



## THE EFFECTIVENESS OF THE USE OF VIDEO MEDIA AND E-QUIZ ON KNOWLEDGE AND ATTITUDE ABOUT NUTRITION MORE IN FIRST MIDDLE SCHOOL

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**Abstract, Background:** Obesity is a nutritional problem that was previously considered a problem in high-income countries, but currently, the problem of overweight and obesity is increasing in middle-income countries, including Indonesia. Data from the 2018 RISKESDAS results show an increase in the prevalence of overweight status (BMI/U) in adolescents aged 13-15 years.

**Methods:** This research is a quasi-experimental design with a pretest-posttest control group carried out in February - March 2019. The research subjects were class VII and VIII of SMPN 10 Bandung, the PowerPoint media group, and the e-video media group. Quizzes, with a total of 60 students. Data analysis used a non-parametric Wilcoxon and Mann Whitney test with a significance level of 0.05 and a 95% confidence level.

**Result:** The results showed that there was an effect of more nutrition education on increasing students' knowledge in the intervention group ( $p=0.000$ ) and control group ( $p=0.000$ ), student attitudes in the intervention group ( $p=0.007$ ), and the control group ( $p=0.000$ ). There was a difference in knowledge between the intervention and control groups ( $p=0.047$ ), and there was no difference in attitudes between the intervention and control groups ( $p=0.994$ ).

**Conclusion:** Providing nutrition education with video e-quiz is effective in increasing knowledge of over nutrition and not effective in increasing attitudes about over nutrition.

Keywords: nutrition education, video media, e-quiz

## Background

Overweight or obesity is one of the nutritional problems previously considered a problem in high-income countries. However, currently, the problem of overweight and obesity is increasing in middle-income countries, including Indonesia. The 2018 RISKESDAS data shows an increase in the prevalence of overweight status (BMI/U) in adolescents aged 13-15 years. The prevalence of obesity in 2010 of 2.5% increased to 8.3% in 2013 and 11.2% in 2018. The prevalence of obesity in 2013 was 2.5% increased to 4.8% in 2018. Overnutrition status in West Java is above the national prevalence of 12% obese and 4.9% obese. Efforts to prevent overnutrition problems can be carried out by utilizing schools to prevent from an early age in adolescents.

Nutrition programs that can be carried out in schools are in the form of counseling and education. Education, also called nutrition education, aims to improve individual or community health by increasing knowledge, awareness and changing one's behavior towards healthy eating patterns and lifestyles. The use of video media in nutrition education makes students more interested in paying attention and accepting the material presented. Research on providing education using video media has been carried out by Mediana, Risma et al. (2018) to overweight adolescents, which showed an increase in the knowledge and attitudes of overweight adolescents before and after providing education. Anestya, Mery's (2018) research on selecting snacks for junior high school students using video media showed a significant increase in student knowledge before and after nutrition education by 75.6 to 87.

## Methods

This study is a quasi-experimental design with a pretest-posttest control group in February - March 2019. The research subjects were students of class VII and VIII of SMPN 10 Bandung consisting of two groups, namely the PowerPoint media group and

the video e-quiz media group, with 60 students. In this design, two groups were divided into an intervention group and a control group. Both groups were given a pretest (initial test) of knowledge and attitudes related to overnutrition, then given treatment. The intervention group taught overnutrition prevention with videos containing definitions, impacts, causes, methods, and e-quiz as educational games.

In contrast, the control group was given education on the prevention of overnutrition using PowerPoint media. This education was conducted in 2 meetings for both groups. After the education was given, two meetings were given, a post-test (final test) was conducted to see changes in the increase in knowledge and attitudes in both groups. This study compared the scores of knowledge and attitudes about overnutrition before and after the provision of nutrition education.

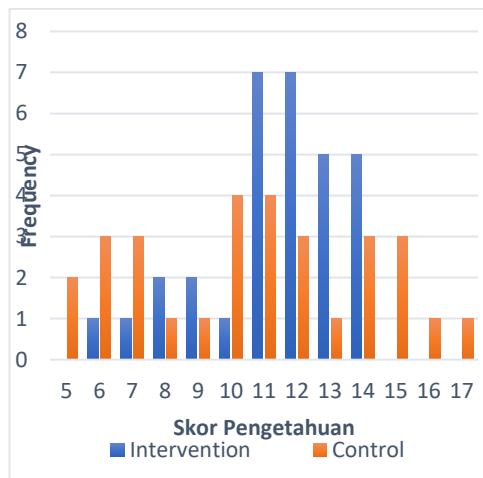
Data analysis used a non-parametric Wilcoxon and Mann Whitney test with a significance level of 0.05 and a 95% confidence level.

## Results

In the initial data collection stage, the researcher used pretest data conducted at the beginning of the meeting 1x before the treatment was carried out. The knowledge and attitude pretest were taken at the same time. The implementation of the pretest was taken in the intervention group and the control group. The pretest questionnaire was distributed in a google form which can be accessed within a predetermined period for both groups. From the pretest results, the distribution of the average value obtained for the intervention group has an average value of knowledge before being given education, which is 11.57 with a minimum value of 7, and a maximum value of 14. In the control group, the average value of knowledge is 10.83, a minimum value of 5, and a maximum value of 17.

The pretest knowledge score in the intervention group was the highest in the sample that achieved scores of 11 and 12, namely seven respondents (23.3%), while in the control group, the highest scores obtained by students were scores of 10 and 11 as many as four respondents (6.7%). Although there are already some students who have high knowledge scores, many students still get low scores. Although there are already some students who have high knowledge scores, many students still get low scores.

The presentation of the results of the analysis of students who answered correctly from the pretest questionnaire on knowledge of over nutrition at SMPN 10 Bandung can be seen in the following table:



**Figure 1.** Knowledge Score

Based on the results of the attitude pretest, it was found that the average attitude value of the intervention group before being given education was 41.60 with a minimum score of 36, a maximum value of 53, and the highest attitude score in the sample that reached a score of 41 (23.3%). While in the control group, the average attitude value 40.20 with a minimum score of 37, a maximum value of 49, and the highest attitude score in the sample reached 43 (20.0%).

**Table 1.** Pretest Frequency Distribution More Nutritional Knowledge

No Question	Knowledge Variable	Intervention	Control
1	Definition of more nutrition	60.0	40.0
2	Which is included in the category of over nutrition	36.7	46.7
3	Formula for calculating BMI	33.3	30.0
4	Definition of overweight	23.3	26.7
5	Definition of obesity	73.3	43.3
6	The link between disease and overnutrition	46.7	46.7
7	Health impact when adolescents experience overnutrition	56.7	63.3
8	Examples of foods that cause overnutrition	93.3	83.3
9	The content of fast food as a cause of over nutrition	100.0	83.3
10	behavioral factors that cause overnutrition problems	63.3	53.3
11	Eating behavior to prevent overnutrition problems	36.7	43.3
12	Definition of balanced nutrition	43.3	53.3
13	Benefits of balanced nutrition	90.0	63.3
14	recommended portion of vegetables	56.7	73.3
15	protein source food	80.0	66.7
16	carbohydrate source food	30.0	83.3
17	Suggestions for drinking water	93.3	30.0
18	Contents in vegetables and fruit	63.3	83.3
19	recommended exercise frequency	43.3	56.7
20	Prevention of overnutrition in adolescents	30.0	36.7

The results of the Wilcoxon test before and after giving knowledge education to the control group using PowerPoint and the intervention group using video and e-quiz obtained a p-value of 0.000 (<0.05) in both groups. It can be stated that there is a change in the increased knowledge of adolescents after being given education twice with PowerPoint media and video e-quiz compared to previous knowledge at SMPN 10 Bandung.

The provision of education in the control group using power points as an educational medium was carried out in 2 meetings. Power points are displayed during education by delivering educational materials using the lecture method. The average value of knowledge in the control group was obtained by pretest 10.83 after providing education with PowerPoint media. Post-test results increased to 13.10, so it was known that the increase was 2.27.

This study is in line with Hadzrina's research (2018) on the effect of providing nutrition education using booklets and powerpoints on balanced nutrition. The increase in the pre-posttest mean of nutritional knowledge with PowerPoint media was 28.65. The statistical test results showed a difference in the increase in nutritional knowledge before and after nutrition education in the PowerPoint group with a p-value of 0.024.

Prasetyo's research on the difference in knowledge before and after being given nutrition counseling using PowerPoint media at SD Negeri Karangasem III Surakarta showed a difference in nutritional knowledge before and after being given counseling about balanced nutrition using media PowerPoint ( $p = 0.000$ ). Furthermore, an e-quiz game was conducted with the QUIZIZ application. The average value of the knowledge obtained by the intervention group at the pretest was 11.57 after providing education with video media and e-quiz. The post-test score was 14.57, with an increase of 2.00. Based on the discussion above, it can be seen that the use of learning media can increase nutritional knowledge after being given education. Learning media has benefits in facilitating the learning process because learning methods can vary with learning media.

Learning media makes the material clearer in meaning and attracts more attention to foster concentration and motivation in learning. The results of the Wilcoxon test on the pretest and post-test attitudes of the two groups obtained p-value = 0.000 in the control group and the intervention group p-value = 0.007. It can be stated that there is an attitude change of adolescents before and after being given education. The explanation of different average values of attitudes before and after education can be seen as follows. Learning methods may vary. Learning media makes the material clearer in meaning and attracts more attention to foster concentration and motivation in learning. The results of the

Wilcoxon test on the pretest and post-test attitudes of the two groups obtained p-value = 0.000 in the control group and the intervention group p-value = 0.007. It can be stated that there is a change in the attitude of adolescents before and after being given education using PowerPoint media and video e-quiz media. The explanation of the different average values of attitudes before and after education can be seen as follows. Learning methods may vary. Learning media makes the material clearer in meaning and attracts more attention to foster concentration and motivation in learning.

The results of the Wilcoxon test analysis on the pretest and post-test attitudes of the two groups obtained p-value = 0.000 in the control group and the intervention group p-value = 0.007. It can be stated that there is a change in the attitude of adolescents before and after being given education using PowerPoint media and video e-quiz media at SMPN 10 Bandung. The explanation of the average difference value of attitudes before and after education can be seen as follows. The results of the Wilcoxon test analysis on the pretest and post-test attitudes obtained p-value = 0.000 in the control group and the intervention group p-value = 0.007. It can be stated that there is a change in the attitude of adolescents before and after being given education using PowerPoint media and video e-quiz media at SMPN 10 Bandung.

The difference in the average value of attitudes before and after education can be seen as follows. The Wilcoxon test on the pretest and post-test attitudes obtained p-value = 0.000 in the control group and the intervention group p-value = 0.007. so that it can be stated that there is a change in the attitude of adolescents before and after being given education using PowerPoint and video e-quiz media. The explanation of the average difference value of attitudes before and after education can be seen as follows.

**Table 2.** Differences in Average Attitude Before and After Education Control Group and Intervention

Group	Knowledge	Average	SD	Min	Max
Control (powerpoint media)	Pretest	40,20	3,517	37	49
	Posttest	43.13	3,298	37	49
Intervention (e-quiz video media)	Pretest	41.60	3,607	36	53
	Posttest	43.37	3,157	39	51

Based on the table above, the distribution of the average pretest attitude score of the control group is 40.20 after the post-test is 43.13 so that the increase is 2.93, while in the intervention group, the average pretest score is 41.60 after the post-test is 43.37 so that the increase of 1.53. Based on the Mann-Whitney test results, it is known that there is a difference in knowledge between the intervention group using video media and e-quiz and the control group using PowerPoint media. The significance value (2-tailed) is 0.047 < 0.05. Video and e-quiz media increase nutritional knowledge more than PowerPoint media. The results of the Mann Whitney test for the attitude variable showed that there was no difference in attitude between the intervention group and the control group with a significance value (2-tailed) of 0.994 > 0,

Post-test aims to find out the description of the final understanding or mastery of students on the educational material that will have been given. The results of the post-test can be an evaluation of the education provided. The question questionnaire given at the post-test is the same as the pretest. Some questions were still answered incorrectly in the answers to the post-test questionnaire. The presentation of the results of the analysis of students who answered correctly from the post-test questionnaire on knowledge of over nutrition at SMPN 10 Bandung can be seen in the following table.

**Table 3.** Nutritional Knowledge Improvement Frequency Distribution After the Intervention at SMPN 10 Bandung

No Question	Knowledge Variable	Intervention	Control
1	Definition of more nutrition	80.0	60.0
2	Which is included in the category of over nutrition	76.7	46.7
3	Formula for calculating BMI	53.3	53.3
4	Definition of overweight	83.3	80.0
5	Definition of obesity	83.3	63.3
6	The link between disease and overnutrition	80.0	56.7
7	Health impact when adolescents experience overnutrition	86.7	63.3
8	Examples of foods that cause overnutrition	100.0	90.0
9	The content of fast food as a cause of over nutrition	96.7	93.3
10	behavioral factors that cause overnutrition problems	63.3	76.7
11	Eating behavior to prevent overnutrition problems	66.7	46.7
12	Definition of balanced nutrition	66.7	56.7
13	Benefits of balanced nutrition	100.0	93.3
14	recommended portion of vegetables	43.3	63.3
15	protein source food	86.7	83.3
16	carbohydrate source food	46.7	40.0
17	Suggestions for drinking water	100.0	90.0
18	Contents in vegetables and fruit	76.7	66.7
19	recommended exercise frequency	50.0	56.7
20	Prevention of overnutrition	23.3	30.7

Based on the table above, it can be seen that the incorrect answers after education were questions regarding the recommended portion of vegetables, carbohydrate sources, and prevention of overnutrition. That can be influenced by several factors, such as unclear information, too quick explanation so that students cannot catch the message, the speaker's voice or video being less audible, and the material delivery in the video is not attractive.

Information on servings of vegetables and food sources of carbohydrates is conveyed by displaying a picture of the contents of my plate and moving text descriptions in the educational video that is delivered. The question about preventing overnutrition is the question with the lowest correct answer. This statement is also a question

that is answered incorrectly during the pretest. Several things influence this. The question sentence on the questionnaire is not understood, multiple-choice is not appropriate, the delivery of material is not precise, and information about the material is difficult to understand.

### Conclusions

1. Before being given education in the intervention group, the average knowledge score was 11.57, and the control group was 10.83. After being given education, the average score in the intervention group became 14.57 for the intervention group and 13.10 for the control group.
2. Before being given education in the intervention group, the average attitude score was 41.60, and the control group was 40.20. After being given education, the average score in the intervention group became 43.37 for the intervention group and 43.10 for the intervention the control group.
3. There is an effect of nutritional education on increasing students' knowledge in the intervention group ( $p=0.000$ ) and the control group ( $p=0.000$ )
4. There is an effect of nutritional education on improving student attitudes in the intervention group ( $p=0.007$ ) and the control group ( $p=0.000$ )
5. Giving education twice using video and e-quiz media is more effective in increasing students' knowledge than PowerPoint media ( $p=0.047$ )
6. Giving education twice using video media and e-quiz was not effective in increasing students' knowledge ( $p=0.994$ )

### References

1. World Health Organization. Obesity [Internet]. 2020. [cited 2020 Feb 25]. Available from: [https://www.who.int/health-topics/obesity#tab=tab\\_1](https://www.who.int/health-topics/obesity#tab=tab_1)
2. Indonesian Ministry of Health. Nutrition as Adolescent Determines the Quality of Heredity [Internet]. 2020. p. 2–3. [cited 2020 Feb 25] Available from: <https://www.kemkes.go.id/article/vie/w/20012600004/gizi-saat-remaja-tekan-kualitas-keurunan.html>
3. Indonesian Ministry of Health. Basic Health Research; Health Research and Development Agency of the Ministry of Health of the Republic of Indonesia in 2010. 2010 National Report.
4. Ministry of Health of the Republic of Indonesia. Basic Health Research 2013. Research and Development Agency, Ministry of Health RI. 2013.
5. Indonesian Ministry of Health. Basic Health Research Results Report(Riskesdas) Indonesia 2018. Basic Health Research 2018.
6. Kurdanti W, Suryani I, Syamsiatun NH, Siwi LP, Adityanti MM, Mustikaningsih D, et al. Factors that influence the incidence of obesity in adolescents. *J Gizi Klin Indonesia*. 2015;11(4):179.
7. Aini SN. Risk Factors Associated With Events of Overnutrition in Urban Youth. *Unnes Journal of Public Heal*. 2013;2(1):1–8.
8. Istiqomah KN. Differences in Fat Intake, Fiber Intake and Physical Fitness Between Overweight and Normal Nutritional Adolescents at SMP AL Islam 1 Surakarta. Muhammadiyah Surakarta university. 2014.
9. Muhammad HFL. School utilization as a means of preventing obesity from an early age in adolescents. *Journal of Community Empower Heal*. 2019;1(2):107.
10. Food and Nutrition Services. Nutrition education and promotion: The role of FNS in helping low-income families make healthier eating and lifestyle choices; A report to Congress. Food and Nutrition Services. 2010.
11. Maheasy U, Sari SP. The effect of using nutrition disc media on adolescent knowledge about fruit and vegetable consumption. *Indonesian Nutrition Science*.

2020;3(2):155.

- 12. Fitria A. Use of Audio-Visual Media in Early Childhood Learning. *Education*. 2014;05(02):58–62.
- 13. Anestya M. The effect of nutrition education with video media on students' knowledge in choosing snacks at SMP Muhammadiyah 10 Surakarta. *Universitas Muhammadiyah Surakarta*. 2018.
- 14. Meidiana R, Simbolon D, Wahyudi A. The Effect of Education through Audio-Visual Media on Knowledge and Attitudes of Overweight Adolescents. *J Health*. 2018;9(3):478–84.
- 15. Dewi, Nikmah Utami; Hartini, Diah Ayu; Jayadi, Yuma is beautiful; Rahman A. Increased Nutrition Knowledge Through Games Increased Nutrition Knowledge Through Games. *J Health Tadulako*. 2018;4(1):20–7.
- 16. Risti N, Par I, Holil M, Nur R, Sofindra U. Nutrition Education with Communicative Games on Knowledge and Attitude of Consumption of Vegetables, Fruits, Snacks and Breakfast. *J Ris Health Poltekkes Kemenkes Bandung*. 2019;11(1):157–64.
- 17. ONLINE K. Meaning of Quiz - Big Language Dictionary Indonesia [Internet]. [cited 2020 May 3]. Available from: <https://kbbi.web.id/kuis-2>
- 18. Minister of Health of the Republic of Indonesia. Regulation of the Minister of Health of the Republic of Indonesia Number 25 of 2014 concerning Child Health Efforts. 25 Minister of Health of the Republic of Indonesia; 2014 p. 3.
- 19. Dhamayanti M. Overview of Adolescent Health Problems and Services [Internet]. Indonesian Pediatric Society (IDAI). 2013 [cited 2020 Mar 3]. Available from: <http://idai.or.id/article/seputar-kesehatan-anak/overview-adolescent-health-problems-and-services>
- 20. World Health Organization. Coming of age: adolescent health [Internet]. World Health Organization. 2018 [cited 2020 Mar 3]. p. 1. Available from: <https://www.who.int/health-topics/adolescents/coming-of-age-adolescent-health>
- 21. Saputro KZ. Understanding the Characteristics and Developmental Tasks of Adolescence. *Application Journal Application of Religious Sciences*. 2018;17(1):25–32.
- 22. Indonesian Dietitian Association (AsDI); Indonesian Pediatrician Association (IDAI); Association of Indonesian Nutritionists (PERSAGI). *Children's Diet Guide 3rd Edition*. 3rd ed. Nasar, Sri S; Djoko, Suharyati; Hartati, SA. Budi; Budiarti Y endan., editor. Jaka: FKUI Publishing Agency; 2016. p-37.
- 23. Par'i HM. Nutritional status assessment: Equipped with standardized nutritional care processes. Reza E, editor. Jakarta: EGC medical book; 2016.
- 24. Indonesian Pediatrician Association. *Recommendations from the Indonesian Pediatrician Association: Diagnosis, Management and PreventionObesity in Children and Adolescents*. 1st ed. Sjarif, Damayanti Rusli; Gultom, Lanny Christine; Hendarto, Aryono; Lestari, Endang Dewi; Sidiartha, I Guzti Lanang; Mexitalia M, editor. 2014.
- 25. Minister of Health of the Republic of Indonesia. Regulation of the Minister of Health of Indonesia Number 2 of 2020 concerning Child Anthropometry Standards. 2 Republic of Indonesia: Minister of Health of the Republic of Indonesia; 2020.
- 26. Par'i, Holil M. ; Wiyono, Sugeng; harjatmo TP. Nutritional Status Assessment. Center for Health Human Resources Education, Agency for Development and Empowerment of Health Human Resources, Ministry of Health of the Republic of Indonesia; 2017.
- 27. McNulty J. Challenges and issues in nutrition education. In: Challenges and issues in nutrition education. *Nutrition Education and Consumer Awareness Group, FAO*; 2013. p. 5–

11. Available from: [www.fao.org/ag/humannutrition/nutritioneducation/en/](http://www.fao.org/ag/humannutrition/nutritioneducation/en/)
28. Nurmasita, Widjanarko B, Margawati A. The effect of nutrition education interventions on increasing nutritional knowledge, changes in nutrient intake, and body mass index of overweight adolescents. *J Gizi Indonesia* Indonesia J Nutr. 2016;4(1):38–47.
29. Indonesian Ministry of Health. PGS Health Guidelines. Balanced Nutrition Guidelines. 2014;1–99.
30. Notoatmodjo S. Behavioral Health Sciences. PT. Rineka Cipta; 2010.
31. Notoatmodjo S. Health Research Methodology. Jakarta: PT. Rineka Cipta; 2014. 140-144 p.
32. Musyayib R, Hartono R, Pakhri A. Knowledge, and Diet with Nutritional Status of Adolescents at the Nahdlatul Ulum Islamic Boarding School Soreang Maros. *Health Media Health Polytechnic Makassar*. 2017;12(2).
33. Azwar S. Human attitude: theory and measurement. Yogyakarta: Liberty; 2012.
34. Miftah M. The function and role of learning media as an effort to improve student's learning abilities. *Kwangsan*. 2013;1(2):95–105.
35. Masturoh I, T NA. Research methodology. Center for Health Human Resources Education, Agency for Development and Empowerment of Health Human Resources, Ministry of Health of the Republic of Indonesia; 2018.
36. Susanti, Zulfiana A. Types of Media in Learning. Muhammadiyah University of Sidoarjo. Available from:<http://eprints.umsida.ac.id/1257/1/ICT%20Jenis%20media.pdf>
37. Hadzirina. The Effect of Nutrition Education Using Booklets and Powerpoint Media on Knowledge and Attitudes Regarding Balanced Nutrition in High School Students. 2018. Department of Nutrition Poltekkes Ministry of Health Bandung.
38. Marisa. The Effect of Nutrition Education Through Balanced Nutrition Comics on Knowledge and Attitudes in Bandungan Elementary School Students in Semarang.2014
39. Prasetyo, Muhammad Sigit. Differences in Knowledge Before and After Being Given Nutrition Counseling Using PowerPoint Media at SD Negeri Karangasem III Surakarta. Publication manuscript. Diploma III Study Program in Nutrition, Faculty of Health, Muhammad University, Surakarta. 2013
40. Salsabila, Salma Tia, et al. Education Using Animation Video Media and Powerpoint Increase Knowledge and Intake of Vegetable and Fruit Consumption. *Journal of Health Research Poltekkes Kemenkes Bandung*. 2019; Vol 11, No 1: p.183-190
- 41 Dewi, Shely Rosita. The Relationship Between Nutritional Knowledge, Attitudes towards Nutrition and Consumption Patterns of Class XII Students of the Catering Service Skills Program at SMK Negeri 6 Yogyakarta. Essay. Department of Education, Food and Clothing Engineering, Faculty of Engineering, Yogyakarta State University. 2013
- 42 Triguno, Yopita, et al. Development of Video Media to Increase Mother's Knowledge and Attitude About Child Development in the Working Area of Jagoi Babang Health Center, West Kalimantan. *MIDWINERSLION Health Journal*. 20210; Vol. 5, No. 1, p-184-194
43. Shakir, Sutrio. The Effect of Nutrition Counseling Intervention with Animation Media on Changes in Knowledge and Attitudes about Anemia in Young Women. *ARGIPA*. 2018; Vol 3, No 1: 18-25
44. Kurnianingrum, Rena Adelia. The Difference Between the Use of Powerpoint Media and Video Media in Health Education on Women's Knowledge Level About Menopause. Scientific papers. DIV Midwife Education Study Program, Faculty of Medicine, Sebelas Maret University, Surakarta. 2016.

45. Hulukati, Wenny. The Role of the Family Environment on Child Development. *Musawa*, Vol. 7 No.2 December 2015 : 265 - 282
46. Kurniasari, Ardingga Dhea. The Relationship Between Education Level, Employment and Parents' Income With Nutritional Status of Students at SD Hangtuah 6 Surabaya. *Journal of Sports and Health Education*. 2017; Vol 05 No 02, 164 - 170