Education intervention model on clean and healthy living habits among pregnant women in remote border areas, Indonesia

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Education intervention model on clean and healthy living habits among mothers having children less than 2 years of age border in remote areas, Indonesia

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Abstract

Background: Stunting in toddlers reflects a failure to grow due to nutritional deficiencies. Repeated exposure to fecal pathogens, especially prevalent in areas where open defecation practices exist, can lead to diarrhea, hindered growth, health issues, and irreversible developmental impairments.
Purpose: To determine the effectiveness of *Agamis Sistematis Interaktif Kreatif/ASIK* (Religious, Systematic, Interactive, Creative) education model (focusing on water, sanitation, and hygiene) on clean and healthy living habit (CHLH) among toddlers at risk of stunting in the remote border areas of Enggano Island, Bengkulu Province in 2023.
Method: The researcher employed a non-equivalent control group design, also known as a pre-test post-test control group design, for the experimental and control groups. This research involved a sample of 60 mothers having children less than 2 years of age, comprising 30 in the intervention group and 30 in the control group. Data collection utilized a questionnaire. Univariate and bivariate data analysis was conducted using the paired t-test statistical analysis. The results of this study revealed a difference in the mean values between the experimental and control groups concerning WAZ (weight-for-age z-scores), with values in the experimental group pre=72.7000, post=75.2667, and the control group pre=76.8167, post=78.4167.
Results: The research findings indicated a difference in CHLH between the treatment and control groups (ρ=0.000, ρ<0.05). The ASIK education model on CHLH among toddlers at risk of stunting is effectively applicable in the remote border areas of Enggano Island, Bengkulu Province in 2023.
Conclusion: Government support in the form of budget allocation is crucial for the sustainability of continuous education aimed at stunting prevention in village communities.

Keywords: *Agamis Sistematis Interaktif Kreatif* (*ASIK*); Clean and Healthy Living Habits; Education Model.

INTRODUCTION

Stunting in toddlers reflects a condition of failed growth due to nutritional deficiencies, resulting in growth measurements not corresponding to their age (De Onis & Branca, 2016). Prolonged accumulation of nutritional deficiencies can lead to growth failure (United Nations International Children's Emergency Fund - UNICEF, 2013). The deficiency starts from pregnancy and extends to the first two years or 24 months of a baby's life (Ministry of Health of the Republic of Indonesia, 2018). Stunting, when not compensated by catch-up growth, causes issues linked to increased risks of illness and mortality, suboptimal brain development resulting in delayed motor skills, and hindered mental growth (Bloem, De

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Pee, Le Hop, Khan, Laillou, Minarto, & Wasantwisut, 2013). Hence, it is crucial to prevent stunting occurrences for a nation's optimal development potential (Ramli, Agho, Inder, Bowe, Jacobs, & Dibley, 2009). Stunting problems in early childhood can manifest in physical growth, mental, cognitive, and motor development disorders. Moreover, unseen complications can heighten the risk of degenerative diseases in adulthood (Vonaesch, Randremanana, Gody, Collard, Giles-Vernick, Doria, & Sansonetti, 2018).

Enggano Island is an outermost small island in Indonesia located in the waters off West Sumatra. It is a subdistrict within the North Bengkulu Regency, Bengkulu Province. As a remote area, accessing digital resources is challenging here. Geographically, Enggano Island consists of gentle undulating hills, karst hills, land, and marshes. Due to this geographical setup, obtaining clean water is extremely difficult, particularly during drought seasons like the one experienced in 2015 by the Enggano Island community (Idramsyah & Novira, 2019). Low healthcare workforce resilience and poor remote infrastructure are limitations faced by Enggano Island in Bengkulu Province. One prevalent behavior among the Enggano population is open defecation despite the availability of latrines (Nasution & Pramawati, 2022). Educating mothers of at-risk stunted toddlers about CHLH is expected to establish disciplined practices for clean and healthy living (Azzura, Fathmawati, & Yulia, 2021). This research aims to assess the effectiveness of the ASIK - *Agamis Sistematis Interaktif Kreatif* (Religious, Systematic, Interactive, Creative) education model on CHLH among toddlers at risk of stunting in the farthest border areas of Enggano Island, Bengkulu Province in 2023.

RESEARCH METHOD

The research design employed by the researcher is a non-equivalent control group design, also known as a pre-test post-test control group design, for both the experimental and control groups. The experimental group comprised mothers of at-risk stunted toddlers receiving the ASIK education model, focusing on water, sanitation, and hygiene education. The control group involved mothers of at-risk stunted toddlers receiving conventional education. The independent variable in this study was the ASIK education model, and the dependent variable was CHLH, while external variables included age and education of at-risk mothers. The research sample consisted of 60 mothers having children less than 2 years of age, with 30 participants in each group.

This study was conducted in the Enggano Community Health Center area in North Bengkulu Regency from January to November 2023. Enggano is a remote, outermost island, and an area with a high incidence of stunting, thus the research intervention is anticipated to impact the behavior of the research subjects. Data collection was conducted using questionnaires.

The initial phase of the research involved establishing commitment among research cadres, health centers, village heads, district heads, researchers, enumerators, and mothers of at-risk stunted toddlers in Enggano Island. Subsequently, identification of cadres conducting conventional education and recruitment of ASIK education model cadres took place. The analysis of research instrument needs for the ASIK education model included videos, pocketbooks, and leaflets. Trial of the ASIK education model was conducted with a limited group, involving cadre training and micro-teaching. A pretest was administered using questionnaires to both the control and experimental groups. Following this, education sessions were conducted three times, covering water education, environmental sanitation education, and personal hygiene education. *ASIK (Agamis Sistematis Kreatif Interaktif* (Interactive Creative Systematic Religion)) education model, comprising videos, pocketbooks, and leaflets, was developed based on the analysis of instrument needs and guidelines for clean and healthy living behaviors (Prihanti, Lista, Habibi, Arsinta, Hanggara, Galih, & Sinta, 2018). Educational activities included brief oral presentations by cadres followed by video presentations and discussions (Priyoto, 2015). At the end of the activities, a post-test was conducted for both the control and experimental groups.

Univariate and bivariate data analysis was performed using paired t-test statistical analysis. This research has been declared ethically appropriate by the Ministry of Health of the Republic of Indonesia, Directorate General of Health Personnel, Bengkulu Health Polytechnic with number: KEPK.BKL/487/07/2023.

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RESEARCH RESULTS

Table 1. Characteristic of Participants (N=60)

Variables	Group	
	Experimental (n=30)	Control (n=30)
Age (n/%) (Mean±SD)(Range)(Year)	(26.13±5.65)(17-38)	(27.90±6.58)(17-38)
Occupation (n/%)		
Unemployed	14/46.7	9/30.0
Farmer/labor	13/43.4	18/60.0
Employee	3/10.0	3/10.0
Education (n/%)		
Uneducated	10/33.3	12/40.0
Elementary	15/50.0	13/43.3
Junior High	4/13.3	5/16.7
Senior High	1/3.3	0/0.0
Income (IDR) (n/%)		
500.000	27/90.0	26/86.7
500.001 - 1.000.000	2/6.7	3/10.0
1.000.001 - 3.000.000	1/3.3	1/3.3
Information Source of Stunting (n/%)		
Healthcare professional	12/40.0	8/26.7
TV/radio	12/40.0	15/50.0
Other people	3/10.0	3/10.0
Online media/smart phone	3/10.0	4/13.3
Latrines Ownership (n/%)		
Pretest		
No	8/26.7	8/26.7
Yes	22/73.3	22/73.3
Posttest		
No	5/16.7	7/23.3
Yes	25/83.3	23/76.7
Handwashing with Soap Practices (n/%)		
Pretest		
Poor	4/13.3	5/16.7
Fair	17/56.7	16/53.3
Good	9/30.0	9/30.0
Posttest		
Poor	0/0.0	2/6.7
Fair	17/56.7	23/76.7
Good	13/43.3	5/16.7

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Based on Table 1, for the age variable in the experimental group the mean value is 2613 and the standard deviation is 5.65. The lowest age was 17 years and the highest age was 38 years, almost half of the participants were unemployed (46.7%), half of the participants had basic education (50%), almost all of the participants had an income of IDR 500,000 (90%), and almost half of the participants had information sources regarding stunting came from health service providers (40%). Meanwhile, age in the control group had a mean value of 27.90 and a standard deviation of 6.58. The lowest age is 17 years and the highest age is 38 years, most of the participants work as farmers/laborers (60%), almost half of the participants have no education (43.3%), almost all of the participants have an income of IDR 500,000, - (86.7%), and half of participants obtained information about stunting from health care providers (50%). In the experimental group, regarding latrine ownership, there was an increase of 3 (10%) participants who had a latrine when compared to before the intervention where 22 (73.3%) participants had a latrine, whereas after the intervention there were 25 (83.3%) participants. In the control group, regarding latrine ownership, there was only 1 (3.3%) additional participant who had a latrine compared to before the intervention where 22 (73.3%) participants had a latrine, and after the intervention there were 23 (76.7%) participants. In the experimental group regarding good hand washing practices with soap, there was an increase of 4 (13.3%) participants who increased their hand washing habits with soap compared to before the intervention, where there were 9 (30%) participants who had good habits, whereas after the intervention the number was 13 (43%) 0.3%) participants. In the control group regarding good hand washing practices with soap, there was a decrease in 4 (13.3%) participants who increased their hand washing habits with soap compared to before the intervention where 9 (30%) participants had good habits, and after the intervention it became 5 (16 .7%) participants.

Table 2. Stunting Risk between the Experimental and Control Groups (n=60)

Stunting Risk	Mean	STD	SE	ρ-value
Experimental group				
Pre	72.7000	5.25980	.96030	0.000
Post	75.2667	5.69594	1.03993	
Control group				
Pre	76.8167	2.99276	.54640	0.000
Post	78.4167	3.24059	.59165	

Table 2, in both the experimental and control groups, indicates a significant difference in reducing the risk of stunting through intervention, where the length-for-age values before and after intervention have a ρ-value of 0.000.

Table 3. Latrine Ownership and Handwashing with Soap Practices (n=30)

Variables	Experimental Group (ρ-value)	Control Group (ρ-value)
Latrine Ownership		
Pretest	0.164	0.164
Posttest		
Hand Washing with Soap Practices		
Pretest	0.030	0.823
Posttest		

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Table 3, in both the experimental and control groups, indicates that there is no significant difference in latrine ownership before and after the intervention, with a ρ-value of 0.164 in the experimental group and a ρ-value of 0.662 in the control group. In the experimental group, there is a significant difference in hand washing with soap practices through the intervention, with a ρ-value of 0.030 before and after.

DISCUSSION

Participants Characteristics

The average age of participants in this study falls within the non-risk age range of 20 to 35 years. Age is a factor that can influence an individual's knowledge. As one ages, they accumulate more experiences and information, leading to a better understanding of stunting (Ministry of Health of the Republic of Indonesia, 2021). This can significantly impact early prevention efforts against stunting (Amelia, 2019).

On average, the participants in this study did not receive formal education. Research suggests a connection between a mother's education and the occurrence of stunting. Toddlers whose mothers have only received primary education are at 2.885 times higher risk of experiencing stunting compared to those whose mothers have higher education (Ministry of Health of the Republic of Indonesia, 2019). Mothers with lower education levels are three times more likely to have undernourished toddlers compared to those with higher education levels (Beal, Tumilowicz, Sutrisna, Izwardy & Neufeld, 2018).

Analysis of the Difference in Average Pre and Post Stunting Risk

The results of statistical data analysis in both the experimental and control groups indicated a significant difference in reducing stunting risk through intervention, where the length-for-age values before and after intervention have a ρ-value of 0.000. Child length intervention employs child anthropometric standards to establish references for assessing nutritional status and growth trends (Ministry of Health of the Republic of Indonesia, 2017). It serves as a reference to identify children at risk of faltering growth before nutritional problems arise, and as a basis to support health policies and public initiatives related to preventing growth disorders (Central Statistics Agency, 2019).

Latrine Ownership

The statistical data analysis results indicated that in both the experimental and control groups, there was no significant difference in latrine ownership before and after the intervention, with a ρ-value of 0.164 in the experimental group and a ρ-value of 0.662 in the control group. Field observations still reveal participants without access to latrines. Open defecation can lead to the spread of infectious diseases within the community, affecting the health of toddlers due to fecal matter that carries disease vectors impacting environmental health (Ministry of Health of the Republic of Indonesia, 2011). A latrine is a structure used for human waste disposal, including urine. A well-maintained latrine can minimize the negative effects caused by human waste (Rahman & La Patilaiya, 2018). Proper waste disposal complying with health standards involves not contaminating the surrounding soil or surface water and preventing open defecation, which could serve as a breeding ground for disease vectors. Several studies state that having a proper latrine does not directly correlate with stunting occurrences (World Health Organization, 2018). However, these studies suggest that owning a sanitary latrine acts as a protective factor. This indicates that having a sanitary latrine is not the sole contributor to stunting incidents. Some research found that exclusive breastfeeding helps protect infants from various infections and supports optimal body growth (Azzura, Fathmawati & Yulia, 2021).

Handwashing with Soap Practice Habit

The statistical data analysis results indicated a significant difference in hand washing with soap practices in the experimental group before and after the intervention, with a ρ-value of 0.030. Based on field observations, there are still several participants who do not wash their hands with soap during the critical five moments, which include before eating,

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after eating, after defecation, after changing a child's diaper, and before feeding a child (Herlina, Gazali, Sari, Widada, & Ermayendri, 2021). Studies have shown that stunting potential decreases with interventions focused on behavioral changes in sanitation and hygiene (Hoffman, Sawaya, Verreschi, Tucker, & Roberts, 2000). Research indicates that access to good sanitation contributes to a 27% reduction in stunting (Kusuma, Kusnoputranto, Djaja & Syarief, 2013). Breaking the chain of poor sanitation and hygiene is closely related to stunting; therefore, every pregnant woman and child need to live in a clean environment (Ministry of Health of the Republic of Indonesia, 2020). There are two simple ways to improve hygiene and sanitation: by avoiding open defecation and washing hands with soap (Prasanti & Fuady, 2017).

CONCLUSION

There is a significant difference in reducing stunting risk through interventions, where the length-for-age values before and after have a ρ-value of 0.000, and there is a significant difference in hand washing with soap practices before and after with a ρ-value of 0.030. However, there is no significant difference in latrine ownership before and after the intervention, with a ρ-value of 0.164 in the experimental group and a ρ-value of 0.662 in the control group.

SUGGESTION

The ASIK education module can serve as an educational tool in early stunting prevention, providing information to break the chain of causes and can be used continuously. Subsequent research could involve developing additional features in an Android application relevant to early stunting prevention and various other aspects to facilitate public access to information.

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