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Research Article

Correlation Between Academic Stress and Random Blood Glucose Levels in Medical Laboratory Technology (D.IV) Students at Kadiri University

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Abstract

Academic stress is a challenging condition faced by students due to academic pressure, which can affect physiological functions such as blood glucose levels. This study aimed to assess the correlation between academic stress levels and blood glucose levels among students enrolled in the Medical Laboratory Technology (D.IV) Study Program at Kadiri University. This was a quantitative, non-experimental study using a cross-sectional design. The participants were 31 students, of whom 28 met the inclusion criteria. The Perceived Sources of Academic Stress (PSAS) questionnaire was used to measure academic stress levels, while the One Tech Medical Komodo 200 photometer was used to measure random blood glucose levels. Data were analyzed using Pearson's correlation test. The findings showed that most participants experienced moderate stress (71.43%) and had normal blood glucose levels (53.57%). Pearson's correlation analysis yielded $r = 0.045$ and $p = 0.819$ ($p > 0.05$), indicating no significant relationship between academic stress and blood glucose levels. These results suggest that academic stress did not have a statistically or practically significant effect on blood glucose levels among the students.

Keywords: blood glucose level, academic stress, students

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1 Introduction

Diabetes mellitus (DM) is a chronic metabolic disease characterized by elevated blood glucose levels resulting from insulin deficiency or resistance. It is classified into type 1, caused by the body's failure to produce insulin, and type 2, caused by ineffective insulin utilization. Management of type 2 DM includes proper diet, regular exercise, and glycemic control. According to the International Diabetes Federation (IDF) [1], there were 537 million people aged 20–79 with diabetes globally in 2021, causing 6.7 million deaths. Indonesia ranked fifth worldwide, with a prevalence of 10.6% (19.47 million cases), and 81% of diabetics reside in low- and middle-income countries, with 44% undiagnosed. Data from Riset Kesehatan Dasar (Riskesdas) [2] show that the prevalence of DM in Indonesians over 15 years increased from 1.5% in 2013 to 2% in 2018. East Java ranks fifth among provinces with the highest DM prevalence [3].

Blood glucose originates from carbohydrate metabolism and is stored as glycogen in skeletal muscles and the liver. Elevated glucose levels in DM patients may be triggered by diet, physical inactivity, medication, obesity, genetics, and stress. Stress triggers hormonal release—adrenaline, catecholamines, glucagon, glucocorticoids, and cortisol—that inhibits insulin action and raises glucose levels [4].

Academic stress refers to the anxiety or strain resulting from academic demands, such as excessive assignments, time constraints, or examination pressure [5]. Students in the Medical Laboratory Technology (TLM) Study Program carry heavy academic workloads, making them prone to sustained stress, which may affect metabolic function, including glucose regulation. This study aimed to determine the correlation between academic stress levels and random blood glucose levels among TLM students at Kadiri University.

2 Method

This quantitative, non-experimental study used a cross-sectional design to examine the correlation between academic stress and blood glucose levels. The study was conducted in December 2024 at the Hematology Laboratory of Kadiri University and the Clinical Laboratory of Bhakti Wiyata Health Sciences Institute, Kediri.

The population comprised 31 active TLM students, and 28 met the inclusion criteria: (1) currently enrolled in semesters 1, 3, 5, or 7, (2) not taking medication, and (3) not following a special diet plan. Academic stress was assessed using the Perceived Sources of Academic Stress (PSAS) questionnaire developed by Bedewy and Gabriel, adapted into Indonesian by Ramadhani and Mastuti [6]. Random blood glucose levels were measured using the One Tech Medical Komodo 200 photometer.

Data analysis employed Pearson's correlation for normally distributed data and Spearman's correlation otherwise. Normality and homogeneity tests were performed before correlation analysis. SPSS version 24 was used, with a 95% confidence level ($\alpha = 0.05$).

3 Result and Discussion

Table 1. Frequency of Academic Stress Levels

No	Academic Stress Level	Frequency	Percentage (%)
1	Low	0	0.00
2	Moderate	20	71.43
3	High	8	28.57
Total		**28**	**100**

Most students (71.43%) reported moderate academic stress, and 28.57% experienced high stress.

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Table 2. Frequency of Random Blood Glucose Levels

No	Blood Glucose Level	Frequency	Percentage (%)
1	Normal	15	53.57
2	High	13	46.43
Total		**28**	**100**

Most respondents had normal glucose levels (53.57%), while nearly half (46.43%) showed elevated levels.

Table 3. Cross-tabulation of Academic Stress Levels and Blood Glucose Levels

Academic Stress	Normal (n,%)	High (n,%)	Total (n,%)
Moderate	12 (42.86)	8 (28.57)	20 (71.43)
High	3 (10.71)	5 (17.85)	8 (28.57)
Total	**15 (53.57)**	**13 (46.43)**	**28 (100)**

Table 4. Pearson Correlation Analysis

Parameter	r	p-value
Academic Stress vs Blood Glucose	0.045	0.819

The correlation coefficient ($r = 0.045$, $p = 0.819$) indicates no statistically significant relationship between academic stress and random blood glucose levels. The findings revealed that most TLM students experienced moderate academic stress, primarily due to academic workload, deadlines, and exam-related anxiety. More than half had normal glucose levels, consistent with young adult physiology, where metabolic function and insulin sensitivity are generally optimal. Regular physical activity among students also contributes to stable glucose regulation.

The absence of a significant correlation between stress and glucose aligns with Sayekti and Yulistari [7], who found no significant association between stress levels and random blood glucose in final-year D.III TLM students. While stress triggers glucose-elevating hormones, effective coping strategies, adequate rest, and balanced diets can mitigate these effects.

Other factors such as genetics, eating patterns, and exercise frequency likely influence glucose regulation more than academic stress alone. Although the regression coefficient was positive, indicating a slight upward trend, it was statistically and practically insignificant.

4 Conclusion

Among Medical Laboratory Technology students at Kadiri University, none experienced low academic stress, 71.43% had moderate stress, and 28.57% had high stress. Random blood glucose measurements showed that 53.57% had normal levels and 46.43% had elevated levels. Pearson's correlation analysis ($r = 0.045$, $p = 0.819$) demonstrated no significant relationship between academic stress and blood glucose levels.

5 Declarations

5.1 Acknowledgements

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5.2 Author contributions

Mochamad Hanif Hilmi conducted data collection and laboratory measurements of random blood glucose levels. Lisa Savitri supervised the study design, provided methodological guidance, and reviewed the manuscript critically. Elfred Rinaldo Kasimo contributed to instrument preparation, data verification, and literature analysis. Dita Apriana Dwi Astuti performed statistical analysis, interpreted the results, and assisted in manuscript drafting. All authors read and approved the final version of the manuscript and agreed to be accountable for the accuracy and integrity of the work.

5.3 Ethics

This study was approved by the Research Ethics Committee of the Faculty of Health Sciences, Kadiri University (Approval No.: 024/KEPK-FIKES/XII/2024). All participants provided informed consent prior to data collection, and confidentiality of respondent data was maintained throughout the research process.

5.4 Conflict of Interest

The authors declare no conflict of interest.

5.5 Funding Statement

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6 Bibliography

[1]. International Diabetes Federation (IDF), "IDF Diabetes Atlas: Diabetes Around the World in 2021," *International Diabetes Federation*, 2021.

[2]. Riset Kesehatan Dasar (RISKESDAS), *Badan Penelitian dan Pengembangan Kesehatan, Kementerian Kesehatan Republik Indonesia*, Jakarta, 2018.

[3]. Kusuma, T. A., Drajati, Z. A., Ningrum, B. P., Istiqomah, I. I., & Sidjabat, F. N., "Analisis Spasial Faktor Risiko Hipertensi dan Diabetes Mellitus Berdasarkan Screening PTM Berbasis GIS di Wilayah Kerja Puskesmas Pesantren II Kota Kediri," *Askara Jurnal Kesehatan Komunitas*, vol. 1, no. 1, pp. 8–19, 2024.

[4]. Fatih, A. H., "Hubungan Tingkat Stres Dengan Kadar Gula Darah Pada Penderita Diabetes Mellitus Di Kota Bandung," *Jurnal Kesehatan*, vol. 3, no. 1, pp. 12–19, 2023.

[5]. Barseli, M., Ifdil, I., & Nikmarijal, N., "Konsep Stres Akademik Siswa," *Jurnal Konseling dan Pendidikan*, vol. 5, no. 3, pp. 143–148, 2017.

[6]. Ramadhani, I. R., & Mastuti, E., "Hubungan antara Stres Akademik dengan Emotional Eating pada Mahasiswa," *Buletin Riset Psikologi dan Kesehatan Mental (BRPKM)*, vol. 2, no. 1, 2022. doi: 10.20473/brpkm.v2i1.36545.

[7]. Sayekti, S., & Yulistari, N., "Hubungan Tingkat Stres Dengan Kadar Glukosa Darah Sewaktu Pada Mahasiswa Semester 6 Program Studi DIII Teknologi Laboratorium Medis," *Jurnal Insan Cendekia*, vol. 9, no. 2, pp. 121–129, 2022. doi: 10.35874/jic.v9i2.1081.