



Original Research

The Role of Tuan Guru on Improving Iron Intake and Minimalizing Food Restriction Behavior among Pregnant Women with Anemia

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ABSTRACT

Introduction: Anemia in pregnancy is an indirect cause maternal mortality. One of causes anemia during pregnancy is deficit of nutrient especially intake of iron. The aim of this study was to know that the role of religious leaders that called "Tuan Guru" as agent of change to improving iron intake among anemia pregnant women.

Methods: This study was quasi-experimental with pre and post-test group design. 86 participants pregnant women with anemia have been recruited in this study with purposive sampling technic. They were divided in intervention group (47 participants) and control group (39 participants). This study involved Tuan Guru as main intervention to give health promotion about nutrition during pregnancy. This study used food recall as an instrument tool that it used to measure nutrient intake especially intake of iron both pre and post intervention and also used questionare to measure food restriction behaviour among anemia pregnant women. Statistical test used paired t-test

Results: This study show that there were effect of religious leaders to improving the iron intake among *pregnant women with anemia* with $p=0.01$. This study also found that the habits of food restriction among pregnant women are decline between before and after intervention with $p=0.00$.

Conclusion: Tuan Guru has a strong influence in helping to increase nutritional intake and is able to minimize the food restriction behaviour among anemia pregnant women. The result of this study can be a basis for government to make a policy related to involvement of religious leaders in health promotion.

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1. INTRODUCTION

Anemia which is defined as a deficiency of red blood cells (RBC) or a decrease of hemoglobin is a common hematologic complication during pregnancy (Gilbert & Harmon, 2003). Iron deficiency anemia occurs mostly on those the pregnant women with insufficient intake of iron as an essential nutrient to increase hemoglobin (Ma et al., 2009). Severe anemia on expectant mothers increases the risk of maternal and fetal morbidity or mortality, premature birth delivery, and infant lower birth weights (Reeder et al., 2011). Moreover, the prevalence of anemia on expectant mothers in East Lombok region accounted 4,023 mothers and those with chronic energy deficiency were 2,810 cases. The prominent of nutritional intake included low intake of iron, folic acid and other nutrients (Ma et al., 2009). In term of maternal and infants mortality, in Indonesia, prevalence of maternal mortality was 305 of 100.000 life births and infants mortality was 34 of 1000 life births (Kemenkes, 2015c).

Nutritional intake is associated with economic, social and cultural aspects. Food restriction can be influenced by mother's decision in fulfilling the need of their nutrition during pregnancy (Sabi'ah Khairi et al., 2013). An ethnography study that examined knowledge, attitude, beliefs and behavior related to nutrition and nutritional supplementation of pregnant women indicated that ten of forty participants restrict food during pregnancy. In addition, the study presented low position of pregnant women in determining nutrition during pregnancy within the hierarchy of both health care system and the power structure of the broader community. The dominant power was made by husbands, mothers-in-law, village midwives, cadres and village leaders (Setyowati, 2011). Furthermore, food restriction behavior is a culture that must be followed by pregnant women (Mass, 2004). A cultural belief in central java, expectant mothers should prevent to consume eggs and meats as the food cause labor complications such as delivery bleeding (Maas, 2004; Zaluchu, 2007). As food restriction behavior may contribute on deficit nutrients intake,

this may lead to higher number of anemia in Indonesian pregnant women (Kemenkes, 2015a). Study on effort to enhance intake essential nutrition such as iron intake and to resolve food restriction are warranty particularly in East Lombok.

There are many efforts to address the challenges on the nutritional problems. One of the efforts was community-based of maternal health which was aimed to increase health status of pregnant women in community by focusing on optimizing the role of community leaders (Kemenkes, 2015b). Effort to encourage community awareness on nutritional problems was made involving cadres, head of villages, and religious leaders. Furthermore, Tuan guru as a religious leader plays significant role as a social capital in community particularly for West Nusa Tenggara descents. Habib et al., (2014) asserted that community in Lombok have a value of "Sufi Leader". A Tuan Guru can control of behavior and attitude of people that he leads and this value be a culture in Sasak tribe Lombok West Nusa Tenggara. The role of Tuan Guru can be a social capital to increasing health status of pregnant women. Tuan Guru can influence of people and family to give support for pregnant women in fulfilling nutritional intake and minimalize food restriction behavior during pregnancy. However, the study that assess the role of Tuan Guru on nutritional intake is scarce. This study aimed to evaluate role of Tuan Guru on improving iron intake and minimalize food restriction behavior among pregnant women with anemia in East Lombok West Nusa Tenggara Indonesia

2. METHOD

2.1 Design

This study was quasi-experimental with pre and post test group design. This study tried an experiment on the intervention group with a comparison group. Changes in nutritional status particularly iron intake and also food restriction behavior among pregnant women with anemia will be seen as the main outcome in this study. Researchers did not randomize to include participants in study or control group.

2.2 Population, Samples, and Sampling

Pregnant women with anemia were the main subject in this study. The total number of pregnant women with anemia who have level of hemoglobin less than 11 gr/dl on the last month before study was approximately 128 women. The sample formula in this study used test for difference of two proportions with power 90%. Therefore, amount of the samples was 92 participants. But, to guard against the possibility of drop outs, so the total samples that collected in this study reached up to 100 pregnant women with anemia which divided two group (50 in study group and 50 in control group). Purposive sampling technic was used to choose the sample with inclusion criteria of participants include (1) pregnant women who have food restriction behavior during pregnancy, (2) the gestational age in 1st-2nd trimester of pregnancy, (3) they were Muslimah, (4) Sasak tribe and (5) they not have any complications during pregnancy.

However, during the study, there were 14 participants have been drop out both intervention and control group with some complications such as abortion (2), preterm premature rupture of membrane (1), normal labor with premature rupture of membrane (4), antepartum bleeding (1), section caesaria (4), breech delivery (1) and premature birth delivery (1). Therefore, the total number of participants that they had been finished of this study consisted of 86 pregnant women with anemia with 47 participants in study group and 39 participants in control group.

2.3 Instruments

This study used 24-hours food recall as an instrument tool that it used to measure nutrient intake in 2x24 hours especially intake of iron both pre and post intervention. Food recall is one of the primiliry four ways to measure dietary intake of individual. 24-hours food recall is also as one of the international dietary assesments that has been recognized globally. (Nnakwe, 2017) Validity and reliability should be priority to enhance good result of diatery assesment. To reduce the possibility of human error, it is very important to train all the personnel who will administer the testing instrument.

Therefore, to maintain the validity and reliability in this study, the measurement of nutrient intake was conducted by expert nutritionists from Tarara Public Health Service and used standarized graduated food models to quantify foods and beverages consumed. 24-hours food recall is a tabular instrument that asking participants what kind of foods and drinks they consume in last 24 hours such as rice, water, jus, fish, egg, vegetable, fruit and others. Not only kind of foods but also asking about how many they ate of every food and drink. After inquire participants, nutritionists calculate the portion of every food in gram (gr) and drink in milliliter (ml). *Nutrisurvey* from a Professional German Nutrition Software (EBISpro) was used in this study. It contains all useful functions which are typical for this kind of software (nutrient analysis and calculation of energy requirements, planning of diets, Diet History, Food Frequency, searching of nutrients in foods, handling of recipes, etc). In this study, this application was used to calculate the percentage of nutrient content both macro and micronutrients like caloric, protein, vitamin, iron, calcium and the others. This application has been adapted with standard of Indonesian Recommended Dietary Allowances (RDA).

In this study also used a questioner that was measured food restriction behavior among anemia pregnant women. There were ten questions in this questioner that was adopted from previous study by (Sabi'ah Khairi et al., 2014). The validity and reliability test has been carried out for this questioner. This questioner was focused to asking about the impact of food restriction culture in Sasak community that related with food restriction behavior among pregnant women with anemia during pregnancy. All of the questions were negative statement, therefore, score 1 was given if participants choose YES and 0 for answer NO. The result of this variable was categorized into restriction and not restriction

A module about nutritional need during pregnancy also was developed as a media education for participants to understand about daily nutrients intake during pregnancy. The content of module includes nutritional need during pregnancy, daily

nutrition intake for pregnant women, impact of low nutrition during pregnancy, anemia during pregnancy, impact of behavior food restriction for healthy mother and fetus, and also about Islamic value related to healthy pregnant women

2.4 Procedure

Two of Tuan Guru (religious leaders) have been recruited in this study with inclusion criteria were (1) Tuan Guru who live in the region of this study, (2) Tuan Guru who has strong influence and has many pilgrims in the area of study. Before study, Tuan Guru as religious leaders have been given a training by researchers about nutrition during pregnancy. Preparing of Tuan Guru was carried out in one week with some steps include (1) pretest procedure that aimed to know Tuan Guru's knowledge about nutrition during pregnancy before training, (2) carried out training for Tuan Guru that focused explanation and dialogue interactive about how the important nutrition during pregnancy, negative impact of anemia and food restriction culture among pregnant women and other materials in module, (3) posttest after the training. This aims so that Tuan Guru can understand about how the importance of nutrition during pregnancy and they can be able to give explanation to participants and family in study group about this topic.

The main intervention in this study is a health education that have given by Tuan Guru in study group about nutritional intake of pregnant women with anemia which is strengthened by Islamic value. This intervention is located in two Islamic boarding school (Al-Badriyah Boarding School and Daru Muhyidin Boarding School) and was conducted in two section. The section one was the health education by Tuan Guru about the importance of nutritional during pregnancy particularly about iron needs for mother and fetus and effects of deficit nutrition during pregnancy such us iron deficiency anemia. The section two was conducted in the next week after section one. In the section two, Tuan Guru gave lecture about negative impact of food restriction behavior for mother and fetus and Islamic value about the importance of health awareness during pregnancy. Health

education by Tuan Guru was conducted during two hours in each section.

The participants who were in control group not have been given lecture from Tuan Guru. They just got a module about nutrition during pregnancy and also measured their nutrient intake that used food recall (2x24 hours) both of pre and post intervention.

2.5 Analysis

The process tabulating data are included editing, coding and scoring. All collected data were entered and computed using SPSS software and applying Statistical test used paired t-test with significance at p value \leq 0.05.

2.6 Ethical Clearance

This study applied several ethic principles including freedom for respondents to be willing or unwilling as a research subject, maintaining confidentiality of respondent's identity (anonymity), and free from exploitation. This study was also through the ethical examination procedures by Health Research and Development Agency of Indonesian Ministry of Health (Badan LITBANGKES Kemenkes RI). The certificate number of ethical approval is LB.02.01/5.2/KE.285/2016.

3. RESULT

Overall it can be seen that majority of pregnant women with anemia in two groups had age range 20-35 years old (80.2%), had low education level approximately 71% (no school, elementary and junior high school), living in own residence (64%), multigravida (59,5%) and had moderate anemia 56%. (Table 1).

The majority pregnant women with anemia had low iron intake from Recommended Dietary Allowances (RDA) both study and control group. Table 2 show that the level of iron intake before intervention in study group approximately 19.3% from RDA, while in control group approximately 24.2%. But after intervention, there was significant increase intake of iron especially in study group that increased to 32.7% with p value=0.00 (Table 2).

Table 1. Demographics data of the pregnant women with anemia including age, level of education, residence, gravid status, gestational age and level of hemoglobin.

Characteristics	Control group		Intervention group	
	n	%	n	%
Age				
< 20 years old	5	13	10	2
20-35 years old	32	82	37	79
> 35 years old	2	5	0	0
Level of education				
Not school	3	6	2	4
Elementary school	15	38	16	34
Junior high school	9	23	17	36
Senior high school	10	26	7	15
University	1	3	5	11
Residence				
Living in own residence	28	72	30	64
Living together with parents or family	11	28	17	36
Gravid status				
Primigravida	15	38	20	43
Multigravida	24	62	27	57
Gestational age				
First Three months of pregnancy	11	23	8	17
Second Three months of pregnancy	28	77	39	83
Level of hemoglobin				
7-10 gr/dl (moderate anemia)	27	69%	20	43%
10-11 gr/dl (mild anemia)	12	31%	27	57%

Table 2. The number of iron intake according to Percentage from 100% Recommended Dietary Allowances (RDA) both pre and post intervention between intervention and control group.

Intake of iron	Percentage from 100% Recommended Dietary Allowances (RDA)			
	Intervention group	p value	Control group	p value
Pre test	19.3%	0.000	24.2%	0.022
Post test	32.7%		30.9%	

Table 3. Food restriction behavior among pregnant women with anemia during pregnancy.

Food restriction behavior	Intervention Group			Control Group		
	Pre test (%)	Post test (%)	p value	Pre test (%)	Post test (%)	p value
Restriction	81	45	0.000	88	72	0.001
Not restriction	19	55		12	28	

This study was also measured the habits of food restriction among anemia pregnant women. In table 3, it can be seen that the number of food restriction behaviour during pregnancy before study is the highest both of study and control group. The most of pregnant women with anemia in two group have the food restriction behaviour during pregnancy about 81% and 88% respectively. But after intervention, there was significant decrease of its habit especially in study group that decreased to 45% with p=0.00. Whereas about 72 % of participants in control group still have food restriction behaviour during pregnancy.

4. DISCUSSION

According to this study, there is significant impact the iron intake among pregnant women both study and control group. Although there are significant effect of two group, the main focus for this result is percentage increase between two group. In the table 2, it can be seen that there was increasing about 13.4 point of iron intake in study group. Whereas in the control group just increasing about 6.7 point. Theory of

diffusion-innovation which, said that one of the factors which related to how the agent of changes can be success, it is depending on how they can build the good relation and communication with community (Rogers, 1995). Tuan Guru in Lombok community as religious leaders occupy the highest social level. It means that they play significant role as a social capital in community particularly for West Nusa Tenggara descents. "Sufi Leader" is the main value for Sasak society and be a culture in Sasak tribe Lombok West Nusa Tenggara. It is mean that a Tuan Guru can control of behaviour and attitude of people that he leads (Habib et al., 2014).

The strength of a Tuan Guru in influencing his pilgrims depends on how often and how long he conducts lectures. In this study, Tuan Guru as a main figure is a religious leader who is very experienced and has long been as a leader. Therefore, he has many pilgrims in the area of study (Habib et al., 2014). Green's theory states that there are 3 factors that influence public health behaviour. Firstly, facilitating factors such as characteristics, knowledge, attitudes, beliefs and others. Secondly, enabling factors such as the availability of health facilities and infrastructure including funds and others. Thirdly, reinforcing factors such as encouragement from health workers, religious or community leaders and social capital in community (Ikbal, 2010). Related to this study, the reinforcing factor is a main point that it can be the basis for changes in the attitude and behaviour of pregnant women with anemia which are influenced by the role of Tuan Guru as an agent of change. Therefore, there was significant increase of iron intake after intervention especially in study group.

According to the table.3, there was significant impact in food restriction behaviour among pregnant women

between pre and post intervention especially in study group. The percentage of restriction behaviour before intervention in study group approximately 81%, whereas after intervention decrease to 45%. This result indicated that the health promotion which is delivered by Tuan Guru not only improving iron intake but also minimalized the value of restriction food among pregnant women.

In the Sasak community, the obedience to parents is very important. It means that all of their suggestions and prohibitions must be followed even though it is not good for healthy. This condition not only occurs in Lombok but also many regions in Indonesia have same value that the obedience to parents is the most important thing. However, many pregnant women can not be free to decided their nutritional need during pregnancy. One of factors how they can not made decision about their nutritional intake is the influenced of family. One of the qualitative studies conducted in East Lombok found that the inability to decide the nutritional intake of pregnant women with anemia is related with the lack of family support. In this context, families, especially parents or parents in-laws prohibit pregnant women to consuming of seafood such as shrimp, squid, and octopus. They have belief that eating of these seafood will be made complication of the delivery process. This belief made pregnant women with anemia be afraid to consume these seafood even tough actually they didn't believe in. Thus parents or husbands have a strong influence in decision making (Sabi'ah Khairi et al., 2013)

Main intervention that is used in this study is a health education that have given by Tuan Guru. Health education approach by Tuan Guru is combined with Islamic value which mentioned in Quran Surah Al-Maidah verse 86th, Allah said that "it does not prohibit something good

that has made been halal by Allah". This statement that has been conveyed by Tuan Guru made changes the view, attitude and behaviour of pregnant women with anemia and their family about food restriction. Therefore, they dare to try foods such as shrimps, squids and octopus that have been forbidden to eat during pregnancy. One of the studies that was conducted in the city of Bima, West Nusa Tenggara states that the potential role of religious leaders in preventing malaria shows that religious leaders who take malaria prevention measures have a positive correlation to be imitated. Therefore, they bring benefits to the community. This shows the potential role of religious leaders as agents of change can change of people's behaviour and attitudes (Ikbal, 2010)

However, there are some limitations of this study. Firstly, researcher only use food recall to measure nutritional intake of participants and did not make direct observation too know in detail what kind of food and how much they consume in daily. Researcher did not have enough time and assistance to do observation, therefore it makes low accuracy of the result study especially for nutrition contents of each food that consumed of pregnant women with anemia . Secondly, family members of pregnant women with anemia in study group such as husband and parents were not involved in this study. Therefore, pregnant women with anemia got less support from their family members particularly to fulfilling nutritional need during pregnancy and giving social support to maintain their health and avoid food restriction behaviour during pregnancy.

5. CONCLUSION

Tuan Guru has a strong influence in helping to increase nutritional intake and is able to minimize the food restriction behaviour among anemia pregnant women. The strategy which is involving Tuan Guru is quite

effective for improving of health behaviour in community. Therefore, it can be expanded to other areas that have the same regional characteristics. The result of this study can be a basis for government to make a policy related to involvement of religious leaders in health promotion and also can be basis for further study to modification in research method using observational for nutritional intake and involving family members and community leaders as social support for pregnant women.

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CONFLICT OF INTEREST

The authors declare the absence of conflict of interest

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