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Analysis of nutritional status in children with intellectual disability during covid-19 pandemic

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Abstrak: The aim of the study was to look at students' physical fitness conditions based on nutritional status (BMI) during the COVID-19 pandemic. The participants of this study were 28 intellectual disability (ID) students. This research instrument is a test of height and weight that has been standardized. Data analysis uses quantitative descriptive statistics. The results showed that measurements in boys are known as obesity is 1 boy (7,14%), overweight is 6 boys (42,86%), normal is 5 boys (35,71%), thinness is 2 boys (14,27%), and very thinness is 0 (0%). . The results showed that measurements in boys are known obesity is 3 girls (21.43), overweight is 4 girls (28,57%), normal is 3 girl (21.42%), thinness is 3 girl (21.42%), and very thinness is 1 girl (7.14%). The results of the study and discussion above concluded that the nutritional status of children aged 13-15 years during the COVID-19 pandemic was physically examined based on the status of the majority of BMI majority in obesity groups for boys and girls. Contribution for future studies, especially need to include several independent variables to determine the dominant variable that protects the nutritional status of children.

***Keywords*:** physical fitness, nutritional status, intellectual disability, ages 13-15 years

Analisis status gizi pada anak dengan hambatan intelektual selama pandemi covid-19

Abstract: Tujuan penelitian ini adalah untuk melihat kondisi kebugaran jasmani siswa didasarkan pada status gizi (IMT) selama pandemi COVID-19. Partisipan penelitian ini adalah 28 siswa tunagrahita. Instumen penelitian ini adalah tes tinggi badan dan berat badan yang telah baku. Analisis data menggunakan statistik deskriptif kuantitatif. Hasil penelitian menunjukkan bahwa pengukuran pada anak laki-laki yang diketahui obesitas adalah 1 anak laki-laki (7,14%), kelebihan berat badan adalah 6 anak laki-laki (42,86%), normal adalah 5 anak laki-laki (35,71%), kurus adalah 2 anak laki-laki (14,27%), dan sangat kurus adalah 0 (0%). Hasil pengukuran pada anak perempuan ditemukan obesitas adalah 3 anak perempuan (21,43), kelebihan berat badan 4 anak perempuan (28,57%), normal adalah 3 anak perempuan (21,42%), kurus adalah 3 anak perempuan (21,42%), dan sangat kurus adalah 1 anak perempuan (7,14%). Kesimpulan penelitian ini adalah kondisi kebugaran jasmani siswa didasarkan pada status gizi (IMT) selama pandemi COVID-19 adalah dominan pada ideal tinggi. Kontribusi untuk studi di masa depan, terutama perlu memasukkan beberapa variabel independen untuk menentukan variabel dominan yang melindungi status gizi anak

Kata Kunci*:* kebugaran jasmani, status gizi, tunagrahita, usia 13-15 tahun

PENDAHULUAN

Coronavirus (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus (Burhaein, Tarigan, Budiana, Hendrayana, & Phytanza, 2021; Chen et al., 2020; Widodo & Najibuzzamzam, 2021). Most people who contract COVID-19 will experience mild to moderate symptoms and will recover

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without special treatment (Burhaein, Demirci, et al., 2021; Burhaein, Ibrahim, et al., 2020; Demirci & Phytanza, 2021). However, some people will experience severe pain and need medical help. Various countries in the world are currently experiencing shocks in various sectors of life. One of the sectors affected is the health sector. It also affects the nutritional level of the world community because of the weakening of the country's economy so that it also affects the welfare of people's lives. Fulfillment of nutrients needed to maintain immunity during the COVID-19 pandemic (Boukrim et al., 2021; Burhaein, Tarigan, Budiana, Hendrayana, Phytanza, et al., 2021; Sulistiantoro & Setyawan, 2021).

Instability in anthropometric parameters occurs in body weight. Nutritional needs are balanced with the presence of nutritional intake and weight development with age changes into ideal circumstances experienced by a person (Anjali & Sabharwal, 2018; Dixon et al., 2012; WHO, 2020b). But if the opposite occurs when a person experiences a condition called non-ideal. This will result in weight changes that occur walking more slowly than usual.

Regularly reviewed weight checks will have an impact as a form of prevention to address the possibility of unwanted weight gain or loss where continuous nutritional interventions will be performed. Assessment of the nutritional status of children is done by comparing the results of weight and length / height measurements with standard anthropometry (Kemenkes RI, 2017). The conditions seen in excess fat, either localized to a particular part or overall, are a form of state commonly called obesity. Pandemics experienced by the rest of the world have considerable effects or impacts in almost all sectors of human life.

The World Health Organization (WHO) has determined that COVID-19 is a pandemic threat that is currently being experienced by the rest of the world (Burhaein, 2020, 2021; WHO, 2020a). The current state of the pandemic cannot be debated as to what its fate will be in the future. Currently what can be done by the whole world one of them is as a form of prevention to minimize the current situation so as not to increase its impact. One of them that can be done at this time is the implementation of forms of activities carried out at home both in the field of work, education, and others.

Many people who spend longer doing online activities at home are seen from the percentage of about ninety-one percent of the sample that states so. While another fact that the weight gain of 2.5 - 5 kg with the achievement of twenty-two percent of the results obtained from the total sample that this high percentage is seen from the form of sense of vision, smell, stress management, with this meal is different when compared to those who claim not to change behavior at all (Zachary et al., 2020).

Health losses will be experienced by people with obesity if not handled properly. Where this can restore a person's quality of life to decrease and the amount of spending on health interests that swells. So it is not uncommon to be declared to bring obesity to be a cause of premature death / death at a young age, which is the cause of obesity, among others obesity becomes the prefix of some degenerative diseases that are very deadly such as cardiovascular disease, heart disease, stroke, hypertension, *diabetes mellitus* (DM), and cancer (Harbuwono et al., 2018; Hermawan et al., 2020; Melzer et al., 2004).

The importance of nutrition for elementary school students is good for growth, development, and physical fitness (Burhaein, Phytanza, et al., 2020; Catur & Mujiriah, 2021; Cinthuja et al., 2015). Not only nutrition the importance of healthy living behaviors also needs to be socialized to students so that students can get used to behaving in a healthy life. Every teacher or educator and parent of the student should always control the state of the student's condition both physical (nutritional status) (Baranauskas et al., 2015; Irawan & Prayoto, 2021; Phytanza & Burhaein, 2020), mental (student behavior) (Burhaein, Tarigan, et al., 2020; Pramantik, 2021; Villani et al., 2021) in getting used to healthy living both from food, personal hygiene, and the surrounding environment, so that it can be detected early if experiencing disorders that then affect the growth of children.

For people with nutritionally deficient status (underweight) and people with more nutritional status (overweight), the body's defenses become weak, making it easily infected (Burhaein, 2021; Cook et al., 2015; Prasetya, 2021). Therefore, we need to maintain a good nutritional status (ideal) that is by having an ideal body weight and height. For those who are underweight, it is necessary to increase intake to achieve the ideal body weight, while being overweight can reduce the intake of certain foodstuffs to lose weight and be combined with exercise (Blair et al., 2018; Burhaein, 2020; Sibarani & Manurung, 2021).

The fulfillment of good nutrition will affect the process of growth and development of a person, in addition, it also affects the process of maintenance of cells in the body and metabolism in the body (Athanasiou et al., 2019; P. Purwanto et al., 2021; S. Purwanto & Burhaein, 2021; Widiyono &

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Mudiono, 2021). Nutrition has a very important role from still in the womb to old age. Therefore, it is necessary to provide a balanced nutritious diet, so that the body is not malnourished. Poor nutrition will affect physical, mental, and thinking growth.

The lack of knowledge of children and adolescents about nutritious foods will affect the selection of food consumption. Children often have a habit of not having breakfast, irregular eating patterns, and snack habits, drinking less water so that nutritional intake cannot be met properly (Anjali & Sabharwal, 2018; Azizah & Sudarto, 2021; Sutopo & Misno, 2021). Therefore, the role of nutrition is very important for the body to grow and develop children. To know about the picture of health caused by the food consumed is an obligation for teachers, caregivers, and parents.

Malnutrition has a major effect on concentration and learning achievement in students and degrades the quality of human resources in the future. Students' personalities and physiques should be shaped early from childhood as provisions to proceed to a higher level, so cooperation from all parties is necessary to participate directly in supporting programs to improve or improve nutrition in children.

Nutritional intake is very important for children in pandemic times like now, according to a who nutritionist's statement stating that during this pandemic we know the intake of fruits and vegetables must be increased because it contains vitamins C and E that can increase immunity (Irawan & Limanto, 2021; Putra et al., 2021; WHO, 2020b).

Responding to the pandemic situation, through the Healthy Living Community Movement, WHO issued a Balanced Nutrition Guideline (WHO, 2020b, 2020a). Whose goal is to issue these guidelines expected by applying these guidelines in everyday life, it is expected that the public, especially school-age children, have stronger endurance to avoid some diseases.

Children are the next generation of the nation. Human development must start from the beginning, nowadays children should get enough attention, especially in terms of nutritional adequacy. With the maintenance of nutritional quality and quantity, it is expected that children can learn well so that children have real knowledge, skills, abilities, and behaviors in everyday life.

During the Covid-19 Pandemic, people are encouraged to adopt a healthy lifestyle by exercising, maintaining distance, diligently washing hands, using masks, and eating nutritious foods (ACSM, 2020; Widodo & Zainul, 2021). As we know, the Covid-19 pandemic attacks the human body that has low endurance. The importance of nutritional intake during the Covid-19 pandemic is very important to support endurance.

To deal with the current situation, optimal body defense is needed. In terms of nutrition that need to be considered, among others, maintaining ideal nutritional status, and applying balanced nutrition guidelines in daily life. The nutritional status of each person can be known by looking at weight and height.

It is therefore important to uncover the problem of "How students' physical fitness condition is based on nutritional status (BMI) during the COVID-19 pandemic". So, from the formulation obtained the purpose of this study is to analyze of physical fitness levels by nutritional status in children with intellectual disability during the pandemic.

METODE

Research design

This research is quantitative descriptive research (Fraenkel et al., 2012). The method used in this study is surveying (Biddle et al., 2001; Fraenkel et al., 2012). Surveys are techniques of collecting information conducted by compiling a list of questions asked by respondents in the form of a sample population. In the survey study, the researchers examined the characteristics of causal relationships between variables in the absence of intervenes.

Participants

Participants in this study are students with intellectual disabilities. Participants in this study were selected by applying *random sampling* techniques (Fraenkel et al., 2012). Before data retrieval, researchers communicate with participants to explain the purpose of the study and the entire research process. This research requires the approval of participants who later participants are willing to participate or not. Participants who are willing to become participants are those who volunteer and

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without compulsion. Data from participants who are willing to participate in this study will not be misused and will only be used for research purposes only.
Researcher specifies the minimum maximum value at the height and weight of children aged 13-15 years (see Table 1). The number of participants who received the data was 28 children with male and female genders. The participants are described in detail in Table 1.

Tabel 1. Research Participant Statistics

Information	Statistical
Gender	
Male	14
Female	14
Total	28
Age (13-15 years)	
M	13.34
SD	1.03

Source: Primary Data

Instrument

The next step is the determination of the instrument. An instrument is an important measuring alat used in measuring something that will be measured precisely and consistently. Nutritional status measurement generally uses body mass index measurement (BMI) for children 13-15 years old. BMI instrument is a valid and reliable body mass index instrument so that it is consistent and reliable (Kemenkes RI, 2017). The intrusion of this study using measurements of weight and height was then consulted based on the category of calculation of weight and height in children aged 13-15 years. The measurement results are then included in the formula which is further analyzed and interpreted in category form.

Data collection techniques

The data collection technique in this study used anthropometric measurements that included measurements of weight and height. Weight and height are then calculated based on the calculation of weight index according to height in children aged 13-15 years. Furthermore, the process of implementing measurements of weight and height of children (WHO, 2022).

The process of measuring weight measurement is as follows 1) Participants wear shorts and stand barefoot; 2) Testi stands upright on the scales; 3) Weight measurement is done with digital scales with sensitivity of 0.1 kg and 4) Measurement results are recorded in kilograms (kg). After getting weight data, the next stage is to measure the child's height. The implementation of height measurements is as follows 1) Participants wear shorts and stand by bringing their back closer to the measuring pole; 2) Testi stands upright with the position of the legs tightly and the head and body are tight with the pole; 3) The measuring instrument is pulled until it touches the head, 4) The height of the participant is measured by a sensitivity scale of 0.1 cm, and; 4) The measurement results are recorded with centimeter units (cm).

Data Analysis

The study used a percentage descriptive analysis technique used to see a picture of nutritional status by measuring weight using kilograms (kg) and height using centimeter (cm) units. Weight and height are then calculated by table based on the calculation of weight index according to height in children aged 5-19 years old (WHO, 2022). The formula used to calculate nutritional status is as follows.

Body Mass Index (BMI) = $\frac{Height}{(Weight)^2}$

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Table 2. Interpretation of BMI for age 13-15 years from WHO

1	Obesity	>+2SD
2	Overweight	>+1SD
3	Normal	SD
4	Thinness	< -1SD
5	Severe thinness	< -2SD

Source: WHO (2022)

After the data is obtained, then the data is analyzed to conclude the research that has been done. In analyzing data used statistical analysis techniques by percentage. The percentage formula used is as follows (WHO, 2022).

$$\text{Percentage} = \frac{Frequency}{Total\ Participant}$$

HASIL DAN PEMBAHASAN (70%)

The results of research on physical fitness reviewed by BMI can be known by measurements of height and weight. The description data from the results of the study can be seen in Table 3 (raw data) and Table 4 (BMI descriptive statistics).

Table 3. Research Results Data

Male Students					**Female Students**				
Participants	**Hg (m)**	**Wg (Kg)**	**BMI**	**SD***	**Participants**	**Hg (m)**	**Wg (Kg)**	**BMI**	**SD***
1	1,56	38,60	15,86	-1	1	1,41	39,00	19,62	0
2	1,52	37,10	16,06	-1	2	1,51	44,90	19,69	1
3	1,60	45,30	17,70	0	3	1,50	45,10	20,04	1
4	1,63	46,50	17,50	0	4	1,52	47,40	20,52	1
5	1,55	52,90	22,02	1	5	1,51	42,10	18,46	-1
6	1,68	62,80	22,25	1	6	1,67	51,90	18,61	-1
7	1,63	63,20	23,79	1	7	1,51	44,80	19,65	0
8	1,70	91,50	31,66	2	8	1,54	48,4	20,41	1
9	1,73	56,00	18,71	0	9	1,56	109,10	44,83	2
10	1,72	72,40	24,47	1	10	1,62	42,30	16,12	-2
11	1,52	42,50	18,40	0	11	1,61	47,34	18,26	0
12	1,57	49,70	20,16	1	12	1,50	42,12	18,72	-1
13	1,51	52,90	23,20	1	13	1,51	63,60	27,89	2
14	1,36	32,80	17,73	0	14	1,50	71,10	31,60	2

Note: SD is based on the BMI Boys & Girl table from WHO

Table 4. IMT Descriptive Statistical Data

Information	**Statistical Figures**	
	Boy	**Girl**
Min.	15,86	16,12
Max.	31,66	44,83
M	20,68	22,46
SD	4,27	7,61

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The raw data results are then processed using the standard formula of the physical fitness index, then the results are interpreted in the form of nine categories. The results of BMI measurements can be seen in Table 5 (for boy) and Table 6 (for girl).

Table 5. Results of IMT Categorization of Boy's ID

Category	Male's Index	Frequency	Percentage (%)
Obesity	>+2SD	1	7.14
Overweight	>+1SD	6	42,86
Normal	SD	5	35,71
Thinness	< -1SD	2	14,27
Severe Thinness	< -2SD	0	0
Total		14	100

Source: Primary Data

Table 6. Results of BMI Categorization of Girl's ID

Category	Female's Index	Frequency	Percentage (%)
Obesity	>+2SD	3	21.43
Overweight	>+1SD	4	28.57
Normal	SD	3	21.43
Thinness	< -1SD	3	21.43
Severe Thinness	< -2SD	1	7,14
Total		14	100,00

Source: Primary Data

Coronavirus disease will be more dangerous when the child has an accompanying disease, such as pneumonia. Therefore, maintaining and improving the nutritional status of children is very important. Explained, the limitations of elderly income can lead to a domino effect that decreases people's purchasing power in the pandemic period. The availability of food in households and parents' knowledge of affordable nutritious food choices are of particular concern.

It also means an additional threat to the health of potentially malnourished children and to their ubiquitous growth. Therefore, cooperation between stakeholders is needed to help each other, especially to keep the fulfillment of child nutrition still thrive in pandemic times. This pandemic is only a momentary problem but maintaining the growth and development of children is a long-term task that must continue to be solved so that the problem of malnutrition and malnutrition does not increase in the second child. The effect on malnutrition will affect the height of the child for a relatively long time.

The results showed that the nutritional status of children aged 13-15 years during the COVID-19 pandemic reviewed from the weight index based on height was mostly in the ideal category with M = 20.68 (male students) and ideal height with M = 22.46 (female students). Although a child's overall nutritional status is within the ideal range, some children need special attention. Some children have nutritional status ranging from severe thinness too obesity. Children who have poor nutritional status tend to be less physically active (Burhaein, Tarigan, Budiana, Hendrayana, & Phytanza, 2021; Woods et al., 2020). As a result, the muscles of the body in children do not develop perfectly, so the structure of the body is not ideal. Fat kids have several reasons. First, his parents were obese. In addition, children's eating habits also tend to be uncontrolled and physical activity inadequate (Burhaein, Demirci, et al., 2021; Castañeda-Babarro et al., 2020). Excess nutrients in daily calorie intake will accumulate into calorie stores. Calories in the body are stored as fat, which causes an imbalance between a child's weight and height.

Obesity in intellectually disabled children (ID) is caused by various factors, including genetic factors or offspring of parents of ID children who are also obese. A study found that children from with overweight parents were more likely to experience more nutrients by 48% (De Winter et al., 2012). Characteristics of parents with a history of obesity affect the genetic and behavioral nature of food consumption in the family.

Racial/ethnic/area of origin background is one of the sociocultural environmental factors that influence biological and behavioral aspects of health maintenance, including in children. Ethnic or tribal

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cultural background also influences a person's belief system, principles, and behavior. A group of cultural factors that can be beliefs, practices, or lifestyle, which are often manifested in the form of food consumption habits or dietary patterns, intake, are key factors associated with nutrition and digestion (Davies, 2018) The culture that shapes body image perceptions influences parents to determine strategies or decisions regarding food and the right amount of food for their children.

There are many factors that play a role in controlling childhood obesity rates. Factors in a mother are one of the first factors that first affect a person's health status, especially the child (Duffany et al., 2016). The low level of maternal education causes mothers to have more traditional or simple food consumption habits for their children compared to higher educated mothers who can process a variety of other foods together (Ruiz et al., 2016). The level of maternal education affects the mother's understanding of child nutrition, including the selection and development of healthy foods. People with low education often tend to choose fast food for their children to consume with high frequency.

The importance of providing enough nutrients to meet the body's needs for its growth and development, cannot be separated from the role of parents in paying attention to balanced nutritional content for their children (Burhaein, Tarigan, Budiana, Hendrayana, Phytanza, et al., 2021; P. Purwanto et al., 2021). Ideal nutrition is inseparable from several factors that affect the nutritional status that are affected by the imbalance of intake and output, namely intake that exceeds output or vice versa, plus the mis-selection of foodstuffs will result in poor nutrition. During the growth and development of adolescents, nutritional status plays a very important role in the growth and development of the human body to be able to carry out daily physical activity.

The level of nutrients (nutrients) in every food is not the same, some are low there are also high because by paying attention to the "four healthy five perfect" that are always encouraged by the government, nutrients that are always needed by the human body to ensure physical growth and development and enough energy to do activities. (Mielgo-ayuso et al., 2015; WHO, 2022).

To expand the results of the study, researchers sought information about the social status and employment of the students' parents, then researchers conducted interviews with residents around the student residence, for example, students with the initials "AE" had an obese nutritional status. Parents of students are placed in high-profile categories based on their employment status and real estate assets. The following results of the analysis are that students with the initials "BD" initially have poor nutritional status, after interviewing their parents who work as farm laborers, it can be concluded from random interviews that, and the income of the students' parents greatly affected their nutritional status during the pandemic.

In addition to family economic factors, schools also play a role that is no less important in shaping the nutritional status of students. Not only provide debriefing, but the school is also able to provide examples of foods that have a balanced amount of nutrition, but the school can also control food traders around schools and canteens to provide healthy food, more than that through school students also get sports education that has a role as a means of activities and activities to reduce excess food intake that can cause obesity.

The nutritional status of children was closely related to weight and height in the analysis of this study. The first is the relationship between weight and nutritional status. Weight describes the amount of protein, fat, water, and minerals in the bones. In children with intellectual disabilities who are less active in moving, fat intake tends to increase, so a decrease in muscle protein is one measure that gives an idea of body time. Weight is sensitive to sudden changes due to infectious diseases or decreased consumption. Weight loss is also the best parameter, easily visible in a relatively short period of time.

Furthermore, the relationship between height and high nutritional status provides a direct picture of high, moderate, or short conditions. The relationship between height and nutritional status is weight gain, weight can be made guidelines to determine nutritional status. Good nutritional status means that the growth and development of our bodies will be in harmony and age-appropriate (Burhaein, Tarigan, Budiana, Hendrayana, & Phytanza, 2021; WHO, 2020b, 2022).

Based on the literature above, conclusions will be synchronized and strengthened in measuring the nutritional status of children in this study. Measurements are made through a nutritional index that is adjusted to weight based on height. This research is also supported by several previous studies or findings related to nutritional status in the pandemic period.

The results of the first relevant study Prasetyo (2016), the results showed that the nutrition of elementary school-age children with a very thin group of 9 students (4.05%), the skinny group as many

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as 39 students (17.57%), normal groups as many as 156 students (70.27%), obese groups as many as 16 students (7.21%), and groups obesity as many as 2 students (0.90%). The results concluded that the nutritional status of elementary school-age children is mostly in the normal category.

The results of the second relevant study namely Nurmidin et al. (2020), there is an effect of the Covid-19 pandemic on physical activity and the application of balanced nutrition principles. Based on the results of this study, respondents should maintain their immunity by being physically active for at least 30 minutes a day and eating a balanced nutritious diet.

The third relevant research result is a literature review Kirana (2020), this study concluded the impact of the Covid-19 pandemic on physical activity and the application of a balanced diet for school children during online learning in the pandemic period. However, another factor is the impact of the Covid-19 pandemic on students studying online during the pandemic.

The results of a fourth relevant study Arinda et al. (2021), showed that respondents' physical activity, health behaviors, and nutritional awareness were increasing under the new normal. Respondents became more aware and concerned about each other's health, especially for personal hygiene.

The four studies above, all have something in common and strengthen this study, namely about the importance of knowing and measuring nutritional status in children / students. This study has a side of originality compared to previous relevant studies, namely 1) measurement of nutritional status in a broad age range from 13 to 15 years, and 2) Measurements are done randomly, so that the data obtained will be more dynamic.

SIMPULAN (5%)

The results of the study and discussion above concluded that the nutritional status of children aged 13-15 years during the COVID-19 pandemic was physically examined based on the status of the majority of BMI majority in obesity groups for boy and girl. The picture of children aged 13-15 years at the time of the pandemic is ideal, with parents' knowledge of child nutrition mostly good. This study has implications for 1) Helps improve understanding in children about the importance of nutritional status for those who are classified as not ideal, and 2) Children are expected to maximize the role of physical activity in improving physical fitness and nutritional status of students. This study has limitations because the number of participants is still small this study then provides contribution for future studies, especially need to include several independent variables to determine the dominant variable that protects the nutritional status of children.

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