

**THE RELATIONSHIP BETWEEN DIET, PHYSICAL ACTIVITY, KNOWLEDGE,
GENETIC HISTORY, AND STRESS WITH THE INCIDENCE OF DIABETES
MELLITUS IN THE WORKING AREA OF KAMPUNG BALI HEALTH CENTER,
BENGKULU CITY.**

**Anggun Kencana^{1*}, Jenni Julianti¹, Feni Yumara¹, Berli Bahrul Ulum¹, Harum Sri
Dona¹, Gina Nordiana¹**

¹Public Health Study Program, Faculty of Health Sciences
Universitas Muhammadiyah Bengkulu

*Correspondent: *feniyumara8@gmail.com*

ABSTRACT

Background: Diabetes Mellitus (DM) is a chronic metabolic disease marked by hyperglycemia that leads to various complications and remains a major public health issue. Several behavioral, genetic, and psychological factors influence its occurrence. Objective: To determine the relationship between diet, physical activity, knowledge, genetic history, and stress with DM incidence in the working area of Kampung Bali Public Health Center Bengkulu City. Method: This research used a quantitative approach with a cross-sectional design. A total of 60 respondents were selected using purposive sampling. Data were collected using validated questionnaires and analyzed using Chi-Square test. Results: Most respondents had poor diet (70%), low physical activity (51.7%), and 53.3% experienced mild stress. Chi-square analysis showed no significant relationship between diet ($p=0.315$), physical activity ($p=0.315$), knowledge ($p=1.000$), and genetic history ($p=1.000$) with DM incidence. However, stress had a significant relationship with DM ($p=0.001$). Conclusion: Among the five variables examined, only stress was significantly associated with DM incidence. Stress management interventions are crucial to reduce the risk of DM in the community.

Keywords: Diabetes Mellitus, Diet, Physical Activity, Knowledge, Stress

INTRODUCTION

Diabetes Mellitus (DM) is a chronic metabolic disease characterized by increased blood glucose levels due to impaired insulin secretion or work. This disease is one of the causes of the highest morbidity and mortality in non-communicable diseases. Globally, the number of people with DM continues to increase and is projected to reach 783 million people by 2045.

In Indonesia, the number of DM sufferers in 2021 reached 19.5 million people and is expected to increase significantly in the following years. Various risk factors include unhealthy diet, low physical activity, stress, hereditary factors, and public knowledge about DM.

Previous research has stated that diet and physical activity are important factors in controlling DM, but recent research has also shown that psychological factors such as stress have a major contribution to the occurrence of DM. Therefore, this study was conducted to analyze these factors in the community in the working area of the Kampung Bali Health Center, Bengkulu City.

METHODS

This type of research is quantitative with a cross-sectional design. The research location will be carried out in the working area of the Kampung Bali Health Center, Bengkulu City in October 2025. The sample consisted of 60 respondents who were selected purposively according to the inclusion criteria.

The research instruments were questionnaires on diet, physical activity, knowledge, genetic history, and stress scale PSS-10 which had been tested for validity and reliability. Data analysis was carried out univariate and bivariate using the Chi-Square test with a significance level of $p < 0.05$.

RESULTS AND DISCUSSION

1. Diet: 70% of respondents have a poor diet.
2. Physical activity: 51.7% less active.
3. Knowledge: 50% good and 50% less.
4. Genetic history: 50% have a family history of DM.
5. Stress: 53.3% experienced mild stress.
6. Incidence of DM: 51.7% of respondents had DM.

Variabel	p-value	Keterangan
Pola makan	0.315	Tidak signifikan
Aktivitas fisik	0.315	Tidak signifikan
Pengetahuan	1.000	Tidak signifikan
Riwayat genetik	1.000	Tidak signifikan
Stres	0.001	Signifikan

Only stress has a meaningful relationship with the incidence of Diabetes Mellitus.

DISCUSSION

Research shows that diet, physical activity, knowledge, and genetic history are not significantly related to the incidence of DM. This can happen because these variables are influenced by many other factors, such as long-term habits, individual metabolism, and lifestyle.

However, stress shows a significant association with DM. Prolonged stress triggers an increase in the hormone cortisol causing insulin resistance and increased blood glucose levels. These findings are in line with the theory of Guyton & Hall (2020) as well as previous research that showed a strong link between stress and DM.

These results confirm the importance of mental health interventions in the prevention of non-communicable diseases, particularly DM.

CONCLUSION

Based on the results of research on the relationship between diet, physical activity, knowledge, genetic history, and stress to the incidence of Diabetes Mellitus (DM) in the working area of the Kampung Bali Health Center, Bengkulu City, it can be concluded that the incidence of DM in the community is still relatively high, which is 51.7%. This shows that more than half of the respondents have been diagnosed with DM, so this problem requires serious attention from

health workers and the public. Characteristic analysis showed that most of the respondents had poor diets, low physical activity, and varying levels of stress. However, the results of statistical tests showed that diet, physical activity, knowledge, and genetic history did not have a significant relationship with the incidence of DM. The insignificance of these four variables can be influenced by various factors such as respondents' lifestyle habits, duration of exposure to risks, and more complex lifestyle factors. Meanwhile, the stress variable showed a significant relationship with the incidence of DM, where respondents with moderate to severe stress experienced DM more than respondents who had mild stress. This indicates that psychological aspects play an important role in influencing blood glucose levels through hormonal mechanisms, especially through an increase in the hormone cortisol which has an impact on insulin resistance. Overall, this study confirms that although lifestyle factors such as diet and physical activity remain important, stress is a more dominant factor affecting the metabolic condition of respondents in this study area. Therefore, efforts to prevent and control DM not only need to focus on nutrition education and physical activity, but also must pay attention to mental health and stress management in an ongoing manner to reduce the risk of disease comprehensively.

RECOMENDATION

Based on the results of studies showing that stress is a significant factor related to the incidence of Diabetes Mellitus, it is recommended that the Kampung Bali Health Center improve education and intervention programs that not only focus on healthy diet and physical activity, but also on integrated stress management. Puskesmas can organize routine activities such as stress management counseling, relaxation training, fitness gymnastics, and other mental health support activities through the PTM Posbindu. In addition, cooperation between health workers and psychologists or counselors is needed to provide counseling services for people who experience quite high psychological pressure. For people, it's important to start implementing a holistic healthy lifestyle, including regulating diet by reducing foods high in sugar and fat, increasing physical activity for at least 150 minutes per week, and implementing stress management techniques such as meditation, deep breathing, or hobby activities that can help lower mental tension. The community is also expected to routinely check blood sugar levels to detect metabolic disorders early. For subsequent researchers, it is recommended to use a larger sample size and add other variables such as body mass index, daily sugar consumption habits, sleep quality, and other psychosocial conditions to get a more comprehensive picture of the factors that influence the incidence of Diabetes Mellitus. The use of multivariate analyses such as logistic regression is also recommended to determine the most dominant variables in influencing DM risk. Further research can also develop community-based interventions as a measure to evaluate the effectiveness of DM control programs in the community.

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