Strategy to Reduce Low Birthweight Babies in West Aceh Regency

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How to cite this article:
Farisni, T., Yarmaliza, Y., & Fitriani, F. (2019). Strategy to reduce low birthweight babies in West Aceh Regency. *J-KESMAS, 6*(1), 1-5.

Abstract

Low birthweight babies are babies with a birth weight of 1,500 grams to less than 2,500 grams. Low birthweight babies are the cause of increase in babies' mortality (death) and morbidity (pain). One of the primary risk factors of low birthweight babies is poor pregnant mother's nutrition. Iron can provide a reserve or storage of nutrition that is very much needed by pregnant mothers to prevent anemia and maintain optimal growth of fetuses. The occurrence of low birthweight babies in Aceh Barat Regency is still very high. The design of this research was observational with an intervention of providing iron for 90 days to pregnant mothers and nutritional guidance for pregnant mothers in the effort of reducing the prevalence of low birthweight babies. The research was done in 10 villages from 3 rural sub-districts that contribute to high rates of low birthweight babies in Aceh Barat Regency, with 146 pregnant mothers. The results of the research showed that the application of the informal guidance strategy in a non-formal setting accompanied with discussions among family members and guidance targets resulted in 69.2% of guidance targets becoming motivated to consume Fe tablets and maintain eating patterns, while guidance targets that have been motivated yet did not consume Fe tablets and maintain eating patterns gave low income of guidance and Fe tablets were observed for 3 months; the result was 13 mothers (86.7%) gave birth to babies of normal weight and 2 mothers (13,3%) gave birth to underweight babies. The application of the guidance strategy in the effort to reduce the occurrence of low birthweight babies, from the results of this research, requires commitment from the Department of Health to provide suitable funds, facilities, and infrastructure to provide services to pregnant mothers, and commitment of all health officials in particular village nurses and health cadres, as well as involving the husband in the role to maintain a healthy pregnancy.

Keywords

Underweight babies; baby mortality; Fe tablet; pregnant woman

Introduction

Every year it is estimated that eight million babies die at birth or in the first month of the life of the baby. The rate of baby death from SDKI is 32 per 1000 live births; this number is still too high for the target of MDGs.[1] The quality of babies at birth is very much affected by how

nourished the mother was before and during pregnancy, among others due to the development of nerve arrangements in a fetus of early age. One of the indicators to evaluate the quality of babies or of this further generation is the body weight at birth.

The body weight at birth is the weight of a newborn baby measured in the first hour of the life of the baby. Normal newborn babies are babies born from a term pregnancies (37-42 weeks) with a body weight at birth of 2500-4000 grams. Low birthweight babies are babies with a body weight of 1,500 grams up to 2,500 grams. The incidence of low birthweight babies is the percentage of live births of which their body weight is less than 2,500 gram per the total number of live births weighed in the same period of time multiplied by 100. Low birthweight babies are the cause of increase in mortality (death) and morbidity (pain) of babies. The risk of death of low birthweight babies is four times greater than normal newborn babies.

A study at Arberden in the form of observing 282 children of 10 years of age (143 of which were low birthweight babies and 139 children being the control) proved that children who were born underweight had relatively lower intellectual capabilities, lower academic progress, suffered more from nerve disorders and hearing problems, and became ill more often compared to children who were born with a normal body weight.

To reduce the rate of incidence of low birthweight babies, the government has conducted many prevention efforts. Efforts to reduce the rate of incidence of low birthweight babies will be more efficient if pregnant mothers with a risk for giving birth to underweight babies can be detected as early as possible. The observation of pregnant mothers is one of the efforts to detect the 12 risks of underweight babies. This observation is an effort to follow the development of the mother and fetus, to increase optimal health, and to result in the birth of healthy babies.

One of the primary risk factors of low birthweight babies is anemia. Nutritional intervention during pregnancy provides a better reserve or storage of nutrition for the mother and fetus. Iron is very much needed by pregnant mothers to prevent anemia and maintain optimal growth of fetuses. The Ministry of Health has recommended that pregnant women consume at least 90 pills of iron during pregnancy. Anemic pregnant women have a higher risk of illness compared to normal pregnant women, which causes a higher chance to give birth to underweight babies.

The prevalence of anemia among pregnant women in Indonesia is 70 %. The high rate of anemic pregnant women contributes to the high rate of low birthweight babies which is estimated to reach 350,000 each year. (Depkes, 2001). To that effect, management of anemia is one of the potential programs to increase the quality of human resources.

Based on research results, the cause of increase in low birthweight babies is insufficient consumption of iron and the behavior of mothers. The behavioral factor mentioned here is the lack of knowledge of mothers on the benefits of iron and iron-containing foods. Results of the research by Rosmery (2000) showed that the nourishment of mothers before being pregnant has a significant effect on the incidence of low birthweight babies.

Various researches have been conducted to understand the risk factors of low birthweight babies. Among these factors, the issue of iron-deficiency anemia during pregnancy is one of

the risk factors for the indication of premature birth, low birthweight babies, and increase in prenatal death.

A research (Desphande, 2011) found that the maternal factor related to low birthweight babies is anemia; mothers who suffered anemia were 2.54 times greater at risk of giving birth to underweight babies compared to mothers that did not suffer from anemia.

Maternal knowledge of nutrition and its issues very much influences the nutrition status of the family. Pregnant women who have better knowledge of nutrition will be able to select foods that are appropriate for themselves and their fetuses in quantity and quality. In addition to nutritional knowledge, knowledge of pregnancy health is also necessary for pregnant women. As such, knowledge of nutrition and health is one of the protective factors in maintaining the quality of pregnancy. Knowledge has a great influence on health.

The incidence of low birthweight babies in West Aceh Regency is still very high. Underweight babies numbered to 52 babies spread in 12 sub-districts. This matter requires special attention from the regional government to reduce the incidence of low birthweight babies.

The goal for this research was to reduce the incidence of low birthweight babies by providing iron (Fe), increasing the knowledge of targets to pay attention to foods during pregnancy by informing the dangers of babies being born underweight, creating a supportive condition and environment, and increasing the involvement of the husband and other household members.

Method

The design of this research was observational with an intervention of providing iron for 90 days to pregnant mothers and nutritional guidance for pregnant mothers in the effort to reduce the prevalence of low birthweight babies. The research was done in 10 villages from 3 rural sub-districts that contribute to high rates of low birthweight babies in West Aceh Regency. The samples in this research were all pregnant mothers entering trimester III of pregnancy age in 10 villages spread in 3 sub-districts of West Aceh Regency. All the samples of the research were followed since entry into trimester III and the childbirth phase.

Guidance Strategy
The strategy to reduce low birthweight babies expected in this research was by providing Fe tablets to pregnant women entering trimester III of pregnancy for 90 days and by providing guidance on safe pregnancy (Making Pregnancy Safer).
The strategy covered:
1. Guidance targets were pregnant mothers, couples of fertile age, baby shamans, cadres, and village nurses. Guidance was performed through an interpersonal communication system accompanied by discussions with mothers, husbands, and other family members.
2. Guidance contents were safe pregnancy, good foods for pregnant mothers, and risk factors for low birthweight babies. Guidance material provided to each target were the same, complete, and delivered in a communicative language style. The intent for this was so that every guidance target had the same perceptions and complete information. The management of behaviors of pregnant mothers to care for their pregnancy and keep consuming Fe tablets for 90 days was to perform house visits every two weeks to motivate the guidance targets.

3. Guidance was done once a month for 3 consecutive months, given to the mother and her family while still pregnant.
4. Guidance media utilizes LCD projectors, posters, and leaflets.
5. Guidance was done with a communication system accompanied by discussion with guidance targets.
6. Guidance officials were field officers who were trained on and provided with materials on low birthweight babies and guidance techniques. Thus guidance was performed by the researcher and not by a nurse or cadre.

This strategy was to motivate pregnant women to consume Fe tablets and to inform the danger of babies being born underweight, to create a supporting condition and environment, to increase the involvement of the husband and other family members, and to reduce the incidence of low birthweight babies.
Guidance Strategy

The reduction of incidence of low birthweight babies in this research was achieved by providing guidance to motivate mothers to pay attention to and manage their pregnancy, and to consume Fe tablets. Guidance targets were mothers, husbands and other family members, baby shamans, cadres, and nurses in villages.

Guidance was provided to the mother and her family during pregnancy (second and third trimesters); guidance was conducted with an interpersonal communication system accompanied by discussions with the mother, husband, and other family members.

Guidance officials were field officers that were trained on and provided with materials on pregnancy. Thus, guidance was conducted by the researcher, not by a nurse or cadre. Guidance material provided to each guidance target were the same, complete, and delivered in a communicative language style. The intent for this was so that every guidance target had the same perceptions and complete information, so that every target had knowledge of a healthy pregnancy. The maintenance of behaviors so that mothers kept consuming 90 Fe tablets during pregnancy was by conducting house visits once every two weeks to observe guidance targets.

Results

The number of samples in this research was 146 mothers and their families which were followed for 3 months. From the total number of samples of 146 mothers and their families, mothers whose babies were born with a normal weight numbered to 52, while mothers whose babies were born underweight numbered to 94.
The samples of this research were split into two groups. The two groups were mothers whose babies were born with a normal weight and mothers whose babies were born underweight.
    The results of the research showed that most mothers were of 20-35 years of age (57.5%) and most husbands were over 31 years of age (64.4%). The proportion of mothers only educated to elementary school level was 30.13% while husbands educated up to high school level was 32.9%. For the occupations of the samples, most husbands were farmers (33.56%) while most mothers were household wives (46.3%). The socio-demographic characteristic data of the sample families are shown in Table 1.

Table 1. Socio-demographic characteristics

No	Socio-demographic characteristics	Sample Total		Baby Birth Weight			
		n	%	LBW* (n)	%	NBW* (n)	%
1	**Age Group of Mothers**						
	< 20 years old	19	13	7	7	12	8.2
	≥ 20-35 years old	84	57.5	12	24	60	41.1
	≥ 35 years old	43	29.5	43	23	20	13.7
2	**Education of Mothers**						
	Did not finish elementary school	32	21.9	10	6.85	12	8.22
	Elementary school						
	Middle school	44	30.13	13	8.9	31	21.23
	High school						
	College/higher education	37	25.3	15	10.27	22	15.07
		30	20.5	11	7.5	19	13.01
		3	2.1	0	0	3	3.05
3	**Occupation of Mothers**						
	Household Wife	68	46.6	23	15.75	45	30.28
	Industrial Laborer	57	39.0	24	16.44	33	22.62
	Civil Servant						
	Merchant	5	3.4	2	1.37	3	2.05
		16	11	4	2.74	2	8.22
4	**Age Group of Husbands**						
	16-30 years old	52	35.6	12	8.2	40	27.4
	≥ 31 years old	94	64.4	44	30.1	50	34.2
5	**Education of Husbands**						
	Did not finish elementary school	18	12.3	7	4.8	11	7.5
	Elementary school						
	Middle school	46	31.1	13	8.9	33	22.6
	High school						
	College/higher education	30	20.5	9	6.1	21	14.3
		48	32.9	17	11.6	31	21.2
		4	2.7	1	0.6	3	2.05
6	**Occupation of Husbands**						
	Farming	49	33.56	12	8.2	37	25.3
	Driver	30	20.54	7	4.8	23	15.75
	Industrial Laborer	33	22.6	8	5.4	25	17.1
	Civil Servant						
	Merchant	4	2.7	1	0.7	3	2.0
		30	20.5	11	7.5	19	13.01

*LBW: low birth weight; NBW: normal birth weight

The results of the research showed that the characteristics of research samples, covering age of mothers, age of husbands, education of mothers, education of husbands, occupation of mothers, and occupation of husbands, there was no difference between mothers giving birth to underweight babies and mothers giving birth to normal weight babies ($p > 0.05$). This shows that there is no difference between the age of parents, education of parents, and occupation of parents with the birth weight of babies.

Other data related to the profile of the samples were Eating Patterns, Nutritional Condition, Consumption of Fe, Knowledge of Mothers, Parity, Pregnancy Interval, and Antenatal Care Services. The childbirth profile of the research samples according to the baby birth weight is presented in Table 2.

Table 2 Risk Factors for Babies Underweight at Birth

No	Risk Factor	Total Samples		Baby Birth Weight			
				BBLN*		BBLR*	
		n	%	n	%	n	%
1	**Eating Patterns**						
	Good	66	45	34	51.5	32	48.5
	Poor	80	54.7	60	75	20	25
2	**Nutritional Condition**						
	Good	91	62.3	26	47.3	23	25.3
	Poor	55	37.6	68	74.7	29	52.7
3	**Consumption of Fe**						
	Present	62	42.4	19	30.6	43	69.4
	Absent	84	56.1	75	89.3	9	10.7
4	**Knowledge of Mothers**						
	Good	69	47.2	35	50.7	34	49.3
	Poor	77	52.7	59	76.6	18	23.4
5	**Pregnancy Interval**						
	2 years or greater	66	45.2	34	51.5	32	48.5
	Less than 2 years	80	54.7	60	75	20	25
6	**Number of Children (Parity)**						
	1 child	25	17.1	12	8.2	17	11.6
	2 children	41	28.1	22	15.1	15	10.3
	3 children	33	22.6	34	23.3	8	5.5
	4-7 children	47	32.2	26	17.8	12	8.2
7	**Antenatal Care Services**						
	Present	55	37.7	26	47.3	29	52.7
	Absent	91	62.3	68	74.7	23	25.3

*BBLR: low birth weight; BBLN: normal birth weight

In Table 2, it is evident that most of the research samples had poor eating patterns (54.7%), 62.3% of mothers were in good nutritional condition, 56.1% of mothers did not consume Fe tablets, 77% had poor knowledge, most pregnancies had an interval of less than 2 years (54.7%), parity most occurred with 4-7 children with 32.6%, and most did not have ANC services (62.3%). Statistical tests showed that the risk factor profiles of both groups had a very significant difference ($p < 0.05$).

Discussion

From the research results, there was a relationship between eating patterns, nutritional condition, consumption of Fe, pregnancy interval, number of children, and antenatal care (ANC) services with low birthweight babies. The application of the informal guidance strategy in a non-formal environment accompanied with discussions with family members and targeting guidance to consume Fe tablets and to maintain the nutritional condition of pregnant mothers to 15 individuals resulted in 69.2% guidance targets becoming motivated to consume Fe tablets and maintain eating patterns, while 30.2% guidance targets being motivated to consume Fe tablets and maintain eating patterns did not do so with the reason that their incomes were low. From 15 mothers given guidance and provided Fe tablets followed for 3 months, it was found that 13 mothers (86.7%) gave birth to babies with normal body weight and 2 mothers (13.3%) gave birth to underweight babies.

This showed that the guidance strategy worked well to reduce the incidence of low birthweight babies by providing the understanding to targets of the importance of Fe tablets and maintaining eating patterns during pregnancy so that babies are not born underweight and explaining the dangers of babies born underweight. Basically, this guidance strategy is simple, and the knowledge is easy. The application of health promotions that need to be increased through posyandu (community health centers) are training and actively involving cadres and nurses in participation as guidance officials.

In addition, the guidance officials need to be supervised by a direct superior or adviser in a regular manner. This is meant to protect the guidance continuity of the guidance officials. Nurses and cadres are the most appropriate officials to deliver guidance on ANC, nutrition, the importance of Fe tablets for pregnant mothers, the danger of low birthweight babies, and risk factors of low birthweight babies in particular in remote or undeveloped regions, because nurses and cadres are often in contact with guidance targets while serving pregnant mothers. Guidance and the effort to maintain the behavior of the target group and motivate the guidance targets can be done by nurses and cadres during posyandu and they can also visit homes of pregnant mothers to control consumption of Fe tablets. As such, to reduce the incidence rate of low birthweight babies in West Aceh Regency, several efforts can be conducted, among them:

1. Fostering the commitment of all health officials, in particular village nurses, cadres, and health promotion officials to provide understanding of healthy pregnancy, the risk factors of low birthweight babies, and the dangers of underweight babies;
2. Increasing the ability of health officials in performing guidance;
3. Offering free Fe tablets for pregnant mothers, done by the Department of Health;
4. Providing and distributing communicative and educative leaflets and poster with complete information for each couple of fertile age and pregnant women;

5. Involving the husband and other family members as targets of promotion on healthy pregnancy, the risk factors of low birthweight babies, and the dangers of underweight babies;
6. Awarding nurses and cadres who have shown dedication and hard work in conducting guidance in the effort to reduce the incidence of low birthweight babies, necessary to maintain continuity of guidance, done by the Department of Health; and
7. Providing promotion funds, facilities, and infrastructure on healthy pregnancy, the risk factors of low birthweight babies, and the dangers of underweight babies, done by the Government through the Ministry and Department of Health.

Conclusion

The guidance strategy conducted informally targeting individuals and families in a non-formal environment communicated informatively accompanied with discussion with guidance targets and done continuously can help pregnant mothers and their families to maintain pregnancy as well as guidance targets to understand the dangers of low birthweight babies. The success in decreasing the incidence of BBLR very much depends on the support and performance of health officials supported with suitable funds, facilities, and infrastructure to provide services to pregnant mothers, as well as the commitment of the Department of Health.

Acknowledgements

Author Contribution and Competing Interest

All of the authors contributed in collecting and analyzing the data, including preparing the manuscript. The first author acted as the chief researcher and as the corresponding author. The second and the third author acted as members of researchers helping the first author in collecting and analyzing the data. There was no competing interest related to the conduct of this study.

References

Depkes, R. (2001). Pedoman Pemantauan Kesehatan Ibu dan Anak.

Desphande, J. D., Phalde D.B, Bangal, V.B. (2011). Maternal Risk Factors for Low birth weight neonates: a hospitas Based Case Control Studiy in Rural Area of Western Maharastra. *India National Journal of Comunity Medicine, 2*(3), 394-39.

Guyard, B. F. J. C. M. (1992). Determinants of prematurityand low birth weight: Health Nutrition

Illsley, R. R. G. M. (1984). Low birth weight a medical pychological and social study: Chi Chester: John Wileyand sons.

Mubarak, W. I. (2009). Sosiologi untuk Keperawatan: Pengantar dan Teori. Jakarta: Salemba Medika

Najoan. N.W, S. W. (2002). Hubungan Serum Feritin Ibu Hamil Trisemester Ke Tiga dengan Bayi Berat Lahir Rendah. Manado: FK Universitas Samratulangi

Profil Dinas Kesehatan Kabupaten Aceh Barat (2014). Meulaboh: Dinas Kesehatan Aceh Barat

Saifuddin, A. B. (2002). Buku Acuan Nasional Pelayanan Kesehatan Maternal dan Neonatal. Jakarta: Yayasan Bina Pustaka Sarwono Prairohardjo.

Survey Demography Kesehatan Indonesia, 2012

UNICEF. (1999). Composition of a multi micronutrient supplement to be used in pilot programes among pregnant women in developing countries. New York: Word Health Organization.

Winkjosastro, H. (2007). Ilmu Kebidanan. Jakarta: Bina Pustaka.

Yulifah, R., & Yuswanto, T. J. A. (2009). Asuhan Kebidanan Komunitas. Jakarta: Salemba