The Effect of Policy and Pregnant Women's Behavior on the Incidences of Anemia in Coastal Communities

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ABSTRACT

A shortage of hemoglobin suffered by a pregnant woman is one of health problems that often occur during pregnancy. Anemia most often encountered in pregnancy is one caused by iron deficiency anemia due to inadequate intake of iron in the diet. Data from the World Health Organization (WHO) reveals that 40% of maternal deaths in developing countries are related to anemia during pregnancy. Data from Indonesian Demographic and Health Survey (IDHS) mentions that Maternal Mortality Rate (MMR) associated with pregnancy, child birth, and postpartum in Indonesia amounted to 359 per 100,000 live births. This is the highest figure in Southeast Asia and is still far beyond the target of the Millennium Development Goals (MDGs) in 2015, which is 102 per 100.000 live births. Anemia can cause abortion, missed abortion, congenital anomalies, premature labor, antepartum bleeding, impaired fetal growth, low birth weight, susceptible to infection, low Intelligence Quotient (IQ), and can increase perinatal death. This study analyzes how policy and behavior of pregnant women affect the incidence of anemia in coastal communities. This study uses a quantitative method with a design of cross sectional study, and then followed by the Forum Group Discussion (FGD). Samples are determined by means of total sampling, thereby involving the whole population of pregnant women, totaling 119 respondents. Results show that, concerning the distribution of respondents frequency, 79 (66.4%) women are at risk of anemia, whereas the remaining 40 (33.6%) are not. In terms of the pregnant women's behavior, 78 respondents (65.5%) fall into a category of those with good behaviors, whereas 41 (34.5%) are into a category of bad behaviors. Result of statistical test of X^2 on the behavior of pregnant women is ρ Value = 0.018, therefore it can be concluded that there is a correlation between pregnant women's behaviors and anemia. This result is expected to be taken into consideration in designing health policy and education to the community in the efforts to prevent anemia from occurring in the community, especially the pregnant women.

Keywords: anemia, pregnant women, behavior, policy

INTRODUCTION

Health development cannot be separated from efforts to maintain children's health as early as possible since they are in the womb. Efforts to maintain maternal health should be done before and during pregnancy, with the aim to get a healthy baby. Any health problems that occur during pregnancy can affect the health of the fetus, not only in the womb and when the baby is born, but also during the growth of the baby.

Regional development should develop health policies as its main pillar, before designing other policies. It is evident that only 5% of our State's Expenditure Budget allotted for health care, causing a low health indicator. Data from the *World Health Organization* (WHO) reports that Indonesia al locates only 1.8% of its gross domestic product (GDP) for spending

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in health care (WHO, 2013). Health care policy needs to be directed to every citizen so that everyone is healthy enough to live a productive life. Under the Health Act 36 of 2009, health is one of human rights and one of the elements of well-being that should be maintained in accordance with the ideals of the nation of Indonesia as stipulated in Pancasila and the 1945 Constitution. Everyone has an equal right to gain access to resources in the field of health, as well as health care services that are secure, qualified and affordable, and the obligation to respect the rights of others in the society through the social insurance system for individual health efforts.

According to WHO, 40% of maternal deaths in developing countries are related to anemia developed during pregnancy. The average anemia-related mortality in Asia is estimated at72.6% (Adawiyani, 2013). WHO also reports that the prevalence of pregnant women worldwidea who are anemic is 41.8%.Prevalence among pregnant women varied from 31% in South America to 64% in Southern Asia? Combined, South and Southeast Asia contribute up to58% of the total population in developing countries that are anemic (Salmariantity, 2012). The high prevalence of anemia among pregnant women is a problem faced by the Indonesian government today. Based on the Basic Health Research in 2007 the prevalence of anemia among pregnant women in Indonesia was 24.5% (Noverstiti, 2012), whereas base don Riskesdas in 2013 this has increased to 37.1% (Riskesdas, 2013).

The most common type of anemia in pregnancy is caused by iron deficiency due to inadequate intake of iron in the diets (Ruslan M, 2009). Iron deficiency is highly undesirable for mothers and infants, since anemic pregnant women runa higher risk of maternal death than those who are not anemic (Salmariantity, 2012). Data from the *Indonesian Demographic and Health Survey* (IDHS) in 2012 reported that maternal mortality rate is associated with pregnancy, child birth, and postpartum in Indonesia and amounted to 359 per 100,000 live births (Indonesia Health Profile, 2013). This figure is the highest in Southeast Asia and is still far beyond the target of the *Millennium Development Goals* (MDGs) in 2015, which is 102 per 100,000 live births. Some causes of death include bleeding (28%), *eclampsia* (24%), infections (11%), puerperal complications (8%), obstructed/long *partus* (5%), abortion (5%), obstetric trauma (5%), obstetric embolism (3%), and others (11%) (Lestari, 2014).

The high maternal mortality rate in Indonesia has become a priority issue in health. In addition to indicating the degree of public health, it shows the level of welfare and quality of healthcare service, childbirth, or during childbirth, and any improper interventions or handling of these complications, all of which cannot be fully understood without considering the medical or non-medical background (underlying factor), among which are the state of family economic welfare, maternal education, environment, behavior, and others (Salmariantity, 2012).

Data about micronutrient deficiency anemia in Southeast Sulawesi is still unavailable. The figures of Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) is a mark of the still poor state of maternal nutrition during pregnancy, which is one of the main causes of the problem. In 2011, the Infant Mortality Rate (IMR) in Southeast Sulawesi was 300/100.000 live births, with the percentage of low birth weight (LBW) being 0.28% of all live births (Southeast Sulawesi Provincial Health Office, 2012). In 2013, this rate raised to 606 out of 47 939 live births (Southeast Sulawesi Health Office, 2014).

According to the data from Kendari City Health Department in 2011, the number of targeted pregnant women was 4812 , with 52 (10.80%)experiencing cases of anemia, and the incidence of chronic energy deficiency (CED) was 15% of the entire targeted pregnant women (Kendari City Health Office, 2012). Results of a research conducted in *Puskesmas* (Public Health Centre) of Abeli in Kendari shows that the prevalence of anemia amounted to

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44.3% of pregnant women (Ruslan M, 2009), and a further study conducted in the same area reports that the prevalence of anemia in pregnant women has increased to 61.9% (Mardiah, 2013).

A policy for preventing nutritional anemia had been undertaken by the government through provision of a minimum of 90 (ninety) iron tablets during pregnancy, but this has not been able to reduce the prevalence of anemia in pregnant women in developing countries. Some factors that make such policy of iron supplementation ineffective are, among others, inadequate distribution of iron tablets, the side effects of iron tablet, poor compliance, and lack of knowledge possessed by pregnant women about the importance of iron supplementation during pregnancy (Winarni, 2008).

Based on the aforementioned data, it is interesting to investigate the effect of policy and pregnant women's behavior on the incidence of anemia in coastal communities within the work area of Abeli Public Health care Centre (*Puskesmas*) in Kendari city, Southeast Sulawesi.

RESEARCH METHODS

This study employed a quantitative method by taking a survey approach and using a *cross sectional study* design. Samples were 119 pregnant women, as the respondents of the study, which were determined by applying a total sampling technique on coastal communities within the work area of Abeli Public Health care Centre in Kendari in a period from January to May 2014. Data were collected through questionnaires and analyzed by using the statistical test of *Chi Square* (X^2), and then continued with the Forum Group Discussion (FGD) involving pregnant women, health workers (doctors, midwives and related service providers), traditional birth attendants, community leaders and local authorities.

RESEARCH RESULT

Health is vitally needed to support living organisms. Health problems are often ignored for the sake of temporary pleasure, especially by pregnant women who are at risk from anemia. The need for iron during pregnancy is greatly increased during pregnancy, and this is especially related to the growth of the fetus in the womb and pregnant women themselves, since iron deficiency during trimester I, II and III can cause anemia. Iron deficiency can also occur because of pregnant women's behaviors, which may lead them to be affected by anemia. Results of this study showed that, in most cases, the incidences of pregnant women at risk of anemia during pregnancy are associated with lack of consumption of food that contains iron, due to various factors, but in particular the behavior of pregnant women themselves. The distribution of respondents of pregnant women at risk of anemia is presented in the following table:

Tabel 1. Distribution of the frequency of the respondents at risk for anemia

Pregnant Women at Risk for Anemia	*n (number)*	*%*
At risk	79	66.4
Not at risk	49	33.6
Total	119	100.0

Based on the distribution of frequency of pregnant women at risk of anemia, as presented on Table 1,it is clear that most of the respondents, i.e. 79 pregnant women (66.4%), were in the

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category of "atrisk", whereas40 of them (33.6%) were "not at risk". Results of distribution and cross tabulation on the variable of behavior of pregnant women with anemia can be seen in the following table:

Table 2. Distributionof respondents frequency based on maternal behavior

Pregnant Women's Behavior	*n (number)*	*%*
Poor	41	34.5
Good	78	65.5
Total	119	100.0

It can be seen on Table2, regarding the distribution frequency of pregnant women's behavior, that the majority of the respondent (78or 65.5%) was in the category of having "good" behaviors, whereas the remaining 41respondents (34.5%) was in the category of having "poor" behaviors

A test using the chi-square statistics resulted in the $X2_{count}$valueof4.651andthe ρ Value of 0.018, with a significance level of 95% (α =0.05) and dk =1.In accordance with the basis for a decision, if the $X2_{count}$value (4.651)>$X2_{tabel}$ (3,841) and the ρ Value (0,018) <0.05, then H_0 is rejectedor$H_1$is accepted. It can therefore be concluded that there is a correlation between the pregnant women's behavior and anemia.

DISCUSSION

Anemia due to iron deficiency is the most common nutrition al disorder in the world and becomes endemic health problems. Anemia is as hostage of hemoglobin levels in the blood that causes deficiency of nutrients necessary for the formation of hemoglobin (RI MOH, 1998). Furthermore, anemia occurs when there is insufficient production of hemoglobin, causing it slow level in the blood. Iron deficiency is one of the causes of anemia, but it is not the only cause of anemia. Other causes of anemia include acute or chronic inflammation, parasitic infections and irregular hemoglobin synthesis (WHO, 2011). Pregnant women who are suffering from anemia belong to one of the groups that are most vulnerable to this disease, due to the acceleration of growth and development of the fetus in the womb that requires most of energy and nutrients, and because changes in lifestyle and food habits requires an adjustment of inpus energy and nutrients(Arisman, 2004).

The policy and behaviors of pregnant women to prevent anemia had been found to be ineffective since the program of iron tablet supplements intended for pregnant women faced difficulties in its implementation in the field due to many factors. As a result, the program did not go according to the government's policy of iron tablets supplementation. One of the difficulties was that many pregnant women felt burdened to have to consume 90 iron tablets during their pregnancy, one each day. Even though the iron tablets were given for free by health workers (from Public Healthcare Centre), many complaints were expressed by pregnant women who experienced nausea and dizziness, and were unable to bear the bad smells of the tablet that often caused them to vomit after taking the medicine, leading the women to eventually discontinue consuming the tablets, and in the end rendering the government program useless.

It also turns out that the term of anemia is not even known by the respondents, nor the benefits of iron tablets that are recommended to consume. The pregnant women are not aware of the importance of iron for fetus formation and development, which is actually needed to

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produce quality human resources in the future. The pregnant women themselves need to maintain their physical condition, especially those associated with bones and teeth. Pregnant women who are at risk of anemia are in constant danger of iron deficiency, all the more when their pregnancy is in trimester I, II and III. Therefore it is certainly extremely important that pregnant women become aware of the issues, and then address and act rightly for the sake of the future of the fetus/baby to be born. Having said that, health policy is fundamentally related to the action or decision-making of the government, individuals, or society, all of which can affect health sector, either positively or negatively. The health policy concerns with who influences whom, a process related to the power and political interests that have an impact on health (Palutturi S, 2014).

Furthermore, pregnant women's poor behavior, who do not want to know, behave and act to learn that anemia occurs due to ignorance, can be improved by consuming good diet and iron-rich foods, which are actually abundant around the coastal communities, where animals and vegetables become the main source of food. In general, consumption of food is closely related to nutritional status, that is, if one consumes food that contains iron and has good values, then the person's nutritional status will be good too; on the contrary, consuming food that contains no iron and has no good values will cause shortages of nutrients, which in turn can cause anemia due to iron deficiency (Hapzah, 2012). Foods containing iron come from various sources such as liver, eggs, red meat, cows, goats, sheep, and white meat such as chicken, fish and meat from the sea such as clams, oysters, as well as green vegetables like spinach. In addition to poor diet, anemia can also be triggered by blood loss and diarrhea.

Certain circumstances such as the increased needs during pregnancy, chronic disease (such as tuberculosis), as well as blood loss due to parasitic infectious diseases (malaria and worm infection) will heighten the incidence of anemia (Arisman, 2004). Iron deficiency anemia is a blood disease that is most common in infants, children, and pregnant women. Iron deficiency can occur when the amount absorbed to meet the needs of the body is too little, whereas iron insufficiency can be caused by inadequate inclusion of iron, reduced iron in the diet, and the increased need for iron. If it lasts longer then it will lead to iron deficiency anemia (Permono B, 2005).

One of the problems in the consumption patterns in general and pregnant women in particular, and according to research results, is that although pregnant women consumed foods containing a lot of iron, they also, due to limited knowledge, eat other foods that should not be consumed at the same time or it should be about 1- 2 hours later. If simultaneously taken with tea and coffee, these foods can inhibit the process of iron absorption. The absorption of iron in the body includes calcium phosphate, rice bran, physic acid and polyphones. Physic acids are contained in many cereals and legumes, and are the main factors responsible for the poor bioavailability of iron in these foods. Because dietary fiber itself does not inhibit iron absorption, its inhibitory effect on rice bran is caused solely by the presence of physic acid. Polyphenols (phenolic acids, flavonoids, and polymerization products) are contained in tea, coffee, and wine. Tannins contained in tea and coffee can reduce iron absorption by 40% and 8% respectively. Drinking tea one hour after a meal can decrease iron absorption by up to 85%, because polyphenols such as tannins are contained in tea (Gutrie, 1989 and Bhargava et al, 2000). Incorrect dietary habitis the greatest cause of anemia, so this habit must be corrected if anemia is to be prevented. It is therefore recommended for pregnant women to eat nutritious foods that contain lots of iron, both from animals (meat, fish, chicken, liver, eggs) and plants (dark green vegetables, nuts and tempeh). Vegetables and fruits that contain vitamin C (cassava leaves, spinach, guava, tomato, orange, and pineapple) are very useful to increase iron absorption in the intestine (MOH, 1998).

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Blood booster tablets are iron supplement containing 60 mg of elemental iron and 0:25 mg of folic acid (as recommended by WHO). However, as admitted by the respondents through the FGD, the supplement tablets are not consumed regularly due to their side effects such as nausea, dizziness, vomiting and the bad smell of the tablets, so the pregnant woman only consumed the tablets intermittently, although most of the time they forgot to do so. To prevent and control anemia, iron tablets should be taken regularly and consumed according to the direction of use. Iron tablets or blood booster supplements are recommended to be consumed routinely by pregnant/postpartum women at a dose of 1 (one) tablet every day during the pregnancy and 40 days after birth (MOH, 2008). In light of this, it is necessary to implement a policy on the modification of iron tablets and produce the supplements into more palatable forms like biscuit or cracker, so that pregnant women would inadvertently consume the iron-rich foods. It is important to implement this policy in order to prevent anemia, which has become the main complaints during pregnancy, and to anticipate iron deficiency in pregnant women as early as possible.

Pregnant women's behavior is very instrumental in preventing anemia, and this factor can cause the disease if not seriously dealt with. So far, to countermeasure the disease, a program has been developed to supply pregnant women with iron tablets at affordable price, with a view to making it possible for the women to help themselves through correct behaviors and diets by consuming foods that contain lots of iron. It is very important for pregnant woman to be aware of the tremendous importance of nutrition, and they especially need to know the nutritional content of food, the source of the nutrients, and the benefits of iron in the body. Knowledge about nutrition encompasses cognitive process required to combine nutritional information with the behavior of the diet, in order to structure a good knowledge of nutrition that can help to develop health.

The level of one's knowledge about nutrients and selection of food affects the nutritional state of the person. It is very important to be aware of the need for iron because not only it is required for the formation of hemoglobin, but it also plays a role in the irregularities and the transport of oxygen. Also, iron is present in several enzymes that plays a role in oxidative metabolism, DNA synthesis, neurotransmitter, and catabolism process which requires iron to work.

According to WHO (2001), efforts to overcome problems related to anemia have been focused more on pregnant women. As such, one of the impacts of anemia on adolescents who are pregnant is that there is a 40% chance that they suffer from bleeding during childbirth, and bleeding is the first cause of maternal death in Indonesia (MOH, 2001). Thus iron deficiency problems should receive attention from all parties, including health care workers but most importantly closest relatives, especially the husband. If not addressed properly, the effect of the disease is very detrimental to the quality of human resources in the future, given its role in the growth and formation of the fetus, as well as child development. Thus, obviously this issue needs to be given a priority during pregnancy.

Another undesirable effect of anemia is that it can reduce a mother's immune system, reduce the power of concentration in studying, disturb day-to-day activities, and lead to increased morbidity and mortality of the fetus of pregnant and even the woman herself. Finally one of the solutions offered to pregnant women, to enable them to prevent anemia and to change their behaviors so that they are willing to consume iron tablet supplements and iron-rich foods, is by promoting the concept of Healthy Families Prevent Anemia or *Keluarga Sehat Cegah Anemia* (KECE) program, to be implemented by health workers and health observers directly through health education and counseling about anemia, as well as through posters

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and monitoring of pregnant women once a week by conducting house-to-house visit during their pregnancy.

CONCLUSIONS

Based on the results and discussion presented above, it can be concluded that:

1. There is a correlation between the policy of iron tablet supplementation for pregnant women and anemia in coastal communities within the work area of Public Health Centre (*Puskesmas*)of Abeliin Kendari.
2. There is a correlation between the behaviors of pregnant women and anemia in coastal communities within the work area of Public Health Centre (*Puskesmas*) of Abeli in Kendari.
3. During their pregnancy, the pregnant women in this study did not consume the supplementation of iron tablets as directed on a regular basis.

SUGGESTIONS

1. The government continues to implement the policy routinely and on a regular basis as an effort to prevent anemia from pregnant women by using health promotional media at healthcare centers to provide information about the incidence of anemia, especially the iron deficiency anemia.
2. In the efforts to prevent anemia, it is important that pregnant women themselves and their close relatives improve their behaviors related to health education and lead healthy lifestyle by participating in the program of Healthy Families Prevent Anemia or *Keluarga Sehat Cegah Anemia* (KECE) for coastal communities.
3. Supports from all competent parties and the community's active participation are needed in addition to further research on the concept of Healthy Families Prevent Anemia or *Keluarga Sehat Cegah Anemia* (KECE), so that the program can be universally applied to other communities. This result is expected to become one of considerations for developing a policy of and health education to the community as a way of protecting pregnant women from anemia.

ISSN: 2223-9944, e ISSN: 2223-9553

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