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Anxiety Response and Blood Glucose of Diabetes Mellitus Patients During the Covid-19 Pandemic

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Abstract

The phenomenon in someone diagnosed with diabetes mellitus in the development of emotional responses usually exacerbates the patient's situation in managing glucose. This research aimed to determine the relationship between anxiety reactions and blood glucose in individuals with diabetes mellitus during the Covid-19 epidemic. The study utilized a cross-sectional design. The population in this research was all individuals with diabetes mellitus in the hamlet of Ngrandulor who were taken by purposive sampling. The sample yielded 19 responses and was analyzed using the Spearman rank test. The findings indicated that the features of respondents' anxiety ranged from moderate to severe, with some of the respondents having blood glucose levels of more than 400 mg/dl as many as 6 respondents (31.6 percent). (31.6 percent). The statistical analysis findings based on study data produced a p-value of 0.007 with a value of r = 0.0579, therefore showing a p-value <0.05. The result of this research is to demonstrate that there is a connection between anxiety reactions and blood glucose in individuals with diabetes mellitus during the Covid-19 epidemic.

Keywords: Anxiety, Diabetes, Pandemic Covid-19

Introduction

The phenomena that happen in someone diagnosed with diabetes mellitus result in emotional responses, which in most cases aggravate the patient's state in terms of glucose management (Santoso, 2017). Denial, worry, tension, and despair are the most common emotional responses (Centres for Disease Control and Prevention, 2019). Individuals suffering from diabetes mellitus often experience elevated levels of stress, which may lead to various emotional reaction issues (Kalra et al., 2018). Patients develop anxiety due to the treatment required to maintain blood glucose levels, which involves diet and meal planning, medication administration, and physical activity. Patients are often concerned about the disease's consequences, which adds to their anxiety (Woods et al., 2020).

According to the World Health Organization, approximately 16.7 million people will have type 2 diabetes by 2045, an increase from the current prevalence of 75% of diabetes patients in 2017 (IDF, 2019). Regarding persons over 65, 19.9 percent of the population, or 111.2 million people, are predicted to reach 578 million by 2030 and 700 million by 2045 Regarding persons over 65, 19.9 percent of the population, or 111.2 million people, are predicted to reach 578 million by 2030 and 700 million by 2045 (Kemenkes, 2020).

The degree to which blood glucose is managed is referred to as blood glucose control. Blood glucose testing, which has traditionally been the most reliable technique of determining these values, may be used to define them (Mutyambizi et al., 2019). Diabetes mellitus is characterized by psychological issues, which contribute to the synthesis of neurohormones and

neurotransmitters that might interfere with glucose metabolism (Pourhanifeh et al., 2020). Emotional problems in people with Diabetes Mellitus may manifest themselves in the form of worry, dread, and even despair (Giri & Putra, 2020). One of the most prevalent psychological changes in people with diabetes is anxiety, which is one of the most common psychological alterations (Kalra et al., 2018).

Diabetes Mellitus is a chronic condition in which most of those who have it die due to complications (Sulistiana, 2020). Individuals with Diabetes Mellitus may have everyday lives as long as they maintain control over their emotional reactions (Kristianingrum et al., 2018). Accepting and befriending the sickness is the most acceptable method of dealing with the condition (Holton et al., 2021). Activities that need regularity and consistency over an extended length of time raise the risk of boredom and, eventually, non-compliance; in addition, these circumstances necessitate substantial financial expenditures (Ogundele, 2018). Although what a diabetic patient must manage indeed goes against the body's natural impulses, such as feeling extremely hungry even though food intake is restricted or the desire to drink sweets even though glucose intake is limited, it is also true that a diabetic patient must be able to control their blood glucose if they want to keep their blood glucose under control. The emotional reaction requires the highest level of awareness and effort (Jacques et al., 2019).

Materials and Methods

This study is a correlational analytic study that uses a cross-sectional design to investigate and analyze. The participants in this research were all persons with diabetes mellitus living in Ngrandulor Village, Peterongan Jombang District, and 36 people answered the survey's questions. The researchers picked respondents from the existing population using the purposive sampling approach, resulting in 19 participants in this study, which was representative of the overall population.

This research was conducted in August 2021 after STIKES Insan Medika Jombang obtained approval for its ethical feasibility via No. 011/KEPK/ICME/VIII/2021. The data collecting was completed in August 2021. The data was gathered by completing an anxiety questionnaire and using a blood glucose screening kit to measure glucose levels in the bloodstream. The data is then processed and evaluated using the Spearman Rank statistical test, which is a correlation test.

Results and Discussion

Table 1. Distribution of general characteristics of respondents

Characteristics of Respondents	f	%
Age		
< 45 Years	1	5,3
45-59 Years	14	73,6
60-70 Years	4	21,1
Education		
Primary school	15	79,0
Junior high school	2	10,5
Senior High School	2	10,5
Long Suffering		
<3 Years	5	26,3

Characteristics of Respondents	f	%
3-5 Years	6	31,6
>5 Years	8	42,1

The findings of the study, as shown in Table 1, indicate that the majority of respondents are between the ages of 45 and 59, with as many as 14 respondents (73.6 percent) falling within this age range, and that the majority of respondents have completed Primary school, with as many as 15 respondents (73.6 percent) falling within this age range (79.0 percent). Furthermore, almost half of those who answered the survey had had diabetes for more than 5 years, with 8 respondents having had the disease for more than 5 years (42.1 percent).

Table 2. Distribution of respondents' anxiety levels and blood glucose

Characteristics of Respondents	f	%
Anxiety		
Normal	3	15,8
Mild	5	26,3
Moderate	5	26,3
Severe	4	21,1
Very Severe	2	10,5
Blood Glucose		
<200 mg/dl	5	26,3
200 - 300 mg/dl	5	26,3
300 - 400 mg/dl	3	15,8
> 400 mg/dl	6	31,6

The research findings, as indicated in Table 2, the features of the respondents' anxiety ranged from moderate to severe, with some of the respondents having blood glucose levels more than 400 mg/dl, namely 6 respondents (31.6 percent).

Table 3. Results of Correlation Test Analysis

Anxiety	Blood Glucose								Total	
	< 200 mg/dl		200-300 mg/dl		300-400 mg/dl		>400 mg/dl			
	f	%	f	%	f	%	f	%	N	%
Normal	1	5,3	2	10,5	0	0	0	0	3	15,8
Mild	2	10,5	1	5,3	1	5,3	1	5,3	5	26,3
Mod	2	1	2	1	0	0	1	5	5	2

erate		0,5		0,5				,3		6,3
Severe	0	0	0	0	2	10,5	2	10,5	4	21,1
Very Severe	0	0	0	0	0	50	2	10,5	2	110,5
Total	5	26,3	5	26,3	3	15,8	6	31,6	19	100
P Value = 0.007 and r = 0.579										

According to the study's findings, as shown in Table 3, most respondents with blood glucose levels more than 400 mg/dl reported severe and very severe anxiety levels, accounting for 10.5 percent of those who answered the survey's questions. With a p-value of 0.007 and an r-value of 0.0579, the statistical analysis findings generated from the study data yielded a significant result. According to these findings, there is a link between anxiety reactions and blood glucose levels in persons with diabetes exposed to the Covid-19 epidemic. As a consequence of these findings, patients with diabetes mellitus are at greater risk of experiencing a rise in blood glucose levels and vice versa; to achieve a lower blood glucose level, persons with diabetes mellitus must reduce their stress levels.

Researchers discovered that respondents' anxiety symptoms varied from mild to severe, with some of the respondents having blood glucose levels more than 400 mg/dl and as many as six respondents having blood glucose levels greater than 400 mg/dl, according to the results (31.6 percent).

Lifestyle modification is an effective diabetic Mellitus preventive method that may help you avoid recurrence of the disease (Chen et al., 2017). An individual's reaction to a circumstance may be altered to minimize their anxiety (Leal et al., 2017). Various approaches may be used to reduce anxiety, including regular exercise and relaxation methods (Vaccaro, 2020). Patients with uncontrolled glucose levels will have a negative outlook and may be worried or anxious about something (Hendrieckx et al., 2019).

Individuals with diabetes mellitus have elevated blood glucose levels as a result of their anxiety. Hyperglycemia hurts those who suffer from it, and this condition is more likely to be chronic and to raise the chance of developing a variety of complications in persons with diabetes mellitus.

The findings revealed that most respondents (73.6 percent) were between the ages of 45 and 59, with the majority of respondents (79.0 percent) having completed elementary school education. 42.1 percent of those who answered the survey had diabetes mellitus for more than 5 years, over half of all who answered.

The chance of developing diabetes mellitus rises with age, particularly beyond the age of 45 (Simanjuntak et al., 2020). The older a person is, the more mature their ideas and functions will be (Darmiah, 2019). It will be more straightforward for someone to enhance their health and improve their quality of life if they have reached an advanced age and received a high education level (Darling-Hammond et al., 2020). The greater a person's level of education, the simpler it is for them to assimilate information (Aini & Purwasari, 2021).

One factor that leads to a rise in blood glucose levels is the individual's age. Diabetes mellitus is more frequent in adults over 40, contrary to what is often assumed. Because of insulin resistance, which is a condition in which the body generates adequate or even average insulin levels but has a lower number of insulin receptors, adults 40 years of age and older experience glucose insufficiency at a higher rate.

The statistical analysis results using the Spearman rank obtained a p-value of 0.007, indicating a p-value less than 0.05, indicating a relationship between anxiety responses and blood glucose in people with diabetes mellitus during the Covid-19 pandemic findings.

Physical and psychological difficulties connected with a person's disease might also lead to psychological problems in that individual (Pasaribu, 2020). People with diabetes mellitus who have suffered hypoglycemia or hyperglycemia will be given the option of either stabilizing glucose levels or not stabilizing glucose levels, depending on their circumstances (Bae, 2021). Patient outcomes have been proven to be affected by both hypoglycemia and hyperglycemia in a variety of ways. These include social, emotional, and physical implications (including death) (Kalra et al., 2018). Taking care of one's health helps prevent hypoglycemia and hyperglycemia (Id et al., 2019).

Individuals who have strong self-efficacy will positively affect their thinking, motivation, emotions, and physical health, making anxiety a difficult obstacle to overcome. Both hypoglycemia and hyperglycemia may generate anxiety, resulting in painful feelings; nevertheless, both states improve the patient's awareness to prevent this experience from recurring in the future. Because of earlier traumatic events, we now have a greater understanding of our surroundings. The patient's response to anxiety is a positive shift in their behavior that allows them to maintain a stable physical state continually.

Conclusion :

A wide range of features characterized respondents' worry, with some reporting blood glucose levels more than 400 mg/dl in a few cases. According to the researchers, results revealed a link between anxiety reactions and blood glucose levels in persons with diabetes mellitus during the Covid-19 epidemic.

REFERENCES

1. Aini, N.-, & Purwasari, M. D. (2021). Sikap dan Perilaku Pencegahan Covid-19 di Desa Kemuningsari Kidul Kabupaten Jember. *Jurnal Kesehatan*, *8*(3), 171–177. https://doi.org/10.25047/j-kes.v8i3.176
2. Bae, J. H. (2021). COVID-19 and diabetes mellitus: from pathophysiology to clinical management. *Nature Reviews Endocrinology*, *17*(January). https://doi.org/10.1038/s41574-020-00435-4
3. Centres for Disease Control and Prevention. (2019). Psychology of a Crisis 2019 Update CERC :

Psychology of a Crisis. *U.S. Department of Homeland Security*, 2–16. https://www.cdc.gov/healthcommunication/risk_communication.html

4. Chen, R., Ovbiagele, B., Feng, W., Carolina, S., & Carolina, S. (2017). *HHS Public Access*. *351*(4), 380–386. https://doi.org/10.1016/j.amjms.2016.01.011.Diabetes
5. Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, *24*(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791
6. Darmiah. (2019). Perkembangan Dan Faktor-Faktor Yang Mempengaruhi Emosi Anak Usia Mi. *PIONIR: Jurnal Pendidikan*, *8*(2), 94–104.
7. Giri, M. K. W., & Putra, A. (2020). *Perceptions and Needs Among Diabetes Patients: A Qualitative Study*. *394*(Icirad 2019), 202–208. https://doi.org/10.2991/assehr.k.200115.033
8. Hendrieckx, JA, H., LJ, B., & J., S. (2019). *Diabetes and emotional health: a practical guide for healthcare professionals supporting adults with Type 1 and Type 2 diabetes.* (2nd Editio). Diabetes UK.
9. Holton, E., Fitzpatrick, R., Maguire, R., Commins, S., Scharf, T., Lawlor, B., Johnson, N., Hannigan, C., & Power, J. M. (2021). Older users of a befriending service in ireland and the maintenance of personal autonomy during the covid-19 pandemic. *International Journal of Environmental Research and Public Health*, *18*(6), 1–16. https://doi.org/10.3390/ijerph18062788
10. Id, M. D. A., Malabu, U. H., Id, A. E. O. M., & Malau-aduli, B. S. (2019). *Enablers and barriers to effective diabetes self-management : A multi-national investigation*. *i*, 1–22.
11. IDF. (2019). *463 million People Living With Diabetes*.
12. Jacques, A., Chaaya, N., Beecher, K., Ali, S. A., Belmer, A., & Bartlett, S. (2019). The impact of sugar consumption on stress driven, emotional and addictive behaviors. *Neuroscience and Biobehavioral Reviews*, *103*(November 2018), 178–199. https://doi.org/10.1016/j.neubiorev.2019.05.021
13. Kalra, S., Jena, B. N., & Yeravdekar, R. (2018). Emotional and psychological needs of people with diabetes. *Indian Journal of Endocrinology and Metabolism*, *22*(5), 696–704. https://doi.org/10.4103/ijem.IJEM_579_17
14. Kemenkes, P. (2020). *Tetap Produktif, Cegah, dan Atasi Diabetes Melitus*.
15. Kristianingrum, N. D., Wiarsih, W., & Nursasi, A. Y. (2018). Perceived family support among older persons in diabetes mellitus self-management. *BMC Geriatrics*, *18*(Suppl 1), 1–5. https://doi.org/10.1186/s12877-018-0981-2
16. Leal, P. C., Goes, T. C., Silva, L. C. F. da, & Teixeira-Silva, F. (2017). *Trait vs. state anxiety in different threatening situations*. *39*(3), 147–157.
17. Mutyambizi, C., Booysen, F., Stokes, A., Pavlova, M., & Groot, W. (2019). Lifestyle and socio-economic inequalities in diabetes prevalence in South Africa: A decomposition analysis. *PLoS ONE*, *14*(1), 1–21. https://doi.org/10.1371/journal.pone.0211208
18. Ogundele, M. O. (2018). Behavioural and emotional disorders in childhood: A brief overview for paediatricians. *World Journal of Clinical Pediatrics*, *7*(1), 9–26. https://doi.org/10.5409/wjcp.v7.i1.9
19. Pasaribu, J. (2020). Hubungan Tingkat Stres Dan Ansietas Terhadap Mekanisme Koping Penderita Kanker. *Jurnal Mutiara Ners*, *3*(1), 28–36.
20. Pourhanifeh, M. H., Hosseinzadeh, A., Dehdashtian, E., Hemati, K., & Mehrzadi, S. (2020). Melatonin: New insights on its therapeutic properties in diabetic complications. *Diabetology and Metabolic Syndrome*, *12*(1), 1–20. https://doi.org/10.1186/s13098-020-00537-z
21. Santoso, I. (2017). *Analisis Hubungan Determinan Sosial Terhadap Kualitas Hidup Penderita Dm*

Tipe 2 Di Rsud Labuang Baji Kota Makassar [Universitas Hasanuddin]. https://doi.org/0803973233

22. Simanjuntak, G. V., Sinaga, J., & Simamora, M. (2020). Ankle Brachial Index Dan Sensitifitas Kaki Pada Pasien DM Tipe II. *Jurnal Mutiara Ners*, *3*(2), 89–94.
23. Sulistiana, R. (2020). Factors associated with mental health disorders among elderly with diabetes melitus in Indonesia. *Jurusan Ilmu Kesehatan Masyarakat Universitas Negeri Semarang*, 78.
24. Vaccaro, M. G. (2020). *Reduction of COVID-19 Anxiety Levels Through Relaxation Techniques : A Study Carried Out in Northern Spain on a Sample of Young University Students*. *11*(August), 1–6. https://doi.org/10.3389/fpsyg.2020.02038
25. Woods, J. A., Hutchinson, N. T., Powers, S. K., Roberts, W. O., Gomez-cabrera, M. C., Radak, Z., Berkes, I., Boros, A., & Boldogh, I. (2020). The COVID-19 pandemic and physical activity Sports Medicine and Health Science. *Sport Medicine and Health Science*, *2*(January), 55–64.