Education on the Relationship between Body Mass Index and Balanced Nutrition for School-Age Children Through Video Learning (Case Study of Integrated Islamic Elementary School Daarul Fikri grade 6, Cihanjuang Village)

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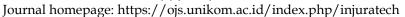
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Abstract. This study aims to determine the level of students' understanding through learning videos regarding the relationship between Body Mass Index (BMI) education and balanced nutrition in 6th grade elementary school-aged children at integrated Islamic elementary school Daarul Fikri, Cihanjuang Village. Quantitative research method with pre-experimental design type one group pretest-posttest. The research was conducted on 20 6th grade students of integrated Islamic elementary school Daarul Fikri. The research was conducted in 3 stages, namely (i) pre-test; (ii) education through learning videos; and (iii) post-test. The results showed the average value of the pretest was 67.25 and the average posttest was 79.25. The comparison of pretest and posttest showed an increase in students' knowledge after taking action through learning videos. The result of calculating the average N-Gain value is 0.34 (34%) which shows that education through learning videos regarding the relationship between Body Mass Index (BMI) and balanced nutrition is not effective. This is because the students' pre-test scores are quite good. As for the results of the calculation of the t-test, it is known that T count (-6.564) < T table (1.729) means that the posttest scores of students increase but are not significant. With the completion of this study, it is hoped that more school-age children will understand the relationship between Body Mass Index and balanced nutrition. That we can identify the nutritional status that will affect the health of our bodies.

1. Introduction

Nutrition is wrong one determinant quality source power man (HR), because success development something nation determined by availability HR which quality, that is HR which have physique which toughness, mental which strong, intelligent and health which prime, Thing this very determined by status nutrition which good (Rahayu et al., 2019). Nutritional problems are still a heavy burden for the nation, especially nutritional problems in school-age

children. The influence of nutritional problems on growth, development, intellectual and productivity shows the large role of nutrition for the life of school-age children (Rahayu, 2020). Malnutrition at school age will result in disruption of body growth, mental, intelligence, and easily infected with disease. Nutritional problems in school-age children are not only problems of undernutrition, but also problems of overnutrition. Nutritional problems that are often found at this time are anemia, chronic lack of energy and obesity (Rusdi, et al., 2021). High-calorie eating habits in children without a balanced intake of nutrients, in a certain period of time can lead to overweight and eventually can lead to obesity (Lupiana, et al., 2022). The problem of excess nutrition does not only occur in certain circles, certain ages, it can even occur in school-age children (Furtuna, 2022). Fulfillment of nutrients in school children must be given appropriately both in terms of quality and quantity. This is because school-age children pay less attention to the food consumed by them. Therefore, school children are included in one of the groups that are prone to nutritional problems (Nuzrina et al., 2016). One of the ways to improve nutritional quality is through improving food consumption patterns that are in accordance with balanced nutrition (Febrinsa et al., 2016).
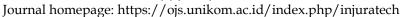
Nutrition is substance food which contains something ingredient food which could be utilized by the body. Whereas substance nutrition is substance or element chemical which is contained in food which is required for metabolism in the body by normal. Nutrition balanced is food composition daily which contains nutrition in type and amount which in accordance with the body needs. intake nutrition which is optimal, good in Thing quantity nor quality, very important for growth as well as development which is optimal. Balanced nutrition is food arrangement daily containing substances nutrition in type and amount which in accordance with needs body, with pay attention to four pillar nutrition balanced that is diversity or variation food, activity physique, get used to a clean and healthy lifestyle, and monitor body weight regularly (Irnani & Sinaga, 2017).

Body Mass Index (BMI) is one of the parameters for the comparison of body weight and height based on child anthropometric standards. Anthropometric Standards Child is gathering data about size, proportion, composition and body as reference for assessing the nutritional status and growth trends of children. Child Anthropometry Standards must be used as a reference for assessing the nutritional status of children. Body Mass Index by Age (BMI/U) child age 5 (five) years until 18 (eighteen) years used to determine category nutrition bad, nutrition not enough, nutrition good, risky nutrition more, nutrition more and obesity.

From various studies, one of the factors that affect a person's nutrition is lack of knowledge about nutrition. Knowledge of nutrition is one of the factors that affect a person's nutritional condition (Hafidz & Kurniasari, 2021). One of the lacks of knowledge and nutritional attitudes in school-age children is that they are less able to choose nutritious foods (Ramadhanti et al., 2022). Decreasing knowledge also will reduce the ability of somebody to apply information nutrition in life everyday (Nuryanto et al., 2014). It is also supported by Gifari et al., (2020) which said that knowledge about balanced nutrition can reduce mass index body (BMI) in adolescents who have more nutrition. In addition, with knowledge of nutrition A balanced diet can improve consumption patterns and achieve normal weight (Intantiyana et al., 2018). Thus, the prevention of undernutrition and overnutrition requires understanding and the practice of a healthy lifestyle contained in the four pillars of balanced nutrition, one of which is to monitor a heavy body by periodically. Knowledge can be obtained by using the senses of sight and hearing. One way to increase nutritional knowledge is through nutrition education. Educational activities are influenced by the media that will be used (Ningtyas et al., 2022). The provision of nutrition education can be done using various media such as auditive, visual, and
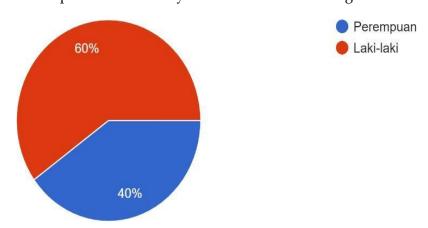
audiovisual media (Hidayah et al., 2022). One of them is using video media. Video is an audio-visual media that can reveal objects and events as they really are (Effendy et al., 2022). Through learning videos, students are able to understand the learning message more meaningfully that the information conveyed through the video can be understood in its entirety (Meidiana et al., 2018).

However, there has been no research on education through learning videos about Relationship between Body Mass Index and balanced nutrition for school-age children. Thus, this study aims to determine education through learning videos on the level of students' understanding of the relationship between Body Mass Index and nutrition balanced in 6th grade school-aged children of Integrated Islamic Elementary School Daarul Fikri Cihanjuang Village as a sample study. The novelty of this research is (i) research conducted on education influence index mass body with nutrition balanced to child age school class 6 integrated Islamic elementary school Daarul Fikri; (ii) process education influence index mass body with nutrition balanced conducted with use media technology videos learning; and (iii) study this using nutritional status assessment based on PMK No 2 of 2020 regarding nutritional status Child Anthropometry and Anthropometric Index according to the WHO nutritional status category Reference 2007 for child 5-18 year.

2. Method
2.1. Subject Study

Subject study is child age school class 6 integrated Islamic elementary school Daarul Fikri Village Cihanjuang. There were 20 respondents consisting of 8 women and 12 men (Figure 1). The age range of the respondents is 11-12 years. Table 1 shows the age details of respondents.
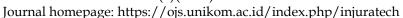

Figure 1. Presentation type sex respondents.

Table 1. Data Respondent's Age.

No	Name	Date Born	Age
1	R	01/02/2011	11 Year 5 month
2	A	23/07/2010	11 Year 11 month
3	Q	10/05/2011	11 Year 2 month
4	RE	20/02/2011	11 Year 5 month
5	AR	22/11/2010	11 Year 8 month

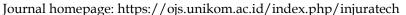| 6	QO	21/07/2011	11 Year 0 month
7	RA	28/05/2010	12 Year 1 month
8	AI	06/08/2010	11 Year 11 month
9	KH	12/11/2010	11 Year 8 month
10	KA	10/09/2010	11 Year 10 month
11	NA	29/01/2011	11 Year 5 month
12	RD	21/07/2011	11 Year 0 month
13	AL	16/02/2011	11 Year 5 month
14	EA	15/05/2011	11 Year 2 month
15	FA	06/08/2010	11 Year 11 month
16	AZ	15/08/2010	11 Year 11 month
17	FD	07/07/2010	12 Year 0 month
18	KE	11/10/2010	11 Year 9 month
19	FS	10/09/2010	11 Year 10 month
20	NI	21/07/2011	11 Year 0 month

2.2. Research Design Analysis

Research data collection was carried out by distributing questionnaires using Google Form to 6B grade students of integrated Islamic elementary school Daarul Fikri, Cihanjuang Village. There are 3 stages in data collection, namely (i) distribution of pre-test questionnaires; (ii) providing educational actions through learning videos; and (iii) distribution of post-test questionnaires. The data processing approach used is a quantitative approach. We made 20 pre-test and post-test questions. Table 2 shows the pre-test and post-test questions in this study. Making questions focused on students' knowledge of body mass index and balanced nutrition. Types of questions pre-test and post-test are types of questions with answers Yes and No and stuffing short for knowing heavy body, tall body, and activity activity student. Giving a score answer be marked as 1 for answer Correct and 0 for answer wrong.

Table 2. Question Pre-Test and Post-Test.

No	Question	Answer	
		Yes	Not
1	Do you know what balanced nutrition is?		
2	Is nutrition balanced with 4 healthy 5 perfect?		
3	Do you know 4 balanced nutrition?		
4	is 4 healthy 5 perfect is wrong one from 4 pillar nutrition balanced		
5	is to do behavior life clean and healthy is wrong one from 4 nutrition pillars balanced?		
6	is to do activity physique is wrong one from 4 pillar nutrition balanced?		
7	Is our need to monitor weight periodically?		
8	Do you know the type of substance good nutrition needed for school children?		

9	is monitor heavy body is wrong one indicator which showing balanced nutrition?		
10	Do you know about consequence deficiency nutrition?		
11	Do you know the consequences of excess nutrition on the body?		
12	is you knowing what that's BMI		
13	is determination status nutrition based on BMI must customized with age and type sex?		
14	Do you know the method to count weight ideals?		
15	is We already Fulfilling nutrition balanced?		
	Stuffing Short		
16	In time 7 day which then how much day you have to do activity physique, like gymnastics, bicycle or play football?		
17	How much do you weigh at the moment?		
18	When do you finally rise up in weight?	< 1 Month	> 1 Month
19	How many heights do you when this?		
20	When final you weigh weight	< 1 Month	> 1 Month

2.2.1 N-Gain Analysis

The normalized gain test analysis or N-Gain aims to determine enhancement students' understanding after being given certain actions in one group pretest research post-test design. Improved understanding taken from the pretest and posttest scores obtained by students. The formula used in calculating the N-Gain value is shown on Equation 1

Equation 1. N-Gain

$$N - Gain = \frac{Skor\ Posttest - Skor\ Pretest}{Skor\ Ideal - Skor\ Pretest}$$

where the ideal score is the maximum value that can be obtained by respondents when filling out the pretest and posttest questions.

There are several categories of obtaining N-Gain values that can be used as a reference to determine the conclusion of the final result. Table 3 shows the distribution of the N-Gain value acquisition categories. Table 4 shows the effectiveness category of N-Gain in percentage (Farell et al., 2021).
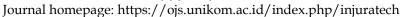
Table 3. Category N-Gain.

Score N-Gain	Category
g > 0.7	Tall
0.3 g 0.7	Currently
g < 0.3	Low

Table 4. Category Effectiveness N-Gain.

Percentage (%)	Interpretation
> 76	Effective
56 – 75	Enough Effective
40 – 55	Not enough Effective
< 40	Not Effective

3. Results and Discussion

Counting score gain conducted for knowing understanding students after carrying out an action (Farell et al., 2021). Table 5 shows the results of the analysis of the value of gain pretest and posttest. Based on the data in Table 5, it is known that the average value of N-Gain is 0.34 (34%) indicating that the action taken is education using learning videos about body mass index with balanced nutrition are not effective. Results the ineffectiveness of learning video media is influenced by the respondents' initial pretest scores which are big enough. This states that students already know about nutrition balanced.
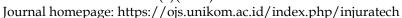
Table 5. Analysis Score Pretest Gain and Post-Test.

No	Name	Score		N-Gain	Category
		Pre-Test	Post-Test		
1	R	65	85	0.57	Currently
2	A	55	80	0.56	Currently
3	Q	65	70	0.14	Low
4	RE	70	80	0.33	Currently
5	AR	70	75	0.17	Low
6	QO	65	85	0.57	Currently
7	RA	75	85	0.40	Currently
8	AI	80	85	0.25	Low
9	KH	80	85	0.25	Low
10	KA	80	80	0.00	Low
11	NA	70	80	0.33	Currently
12	RD	75	90	0.60	Currently
13	AL	60	75	0.38	Low
14	EA	50	70	0.40	Currently
15	FA	65	75	0.29	Currently
16	AZ	75	80	0.20	Low
17	FD	65	70	0.14	Low
18	KE	60	80	0.50	Currently
19	FS	70	75	0.17	Low
20	NI	50	80	0.60	Currently
	Average	67.25	79.25	0.34	
	Min	80	90	0.60	
	Max	50	70	0.00	

Figure 2 shows analysis difference results pretest and posttest per question. Based on the picture, it can be seen that all students experienced an increase from every indicator question. That, could our conclude that education through videos learning about the relationship between body mass index and balanced nutrition can still be done used even in research this no have effectiveness level which high.
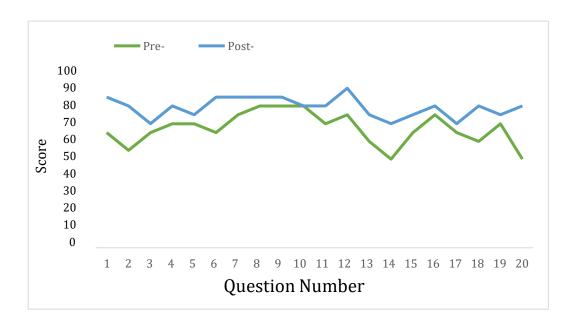
Figure 2. Chart Results Pre-test and Post-test.

Table 6 shows results analysis t-Test: paired two samples for means. Pre-Test has an average value of 67.25 out of 20 data. Post-test has an average value of 79.25 of 20 data (see Table 5). The t-test of the average of two paired samples, shows that T count (-6.564) is smaller than T table (1.729) shows T Count < T table means value of student posttest increased indirectly significantly (Setiawan, 2020).
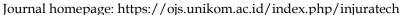
Table 6. t-Test: Paired Two Sample for mean.

	Pre-Test	Post-Test
mean	67.25	79.25
Variance	82.82895	32.30263
Observations	20	20
Pearson Correlation	0.46678	
Hypothesized mean Difference	0	
df	19	
t stat	-6.56404	
P(T<=t) one-tail	1.38E-06	
t Critical one-tail	1.729133	
P(T<=t) two-tail	2.77E-06	
t Critical two-tail	2.093024	

From every data analysis that has been carried out, it can be seen a positive impact on the understanding of 6th grade students of integrated Islamic elementary school Daarul Fikri regarding index relationship education mass body with nutrition balanced. On the side other use videos learning to convey Theory index mass body and nutrition balanced in study this

get results which not enough effective based on score N-Gain. Effectiveness gift action uses videos learning character not significant based on results t-test.

4. Conclusion

Study which has conducted aim for knowing understanding student about education influence Index Mass Body with nutrition balanced through videos learning for 6th graders at integrated Islamic elementary school Daarul Fikri, Cihanjuang Village. There are 3 main steps taken in this research: (i) pre-test; (ii) educational action through video learning; and (iii) post-test. Results study show the increase between the average value of the pretest and posttest that starts with a value of 67.25 Becomes 79.25. Calculation N-Gain conducted for knowing is effectiveness or no actions that have been taken. The results show the average N-Gain value is 34% (N-Gain < 40%). It means gift education about connection index mass body with nutrition balanced through learning videos for 6th grade school-aged children at integrated Islamic elementary school Daarul Fikri Desa Cihanjuang is not effective, this is due to the pre-test scores obtained by students no too small. That could conclude that student already enough know about knowledge of body mass index with balanced nutrition. In this study, the t-test was conducted. based on the results of the t-test, it can be seen that the calculated T (-6.564) is smaller than the T table (1.729). With thereby could concluded score posttest student increase however not significant.
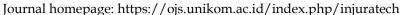
Acknowledgement

References

[1] Hafidz, A. K. U., & Kurniasari, R. (2022). Pengaruh Pemberian Video Animasi Terhadap Pengetahuan Gizi Pada Mahasiswa Tentang Sumber Pangan Antioksidan. *Jumantik, 8*(1), 31-35.

[2] Effendy, D. S., Bahar, H., Muchtar, F., Lestari, H., & Tosepu, R. (2022). Pendidikan Gizi Seimbang Untuk Mencegah Stunting Menggunakan Media Video Dan Poster Pada Murid Sekolah Dasar di SDIT Al Wahdah Kendari. *Karya Kesehatan Journal of Community Engagement, 3*(01), 01-07.

[3] Farell, G., Ambiyar, A., Simatupang, W., Giatman, M., & Syahril, S. (2021). Analisis Efektivitas Pembelajaran Daring Pada Smk Dengan Metode Asynchronous dan Synchronous. *Edukatif: Jurnal Ilmu Pendidikan, 3*(4), 1185-1190.

[4] Febrinsa, F. D., Widajanti, L., & Pradigdo, S. F. (2016). Asosiasi Kompetensi Tentang Pedoman Gizi Seimbang Dengan Status Indeks Massa Tubuh Remaja Putri di Pondok Pesantren Al-Ishlah Bulusan kota Semarang. *Jurnal Kesehatan Masyarakat (Undip), 4*(2), 46-54.

[5] Furtuna, I. S. B. (2022). Hubungan Aktifitas Fisik Dengan Indeks Massa Tubuh Pada Anak Usia Sekolah 7-12 di Masa Pandemi Covid-19 (SDN Grogol 2). *Jurnal Pendidikan Kesehatan, 11*(1), 81-89.

[6] Gifari, N., Nuzrina, R., Ronitawati, P., Sitoayu, L., & Kuswari, M. (2020). Edukasi Gizi Seimbang dan Aktivitas Fisik Dalam Upaya Pencegahan Obesitas Remaja. *Jurnal Masyarakat Mandiri, 4*(1), 55-62.

[7]   Hidayah, N. M., Mintarsih, S. N., & Ambarwati, R. (2022). Edukasi Gizi Seimbang Dengan Media Video Terhadap Pengetahuan dan Sikap Remaja Putri. *Sport and Nutrition Journal, 4*(1), 1-6.

[8]   Intantiyana, M., Widajanti, L., & Rahfiludin, M. Z. (2018). Hubungan Citra Tubuh, Aktivitas Fisik dan Pengetahuan Gizi Seimbang Dengan Kejadian Obesitas Pada Remaja Putri Gizi Lebih di SMA Negeri 9 Kota Semarang. *Jurnal Kesehatan Masyarakat, 6*(5), 404-412.

[9]   Irnani, H., & Sinaga, T. (2017). Pengaruh Pendidikan Gizi Terhadap Pengetahuan, Praktik Gizi Seimbang dan Status Gizi Pada Anak Sekolah Dasar. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition), 6*(1), 58-64.

[10] Lupiana, M., & Indriyani, R. (2022). Hubungan Pola Makan Remaja Dengan Indeks Massa Tubuh di SMP Advent Bandar Lampung. *Prepotif: Jurnal Kesehatan Masyarakat, 6*(2), 1135-1144.

[11] Meidiana, R., Simbolon, D., & Wahyudi, A. (2018). Pengaruh Edukasi Melalui Media Audio Visual Terhadap Pengetahuan dan Sikap Remaja Overweight. *Jurnal Kesehatan, 9*(3), 478-484.

[12] Ningtyas, L. N., Nurdiani, M., & Muhdar, I. N. (2021). Pengaruh Edukasi Gizi Melalui Instagram Dengan Power Point Tentang Sayur dan Buah Pada Siswa. *Jurnal Dunia Gizi, 4*(2), 83-89.

[13] Nuryanto, N., Pramono, A., Puruhita, N., & Muis, S. F. (2014). Pengaruh Pendidikan Gizi Terhadap Pengetahuan dan Sikap Tentang Gizi Anak Sekolah Dasar. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition), 3*(1), 32-36.

[14] Nuzrina, R., Melani, V., & Ronitawati, P. (2016). Penilaian Status Gizi Anak Sekolah Dasar Duri Kepa 11 Menggunakan Indeks Tinggi Badan Menurut Umur dan Indeks Massa Tubuh Menurut Umur. *Jurnal Abdimas, 3*(1), 62-7.

[15] Rahayu, A. (2020). Pemeriksaan Status Gizi Indeks Massa Tubuh Menurut Umur Untuk Deteksi Dini Status Gizi Tidak Normal Pada Remaja Puteri. *Jurnal Abdimas Kesehatan, 2*(2), 150-156.

[16] Rahayu, S., Tamrin, T., & Wulandari, P. (2019). Pengaruh Edukasi Gizi Pada Ibu Balita Terhadap Perubahan Berat Badan Balita Yang Mengalami Masalah Gizi. *Jurnal Ners Widya Husada, 6*(3), 87-96.

[17] Ramadhanti, F. M., Sulistyowati, E., & Jaelani, M. (2022). Pengaruh Edukasi Gizi Dengan Media Video Motion Graphics Terhadap Pengetahuan dan Sikap Tentang Obesitas Remaja. *Jurnal Gizi, 11*(1), 22-31.

[18] Rusdi, F. Y., Helmizar, H., & Rahmy, H. A. (2021). Pengaruh Edukasi Gizi Menggunakan Instagram Terhadap Perubahan Perilaku Gizi Seimbang Untuk Pencegahan Anemia Pada Remaja Putri di SMAN 2 Padang. *Journal of Nutrition College, 10*(1), 31-38.

[19] Setiawan, T. H., & Aden, A. (2020). Efektifitas Penerapan Blended Learning Dalam Upaya Meningkatkan Kemampuan Akademik Mahasiswa Melalui Jejaring Schoology di Masa Pandemi Covid-19. *Jurnal Pembelajaran Matematika Inovatif, 3*(5), 493-506.