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Original Research

Effectiveness of Health Education and Nutrition Rehabilitation Toward Community Empowerment for Children Aged Less Than 5 Years with Stunting: A Quasi-Experimental Design

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ABSTRACT

Introduction: Globally, more than one child in four under the age of five is too short for their age. Although attempts to reduce stunting have succeeded globally, stunting rates in Indonesia have unfortunately remained largely stagnant. However, few studies have been conducted in Indonesia, particularly in Banten to develop and evaluate the education program combining with nutrition rehabilitation intervention to reduce stunting. The purpose of this study was to test effectiveness of education and nutrition rehabilitation to increase community empowerment for stunting in Serang Banten.

Methods: This study was conducted using a quasi-experimental design with the reversed-treatment non-equivalent control group design. The study used 200 people as research samples. The analysis tools used include descriptive statistics and paired t tests

Results: The results of this study showed that education and nutrition rehabilitation effectively to increased community empowerment in overcoming children with stunting ($p<0.05$).

Conclusion: Nutrition education and rehabilitation management needs to be improved in an effort to reproduce the status of malnutrition or malnutrition into normal nutritional status, particularly in Serang City.

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INTRODUCTION

Globally, more than one child in four under the age of five is too short for their age (UNICEF, 2013). Low height-for-age or stunting represents failure to attain a minimum stature correlated with present and future growth and development and is a main chronic undernutrition indicator. Stunting means poverty and unhealthy working conditions. In 2012, nearly 33 percent of urban residents in the developing world lived in the suburbs and this is expected to reach two billion people living in slum communities in less developed countries by 2030 (United Nations, 2012). In the developing world, more than 100,000 people shift to slums each day. Actually, almost 1.5 billion citizens live in urban suburbs without proper access to healthcare, clean water and sanitation (British Red Cross, 2012). Evidence indicates that children living in the slums are much more likely than children who live somewhere else in the city to suffer from malnutrition, including stunting (Awasthi & Agarwal, 2003; Ghosh & Shah, 2004).

Stunting is a result of chronic undernutrition during the most important periods of early life growth and development. Stunted children suffer from compromised development with irreversible adult consequences and face a high risk of morbidity and mortality (Dewey & Begum, 2011; McDonald et al., 2013). Stunting in children can be measured by anthropometry using physical growth data. Development faltering often happens between the ages of three months and 18 to 24 months (Victora et al., 2010). Stunting prevalence rises very rapidly between 12 and 24 months (40 percent to 54 percent), continues to rise until 36 months of age (58 percent), and then remains relatively stable until 5

years of age (55 percent) (Bhutta et al., 2013). Indonesia is the fifth highest country in stunting prevalence among children under five in Asia (WHO, 2018). In 2018, as many as 30.8 percent of children under five in Indonesia experienced stunting and Banten province was the fifth province to become a priority of stunting handling in Java Island (Kemenkes RI., 2018). In Banten, the stunting rate has increased significantly from year to year, in 2018 as many as 60,806 cases of stunting were identified.

The WHO hypothesis on the history, causes, and consequences of childhood stunting, which was published in 2013, identifies numerous factors directly leading to stunted growth and development (Stewart et al., 2013). While the WHO framework was based on global data analysis, the framework used to evaluate the contributors of stunting at the national level is critical as national health policies are often based on the available national and sub-national data. The WHO Stunting Framework defines community and social factors as 'contextual' and classifies them into six groups: (1) political economy; (2) health and healthcare; (3) education; (4) society and culture; (5) farming and food systems; and (6) water, sanitation and climate. The current evidence of correlation between these factors and stunting is minimal (Stewart et al., 2013), and various background variables (e.g. population density, per capita national income, level of democracy (Pridmore & Hill, 2009) are measured at the national level and are, therefore, not appropriate for household or community level research. According to the WHO conceptual framework for determinants of a child, stunting showed that household and family factors–low maternal height, premature birth, short birth length, low maternal education, and low household wealth—are important proximate determinants of child stunting in Indonesia (Beal et al., 2018).

Although attempts to reduce stunting have succeeded globally (Lundeen et al., 2014), notably in Ethiopia and the state of Mahrastrata, India (Haddad et al., 2014), stunting rates have unfortunately remained largely stagnant in sub-Saharan Africa and South Asia (Bhutta et al., 2013). Achieving global health goals of the WHO in 2025 to minimize stunting by 40 percent in children under the age of five would rely on sustained efforts to prevent stunting within slums. In Indonesia, currently, the government program in handling stunting has been carried out through two approaches, namely specific and sensitive nutrition interventions (Kemenkes RI., 2018). However, the stunting program is still not implemented optimally and here is less involvement of community to participate in stunting reduction, as evidenced by the continued increase in the stunting rate. So, we need an approach or intervention that is able to involve community participation outside the health sector.

Community empowerment is the participation of all community members in solving community problems (Bierman et al., 2014). There are several interventions to prompt community participation, one of which is education. The results of previous studies indicate that education is an effective way to increase knowledge, which will have an impact on increasing behavior to participate in problem solving (Notoatmodjo, 2014). However, educational education alone is not enough to sustain sustainable participants. Decreases in the stunting can be accomplished through measures based on facts. Strong evidence was found in the Lancet series on maternal and child undernutrition for a range of measures that are effective in supporting children's health (Bhutta et al., 2013). By integrating and scaling up to 90 percent of these documented nutrition-specific interventions, stunting could be reduced by 20 percent, representing 33.5 million fewer stunted children (Bhutta et al., 2013; Fenske et al., 2013; Milman et al., 2005; Remans et al., 2011). Specifically, proposed strategies to address the underlying causes of stunting would concentrate on improving nutrition and avoiding associated diseases. However, few studies have been conducted in Indonesia, particularly in Banten, to develop and evaluate the education program combining with nutrition rehabilitation intervention to reduce stunting. Therefore, the purpose of this study was to primarily test the effectiveness of health education and nutrition rehabilitation toward community empowerment for children aged less than 5 years with stunting.

MATERIALS AND METHODS

Study design

This study was conducted using a quasi-experimental design with the reversed-treatment non-equivalent control group design with pre-test and post-test conducted in Serang City, Banten. Intervention group was provided education and rehabilitation nutrition for two week and control group only provided with education through leaflet with the topic focus on general information about stunting and its prevention. In the first week, the cadre received two sessions of comprehensive workshops, each session was two hours and the topics were regarding general information about stunting, prevention, and treatment and discussion about their ability to help children aged less than 5 years in recovery from stunting and preventing relapse. Workshops were delivered in Bahasa Indonesia using tutorial and discussion methods. In the second week, the cadre was provided with rehabilitation training in two sessions (each session was two hours) with the topic about nutrition intervention that can be done by the cadre, for example modification of nutrition for children, and cooking class, and also discussing about how to empower their ability to help children with undernutrition. Before the workshop session began, all participants received a pre-test regarding their understanding through group discussion about stunting and most of them showed similar understanding about malnutrition.

Sample

The sample in this study was a cadre and other volunteers that were listed officially in the public health center in Serang City, Banten Province, Indonesia. The inclusion criteria in this study were age over 18 years old, able to communicate, and willing to be respondent. Inactive cadre means those who registered in the database in the public health centre but did not involve in activities provided by the community health centre more than three times. Exclusion criterion was inactive cadre. The sample size was calculated using G-Power Software Version 3.1.6 assuming t-test, $\alpha = 0.05$, effect size = 0.15 (Cohen, 1992), power level = 0.80. So that the total sample recruited was 100 cadres for each group. Convenience sampling was used to select participants.

Instrument

The demographic characteristics were collected, including age, gender, and education level. Community empowerment was measured using a self-developed instrument constructed from four indicators, namely contribution of thought, contribution of funds, contribution of personnel, and contribution of facilities. This instrument was developed based on our previously unpublished qualitative study. This instrument included a Likert scale with 1 indicating never and 5 indicating always. After discussion with an expert, finally the instrument measured only three aspects, contribution of thought, contribution of personnel, and contribution of funds with total 15 items, five items for each indicator. The content validity index ranged from 0.64 to 0.79. The Cronbach's alpha in the current study was 0.68.

Data Collection Procedure

Prior to this research, an ethics permit was obtained from the affiliated university (EB20346). After permission was obtained, the researcher explained the objectives, inclusion and exclusion criteria, procedures and ethical protection to midwives and cadres. Cadres helped choose samples according to the criteria. Respondents who met the criteria were then given an explanation of the intervention and after that signed the informed consent sheet. Before intervention, respondents filled out the questionnaire first and then intervened with education and rehabilitation for two weeks. After completion of the intervention, a post-test was taken again.

Data analysis

Normality test with Kolmogorov Smirnov was first done to see whether the data distribution was normal or not. When the data were normal, the univariate analysis used the mean and standard deviation to describe the demographic characteristics and variable of community empowerment. Paired sample t-test was used to see the difference before and after the intervention. Data processing was performed using SPSS software version 22.

RESULTS

Table 1 shows that the average age of the control and control group is over 30 years, mostly women, with junior high school education. There was no significant difference between intervention and control group in terms of age, gender, and education level, which mean that both intervention and control groups had similar characteristics even without random sampling.

In the intervention group, the mean of community empowerment score before intervention was 11.11 (SD=4.88), and after intervention there was an increased score of community empowerment as much as 4.17, with mean score after intervention of 13.50 (SD=2.22). According to the results of paired t-test, it showed a significant improvement of community empowerment after intervention with p-value 0.000 (Table 2). While, in the control group, the mean of community empowerment score before intervention was 13.42 (SD=6.60), and after intervention there was an increased score of community empowerment as much as 0.09, with

Table 1. Demographic characteristics of respondent (n=200)

Variables	Intervention group (n=100)	Control group (n=100)	p-value
Age, mean (SD)	34.4 (3.3)	33.4 (3.4)	0.142
Gender			
Male	30 (30)	27 (27)	0.078
Female	70 (70)	73 (73)	
Education level			0.271
Elementary school	35 (35)	37 (37)	
Junior high school	55 (55)	49 (49)	
Senior high school	10 (10)	14 (14)	
University	0	0	

Tabel 2. Differences in community empowerment before and after intervention in both groups (n=200)

Group	Before intervention Mean (SD)	After Intervention Mean (SD)	Mean different	p-value for paired t test	p-value for independent t test
Intervention group	11.11 (4.88)	13.50 (2.22)	4.17	0.000	0.001
Control group	13.42 (6.60)	13.49 (3.29)	0.09	0.922	

mean score after intervention of 13.49 (SD=3.29). According to the results of paired t-test, it showed non- significant improvement of community empowerment after intervention with p-value 0.922. In addition, independent t-test showed that the intervention group had significant improvement in the score of community empowerment after intervention compared to the control group, with p-value 0.001.

DISCUSSION

There is a significant improvement of community empowerment in stunting prevention after being given intervention. These results are consistent with Astama et al. (2012), that prevention through nutrition education and rehabilitation is an alternative model for tackling under-fives' malnutrition based on community empowerment through four elements, namely: (1) education, (2) PMT together , (3) health checks, medications and micronutrients and (4) fostering community participation to contribute in the form of food, energy, or money. The implications of this result are nutrition education and rehabilitation by helping, facilitating, and motivating mothers of under-fives and with poor nutrition, failing to improve their child's nutritional status, and changing behavior in caring for children and providing food to children. The obstacles are the low level of society and the lack of public knowledge about the importance of overcoming malnutrition in children under five which has an impact on brain growth and development in children.

We found that community empowerment before intervention among two groups showed a low score. This result is not in accordance with previous study finding that the development paradigm that is highly developed now is the empowerment paradigm, which consists of community participation (Abadi, 2014). It was also explained that community participation is the participation of all community members in solving community problems (Abadi, 2014). The results are also not in accordance with Aidha (2012), that the level of community participation, both from the scope of the program and from the results of measurements on the community, shows the same results i.e. the level of community participation is below the established national standard of 80 percent. If the D / S coverage is below 80 percent then it is said that community participation for monitoring growth and weight development is very low. Thus, support from family and community will influence the actions of mothers in utilizing community health activity to improve family health, especially weighing children under five, examining sick children and others.

Our study may have several limitations. First, measurement of community empowerment still needs to be tested for its construct validity. Second, our study was carried out for only two weeks after ending of the impact evaluation and termination, which may be considered as a relatively short period. Nevertheless, this period was sufficient to examine how intervention exposure changed even shortly after the ending. Further research on the effects of longer duration of sustainability is needed. Third, our study of sustained outcomes was focused on the effects among the target population of the nutrition interventions. We did not examine the policy and regulatory institutions or organizational levels in connection to sustained service delivery, which was undertaken by a separate study.

CONCLUSION

In conclusion, education and nutrition rehabilitation through workshop and training in two sessions for two weeks was effective to increase community empowerment for stunting reduction. Nutrition education and rehabilitation management needs to be improved in an effort to reproduce the status of malnutrition into normal nutritional status, particularly in Serang City. Community empowerment management needs to be improved by instilling awareness to be involved in dealing with toddlers with malnutrition and of malnutrition being the normal nutritional status. This study provides a new approach for prevention of stunting in Indonesia that can be basic evidence for healthcare policy to improve prevention programs on stunting with the local community and widely provide cultural training for all communities through cadres as a first line of the healthcare system in Indonesia.

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