ADOLESCENT KNOWLEDGE ABOUT DIABETES MELLITUS IN SMAN 1 KRAKSAAN PROBOLINGGO REGENCY

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Abstract. Diabetes mellitus (DM) is a health problem whose cases in the world continue to increase every year. Diabetes mellitus that occurs in adolescents is generally type 1 diabetes mellitus caused by autoimmune or genetic causes. However, type 2 diabetes mellitus is now also suffered by many adolescents due to unhealthy lifestyle changes, obesity, genetics and knowledge. The purpose of this study was to identify adolescents' knowledge about diabetes mellitus based on the characteristics of adolescent DM, family history of DM, food consumption habits, and sources of information. This study used a descriptive research method with a cross-sectional approach. The population consisted of 368 adolescents with a sample calculated using the Slovin formula using an error rate of (0.05) resulting in a sample of 192 adolescents. The sampling technique used was purposive sampling. Data collection was obtained by means of respondents filling out a questionnaire in the form of a Google form. The results of the study on the knowledge of adolescents about diabetes mellitus at SMAN 1 Kraksaan, Probolinggo Regency, most (59%) had good knowledge, almost half (34%) had moderate knowledge and a small portion (7%) had poor knowledge. It is hoped that this good knowledge will be useful for adolescents as someone who are in a fairly young phase to change their lifestyle to become healthier based on the knowledge they have in order to avoid diabetes mellitus.

Keywords: Knowledge, Adolescents, Diabetes Mellitus.

1   INTRODUCTION

Diabetes mellitus (DM) is a health problem whose cases in the world continue to increase every year. The prevalence of diabetes mellitus cases among adolescents in Indonesia also continues to increase. Diabetes mellitus that occurs in adolescents is generally type 1 diabetes mellitus which is caused by autoimmune or genetic causes. However, many adolescents suffer from type 2 diabetes mellitus. The increase in cases of diabetes mellitus in adolescents is caused by unhealthy lifestyles such as following the trend of eating fast food and not paying attention to a healthy and balanced lifestyle (Qifti et al., 2020; Zemba et al., 2023; Danne et al., 2018).

Based on Riskesdas, the prevalence of diabetes mellitus in Indonesia at the age of 15 years and over has increased to 2%, namely 713,783 sufferers (Riskesdas, 2018). In Indonesia, according to the International Diabetes Federation (IDF), it is predicted that there will be an increase in cases of diabetes mellitus from 10.7 million in 2019 to 13.7 million in 2030 (Milita et al., 2019; Mangla et al., 2019). In East Java, based on the East Java Health Profile in 2021, there were 929,810 sufferers. Meanwhile, there were 22,325 diabetes mellitus sufferers in Probolinggo Regency (East Java Health Office, 2021). One of the sub-districts in Probolinggo Regency which has the most diabetes mellitus sufferers is Kraksaan Sub-district, with 1,336 sufferers recorded (Probolinggo District Health Office, 2021).

Diabetes mellitus occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin it produces (Mukti et al., 2021; Hapunda et

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al., 2017). Diabetes mellitus is characterized by symptoms such as frequent urination, constant thirst, constant feeling of hunger, significant weight loss and/or obesity. If this disease is experienced for a long time and does not receive proper treatment, it can damage several body systems, such as the blood vessels, heart, kidneys, eyes, which can lead to blindness, kidney failure, nerve damage or stroke, and even death (Tim Bumi Medika, 2017).

Diabetes mellitus in adolescents can occur due to several risk factors. Knowledge is one of the factors that influence the occurrence of diabetes mellitus because there is a relationship between knowledge and risk factors for diabetes mellitus (Silalahi, 2019; Lindholm et al., 2022). Other factors that also influence the occurrence of diabetes mellitus in adolescents are heredity, unhealthy lifestyle, cultural, economic, and social changes, changes in diet such as increased consumption of foods or drinks that are high in sugar, lack of physical activity, and obesity (Hardianto, 2021; Sagna et al, 2023; De Bock et al., 2022). Adolescents have a penchant for eating fast food or junk food which contains high calories from sugar or fat with little fiber, vitamins, and minerals. In addition, the development of technology has an impact on reducing physical activity in adolescents. Juvenile delinquency behavior such as smoking and alcohol consumption is also often done by adolescents. These conditions are at risk of causing diabetes mellitus in adolescents (Silalahi, 2019).

The government has prepared all forms of treatment for diabetes mellitus through the health ministry. One of the programs that has been and is still being implemented by the Ministry of Health is Integrated Services for Non-Communicable Diseases (PANDU PTM) in First Level Health Facilities (Darmawan, 2019; Lesage et al., 2021). In addition, it is necessary to increase the knowledge of sufferers, the community, and especially adolescents about diabetes mellitus and its prevention. So it is hoped that increasing knowledge about this disease can reduce and prevent the increase in diabetes mellitus sufferers who are also at risk for adolescents. Therefore, researchers are interested in conducting research on adolescent knowledge about diabetes mellitus at SMAN 1 Kraksaan.

2   METHOD

This research is a type of descriptive research with a cross-sectional approach. The population in this study were all adolescents in class XI for the 2022/2023 academic year at SMAN 1 Kraksaan, totaling 368 students. Samples were taken using a simple random sampling technique at random with the number of samples calculated using the Slovin formula resulting in 192 adolescents. The instrument of this research is a questionnaire in the form of a Google form. This questionnaire contains data on characteristics, namely gender, juvenile DM, family history of DM, food consumption habits, and sources of information as well as 20 questions about knowledge about diabetes mellitus. A diabetes knowledge questionnaire using the Guttman scale with a category of a good level of knowledge if the score is 80-100%, moderate knowledge if the score is 60-79%, and knowledge is lacking if the score is <60%. Data collection was carried out by giving a Google Form questionnaire to representatives of all respondents

to be distributed via the WhatsApp group for each class and explaining the filling procedure with a time limit for filling out the questionnaire of 20 minutes within a time span of 1x24 hours. Data was obtained by respondents agreeing to consent and then filling in a Google form link consisting of name, gender, not/suffering from DM, whether or not they have family with DM, food consumption habits, sources of information and a knowledge questionnaire about DM. Then the researcher scored the results of filling out the Google Form questionnaire and analyzed the respondent's level of knowledge according to the objectives of the research. Data analysis in this study was a descriptive analysis by presenting data on patient characteristics in the form of frequencies and percentages in the frequency distribution table. Ethical Approval was obtained from the Ethics Institute of the Surabaya Ministry of Health Poltekkes No. EA/1550/KEPK-Poltekkes_Sby/V/2023.

3   RESULTS

The research data presented in this study are characteristic data and knowledge of adolescents about diabetes mellitus at SMAN 1 Kraksaan, Probolinggo Regency.

Table 1. Characteristics of Adolescents at SMAN 1 Kraksaan Probolinggo Regency

No	Characteristic	Category	Frequency	Percentage
1.	Gender	Male	43	22
		Female	149	78
		Total	**192**	**100**
2.	History of Adolescent DM	Suffering DM	0	0
		Not Suffering DM	192	100
		Total	**192**	**100**
3.	Family DM History	Yes	64	33
		Father	12	
		Mother	4	
		Lainnya (kakek/nenek/bibi/paman)	48	
		No	128	67
		Total	**192**	**100**
4.	Food Consumption Habits	Often	94	49
		Rarely	86	45
		Never	12	6
		Total	**192**	**100**
5.	Information Sources	Internet	124	64
		Seminars / Health Services	21	11
		Electronic Media	17	9
		Book	25	13
		Brochures/Leaflets/Banners	5	3
		Total	**192**	**100**

Based on the research results, it was found that most of the data (78%) were female and a small portion (22%) were male. Overall (100%) there were no adolescent who had a history of suffering from DM. The majority (67%) of adolescent had no family history

of DM. Nearly half (49%) of adolescent have a habit of frequently consuming sweet foods and drinks more than twice a week. Most (64%) of adolescent get information from internet media.

Table 2. Frequency Distribution of Adolescent Knowledge About Diabetes Mellitus at SMAN 1 Kraksaan, Probolinggo Regency.

No	Knowledge	Frequency	Percentage
1.	Good	114	59 %
2.	Moderate	64	34 %
3.	Lack	14	7 %
	Jumlah	**192**	**100 %**

Based on The results of the distribution in the table above, show that the knowledge possessed by adolescents about diabetes mellitus is mostly well-informed (59%), almost half (34%) have sufficient knowledge, and a small proportion (7%) have poor knowledge.

4   DISCUSSION

This study has identified adolescents' knowledge about diabetes mellitus based on the characteristics of the disease, family history of DM, food consumption habits, and sources of information. Based on the results of the study, it was shown that most of the knowledge possessed by adolescents about diabetes mellitus was good knowledge, almost half had sufficient knowledge and a small number had poor knowledge.

Knowledge basically consists of a number of facts and theories that enable someone to be able to solve the problems they face (Notoatmodjo, 2018). Knowledge is a very important domain in shaping one's actions or behavior. Behavior based on knowledge will be better than behavior that is not based on knowledge. The knowledge possessed by a person tends to raise awareness for healthy behavior (Silalahi, 2019; Katte et al., 2023). Knowledge about diabetes mellitus is a collection of facts and theories about diabetes mellitus in the hope that it will influence a person's actions or behavior to behave healthily. Knowledge can be obtained from the environment where there are things that make someone know about something through sensing (Darsini, 2019; Phiri et al., 2017). In this study, most adolescents have good knowledge about diabetes mellitus with a family who suffers from diabetes mellitus. Where tofu results are obtained based on what he knows by sensing the presence or absence of a family suffering from diabetes mellitus.

The results of this research are in line with research conducted by Silalahi (2019) regarding diabetes mellitus at SMA Muhammadiyah 7 Surabaya, which showed that the majority (45.7%) had good knowledge, almost half (35.7%) had sufficient knowledge, and a small portion (18.6 %) less knowledgeable. This research is also in line with research conducted by Lutfiawati (2021) that the majority (68%) of adolescents at SMAN 14 Tanggerang have good knowledge. Nearly half (24%) have sufficient knowledge and a small portion (8%) have insufficient knowledge. Adolescents can have good knowledge obtained from education so they will have

broader information. Knowledge and understanding of diabetes mellitus results in the formation of behavior or actions to be taken to prevent the occurrence of diabetes mellitus (Lutfiawati, 2021). Adolescents' knowledge about diabetes mellitus based on family history of DM in this study is in line with research conducted by Setyorini (2022) at the Pacar Keling Community Health Center, Surabaya, with whether or not families suffering from diabetes mellitus had good or high knowledge, namely 90.9 %.

The results of research conducted on adolescents at SMAN 1 Kraksaan are mostly knowledgeable about diabetes mellitus. This shows that the majority of adolescents are aware that diabetes mellitus is already known and is a disease to watch out for. This good knowledge indicates that adolescents have a fairly broad insight including an understanding, of types, causes, signs and symptoms, risk factors, prevention, and complications, and are able to understand the information provided about diabetes mellitus and then form behavior or actions that can prevent diabetes mellitus from occurring. Adolescents who have sufficient and insufficient knowledge can be caused by various factors, including experience, environment, information sources, and social culture. Adolescents tend to be at risk for diabetes mellitus when their behavior or lifestyle is unhealthy. Some of the lifestyles that adolescents often adopt include a lack of activity and poor eating patterns such as consuming junk food resulting in obesity, and smoking.

Sweet foods and drinks are some of the foods that increase the risk of diabetes mellitus. In the 2018 Riskesdas, the Indonesian Ministry of Health categorized risky foods into 9 types, namely sweet, salty, fatty foods, and drinks, grilled foods, processed meat foods with preservatives, seasonings, soft drinks/carbonated drinks, energy drinks, and instant food/fast food. These foods are currently often consumed by adolescents because of their lifestyle. Adolescents can consume it 1-6 times in one week. Adolescents are included in the consumerist age group so they tend to consume various types of fast food and instant drinks without following a healthy lifestyle (Andini & Awwalia, 2018; Rochmah et al., 2022). In research on adolescents at SMAN 1 Kraksaan, it was found that adolescents who frequently and rarely consumed sweet foods and drinks within one week had good knowledge, while adolescents who never consumed sweet foods and drinks within one week had sufficient knowledge. This is different from research conducted by Fitriani (2022) which stated that knowledge influences behavior in consuming sweet foods and drinks. In his research, it was explained that respondents who often consumed sweet foods and drinks were dominated by respondents with a low level of knowledge (70.4%) compared to respondents with a high level of knowledge (43.5%).

The results of the research show that the knowledge that adolescents have about diabetes mellitus is based on the largest source of information using the internet and most of them are well-informed. This is in line with research conducted by Fitriani (2022) on Diponegoro University students which showed that as many as 53% of respondents had good knowledge due to the influence of social media such as the internet. According to this research, social media such as the internet is seen by young people such as adolescents as a normal part of everyday life. So that adolescents find out a lot of information quickly and easily. Information sources originating from the

internet, including social media, can also have a bad influence, namely knowing various foods or drinks that are at risk of diabetes mellitus (Fitriani et al., 2022).

The knowledge possessed by adolescents at SMAN 1 Kraksaan about diabetes mellitus can be influenced by various things. Knowledge can be obtained from them through education in schools in several related subjects. The results of good knowledge, enough or less will influence how adolescents behave according to their knowledge. Good knowledge tends to produce good behavior and it can reduce the risk of adolescents experiencing diabetes mellitus. Adequate or insufficient knowledge possessed by adolescents should be increased so that in the future it does not have an impact on health, especially diabetes mellitus. It is hoped that adolescents as people who are in a fairly young phase can change their lifestyle to become healthier based on their knowledge so as to avoid diabetes mellitus.

5   CONCLUSION

This research is a study that identifies adolescents' knowledge about diabetes mellitus based on the characteristics of adolescent DM, family history of DM, food consumption habits and sources of information. The knowledge of adolescents about diabetes mellitus is mostly well-knowledgeable, almost half of them have sufficient knowledge and a few have less knowledge. Adolescents' knowledge about diabetes mellitus based on a history of DM disease is mostly well-knowledgeable from adolescents who do not suffer from diabetes mellitus. Adolescents' knowledge of diabetes mellitus based on family history of diabetes mellitus is mostly well-knowledgeable from adolescents who have a family history of diabetes mellitus. Adolescents' knowledge about diabetes mellitus based on food consumption habits is mostly well-knowledgeable from adolescents who often consume sweet foods and drinks more than 2 times a week. Adolescents' knowledge about diabetes mellitus is based on information sources, mostly well-informed, came from adolescents who had information sources from the internet.

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