ANALYSIS OF RISK FACTORS FOR THE INCIDENT OF DIABETES MELLITUS IN ADOLESCENTS IN HIGH SCHOOLS IN DELI SERDANG DISTRICT AND MEDAN CITY IN 2021

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Abstract

Diabetes Mellitus (DM) is an important health problem for women of reproductive age (15-49 years). Diabetes can cause pregnancy difficulties such as miscarriage. The impact caused by pregnant mothers with DM is a high risk of excess weight gain, preeclampsia, eclampsia and even maternal death. These impacts can be prevented by encouraging young women to consume healthy food and exercise. According to 2018 Basic Health Research Data (Riskesdas), the prevalence of diabetes in Indonesia is 10.9%. The largest age category of DM sufferers is in the 55-64 year age range at 6.3%. DM sufferers in Indonesia are more female at 1.8%) than men at 1.2%. The prevalence of DM sufferers in urban areas is 1.9% and 1.0% in rural areas. There are 61.3% of people consume sugary drinks more than once a day. 1 in 3 adolescents have an average consumption of sugary drinks 1 – 6 times a week, far exceeding the recommended sugar consumption of <50 g per day.The purpose of this study is to analyze the Risk Factors for the occurrence of Diabetes Mellitus in Senior High Schools in DeliSerdang Regency and Medan City. Cross sectional research design. Research Results: It was found that out of 200 respondents there were 1 (one) person at risk with blood sugar levels above normal, 203 mg/dL,18% were obese, 64% had irregular sports activities, 56 % consume junk food. In this study, there was one respondent who was at risk of diabetes mellitus by being obese, consuming junk food and having irregular exercise activities. It is hoped that teenagers in Senior High Schools in Deli Serdang Regency and Medan City will improve their diet (healthy food) and exercise regularly so that their body weight is ideal.

Keywords: Blood Sugar Levels, Weight, Food.

1. INTRODUCTION

The epidemiological transition or change in disease patterns that Indonesia is experiencing is marked by increasing deaths and morbidity due to non-communicable diseases (NCDs) such as stroke, heart disease, cancer, diabetes mellitus and others. Meanwhile, morbidity and mortality due to NCDs are decreasing, although disease prevalence is still quite high. This trend of morbidity and death due to NCDs causes the public's high need for health services, especially referral services at hospitals (1).

DM is a non-communicable disease that occurs due to increased blood sugar (glucose) levels due to insulin deficiency or resistance in the body. DM is an important health problem for women of reproductive age (15-49 years) (2). Uncontrolled or undiagnosed DM at this age can result in complications during pregnancy that threaten the mother's life or difficult delivery, and complications that threaten the life and health of the newborn child (3).

Babies born to mothers who have a history of gestational diabetes mellitus (GDM) will be at risk of developing type 2 DM. Aleida said diabetes mellitus during pregnancy (GDM) is a sign of ongoing diabetes and women of childbearing age will be at increased risk of developing diabetes mellitus during pregnancy. have an persistent diabetes (4).

Indonesia is one of the 22 countries and territories in the IDF WP territory. Based on data from the International Diabetes Federation (IDF) 2021, Indonesia is the country with the 5th

highest number of people with diabetes mellitus (DM) in the world, as many as 19.5 million sufferers. This number is expected to increase to 28.6 million by 2045 if not treated immediately given its high prevalence. In 2023, according to the Ministry of Health's records, the prevalence is 11.7 percent, and continues to increase. This situation is worrying and could threaten Indonesia's efforts to realize a Golden Indonesia 2045.(6).

According to 2018 Basic Health Research Data (Riskesdas), the prevalence of diabetes in Indonesia is 10.9%. The largest age category of DM sufferers is in the 55-64 year age range at 6.3%. DM sufferers in Indonesia are more female at 1.8%) than men at 1.2%. The prevalence of DM sufferers in urban areas is 1.9% and 1.0% in rural areas. (7). The Indonesian Pediatrician Association (IDAI) noted that in November 2021 as many as 1,346 children had diabetes. In fact, 60 to 70 percent of diabetic children have experienced high sugar levels. Therefore, early detection of diabetes is very important. (9).

Nina Widyasari's research in 2017 (8) stated that there was a relationship between the ages of respondents (p value = 0.005); respondent's gender (p value = 0.000); the respondent's latest education (p value = 0.001) and the risk of Diabetes Mellitus and there is a significant relationship between the respondent's age (p value = 0.007); gender (p value = 0.000); education (p value = 0.000) with the risk of dyslipidemia. Furthermore, in Juliandi's 2020 research (2), data was obtained that respondents with high school education were 25 respondents (62.5%), then respondents with junior high school education were 9 respondents (22.5%), and the fewest respondents with academy education were 6 respondents. (15%) and the majority of respondents' education level was high school, namely 25 respondents (62.5%). Based on the data above, researchers want to find out what are the Risk Factors for the Incidence of Diabetes Mellitus in Adolescents in Senior High Schools in Deli Serdang Regency and Medan City in 2021

1.1 Research Purposes

1.1.1 General purpose :

To determine the risk factors for diabetes mellitus in adolescents in Senior High Schools in Deli Serdang Regency and Medan City

1.1.2 Special purpose :

1) Understand the characteristics of adolescents who are at risk of diabetes mellitus
2) Know the characteristics of parents who are at risk of diabetes mellitus

1.1.3 Benefits of research:

The research we conducted regarding risk factors for diabetes mellitus in adolescents at Senior High Schools in Deli Serdang Regency and Medan City is expected to provide benefits for adolescents, namely risk factors for diabetes mellitus in adolescents.

2. METHODOLOGY

This research is an-analytic study with a cross-sectional research design.

2.1 Population and Sample

A population is an entire group consisting of people or objects that meet the criteria set by the researcher. The population in this study is all high school students in Deli Serdang Regency and Medan City (400 people). After using the Slovin Formula, a sample of 200 people was obtained. Inclusion criteria are Present during the research and Willing to be a respondent

Ethics Clearance For this research, the researcher received a recommendation from the Medan Ministry of Health Polytechnic institution, namely the Health Research Ethics Committee of the Medan Ministry of Health Polytechnic Number: 01.1829/KEPK/POLTEKKES KEMENKES MEDAN 2021 dated July 2021.
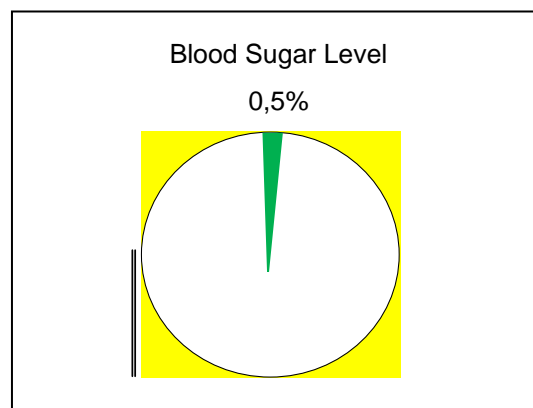
3. RESULTS AND DISCUSSION

3.1 Research sites

This research was carried out at Pancur Batu People's College High School, Jalan Let Jend Jamin Ginting, Deli Sedang Regency and Dharma Pancasila Private High School, Jalan Dr Mansyur, Medan City. Data collection in this research was carried out from August to October 2021. Data collection was carried out online because during Covid-19 there was no direct learning process at school. Data collection activities for blood sugar levels were carried out twice, with details of 50 people at each meeting. This is done to prevent crowds and continue implementing the Covid-19 Health Protocol.

3.2 Result

3.1.1 Blood Sugar Levels

Blood sugar levels were checked for 200 respondents without fasting at school and data on adolescent diabetes mellitus risk factors can be seen in the following table:

***Picture 1.** Blood Sugar Levels, People's College Foundation High School Students, Regency Deli Serdang and SMA Dharma Pancasila Medan*

According on Picture 1. It can be seen that 199 people (99.5%) of respondents' blood sugar was normal and there was one person (0.5%) who was abnormal.

***Table 1.** Characteristics of Respondents, People's Education Foundation High School Students, Deli Serdang Regency and SMA Dharma Pancasila Medan*

Respondent's weight	F	%
Normal	164	82.0
Obesity	36	18.0
Total	200	100.0
Sport Activity	Frequency	Percent
Regular	72	36.0
Irregular	128	64.0
Total	200	100.0
Food Frequently Consumed	Frequency	Percent
Healthy food	88	44.0
Junk Food	112	56.0
Total	200	100.0

Based on Table 2, it is known that, of the 200 respondents, 18% were obese, 64% had irregular exercise activities, 56% consumed junk food.

3.1.2. Discussion

3.1.2.1. Blood Glucose Levels

The research results found that there was 1 (one) person or 0.5% whose blood sugar levels were abnormal.

Diabetes mellitus is known by the public as diabetes or a chronic disease which is characterized by an increase in blood sugar levels as a result of a disruption in the metabolic system in the body. This can be caused by the failure of the pancreas to produce the insulin hormone as needed (10). DM sufferers are still allowed to eat like normal people but must be able to control it both in terms of eating schedule, amount and type of food consumed (Sudarmingsih, 2006).

3.1.2.2. Respondent Characteristics

a.   Body weight

It is known that 18% of respondents are obese. The causes of type 1 DM and type 2 DM are closely related to unhealthy lifestyles such as excess body weight, obesity, lack of physical activity, hypertension, dyslipidemia, unhealthy/unbalanced diet, and smoking.

b.   Sports

It is known that 64% do exercise irregularly. Daily activities or daily activities do not include physical exercise even though it is recommended to be active every day. Apart from maintaining fitness, physical exercise can also reduce weight and improve insulin sensitivity, thereby improving blood glucose control.

c.   Foods that are liked and consumed frequently

It is known that 56% of respondents consume junk food on a daily basis. Diet is a certain way of regulating the amount and type of food intake with the aim of maintaining health, nutritional status, as well as preventing and/or assisting the healing process.

According to Basic Health Research Data (Riskesdas) 2018, There are 61.3% of people who consume sweet drinks more than once a day. 1 in 3 teenagers on average consume sweet drinks 1 – 6 times a week, far exceeding the recommended sugar consumption of <50 g per day.

4.   CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusion

The risk factors for Diabetes obtained in Senior High School in Deli Serdang Regency and Medan City are: It is known from the Characteristics of Responders where 18% of their body weight is obese, 64% are irregular sports activities, 56% consume junk food.

4.2. Recommendations

Respondent or Students at Senior High Schools in Deli Serdang Regency and Medan City are exercise regularly so that their body weight is ideal, expected to improve their diet (healthy food) and then their blood sugar levels becomes normal .

ACKNOWLEDGEMENTS

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