Coverage of Vitamin A Supplementation among Under-Five Children in Hegarmanah Village, Jatinangor in August 2014

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Abstract

Background: The vitamin A supplementation program conducted every February and August aims to reduce children morbidity and mortality. Mother's knowledge on the importance of vitamin A is crucial to succeeding this program. This study aimed to examine the coverage of the program among under-five children and the mother's knowledge about vitamin A supplementation in Hegarmanah Village, Jatinangor in August 2014.

Methods: This was a descriptive cross-sectional study involving mothers of children aged 6–59 months in eight RWs in Hegarmanah Village. The mothers were interviewed to find out whether their children received vitamin A supplementation. Additional questionnaire-based data about mother's knowledge on vitamin A was also collected. The subjects in this study were the mothers of 220 under-five children. Data collection was obtained by direct interviews with the mothers during their visit to the Puskesmas or during home visits to children who missed the Posyandu appointments.

Results: Two hundred and fourteen (97.27%) children received vitamin A supplementation and only 6 (2.73%) did not. The questionnaires revealed that 94 children (96%) received vitamin A, while 4 (4%) did not. The mother's level of knowledge in vitamin A was either poor (1%), moderate (37%), or good (62%).

Conclusions: The coverage of vitamin A supplementation in Hegarmanah Village reaches 97.27% and the mother's understanding about vitamin A is generally good.

Keywords: *Posyandu*, sweeping, under-five children, vitamin A

Introduction

Vitamin A has a role in the maintenance of the integrity of epithelial, immune, and reproductive cells.[1] Vitamin A deficiency is one of the causes of immune system depression which affect about 130 million preschool children and 7 million pregnant women mostly in developing countries.[2] Vitamin A deficiency in under-five children can also cause mortality risk up to 20-30%.[1] Xerophthalmia among preschool children amounts to about 5 million cases, 10% of which can potentially lead to blindness.[3] Even though there has already been significant improvements, vitamin A deficiency is still the cause of at least 650,000 young children deaths annually, which are related to diarrhea, measles, malaria, and other infections.[4–5]

Several studies have stated that vitamin A coverage in several other countries, such as Ghana, Zambia, and Nepal, is much higher than the percentage of vitamin A supplement capsules in Indonesia.[6,7] The government has shown much efforts in reducing the number of vitamin A deficiency-related deaths by some strategies that involve distributing vitamin A capsules every 6 months and promoting consumption of food high in vitamin A.[8] These programs are effective to fulfill the needs of vitamin A, as proven by increased distribution percentage of vitamin A capsules in the provinces of Indonesia. According to the Basic Health Research (Riskesdas) 2010, the distribution percentage of vitamin A capsules among 6–59 months old children was 69.8% and increased to 75.5%.[9] Furthermore, the vitamin A supplementation program has shown significant improvement, which is a decrease in the number of under-five children

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with serum retinol levels lower than 20µg/dl (from 50% to 14.6%). High dose of vitamin A supplementation twice a year for 6–59 months old children has decreased under-five mortality rate by as much as 23%.[1,10]

The vitamin A supplementation program is still the main choice in dealing with vitamin A deficiency cases. However, there is still a need for other efforts in the future to achieve sustainable prevention; one of them is vitamin A fortification in food sources. Education and nutritional knowledge are also important especially for mothers to improve the growth and development of children.[1]

As it is a public health program, Puskesmas Jatinangor distributes vitamin A supplementation to under-five children in every village in *Kecamatan* (District) Jatinangor in February and August. Besides, this program requires continuous support and periodic follow-ups to maintain the rate of vitamin A supplementation distribution among under-five children. Based on the points above, this study set out to find the coverage of vitamin A supplementation among under-five children in August 2014 and the level of mother's knowledge on the importance of vitamin A.

Methods

This was a descriptive study with a cross-sectional approach so as to obtain an accurate description of the coverage of vitamin A supplementation distribution among under-five children in Hegarmanah Village, Kecamatan Jatinangor in August 2014. The subjects were the mothers of under-five children aged 6–59 months old. This study was conducted in 8 out of 14 *posyandu* and from these posyandu 220 mothers were selected. Data was collected by direct interview with the children's mothers at the posyandu or at their respective homes if they did not come to the *posyandu.*

Another set of data was collected from the mothers in Posyandu Hegarmanah from August to October 2014 to find out the distribution and their knowledge about vitamin A by using a questionnaire which had enquiries on the distribution and knowledge about vitamin A capsules. The inclusion criterion in this study was the mother of children older than 6 months as of July 2014. Mothers of younger children were excluded. The validated questionnaire comprised identity, distribution, and maternal knowledge on vitamin A. Then, the collected data was analyzed by a statistical software. The distribution and frequency of the data were presented in tables.

The Ethical clearance was granted by the Health Research Ethics Committee Faculty of Medicine Universitas Padjadjaran, Bandung. Informed consent was also given by the *posyandu* workers and the selected mothers.

Results

There were 220 under-five children spread across the eight selected posyandu, 214 (97.27%) children received vitamin A capsules in August 2014. The number of children who did not receive vitamin A capsules was 6 (2.72%) (Table 1). In overall, the coverage of vitamin A supplementation can be seen in Table 2.

Furthermore, the result of the questionnaire about the mother's vitamin A knowledge was secondary data. The subjects in this study were 98 mothers of under-five children who came to the *posyandu* and had provided their general characteristics of educational background and occupation to be collected as data in this study.

The mothers generally had Junior High school education (41%) or Senior High school education (47%). A minor proportion of mothers had a higher education. In the occupation aspect, most mothers were housewives (74%). A minority had a profession, such as civil servant (1%) and salesperson (4%).

From the data provided by the mothers through the questionnaire, it was discovered that 94 (96%) out of 98 children received vitamin A supplement while 4 (4%) did not. It was almost similar to the result gathered from 214 children which showed that 97.27% of the children received vitamin A supplement. In this study, educational background or occupation did not have a significant effect on the coverage of vitamin A supplementation (Table 3).

Furthermore, the distribution and knowledge on vitamin A supplementation in *Posyandu* Hegarmanah, Jatinangor were based on the questionnaire.

Moreover, t data obtained from questionnaires revealed that most parents (94%) were aware of the government's free vitamin A supplementation program for under-five children in the *Posyandu*. Additionally, 70% of the mothers knew that vitamin A supplement was given twice a year. Besides, 92% of the mothers knew and participated in the free vitamin A supplementation program. Furthermore, 68% of the mothers knew that *Posyandu* would give one capsule during a home visit if they did not get any vitamin A

Table 1 Coverage of Vitamin A Capsule Supplement in Eight RWs in Hegarmanah Village in August 2014

RW	Number of children aged 6-59 months	Number of children aged 6-59 months who came to posyandu and received vitamin A		Number of children aged 6-59 months who did not come to posyandu and vitamin A sweeping		Number of children aged 6-59 months who did not come to posyandu nor receive vitamin A capsule	
		Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
1	24	12	50	9	38	3	12.5
2	20	20	100	0	0	0	0
3	57	50	88	7	12	0	0
4	33	24	73	7	21	2	6
5	23	20	87	3	13	0	0
6	24	19	79	5	21	0	0
7	26	23	88	3	12	0	0
8	13	9	69	3	23	1	7.69
TOTAL	220	177	80.45	37	17	6	2.72

Table 2 Coverage of Vitamin A Supplementation Among Under-Five Children in Hegarmanah Village, Jatinangor in August 2014

	Frequency	Percentage(%)
Children who received vitamin A	214	97.27
Children who did not receive vitamin A	6	2.72

supplement. A proportion of the mothers (40.82%) also knew that they could also get vitamin A supplement from the Puskesmas (Table 4). Moreover, data results showed that the mother's knowledge could be classified into three categories: good, moderate, and poor (Table 5).

Results based on mother's knowledge about vitamin A supplementation were that half of the number of mothers had good knowledge and received vitamin A supplementation while, only three people with good knowledge did not receive vitamin A. Other than that, 35 mothers who received vitamin A had moderate knowledge and another one had poor knowledge. Overall, it could be observed that mothers still received vitamin A regardless of their knowledge about it (Table 5).

Discussions

This study involved under-five children in Hegarmanah as subjects. Based on direct interviews with mothers of the children in 8 *RWs* in Hegarmanah, it revealed that the coverage of vitamin A supplementation in August 2014 was 97.27%, while the other 2.72% did not receive it. Similar findings were also reflected in the results of the questionnaire in eight Posyandu about the distribution of and mother's knowledge on vitamin A supplementation: 96% of the children received it while the other 4% did not. According to the regulations in Renstra Kementerian Kesehatan dan *Rencana Pembinaan Gizi Masyarakat* tahun 2010-2014, nutritional management development is indicated by nutritional repair and the phasing of targeted indicators up to 2014, one of which is the percentage of children aged 6–59 months that receive vitamin A capsule. The target in 2012 was 80% and increases to 85% in 2014.[11]

In overall, it could be concluded that the coverage of the vitamin A supplementation program in Hegarmanah Village (97.27%) had exceeded the targeted value. This was also the case with the coverage in February 2014 (98%). This achievement proved the efficiency and effectiveness of Posyandu in carrying out its role as health care service provider.

Vitamin A supplements were not only distributed during Posyandu activities but

Table 3 Common Characteristics of Mothers Based on Questionnaire Responses

Characteristics	Frequency	Percentage (%)
Educational background		
Elementary school	9	9.18
Junior High school	40	40.82
Senior High school	46	46.94
Higher education	3	3.06
Occupation		
Housewife	73	74.49
Civil servant	1	1.02
Factory worker	12	12.24
Sales	4	4.08
Other	8	8.16
Children who received vit. A	94	96
Children who did not receive vit.A	4	4
TOTAL	98	100

also during home visits by the Posyandu cadres. This study revealed that more than half of the families were visited by the cadres at their homes. Sweeping or Home visits was one of the efforts directed to increase the coverage of vitamin A supplementation. Children and babies who did not receive vitamin A supplements during *Posyandu* activities would be tracked down and visited at their homes; the supplement would then be given at their homes.[10] If there were still some children or babies who did not receive their share of vitamin A supplement, then cadres should make efforts to successfully deliver the supplement even if the designated period of time had passed. Through this strategy, the coverage of vitamin A supplementation could actually reach 100%.[11] Unfortunately, sweeping caused the mothers to prefer staying at home and waiting to be visited instead of coming over to the *Posyandu*.

Vitamin A supplementation program was still the preferred method of managing vitamin A deficiency; however, other methods have to be performed in the future to ensure sustainability, such as vitamin A fortification in food sources, nutritional education, etc.[10,12,18] Another study mentions education

Table 4 Distribution and Mother's Knowledge on Vitamin A Supplementation in Posyandu Hegarmanah, Jatinangor Based on Results of the questionnaire

Distribution and mother's knowledge	Yes		No		Not sure	
	F	(%)	F	(%)	F	(%)
Knows about the government's free vit. A supplementation program for under-five children in Posyandu	92	93.88	6	6.12	0	0.00
Vit. A supplement is given twice a year	68	69.39	9	9.18	21	21.43
Vit. A supplement is given 3 times a year	20	20.41	47	47.96	31	31.63
Parents participate in the vit. A supplementation program	91	92.86	3	3.06	4	4.08
Posyandu gives vit. A supplement during home visit if the parents have not received vit. A	67	68.37	21	21.43	10	10.20
If the child does not get vit. A, it is still available at the Puskesmas	40	40.82	27	27.55	31	31.63

Table 5 Coverage of Vitamin A Supplementation Based on Mother's Knowledge on Vitamin A

Mother's Knowledge	Vit. A Distribution					
	Did not receive		Received		Total	
	F	%	F	%	F	%
Good	3	4.92	58	95.08	61	100
Moderate	1	2.78	35	97.22	36	100
Poor	0	0.00	1	100.00	1	100
Total	4	4.08	94	95.92	98	100

as an important factor in the distribution of vitamin A capsules. Children with parents who only had primary school education or lower had a higher risk of not receiving the vitamin A capsule compared to those with parents who had at least junior high school education.[14,16]

Semba and Grover[16] stated that there is a significant difference between the coverage of vitamin A supplementation with parent's educational background. Higher educational background of parents will result in a higher coverage. Additionally, a previous study also states that there is a difference between mothers with high and low educational background: mothers with lower education tend to miss out on the vitamin A supplementation.[13,17,20] Fortunately, the program was carried out extensively in Hegarmanah Village and was able to reach out to all elements of the community regardless of the level of education or knowledge. When the mothers and their children missed the *Posyandu* activities, the supplement was given during the sweeping. This was proven by the finding that the mothers, even with different levels of knowledge, all still received vitamin A supplement. As such, in this study, maternal education and knowledge were not important determinants of the coverage of vitamin A supplementation.

Nevertheless, the result of this study still showed some indications of mothers' who were still unsure about the vitamin A supplementation program. This was reflected in the fair number of mothers who were unsure whether the supplement was given two or three times a year. Besides, some mothers were also unsure whether or not they could get it from at the local Puskesmas.

Thus, it can be concluded that there is still a lack of socialization by the Puskesmas. Most people are only participating in *Posyandu* activities because they are invited by cadres and not because of their awareness of their children's needs.

The coverage of vitamin A supplementation for under-five children in *Posyandu* Hegarmanah, Jatinangor was 97.27% by visiting the *Posyandu* or home visits. Sweeping or home visits was one of the efforts performed by the cadres to ensure the coverage of vitamin A supplementation also reached those who did not attend *Posyandu* activities. The weakness of this method was that mothers became too lazy and preferred staying at home than participating in *Posyandu* activities. In other words, the mothers lacked awareness regarding the importance of vitamin A .

Mothers' knowledge affected her children's growth and development. If one had the understanding and the awareness of a particular object, he/she would seek to treat the object in the best way that was known to him/her. However, the extensive nature of the vitamin A supplementation program covered most of the mothers regardless of their level of knowledge.

Vitamin A supplementation for under-five children needed to be well-integrated with the existing health programs, such as , Posyandu still held a crucial role in sustaining the coverage of the vitamin A supplementation program. A comprehensive revitalization of the Posyandu would be an accurate step to further increase its coverage.[9]

The author recommends socialization and education as the suitable way to generate an effective social participation in the community and also increase the public awareness. The vitamin A supplementation program should be promoted prior to the scheduled time (February and August) so as to increase the coverage by involving the community itself, increasing the people's knowledge and awareness to stimulate motivation to participate.

Promotion can be performed by spreading information formally through seminars,

training, education, or promotions between other activities. Some informal methods would be through stickers, posters, banners, and other media. The socialization can be conducted by the local health authority, hospital, and Puskesmas Jatinangor to provide the community with the information on the benefits, food sources, and dangers of deficiency of vitamin A.

Furthermore, the people are recommended to increase their knowledge on the symptoms of deficient or excessive vitamin A in the body. The data in this study should be considered before conducting further studies so that they can be better and more beneficial.

Limitations of this study are the lack of time and costs. The author recommends to conduct a further study with larger population coverage.

References

1. Herman S. Masalah kurang VItamin A (KVA) dan prospek penanggulangannya. Media Litbang Kesehatan. 2007;17(4):40–4.
2. WHO. WHO Guideline: Vitamin A supplementation in infants and children 6–59 months of age. Geneva: WHO Press; 2011.
3. Dole K, Gilbert C, Deshpande M, Khandekar R. Prevalence and determinants of xerophtalmia in preschool children in urban slums, Pune, India-a preliminary assessment. Opthalmic Epidemiol. 2009;16(1):8–14.
4. Semba RD, de Pee S, Sun K, Campbell AA, Bloem MW, Raju VK. Low intake of vitamin A-rich foods among children, aged 12-35 months, in India: association with malnutrition, anemia, and missed child survival interventions. Nutrition. 2010; 26(10):958–62.
5. Kassu A, Andualem B, Van Nhien N, Nakamori M, Nishikawa T, Yamamoto S, et al. Vitamin A deficiency in patients with diarrhea and HIV infection in Ethiopia. Asia Pac J Clin Nutr. 2007;16(Suppl 1):323–8.
6. MOST, USAID Micronutrient Program. Cost analysis of the national Vitamin A supplementation programs in Ghana, Nepal, and Zambia: a Synthesis of three studies. Arlington, Virginia USA: USAID; 2004.
7. Nguyen AM, Grover DS, Sun K, Raju VK, Semba RD, Schaumerg DA. Coverage of the vitamin A supplementation programme for child survival in Nepal: success and challenges. Paediatr Int Child Health. 2012;32(4):233–8.
8. Berger SG, de Pee S, Bloem MW, Halati S, Semba RD. Malnutrition and morbidity among children not reached by the national vitamin A capsule programme in urban slum areas of Indonesia. Public Health. 2008;122(4):371–8.
9. Badan Penelitian dan Pengembangan Kesehatan. Riset Kesehatan Dasar. Jakarta: Kementerian Kesehatan Republik Indonesia; 2010.
10. Ridwan E. Cakupan suplementasi kapsul Vitamin A dalam hubungannya dengan karakteristik rumah tangga akses pelayanan kesehatan pada anak balita di Indonesia analisis data riskesdas 2010. Buletin Penelitian Sistem Kesehatan. 2013;16(1):1-9.
11. Riyadi S. Rencana kerja pembina gizi masyarakat Tahun 2013. Jakarta: Direktorat Bina Gizi Masyarakat dan KIA; 2013.
12. Bendech MA, Cusack G, Konate F, Toure A, Ba M, Baker SK. National vitamin A supplementation coverage survey among 6–59 months old children in Guinea (West Africa). J Trop Pediatr. 2007;138(4):787–92.
13. Semba RD, de Pee S, Sun K, Akhter N, Bloem MW, Raju VK. Coverage of Vitamin A capsule programme in Bangladesh and risk factors associated with non-receipt of Vitamin A. J Health Popul Nutr. 2010;28(2):143–8.
14. Grover DS, de Pee S, Sun K, Raju VK, Bloem MW, Semba RD. Vitamin A supplementation in Cambodia: program coverage and association with greater maternal formal education. Asia Pac J Clin Nutr. 2008;17(3):446–50.
15. Rahman M. Micronutrient profile of children and women in rural Bangladesh: study on available data for iron and vitamin A supplementation. East Afr J Public Health. 2009;6(1):102–7.
16. Semba RD, de Pee S, Sun K, Bloem MW, Raju VK. Coverage of the national vitamin A supplementation program in Ethiopia. J Trop Pediatr. 2008;54(2):141–4.
17. Semba RD, de Pee S, Sun K, Bloem MW, Raju VK. The role of expanded coverage of the national vitamin A program in preventing morbidity and mortality among preschool children in India. J Nutr. 2010;140(1):208S–12S
18. Semba RD, de Pee S, Sun K, Akhter N, Bloem MW, Raju VK. Coverage of vitamin A capsule programme in Bangladesh and risk factors

associated with non-receipt of vitamin A. J Health Popul Nutr. 2010;28(2):143–8.
19. Choi Y, Bishai D, Hill K. Socioeconomic differentials in supplementation of vitamin A: evidence from the Philippines. J Health Popul Nutr. 2005;23(2):156–64.
20. Demissie T, Ali A, Mekonen Y, Haider J, Umeta M. Magnitude and distribution of vitamin A deficiency in Ethiopia. Food Nutr Bull. 2010;31(2):234–41.