Media Pendidikan Gizi dan Kuliner

MPGK
Media Pendidikan
Gizi dan Kuliner

Education on the Effect of Vitamin A Lack of The Risk of Measles

Karmila Apriliya [1], Asep Bayu Dani Nandiyanto[2]*

[1]Departemen Pendidikan Manajemen Perkantoran, Universitas Pendidikan Indonesia, Indonesia
[2]Dapartemen Kimia, Universitas Pendidikan Indonesia, Indonesia
Correspondence: E-mail: karmilaapriliya@upi.edu

A B S T R A C T S

This study aims to determine the public's understanding of the effect of lack of vitamin A on the risk of measles. This research was conducted on 10 residents of Cigugur Girang, Parongpong. The age range of the respondents is 20 to 60 years. The method used is to provide an understanding in the form of education to the public about the importance of vitamin A for the body and in order to avoid the risk of measles. This research was conducted through 3 stages, namely (i) pre-test, (ii) education through presentation video presentations; and (iii) post-test. The results showed that the average value of the pretest was 144 and the average post-test was 193. From these results, it can be seen that there was an increase in respondents' knowledge after going through these stages. From the results of the N-Gain calculation, it can also be seen that the average N-Gain value is 84%, which means that providing education to the public through video media is an effective action. This is because the public's understanding has increased after being given education through video shows. The results of the t-test calculation show that the t-count (-3.400) is smaller than the t-table (2.262), meaning that the post-test value increased not significantly. From this study, the results obtained are influenced by the people of Cigugur Girang, Parongpong who are able to understand the material in educational video shows well. With this completion of this research, it is hoped that more people will understand the importance of maintaining vitamin A intake in order to avoid the risk of measles.

A R T I C L E I N F O

1. INTRODUCTION

Vitamins are essential substances that are needed to help smooth the absorption of nutrients and the body's metabolism. The main function of vitamins is to regulate the work of the body's organs so that the growth of the organs can run properly. Vitamins are needed by the body in order to prevent and avoid the threat of deficiency diseases or diseases that arise as a result of lack of vitamin intake in the body. A number of vitamins that have been widely known are vitamin A, vitamin B complex, vitamin C, vitamin D, vitamin E, and vitamin K. These vitamins can be divided into two groups, namely water-soluble vitamins and water-soluble vitamins. fat. The water-soluble vitamins are vitamin B and vitamin C. These vitamins are less in number when compared to vitamins stored in fat. This vitamin needs to be consumed every day. The fat-soluble vitamins are vitamins A, D, E, and K. These vitamins are stored in the body and liver, which can last up to 6 months depending on diet and daily activities. The thing that is the focus of this research is the lack of vitamin A which can cause measles. Vitamin A functions in the visual system, immune function, growth and development, and reproductive function (Indarwati, 2016). In addition, vitamin A is also useful in reducing morbidity and mortality because vitamin A can increase the body's resistance to infectious diseases such as measles, diarrhea, and ARI. Vitamin A deficiency can also have an impact on the risk of measles, especially for people who have never received the measles vaccine. Measles is a disease caused by a viral infection. Children who are deficient in vitamin A are less able to fight various potentially fatal diseases (Ifalahma, 2021). In addition, measles can be caused by a lack of vitamin A intake in the body.

Measles is also known as Morbili or Measles, is highly contagious disease (infectious) caused by a virus Paramyxoviridae (RNA), 90% of children who not immune to this disease. Measles is usually transmitted when someone sucked up the measles virus has been coughed or sneezed into in the air by one who can spreading the disease (Marniasih *et al*., 2012). Measles has some very typical symptoms i.e. fever increases, cough (coryza) that occurs is difficult to distinguish with a severe common cold, conjunctivitis characterized by eye redness of the conjunctiva with inflammation complaints taste glare to light, colds (cough) due to inflammation of the ductal epithelium breath, the appearance of small white spots on the inside of the mouth (koplik), rash maculopapular all over the body (Halim, 2016).

Signs of deficiency seen when the body's savings are used up. Vitamin A deficiency can be a deficiency primary due to lack of consumption or lack of secondary to impaired absorption and its use in the body, the need for increased or due to interference with conversion carotene to vitamin A (Liliandriani, 2020). The incidence of measles is not affected by vitamin A status only, but clinical and community-based, indicate that the severity of accompanying complications and case fatality are increased by underlying vitamin A deficiency (Underwood & Arthur, 1996).

The causes of measles are very diverse. One of them is the factor that pregnant women who have never received the measles vaccine can pose a risk to the baby. Based on research conducted by Caceres *et al*. (2000) measles infection can originate from the mother's weak antibodies. This proves that the measles vaccine is very necessary, in addition to paying attention to vitamin A intake. Based on the results of research conducted by Sudfeld *et al*.

(2010), measles vaccine and vitamin A treatment are effective interventions to prevent deaths from measles in children. Vitamin A supplements are associated with a significant reduction in mortality when given periodically to children at the community level. Factors that affect the bioavailability of large doses of vitamin A need to be studied further. Vitamin A supplements should be given to all measles patients in developing countries whether or not they have symptoms of vitamin A deficiency (Fawzi *et al.,* 1993).

Children with measles who have poor nutritional status tend to experience complications of measles compared to children with good nutritional status, overweight and obesity. However, apart from nutritional status, there are many factors that predispose children with measles to have complications. Factors that can increase the occurrence of complications include: age, immune status and immunodeficiency (Liwu *et al.,*). In addition, another factor that causes the number of measles cases is still related to the knowledge of mothers who are still lacking. The results of research conducted by Arianto *et al.* (2018) indicate that mother's knowledge is less statistically proven to be a risk factor for the occurrence of measles in infants. In general, society have less knowledge about measles, causes and modes of transmission. Community understanding that measles is a common fever, other than that a person must get measles once for life, it's better to be exposed measles as a child as not critical. Furthermore, based on research conducted by Cahyaningrum and Setyanti (2017), it is stated that mothers who have good knowledge about giving vitamin A tend to be obedient in providing vitamin A intake to their childre, and vice versa.

Vitamin A deficiency is one of the causes of failure to thrive, decreased immune response and the most worrying is the high risk of xerophthalmia and blindness (Ernawati & Soekarti, 2013). By the early 1930s, the cause of vitamin A deficiency and its clinical manifestations, including impaired growth and reduced resistance to (some) microbial infections, had been worked out. Vitamin A was finally crystallized in 1937. At this point in time, further investigations on (and advocacy for) the administration of vitamin A to treat and prevent infections virtually stopped. It is likely that a number of issues accounted for this loss of interest in the prevention of vitamin A defificiency and its associated clinical manifestations (Sommer, 2008).

There have been several previous studies regarding the lack of vitamin A and the risk of measles, including research conducted by Pratiwi (2013) vitamin A deficiency (VAC) and infection. Research on the effect of vitamin A supplementation on measles (Munasir, 2000). Research on the relationship of mother's knowledge about vitamin A with vitamin A administration to toddlers (Fithriyana, 2018) and research on factors related to the incidence of measles (Yahmal, 2021). There is also a study on vitamin A deficiency in children by (Govalan *et al.,* 1960) and a study on Vitamin A for the Management of Measles conducted by (Stinchfield & Orenstein, 2020). Based on research conducted by Pratiwi (2013), vitamin A has an important role in the normal function of the immune system. Therefore, when germs enter the body, the immune system or immune system will be disrupted, resulting in infection in the body. The problem of lack of vitamin A is still one of the main micronutrient problems that often occur in Indonesia, especially in infants and toddlers.

Currently, there are no studies that focus on understanding the effect of a lack of vitamin A on the risk of measles. Therefore, the purpose of this study was to educate about the effect of lack of vitamin A on the risk of measles. The novelties of this study are: (i) the research conducted is about education on the effect of lack of vitamin A on the risk of measles; (ii) the research was conducted by providing socialization through educational video shows; (iii) the focus of this research is the role of vitamin A in the threat of measles.

2. METHODS
2.1. Research subject

The research subjects are the people of Cigugur Girang, Parongpong. Respondents amounted to 10 people. The age range of the respondents is 20 to 60 years. Respondents consisted of 2 people aged 21 years, 3 people aged 30 years, and others aged 28 years, 29 years, 36 years, 47 years, and 57 years. **Table 1** shows data on the age of the respondents.

Table 1. Respondent Age Data

Name	Age (Years)
A	57
B	36
C	30
D	30
E	28
F	29
G	47
H	21
I	21
J	30

2.2 Research Design Analysis

Research data collection was carried out by distributing questionnaires via GoogleForm to the people of Cigugur Girang, Parongpong, Indonesia. There are 3 stages in data collection, namely: (i) distribution of pre-test questionnaires; (2) providing educational materials through material video shows; (iii) distribution of post test questionnaires. The data processing approach used is a quantitative approach. We made a total of 20 questions pre-test and post-test. The making of this question focused on the respondent's knowledge about vitamin A and measles. **Table 2** shows the items in the pre-test and post-test with the answer choices "Yes" and "No". The scoring of the answers is given 10 points for the correct answer, and 0 for the wrong answer.

Table 2. Pre-Test and Post-Test Questions

No.	Question	Answer	
		Yes	Not
1.	Do you know and understand what vitamin A is?		
2.	Is vitamin A a fat soluble vitamin?		
3.	Do you know foods that contain vitamin A?		
4.	Is vitamin A only found in fruits?		
5.	Do you know the benefits of vitamin A for the body?		
6.	Is vitamin A only beneficial for eye health?		
7.	Can vitamin A maintain bone health?		
8.	Do you know the dangers of a lack of vitamin A intake?		
9.	Can vitamin A deficiency cause the immune system to decrease?		
10.	Does vitamin A deficiency affect the risk of measles?		
11.	Do you know and understand what measles is?		
12.	Do you know the cause of measles?		

13.   Is measles caused by a viral infection?
14.   Is measles an infectious disease?
15.   Do you know the symptoms of measles?
16.   Is the appearance of small, grayish-white patches in the mouth and throat
         a symptom of measles?
17.   Are red eyes and sensitivity to light a symptom of measles?
18.   Do you know how to prevent measles?
19.   Is the measles vaccine the primary prevention?
20.   Can measles also occur in adults?

2.3 N-Gain Score Value Analysis

Normalized Gain or N-Gain score is an analysis used to determine an increase in critical thinking skills after respondents are given pre-test and post-test questions, and aims to determine the effectiveness of using a certain method or treatment in one group pre-test post-test design research. After all the data is collected, the data processed by calculating the N-gain score to see the comparison of pre-test and post-test using the Eq. (1) :

$$N\ Gain = \frac{Post\ test\ score - Pre\ test\ score}{Ideal\ score - Pre\ test\ score}$$

The categorization of the acquisition of the N-Gain value can be determined based on the N-Gain value or in the form of a percentage. The effectiveness criteria that are interpreted from the N-Gain value can be seen in **Table 3** below:

Table 3. Distribution of N-Gain Score

Gain normality value	Criteria
g > 0.70	Tall
0.30 g 0.70	Currently
g < 0.30	Low

Meanwhile, the division of value acquisition categories in the form of percentages can be seen in **Table 4** below:

Table 4. Categories of Interpretation of the Effectiveness of N-Gain

Percentage (%)	Interpretation
< 40	Ineffective
40 – 50	Less effective
56 – 75	Effective enough
>76	Effective

3. RESULTS AND DISCUSSION

The results of the analysis of the N-Gain value are shown in **Table 5**. Calculations were carried out to show the quality of increasing knowledge possessed by the respondents. Based on the data in table 4, it can be seen that the average value of N-Gain is 0.84 (84%) indicating that providing education to the public through video media is effective. This effectiveness was obtained because it was seen from the increase in the post test scores.

Table 5. Analysis of Pre-Test and Post-Test N-Gain Values

No.	Name	Score		N-Gain	Category
		Pre-Test	Post Test		
1.	A	190	200	1.00	High
2.	B	90	180	0.82	High
3.	C	180	200	1.00	High
4.	D	190	200	1.00	High
5.	E	190	200	1.00	High
6.	F	80	190	0.92	High
7.	G	90	200	1.00	High
8.	H	90	180	0.82	High
9.	I	150	190	0.80	High
10.	J	190	190	0.00	Low
Average		144	193	0.84	
Min		80	180	0.00	
Max		190	200	1.00	

Figure 1 shows a comparative analysis between the scores obtained in the pre-test and post-test. Based on the data in the figure, it can be seen that the respondents experienced an increase in each filling in the post test questions. In this study, it is shown that there is high effectiveness in the level of understanding of the respondents.
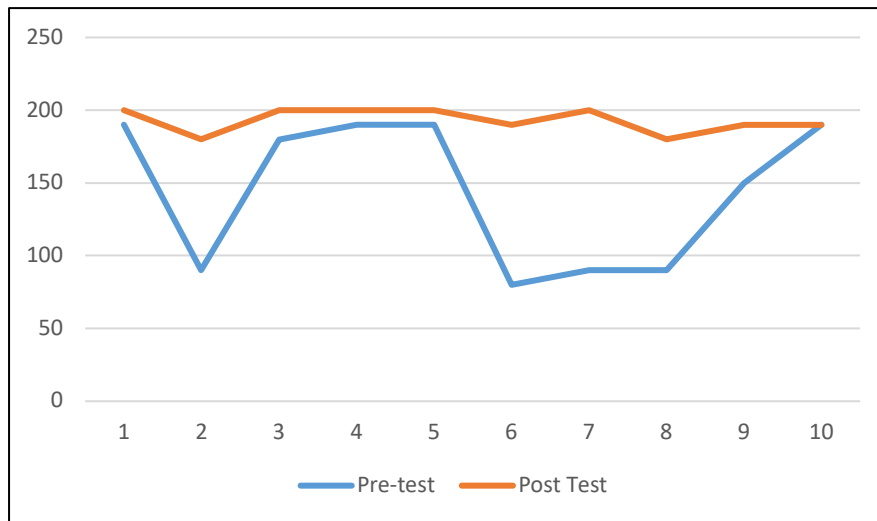

Figure 1 Comparison of pre-test and post-test scores

Table 6 shows the results of the t-test analysis: paired two sample for means. The pre-test has an average value of 144 out of 10 data, while the post-test has an average value of 193 out of 10 data. The average t-test of two paired samples shows that the T count (-3.400) is smaller than the t table (2.262) which means that the post-test scores of students increase not significantly.

Table 3. t-Test: Paired Two Sample for Means

	Pre-Test	Post Test
mean	144	193
Variance	2515,555556	67.77777778
Observations	10	10

Pearson Correlation	0.613524229
Hypothesized Mean Difference	0
df	9
t Stat	-3,400264365
P(T<=t) one-tail	0.003935016
t Critical one-tail	1.833112933
P(T<=t) two-tail	0.007870031
t Critical two-tail	2.262157163

From each data analysis that has been carried out, it can be seen that the provision of education has a positive impact, because the level of understanding of the people of Cigugur Girang increases based on the results of the N-gain analysis. From these results it can be said that the provision of action is effective

4. CONCLUSION

Based on this research, it can be concluded that the provision of education regarding the effect of vitamin A deficiency on the risk of measles was carried out to the people of Cigugur Girang, Parongpong. This is indicated by the average percentage level which reaches 84%. The steps taken in this research are: (i) conducting a pre-test; (ii) education through video shows; and (iii) do a post test. The results showed an increase in public understanding, seen from the average pre-test score of 144 to 193 on the average post-test score. From these results it can be seen that the effectiveness of providing education is influenced by the people of Cigugur Girang who can understand educational materials well. Then, based on the results of the t-test, it is known that the t-count value of (-3.400) is smaller than the t-table value (2.262), which means that the increase in public understanding is not significant.

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.

6. REFERENCES

Arianto, M., Setiawati, M., Adi, M. S., Hadisaputro, S., and Budhi, K. (2018). Beberapa faktor risiko kejadian campak pada balita di Kabupaten Sarolangun. *Jurnal Epidemiologi Kesehatan Komunitas*, *3*(1), 41-47.

Cáceres, V. M., Strebel, P. M., and Sutter, R. W. (2000). Factors determining prevalence of maternal antibody to measles virus throughout infancy: a review. *Clinical Infectious Diseases*, *31*(1), 110-119.

Cahyaningrum, F., and Setyanti, P. (2017). Hubungan tingkat pengetahuan ibu tentang vitamin a dengan kepatuhan ibu memberikan kapsul vitamin a pada balita usia 12-59 bulan di wilayah kerja Puskesmas Rowosari Kota Semarang. *Jurnal Ilmiah Maternal*, *2*(1), 1-6.

Ernawati, F., and Soekatri, M. (2013). Status vitamin A dan zat besi anak Indonesia. *Gizi Indonesia*, *36*(2), 123-130.

Fithriyana, R. (2018). Hubungan pengetahuan ibu tentang vitamin A dengan pemberian vitamin A pada balita di Desa Kuantan Sako tahun 2016. *Jurnal Doppler*, *2*(1), 50-57.

Fawzi, W. W., Chalmers, T. C., Herrera, M. G., and Mosteller, F. (1993). Vitamin A supplementation and child mortality: a meta-analysis. *Jama*, *269*(7), 898-903.

Gopalan, C., Venkatachalam, P. S., and Bhavani, B. (1960). Studies of vitamin A deficiency in children. *The American Journal of Clinical Nutrition*, *8*(6), 833-840.

Halim, R. G. (2016). Campak pada anak. *Cermin Dunia Kedokteran*, *43*(3), 186-189.

Ifalahma, D. (2021). Pengetahuan ibu tentang vitamin A pada balita di Posyandu Melati I Kadipiro Surakarta. *OVUM: Journal of Midwifery and Health Sciences*, *1*(1), 17-26.

Indarwati, E. (2015). Hubungan tingkat pengetahuan ibu dengan cakupan pemberian vitamin A pada balita di PKD Melati Sari Desa Durensari Kecamatan Bagelen Kabupaten Purworejo. *Jurnal Komunikasi Kesehatan*, *6*(1).

Liliandriani, A. (2021). Gambaran pengetahuan ibu tentang asupan vitamin A pada balita. *Journal Peqguruang*, *2*(1), 6-9.

Liwu, T. S., Rampengan, N. H., and Tatura, S. N. (2016). Hubungan status gizi dengan berat ringannya campak pada anak. *e-CliniC*, *4*(1), 237-242.

Marniasih, W., Hermawan, D., and Abidin, Z. (2012). Faktor-faktor yang berhubungan dengan kejadian campak di wilayah kerja Puskesmas Natar Kabupaten Lampung Selatan tahun 2012. *Jurnal Dunia Kesmas*, *1*(2), 1-10.

Munasir, Z. (2016). Pengaruh suplementasi vitamin A terhadap campak. *Sari Pediatri*, *2*(2), 72-76.

Pratiwi, Y. S. (2013). Kekurangan vitamin A (KVA) dan infeksi. *The Indonesian Journal of Health Science*, *3*(2), 207-201.

Sommer, A. (2008). Vitamin A deficiency and clinical disease: an historical overview. *The Journal of Nutrition*, *138*(10), 1835-1839.

Stinchfield, P. A., and Orenstein, W. A. (2020). Vitamin A for the management of measles in the United States. *Infectious Diseases in Clinical Practice*, *28*(4), 181-187.

Sudfeld, C. R., Navar, A. M., and Halsey, N. A. (2010). Effectiveness of measles vaccination and vitamin A treatment. *International Journal of Epidemiology*, *39*(suppl_1), i48-i55.

Underwood, B. A., and Arthur, P. A. U. L. (1996). The contribution of vitamin A to public health. *The FASEB Journal*, *10*(9), 1040-1048.

Yahmal, P. (2021). Faktor-faktor yang berhubungan dengan kejadian campak. *Jurnal Medika Hutama*, *3*(1), 1612-1615