

The importance of education about women nutrition for Kader Kesehatan in the effort of stunting reduction in Indonesia

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Abstract

Stunting prevalence in Indonesia, including East Java Province, fell into high category and mandates public health concern. In developing countries, the possibility of stunted child can be reduced if women of reproductive age have good health and nutrition. Community health workers (CHWs), or widely known as Kader Kesehatan in Indonesia, are essential public health workforce who carry out several activities including providing nutrition education to women of reproductive age. This study aimed to assess the knowledge of Kader Kesehatan actively work in an urban village in Surabaya, Indonesia, and provided sufficient education in order to improve the knowledge of Kader Kesehatan in regards to nutrition. This study was conducted through a community development event in an urban village (kelurahan) in Surabaya, East Java, Indonesia. Fifty-two Kader Kesehatan residing and actively work with the community of the urban village were enrolled in this study. Theoretical subjects were delivered using lecture method, while technical subjects were delivered using small-group instruction method. Pre-test and post-test were administered prior and after education, respectively. Prior to the education, most Kader Kesehatan could not answer and perform anthropometric measurement correctly for all subjects related to stunting in children under five and women nutrition. Following the nutrition education, the knowledge of Kader Kesehatan was improved significantly ($p < 0.05$). Despite the experience of working with the community, Kader Kesehatan need continuous education in order to improve their knowledge, especially about nutrition; thus, able to provide adequate education for women and helping the effort of stunting reduction in Indonesia.

Keywords: Education; Nutrition; Stunting; Indonesia; Kader Kesehatan

1. Introduction

Stunting in children under five is defined as deficient linear growth during critical periods and is diagnosed as height at the age less than -2 standard deviations of the child growth standard median of World Health Organization¹. Basic Health Research or Riset Kesehatan Dasar (Riskesdas) reported the decreasing prevalence of stunting, from 37.2% in 2013 to 30.8% in 2018 (Riskesdas 2018)^{2,3}. Study of Nutritional Status of Indonesia of Studi Status Gizi Indonesia (SSGI) observed similar trend, in which 27.7% and 24.4% of stunting prevalence were reported in 2019 and 2021, respectively. In East Java, the prevalence was 26.86% in 2019 and 23.5% in 2021⁴.

The levels of stunting are classified into five categories: very low (<2.5%), low (2.5% - <10%), medium (10% - <20%), high (20% - <30%), and very high ($\geq 30\%$)⁵. Thus, despite the decrease, stunting prevalence in Indonesia, including East

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Java Province, was fell into high category and mandates public health concern. Stunting in children under five possesses immediate and long-term impacts, including the increased of mortality and morbidity, poor development which inhibit learning capacity and ability, higher risk of developing non-communicable diseases in adulthood, higher risk of acquiring infections, and reduced productivity and economic capability⁶.

Stunting often begins *in utero* and continues for at least the first 2 years of post-natal life⁷. Adequate providence of nutrition is needed not only after birth, but also during pregnancy and prior to conception. Study shown that fetal growth and newborn length are similar despite heterogenous geographical settings, as long as mothers received adequate nutrition and the health needs are met, and the presence of environmental constraints on growth are low⁸. In developing countries, the possibility of stunted child can be reduced if women of reproductive age have good health and nutrition⁹.

The occurrence of stunting was associated the maternal education level. Mothers with lower level of education tend to experience higher chances of having stunted children¹⁰. Parents with higher education level were associated with lower possibility of having stunted child. Higher paternal and maternal education was significantly associated with the decreasing prevalence of childhood undernutrition, including stunting¹¹. Several programs demonstrating successful reduction in stunting are commonly included nutrition education and counseling, immunization, growth and health monitoring, hygiene and sanitation, and social safety¹². Thus, the providence of sufficient knowledge and education, especially in nutrition, is essential for the reduction of stunting. This includes adequate provision of knowledge for women of reproductive age, in order to achieve good nutrition status to lower the possibility of having stunted child.

Community health workers (CHWs), or widely known as Kader Kesehatan in Indonesia, are essential public health workforce who share lived experiences and have social capital in their communities. Kader Kesehatan received brief training in order to carry out their core roles, including health outreach, education, cultural mediation, and advocacy^{13,14}. In regards to the effort in stunting reduction, Kader Kesehatan are expected to carry out several activities including anthropometric measurement and documentation of children under five visiting Pos Layanan Terpadu (Posyandu), distributing supplementary feeding, and providing nutrition education and counseling to mother with children under five, expectant mother, and women of reproductive age. Thus, it is important for Kader Kesehatan to possess sufficient knowledge about health and nutrition. Continuous training and education are recommended to be provided to Kader Kesehatan in order to maintain and update their knowledge¹⁵.

This study aimed to assess the knowledge of Kader Kesehatan actively work in an urban village in Surabaya, and provided sufficient education in order to improve the knowledge of Kader Kesehatan in regards to nutrition for women in reproductive age, as an effort to reduce the prevalence of stunting in Surabaya, East Java, Indonesia.

2. Material and methods

This study was conducted through a community development event in an urban village (kelurahan) in Surabaya, East Java, Indonesia. Prior to the education, written pre-test was administered for theoretical subjects, while individual demonstration test was carried out for technical subjects. Theoretical subjects covered the definition and indicator of stunting, undernutrition and its indicators in women, and calorie requirement. Technical subjects covered the proper anthropometric measurement, including length and height for children under five, and height, weight, and mid upper arm circumference (MUAC) for adults. Theoretical subjects were delivered using lecture method, while technical subjects were delivered using small-group instruction method. The education was delivered by dietitians receiving formal education in the field of human nutrition. Following the education, written post-test and individual demonstration test were administered.

3. Results

3.1. Demographic characteristics of the participants

Fifty-two Kader Kesehatan residing and actively work with the community of an urban village in Surabaya were enrolled in this study. All Kader Kesehatan were female, with age ranging from 30 to 62 years old. Most Kader Kesehatan are housewives (65.6%; 34/52) and received high school diploma (50%; 26/52). Demographic characteristics of Kader Kesehatan are presented in Table 1.

Table 1 Demographic characteristics of Kader Kesehatan

Characteristics		n	%
Sex	Female	32	100
	Male	0	0
Education level	Elementary	3	5.8
	Junior high school	19	36.5
	Senior high school	26	50
	Vocational school/University	4	7.7
Occupation	Not working/housewife	34	65.6
	Private/non-formal sector	18	34.4

3.2. Knowledge about stunting and women nutrition

Prior to the delivery of nutrition education, most Kader Kesehatan could not answer the written pre-test nor demonstrating technical anthropometric procedure correctly. In regards to stunting definition, indicator, and related anthropometric measurement (height and length of children under five), only 7.7% (4/52) Kader Kesehatan answered and performed correctly. As for body mass index (BMI) classification, calculation, and related anthropometric measurement (weight and height in adults), less than 50% Kader Kesehatan were able to answer and performed the measurement correctly. The same condition was observed regarding the mid-upper arm circumference (MUAC) measurement and interpretation. No Kader Kesehatan understand the calculation of calorie requirement or energy expenditure calculation in women. Following the nutrition education, the knowledge of Kader Kesehatan was improved significantly, as can be seen in Table 2.

Table 2 Knowledge of Kader Kesehatan about stunting and women nutrition prior and after the delivery of nutrition education

Subjects	Pre-test				Post-test				p
	Incorrect		Correct		Incorrect		Correct		
	n	%	N	%	n	%	n	%	
Theoretical subjects									
Definition and indicator of stunting	48	92.3	4	7.7	8	15.4	44	84.6	<0,05
Undernutrition in women (based on BMI classification)	31	59.6	21	40.4	0	0	52	100	<0,05
BMI calculation	52	100	0	0	0	0	52	100	<0,05
Undernutrition in women (based on MUAC measurement)	45	86.5	7	13.5	8	15.4	44	84.6	<0,05
Calorie or energy expenditure calculation	52	100	0	0	0	0	52	100	<0,05
Practical subjects									
Height and length measurement for children under five	48	92.3	4	7.7	8	15.4	44	84.6	<0,05
Weight and height measurement in adults	49	94.2	3	5.8	9	17.3	43	82.7	<0,05
MUAC measurement in adults	45	86.5	7	13.5	8	15.4	44	84.6	<0,05

4. Discussion

Stunting in children under five is defined as deficient linear growth during critical periods, and is diagnosed as height at the age less than -2 standard deviations of the child growth standard median of World Health Organization¹. It is necessary to conduct proper length or height measurement and analyzed the data using correct indicator, in order to identify stunted children under five¹⁵. This study revealed that prior to the delivery of nutrition education, only 7.7%

(4/52) Kader Kesehatan who understand the definition of stunting and its indicator, and able to conduct proper height and length measurement. After the nutrition education, the number of Kader Kesehatan who understand the definition of stunting and proper procedure of height and length measurement was improved significantly ($p=0.005$) to 84.6% (44/52).

Children born from underweight mother are at higher risk of being stunted¹⁶⁻¹⁸. The World Health Organization Regional Office for the Western Pacific Region (WPRO) classified body mass index (BMI) under 18.5 as underweight¹⁹. Expert Panel on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults determined BMI as weight in kilograms divided by the square of the height in meters (kg/m^2)²⁰. Aside of BMI, mid-upper arm circumference (MUAC) can be used as an alternative for BMI to assess the risk of undernutrition in women of reproductive age and expectant mothers²¹. Pregnant women with MUAC <23.5 cm is more likely to have stunted child²². In order to deliver education and distribute sufficient intervention to women with higher risk of having stunted children, it is necessary to identify undernourished women using correct anthropometric measurement and indicators¹⁵. Among Kader Kesehatan prior to the nutrition education, 59.6% (31/52), 86.5% (45/52), 94.2% (49/52), and 0% (0/52) failed to understand the definition of underweight, demonstrated improper MUAC measurement, conducted improper weight and height measurement, and falsely calculated the BMI, respectively. After receiving education, the condition improved significantly ($p<0.05$). All Kader Kesehatan enrolled in the nutrition education session were correctly defined underweight in women and able to calculate BMI correctly, and more than 80% Kader Kesehatan properly conducted MUAC, height, and weight measurement.

One of the most common causes of undernutrition, including underweight, is insufficient intake of calorie and nutrients to meet an individual's needs to maintain good health²³. It is recommended to consume a healthy diet containing calorie and nutrients in appropriate proportion. (Stark, 2013) There are several equations commonly use to estimate resting energy expenditure (REE) needed to calculate calorie need. The Mifflin-St. Jeor equation is preferred compared to Harris-Benedict, WHO/FAO/ONU, Schofield, and Owen equation^{24,25}. Aside of REE, total energy expenditure (TEE) calculation also needs the physical activity and thermic effect of food factor²⁶. However, none of the Kader Kesehatan known how to calculate REE using the Mifflin-St. Jeor equation and proper TEE calculation prior to the education. Kader Kesehatan also did not understand The Food and Nutrition Board of the Institutes of Medicine (IOM) regarding the macronutrient distribution, that is 45%-65% of energy for carbohydrate, 10%-35% of energy for protein, and 20%-35% of energy for fat²⁷. Following the education, all Kader Kesehatan enrolled were able to calculate REE, TEE, and macronutrient distribution.

5. Conclusion

Despite the experience of working with the community, Kader Kesehatan need continuous education in order to improve their knowledge, especially about nutrition. Understanding the nutrition for women of reproductive age might help Kader Kesehatan to provide adequate education for women and helping the effort of stunting reduction in Indonesia.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare no potential conflict of interests.

Statement of informed consent

Informed consent was obtained from each participant enrolled in the study.

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