



## Education on Nutrition, Sanitation, and IYCF to Increase Mother's Knowledge in Lokus Stunting Village

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### ABSTRACT

Stunting is a condition of growth failure on children under five only years caused by chronic malnutrition. Stunting is caused by multi-dimensional factors, not due to malnutrition in pregnant women and toddlers. The research aims to prove the influence of education on nutrition, sanitation, and also infant and young children feeding (IYCF) on increasing maternal knowledge. This type of research is experimental research using quasi experiment approach with nonrandomized control group pre-test– post test design research. The study population was mothers who had children aged 0 to 5 years. The variables studied were education on nutrition, sanitation, and IYCF. The test of differences in knowledge before and after the intervention in each group used statistical paired t-test. The results showed that there were differences in nutritional knowledge in the control group and intervention group (p-value=0,006 and 0,0001). There was no difference in sanitation knowledge in the control group (p-value=0,208) but there was difference in sanitation knowledge in the intervention group (p-value=0,669). There was no difference in IYCF knowledge in the control group (p-value=0,083) and there was a difference in IYCF knowledge in the intervention group (p-value=0,001). Height for age before and after intervention with p value 0.018 in the intervention group. There was no difference in maternal knowledge about nutrition, sanitation and IYCF before and after the intervention between the control and intervention groups, at the initial measurement with p-values 0.309, 0.991, 0.915 and the final measurements with p values of 0.289, 0.150 and 0.753. There was no difference in Z-score weight for age before and after between control and intervention groups with p value of 0.531 and there was no difference in z-score height for age between before and after intervention with p value 0.616. Based on the research results, it is hoped that local governments and related sectors will create innovative programs that can increase the scope of appropriate infant and young child feeding practices, including breastfeeding and complementary breastfeeding. In addition, the Puskesmas is expected to increase cooperation among health workers in providing education related to IYCF and maximizing coaching activities for posyandu cadres in the context of increasing family assistance as an effort to prevent the incidence of stunting in toddlers from pregnancy.

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### INTRODUCTION

Stunting is caused by multi-dimensional factors. The most decisive intervention in the First 1,000 Days of Life (HPK). The factors that cause stunting are 1) poor parenting practices (lack of knowledge about health and nutrition before and

during pregnancy, 60% of children aged 0-6 months do not get exclusive breastfeeding, 2 out of 3 children aged 0-24 months do not receive MP-ASI), 2) limited health services including Ante Natal Care (ANC), post natal and quality early learning (1 out of 3 children aged 3-6 years are not registered in PAUD, 2 out of 3 pregnant women have not taken supplements

adequate iron, decreased child attendance at Posyandu (from 79% in 2007 to 64% in 2013), not getting adequate access to immunization services, 3) lack of access to nutritious food (1 out of 3 pregnant women is anemic, nutritious food is expensive ), 4) Lack of access to clean water and sanitation, 1 in 5 households still defecate in open spaces, 1 in 3 households do not have access to clean drinking water).(PDTT, 2017).

Stunting has an impact on the level of intelligence, vulnerability to disease, reduces productivity and then inhibits economic growth, increasing poverty and inequality. Stunting that occurs in children under 5 years is generally caused by nutritional factors. When viewed from the prevalence by age, when a baby is born, the incidence of stunting is 11%. From birth to 2 years, 60%. 2-5 years, 28%. (Millward, 2017). Meanwhile, according to Stewart et al., (2013), the incidence of stunting from 0 to 6 months is 10%, so it is estimated that the incidence of stunting aged 6-24 months is 50%. This period is the period with the highest incidence of stunting, which is mainly due to environmental factors including food factors, namely complementary foods which are mainly due to poor quality feeding practices.

The nutritional status of women before, during, and after pregnancy, including inadequate weight gain during pregnancy, affects birth and delivery outcomes. Fetal growth restriction causes the baby to be born too small, which has lifelong consequences. (Bhutta et al., 2013). Scientific evidence presented at a seminar organized by UNICEF-WHO (2012) reemphasized the importance of the first 1000 days of life (1000 HPK) window of time in which the foundations are laid to determine the achievement of one's physical, physiological and intellectual capacities in later life.

Indonesia is still facing various nutritional problems in the period of 1000 HPK. Research shows that women who have more control over household resources tend to be healthier and have better nutritional status and their families because women tend to spend more on nutrition, health and well-being of their household. For this reason, programs to improve nutrition should focus on increasing women's knowledge about nutrition and empowering women in decision making.

## METHOD

This type of research includes experimental research using a quasi-experimental approach with a non-randomized control group pre-test – post-test design. The research design is as follows:

**Table 1. Research Design Table**

Grup	Pretest	Variabel Independen	Posttest
A	Y <sub>1</sub>	X	Y <sub>2</sub>
B	Y <sub>1</sub>	-	Y <sub>2</sub>

Description:

Y1: Level of knowledge, before being given education on nutrition, sanitation and IYCF

X: Providing education about nutrition, sanitation and IYCF

Y2: Level of knowledge about nutrition, sanitation and IYCF after being given mentoring

The flow of data collection is:

1. This study compares two groups, namely the treatment group and the control group. The treatment group was given an intervention in the form of assistance using booklets on nutrition, sanitation and IYCF and was given a

stimulant of funds to buy food for their toddlers for 25 days while the control group used leaflets.

2. Nutritional assistance is provided by researchers, Nutrition Implementing Personnel (TPG) and village midwives, assistance is carried out daily online (WA group) in the intervention group for 1 month. After that, the measurement of knowledge of maternal nutrition, sanitation and PMBA was carried out again.

The research population was all mothers of children under five who had stunted toddlers in the stunting locus village, Gedung Tataan sub-district, Pesawaran Regency.

The calculation of the research sample uses the formula for calculating the size of the two-mean difference test sample than the number of samples as many as 48 mothers who have stunting toddlers consisting of 24 treatment groups and 24 control groups.

## RESULTS AND DISCUSSION

**Table 1**  
**Characteristics and Socio-Economic**

	Mean	N	SD
<b>a. Mother's Age</b>			
Control	33,54	24	8,55
Intervention	29,17	24	5,64
<b>b. Number Of Children</b>			
Control	2,42	24	1,28
Intervention	1,71	24	0,69
<b>c. Family Income</b>			
Control	1,060,416	24	523,154
Intervention	1,262,500	24	737,099
<b>d. Pekerjaan Ibu</b>			
Control		%	
- Housewife	24	100	
Intervention		%	
- Housewife	24	100	
<b>e. Mother's Education</b>			
Control	24	%	
- Never School	1	4,2	
- Not Completed elementary school	2	8,3	
- Finished elementary school	9	37,5	
- Junior High School	7	29,2	
- Senior High School	5	20,8	
Intervention	24	%	
- Finished elementary school	7	29,2	
- Junior High School	11	45,8	
- Senior High School	6	25,5	
<b>f. Sanitary infection results</b>			
<b>Control</b>			
Before			
- High Risk	10	41,7	
- Low Risk	14	58,3	
After			
- High Risk	8	33,3	
- Low Risk	16	66,7	
<b>Intervention</b>			
Before			
- High Risk	10	41,7	
- Low Risk	14	58,3	
After			
- High Risk	1	4,2	
- Low Risk	23	95,8	

The results showed that the average age of the mother in the control group was 33.54 years and in the treatment group was 29.17 years. Meanwhile, the average number of children in the control group was 2.42 and in the treatment group 1.71.

Meanwhile, the average family income in the control group was Rp. 1,060,416 and in the treatment group the average was Rp. 1,262,500. For mothers' occupations, all mothers in the control and treatment groups were housewives, while for the level of education in the control group there were still mothers who had never attended school and did not finish elementary school.

The results of sanitation infection in the control group showed that before had a high risk of 41.7% and after a high risk of 33.3%. Meanwhile, the result of sanitation infection in the high-risk treatment group before the intervention was 41.7% and after the high-risk intervention was 4.2%.

### Characteristics of Stunting Toddlers

**Table 2**  
**Characteristics of Stunting Toddlers**

Characteristics Toddlers	Mean	n	SD
<b>Child Age</b> (Bulan)			
Control	34,79	24	9,62
Intervention	24,32	24	4,72
<b>Jenis Kelamin Anak</b>			
Control			%
- Man	16	66,7	
- Women	8	33,3	
Intervention			%
- Man	8	33,3	
- Women	16	66,7	
<b>BB dan PB</b>			
BB Begining			
Intervention	9,48	24	1.20
Control	11,03	24	11.02
BB Final			
Intervention	9.46	24	1.15
Control	11.04	24	1.83
PB Begining			
Intervention	78.23	24	3.68
Control	84.02	24	7.46
PB Final			
Intervention	79.14	24	3.78
Control	85.27	24	3.37

Based on its characteristics, it was known that majority of respondents were female (61.7%), the most were in the age range of 36 to 45 years (41.3%) with details of 20.4% in the 36-40 year old range and 20.9% in the 41-45 year old range. Most of respondents had a high school education or equivalent (91.9%), had visited the PHC more than two times, namely for three times (62%) and more than three times (31.6%). Regarding marital status, the majority were married (58.1%). Most of the respondents have also registered BPJS (agency of health social security) membership, where the PBI (beneficiary of contribution) group dominates (38%).

Based on the variables studied, it was known that most of respondents have good knowledge (52.1%), with perceptions related to health workers ability who were also good (54.2%). A total of 56.9% respondents thought that infrastructure at the PHC was classified as good with good quality health services (52.4%). Regarding the service waiting time, as many as 51.2% said it was not too long or short. As many as 51.8% of respondents have a good perception of illness and 57.5% have the intention of making repeated visits.

If viewed from the value of central tendency, it was known that mean score of knowledge was 76.53 (SD 10.65), the mean score of the health workers ability was 37.77 (SD 6.38), the mean score of infrastructure facilities was 43.90 (SD 6.02), the mean score of service quality was 62.96 (SD 8.06), the mean score of waiting time was 27.25 (SD 12.87) and perception with mean score of 32.61 (SD 7.05). In variable of intention to make revisit health services, the mean score was 37.88 and the SD was 6.07. Table 1 illustrate the cross-table analysis between independent variables and dependent variable which showed that outpatients belonging to the group with low revisit intentions, who have less knowledge, have a higher percentage than respondents with good knowledge. There was a tendency for outpatients with less knowledge, their intention to revisit was low also. The same pattern also seen for the variables of health workers ability, infrastructure, service quality, waiting time and perception. Based on the influence test conducted using simple linear regression, the p value <0.05 was obtained, except for the effect of perception on revisit health services intention because the p value=0.998 (p>0.05). Statistically it could be concluded that partially there was significant effect of knowledge, ability of health workers, infrastructure, quality of services and waiting time on intention to revisit health services to health centers during Covid-19 pandemic. The perception variable proved to have no effect on the intention to revisit.

**Table 1**  
**Cross Tabulation of Independent Variables with Intention of Revisit Health Services at the PHC**

Variables	Intention of Revisit				Amount		p-value
	Low		High		F	%	
	F	%	F	%			
<b>Knowledge</b>							
Less	84	52.8	75	47.3	159	100.0	0.000
Good	57	32.9	116	67.1	173	100.0	
<b>Health Workers Ability</b>							
Less	88	57.9	64	42.1	152	100.0	0.000
Good	53	29.4	127	70.6	180	100.0	
<b>Infrastructre</b>							
Less	83	58.0	60	42.0	143	100.0	0.000
Good	58	30.7	131	69.3	189	100.0	
<b>Service Categories</b>							
Less	86	54.4	72	45.6	158	100.0	0.000
Good	55	31.6	119	68.4	174	100.0	

Waiting Time						
Long	75	46.3	87	53.7	162	100.0
Short	66	38.8	104	61.2	170	100.0
Perception						
Less	78	48.8	82	51.3	160	100.0
Good	63	36.6	109	63.4	172	100.0

To find out the effect and the value of linear equation of independent variables partially on the dependent variable, it could be seen in Table 2. The results of regression test of knowledge variable on the intention to revisit health services showed a coefficient value of 0.175 and a constant 24,510 so the regression equation formula was  $Y = \text{constant} (24,510) + (0.175X^1)$  which means that every 1% addition of knowledge will increase the intention to revisit health services at PHC by 0.175 times bigger. It's proven that there was an effect of knowledge on the intention to revisits with a large effect of 9.4%. The results of regression test for variable of health workers ability obtained a constant value of 28.125 and a regression coefficient of 0.273, which means that each additional 1% of the health workers ability would increase the intention to revisit 0.273 times with a large effect of 8.2% with the regression equation  $Y = \text{constant} (28.125) + (0.273X^2)$ . An increase of 1% in infrastructure would increase

the intention to revisit by 0.410 times greater with a large effect of 16.8% with the regression equation  $Y = \text{constant} (19.887) + (0.410X^3)$ . In test of the effect of service quality, the constant value acquired was 18.794 and the regression coefficient was 0.307 so that it could be interpreted that every 1% addition of service quality could increase repeated visits by 0.307 times with an effect of 16.7% (with the regression equation  $Y = 18.794 + 0.307X^4$ ). Likewise for the results of the equation test on the effect of waiting time on the intention to revisit which showed the regression equation  $Y = 34,223 + 0,134X^5$ , which it means that every 1% improvement in service waiting time will increase the intention to revisit health services by 0.134 with a large effect of 8.1%. Table 2 also proved that there's no effect of perception on the intention to revisit health services at the PHC.

**Table 2**  
**The Partial Analysis of Independent Variables Effect on Intention to Revisits Health Services to the PHC**

Variables	Constant Value	Coefficient Value	Sig.	R <sup>2</sup> Value
Knowledge	24,510	0,175	0,000	0,094
Workers Ability	28,125	0,273	0,000	0,082
Infrastructure	19,887	0,410	0,000	0,168
Quality of Service	18,794	0,307	0,000	0,167
Waiting Time	34,223	0,134	0,000	0,081
Perception	0,000	0,000	0,998	0,000

To see the overall effect of independent variables on the intention to revisit health services, a multiple linear regression test was performed with enter method. In the first modeling, all variables were included except for perception variable ( $p > 0,25$ ). The results showed that knowledge variable was not significant so it was excluded from multivariate modeling. The final results of the test could be seen in Table 3 which showed only 4 (four) variables that were simultaneously proven affected the intention to revisit health services at public health center, namely: the health workers ability, infrastructure, service quality and waiting time with a total effect of 27.7%. From the test results obtained the equation was  $Y = 11.083 + 0.146X^2 + 0.276X^3 + 0.106X^4 + 0.104X^5$  which means that the intention to revisit PHC was 11,083 greater if all variables were assumed to be constant (0). With an increase in each independent variable of 1%, the intention to return to the PHC services will also increase by:  $11.083 + 0.146$  (knowledge) +  $0.276$  (infrastructure) +  $0.106$  (quality of service) +  $0.104$  (waiting time). The better of knowledge, infrastructure, services quality and shorter waiting times, the greater opportunity for increased revisits health services of out patients to the health center.

Intention was the driving force that causes a person to pay attention to an object. The intention to revisit was a form of patient behavior to come back, give positive word of mouth, stay longer than expected, and shop more than expected (Wulanjani & Derriawan, 2017). A person's intentions were determined because of an attitude that describes a person's desire to behave based on their beliefs and evaluations of the

results that will be generated, important norms and subjective norms in the form of person's perception of what other people think (Arafat & Mohamed Ibrahim, 2018). Patient satisfaction with services will affect patient interest in determining the place of health service for repeat visits (Siripipathanakul & Bhandar, 2021). Patient satisfaction occurred when the perceived services was as expected (expected service), but if it's lower then it's perceived as the services quality of health facility was bad or not good (Permana et al., 2019). If the services obtained meet the patient's expectations, it will generate interest and intentions to reuse that health service facility (Febriawati et al., 2022). The results of this study were in line with study in Padang City that quality of service affected the intention to revisit at Ibnu Sina Hospital. Perceptions of quality affected the interest in revisiting BPJS patients to Specialist Polyclinic, where the performance quality resulting from specialist polyclinic services provided was positive for patients who have utilized that services, thus creating high dependence on willingness to reuse it (Faaghna et al., 2019). The availability of facilities and infrastructure were factors that encourage and motivate people to take advantage of health services or another treatment efforts. Services with incomplete health facilities will make people choose other places that were felt to have more complete facilities. This study also in line with study at Surya Insani Hospital Pasir Pengaraian Riau which proved that availability of poor facilities tends to be 0.185 times more likely having an effect on dis-interest of patients revisiting in the hospital (Satria negara et al., 2016).

**Table 3**  
**Multivariate Analysis of the Effect of Independent Variables on Intentions to Revisits Health Services at Health Center**

	Coefficient Value (B)	SE	t Value	Sig.	R <sup>2</sup> Value
(Constant)	11,083	2,564	4,323	0,000	0,277
Workers Ability (X <sup>2</sup> )	0,146	0,048	3,029	0,003	
Infrastructure (X <sup>3</sup> )	0,276	0,063	4,371	0,000	
Service Quality (X <sup>4</sup> )	0,106	0,030	2,126	0,034	
Waiting Time (X <sup>5</sup> )	0,104	0,023	4,576	0,000	

Waiting time is the total time a patient spends waiting for outpatient services at PHC from registration to getting an examination by a doctor or other health worker. Long waiting times reduce patient satisfaction which causes patients to seek other health services that were considered faster and better (David et al., 2014). The study results were also in line with study of Insani et-al at the Eye Polyclinic of William Booth General Hospital in Semarang regarding waiting times which showed that long waiting times cause discomfort to patients, because they will feel very bored and even frustrated in waiting for get services which could affected satisfaction and intention to revisit. At the other hand, long waiting times could cause feelings of tightness, angry, irritation and boredom (Insani et al., 2020). The study at the Outpatient Unit of Indramayu Public Hospital also showed that the length of waiting time was due to performance of health workers in providing outpatient care which includes a lack of discipline in starting and ending services to all patients, a lack of cooperation sense between health workers in providing services, and low awareness of health workers about the importance of guarantee service waiting time for patient services in outpatients units, so efforts were needed increasing the discipline of health workers so that health workers could provide services quickly and accurately (Laeliyah & Subekti, 2017). The research at first-level health facilities in Dubai was stated that there was a need for leaders role and managers who were responsible for solving waiting time problems in a planned manner and reducing patient complaints while waiting with a policy of making advance appointments for getting services (Aburayya et al., 2020). Online queuing services (e-health) were able creating access to efficiency and effectiveness of service process and break long queues at the PHC, because patients could estimated arrival times at PHC so there' s no need to wait for long queues (Prabowo et al., 2020).

Health workers who have good communication with patients and the availability of competent health workers were reinforcing factors for patients to revisit healthcare places to get treatment (Darkwa et al., 2015). This study was in line with study at RSIA PKU Muhammadiyah Cipondoh regarding the interest in outpatient visits which stated that there was a relationship between the quality of nursing services regarding dimensions of tangible physical evidence, reliability, responsiveness, assurance and empathy with interest in repeated visits (Habibi et al., 2020). Accessibility, attitudes, and interpersonal problems could affected the visits to health services, even though a person was hindered by accessibility (distance and cost) but if they had a good attitude towards services where these attitudes were formed due to experiences related to waiting times, service quality, perceptions of preventive services and medical interventions and also supported by good interpersonal support, including relationships with health care providers would encouraged someone to make repeated visits (Andrew et al., 2014). The existence of good services provided by health workers makes people willing to make repeat visits because they were satisfied. Good service needs to be provided starting from the

registration process to carrying out examination actions and the treatment process according to the code of ethics and service standards set (Akbar et al., 2020).The quality of PHCs services need to be continuously improved, especially in aspects that were the main priority, such as the comfort of waiting room, providing disease information and medical action information by health officers clearly, medical services, health officers skill, speed of handling complaints, and employee empathy in giving patients the opportunity submitted their complaints, so that later it will have an impact on increasing interest in patient visits for treatment and checking their health again at PHC (Suryani & Arini, 2020). Study at Leyangan Health Center in Semarang District showed that health workers who were less friendly and less concerned about the patient's conditions were able to influence the low community interest in seeking treatment at the PHC (Taekab et al., 2019). It was necessary to discipline and empowering health workers by conducting skills training and improving job services to improve the quality of officers in providing health services (Backhouse & Ogunlayi, 2020).

Perception was a long process from sensing to giving meaning, both regarding health care and about psychological well-being (Thersya & Batlajery, 2019). Illness perception was person's assessment of illness as a direct experience, which was different for each person because it was influenced by physical, social and mental factors that produce illness conditions which were also influenced by affective, cognitive and interpersonal (Pillay et al., 2014). This research was in line with study at Padang Selasa Health Center which stated that there was no relationship between perception of pain and the use of health services for JKN participants (Pebriani, 2021). In society there were various concepts of health and illness, the difference usually in concept of disease with feel of sick, where people who were actually affected by the disease but do not feel sick, people tend to think sick when lying weak and unable to carry out activities, and health was a condition where person condition was functioning properly starting from physical, mental, social and even spiritual so that they were able carrying out activities and express their potential in the environment where they live (Svalastog et al., 2017). In this study, respondents who did not have intention to revisit PHCs due to fear of contracting Covid-19 and prefer to seek treatment at the nearest clinic. Factors of fear and anxiety were indicators that influence patient behavior. It was in line with study in Australia which stated that there were differences in the level of anxiety in patients who had been given knowledge about breast cancer and those who doesn' t, so it could be concluded that providing knowledge to patients can reduce patient anxiety (Jimenez et al., 2018).

Knowledge was result of knowing and occured after a person have sensed an object so that it could influenced a person's perception to be different (Abdel Wahed et al., 2020). The higher of person's knowledge about health, the more they needed a health service center, because the increasing knowledge insight would increased awareness that health was important factors so they were motivated to make visits (Kamo et al., 2018). This study wss in line with study on the

interest in revisits of pregnant mothers at Karangany Health Center, where knowledge about antenatal care could increasing interest of pregnant mothers in re-checking their pregnancies, because they feel that when they check their pregnancy at PHC they were given information about health conditions and fetal growth and development and could find out health conditions periodically (Suryani & Arini, 2020). Study at Barrang Lompo Health Center in Makassar City also proved that patients who have good education and knowledge and have a good level of understanding about health services will be motivated to reuse PHC services (Munawar, 2017). Therefore, it was necessary to health workers support, including cadres to improve their cognitive aspects, such as perceptions, knowledge, and beliefs about something so as not to cause misunderstandings and wrong perceptions in community, including for patients. In addition, interaction with peer groups have also been shown increasing knowledge, perceptions and beliefs (Oktadevi et al., 2021). Knowledge and perception of health services was the key factors to health services utilization.

## CONCLUSIONS AND SUGGESTIONS

Most of respondents have a high intention to make revisits health services at public health centers. Factors of knowledge, ability of health workers, facilities and infrastructure, quality of services and waiting time partially affected the intention to revisit at PHC. While waiting time, infrastructure, ability of health workers and quality of service were predictors for revisit intentions with an overall effect of 27.7% because it's proven that these four variables together affect revisit intentions. Health centers need to develop an online queuing mechanism to reduce waiting times and gradually equip infrastructure and improve service quality through the discipline of health workers. There was a need for further research related to service quality and perception of illness with revisits at PHCs.

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