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**FERRITIN & HEMOGLOBIN LEVEL ON 0-6
MONTH BABIES FROM MOTHERS WHO
RECEIVED HEALTH EDUCATION ABOUT
LACTATION MANAGEMENT WITH
MODELLING APPROACH**

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2015**

FERRITIN & HEMOGLOBIN LEVEL ON 0-6 MONTH BABIES FROM MOTHERS WHO RECEIVED HEALTH EDUCATION ABOUT LACTATION MANAGEMENT WITH MODELLING APPROACH

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ABSTRACT

Introduction: Mother is the first and main support for baby that has a role as a health agent for children growth and development. Therefore, knowlwdge on lactation management is imperative as a foundation in maintaining the children's health, mainly nutritional status. Some Indicators of nutrition status are ferritin & hemoglobin level. This study aimed to find the effectiveness a health education about lactation management with Modelling Approach to the level of Ferritin and Hemoglobin on babies' age 0 – 6 months in Maros Regency, South Sulawesi Province, Indonesia

Method: *Quasi eksperimental pre-post with control group design* was used. 81 participants were purposively sampled, 41 were allocated tothe intervention group and 40 to the control group.The intervention given was a series of health education with modelling approach related to lactation management that conducted at the third trimester of pregnancy, first week after labor and after the babies aged 3 months. The blood sample from the babies aged 6 months were collected to check the ferritin and hemoglobin level. The data were analysed statistically with significant level $\alpha < 0.05$.

Results: The study found the average of ferritin and hemoglobin level on 6 monthbabiesin the intervention groupwere 42,85±36,34 ng/ml and 11,60±1,01 gr/dl, whereas for the control groupwere 71,86±83,93ng/ml and 11,17±0,78 gr/dl. However, the ferritin and hemoglobin level on babies between two groups were not different significantly ($p=0,071$ and $p=0,051$)

Conclusion: Health education about lactation management with Modelling Approach did not significantly affect the babies' level of ferritin and hemoglobin, however it effectively increased maternal knowlegeon how to maintain their babies health status.

Keywords: Ferritin, hemoglobin, health education, modelling

INTRODUCTION

Anemia is a medical condition in which the number of red blood cells or the hemoglobin is less than normal (Evelyn 2002). Iron deficiency anemia is a common problem especially in developing countries (WHO 2001). Anemia leads to debilitating physical (tiredness, lethargy, reduced exercise tolerance, dyspnea, dizziness, anginal pain, and palpitation) and mental (impaired cognitive function) symptoms, both of which negatively affect quality of life (Gangopadhyay, Karoshi et al. 2011).

Anemia affects nearly half of all pregnant women in the world: 52% in developing countries compared with 23% in the developed world (WHO 2001). Based on the 2010 National Health Survey (SUSENAS), rate of anemia in pregnant women amounted to 40.1% (Depkes RI 2010). Riskesdas (2007) showed that the prevalence of anemia among pregnant women of 24.5% and Riskesdas (2013) shows the prevalence of anemia among pregnant women in Indonesia amounted to 37.1% ie an increase of 12.6% It showed that anemia is quite high in Indonesia (Departemen Kesehatan RI 2007; Departemen Kesehatan RI 2013).

Iron Deficiency Anemia in pregnant women is still one of the health problems that can decrease productivity. During pregnancy the need for iron increased nearly threefold for fetal growth and the needs of pregnant women. The consequences of anemia in pregnant women can be a negative influence on the health of both mother and fetus, this situation can increase morbidity and mortality of mothers and children (Saidin and Khomsan 2003). It shortly became apparent, however, that after several months these infants born of anemic mothers developed pallor, which became most marked toward the end of the first year of life (Strauss 1933). It is too well known that iron is actively transported from mother to fetus. In the iron deficiency state, there is up regulation of iron transport proteins in the placenta thus ensuring an adequate iron supply to the growing fetus even in the anemic mother (Gambling, Danzeisen et al. 2001).

Current knowledge indicates that iron deficiency anemia in pregnancy is a risk factor for preterm delivery and subsequent low birth weight, and possibly for inferior neonatal health. Data are inadequate to determine the extent to which maternal anemia might contribute to maternal mortality. Even for women who enter pregnancy with reasonable iron stores, iron supplements improve iron status during pregnancy and for a considerable length of time postpartum, thus providing some protection against iron deficiency in the subsequent pregnancy (Allen 2000). Knowledge is one of the factors that stimulate or excite to the establishment of a health behavior. If a pregnant woman to know and understand how to prevent anemia and anemia will have a good health behavior with the hope to escape from the consequences or risks of anemia in pregnancy. Health behaviors such influence to decrease the incidence of anemia among pregnant women (Purbadewi and Ulvie 2013).

METHOD

This research has been conducted in Maros. Overall maternal sample of 81 people consisting of 41 people the intervention group and 40 control group according to the criteria. The method used in health education (penkes) is a demonstration, redemonstrasi and simulation, while penkes tools used are leaflets, flipcharts and Pantom. The method in this

research is a quasi experimental pre-post with control group design. Empowerment of mothers is to provide health education (penkes). Treatment (intervention) for the provision of penkes with a modeling approach. Penkes used is penkes with a modeling approach that focuses practices in the activity.

Penkes in this study held 3 times, namely penkes I using the modules of the management of lactation (breastfeeding) is given at the end of the third trimester of pregnancy. Penkes II by using module of the stimulation of growth and development 1 (infants 0-3 months) given in the first week post partum and penkes III by using modules of stimulation of growth of 2 (infants 3-6 months) given when the infant age 3 months. The learning process modeling has four phases, namely attention, retention, reproduction and motivation, most of these phases is an internal process of learning in a subject undergoing social learning.

The research instrument used in this study was a questionnaire and observation sheet. Variables were measured before and after the intervention is knowledge, family support and lactation status. Data analysis was performed using univariate and bivariate to see the general description of each variable, distribution, and frequency such as (gender and age) and the relationship of nutrient intake and nutritional status. The results obtained were tested using the chi-square test, Wilcoxon test and Mann Whitney test. Presentation of data using tables and descriptively explained.

RESULTS

1) Levels of ferritin baby

Table 1. Differences in the levels of ferritin infants aged 6 months between treatment groups with the control group

Group	Ferritin bayi	p
	Mean ± SD	
Treatment (n=34)	42,85± 36,34	0,071
Control (n=34)	71,86 ± 83,93	

Based on the results of research on infant ferritin levels between Group Treatment and Control are shown in Table 1 was obtained information that the average ferritin levels lower infant Treatment Group (42.85 ± 36.34) compared to the Control Group (71.86 ± 83.93).

Statistically, these results do not differ significantly ($p = 0.071$). Differences in the levels of ferritin newborns and infants aged 6 months can be seen in table 2 below.

2) Hemoglobin Baby

Table 2. The difference in hemoglobin levels among infants aged 6 months to Group Control Group Treatment

Group	Hemoglobin Baby	p
	Mean \pm SD	
Treatment (n=35)	11,60 \pm 1,01	0,051
Control (n=34)	11,17 \pm 0,78	

Based on data in Table 2, the mean hemoglobin level was higher in infants Treatment Group at 11.6 ± 1.01 , compared to the Control Group amounted to 11.17 ± 0.78 . Based on the unpaired t test, the obtained value of $p = 0.051$, meaning that there is no difference in the mean hemoglobin levels among infants aged 6 months Treatment Group and Control Group.

DISCUSSION

Iron deficiency anemia in pregnancy is a condition in women with hemoglobin levels below 11 g% in the first trimester and the third or hemoglobin levels <10.5 g% in the second trimester and is one cause of death in pregnant women (Fuady and Bangun 2013). There are conflicting views on the optimal Hb concentrations during pregnancy. One of the reasons for this is that the prepregnant hematologic state of the woman is rarely known, and this, to a large extent, determines the hematologic reactions during pregnancy. Thus, one important parameter is the knowledge of normal nonpregnant Hb variation. Another point is the use of ± 2 SD as limits for the variation of Hb levels during pregnancy. Finally, it is best to consider what is known about the physiological changes in plasma volume and in red cell mass during pregnancy that lead to physiological anemia (Sifakis and Pharmakides 2000).

The study found the average of ferritin and hemoglobin level on 6 monthbabiesin the intervention groupwere $42,85 \pm 36,34$ ng/ml and $11,60 \pm 1,01$ gr/dl, whereas for the control groupwere $71,86 \pm 83,93$ ng/ml and $11,17 \pm 0,78$ gr/dl. However, the ferritin and hemoglobin level on babies between two groups were not different significantly ($p=0,071$ and $p=0,051$). The consequences of anemia in pregnant women can be a negative influence on the health of both mother and fetus, this situation can increase morbidity and mortality of mothers and

children (Saidin and Khomsan 2003). It shortly became apparent, however, that after several months these infants born of anemic mothers developed pallor, which became most marked toward the end of the first year of life (Strauss 1933). It is too well known that iron is actively transported from mother to fetus. In the iron deficiency state, there is up regulation of iron transport proteins in the placenta thus ensuring an adequate iron supply to the growing fetus even in the anemic mother (Gambling, Danzeisen et al. 2001).

Transfer of iron from the mother to the fetus is supported by a substantial increase in maternal iron absorption during pregnancy and is regulated by the placenta (3, 4). Serum ferritin usually falls markedly between 12 and 25 wk of gestation, probably as a result of iron utilization for expansion of the maternal red blood cell mass. Most iron transfer to the fetus occurs after week 30 of gestation, which corresponds to the time of peak efficiency of maternal iron absorption. Serum transferrin carries iron from the maternal circulation to transferrin receptors located on the apical surface of the placental syncytiotrophoblast, holotransferrin is endocytosed, iron is released, and apotransferrin is returned to the maternal circulation. The free iron then binds to ferritin in placental cells where it is transferred to apotransferrin, which enters from the fetal side of the placenta and exits as holotransferrin into the fetal circulation. This placental iron transfer system regulates iron transport to the fetus. When maternal iron status is poor, the number of placental transferrin receptors increases so that more iron is taken up by the placenta. Excessive iron transport to the fetus may be prevented by the placental synthesis of ferritin. As discussed later in this review, evidence is accumulating that the capacity of this system may be inadequate to maintain iron transfer to the fetus when the mother is iron deficient (Allen 2000).

Based on Research Purbadewi and Ulvie (2013) showed that most of respondents (90,5%) are health include in reproductive age (20-35 years old) is 90,5%, the respondents of high school education level (SMA, SMK/equal level) are 61,9% and unemployed pregnant mothers are 59,5%. Percentage the knowledge level of respondents about anemia is equal between good and bad category which is 50% and the experience anemia of pregnant mother is 64,3%. The results of chi square analysis is p value $0,000 < 0,05$ ($p < \alpha$) with contingency coefficient rate of 0,480 (Purbadewi and Ulvie 2013). Based on Research Setyaningsih (2008) showed that knowledge was significantly related to the practice of mothers in preventing infant iron deficiency anemia ($p = 0.003$), and the attitude of mothers in significantly related to the practice of mothers in the prevention of anemia iron nutrition toddlers ($p = 0.028$) (Setyaningsih 2008). Less knowledge about anemia have an influence on health behaviors, especially when a woman during pregnancy, will result in less than optimal

health behavior of pregnant women to prevent anemia in pregnancy. Pregnant women who have less knowledge about anemia can result in a lack of consumption of foods containing iron during pregnancy is caused by ignorance (Purbadewi and Ulvie 2013).

CONCLUSIONS

The study found the average of ferritin and hemoglobin level on 6 month babies in the intervention group were $42,85 \pm 36,34$ ng/ml and $11,60 \pm 1,01$ gr/dl, whereas for the control group were $71,86 \pm 83,93$ ng/ml and $11,17 \pm 0,78$ gr/dl. However, the ferritin and hemoglobin level on babies between two groups were not different significantly ($p=0,071$ and $p=0,051$). Health education about lactation management with Modelling Approach did not significantly affect the babies' level of ferritin and hemoglobin, however it effectively increased maternal knowledge on how to maintain their babies health status.

REFERENCES

- allen, L. H. (2000). "Anemia And Iron Deficiency: Effects On Pregnancy Outcome." The American Journal Of Clinical Nutrition **71**(5): 1280s-1284s.
- Departemen Kesehatan Ri (2007). Laporan Riskesdas 2007. Jakarta, Badan Penelitian Dan Pengembangan Kesehatan Republik Indonesia.
- Departemen Kesehatan Ri (2013). Laporan Riskesdas 2013. Jakarta, Badan Penelitian Dan Pengembangan Kesehatan Republik Indonesia.
- Depkes Ri (2010). Survei Kesehatan Nasional (Susenas). Jakarta Depkes Ri.
- Evelyn, C. P. (2002). "Anatomi Dan Fisiologi Untuk Paramedis." Gramedia, Jakarta.
- Fuady, M. And D. Bangun (2013). "Hubungan Pengetahuan Ibu Hamil Tentang Anemia Defisiensi Besi Terhadap Kepatuhan Mengonsumsi Tablet Zat Besi." E-Journal Fk Usu **1**(1): 1-5.
- Gambling, L., R. Danzeisen, Et Al. (2001). "Effect Of Iron Deficiency On Placental Transfer Of Iron And Expression Of Iron Transport Proteins In Vivo And In Vitro." Biochemical Journal **356**(3): 883-889.
- Gangopadhyay, R., M. Karoshi, Et Al. (2011). "Anemia And Pregnancy: A Link To Maternal Chronic Diseases." International Journal Of Gynecology & Obstetrics **115**: S11-S15.
- Purbadewi, L. And Y. N. S. Ulvie (2013). "Hubungan Tingkat Pengetahuan Tentang Anemia Dengan Kejadian Anemia Pada Ibu Hamil." Jurnal Gizi **2**(1).
- Saidin, M. And A. Khomsan (2003). "Kandungan Radikal Bebas Dalam'feses Ibu Hamil Penderita Anemia Yang Disuplementasi Formula Kombinasi Ferro Sulfat, Asam Folat, Vitamin B6 Dan Vitamin B12 Secara Oral."
- Setyaningsih, S. (2008). Pengaruh Interaksi, Pengetahuan Dan Sikap Terhadap Praktek Ibu Dalam Pencegahan Anemia Gizi Besi Balita Di Kota Pekalongan Tahun 2008. Magister Ilmu Kesehatan Masyarakat. Semarang, Program Pasca Sarjana Universitas Diponegoro Semarang Tahun 2008 Tesis.
- Sifakis, S. And G. Pharmakides (2000). "Anemia In Pregnancy." Annals Of The New York Academy Of Sciences **900**(1): 125-136.
- Strauss, M. B. (1933). "Anemia Of Infancy From Maternal Iron Deficiency In Pregnancy." Journal Of Clinical Investigation **12**(2): 345.
- Who (2001). Iron Deficiency Anaemia: Assessment, Prevention And Control: A Guide For Programme Managers. Geneva, World Health Organization.