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Factors Influencing Mothers in Providing Vitamin A Capsules to Toddlers

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ABSTRACT

Background: Vitamin A is an essential micronutrient required by the body. According to the World Health Organization (WHO) in 2014, approximately 250 million preschool-aged children experience vitamin A deficiency. This study aimed to determine the factors influencing mothers in providing vitamin A capsules to toddlers. **Methods:** This research employed an analytical observational study with a cross-sectional design. The study was conducted at Sidomulyo Public Health Center, Banyuasin Regency, in May 2023. The sample consisted of 51 mothers with toddlers. **Results:** The cross-tabulation results between attitude and the provision of vitamin A capsules showed that the majority of mothers who provided vitamin A capsules had a positive attitude, totaling 23 respondents (45.1%). The chi-square test results indicated a p-value of 0.003 (<0.05). The cross-tabulation results between behavior and the provision of vitamin A capsules showed that the majority of mothers who provided vitamin A capsules to toddlers had good behavior, totaling 26 respondents (51.0%). The chi-square test results indicated a p-value of 0.001 (<0.05). **Conclusion:** There was a significant association between maternal attitude and behavior and the provision of vitamin A capsules to toddlers. It is recommended that the head of Sidomulyo Public Health Center pay greater attention to factors influencing mothers in providing vitamin A capsules to toddlers by using the findings of this study as a reference.

Keywords: Factors; provision; vitamin A capsules; toddlers

1. INTRODUCTION

Vitamin A is an essential micronutrient required by the body and plays an important role in maintaining eye health and overall body function.[1] According to the World Health Organization (WHO), approximately 250 million preschool-aged children suffer from vitamin A deficiency, with an estimated 250,000 to 500,000 children becoming blind each year (1%–2%). Within 12 months, about half of these children die as a result of vitamin A deficiency.[2] Vitamin A capsules are soft capsules with tips that can be cut, opaque, and easy to consume, including for toddlers. Toddlerhood is a critical period for growth and development. During this stage, toddlers require sufficient vitamin A to support growth and strengthen their immune system against diseases.[3]

Insufficient intake of vitamin A can reduce the immune system of toddlers and increase the risk of morbidity and mortality. Vitamin A deficiency is also the leading preventable cause of childhood blindness. Approximately 2.8 million children under five show clinical signs, while 251 million others experience vitamin A deficiency, thereby increasing the risk of death from severe infections. About one-quarter of children under five in developing countries are at risk of vitamin A deficiency, with 20% at higher risk of common infectious diseases and 2% experiencing blindness or serious visual impairment. In Indonesia, around 10 million children under five suffer from vitamin A deficiency. Based on the 2008 vitamin A survey, from a target of 20 million children under five, the prevalence of xerophthalmia was 0.33%,

while subclinical vitamin A deficiency (based on serum retinol levels) reached 50%. Vitamin A deficiency increases mortality and morbidity, making children more susceptible to infectious diseases such as diarrhea, pneumonia, and acute respiratory infections. Clinical manifestations include night blindness and other signs of xerophthalmia, including corneal damage (keratomalacia) and blindness.[4]

To reduce morbidity and mortality among toddlers caused by vitamin A deficiency, the government implements vitamin A supplementation programs in the form of blue vitamin A capsules containing 100,000 IU for infants aged 6–11 months, and red vitamin A capsules containing 200,000 IU for children aged 12–59 months, as well as for postpartum mothers. According to the Vitamin A Supplementation Management Guidelines, vitamin A supplementation is provided simultaneously to all children aged 6–59 months through integrated health service posts (*Posyandu*), specifically in February and August. Infants aged 6–11 months receive supplementation once (February or August), while children aged 12–59 months receive supplementation twice (February and August).[5] In 2007, vitamin A coverage increased from 71.5% to 75.5% in 2012.[6]

Improving vitamin A status in children with deficiency, accompanied by treatment of measles cases using vitamin A, can reduce the severity of infectious diseases in childhood and improve survival rates. Vitamin A reduces mortality and morbidity by enhancing resistance to infections such as measles, diarrhea, and acute respiratory infections. In addition, vitamin A contributes to eye health and supports growth.[6] Awareness of the importance of vitamin A supplementation in toddlers is reflected in an individual's knowledge. One of the causes of vitamin A deficiency in children is maternal behavior or attitudes that do not support vitamin A supplementation, often due to a lack of maternal knowledge about its importance. Higher levels of knowledge are associated with greater awareness of the importance of providing vitamin A.

Based on the health behavior theory proposed by Lawrence Green, health problems are often caused by behavior. Health behavior is influenced by three factors: predisposing factors, enabling factors, and reinforcing factors. Knowledge is an internal factor and a behavioral domain that influences the formation of human behavior. In this theory, knowledge is categorized as a predisposing factor. Maternal attitudes toward vitamin A capsule supplementation represent health behavior that plays an important role in maintaining eye and overall health among toddlers.[7] This is consistent with research conducted by Djalil (2017),[8] which reported a significant relationship between maternal behavior and the provision of vitamin A capsules to toddlers. Similarly, Herawati et al. (2015) found a moderate significant relationship between health education provided by health workers and maternal behavior in administering vitamin A capsules to children aged 6–59 months.[9]

Based on a preliminary survey conducted among 20 mothers with toddlers at Sidomulyo Public Health Center, Banyuasin Regency, in 2023 regarding their knowledge of vitamin A supplementation, the results showed that five mothers understood the definition of vitamin A, five mothers knew its benefits, and ten mothers had no knowledge of vitamin A. These findings indicate that maternal knowledge, attitudes, and behaviors regarding the benefits of vitamin A and its provision to toddlers remain low, which may negatively affect toddler health. Therefore, this study aims to determine the factors influencing mothers in providing vitamin A capsules to toddlers.

2. METHODS

2.1 Study Design

This study employed an analytical observational design with a cross-sectional approach, in which measurements or observations of the independent and dependent variables were collected simultaneously. The study was conducted at Sidomulyo Public Health Center, Banyuasin Regency. The preliminary survey was conducted in April 2022, and the field research was carried out in May 2023.

2.2 Study Population

The population in this study consisted of all mothers with toddlers at Sidomulyo Public Health Center, Banyuasin Regency, totaling 51 individuals. The sample included mothers with toddlers at the same location. The sampling technique used was total sampling, resulting in 51 respondents.

2.3 Data Collection

Primary data were collected directly from respondents through interviews and observations related to the research variables, namely maternal attitudes and behaviors regarding the benefits of vitamin A and the provision of vitamin A capsules to toddlers. Secondary

data were obtained from records in the evaluation section of Sidomulyo Public Health Center, Banyuasin Regency.

2.4 Data Analysis

Data analysis was performed using univariate and bivariate analyses. Univariate analysis was conducted to describe the distribution of each variable, including maternal attitude, maternal behavior, and the provision of vitamin A capsules. The results were presented in frequency and percentage tables.

Bivariate analysis was conducted to determine the association between independent variables (maternal attitude and behavior) and the dependent variable (provision of vitamin A capsules to toddlers). The chi-square test was used to assess statistical significance with a confidence level of 95% ($\alpha = 0.05$). A p-value of less than 0.05 was considered statistically significant, indicating an association between the variables.

2.5 Ethical Practices

This study adhered to ethical standards and obtained informed consent. Ethical approval was granted by the Ethics Committee of STIKes Mitra Husada Medan (Reference No. 968/KEP-MHM/IV/2023).

3. RESULTS

3.1 Univariate Analysis

Based on Table 1, the majority of respondents had a good attitude toward vitamin A supplementation, totaling 26 respondents (51.0%). In terms of behavior, most respondents demonstrated good behavior regarding vitamin A supplementation, totaling 29 respondents (56.9%). Additionally, the majority of respondents provided vitamin A capsules to their toddlers, totaling 35 respondents (68.9%).

Table 1. Distribution of respondent characteristics at Sidomulyo Public Health Center, Banyuasin Regency

Variable	Frequency	Percentage (%)
Attitude		
1. Good	26	51.0
2. Poor	25	49.0
Total	51	100
Behavior		
1. Good	29	56.9
2. Poor	22	43.1
Total	51	100
Provision of vitamin A capsules		
1. Provided	35	68.9
2. Not provided	16	31.4
Total	51	100

2. Bivariate Analysis

Based on Table 2, the cross-tabulation results between attitude and the provision of vitamin A capsules show that the majority of mothers who provided vitamin A capsules to their toddlers had a good attitude, totaling 23 respondents (45.1%). The chi-square test result showed a p-value of 0.003 (<0.05), indicating that H_0 was rejected and H_a was accepted. This means that there was a significant association between maternal attitude and the provision of vitamin A capsules to toddlers at Sidomulyo Public Health Center, Banyuasin Regency, in 2023.

Table 2. Factors influencing mothers in providing vitamin A capsules to toddlers at Sidomulyo Public Health Center, Banyuasin Regency, 2023 based on attitude

No.	Attitude	Provision of Vitamin A Capsules						*p*-value
		Provided		Not provided		Total		
		F	%	F	%	F	%	
1	Good	23	45.1	3	5.9	26	51.0	0.003
2	Poor	12	23.5	13	25.5	25	49.0	
	Total	35	68.6	16	31.4	51	100	

Based on Table 3, the cross-tabulation results between behavior and the provision of vitamin A capsules indicate that the majority of mothers who provided vitamin A capsules to their toddlers had good behavior, totaling 26 respondents (51.0%). The chi-square test result showed a p-value of 0.001 (<0.05), indicating that H_0 was rejected and H_a was accepted. This means that there was a significant association between maternal behavior and the provision of vitamin A capsules to toddlers at Sidomulyo Public Health Center, Banyuasin Regency, in 2023.

Table 3. Factors influencing mothers in providing vitamin A capsules to toddlers at Sidomulyo Public Health Center, Banyuasin Regency, 2023 based on behavior

No.	Attitude	Provision of vitamin A capsules						p-value
		Provided		Not provided		Total		
		F	%	F	%	F	%	
1	Good	26	51.0	3	5.9	29	56.9	0.001
2	Poor	9	17.6	13	25.5	22	43.1	
	Total	35	68.6	16	31.4	51	100	

4. DISCUSSION

Factors Influencing Mothers in Providing Vitamin A Capsules to Toddlers Based on Attitude

The cross-tabulation results between attitude and the provision of vitamin A capsules showed that the majority of mothers who provided vitamin A capsules to their toddlers had a positive attitude toward vitamin A supplementation, totaling 23 respondents (45.1%). The chi-square test result showed a p-value of 0.003 (<0.05), indicating that H_0 was rejected and H_a was accepted. This means that there was a significant association between maternal attitude and the provision of vitamin A capsules to toddlers at Sidomulyo Public Health Center, Banyuasin Regency, in 2023.

These findings are consistent with a study conducted by Rofik entitled "The Attitude of Mothers of Toddlers Towards Vitamin A Supplementation in Posyandu Mawar Merah." The study aimed to determine maternal attitudes toward vitamin A capsule supplementation at *Posyandu* Mawar Merah, Dusun Kamal, Banyakan District, Kediri Regency. The sample consisted of 72 respondents whose attitudes toward vitamin A capsule administration were measured using a respondent questionnaire. The results showed that 63 respondents (87.5%) had a positive attitude, while 9 respondents (12.5%) had a negative attitude toward vitamin A capsule supplementation. The study concluded that the majority of respondents at *Posyandu* Mawar Merah had a positive attitude toward vitamin A capsule administration.[10]

This study is also in line with research conducted by Riska et al. (2020),[11] which aimed to determine whether maternal knowledge and attitudes influence vitamin A supplementation in the prevention of xerophthalmia. The study used an analytical method with a cross-sectional approach. The instruments included questionnaires, interview guidelines, recording devices, writing tools, and a camera. Data were collected from primary and secondary sources and analyzed using univariate and bivariate analyses with the chi-square test. The results indicated a significant relationship between maternal attitude (p=0.000) and vitamin A supplementation in Palanro Village.[11]

According to the researchers' assumption, mothers of toddlers who receive information about vitamin A capsules understand that vitamin A is beneficial in reducing morbidity and mortality, as it can improve the immune system against diseases. Vitamin A deficiency may cause night blindness and xerophthalmia due to dryness of the corneal epithelium.[12-14] Such information becomes a basis for respondents to form attitudes and take action in their daily lives, including providing vitamin A capsules to their toddlers.

Factors Influencing Mothers in Providing Vitamin A Capsules to Toddlers Based on Behavior

The cross-tabulation results between behavior and the provision of vitamin A capsules showed that the majority of mothers who provided vitamin A capsules to their toddlers had good behavior toward vitamin A supplementation, totaling 26 respondents (51.0%). The chi-square test result showed a p-value of 0.001 (<0.05), indicating that H_0 was rejected and H_a was accepted. This means that there was a significant association between maternal behavior and the provision of vitamin A capsules to toddlers at Sidomulyo Public Health Center, Banyuasin Regency, in 2023.

These findings are consistent with a study conducted by Putra Apriadi Siregar, which examined postpartum mothers' behavior in consuming vitamin A capsules in Kota Pinang District, South Labuhan Batu Regency. Maternal behavior in consuming vitamin A capsules is considered very important. The study used a descriptive design with a cross-sectional approach. The population consisted of 355 postpartum mothers in Kota Pinang District, with a sample of 57 respondents. The instrument used was a structured questionnaire. The data were presented in frequency distribution tables. The

results showed that most respondents had moderate behavior, totaling 52 respondents (91.2%), while the remaining 5 respondents (8.8%) were categorized as having poor behavior. All respondents (100%) were categorized as having moderate attitudes.[15]

5. CONCLUSION

The cross-tabulation results between attitude and the provision of vitamin A capsules showed that the majority of mothers who provided vitamin A capsules to their toddlers had a positive attitude toward vitamin A supplementation, totaling 23 respondents (45.1%). The chi-square test yielded a p-value of 0.003 (<0.05), indicating that H_0 was rejected and H_a was accepted. This means that there was a significant association between maternal attitude and the provision of vitamin A capsules to toddlers at Sidomulyo Public Health Center, Banyuasin Regency, in 2023.

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It is recommended that the head of Sidomulyo Public Health Center pay greater attention to factors influencing mothers in providing vitamin A capsules to toddlers by using the findings of this study as a reference. Educational institutions are also expected to use these findings as input and to enhance the knowledge of STIKes Mitra Husada students regarding health services at Sidomulyo Public Health Center. Future researchers are encouraged to conduct intervention-based studies to address factors influencing mothers in providing vitamin A capsules to toddlers. In addition, greater attention should be given to the health of infants and toddlers to prevent potential complications that may occur due to not receiving vitamin A capsules.

Ethical Approval

Ethical approval was granted by the Ethics Committee of STIKes Mitra Husada Medan (Reference No. 968/KEP-MHM/IV/2023).

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Competing Interests

All the authors declare that there are no conflicts of interest.

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Underlying Data

Derived data supporting the findings of this study are available from the corresponding author on request.

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