

The Relationship between Students' Parents' Knowledge and Attitudes about Type 2 Diabetes Mellitus with Students' Behaviour of Purchasing Snacks from Street Food Vendors at Schools

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Abstract

According to the World Health Organization (WHO), 87% of adolescents frequently consume fast food and junk food. The recorded number of diabetes mellitus (DM) cases reaches 1.6%, with a prevalence of 10.9% among children over 15 years old. One of the causes of this disease is the frequent consumption of street food. Parents' knowledge about DM is the foundation for taking action, particularly in selecting healthy snacks for their children's well-being. The objective of this study is to determine the relationship between parents' knowledge and attitudes about Type 2 DM and students' habits of buying food from street vendors at SMAN 1 Tambang. This study employs a quantitative analytical approach with a cross-sectional research design. The research was conducted from May 27 to June 4, 2024. The study sample consists of 81 parents and students, selected using the consecutive sampling technique. The collected data were analyzed using the chi-square test, and the results indicate a significant relationship between parents' knowledge about Type 2 DM (p -value = 0.002) and parents' attitudes (p -value = 0.001) with students' habits of purchasing food from street vendors at SMAN 1 Tambang. This study suggests that schools should provide guidance to parents on the importance of preparing home-packed meals for their children. Additionally, parents should be encouraged to advise and remind their children not to buy food indiscriminately. It is also necessary to educate students about food safety.

Keywords

health, community, international, well-being, epidemiology, healthcare, policy, prevention, public health, global health

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Introduction

Non-Communicable Diseases (NCDs) are diseases that are not transmitted from one person to another. Currently, NCDs are the leading cause of death globally, accounting for 63% of all annual deaths (Tasya, 2020). One of

the NCDs contributing to the highest mortality rate is diabetes mellitus (DM), which causes 1.3 million deaths annually (Masitha, 2021). According to the World Health Organization (WHO), approximately 422 million people worldwide suffer from DM, and this number is projected to increase to 783.2 million (12.2%)

by 2045. Among the 3.7 million deaths caused by DM, 43% occur in individuals under the age of 70. Southeast Asia ranks third in the world for the highest number of DM cases, with 90.2 million people affected. Indonesia ranks fifth among the 10 countries with the highest number of DM cases in Southeast Asia, with 19.5 million cases (WHO, 2023).

A study by Trisnadewi (2019) stated that the number of DM cases has reached 1.6%, with a prevalence of 10.9% among children over 15 years old. One of the causes of this disease is frequent consumption of snacks both at home and at school (Wiriastuti, 2019). Street food is often appealing due to its delicious taste, easy accessibility, attractive appearance, and affordability, making it a favorite among children (Desmarani, 2017). However, this contrasts with the quality of the food, particularly in terms of safety, composition, and hygiene, which may pose health risks to children. Children tend to consume large amounts of sugary foods and high-glucose carbohydrates. Poor dietary choices can lead to DM complications, and excessive food portions in a day can elevate blood glucose levels (Purtiantini, 2020).

DM is a metabolic disorder characterized by elevated blood glucose levels (hyperglycemia) due to absolute or relative insulin deficiency (Soegondo, 2018). This condition is caused by two factors: environmental and genetic factors. Environmental factors are associated with lifestyle changes, where the consumption of healthy and natural foods has shifted to fast food consumption (WHO, 2021). Fast food contains substances that can cause various diseases due to its high sodium, calorie, and fat content. The daily caloric intake recommended for an individual can often be met with just one fast food meal. Consuming more than the recommended 2,000 kcal per day leads to calorie accumulation in the body, which, if

unused, can result in obesity, a major risk factor for DM (Yetmi, 2021).

Obesity is a significant risk factor for DM. The prevalence of children with type 2 DM and obesity in Indonesia in 2020 was approximately 9.1%, or 60 million children. Based on age categories, DM cases among children over 10 years old accounted for 1.55%, while the prevalence among older adults (aged ≥ 60 -74 years) was 3.41%. The highest incidence was observed among adolescents aged 15-18 years. In Riau Province, the obesity prevalence was 8.3%. Meanwhile, in Kampar Regency, the prevalence of DM among obese adolescents (aged 15-18 years) was 12.1% (Riskesdas, 2018). The habit of consuming unhealthy street food is one of the highest risk factors for NCDs, including type 2 DM, among adolescents (Bonita, 2019). Achieving good health status requires the adoption of health-promoting behaviors from adolescence. Developing pro-health behaviors can significantly help prevent the early onset of NCDs, such as DM (Nugraheni, 2018). Increased knowledge, attitudes, and behaviors related to DM risk prevention can reduce the risk and prevent the occurrence of type 2 DM (Lolong, 2019).

Parents' knowledge about DM is fundamental in guiding actions, particularly in selecting healthy snacks for their children (Widyaastuti, 2019). Parents should be aware of which snacks are nutritious and which are not suitable for their children (Sofyandi, 2019). In addition to knowledge, parental attitudes also play a crucial role in influencing healthy snack choices. Parental attitudes are evaluative responses, which can be either positive or negative, toward their children's behavior in selecting healthy snacks (Sanjaya, 2014). Maintaining a healthy lifestyle is now an urgent concern. Many parents still lack an understanding of the primary causes of DM,

which are unhealthy lifestyle habits. As a result, children are accustomed to consuming snacks that can trigger DM, while some parents remain indifferent to the types of food their children frequently consume. The lack of parental knowledge and behaviors related to DM-triggering foods has contributed to the increasing incidence of DM at an early age.

According to data from the Kampar District Health Office (2023), the highest prevalence of type 2 DM was recorded at Tambang Community Health Center, with 734 cases, an increase from 549 cases in 2022. Based on data from Tambang Community Health Center, the number of type 2 DM cases by age group includes 134 cases among children over 10 years old, 336 cases among adolescents aged 15-18 years, and 246 cases among older adults (≥ 60 years). The highest incidence was among adolescents aged 15-18 years. Given these issues and the lack of research in Kampar Regency exploring the relationship between parents' knowledge and attitudes about DM and students' snack-buying habits at school, this study aims to investigate the relationship between parents' knowledge and attitudes about type 2 DM and students' habits of purchasing food from street vendors at SMAN 1 Tambang.

Methodology

This study is quantitative research with an observational analytic design and a cross-sectional approach. The research was conducted from May 27 to June 4, 2024, at SMAN 1 Tambang, located in Tambang District, Kampar Regency, Riau Province, Indonesia. The population in this study consists of all parents and students at SMAN 1 Tambang, totaling 437 individuals. The sample includes 81 parents and students from SMAN 1 Tambang who agreed to participate, regardless of their DM status, and were recruited using the consecutive sampling technique. The

measurement tool used in this study was an observation sheet in the form of a questionnaire, which was developed by the researcher and had been validated and proven reliable, with Cronbach's Alpha values of 0.960 for parental knowledge, 0.859 for parental attitude, and 0.756 for students' snack-buying habits.

Data collection was carried out by distributing questionnaires to be filled out by students and their parents at SMAN 1 Tambang. The questionnaire contained both open-ended and closed-ended questions. Open-ended questions included items on sociodemographic data. Closed-ended questions consisted of 30 items, divided as follows: 10 items on parental knowledge, assessed by calculating the score from the number of correct answers. These questions used multiple-choice format, where a correct answer received a score of 1, and an incorrect answer received a score of 0. 10 items on parental attitudes, assessed by calculating the score from the total responses. The questionnaire used a 4-point Likert scale, with response options: Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD). 10 items on students' snack-buying habits, assessed similarly with a 4-point Likert scale (SA, A, D, SD).

Univariate analysis was used to describe the frequency distribution of respondent characteristics, parental knowledge of DM, parental attitudes, and students' snack-buying habits. Bivariate analysis using the Chi-square test was conducted to examine the relationship between parental knowledge of DM and students' snack-buying habits. Parental attitudes and students' snack-buying habits. The analysis was performed at a 95% confidence level ($p < 0.05$).

Results

The characteristics of the parents in this study include age, education level, and occupation of parents of students at SMAN 1 Tambang, within the Tambang Health Center service area. The details are presented in the following table.

Table 1. Frequency Distribution of Parents' Characteristics at SMAN 1 Tambang in the Working Area of UPT Puskesmas Tambang

Respondents Characteristics	Frequency (n)	Percentage (%)
	n=81	100%
Age		
30-40 year	16	19,8
41- 50 year	65	80,2
Education		
Junior High School	19	23,5
Senior High School	48	59,3
University	14	17,3
Occupation		
Housewife	58	71,6
Entrepreneur	15	18,5
Civil Servant	8	9,9
Health Status		
Having diabetes	32	39,5
Non-diabetes	49	60,5
Duration of having DM		
1-3 years	20	24,7
4-7 years	12	14,8
Do no know	49	60,5
Sources of information on DM		
Medias (TV, Hp, radio, newspaper)	31	38,2
Neighbor or family	50	61,7
Number of children		
1-2	27	33,3
3-4	54	66,7
Family Incomes		
< Rp. 3.000.000.	56	69,1
≥ Rp.3.000.000	25	30,9

Based on table 1, it can be observed that the majority of parents are aged 41-50 years, totaling 65 individuals (80.2%). Most parents have a high school education, totaling 48 individuals (59.3%). The majority are housewives, totaling 58 individuals (71.6%). Most parents do not DM, totaling 49 individuals (60.5%). The majority obtained information about DM from neighbors or family, totaling 50 individuals (61.7%). Most families have 3-4 children, totaling 54 individuals (66.7%). The majority have a monthly family income of less than IDR 3,000,000, totaling 56 individuals (69.1%).

Tabel 2. Frequency Distribution of Parental Knowledge and Attitudes About Diabetes Mellitus (DM)

Variables	Frequency (n)	Percentage (%)
	n=81	100%
Knowledge About Diabetes Mellitus (DM):		
High	33	40,7
Low	48	59,3
Attitudes Toward Students' Snacking Habits:		
Not Supportive	37	45,7
Supportive	44	54,3
Students' Snacking Habits:		
Not Habitual	30	37,0
Habitual	51	63,0

Based on Table 2, it can be seen that out of 81 parents. The majority have low knowledge, totaling 48 individuals (59.3%). Most parents have a supportive attitude, totaling 44 individuals (54.3%). The majority of students habitually buy snacks from street food vendors, totaling 51 individuals (63.0%).

Table 3. The Relationship Between Parents' Knowledge About Diabetes Mellitus (DM) and Their Attitudes With Students' Snacking Habits at Street Food Vendors in SMAN 1 Tambang

Variable		Students' Snacking Habits at Street Food Vendors				p value	PO R
		Not Habitual		Habitual			
		n	%	n	%		
Parents' Knowledge About DM	High	1	33,	2	66,	0.002	4.310
		1	3	2	7		
	Low	1	39,	2	60,		
		9	6	9	4		
Parents' Attitude	Not Supportive	1	40,	2	59,	0.001	2.318
		5	5	2	5		
	Supportive	1	34,	2	65,		
		5	1	9	9		

Based on Table 3, the results of the chi-square statistical test indicate that there is a significant relationship between parental knowledge about diabetes mellitus (DM) and students' habits of buying snacks from street vendors, with a p-value of 0.002. This means that parental knowledge about DM is significantly associated with students' snack-buying habits. Among the 33 parents with high knowledge about DM, 22 students (66.7%) were accustomed to buying snacks from street vendors. Conversely, among the 48 parents with low knowledge about DM, 19 students (39.6%) were not accustomed to buying snacks from street vendors. The odds ratio (OR) = 4.310 (95% CI = 2.519-3.310) suggests that parents with low knowledge about DM are 4.3 times more likely to have students who are accustomed to buying snacks from street vendors.

Regarding the relationship between parental attitudes and students' snack-buying habits, the chi-square test yielded a p-value of 0.001, indicating a significant association. Among the 37 parents with an unsupportive attitude toward their children's snack-buying habits, 22 students (59.5%) were accustomed to buying snacks from street vendors. Conversely, among the 44 parents with a supportive attitude, 15 students (34.1%) were not accustomed to buying snacks from street vendors. The odds ratio (OR) = 2.318 (95% CI =

1.533-3.259) suggests that parents with a supportive attitude toward students' snack-buying habits are 2.3 times more likely to have students who are accustomed to buying snacks from street vendors.

Discussion

The Relationship Between Parents' Knowledge of Diabetes Mellitus (DM) and Students' Snack-Buying Habits from Street Vendors at SMAN 1 Tambang.

Parents' knowledge about selecting healthy snacks influences children's snacking habits. Parents must understand which snacks are nutritious and which are harmful to their children's health so that children develop the habit of choosing healthy snacks. Low knowledge and poor parental attitudes often result from a lack of information.

Good parental knowledge positively affects children's knowledge and attitudes, as well as the behavioral patterns instilled by parents, which shape children's behaviors. Additionally, information from close individuals supports children's assumptions about the knowledge they acquire. In reality, many parents lack awareness of the harmful substances in street food that their children frequently consume, which can negatively impact their health. The low enthusiasm of parents, especially mothers, in seeking information, coupled with their busy work schedules, contributes to limited knowledge about DM and a tendency toward passive attitudes (Whidarto, 2021).

This finding aligns with Sukatmi (2019), who states that mothers' knowledge about snacks that trigger DM is crucial to protecting children from harmful chemicals in food. A mother who has sufficient knowledge about DM-inducing foods and safe consumption limits can influence the family's dietary choices (Fahleni, 2016).

Parental knowledge about DM serves as the foundation for taking action, particularly in selecting healthy snacks for their children's well-being (Widyaastuti, 2019). Parents should be aware of which snacks are nutritious and which are not (Sofyandi, 2019). Many parents still do not understand that unhealthy lifestyles, including frequent consumption of street food, are major contributors to DM. Consequently, children develop unhealthy eating habits without parental concern about the quality of their food. The lack of parental knowledge and awareness regarding DM-inducing foods increases the risk of developing DM at an early age (Ulfa, 2021).

The Relationship Between Parental Attitudes and Students' Snack-Buying Habits from Street Vendors at SMAN 1 Tambang.

Parents' attitudes toward selecting healthy snacks influence children's snacking habits. Parents should be aware of which snacks are nutritious and which are not, so children develop the habit of choosing healthy snacks (Bonita, 2019). Additionally, parental attitudes play a key role in snack selection. Parents' attitudes are evaluative responses that can be either positive or negative toward their children's snack choices (Whidarto, 2021).

A positive parental attitude toward children's snacks can be observed when parents prepare home-packed meals to prevent their children from buying unsafe food at school. Conversely, a negative parental attitude is evident when parents give their children money to buy snacks without supervision, often due to work commitments that prevent them from preparing meals. Parents' attitudes toward selecting healthy snacks significantly influence children's snacking habits.

This finding aligns with Iklima (2017), who states that attitudes directly affect snack

selection decisions among students. The low awareness of healthy snacks among children results from a lack of education. Unhealthy and unsafe snack consumption practices remain prevalent among children. Therefore, educational programs on selecting nutritious and safe snacks should be implemented for both parents and children, with support from schools and NGOs.

Kusumawati (2024), highlights that while some students gain knowledge about DM from relatives with the condition, most students lack awareness of DM, which reduces their motivation to take preventive measures. Many students choose snacks based on taste and affordability rather than health considerations. School canteens, in particular, do not account for students' health conditions, such as DM, when selecting the food and drinks they sell. Additionally, school canteen vendors receive no education or guidance on diabetes prevention or healthy dietary practices.

Therefore, the information children receive is crucial in guiding their choices when selecting school snacks. Sri Ulfa (2021) emphasizes that children accustomed to unhealthy snacks at school are at greater risk of nutritional issues. Children often make poor choices due to a lack of understanding about healthy eating, frequently consuming instant foods high in artificial coloring and preservatives. These snacks, often calorie-dense, lead to satiety without proper nutrition. Moreover, their hygiene standards are questionable. Thus, children's knowledge of snacks is essential to protect them from the dangers of chemical-laden foods at school.

Conclusion

Based on the research findings, it can be concluded that most parents of SMAN 1 Tambang students have low knowledge about DM, with 48 respondents (59.3%). The

majority of parents support their children's habit of buying snacks from street vendors at school, with 44 respondents (54.3%). Additionally, most students are accustomed to buying snacks from street vendors, with 51 respondents (63.0%).

There is a significant relationship between parents' knowledge of type 2 DM and students' snack-buying habits from street vendors at SMAN 1 Tambang, with a p-value of 0.002. Furthermore, there is a significant relationship between parental attitudes toward students' snack-buying habits and students' actual snack-buying habits from street vendors at SMAN 1 Tambang, with a p-value of (0.001).

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Author's Contribution

Dinda Nurma Azharil contributed to data collection, and data analysis, and wrote the first draft of the manuscript;

Nia Aprilla contributed to the writing style and supervision of the research.

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Declaration of Conflicting Interest

No conflict of interest to declare.

Ethical Consideration

The study approval was obtained from Universitas Pahlawan Tuanku Tambusai (Approval number: 123456 on 16 December 2024).

Data Availability Statement

- The dataset produced and examined in the present study can be obtained from the corresponding author upon a reasonable request.
- The supporting data are available at <https://dataset.com>

Declaration of Use of AI in Academic Writing

Nothing to declare

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