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Multilevel Analysis of Health Services in the Stunting Prevention Program in Central Lampung District

Sutarto, Ratna Dewi Puspita Sari, Winda Trijyanthi Utama, Reni Indriyani

Abstract

Stunting is a condition of chronic malnutrition accompanied by complications of infectious diseases, which has a harmful impact in the short term risky and easy to get sick in children and long term impact in adulthood. They are at risk of having chronic diseases with low severity. Maternal and child health services affect the incidence of stunting, and the Indonesian government intervenes in maternal and child health service programs, as is the case with the local government of Central Lampung Regency. The mother's response to the mother-child health service program can affect the child's health status, including the child's stunting status. This study analyzes the maternal-child health service program carried out by the service unit in the village for the mothers of children under five to prevent stunting in the work area of Central Lampung District. The method used is a quantitative analysis using multiple linear regression analysis. The data were collected through interviews and observations of mothers of children under five, totaling 198 respondents in the stunting locus village, Central Lampung Regency. The sample was determined using a simple random selection of both cases and controls. There was an effect of intervention efforts to prevent mother-child stunting at the village level for mothers of children under five, with a practical value of 14.5%. This situation means that the intervention efforts of the mother-child health service program on stunting prevention by the local government of Central Lampung Regency carried out by health workers and cadres in the village have succeeded in providing a positive response to mothers of children under five by 14.5%. Another factor that affected the reaction of mothers of children under five is 75.4%. Further research is still needed on these other factors.

Keywords: stunting; maternal and child health service; prevention

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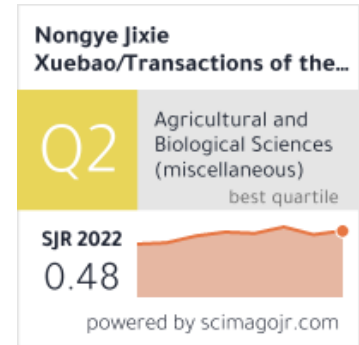
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Multilevel Analysis of Health Services in the Stunting Prevention Program in Central Lampung District

Sutarto¹, Ratna Dewi Puspita Sari², Winda Trijayanthi Utama¹, Reni Indriyani³

(1. Medical Education Study Program, Faculty of Medicine, Lampung University, Bandar Lampung, 35145, Indonesia; 2. Medical Profession Study Programs, Faculty of Medicine, Lampung University, Bandar Lampung, 35145, Indonesia; 3. Department of Nutrition, Poltekkes Tanjungkarang, Indonesia)

Abstract: Stunting is a condition of chronic malnutrition accompanied by complications of infectious diseases, which has a harmful impact in the short term risky and easy to get sick in children and long term impact in adulthood. They are at risk of having chronic diseases with low severity. Maternal and child health services affect the incidence of stunting, and the Indonesian government intervenes in maternal and child health service programs, as is the case with the local government of Central Lampung Regency. The mother's response to the mother-child health service program can affect the child's health status, including the child's stunting status. This study analyzes the maternal-child health service program carried out by the service unit in the village for the mothers of children under five to prevent stunting in the work area of Central Lampung District. The method used is a quantitative analysis using multiple linear regression analysis. The data were collected through interviews and observations of mothers of children under five, totaling 198 respondents in the stunting locus village, Central Lampung Regency. The sample was determined using a simple random selection of both cases and controls. There was an effect of intervention efforts to prevent mother-child stunting at the village level for mothers of children under five, with a practical value of 14.5%. This situation means that the intervention efforts of the mother-child health service program on stunting prevention by the local government of Central Lampung Regency carried out by health workers and cadres in the village have succeeded in providing a positive response to mothers of children under five by 14.5%. Another factor that affected the reaction of mothers of children under five is 75.4%. Further research is still needed on these other factors.

Keywords: stunting; maternal and child health service; prevention

中央楠榜区发育迟缓预防计划中卫生服务的多层次分析

Sutarto¹, Ratna Dewi Puspita Sari², Winda Trijayanthi Utama¹, Reni Indriyani³

(1. 医学教育研究项目, 楠榜大学医学院, 班达楠榜, 35145, 印度尼西亚)

2. 医学专业研究项目, 医学院, 楠榜大学, 班达楠榜, 35145, 印度尼西亚

3. 印度尼西亚丹戎卡朗卫生理工学院营养部)

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About the authors: Sutarto, Medical Education Study Program, Faculty of Medicine, Lampung University, Bandar Lampung, Indonesia; Ratna Dewi Puspita Sari, Medical Profession Study Programs, Faculty of Medicine, Lampung University, Bandar Lampung, Indonesia; Winda Trijayanthi Utama, Medical Education Study Program, Faculty of Medicine, Lampung University, Bandar Lampung, Indonesia; Reni Indriyani, Department of Nutrition, Poltekkes Tanjungkarang, Indonesia

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摘要:

发育迟缓是一种慢性营养不良并伴有传染病并发症的病症，短期内对儿童的风险和易患病以及成年期的长期影响都是有害的。他们有患上严重程度较低的慢性病的风险。妇幼保健服务影响发育迟缓发生率，印度尼西亚政府干预妇幼保健服务项目，中央楠榜摄政当地政府就是如此。母亲对母子健康服务项目的反应会影响孩子的健康状况，包括孩子的发育迟缓状况。本研究分析了中央楠榜区工作区村内服务单位为五岁以下儿童的母亲开展的预防发育迟缓的母婴健康服务项目。使用的方法是使用多元线性回归分析的定量分析。这些数据是通过采访和观察五岁以下儿童的母亲收集的，共有198名受访者来自中央楠榜摄政的发育迟缓村。使用病例和对照的简单随机选择来确定样本。5岁以下儿童的母亲在村级预防母婴发育迟缓的干预措施产生了效果，实用值为14.5%。这种情况意味着，中央楠榜摄政区地方政府开展的预防发育迟缓母婴健康服务项目，由村里的卫生工作者和干部开展的干预工作，成功地为五岁以下儿童的母亲提供了积极的回应。14.5%。另一个影响五岁以下儿童母亲反应的因素是75.4%。这些其他因素仍需要进一步研究。

关键词：发育迟缓；妇幼保健服务；预防

1 Introduction

Stunting is a condition of chronic malnutrition accompanied by complications of disease infection^[1]. Its prevalence in Indonesia is 29.9% and in Lampung province 27.4%, located primarily in rural areas. Prevalence of stunting in Province Lampung is below the national figure but still above the WHO target (less than 20%)^[2]. In 2020, the prevalence of stunting in the District central Lampung decreased to 12.1%, but 20 villages had a majority above 14%^[3].

They were stunting impacts on the bad and excellent indicators in short and long terms. The period of the harsh childhood is risky and easy to catch the disease infection; during a long crash time and in adulthood, there is a risk of suffering a chronic disease and low-level intelligence^[4-6]. Stunting starts from the condition of maternal nutrition before pregnancy, when pregnant^[7] and toddlerhood 1–2 years old^[8].

Maternal and child health service affects stunting incidents. Health service is provided by doctors and midwives. Their activities include counseling, examination of health status, and others. Service counseling permission for the mother plays an important role when pregnancy for the fetus and child born^[9]. Service maternal and child health is an effective program for preventing stunting^[10]. The services provided can be in the form of energy and matter nutrition, and treatment of disease infection in pregnancy plays a role in stunting^[11]. The distance between the house and health service facilities also influences the incidence of stunting^[12], the posyandu is the closest service to the community, posyandu are at

the forefront of the stunting prevention, with various activities on maternal and child^[13].

Health services are organized by the government, and its network is a health service program for aged fertile pregnant females, through national activities, among others, in the form of health inspection of pregnant women at least four times during pregnancy. Pregnant women get and drink Tablets Added to Blood (TTD) for 90 days, and pregnant women follow counseling nutrition/mother class at least four times^[14]. The activity is an effort to service health for pregnant women on the target posyandu. Interventions with other specifics are carried out by cross-programs, and sensitive interventions are carried out by cross-sectors^[14].

Services provided by the health unit have a difference in providing assistance to the public related to service unit performance, including health services in the village. With consideration, the attitudes and behavior of officers' health and parents' toddlers in the administration and use of service health can affect the incidence of stunting. Knowledge and attitude alone do not guarantee changes in behavior following the wishes, then still required facilities or facilities, for example, access to affordable health care that will make it easier for pregnant women to get service health from officer professionals^[15].

From the description above, to determine the effectiveness of specific interventions carried out by health service units in the village, it is necessary to conduct a multilevel analysis of health services in the stunting prevention program in Central Lampung Regency to

determine the magnitude of the influence of the role at the village-level health service, which is carried out by midwives. This study uses information on local wisdom intervention in programs at posyandu by the community in the context of preventing stunting. How to influence level health unit services in implementing intervention specific by sector health on stunting prevention by the ranks government Central Lampung Regency.

The destination of this research for analyze the influence level of service unit service health in implementing interventions specific by sector health on stunting prevention by the ranks government Central Lampung Regency.

2 Materials and Methods

The location of this research is planned at the puskesmas in Central Lampung Regency, Lampung Province, with a village location chosen from the highest proportion of stunting in as many as 16 villages within the research period from April to September 2022. This research uses an quantitative analysis approach, and the study subject is toddlers aged 2–5; the information source was interview with biological mothers of the toddlers. To complete the information, we conducted other open interviews with the public, community leaders, village officials, health workers, and health cadre. The number of samples in every village is 4–10 toddlers. Stunting prevalence is high in 16 villages with a total sample of 198 respondents.

To collect data from the respondents (biological mothers of the toddlers), we used a structured questionnaire. The interview was carried out by health officers trained in the use of the questionnaire. The dependent variable is the cumulative score of the mother's response to maternal and child health service, the independent variables are service in posyandu, maternal and child health service, pattern program of parental care for children, immunization services, giving program iron table, vitamin A program, and exclusive breastfeeding program.

3 Results

Central Lampung Regency is wrong one district in Lampung Province through Invite Invite Number 12 of 1999, Central Lampung Regency experience expansion Becomes two districts and one city that is Central Lampung Regency, East Lampung Regency and Metro City. The original capital of Central Lampung was in Metro City, and on July 1, 1999, it was transferred to Kota Mountain Sugi.

Governmental activity for scale districts is centered in Mt Sugih, while trade and services are centred in Bandar Jaya.

The geographical position is bordering the district Bone Onion, Bone West Bawang, and North Lampung Regency to the north; the district Pesawaran, East Lampung Regency, and South Lampung Regency to the south; Pringsewu and Metro City to the east; Tanggamus and West Lampung to the west.

The characteristics of the respondents based on age and education are detailed in Tab. 1. The respondents generally were aged 25–40 (75.3%) with 40.4% education at the junior secondary level. However, thereby, there are college graduates, 8.6% (17 people).

Tab. 1 Personal characteristics of the toddlers and their parents

Description	Amount	Percent (%)
Mothers' age		
Under 25 years old	23	11.6
25–40 years old	149	75.3
Over 40 years old	26	13.1
Mothers' education		
Elementary	35	17.7
Junior high school	80	40.4
High school	66	33.3
College	17	8.6
Fathers' age		
Under 25 years old	9	4.6
25–40 years old	127	64.1
Over 40 years old	62	31.3
Fathers' education		
Elementary	43	21.7
Junior high school	71	35.9
High school	77	38.9
College	7	3.6
Toddlers' gender		
Male	98	49.5
Female	100	50.5

Tab. 1 also describes the characteristics of the family heads of a productive age of 25–40, 127 people (64.1%) with education in general, junior and senior high school at 35.9% and 38.9%, respectively.

Tab. 2 Target toddlers' gender

Village Location	Male	Female	Amount
Grand City	7	3	10
Gn Inner Udik	5	9	14
Queen's House	3	5	8
Ruki Harjo	11	15	26
Java Coral	10	10	20
White City Old	3	5	8
Jaya	2	10	12
Coral Cape	5	3	8
Sari Building	7	5	12
Sri Mulyo	5	7	12
Bandar Sari	5	9	14
Sendang Ayu	13	7	20
Rama Dewa	3	5	8
Rama Murti	7	1	8

Village Location	Male	Female	Amount
Suko Build	4	4	8
Sri Bawono	8	2	10
Amount	98	100	198

Tab. 2 it is illustrated the amount toddler targeted according to type and gender. The data also provide information on the number of respondent-mothers of children under five per

village based on the proportion prevalence of stunting. Amount biggest prevalence the stunting has many respondents, namely in the village spring Ayu and Bandar Sari, respectively 28 and 14 respondents, then the smallest number of respondents in the villages Tanjung Karang, Rama Dewa, Rama Murti, and Suko Binangun, eight respondents each.

Tab. 3 Variable score accumulation by the Likert answer scale

Variable	Observation	Average Score	SD	Min Score	Max Score
Response of the Toddler's Mother (IT)	198	81.146	5.821	66	100
Posyandu Service (F)	198	94.398	7.484	83	113
Mother-child health service (K)	198	97.414	8.519	70	115
Parenting _ child (PA)	198	65.737	9.291	49	97
Immunization Service (IM)	198	49.767	4.576	39	63
Tablet Program (FE)	198	58.909	6.753	0	71
Vitamin A Program (VIT)	198	59.015	5.756	45	80
Exclusive Breastfeeding (ASI)	198	40.409	4.067	28	50

Tab. 3 provides descriptive statistics, scores on each variable based on the average score, standard deviation, minimum, and maximum scores. The variables *mother-child health service* and *Integrated Healthcare Center services* had the highest average scores, and the variable *immunization service* had the lowest average

score on observations of 198 respondents.

The stages in Tab. 4 and 5 provide information on the multicollinearity test. Multicollinearity is a violation assumption because the existence independent variable has a strong correlation (correlation), something like model regression.

Tab. 4 Multicollinearity test stage 1

Variable	IT	P	K	PA	IM	FE	VIT
Response of the Toddler's Mother (IT)	1						
Posyandu Service (F)	0.42	1					
Mother-child health service (K)	0.44	0.87	1				
Parenting _ child (PA)	0.37	0.01	0.01	1			
Immunization Service (IM)	0.48	0.53	0.45	0.16	1		
Tablet Program (FE)	0.28	0.22	0.19	0.09	0.29	1	
Vitamin A Program (VIT)	0.39	0.25	0.26	0.26	0.36	0.19	1
Exclusive Breastfeeding (ASI)	0.50	0.49	0.53	0.23	0.56	0.19	0.29

Note: Multicollinearity score limit - 0.8 and above.

Tab. 4 shows the multicollinearity test results. The score of correlation between mother-child health service (K) and posyandu service (P) is 0.87. The value of this exceeds the standard

assumption, should be correlation no can exceed the value of 0.8^[16]. Steps are taken through eliminating the variable *Integrated Healthcare Center service* from the models in Tab. 5.

Tab. 5 Multicollinearity test stage 2

Variable	IT	K	PA	IM	VIT
Response of the Toddler's Mother	1				
Mother-child health service (K)	0.4380	1			
Parenting _ child (PA)	0.3719	0.0127	1		
Immunization Service (IM)	0.4813	0.4469	0.1567	1	
Vitamin A Program (VIT)	0.3926	0.2562	0.2326	0.3624	1
Exclusive Breastfeeding (ASI)	0.5044	0.5256	0.2308	0.5617	0.2954

Note: The variable scores are below 0.8 (there is no multicollinearity).

Multicollinearity test stage 2 results in Tab. 5 show that no score exceeds the value of 0.8, so there is no independent variable that has a problem with multicollinearity. Multicollinearity can increase (or decrease) the influence of the independent variable so that occurs standard error coefficient, and as a result, the value of the

coefficient can be wrong to be insignificant; another effect of multicollinearity is the changed sign coefficient's negative effect can be positive and vice versa^[16].

The next step is multilevel multiple linear regression analysis for obtaining a description of service-level influence on health carried out at

the level of the village. Through two stages of elimination on analysis, multilevel multiple linear regression eliminated the independent variables of the vitamin A program and the program of

administration Fe table, which has the largest p-value of more than 0.05. The resulting multilevel multiple linear regression model is shown in Tab. 6.

Tab. 6 Analysis results from multilevel linear regression on the Intervention for stunting prevention and health services for toddlers' mothers

Independent Variable	Regression Coefficient (b)	Confidence intervals		p-value
		Lower limit	Upper Limit	
Fixed effect				
Service Health mother-child (K)	0.150	0.053	0.248	0.002
Parenting _ child (PA)	0.138	0.068	0.209	0.001
Service Immunization (IM)	0.243	0.075	0.411	0.005
Exclusive Breastfeeding (ASI)	0.298	0.091	0.505	0.005
Constant	33,151	22.766	43,546	0.001
Random effects				
Var village (constant)	2,914	0.987	8,605	
N observation 198				
N groups = 16				
Log Likelihood = -570.7144				
LR test vs. linear regression = 11.27				
p-value = 0.0004				
ICC = 14.57%				
AIC = 1155,429				
BIC = 1178,447				

4 Discussion

Maternal and child health service, pattern of foster children, immunization service, and breastfeeding programs increase logging the responses of mothers of children under five and account for 0.150, 0.138, 0.243, and 0.298 units, respectively, with a statistically significant p-value below 0.05. Service health stunting prevention in the village has influenced quite strongly contextual to the response of mothers under five with ICC value = 14.5%. Stunting prevention health services conducted in the government of Central Lampung provide a description of different health services provided by officers at the village level of 14.5%, and the greatest effect is on exclusive breastfeeding program and immunization services.

Intervention in nutrition deficiency, including stunting problems, in the first 1,000 days of life is a method for preventing stunting, in the form of nutrition activity fulfillment and health service for pregnant women, through a multi-sectoral approach to the nutrition program^[17]. The need for nutrition plays an important role in the cycle of humans' life because deficiency of nutrition for infants and toddlers will cause disturbance of their growth and development, and the growth or nutritional status of children is related not only to consumption but also to the behavior/responses of parents and toddlers in this case pattern of child care, which is influenced by the environment^[18]. The mother, as the caregiver closest to the child, should be more knowledgeable about the child's growth and

development. The mother's role is critical in determining to grow her children's flowers and motivation to grow a child^[19].

Service immunization is one effort intervention government in maintaining healthy toddlers; service immunization aims to lower the risk happening mortality and morbidity in children from several diseases that can be prevented by immunization. Immunizations for toddlers provide information on contact indicators on health service program to help improve nutrition and health^[20]. Early exclusive breastfeeding prevents and reduces children's risk of becoming stunted because breast milk contains micro and macro colostrum to provide immunity in infants. At the same time, lactose, iron substance, and other minerals very help the development of the brain^[21]. Breastfeeding is one of the how to use for increase the intake of child nutrition and prevent stunting, so it is hoped that the government and various parties involved in accelerating stunting prevention can collaborate in promoting and campaigning for the benefits of breast milk for children to achieve the target of SDGs 2030, reduce malnutrition, including stunting and welcoming Generation Gold 2045^[22].

Mother's Milk is the first food that experience contains various nutrients formulated in the mother's body to ensure the growth and development of the baby. Breast milk not only provides adequate nutrition for children but also protects a newborn baby from infection and disease. Breast milk is a solution of protein,

lactose, and inorganic salts secreted by the mother's mammary glands that serve as a source of protein food for the baby. The right amount of breast milk is the optimal food for infants and can meet the needs for nutrition During six the first month^[21].

Strong relationships among knowledgeable village midwives in standard antenatal care (ANC) are due to the basic skills all village midwives have, contributing to professional midwifery practice, in particular, to enhance standard antenatal care services. Knowledge level of village midwives will impact the appropriate antenatal care service^[23]. Service child health is critical because a child who was born with a low body length more many needs supplementation nutrition than the current child at normal birth^[10]. In practice, every day, pregnant women practice foods that can contribute to their health, which can make pregnant women experience bad nutrition, some taboos about food can protect a woman from eating less healthy, so it is important for understanding impact double from taboos food to develop a program based on effective and sensitive community culture for health guard during pregnancy^[24].

5 Conclusion

The maternal and child health service program implemented by the Central Lampung Regional Government in stunting prevention activities at the village-level service unit received a positive response from mothers of children under five to prevent stunting. A positive response of 14.5%

was due to the existence of a service unit at the village level. The form of activities in the Maternal-Child Health Service program on stunting prevention is in the form of monitoring child growth and development services, giving immunizations, providing complementary foods for breastfeeding, and health counseling by health cadres and village midwives at Posyandu. The stunting prevention health service carried out in the Central Lampung Regional Government illustrates the difference in health services provided by officers at the village level by 14.5%, and the greatest influence is on exclusive breastfeeding program and immunization services. Mothers, as caregivers who are closest to children, know more about the process of child growth and development and the quality of children, so the role of mothers is critical in monitoring children's growth and development because mothers have a strong motivation to grow and develop their child. The development of maternal-child health service programs at the village level is a very effective program for stunting prevention efforts.

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