The Effectiveness of Health Education to Increasing Hemoglobin Levels in Pregnant Women as Stunting Prevention Effort

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Abstract

Stunting is a nutritional health problem that is the center of attention worldwide with cases reaching 150.8 million people (22.2%). Stunting causes failure of growth and development of toddlers which has an impact on increasing mortality, morbidity, physical and cognitive disorders in adolescence and adulthood. Mothers who are malnourished during pregnancy are prone to anemia. Mothers with anemia can give birth to children who are at risk of stunting. This study aims to see the effectiveness of health education on increasing hemoglobin in pregnant women to prevent stunting. This research method was quasi-experimental with one group pre-post test. Sampling was done by purposive sampling method. The number of samples in this study was 60 samples. The data were analyzed using a normality test, and then a different test was performed using Wilcoxon. This study was conducted from August-September 2020. The results showed the effectiveness of health education during pregnancy in increasing the Hb value in pregnant women as indicated by the difference in the average Hb concentration before the intervention and after the intervention with a value of sig. (0.00) < (0.05). It was expected that health workers in primary health care facilities and hospitals provide continuous education to pregnant women in fulfilling balanced nutrition and consuming at least 90 iron tablets during pregnancy to prevent stunting.

Keywords: Health education, hemoglobin, pregnant women, stunting.

Introduction

The first thousand days of life are crucial periods in the stage of human life. Nutritional status at that time will affect the quality of children's health, intellectual and productivity at the next stage of growth and development. The quality of children's growth is one of the focuses in health development (Rahmawati et al., 2016). Lack of chronic nutritional status during the first thousand days of life period causes the failure of child growth and development to trigger stunting (Geberselassie, Abebe, Melsew, Mutuku, & Wassie, 2018).

Globally, 150.8 million or around 22.2% of children under five years of age were stunted in 2017 and more than half of stunted children under five worldwide came from Asia (55%). Data on the prevalence of stunting under five collected by the World Health Organization (WHO), Indonesia is one of the highest countries in the Southeast Asia region with an average of 36.4% from 2005-2017 (Ministry of Health, 2018). The stunting prevalence in Indonesia had decreased from 37.2% in 2013 to 30.8% in 2018. Aceh became the area with the third-highest percentage in Indonesia, where the presentation was 37.3% in 2018 (Ministry of Health, 2018). The district/city area with a high number of children experiencing stunting in Aceh is Aceh Besar District with a prevalence in 2017 of 31.2% (Aceh Health Office and Department of Health Poltekkes Aceh, 2018).

The overall prevalence rate has not yet reached the target recommended by WHO, which expects stunting rates worldwide to reach a percentage of 20%. Various programs have been promoted to reduce this figure, but these efforts still need support from all parties. So that this goal can be achieved optimally considering that Aceh contributes a high enough number to the prevalence of stunting nationally, so it is necessary to initiate action against and against stunting (Ministry of Health, 2018).

The high prevalence of stunting certainly requires serious treatment. Serious impacts will threaten the quality of human resources in the chain of life that occurs continuously. This situation will cause increased mortality and morbidity, growth disorders, developmental disorders, and cognitive function. Stunting in childhood will also increase the risk of chronic disease in adulthood (Indriyani et al., 2018). As adults, in addition to giving birth to babies with the same nutritional problems, this growth failure is also associated with a long-term impact, namely an increase in the prevalence of non-communicable diseases in the future (Bates, Gjonça, & Leone, 2017).

Stunting is caused by various factors such as socio-demographic status, economic status, cultural and environmental practices, as well as other health-related variables. For example, poverty, low parental education (Haider, Olofin, Wang, Spiegelman & Ezzati, 2013). Poor sanitation conditions have a detrimental effect on the growth and development of children and cause significant exposure to pathogens (Cumming & Cairncross, 2016). Low food intake, poor dietary practices since pregnancy, inadequate breastfeeding, recurrent infections, family size, and birth interval are considered to be the main determinants of stunting (Geberselassie et al., 2018 & Ruwali D, 2011).

Malnutrition during pregnancy and irregular consumption of iron will cause the mother to experience anemia so that the growth of the fetus will be disrupted. Anemia that occurs during pregnancy will increase the risk of babies being born with low birth weight (LBW) (Haider, Olofin, Wang, Spiegelman, Ezzati, 2013). The hemoglobin (Hb) level of pregnant women is related to the length of the baby who will be born later, the higher the Hb level the longer size of the baby to be born (Ruchcayati, 2012). As many as 22.7% of all babies born in Indonesia have a birth length of less than 48 cm (Kemenkes RI, 2018).

One of the areas in Aceh Besar District that is the focus of implementing stunting prevention interventions is Kuta Baro District. It is because the working area of the Kuta Baro District Health Center has a prevalence of under-five weight under the red line is relatively high in the Aceh Besar district, which is 9.31%, occupying the fourth highest number in this district. Kuta Baro District has a high number of stunting cases, namely 23 cases in 2018. So this area becomes the main focus in handling and preventing stunting. There has been no previous similar research in this district.

The activities that have been carried out so far are still in partial forms, such as fulfilling the health of pregnant women, giving iron tablets to prevent anemia in pregnant women, but not yet building basic knowledge about the importance of consuming iron in pregnant women so that there are still pregnant women who do not take iron tablets.

Methods

This study is a quasi-experimental study with one group pre-post test. The research was conducted in the Puskesmas Kuta Baro. Respondents in this study were 60 pregnant women chosen by purposive sampling method with inclusion criteria,

namely gestational age in trimester 1, trimester 2, and trimester 3, did not experience pregnancy complications and had checked their pregnancy at least once at the Puskesmas Kuta Baro. Data collection lasted for one month. The initial stage of the research activity was to check Haemoglobin (Hb) in pregnant women, after which they were given education about balanced nutrition and the importance of consuming iron supplements during pregnancy in preventing stunting. Hemoglobin examination using a portable measuring device with the brand Easy Touch which uses peripheral blood. Post-intervention Hb examination was carried out after one month to see an increase in Hb in pregnant women.

Result

a. Demographic Data

Demographic data of respondents consisted of maternal age, gestational age, gravida, antenatal care (ANC) visits, education and occupation. Demographic data in this research can be seen in table 1 below:

Table 1. Frequency Distribution table of Demographic Data (n=60)

Demographic Data	f	%
Mother`s Age		
20- 35 years old	46	76,7
> 35 years old	14	23, 3
Gestational Age		
1st Trimester	8	13,3
2nd Trimester	39	65
3rd Trimester	13	21,7
Gravida		
Primipara	16	26,7
Multipara	44	73,3
ANC		
1-2 times	18	30
3 times	33	55
<3 times	9	15
Education		
Low	2	3,3
Moderate	35	58,3
High	23	38,4
Profession		
Housewife	43	71,7
Civil Servant	11	18,3
Private	6	10

From the data in the table above, it can be seen that the most maternal age ranges from 20-35 years by 76.7%, the majority of pregnant women in the 2nd trimester of 65%, namely the gestational age range from 13-26 weeks, 73.3% multiparous pregnancies, 33 % of ANC visits were 3 times, 58.3% of mother's education was at the secondary education level and 71.7% were housewives.

b. Hemoglobin value pre and post intervension

The value of the Hb concentration of pre-interaction and post-intervention pregnant women can be seen in the table 2 and table 3 below:

Table 2. Frequency Distribution of Hb Concentration in Pre-intervention Pregnant Women (n=60)

Hemoglobin Value	f	%
Severe Anemia (Hb <7 gr/dl)	0	0
Moderate Anemia (Hb7- 8 gr/dl)	11	18,3
Mild Anemia (Hb 9-10 gr/dl)	27	45
No Anemia (Hb>11 gr/dl)	22	36,7
Total	60	100

Table 3. Frequency Distribution of Hb Concentration in Post-intervention Pregnant Women (n=60)

Hemoglobin Value	f	%
<7 gr/dl	0	0
7- 8 gr/dl	5	8,3
9-10 gr/dl	21	35
>11 gr/dl	34	56,7
Total	60	100

The Hb value of pregnant women before being given the intervention was mostly in the category of Mild Anemia (Hb 9-10 g/dl) which was 45% and after the intervention the most were in the non-anemic criteria of 56.7%.

c. The effectiveness of health education on increasing Hb levels in pregnant women in an effort to prevent stunting.

The following are the results of the pretest and posttest data normality test

Table. 4. Tests of Normality the Pretest and Posttest Data

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PRE	.171	60	.000	.936	60	.004
POST	.128	60	.017	.905	60	.000

The table above shows that the pretest and posttest data are not normally distributed, because the value of sig. (0.000 ; 0.017) < (0.05) then the test of the average difference conducted is non-parametric, namely Wilcoxon

Table 5. The Effectiveness of Health Education on Increasing Hb lLvels in Pregnant Women in Preventing Stunting (n=60)

		N	Mean Rank	Sum of Ranks
POST-PRE	Negative Ranks	0[a]	.00	.00
	Positive Ranks	58[b]	29.50	1711.00
	Ties	2[c]		
	Total	60		

Tabel 6. Test Statistics[a]

	Post-pre
Z	-6.629[b]
Asymp.sig. (2-Tailed)	.000

a. Wilcoxon signed Rang Test
b. Based on negative ranks

Obtained the value of sig. (0.00) < (0.05) then the decision is to reject H0. So the decision taken is that there is an average difference in the pre-intervention group of pregnant women and the post-intervention group of pregnant women.

Discussion

The results of statistical tests using the Wilcoxon test showed that there was an effect of health education on increasing Hb levels in pregnant women. The respondents' pre-test and post-test values obtained a significance value of 0.000 <0.05, meaning there was a difference in Hb values before and after being given health education. The results of data analysis showed that pregnant women who were not anemic before the intervention were 36.7% while after the intervention increased to 56.7%, there was an increase of 20% for respondents who were not anemic. It shows that health education has a significant positive impact on increasing Hb values in pregnant women.

Health education about balanced nutrition and the importance of consuming iron supplements during pregnancy increases a mother's knowledge about the importance of fulfilling nutrition and consuming iron during pregnancy to prevent maternal anemia. So that pregnant women regularly consume iron and fulfill daily nutrition with a balanced nutritional menu. The results of this study are in line with research conducted by Suryagustina, Araya, & Jumielsa (2018) which states that there is an effect of health education on changes in maternal knowledge about Fe tablets and there is an effect of health education on changes in mothers' attitudes about Fe tablets. Another study conducted by Mulianingsih, Yolanda, Khalid & Hayana (2021) stated an increase in knowledge related to anemia after being given health education to pregnant women.

In addition, health education is crucial to change mindsets and change people's behavior for the better. Nutrition counseling can provide changes in nutritional status, namely weight gain and increase in blood hemoglobin levels in pregnant women. Health education about the consumption of healthy and balanced food can also increase the intake of nutrients (energy and protein) of pregnant women and the nutritional status of pregnant women for a better and positive impact on reducing stunting at birth and perinatal mortality (Hasrati, 2017).

The process of stunting in children starts from the first thousand days of life begins with the growth and development of the fetus until the age of 24 months after birth. Nutritional imbalances that occur during pregnancy cause intrauterine growth inhibited (Maravilla, Betts, Adair, & Alati, 2020). Mothers with poor nutrition levels during pregnancy accompanied by non-compliance in iron consumption will cause the mother to lack protein energy and anemia occurs in pregnancy which will affect the

growth and development of the fetus. It becomes the risk of stunting in the baby later. Research conducted by Rohmawati, Keumala Sari, Sitepu & Rusmil (2021) stated there was a significant correlation of iron (Fe) levels in the mother's blood serum with the length of the baby's birth. Other studies also state that the hemoglobin level of pregnant women is related to the length of the baby who will be born later. The higher the Hb level the longer size of the baby to be born (Ruchcayati, 2012). Iron plays an important role in the synthesis and secretion of hormones that play a role in fetal growth and bone formation (Suzuki, Katsumata, Matsuzaki & Suzuki, 2016 & Rocha, de Brito, Dantas, Silva, Almeida, Brandão-Neto, 2015). As many as 8.5% of stunting occurred because they did not start consuming iron before the first six months of pregnancy, so pregnant women are advised to consume iron early. Consumption of iron supplements during the antenatal period can significantly reduce the risk of stunting in children aged less than two years (Nisar, Dibley & Aguayo, 2016).

Anemia that occurs in pregnant women will not only interfere with fetal growth but also impact the incidence of anemia in the postpartum period, postpartum anemia, the risk of bleeding will also affect milk production will have an impact on the success of exclusive breastfeeding. Children who do not receive exclusive breastfeeding are also a risk factor for stunting. Research conducted by Darmawati in 2019 showed that 49.0% of postpartum mothers experienced anemia at the dr. Zainoel Abidin Public Regional Hospital Banda Aceh with a Hb value of 9-10.9 g/dl (Darmawati et al., 2019) and mothers who have poor dietary practices during pregnancy are more likely to experience postpartum anemia. Fitri, Wahyuni, Hapsari, & Darmawati, 2020 & Fitri, Darmawati, Kiftia, Rizkia & Syahbandi, 2020). Interventions to reduce stunting should start right before birth, with prenatal care and maternal nutrition, and continue up to two years of age. The stunting process starts from the conception process until the age of two. By the time a child is past the age of two, it is too late to repair the damage in the early years. Therefore, maternal health and nutritional status is a determinant of stunting (Unicef Indonesia, 2012).

In tackling this stunting problem, WHO launched the Scaling Up Nutrition (SUN) program. One of the targets set in the program is to reduce the stunting rate below 20% (WHO, 2018). One of Indonesia's efforts in tackling the stunting problem is by providing interventions in the First 1000 days of life by fulfilling nutrition for pregnant women during the first 1000 days of life. pregnancy and children born to two years of age. Stunting must be prevented as early as possible, starting from the early

stages of pregnancy by meeting the nutritional needs of pregnant women. Maternal nutritional status during pregnancy is one of the risk factors for stunting. The nutritional status of the mother during pregnancy can affect the growth and development of the fetus (Fajrina, 2016). According to research from Alfarisi, Nurmalasari, and Nabila (2019), nutritional status in pregnant women can cause stunting in toddlers aged 6-59 months (Alfarisi, 2019). Sukmawati, Hendrayati, Chaerunnimah, & Nurhumaira (2018) also stated that the good nutritional status of pregnant women reduces the risk of low birth weight and stunting in children born. Another study also stated that pregnant women with protein intake < 58% of the RDA have a 1.6 times greater risk of having stunting children at the age of 12 months (Ernawati, Rosalina & Permanasari, 2013).

Conclusion

Stunting is a failure to grow in children aged two years, one of the causes is prenatal nutrition problems. In addition to fulfilling the needs of balanced nutrition, pregnant women must also consume iron as a micronutrient in fulfilling daily nutrition. It aims to achieve intrauterine fetal growth according to gestational age and prevent anemia in pregnant women that also plays a role in fetal growth inhibition. Health education is one of the efforts made to increase the knowledge and awareness of mothers in fulfilling balanced nutrition during pregnancy and preventing anemia in pregnancy. So this is one of the interventions carried out to prevent stunting.

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