



## The Dietary Patterns of High School Students in Medan City are Influenced by Perceptions of Stunting

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### ABSTRACT

**Introduction:** Data from WHO shows that Indonesia ranks third in the highest prevalence of stunting in Southeast Asia with an average prevalence of 36.4%. This study aims to explore the relationship between perceptions of stunting and dietary patterns of high school students in Medan city, Indonesia.

**Methods:** This research is a non-experimental descriptive-analytic study with a cross-sectional design by observing primary data through questionnaires and then analyzing using Chi-Square.

**Results:** The results of this study from 110 samples found that there were significant results ( $P=0.031$ ) between the relationship between perceptions of stunting and female diet patterns. The result above shows that 77 high school youth (70%) have a poor perception of stunting in Medan City, and 33 people (30%) are good. Meanwhile, the dietary patterns of high school adolescents in Medan City who were classified as poor were 76 people (69.1%), and as good were 34 people (30.9%). All samples were tested with purposive sampling of 110 students.

**Conclusion:** There is a significant relationship between perceptions of stunting and diet patterns of high school students in Medan City.

**KEYWORDS:** Eating Patterns, High School Students, Perceptions of Stunting.

### INTRODUCTION

Stunting in toddlers is a global and national nutritional problem and has become a priority health problem in society. (Rahayu and Darmawan, 2019) Around 22.2% or 150.8 million toddlers in the world are stunted, and more than half of the stunted toddlers in the world come from Asia (55%). There are around 83.6 million stunted toddlers in Asia with the largest proportion coming from South Asia (58.7%). Data from the WHO shows that Indonesia has the third highest prevalence of stunting in Southeast Asia with an average prevalence of 36.4%. (Sumartini, 2022) The 2018 Basic Health Research (Riskesdas) stated that the prevalence of stunting in toddlers in Indonesia was 30.8%. North Sumatra is one of the provinces in Indonesia with a stunting prevalence above the national prevalence rate, which is around 25.8%, and more than half of the prevalence rate in North Sumatra is in Medan City, which is around 19.9%. (Saputri and Tumangger, 2019)

The cause of stunting itself consists of many factors such as poor parenting practices, lack of knowledge of mothers regarding health and nutrition before and during pregnancy until after the mother gives birth, limited health services like Antenatal Care (ANC) services, namely health services for mothers during pregnancy, also Postnatal Care (PNC), and the lack of access by households or every family to nutritious food. (Sumartini, 2022) Stunting also has short-term impacts, such as a high risk of morbidity and mortality and decreased learning ability due to a lack of cognitive development. The long-term risk due to stunting is the low quality of human resources, which will lead to reduced opportunities for education, employment opportunities, better incomes, and the emergence of degenerative disease problems in the future, such as obesity and etcetera. Stunting can also increase the risk of various non-communicable diseases, such as diabetes, hypertension, cancer, etcetera. (Harahap, 2022)

Prevention of stunting itself can be carried out from the adolescent stage as a preparation for entering the pre-conception period because the nutritional status of young women has a significant contribution in determining health and pregnancy safety up to birth later. (Harahap, 2022) (Dewi, 2019) The nutritional intake factor shows that around 32% of young women in Indonesia in 2017 were at risk of experiencing chronic energy deficiency (KEK). The incidence of CED in young women from 2007-2018 was



high at 33.5% on the 2018 Riskesdas. If this condition is not corrected, there will be an increasing number of future pregnant women who have short stature, and this will have an impact on increasing the prevalence of stunting in Indonesia. (Siswati, 2018) Stunting is influenced by diet. Along with the increase in the adolescent population, the problem of adolescent nutrition and eating patterns in Indonesia needs special attention. (Hamdayani, Sainah, 2021) Diet is the best way to regulate nutrient intake or nutrients entering the body to maintain overall health. Therefore, it is significant to pay attention to the right diet. (Parinduri, 2021) Knowledge of dietary patterns about "My Plate Fill" is also crucial for adolescents to adopt a healthy diet to meet their daily nutritional needs and help prevent stunting. (Kurnianingrum, 2021)

Not only that, until now, the perception of stunting and the importance of dietary patterns is only emphasized and focused on pregnant women, even though from research, it turns out that nutritional status from a young age has significantly contributed to preventing stunting. (Harahap, 2022) Research that discusses perceptions of stunting and Diet patterns in adolescents is also rare.

## MATERIALS AND METHODS

This type of research is a non-experimental descriptive analytic with a cross-sectional design. Data will be analyzed using the chi-square test. The sampling technique in this study used a non-probability purposive sampling technique. (Dahlan, 2011) This research was from June 2022 - February 2023 at four high schools in Medan, namely SMAN 1, SMAN 2, MAN 2, and SMK 10. The population of this research was students at the four senior high schools. The sample taken was grade 12 students of the four high schools. The sample of this study amounted to 110 teenage girls.

The data used are primary data obtained through interviews using a questionnaire to respondents. The questionnaire contains several questions regarding stunting to assess perceptions of stunting in final-grade adolescents. The research questionnaire uses a multiple-choice questionnaire prepared according to the formulation of the problem under study. Primary data was obtained through interviews using a questionnaire. A questionnaire measuring good eating patterns using the semi-quantitative FFQ (Food Frequency Questionnaire) form/questionnaire. (Sagala, 2018)

The research instrument was a questionnaire as a tool for data collection consisting of a perception questionnaire about stunting and a questionnaire about diet patterns with a total of 20 questions, using correct answers (score 1) and wrong (score 0). Calculation of knowledge using the Guttman scale with criteria for evaluating knowledge with a score of 11-20 (good) and a score of <11 (poor). In addition, it also uses calculations with a semi-quantitative FFQ questionnaire which contains the names of food ingredients grouped into several sections as sources of carbohydrates, animal protein, vegetable protein, vegetables, fruits, and others. It also includes consumption frequency, portion/x consumption, and up to URT. Respondents will answer according to what they eat daily by putting a check on the table box.

Data processing includes editing, coding, data entry, cleaning, tabulating, and saving. Furthermore, data analysis in this study used the Chi-Square test to determine the relationship between the two variables and was processed using a computer program. All analyzes were performed using SPSS.

## RESULTS

**Table 1** shows that from 110 high school students in Medan City, it was dominated by 17-year-olds, namely 71.8% (79 female students), followed by 18-year-olds, 14.5% (16 female students), 16-year-olds, and 12.7% (14 female students), and the age 19 years old is 0.1% (1 female student).

**Table 2** shows the distribution of student stunting perception characteristics and it shows that 77 high school youth (70%) have a poor perception of stunting in Medan City, and 33 people (30%) are good. Meanwhile the **table 3** shows the distribution of diet patterns for high school students in Medan City and it shows that dietary patterns of high school adolescents in Medan City who were classified as poor were 76 people (69.1%), and as good were 34 people (30.9%). **Table 4** shows the relationship between perceptions of stunting and diet patterns of high school students in Medan and it were tested with purposive sampling of 110 people. The Chi-Square statistical test results obtained a *P* value of 0.031 ( $p < 0.05$ ). Thus there was a significant relationship between the perception of stunting and the dietary pattern of Medan City high school adolescents.



## DISCUSSION

In general, the results of the current study have revealed that majority of the students seemed to have poor perception of stunting and poor dietary patterns. This is in line with Mustika et al's study, which found that 13 people (52%) of the total research sample had poor perception/knowledge of stunting, and only five people (20%) were in a good category. While as many as seven people (28%) have a moderate level of perception.(Foundation, 2021)

It is also in line with the research of Sisilia et al where more than half of the research sample had poor knowledge about stunting.(Purbowati et al., 2021) Adolescence is the most effective age for recognizing stunting cases because when someone already has insight regarding stunting at the age of marriage, they will be able to anticipate the occurrence of stunting from 0 - 1000 first days of life (HPK). The readiness of young women to anticipate stunting as the vanguard of prevention can foster nutritional fulfillment for the next day. Adolescents are at the forefront of the stunting prevention process. Therefore, early preparation to prevent stunting in adolescents can increase the chances of the birth of a younger or a better generation.(Natanael et al., 2022) Good nutrition will produce a healthy, intelligent, qualified, physically strong and productive generation. Inadequate intake of energy and protein can lead to malnutrition.(Boy, 2019) Malnutrition can make children more susceptible to disease and lead to death. About 45% of deaths of children under the age of 5 years are related to malnutrition.(Amanda et al., 2020)

The diet pattern followed by most of the female students in the city of Medan turned out to be in a poor category, namely 76 female students (69.1%), and the dietary pattern which was included in the good category was only carried out by a small proportion of female students, namely 34 female students (33,9 %). It is in line with the results of a study by Devi et al which showed that most of the eating patterns adopted by adolescents at SMA Negeri 1 Ungaran, Semarang Regency, fall into the unfavorable category, namely around 61 respondents (66.3%).(Rosyada et al., 2020)

The same thing was also found in the research by Syamsu et al, as many as 52 teenagers at the Al-Munjiyah Islamic Boarding School had poor eating patterns total of 95 respondents, where most of the research samples even had a frequency of eating <2 times a day. In theory, the frequency of eating is said to be good if the frequency of eating every day is three main meals or two main meals with one snack, and is considered poor if the frequency of eating each day is only two main meals or less.(Wahyuni et al., 2017)

Similar research was also obtained from Anastasia et al that out of 50 respondents, the majority still adhered to inappropriate dietary patterns, namely as many as 32 people, and only 18 respondents adhered to appropriate diet patterns.(Lintang et al., 2015) The results of Yudha et al's research also found that as many as 22 people (64.7%) had unhealthy eating patterns, and 12 people (35.2%) had healthy eating patterns.(Diliyana and Utami, 2020)

The eating pattern has three characteristic components, namely frequency of eating, type of food, and portion of food, where the frequency of eating is said to be good if the frequency of eating every day is three main meals or two main meals with one snack, and is considered poor if the frequency of eating every day is two main meals or less. The frequency of eating is also influenced by the type of food eaten. Types of food have two parts, namely staple food and snack food. The eating pattern for a healthy diet is at least two times a daily staple food.(Lintang et al., 2015)

In general, staple foods function as a source of energy/calories in the body and provide a feeling of satiety (8%) who have a good diet.(Diliyana and Utami, 2020) Consumption patterns and wrong eating behavior can cause health problems in adolescents.(Suryani et al., 2017) Excess and deficiency of adolescent nutrition has a serious impact on health, impacting the welfare of current and future generations because the nutritional status of young women is closely related to the conditions and outcomes of pregnancy and the survival of mothers and children. Adolescents with malnutrition that lasts for a long time have a high potential to give birth to children with stunting.(Muliarsi and Sutiari, 2022) Adolescent girls who follow an unhealthy diet and have wrong consumption patterns will experience nutrient deficiencies which will impact the chain of nutritional problems between generations in the future.(Suryani et al., 2017)

The perception of stunting among high school adolescents in Medan City who was classified as poor was 77 people (70%), and those who were classified as good 33 people (30%). Meanwhile, the dietary patterns of high school adolescents in Medan City



who were classified as poor were 76 people (69.1%), and those who were classified as good were 34 people (30.9%). The results of the Chi-Square statistical test found a  $P$  value = 0.031 ( $p < 0.05$ ). So, it can be understood that there is a significant relationship between the perception of stunting and the dietary pattern of Medan City high school adolescents.

## CONCLUSION

Based on the research, there is a significant relationship between perceptions of stunting and dietary patterns of high school students in Medan City. The analysis obtained the characteristics of respondents based on the most age, namely 17 years. The results show a picture of the perception of stunting at SMAN 1 Medan, SMAN 2 Medan, SMK 10 Medan, and Man 2 Model Medan shows that the perception is poor. Analysis shows an overview of the dietary patterns followed by female students at SMAN 1 Medan, SMAN 2 Medan, SMKN 10 Medan, and Man 2 Model Medan of unfavorable results.

## ACKNOWLEDGEMENT

The authors would like to thank the educational office and the principal of SMAN 1 Medan, SMAN 2 Medan, SMKN 10 Medan, Man 2 Model Medan that have helped in obtaining permission to conduct the research entitled "The dietary patterns of high school students in Medan City are influenced by perceptions of stunting".

## Authors' contributions

EB, preliminary reviewing and correction of manuscript; YH, principal investigator, designed, formulated and supervised the experiment, and finally reviewed the manuscript; developed questionnaire, performed the data collection and analysis.

## Conflict of interest

The authors declare that there is no conflict of interest.

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**Table 1.** Age Characteristics Distribution of Female Students

Usia	Jumlah (n)	Persentase (%)
16 tahun	14	12,7%
17 tahun	79	71,8%
18 tahun	16	14,5%
19 Tahun	1	0,1%
<b>Total</b>	<b>110</b>	<b>100%</b>

**Table 2.** Distribution of Student Stunting Perception Characteristics

Perception of Stunting	Amount (n)	Percentage (%)
Poor	77	70%
Good	33	30%
<b>Total</b>	<b>110</b>	<b>100%</b>

**Table 3.** Distribution of Diet Patterns for High School Students in Medan City

Diet Pattern	Amount (n)	Percentage (%)
Poor	76	69,1%
Good	34	30,9%
<b>Total</b>	<b>110</b>	<b>100%</b>



Table 4. The relationship between perceptions of stunting and diet patterns of high school students in Medan

	Perception of Stunting		Diet Pattern		Result
	N	%	N	%	
Not Good	77	70%	76	69,1%	P = 0.031
Good	33	30%	34	30,9%	
<b>Total</b>	<b>110</b>	<b>100%</b>	<b>110</b>	<b>100%</b>	

Cite this Article: Elman Boy, Yoan Hanni (2023). The Dietary Patterns of High School Students in Medan City are Influenced by Perceptions of Stunting. International Journal of Current Science Research and Review, 6(11), 7152-7157