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Carbohydrate Diet during the Covid-19 Pandemic (Case Study: 4th Grade Students of Elementary School 02 Meruya Utara, West Jakarta)

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Abstract— Background: *During the COVID-19 pandemic, the Government issued Regulations Government regarding Large-Scale Social Restrictions which require people to limit their activities to work and study from home. This activity affects the eating behavior, especially for school age children.* ***Purpose:*** *This research was to obtain an description of the carbohydrate diet during the Covid-19 pandemic in 4th grade students of Elementary School Meruya Utara 02 in 2021.* ***Method:*** *This research used a descriptive method. It was conducted on 64 grade IV students of Elementary School Meruya Utara 02 West Jakarta who were obtained using a total sampling technique. The instrument used in this research was a questionnaire via google form about the carbohydrate diet of grade IV SDN Meruya Utara 02 during the Covid-19 pandemic.* ***Result:*** *Students who consume very low fermentable foods are 31 students (48.44%); low fermentable 64 students (100%); Modarate fermentable 34 students (46.88%); high fermentable 64 students (100%). The frequency of eating carbohydrates showed that there is 1 student (1.56%) consuming carbohydrates in the low category (≤ 3 times a day); medium category (4-6 times a day) 40 students (62.50%) and high category (≥ 7 times a day) 23 students (35.94%). Most students, 55 students (85.94%) have an increase in eating carbohydrates and 9 students (14.06%) did not change. There were 39 students (60.94%) who have had toothache during the pandemic and 25 students (39.06%) had never experienced toothaches during the Covid-19 pandemic.* ***Conclusion****: All of students consume low fermentable and high fermentable food and most of them increased carbohydrates consumption and have had toothaches during the covid-19 pandemic.*

Keywords*— Carbohydrates Diet, The Covid-19 Pandemic.*

I. INTRODUCTION

School age is one of the stages of life experienced by a person, one of which is the stage of elementary school children aged 6-12 years. Children at this age are still experiencing a growth stage accompanied by increased physical activity, such as studying, going to school, playing and exercising. School-age children are at risk of experiencing nutritional problems because there is a connection in terms of diet. Diet is a characteristic of repeated activities in meeting the need for food, including the type and amount of food eaten every day and how to choose food.[1,2]

Diet is an effort or way to regulate the type and amount of food with the aim of maintaining health, nutritional and nutritional status, preventing disease and helping the healing process of disease. Diet is everything related to the frequency of food consumption, the number of servings, and the quality of daily food.[3,4]

Wrong eating habits in elementary school children often occur, such as the habit of consuming excessive food. Foods that are often consumed by elementary school children are cariogenic. Cariogenic foods are one of the types of carbohydrates that most affect tooth decay. Cariogenic foods are foods that contain a lot of sugar, such as sweet, sticky, and attractively shaped foods that can cause dental caries. This is because cariogenic foods have a tendency to stick to the tooth surface. For 20-30 minutes after a person consumes carbohydrates, the caries-causing bacteria in the oral cavity will produce acid so that demineralization occurs. If a person consumes carbohydrates too often, the tooth enamel will not have the opportunity to carry out the remineralization process.[5–7]

This group of elementary school age children is a vulnerable group for dental and oral health cases, so they need to be wary of or managed properly and correctly. The period of 6-12 years is the elementary school age period, where the age of 10-12 years is the mixed dentition period, so that good actions are needed for the maintenance of dental and oral health. The results of the 2018 Basic Health Research stated that the largest proportion of dental problems in Indonesia were damaged/cavities/sick teeth, which was 45.3%, while the prevalence of children experiencing dental and oral health problems based on age characteristics was 5-9 years at 21.6%, aged 10-14 years by 20.6%.[8–10]

Dental caries is a problem that often occurs in children, due to the consumption pattern of cariogenic foods in terms of type, method of consumption, time and frequency of consuming cariogenic foods. So it is suspected that it can increase the risk of dental caries in children.[11,12]

In Indonesia, there is a Corona Virus Disease 19 pandemic which was officially announced by the government through the Ministry of Health on March 2, 2020. During this pandemic, Indonesians are encouraged to practice a Clean and Healthy Lifestyle, with several other activities. The government implements Large-Scale Social Restrictions which are restrictions on certain activities of residents in an area suspected of being infected with Corona Virus Disease 2019 in such a way as to prevent the possible spread of Corona Virus Disease 2019. Large-Scale Social Restrictions at least include holidays from schools and workplaces,

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restrictions on religious activities and restrictions on activities in public places or facilities.[13,14]

Based on research conducted by Saragih et al., during the Covid-19 pandemic, the community experienced a change in eating habits as much as 62.5% and experienced an increase in the diversity of food consumption by 59%. People who experience an increase in the frequency of eating by 54.5% and the amount of food consumption increasing by 51% and experiencing an increase in body weight by 54.5%. This shows that the Covid-19 pandemic has more or less affected a person's eating habits and patterns, especially for school-age children. The Covid-19 virus can spread between people, becoming the main source of transmission so that the spread becomes more aggressive. Transmission from infected people occurs through droplets that come out when talking, coughing or sneezing.[15,16]

Teeth and mouth are the entrance gate for food that is needed for children's health, but bacteria and viruses can also enter through food and drink into the oral cavity. Bacteria and viruses can stick to children's toys, dirty floors or unclean hands. Through splashes of saliva can also transmit bacteria and viruses that are in the air (airbone infection).[17–19]

II. Research Methodology

The research design used is descriptive research, which is a research method with the main objective of making an objective.

The research design used is descriptive research, which is a research method carried out with the main aim of making a picture or description of a situation objectively.[20] This research is intended to get an overview of the carbohydrate diet during the covid-19 pandemic in grade 4th students Elementary School of the 02 Meruya Utara. This research was conducted on 64 4th grade students of Elementary School Meruya Utara 02 West Jakarta, obtained by using total sampling technique. The instrument used in data collection used a questionnaire sheet to measure carbohydrate eating patterns during the Covid-19 pandemic through a google form. This research is processed and analyzed in excel program and presented in the form of a frequency distribution.

III. Research Result

TABLE 1. Frequency distribution of type of carbohydrates consumed

Carbohydrate Consumption	Types of Carbohydrates							
	Very Low Fermentable		Low Fermentable		Moderate Fermentable		High Fermentable	
	f	%	f	%	f	%	f	%
Yes	31	48.44	64	100	30	46.88	64	100
Not	33	51.56	0	0	34	53.12	0	0
Total	64	100	64	100	64	100	64	100

Table 1 shows that during the covid-19 pandemic, 31 students (48.44%) consumed very low fermentable carbohydrates and 33 students (51.56%) did not consume them; types of low fermentable as many as 64 students (100%) and there are no students who do not consume low fermentable foods; the type of moderate fermentable as many as 30 students (46.88%) and not consuming 34 students (53.13%); 64 students (100%) of high fermentable types, where there were no students who did not consume high fermentable foods during the covid-19 pandemic.

TABLE 2. Frequency distribution of Carbohydrate consumption during the Covid-19 pandemic

Carbohydrate consumption	F	Percentage (%)
≤ 3x a day	1	1.56
4-6x a day	40	62.50
(≥ 7x a day	23	35.94
Total	64	100

Table 2 shows that during the covid-19 pandemic there were 1 student (1.56%) consuming carbohydrates in the low category (≤ 3x a day), 40 students (62.50%) consuming carbohydrates in the moderate category (4-6x a day) and 23 students (35.94%) consumed carbohydrates in the high category (≥ 7x a day).

TABLE 3. Frequency distribution of changes in carbohydrate diet during the Covid-19 pandemic

Changes in diet	F	Percentage (%)
Yes	55	85.94
Not	9	14.06
Total	64	100

Table 3 shows that during the covid-19 pandemic, starting from March 2020 to March 2021, most of the students, namely 55 students (85.94%) experienced changes in the form of an increase in carbohydrate eating patterns and 9 students (14.06%) did not experience any changes

TABLE 4. Frequency distribution of toothache experiences during the covid-19 pandemic

Toothache experience	F	Percentage (%)
Ever	39	60.94
Never	25	39.06
Total	64	100

Table 4 shows that during the covid-19 pandemic, starting from March 2020 to March 2021, 39 students (60.94%) had experienced toothache and 25 students (39.06%) had never experienced toothache during the covid-19 pandemic.

IV. Discussion

The results of the study and data analysis showed that the categories of types of food consumed by all students were low fermentable and high fermentable groups with a percentage of 100%. These results are in accordance with Pika et al research on "The Overview of Dental Caries in Reviewing the Habit of Consuming Types of Food Containing Carbohydrates in MI Tarbiyah Islamiyah Palembang Students in 2019" which showed that of the 110 students who were respondents, 65 students (59%) with the habit of consuming carbohydrates such as wheat, rice, sago, etc. and 32 students (29%) with the habit of consuming sweet foods such as chocolate, candy cakes. This shows that children consume a lot of low-level carbohydrates such as wheat, rice, oatmeal and others because this type of carbohydrate is a daily food in the form of staple food or main food, especially in Indonesia. And many respondents who eat sweet snacks that contain high carbohydrates and are cariogenic. This is in accordance with

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the statement of Kartikasari et al., which states that the food that is often consumed by elementary school children is cariogenic food, this is because cariogenic food has an attractive color, appearance, texture, aroma and taste. Cariogenic foods can cause dental caries this is because cariogenic foods have a tendency to stick to the tooth surface and undergo a rapid fermentation process. And many respondents who eat sweet snacks that contain high carbohydrates and are cariogenic.[5]

The frequency of eating carbohydrates showed that 1 student (1.56%) consumed carbohydrates in the low category (≤ 3x a day), 40 students (62.50%) consumed carbohydrates in the moderate category (4-6x a day) and 23 students (35.94%) consume carbohydrates with a high category (≥ 7x a day). On average, students consume carbohydrates 4-6 times a day. This study is in line with research by Yuanita, which shows that shows the highest percentage of consumption of cariogenic foods (carbohydrates) in the frequent category (39.6%) and the consumption of sweet foods in the occasional category (33.3%). This states that the level of frequency of consuming students' carbohydrates is moderate or sufficient, both staple food and snacks. In this study, respondents usually consume snacks outside the main mealtime (free time), according to Recca, sweet foods should be eaten during main meal times, such as breakfast, lunch and dinner, because at the time of the main meal time, usually quite a lot of saliva is produced, thus helping to clean sugar and bacteria that stick to the teeth.[21,22]

The results of the study on changes in eating patterns during the pandemic showed that most of the students, namely 55 students (85.94%) experienced changes in the form of increasing carbohydrate eating patterns and 9 students (14.06%) did not experience changes. This is in line with the research by Saragih et al. on "An Overview of People's Eating Habits During the Covid-19 Pandemic" which showed that 62.5% experienced changes in diet and experienced an increase in the diversity of food consumption by 59%. People who experienced an increase in eating frequency were 54.5%. This is most likely due to changes in community activities, especially school children due to Government Regulation concerning Large-Scale Social Restrictions which requires students to do Distance Learning where students attend school and study from home so as to make students spend more time at home, this makes students eat often, especially consuming sweet snacks .[15]

From this study, 39 students (60.94%) had experienced toothache during the pandemic and 25 students (39.06%) had never experienced toothache during the covid-19 pandemic. This is probably due to the fact that many respondents consume cariogenic carbohydrates with an increased frequency of eating and after eating they are not cleaned immediately either by rinsing or brushing their teeth, this is what causes caries so that most of the respondents have experienced toothache. This is probably due to the fact that many respondents consume cariogenic carbohydrates accompanied by an increased frequency of eating and after eating they are not cleaned immediately either by rinsing or brushing their teeth, this is what causes caries so that most respondents have experienced toothache. This is confirmed by the research of Rosidi et al. proved that there is a relationship between the consumption of cariogenic foods with the incidence of dental caries in children. Reca's research also proves that there is a relationship between types of snacks and dental caries status. Reinforced the opinion of Rosihan et al. states that consuming carbohydrates will undergo fermentation. The pH in plaque will drop within a few minutes (5-10 minutes) to below 5 or 5.5, which is a critical pH that causes enamel to demineralize, resulting in dental caries. [22–24]

V. CONCLUSION

Based on the research results, it can be concluded that:

1. All 4th grade at Elementary School 02 Meruya Utara, West Jakarta, consume low fermentable and high fermentable carbohydrates.
2. The frequency of eating carbohydrates shows that most students consume carbohydrates in the moderate category or 4-6 times a day, which means that students' carbohydrate needs are fulfilled.
3. Changes in eating patterns during the pandemic show that most students experience changes in the form of an increase in eating patterns during the covid-19 pandemic
4. As many as 39 students have experienced toothache during the covid-19 pandemic pandemi

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