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Education On Balanced Nutrition As A Prevention Of Hidden Hunger For Female Adolescent

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A B S T R A C T S

The purpose of this study is to educate the female adolescent regarding balanced undernourishment causes hidden hunger. The method research that will used is descriptive quantitative to 32 students at Daarul Haliim Boarding School. Study conducted through 3 stages: (1) pre-test, (2) giving education, and (3) post-test. The results showed that the pretest score was 0.018 and the posttest score was 0.036. The pre-test average result was 40.00 and post-test average result was 87.50. The results of the Wilcoxon test is $0.000 < \alpha = 0.05$. From these results, we can conclude education about balanced nutrition as a prevention take effect significant to understanding female adolescent as effort to prevention of hidden hunger. This is because (1) the education was interactive, (2) research subjects enthusiastic during the education, and (3) the educational media very interesting. With the completion of this research, it is hoped more female adolescents will understands nutrition balanced as prevention happening of hidden hunger.

A R T I C L E I N F O

1. INTRODUCTION

Adolescence is a period of growth and development, both physically, mentally, and activity it requires a large enough intake of nutrients (Sandy *et al.,* 2020). If the nutritional needs of adolescents are not properly, various problems and unwanted diseases will occur, one of them is hidden hunger. Hidden hunger depicted as a symptom when somebody experiencing a deficiency of vitamin and mineral (Harding *et al.,* 2017). Victims of hidden hunger may not understand the importance of a balanced nutritious diet (Gani *et al.* 2018). As the term hidden hunger indicates, the signs of undernutrition and hunger are less overtly visible in those affected by it (Muthayya *et al.,* 2013). Hidden hunger has been identified as a major public health issue as individuals with borderline micronutrient deficiencies do not develop classic signs and symptoms of overt deficiencies (Cole, 2012). In Indonesia, micro malnutrition still needs attention. A lack of micro-nutrients remain the primary focus of iodine, vitamin a, zinc and iron (Reska *et al.,* 2018). Hidden hunger becomes important for female adolescent, but sadly still many adolescents ignore that, because hidden hunger didn't make the sufferer feel hunger. Hidden hunger makes up 7% of the global disease burden. Iron deficiency related anemia, zinc and vitamin A deficiencies were among the 15 leading causes of disease burden, in addition, hidden hunger compromises socio-economic development, learning ability and productivity of an individual and of a people in general (Ibeanu *et al.,* 2020). Specific examples of the most important micronutrients whose deficiencies could be precarious to health includes Vitamin A deficiency, iron and iodine deficiencies, the effects can be distressing, resulting in mental impairment, poor health, low productivity, and even death (Onoja & Adione, 2020). Student knowledge can relate to her nutritional status because knowledge affects nutritional status. Having good knowledge will pay attention to the nutritional intake needed by students every day, it can support the nutritional status of students to be good as well (Jayanti & Novananda, 2017). Several studies have stressed adolescents need to understand the importance of nutrition in this stage and have emphasized the importance of educational interventions (Alavil *et al.,* 2013; Sichert-Hellert *et al.,* 2011; Kersting *et al.,* 2008). So, for avoid the problem of hidden hunger, we have to fulfill the needs of nutrition balanced.

From various research, Prasetyo and Khoiriani (2018) said consumption food with source of protein, vegetables and fruit still low among female. Low consumption vegetables, fruit and food in women become factors cause low density intake calcium and vitamins, especially vitamins A and C. More, lack substance micro nutrition in long time could take effect to drop level intelligence, improvement disease infection, decrease productivity, increase number dead of mother and child, and experience hidden hunger. Another study conducted by Widnatusifah *et al.* (2020) said many adolescents who haven't fulfill adequacy substance nutrition, adequacy substance nutrition in adolescents not enough, it's in energy (97.5%) and adequacy carbohydrates. In same research mentioned intake substance nutrition consumed micro in female adolescent still not enough such as vitamin C, folate, calcium, iron, and zinc. Kartini *et al.* (2019) prove that education about nutrition balance in high school take effect positive, it seen from enhancement behavior the first student be in the percentage of 52% later after given education to 54%. Varyam *et al.* (1998; Danty *et al.,* 2019) suggests the

quality of one's food consumption is reflected in income and education. Another study conducted by Nova and Yanti (2018) stated that no existence connection among intake substance macro nutrition and knowledge nutrition with nutritional status in students.

However, there has no research on how to educate female adolescent about fulfill balanced nutrition as a prevention of hidden hunger. Therefore, this study aims to knowing there is whether or not significant difference of given education about nutrition balanced as effort prevention happening hidden hunger for female adolescent at Daarul Haliim Boarding School, Cihanjuang, Indonesia as a research sample. Novelty from this study are: (i) Research conducted about education nutrition balanced for prevent happening hidden hunger for female adolescent, (ii) Education about danger didn't fulfillment nutrition balanced for female adolescent, and (ii) Giving education to introduction nutrition balance needed by the body and the risks if nutrition no fulfilled in more specific way.

2. METHODS

2.1 Research Subject

The research subjects are 1st grade of junior high school at Daarul Haliim Boarding School, Cihanjuang, Indonesia. Respondents amounted to 32 female students. The age range of the respondents is 12 – 16 years.

2.2 Research Design Analysis

The study uses descriptive quantitative methods to describe how education affect the female students understanding of the balanced nutrition as a prevention of hidden hunger. The study was conducted with 32 students in 1st grade of junior high school at Daarul Haliim Boarding School. There are 3 stages in data collection: (i) Distribution pre-test questionnaire; (ii) Giving education using poster as the media; and (iii) Deployment post-test questionnaire. We made 20 questions pre-test and post-test. After the pre-test and post-test results are obtained, first of all, a normality test is carried out on the resulting data. If the data is normally distributed, it'll be followed by paired t-test to show there is a significant difference between the results of the pre-test and the results of the post-test. Paired t-test is a method of testing hypotheses in which the data used are in pairs. But, if the data is not normally distributed, then it is continued with the Wilcoxon test for the same purpose. **Table 1.** show pre-test and post-test questions in this study. Questions are focused on education about nutrition balanced. In pre-test and post-test questions can be answer with a Yes or No. The "Yes" answer score be marked as 1 and for answer "No" be marked as 0.

Table 1. Pre-test and Post-test Questions

No	Statement	Answer	
		Yes	No
1	I know what nutrition means.		
2	I know what nutrition balanced means.		
3	I know Nutrients needed by the body.		
4	I know what macro nutrition means.		

5	I know benefit macro nutrition for body.
6	I understand the risk if my body deficiency substance macro nutrition.
7	I know what micro nutrition means.
8	I know benefit micro nutrition for body.
9	I know risk if my body deficiency substance micro nutrition.
10	I know disease what can arise if my body deficiency substance micro nutrition.
11	I know what hidden hunger means.
12	I know the reason why hidden hunger happen.
13	I know various types of vitamins needed by the body.
14	I know minerals needed by the body.
15	I know dose balanced nutrition or consumed.
16	I know benefit from nutrition balanced on food for body
17	I know foods that contain macro nutrition.
18	I know foods that contain micro nutrition.
19	I know consequence from didn't notice balanced nutrition when eat.
20	I already consume suitable food with nutrition balanced.

3. RESULTS AND DISCUSSION

Of 36 students, only 32 students fill out the *pre-test* and *post-test*, for the students who has only completed the pre-test or post-test, it's not included. The result data test before and after given an education could see in **Table 2**. The pre-test average result was 40.00 and post-test average result was 87.50. Then normality test for each data in **Table 2** using help by software. The test results could see in **Table 3** and **Table 4.**

Table 3 shows test results of 0.018. With value =0.05; because 0.018<α then the result data *pre-test* no normally distributed. Then **Table 4** shows results of 0.036. Where with value =0.05 both pre-test and post-test data either not normally distributed.

Table 2. Result data score pre-test and pos-test

Students	Pre-test	Post-test
AK	40	70
EH	40	70
KH	40	80
AN	50	70
KN	30	80
SW	30	85
FZ	45	80
N	40	100
SF	40	100
FH	30	60
IT	50	95
US	30	75
JQ	15	50

SA	35	100
RR	40	100
SN	40	100
NN	35	90
AF	35	90
A A	55	85
FQ	15	85
ZS	55	100
NA	55	100
PA	55	95
SN	35	100
AM	35	65
SA	30	80
S	45	95
HE	35	75
S	60	100
S	60	100
SA	35	90
SS	30	85
Average	**40.00**	**87.50**

Table 3. Normality test of *pre-test* data

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	Df	Sig.	Statistics	df	Sig.
Pretest	171	32	0.018	0.938	32	0.065

Table 4. Normality test of *post-test* data

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	Df	Sig.	Statistics	df	Sig.
Posttest	0.160	32	0.036	0.891	32	0.004

Based on normality test, show both data are not normally distributed, then we will be going to the Wilcoxon test. Wilcoxon test was carried out with the results are in **Table 5. Table 5** shows test results of 0.000. With value=0.05; because 0.000<α, then there is significant improvement before and after give an education.

Table 5. Wilcoxon Test

	Posttest – Pretest
Z	-4.946[b]
Asymp. Sig. (2-tailed)	0.000

Factors that cause significant change are: (i) The education given was interactive, (ii) research subjects enthusiastic during the education, and (iii) educational media very interesting.

The increase in the average pre-test and post-test results can occur because it's in line with research by Kartini *et al.* (2019) which states that education about nutrition balance in high school take effect positive to understanding and improvement behaviour. Furthermore, education in balanced nutrition for female adolescent enhances their knowledge and awareness about nutrition balance and fulfilment nutrition for body to avoid from disease anemia, stunting, and hidden hunger. Based on the result, this is in the occur with research by Prasetyo and Khoiriani (2018), which states that the lack of substance micro nutrition in long time could take effect to drop level intelligence, improvement disease infection, decrease productivity, increase number dead of mother and child, and experience hidden hunger. The result of the research above is in line with a research by Hafiza (2020), which leads to the conclusion that there is no correlation of eating habits and nutrition, it's due to other factors can affect the nutrient status of adolescents such as physical activity, economics, the availability of 341 food items in homes, communities, peers and families. Students' knowledge of anemia and nutrition is balanced in categories quite well, but most applications of nutrition messages are not consistent with the balanced nutrition message. And there is also a significant link between balanced nutrition knowledge and the application of nutrition messages balanced with iron nutrition anemia (Agustina, 2019). But the research is inappropriate with research by Nova and Yanti (2018) which states that no existence connection among intake substance macro nutrition and knowledge nutrition with nutritional status in students.

4. CONCLUSION

It can be concluded that the research has been conducted aim for knowing to given education about nutrition balanced as effort prevention happening hidden hunger for female adolescent. There are 3 steps main thing to do in study this: (i) pre-test; (ii) action education; and (iii) post-test. Wilcoxon test results showing value 0.000 which means, because 0.000<α then there is significant improvement before and after give education. Factors that cause significant change are: (i)The education given was interactive, (ii)Research subjects enthusiastic during the education, and (iii)Educational media very interesting.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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