The Correlation Between Utilization Of Posyandu And Decrease Of Stunting Cases In Work Area Of Puskesmas In South Bulango

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The Correlation Between Utilization Of *Posyandu* And Decrease Of Stunting Cases In Work Area Of *Puskesmas* In South Bulango

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Abstract.

Utilization of integrated health service post or posyandu (henceforth referred to as posyandu) is one of the determinants of stunting cases in under-five children. Nutritional status monitoring for under-five children is heavily impacted by the frequency of visits to the posyandu. Monitoring of children's nutritional status in posyandu functions as an early detection measure of any growth disorders to prevent stunting. The study was conducted in the work area of community health center/Puskesmas in South Bulango. The analytical survey research employed a cross-sectional approach. It aimed to identify the correlation between the utilization of posyandu and the decrease of stunting cases in the aforementioned research area. All samples were acquired by non-probability accidental sampling technique. The result revealed that there was a correlation between weighing and dissemination with stunting cases in the research area. However, it was found that basic immunization and nutrient supplements provision showed no significant correlation with stunting cases in under-five children. All in all, the study recommends for mothers with under-five children to enrich their knowledge regarding the importance of nutritional status monitoring in posyandu. This is to change the mothers' perspective regarding their children's nutritional status.

Keywords: Posyandu, Stuntin

I. Introduction

Utilization of integrated health service post or *posyandu* (henceforth referred to as *posyandu*) is one of the determinants of stunting cases in under-five children. The monitoring of nutritional status is influenced by the mothers' self-awareness to visit a *posyandu*. It functions as an early detection measure of any possible growth disorder and prevention conduct of stunting as well (Indonesian Ministry of Health, 2011). Among the services in *posyandu* are monitoring of a child's growth, immunization, vitamin A provision, dissemination of health and nutritional matters, complimentary food provision, and diarrhea treatment (Bakri & Fajar, 2001, in Yulia, et al., 2015).

As a form of nutritional disorder, stunting is indicated by short stature that exceeds the deficit of -2 standard deviation (SD) below the WHO standard (WHO, 2010). Stunting cases, particularly in under-five children, requires serious attention due to its correlation with risks of decrease in intellectual ability and productivity, as well as increased risk of degenerative diseases in the future (Eka Kusuma & Nuryanto, 2013). According to WHO (2010, in National Institute of Health Research and Development, 2010), Indonesia joins the country group with higher prevalence of stunting (30-39 percent) with 35.6 percent (Basic Health Research, 2010).

The result of nutritional status monitoring conducted by the Health Office of Gorontalo has

reported that stunting prevalence in the province arrived at 31.7 percent in 2017. The number signifies that the average prevalence among seven regencies in Gorontalo exceeds the national prevalence. Bone Bolango is among the regencies with fluctuating prevalence of stunting; from 28 percent in 2015, the prevalence rose to 34.7 percent in 2016 and decreased to 25.5 percent in 2017 (Health Office of Gorontalo Province, 2018).

Based on the preliminary survey conducted in the regency, the highest prevalence of stunting is in the *puskesmas* in South Bulango. A survey on the site conducted by the community nutrition workers of the *puskesmas* has reported that 58 under-five children experienced stunting in 2017. The number increased to 74 cases in 2018. Moreover, the 2018 secondary data of *posyandu* utilization (measured by frequency of visit to *posyandu*) indicated that the utilization of *posyandu* was at 63 percent. The number suggests that the *posyandu* service was not optimally utilized by the community.

Based on the previous rationale, a study entitled **"The correlation between utilization of *posyandu* and decrease of stunting cases in the work area of *puskesmas* in South Bulango"** is conducted.

2. Research Method
2.1 Research Site and Location
The research was conducted in the *puskesmas* in South Bulango, Bone Bolango regency, from April to November 2019.

2.2 Research Design
The analytical survey research employed a cross-sectional approach to identify the correlation between *posyandu* service and stunting cases in the aforementioned research area. The research sample was acquired by non-probability accidental sampling technique.

2.3 Population and Sample
The population involved all research objects (Notoadmojo, 2010). It consisted of 112 children aged 12-59 months old covered by the *posyandu* with highest stunting case in the work area of *puskesmas* in South Bulango. The respondent comprised mothers of 12-59 months old children that reside within the research area. As many as three *posyandu*s were involved, i.e., *posyandu* in Tinelo Ayula, East Ayula, and South Huntu. The sites were selected due to the highest rate of stunting among the coverage area of *puskesmas* in South Bulango.

The following Slovin formula was applied to acquire the sample:

$$n = \frac{N}{1 + Ne^2}$$

Description:

n = sample size

N = population size

E = desired critical value/limit of accuracy (percentage of inaccuracy tolerance due to sampling error) (5%)

$$n = \frac{112}{1 + 112 \, (0.05)^2} = 87.5 = 87 \text{ samples}$$

3. Findings And Discussion

3.1 Research findings

1. Respondents' characteristics

Table 1. Distribution of respondents based on age in the work area of *puskesmas* South Bulango

Age (years)	Frequency	
	n	%
18-21	5	7.7
22-25	7	10.8
26-29	19	29.2
30-33	13	20.0
34-37	4	6.2
38-41	5	7.7
42-45	12.	18.5
Total	65	100

The above table suggests that the highest percentage of respondents in terms of age group is 26-29 years old (19 respondents or 29.2 percent), followed by 30-33 years old (13 respondents or 20.0 percent), 42-45 years old (12 respondents or 18.5 percent), 22-25 years old (seven respondents or 10.8 percent), and age groups of 18-21 and 38-41 years old, each consisting of five respondents (7.7 percent).

2. Respondents' characteristics based on occupation

The result shows that the distribution of respondents based on occupation is as follows:

Table 2. Distribution of respondents based on occupation in the work area of *puskesmas* South Bulango

Occupation	Frequency	
	n	%
Domestic work	61	93.8
Civil servant	2	3.1
Self-employed	2	3.1
Total	65	100

Table 2 indicates that most of the respondents have occupation as housewife (61 respondents or 93.8 percent); meanwhile, two respondents (3.1 percent) work as civil servant and the other two are self-employed (3.1 percent).

1. Respondents' characteristics based on education

The table below describes the distribution of respondents in the research area based on education:

Table 3. Distribution of respondents based on education in the work area of puskesmas South Bulango

Education	n	%
Low	34	52.3
High	31	47.7
Total	65	100

Based on the table, it is concluded that 67.7 percent (44 respondents) have low level of education, while 32.3 percent of them (21 respondents) have high education level.

2. Under-five children's characteristics based on age

The table below describes the distribution of under-five children in the research area based on age:

Table 4. Distribution of under-five children based on age in the work area of *puskesmas* South Bulango

Age (months)	n	%
12-24	22	33.8
25-36	22	33.8
37-48	16	24.6
49-59	5	7.7
Total	65	100

Table 4 highlights that the highest percentage of under-five children in the research area are 12-24 months and 25-36 months age group (each consisting of 22 children or 33.8 percent), followed by age groups of 37-48 months (16 children or 24.6 percent) and 49-59 months (five children or five percent).

3. Under-five children's characteristics based on sex

The distribution of under-five children in the work area of *puskesmas* in South Bulango is presented in the following Table 5:

Table 5. Distribution of under-five children based on sex in the work area of *puskesmas* South Bulango

Sex	Frequency	
	n	%
Male	36	55.4
Female	29	44.6
Total	65	100

The previous table 5 suggests that the children are predominantly men, as shown in the ratio of male under-five children to the female counterparts is 36 (55.4 percent) to 29 (44.6 percent).

3.2 Univariate Analysis

Univariate analysis is conducted to acquire general information of the research variables, i.e., the utilization of *posyandu* and stunting cases in under-five children.

1. Stunting cases in under-five children

As acquired from the respondents' response, the stunting cases are presented in the following table:

Table 6. Distribution of sample based on stunting cases in under-five children in the work area of *puskesmas* South Bulango

Stunting cases	Frequency	
	n	%
Stunting	28	43.1
Normal	37	56.9
Total	65	100

The table above indicates that under-fives who experience stunted growth are 28 children or 43.1 percent, while those whose normal growth consist of 37 children or 56.9 percent from the total sample.

Table 7. Distribution of stunting cases based on the children's age in the work area of *puskesmas* South Bulango

Age (months)	Stunting cases				Total
	Stunting		Normal		
	n	%	n	%	
12-24	7	25	15	40.5	22
25-36	10	35.7	12.	32.4	22
37-48	7	25	9	24.3	16
49-59	4	14.3	1	2.7	5
Total	28	100	37	100	65

Table 7 above reveals that stunting case mostly occurs in children of 25-36 months old (10 children, or 35.7 percent), followed by age groups of 12-24 and 37-48 months (each consisting of seven children, or 25 percent); meanwhile, based on the sample distribution, stunting occurs the least in age group of 49-59 months (four children, or 14.3 percent). On the other hand, the children who experience normal growth are mostly in the age group of 12-24 months (15 children, or 40.5 percent), followed by age groups of 25-36 months (12 children, or 32.4 percent), 37-48 months (nine children, or 24.3 percent), and 49-59 months (one child, or 2.7 percent).

Table 8. Distribution of stunting cases based on the children's sex in the work area of *puskesmas* South Bulango

Sex	Stunting cases			
	Stunting		Normal	
	n	%	n	%
Male	13	46.4	23	62.2
Female	15	53.6	14	37.8
Total	28	100	37	100

The previous table indicates that the stunting cases in the area mostly occur to female children (15 children, or 53.6 percent) than to male children (13 children, or 46.4 percent). Moreover, the ratio of female children to male counterparts whose normal growth is 14 (37.8 percent) to 23 (62.2 percent).

Table 9. Distribution of stunting cases based on the mothers' education level in the work area of *puskesmas* South Bulango

Education	Stunting cases			
	Stunting		Normal	
	n	%	n	%
Low	22	78.6	12.	32.4
High	6	21.4	25	67.6
Total	28	100	37	100

Based on the previous table, it is acquired that 22 mothers (78.6%) with low education level have stunted child, while the rest 32.4 percent (12 mothers) have child with normal growth. On the other hand, only six (21.4%) mothers with high education level have stunted child, while the rest 25 mothers (67.6 percent) have child with normal growth.

2. Weighing
Based on the respondents' answers, the weighing data of the children are presented as follows:

Table 10. Distribution of under-five children based on weighing
frequency in the work area of puskesmas South Bulango

Weighing frequency	n	%
Routine	43	66.2
Not routine	22	33.8
Total	65	100

Table 10 suggests that 43 children (66.2 percent) are weighed routinely, while 22 children (33.8%) are not routinely weighed.

3. Basic immunization

The basic immunization data of the children are presented as follows:

Table 11. Distribution of under-five children based on basic
immunization in the work area of puskesmas South Bulango

Basic immunization	n	%
Full	44	67.7
Not full	21	32.3
Total	65	100

It is acquired from Table 11 that 44 children are given full basic immunization, while the rest 21 children (32.3 percent) are not given full basic immunization.

4. Nutritional supplements

The following table presents the data of provision of nutritional supplements to the under-five children

Table 12. Distribution of under-five children based on nutritional
supplements provision in the work area of puskesmas South Bulango

Nutritional supplements provision	n	%
Given	44	67.7
Not given	21	32.3
Total	65	100

The table above shows that 44 children (67.7 percent) are given nutritional supplements,

while the rest 21 children (32.3 percent) are not provided with such supplements.

5. Dissemination

The following table highlights the data of dissemination based on the respondents' answers:

Table 13. Distribution of respondents based on dissemination of nutritional supplements in the work area of puskesmas South Bulango

Dissemination	n	%
Given	37	56.9
Not given	28	43.1
Total	65	100

As acquired from the previous table, 37 respondents (56.9 percent) are given dissemination of nutritional supplements, while 28 respondents (43.1 percent) are not given such dissemination.

3.3 Bivariate Analysis

1. **Stunting cases based on weighing frequency**

Table 14. Cross-tabulation between variables of weighing and stunting cases in under-five children

Weighing frequency	Stunting cases		Total	P-value	α
	Stunting	Normal			
Given	14	29	43	0.17	0.05
Not given	14	8	22		
Total	28	37	65		

The previous table indicates that 14 children who are weighed routinely experience stunted growth, while 29 children who are weighed routinely experience normal growth. On top of that, 14 children who are not weighed routinely experience stunted growth. In addition, the same numbers of children who are not weighed routinely experience normal growth.

Moreover, it is shown in the previous table that the Probability value (P-value) of weighing variable is at 0.017. The P-value is smaller than the degree of significance (alpha = 0.05); therefore, the Ha is accepted. The numbers signify that there is a correlation between weighing and stunting cases in under-five children in the research area, with confidence level of 95 percent.

2. **Stunting cases based on basic immunization**

Table 15. Cross-tabulation between variables of basic immunization and stunting cases in under-five children

Basic immunization	Stunting cases		Total	P-value	α
	Stunting	Normal			
Given	15	25	40	0.25	0.05
Not given	13	12.	22		
Total	28	37	65		

The table 15 indicates that the children with full basic immunization that experience stunting consist of 15 children, while those with full basic immunization that experience normal growth are 25 children. Moreover, 13 children that are not given full basic immunization experience stunted growth, while those without full basic immunization that experience normal growth consist of 12 children.

The acquired Probability value (P-value) of basic immunization variable is at 0.25. The P-value is higher than the degree of significance (alpha = 0.05); therefore, the H0 is accepted. The numbers signify that there is no correlation between basic immunization and stunting cases in under-five children in the research area, with confidence level of 95 percent.

3. Stunting cases based on nutritional supplements provision

Table 16. Cross-tabulation between variables of nutritional supplements provision and stunting cases in under-five children

Supplements provision	Stunting cases		Total	P-value	α
	Stunting	Normal			
Given	16	28	21	0.11	0.05
Not given	12.	9	44		
Total	28	37	65		

Table 16 shows that 16 children who are given nutritional supplements experience stunted growth, while 28 children with the same treatment experience normal growth. Moreover, 12 children that are not given nutritional supplements experience stunted growth, while those without nutritional supplements provision that experience normal growth consist of 9 children.

The acquired Probability value (P-value) of nutritional supplements provision variable is at 0.11. The P-value is higher than the degree of significance (alpha = 0.05); therefore, the H0 is accepted. Hence, it is signified that there is no significant correlation between nutritional supplements provision and stunting cases in under-five children in the research area, with confidence level of 95 percent.

4. Stunting cases based on dissemination

Table 17. Cross-tabulation between variables of dissemination and stunting cases

in under-five children

Dissemination	Stunting cases		Total	P-value	A
	Stunting	Normal			
Given	10	10	37	0.03	0.05
Not given	18	27	28		
Total	28	37	65		

As shown in Table 17, ten respondents who receive dissemination in the *posyandu* have stunted child. The same numbers of respondents who receive dissemination have child with normal growth. Moreover, 18 respondents who do not receive dissemination in the *posyandu* have stunted child. Meanwhile, 27 respondents who do not receive such dissemination have child with normal growth.

The analysis result suggests that the P-value of the dissemination variable is at 0.03. The P-value is smaller than the degree of significance (alpha = 0.05); therefore, the Ha is accepted. Thus, it is concluded that there is a significant correlation between dissemination provision to the mothers and stunting cases in under-five children in the research area, with confidence level of 95 percent.

4. Discussion

4.1 Weighing and stunting cases

The cross-tabulation result of weighing and stunting cases shows similar tendency between the children who are regularly weighed and those who are not regularly weighed. Both categories consist of 14 children.

The Chi-Square statistical test result acquires Probability value (P-value) of weighing variable of 0.017. The significance value is smaller than the alpha (α) of 0.05; therefore, it is concluded that there is a significant correlation between weighing and stunting cases in the research area. The weighing is routinely conducted each month in the *posyandu;* it applies the guidelines from Ministry of Health (2011) that weighing in *posyandu* must be conducted more than eight times in a year. The result shows that there are several mothers that do not participate in the weighing process in *posyandu* because of their hectic activities. Moreover, there are several children that are not weighed at least eight times in a year (as based on the guidelines in the KMS Health Card).

The finding is in line with Octaviani et al. (2009), who assert that there is a significant correlation between the participation in *posyandu* and the under-five children's nutritional status. Families that rarely participate in activities in *posyandu* are 6.857 times more prone to experience lack of protein compared to those who participate actively in such activities. Moreover, Maulana (2013) states active participation in *posyandu* can reduce the risk of underweight children (below the red line). Such indicators can be achieved by conducts such as early detection measures of nutritional status (weighing and health card control) in each month by the health workers and the *posyandu* volunteers.

Routine weighing in *posyandu*, accompanied with counseling and provision of complementary foods, is able to decrease the risk of malnutrition and to monitor any health problems.

4.2 Basic immunization and stunting cases

The cross-tabulation result of basic immunization and stunting cases shows no tendency of stunting in children who are provided with full basic immunization. As presented in the table, children with full basic immunization that experience stunted growth are more than those with stunted growth that are not given full basic immunization.

The Chi-Square statistical test result acquires Probability value (P-value) of basic immunization variable of 0.25. The significance value is higher than the alpha (α) of 0.05; thus, it is concluded that there is no significant correlation between basic immunization and stunting cases in the research area. The implementation of basic immunization in the research site has been effective. However, immunization is not considered as the sole contributor to stunting cases. Provision of immunization, if not supported with adequate energy and protein intake, is insignificant to decrease the risk of stunting. On the other hand, lack of food intake and recurrent infections are considered as direct factors in stunting (UNICEF, 2013).

A similar study conducted by Chandra et al. (2011) in Semarang shows that full immunization, both in univariate and multivariate analyses, does not significantly correlate with stunting in children aged 1-2 years. Moreover, Fatimah (2009) points out that the absence of BCG (Bacillus Calmette–Guérin) immunization contributes to stunting. Further analysis of each basic immunization is required to better explain the relationship between immunization and stunting. A research conducted in the work area of the Siloam Tamako *puskesmas* in North Sulawesi also found that there is no significant correlation between immunization and stunting case in kindergarten children. Children who are not given full basic immunization do not necessarily experience an infectious disease.

4.3 Nutritional supplements provision and stunting

The cross-tabulation result of nutritional supplements provision and stunting cases shows no tendency of stunting in children who are given nutritional supplements compared to those who are not given such supplements. Both category consist of 16 children.

The Chi-Square statistical test result acquires Probability value (P-value) of basic immunization variable of 0.11. The significance value is higher than the alpha (α) of 0.05; thus, it is concluded that there is no significant correlation between nutritional supplements provision and stunting cases in the research area. The provision of nutritional supplements (Vitamin A) in the research area has been implemented well. However, similar to immunization, provision of nutritional supplements is not considered as a significant contributor to stunting cases. Adequate intake of energy and protein is regarded as more significant to reduce stunting.

This is supported by Nadimin, who claims that vitamin A provision did not have a significant relationship with the children's nutritional status. Based on the KMS Health Card guidelines, it is a common practice to provide vitamin A to under-fives, particularly in February and August within the weighing process. Similarly, Novika (2012) identifies that there is no significant relationship between vitamin A consumption and stunting cases. It is indeed that stunting might occur due to the lack of consumption of foods that contain vitamin A. Therefore, the lack of vitamin A consumption is not seen as a significant factor of stunting. There are other factors that are considered more significant, such as parenting style and infectious diseases. These factors require in-depth investigation in further studies.

4.4 Stunting and dissemination

The cross-tabulation result of dissemination and stunting cases shows tendency of stunting in respondents who are not given dissemination compared to those who are given dissemination. As many as 18 respondents who are not given dissemination have child with stunted growth.

The Chi-Square statistical test result acquires probability value (P-value) of weighing variable of 0.03. The significance value is smaller than the alpha (α) of 0.05; therefore, it is concluded that there is a significant correlation between dissemination to the mothers and stunting cases in the research area. Such condition is assumed to be caused by the mothers' low level of information regarding nutritional awareness as well as their low level of education.

A study by Picauly (2013) points out that mothers with low level of education have a chance of having a child with stunted growth by 0.049 times greater than mothers with higher education. Based on the findings, the majority of respondents are low educated and are mainly working in domestic domain. Therefore, such a finding supports that a higher level of education correlates with better awareness of educative parenting style as well as awareness of provision of nutritious food to encourage the children's growth.

Such a finding is supported by Hestuningtyas (2014), who states that mothers with stunted children who receive counseling regarding nutrition are more aware of their children's nutritional status and provision of nutritious food. This signifies that adequate knowledge is essential to prevent stunting. Moreover, such knowledge is crucial to acquire in order to adjust to each child's nutritional needs. According to the Indonesian Ministry of Health (2010), the *posyandu* functions to provide information for the mothers regarding the children's nutritional status. By that, the mothers are expected to provide their children with adequate nutrition intake.

5.   CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

1.   There is a correlation between weighing and stunting cases in under-five children in the work area of *puskesmas* in South Bulango.
2.   There is no significant correlation between basic immunization and stunting cases in under-five children in the research site.
3.   There is no significant correlation between nutritional supplements provision and stunting cases in under-five children in the research site.
4.   There is a significant correlation between dissemination and stunting cases in under-five children in the research site.

5.2 Recommendations

1.   For the community

The study recommends for mothers with under-five children to enrich their knowledge regarding the importance of nutritional status monitoring in *posyandu*. Such conduct is beneficial to raise the mothers' awareness of their children's nutritional status. The mothers are also encouraged to utilize *posyandu* to monitor their children's nutritional status.

2.   For the *posyandu* extension workers

The extension workers are recommended to apply intensive dissemination regarding utilization of *posyandu* and the children's nutritional status monitoring to the mothers.
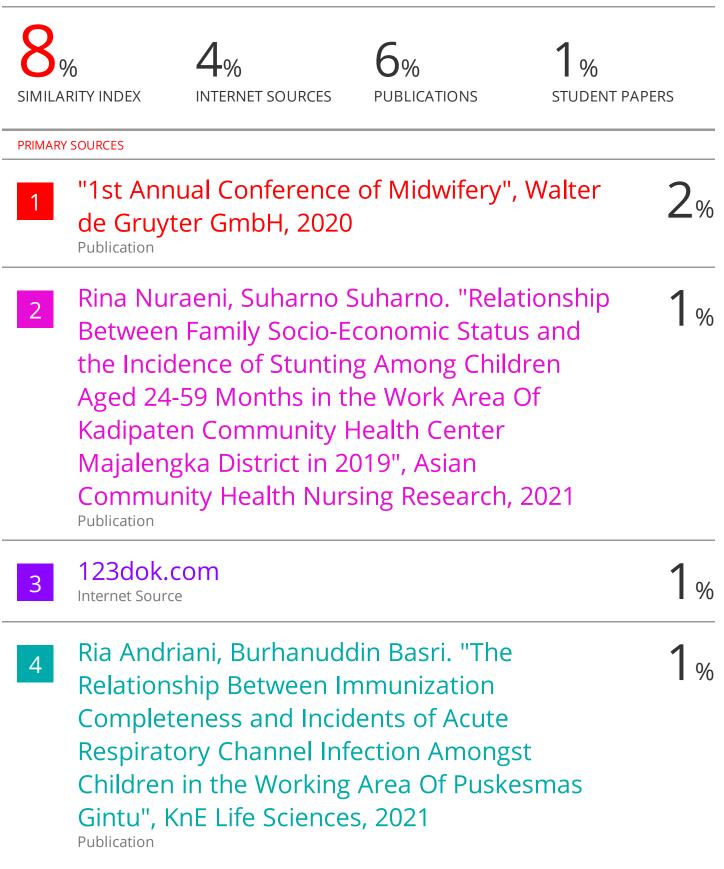
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