubung dengan diet (pola makan), genre kelamin, serta status yang terlibat dalam berolahraga saat menderita diabetes melitus. Metodologi yang digunakan Penelitian ini menggunakan pendekatan kuantitatif beserta metode analisis cross sectional, Sampel pada penelitian ini, secara khusus yaitu masyarakat yang ada di Desa Alur Cempedak Kecamatan Pangkalan susu Kabupaten Langkat yang berjumlah 357 responden, Pengumpulan data melalui alat penelitian wawancara dengan instrument penelitian menggunakan kuisoner. Variabel yang diteliti adalah umur, jenis kelamin, dan status pekerjaan. Hasil penelitian didapatkan Tabel 1 menampilkan variabel risiko diabetes menurut atribut yang berbeda. Prediktor signifikan (p <0,05) meliputi jenis kelamin, usia, pekerjaan, olahraga, dan jumlah makanan manis, asin, dan berlemak yang dikonsumsi. Pria 1,163 kali lebih mungkin terkena diabetes dibandingkan wanita, orang berusia di atas 50 tahun 0,54 kali lebih mungkin terkena diabetes, dan mengonsumsi makanan manis meningkatkan risiko diabetes sebesar 1,01 kali. Mengonsumsi makanan tinggi lemak memiliki risiko sebesar 0,893 dan makanan tinggi garam 1,404. Temuan ini berbeda dengan penelitian Arithka Ayu pada tahun 2019 yang menunjukkan adanya bahaya jika mengonsumsi makanan asin sebesar 1,404 dibandingkan makanan manis dan berlemak.
Kata kunci : Diabetes Mellitus, Penyakit, Pola Konsumsi

Abstract

Diabetes mellitus (DM) is a serious medical condition. Based on international research data, the prevalence of diabetes mellitus reached 8.8% during 2015 and affects 415 million people worldwide. By 2040, this figure is projected to increase to 642 million. Diabetes mellitus is the sixth leading cause of death in the world. In Indonesia, the prevalence of DM is around 4.8%. The goal of this research is to examine the association factors connected with diet, gender, and status involved in exercising while suffering from diabetes mellitus. Methodology used This research uses a quantitative approach along with a cross sectional analysis method, The sample in this study, specifically the people in Alur Cempedak Village, Pangkalan Susu District, Langkat Regency which amounted to 357 respondents, Data collection through interview research tools with research instruments using questionnaires. The variables studied were age, gender, and employment status. The results obtained Table 1 displays the risk variables for diabetes according to different attributes. Significant predictors ($p<0.05$) included gender, age, occupation, exercise, and the amount of sweet, salty, and fatty foods consumed. Men were 1.163 times more likely to develop diabetes than women, people over 50 years old were 0.54 times more likely to develop diabetes, and consuming sugary foods increased the risk of diabetes by 1.01 times. Eating high-fat foods had a risk of 0.893 and high-salt foods 1.404. This finding is different from Arithka Ayu's research in 2019 which showed the danger of eating salty foods by 1.404 compared to sweet and fatty foods.
Keywords : Diabetes Mellitus, Disease, Consumption Pattern

INTRODUCTION

A person's lifestyle is one of their secondary needs, and can vary based on their situation or choices. Today, many people lead unhealthy lives and follow diets that are high in fat, salt and sugar without regard for health risks (de Ridder et al., 2017). This is one of the main causes of the rise of degenerative diseases in our culture. DM or often referred to as diabetes mellitus is one example of such degenerative diseases (AlMatar et al., 2017). Both adults and teenagers today are experiencing significant changes in their lifestyles. The most popular type of food is fast food and meals (Lawrence et al., 2017).

Consumption of foods high in sugar is associated with a number of diseases, including diabetes mellitus. The number of meals and timing of meals should be changed to maintain blood sugar levels (Medina-Remón et al., 2018). While larger amounts of food can exacerbate the difficulties of diabetes mellitus, smaller portions of food can help control blood sugar levels (Ling, 2019).

Diabetes Mellitus is a serious medical condition. Based on international research data, the prevalence of diabetes mellitus reached 8.8% during 2015 and affects 415 million people worldwide. By 2040, this figure is projected to increase to 642 million (Ogurtsova et al., 2017). As per a 2015 report by the International Diabetes Federation (IDF), China has the largest population of people with diabetes mellitus at 109.6 million. The United States and India have similar numbers of people with the disease. 29.3 million and 69.2 million people respectively suffer from diabetes (Gwatidzo & Stewart Williams, 2017). Indonesia ranks seventh with ten million people suffering from diabetes, and by 2040, this figure is projected to increase to 16.2 million (Afandi et al., 2024).

According to the most recent data obtained in 2017 from the International Diabetes Federation (IDF), 10.3 million people in Indonesia have diabetes, thus placing the country at sixth place globally if not properly managed (Arokiasamy et al., 2021). According to World Health Organization (WHO) estimates, the prevalence of diabetes in Indonesia is expected to soar to 21.3 million people by 2030 Type 2 diabetes accounts for up to 90% of all cases of the disease (Saeedi et al., 2019).

Diabetes, also referred to as diabetes mellitus (DM) or simply diabetes, is a metabolic condition characterized by a cluster of symptoms that develop in a person when his or her blood glucose levels rise above normal limits (Reddi Nagesh et al., 2020). Abnormalities in glucose metabolism caused by insulin deficiency and insufficiency are the root causes of diabetes, or DM. There are two forms of

diabetes mellitus: type 2 diabetes, which is acquired as an adult, and type I diabetes, often called juvenile diabetes, which is usually acquired in infancy (Eizirik et al., 2020).

Diabetes mellitus is a global health problem that needs attention. The percentage of the population suffering from diabetes was only 4.7% in 1980. In contrast, the World Health Organization (WHO) reported that 8.5% of individuals across the globe suffered from diabetes mellitus during 2014. Up to 422 million people worldwide have been identified with diabetes mellitus. 1, 2 In 2017, 425 million people worldwide were diagnosed with diabetes mellitus, bringing the prevalence of the disease to 8.8%. The annual increase in the prevalence of diabetes mellitus is expected to continue. It is estimated that 700 million people worldwide will have diabetes mellitus by 2045, with a prevalence of 9.9% (WHO, 2019).

Many variables put people at risk of developing diabetes. A poor lifestyle is the most common reason. Eating a diet high in sugar or fat, consuming little carbohydrates or fiber, and little or no physical activity are examples of unhealthy lifestyle choices (Koehler et al., 2019).

A number of different risk factors work together to cause diabetes mellitus (DM), and are not caused by just one component. Modifiable risk variables including central obesity, smoking, high sugar, low fiber diet, and low physical activity, are categorized as risk factors for diabetes mellitus (Zheng et al., 2018).

Risk factors are conditions or circumstances that contribute to the onset of a particular disease or health condition. There are 2 categories of risk variables: environmental underlying causes and elements originating from within the organism (Gwenzi et al., 2018). The consequences of a disease are also influenced by its risk factors. There are two categories of risk elements for non-communicable diseases, such as type 2 diabetes mellitus: unmodifiable elements, such as heredity, age, or gender, and modifiable elements, such as smoking habits (Olsson et al., 2016).

A person's lifestyle is an action they take that has an impact on their health. People with type 2 diabetes are recommended to do thirty minutes of physical activity every day, such as walking or light jogging, three to four times a week. A person who is not physically active often consumes too much energy because their body expends less energy, leading to an imbalance in the amount of energy stored in adipose tissue. Insulin resistance in this disease can increase the risk of type 2 diabetes mellitus (Harrington & Henson, 2021).

In addition to nutrition, stress can affect a person's risk of developing diabetes mellitus. Stress is a condition of pressure, both mental and physical. This tense condition is caused by demands and pressures that do not match expectations of reality and various reactions from each individual (Bhattacherjee et al., 2018)

A person will initially experience frustration because frustration is an emotion that arises when something prevents him from achieving his life goals. This is the stage before stress. Stress is a state in which a person constantly feels frustrated so that it cannot be overcome. There is a strong correlation between diabetes mellitus and stress, especially in the metropolitan population. Stress is caused by a variety of factors, including bad habits, life demands, and rapid technological advances. These factors can also contribute to the decline of one's health. According to Ruissen et al., (2021) Stress can make it difficult for people with diabetes mellitus to control their blood sugar levels. blood. Being overweight and not exercising are two risk factors that can cause diabetes.

The following CERDIK measures are part of the recommended efforts to control risk factors for type 2 diabetes: 1) Regular health check-ups to monitor your weight, blood pressure, blood sugar and cholesterol 2) Not smoking and eliminating cigarette smoke. 3) Try to exercise at least half an hour every day; 4) Maintain a balanced diet by eating healthy foods and getting enough nutrients; 5) Get enough sleep and, 6) Handle stress properly and effectively (Ministry of Health RI, 2017).

METHOD

Because this study was conducted all at once, it used a cross-sectional analysis methodology combined with numerical methods. Observational studies that use variable data collected at a certain predetermined point in time are called cross-sectional analysis. The local community was used as a research sample in Pangkalan Susu Sub-district, Langkat Regency, Alur Cempedak Village, totaling 357 respondents. Interview-based data collection is a method used by research instruments using questionnaires. The variables studied were age, gender, and employment status.

RESULTS

The table displays the findings of this study

Table 1. Risk Factors for Diabetes Mellitus

Variable Characteristics	**Diabetes**	**Nondiabetes**	**OR**	**95 %CI**
Gender				
Male	60	114	1,163	0,748-1,811
Female	57	126	1	
Age				
>50 Year Old	60	85	0,544	0,344-

				0,860
<50 Year Old	57	155	1	
Job				
Work	52	131	1,042	0,67 - 1629
Unemployment	49	110	1	
Sport				
Yes	57	83	1,797	1,146- 2817
No	56	153	1	
Sweet Food				
Consumption	70	143	1,010	0,644- 1,585
	47	97	1	
Salty Food				
Konsumsi	78	141	1,404	0,884- 2,230
Not Consumed	39	99	1	
Fatty Foods				
Consumption	75	160	0,893	0,562- 1,419
Not Consumed	42	80	1	

Table 1 displays diabetes risk variables according to different attributes. Significant predictors ($p<0.05$) include gender, age, occupation, exercise, and the amount of sweet, salty, and fatty foods consumed. Men were 1.163 times more likely to develop diabetes than women, people over 50 years old were 0.54 times more likely to develop diabetes, and consuming sugary foods increased the risk of diabetes by 1.01 times. Eating high-fat foods had a risk of 0.893 and high-salt foods 1.404. This finding is different from Arithka Ayu's research in 2019 which showed the danger of eating salty foods by 1.404 compared to sweet and fatty foods.

Based on characteristics related to age and gender. Males were 1.163 times more likely to be involved in an accident than females. The study also showed that the majority of women who have diabetes mellitus are different from men. Diabetes risk variables include age, gender, physical activity level and diet. Age and gender are characteristics that cannot be changed. The incidence of diabetes mellitus increases 1.163 times in people over 50 years old. Increasing age will cause the performance of the body's organs to become less good, including insulin production, thus disrupting the body's ability to metabolize glucose. (Nurwijayanti, 2018).

DISCUSSION

There is a strong relationship with other things, such as work and exercise. According to Trisnawati's (2013) research, this was the case involving 100 respondents with diabetes mellitus and found no link between patients' blood sugar levels and physical activity.

The prevalence of diabetes mellitus is significantly correlated with the consumption of fatty and salty foods. The addition of coconut milk and oil are two factors that cause fatty dishes. Coconut milk and oil are two foods that are high in fat. Consuming high-salt foods increased the risk by 1.404-fold. The most common ingredient in high-salt foods contributing to hypertension and fluid retention, which are risk elements for Diabetes Mellitus, is sodium. Twenty-three percent of those surveyed had high blood pressure. Patients with diabetes mellitus often experience consequences, kidney problems, neurological disease, visual impairment, and cardiovascular disease. For people with diabetes mellitus, cardiovascular disease is the main cause of expenditure (Rahmawati et al., 2014).

CONCLUSIONS

Diet, age, and gender were the three main variables that significantly influenced the incidence of diabetes mellitus. Eating salty foods regularly had a 1,404 risk of diabetes mellitus. Meanwhile, eating foods high in fat and sugar was associated with a reduced risk of diabetes mellitus. Therefore, there is no impact on the likelihood of developing diabetes mellitus in adolescents; however, adolescents should start eating nutritious foods as soon as possible.

According to Susilowati & Waskita, (2019) research, gender, age, and nutrition are significant characteristics associated with the occurrence of diabetes mellitus. Consumption of salty foods was associated with a 2.62 times higher risk of developing diabetes mellitus. Consuming sweet and fatty foods was associated with a decreased risk of developing diabetes mellitus. The impact of the risk of diabetes mellitus in adolescents is not too great, but it is important for adolescents to adopt a nutritious and balanced diet as soon as possible.

According to A. Susilowati et al., (2020), individuals between the ages of 50 and 69 are more likely to have difficulty maintaining proper control of their blood sugar levels, which is often seen in cases of uncontrolled type 2 diabetes. The respondents consumed fiber mostly from vegetables such as cesim, cauliflower, and carrots, as well as fruit.

Sujianto & Riniatsih, (2022) research findings that in Kandeman Village, Kandeman Subdistrict, Batang Regency, there is a prevalence of individuals with high blood glucose levels. In addition, based on blood pressure statistics in the neighborhood, the majority of individuals in the community are categorized as having high blood pressure. This is due to the community's habit of continuing to consume foods that are high

in salt and sugar, as well as a lack of physical activity. There are still some residents who adhere to misconceptions, so they ignore the therapy prescribed by nurses and doctors.

Research reveals that the risk of diabetes mellitus is significantly affected by the consumption of fatty foods and saturated fats. The prevalence of diabetes mellitus was significantly correlated with the consumption of fatty foods and saturated fats. Consumption of saturated fat and saturated fat contributes to the risk of diabetes mellitus. The highest risk factor for diabetes mellitus is sodium which is caused by consumption of saturated fat and saturated fat. The study also found that the prevalence of diabetes mellitus was significantly influenced by the consumption of fatty foods and saturated fats. The study suggests that dietary changes can help reduce the risk of diabetes mellitus. These findings highlight the importance of dietary changes in managing diabetes mellitus.

REFERENCES

Afandi, A. T., Putri, P., Darmawan, T. C., & Wijaya, C. P. (2024). Self-Efficacy With Anxiety Levels Of Diabetes Mellitus Patients In Hospital Care Settings. *Journal Of Health Science*, *17*(2), 133–142.

Almatar, M., Islam, M. R., Albari, O., Var, I., & Koksal, F. (2017). Pomegranate As A Possible Treatment In Reducing Risk Of Developing Wound Healing, Obesity, Neurodegenerative Disorders, And Diabetes Mellitus. *Mini-Reviews In Medicinal Chemistry*, *18*(6), 507–526. Https://Doi.Org/10.2174/1389557517666170419114722

Arokiasamy, P., Salvi, S., & Selvamani, Y. (2021). Global Burden Of Diabetes Mellitus: Prevalence, Pattern, And Trends. In *Handbook Of Global Health: With 362 Figures And 152 Tables*. Https://Doi.Org/10.1007/978-3-030-45009-0_28

Bhattacherjee, A., Davis, C. J., Connolly, A. J., & Hikmet, N. (2018). User Response To Mandatory IT Use: A Coping Theory Perspective. *European Journal Of Information Systems*, *27*(4), 395–414. Https://Doi.Org/10.1057/S41303-017-0047-0

De Ridder, D., Kroese, F., Evers, C., Adriaanse, M., & Gillebaart, M. (2017). Healthy Diet: Health Impact, Prevalence, Correlates, And Interventions. *Psychology And Health*, *32*(8), 907–941. Https://Doi.Org/10.1080/08870446.2017.1316849

Eizirik, D. L., Pasquali, L., & Cnop, M. (2020). Pancreatic B-Cells In Type 1 And Type 2 Diabetes Mellitus: Different Pathways To Failure. *Nature Reviews Endocrinology*, *16*(7), 349–362. Https://Doi.Org/10.1038/S41574-020-0355-7

Gwatidzo, S. D., & Stewart Williams, J. (2017). Diabetes Mellitus Medication Use And Catastrophic Healthcare Expenditure Among Adults Aged 50+ Years In China And India: Results From The WHO Study On Global Ageing And Adult Health (SAGE). *BMC Geriatrics*, *17*(1), 1–15. Https://Doi.Org/10.1186/S12877-016-0408-X

Gwenzi, W., Mangori, L., Danha, C., Chaukura, N., Dunjana, N., & Sanganyado, E. (2018). Sources, Behaviour, And Environmental And Human Health Risks Of High-Technology Rare Earth Elements As Emerging Contaminants. *Science Of The Total Environment*, *636*, 299–313. Https://Doi.Org/10.1016/J.Scitotenv.2018.04.235

Harrington, D., & Henson, J. (2021). Physical Activity And Exercise In The Management Of Type 2 Diabetes: Where To Start? *Practical Diabetes*, *38*(5), 35-40b. Https://Doi.Org/10.1002/Pdi.2361

Koehler, K., Boron, J. B., Garvin, T. M., Bice, M. R., & Stevens, J. R. (2019). Differential Relationship Between Physical Activity And Intake Of Added Sugar And Nutrient-Dense Foods: A Cross-Sectional Analysis. *Appetite*, *140*, 91–97. Https://Doi.Org/10.1016/J.Appet.2019.05.010

Lawrence, E. M., Mollborn, S., & Hummer, R. A. (2017). Health Lifestyles Across The Transition To Adulthood: Implications For Health. *Social Science And Medicine*, *193*, 23–32. Https://Doi.Org/10.1016/J.Socscimed.2017.09.041

Ling, H. W. (2019). Why Are Diabetic Patients Still Having Hyperglycemia Despite Diet Regulation, Antiglycemic Medication And Insulin? *International Journal Of Diabetes & Metabolic Disorders*, *4*(2), 1–14. Https://Doi.Org/10.33140/Ijdmd.04.02.03

Medina-Remón, A., Kirwan, R., Lamuela-Raventós, R. M., & Estruch, R. (2018). Dietary Patterns And The Risk Of Obesity, Type 2 Diabetes Mellitus, Cardiovascular Diseases, Asthma, And Neurodegenerative

Diseases. *Critical Reviews In Food Science And Nutrition*, *58*(2), 262–296. Https://Doi.Org/10.1080/10408398.2016.1158690

Ogurtsova, K., Da Rocha Fernandes, J. D., Huang, Y., Linnenkamp, U., Guariguata, L., Cho, N. H., Cavan, D., Shaw, J. E., & Makaroff, L. E. (2017). IDF Diabetes Atlas: Global Estimates For The Prevalence Of Diabetes For 2015 And 2040. *Diabetes Research And Clinical Practice*, *128*, 40–50. Https://Doi.Org/10.1016/J.Diabres.2017.03.024

Olsson, T., Barcellos, L. F., & Alfredsson, L. (2016). Interactions Between Genetic, Lifestyle And Environmental Risk Factors For Multiple Sclerosis. *Nature Reviews Neurology*, *13*(1), 26–36. Https://Doi.Org/10.1038/Nrneurol.2016.187

Reddi Nagesh, M., Vijayakumar, N., & Bhavani, K. (2020). A Review On Diabetes Mellitus- An Annihilatory Metabolic Disorder. *Journal Of Pharmaceutical Sciences And Research*, *12*(2), 232–235. Https://Doi.Org/10.20959/Wjpps202010-17336

Ruissen, M. M., Regeer, H., Landstra, C. P., Schroijen, M., Jazet, I., Nijhoff, M. F., Pijl, H., Ballieux, B. E. P. B., Dekkers, O., Huisman, S. D., & De Koning, E. J. P. (2021). Increased Stress, Weight Gain And Less Exercise In Relation To Glycemic Control In People With Type 1 And Type 2 Diabetes During The COVID-19 Pandemic. *BMJ Open Diabetes Research And Care*, *9*(1), 1–7. Https://Doi.Org/10.1136/Bmjdrc-2020-002035

Saeedi, P., Petersohn, I., Salpea, P., Malanda, B., Karuranga, S., Unwin, N., Colagiuri, S., Guariguata, L., Motala, A. A., Ogurtsova, K., Shaw, J. E., Bright, D., & Williams, R. (2019). Global And Regional Diabetes Prevalence Estimates For 2019 And Projections For 2030 And 2045: Results From The International Diabetes Federation Diabetes Atlas, 9th Edition. *Diabetes Research And Clinical Practice*, *157*, 107843. Https://Doi.Org/10.1016/J.Diabres.2019.107843

Sujianto, U., & Riniatsih, I. (2022). Peningkatan Pengetahuan Dan Kesadaran Masyarakat Terhadap Deteksi Dini Penyakit Deabetes Melitus Dan Hipertensi. *Jurnal Pengabdian Perawat*, *1*(1), 1–6.

Https://Doi.Org/10.32584/Jpp.V1i1.1513

Susilowati, A. A., & Waskita, K. N. (2019). Pengaruh Pola Makan Terhadap Potensi Resiko Penyakit Diabetes Melitus. *Jurnal Mandala Pharmacon Indonesia*, *5*(01), 43–47. Https://Doi.Org/10.35311/Jmpi.V5i01.43

Susilowati, A., Rachmat, B., & Larasati, R. A. (2020). Hubungan Pola Konsumsi Serat Dengan Kontrol Glikemik Pada Diabetes Tipe 2 (T2D) Di Kecamatan Bogor Tengah [Relationship Of Fiber Consumption Patterns To Glycemic Control In Type 2 Diabetes (T2D) In Central Bogor Sub-District]. *Penelitian Gizi Dan Makanan (The Journal Of Nutrition And Food Research)*, *43*(1), 41–50. Https://Doi.Org/10.22435/Pgm.V43i1.3083

WHO. (2019). *Status, Determinants And Interventions On Cardiovascular Disease & Diabetes In Sri Lanka: Desk Review Of Research 2000-2018* (Issue October).

Zheng, Y., Ley, S. H., & Hu, F. B. (2018). Global Aetiology And Epidemiology Of Type 2 Diabetes Mellitus And Its Complications. *Nature Reviews Endocrinology*, *14*(2), 88–98. Https://Doi.Org/10.1038/Nrendo.2017.151