International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2015): 78.96 | Impact Factor (2015): 6.391

The Effect of Iron Plus Vitamin C Tablet on the Improvement of Haemoglobin Level to Pregnant Woman Tri Mester of Pregnant Woman at Pondok Benda Community Center in Southern Tangerang Indonesia

Erni[1], Rasumawati[2], Vera Suzana Dewi Haris[3]

Jakarta I State Health Polytechnics, Indonesia

Abstract: ***According to World Health Organization, 40% of maternal deaths in developing countries are associated with anemia in pregnancy. Hypoxsia from anemia can lead to shock and death of mother in childbirth difficult, although not bleeding. The National Policy set out throughout the Center for Public Health is the provision of one iron tablet daily as soon as possible after the nausea disappears early in pregnancy. Iron is very necessary especially in the third trimester of pregnancy. In the first trimester of pregnancy iron is needed a little because no menstruation occurs and the growth of the fetus is still slow. Based on the above description, the researchers are interested in knowing how the effect of Fe plus vitamin C tablets to increased levels of Hb in pregnant women in the third trimester Health Center Pondok Benda South Tangerang. This research was quasi experiment with pretest-posttest design. In this research, namely p emeriksaan pretest initial hemoglobin levels and post test that checks the final hemoglobin levels in the two groups perlaku an I (control) tablets administration of iron (Fe), and the treatment group II (cases) Award iron tablet (Fe + vitamin C. there is a relationship between education, and the adequacy of vitamin C with Hb levels of pregnant women (P = 0.000 and 0.001). it can be seen that that there is a difference between the levels of Hb levels beginning and end on before and after the administration of the Fe and Fe + Vitamin C with a P value of 0.000. It can be concluded that supplementation of Fe influence on changes in levels Hb in pregnant women with anemia. There are differences in Hb levels in pregnant women were given Fe and Fe plus vitamin C.***

Keywords: Anemia, iron tablet, vitamin C, pregnant

1. Introduction

About 40% of maternal deaths in developing countries are associated with anemia in pregnancy. Most of anemia in pregnancy is caused by iron deficiency and acute bleeding, even less so the two are berinteraksi.Anemia in pregnancy influences not good for the mother during pregnancy, childbirth, and the postpartum period an d the future. Complications - complications that can arise as a result of anemia is a miscarriage, prematurity, long labor due to fatigue the muscle of the uterus into contracting, postpartum hemorrhage due and maternal mortality in the absence of muscle contractions of the uterus, shock, infection either during childbirth or postpartum, and anemia weight (<4 gr%) may cause cordic decompensation. It is important to note that the compliance of pregnant women swallow Fe tablets, although from the reporting that the coverage of pregnant women who get Fe tablet is good enough, but if it is not consumed by pregnant women. The effect expected Fe tablet will not be achieved in general.

In addressing the problem of anemia in pregnant women Provincial health office of Central Java has a program of Implementation of tablets added blood commonly found in local health centers. Tablets added blood can avoid iron anemia and folic acid. Maternal iron requirement during pregnancy is 900 mg iron, including 300 mg for fetus and placenta 500 mg, for mother's erythrocyte addition, and 100 mg for fetal blood, pregnant mother requires 2 3 mg of iron per day (Manuaba, 2002). Iron is very necessary especially in the third trimester of pregnancy. In the first trimester of pregnancy iron is needed a little because no menstruation occurs and the growth of the fetus is still slow. Stepping on the second trimester to third, blood volume in the female body will increase to 35%. Increased blood production requires iron as the raw material, red blood cells must carry more oxygen to the fetus (Sinsin, 2008, p 65-66). The use of vitamin C is d iperlukan to improve za t of iron in the body. Increased consumption of vitamin C by 25 mg, 50 mg, 100 mg, 250 mg can increase iron absorption of 2,3,4 and 5 times. The administration of iron tablets along with other micronutrients is more effective in improving iron status, compared to iron supplementation only in single dosage form. Therefore, to increase the absorption of iron in the body, iron supplementation should be combined denganmikronutrien given another, such as vitamin C. Iron supplementation with a multivitamin more effective in improving iron status in pregnant women (Ahmed, 2001).

2. Methods

This research was quasi experiment with pretest-posttest design. In this research, namely pretest initial hemoglobin levels and post test that checks the final hemoglobin levels in the two groups perlaku an I (control) tablets administration of iron (Fe), and the treatment group II (cases) Award iron tablet (Fe + vitamin C). The population in this study were all pregnant women who contained in Puskesmas Pondok Benda South Tangerang. Samples are w anita pregnant anemia (Hb ≤ 10 g / dl). The research location

is Puskesmas Pondok Benda South Tangerang. This study is held from July to October 2016. Data analysis was done using the computer, with softw are statistical package SPSS / PC version 17.0.

3. Results

Table 1: Characteristics relationship with Kadar Pregnant Mother

Characteristics	Category	Final HB level g / dl (n (%)				Total	P value
		<7	7-7.9	10-10.9	> 11	n (%)	
Age	<20 years	0	7 (17.5)	0	0	7 (11.7)	
	20-30 years	0	25 (62.5)	10 (83,3)	3 (42,9)	38 (46,7)	0.081
	> 30 years	1 (100)	8 (20)	2 (16,7)	4 (57,1)	15 (25)	
Education	Basic	1 (100)	28 (70)	0	1 (14,3)	30 (50)	
	Medium	0	11 (27.5)	11 (91,7)	1 (14.3	23 (38.3)	0,000
	High	0	1 (2.5)	1 (8.3)	5 (71,4)	7 (11.7)	
Work	Work	0	6 (15)	3 (25)	4 (57, 1)	13 (21, 7)	0.053
	Does not work	1 (100)	34 (85)	9 (75)	3 (42.9)	47 (78,3)	
Adequacy of FE	Enough	0	0	0	1 (14, 3)	1 (1, 7)	
	Less	1 (100)	40 (100)	1 2 (100)	6 (85, 7)	59 (98.3)	
Adequacy of Vitamin C	Enough	0	0	0	2 (28, 6)	2 (3, 3)	0.001
	Less	1 (100)	40 (100)	1 2 (100)	5 (71, 4)	58 (96.7)	

Based on table 5.2 above, there is a relationship between education, and vitamin C adequacy with HB levels of pregnant women (P = 0,000 and 0.001).

Table 2: Table Difference HB levels before and after administration of FE and FE Plus Vitamin C

Supplement	HB levels	t / Z count	p-value (sig)
Supplementation FE + Vitamin C	Early	-11,392	0,000
	End		
FE supplementation	Early	-4,625	0,000
	End		

According to the table 2 above, it can be seen that that there is a difference between the levels of HB HB levels beginning and end on before and after the administration of the FE and FE + Vitamin C with a P value of 0.000.

4. Discussion

The results of this study indicate that there is an increase in Hb levels after intervention iron supplementation in respondents for 12 weeks. From the results of ujistatistik discovered that the average increase of 8.76 and 9.23. This is because with supplementation for 1 time semingg u can increase the intake of Fe and vitamin C so it can increase Hb levels of respondents. The same thing also shown Baharudin (2004) on research in Aceh on PGSD students (Primary Teacher Education) it is known that after administration of iron tablets and vitamin C exist an increase in Hb level of 3.28 g / dl. This is consistent with the theory that supplementation of Fe will improve oxygenation in the cells become better, metabolism increased and cell function will be optimal so that the food absorption to be better (Gutri, 1989 in Mulyawati, 2003). Supplementation of Fe tablets in the program prevention of nutritional anemia has been tested on a regular basis scientific effectiveness if carried out accordingly with doses and conditions. Grant program tablets add blood to pregnant women who suffer anemia shows tangible results. Factors that affect is the tablet drinking compliance added non optimal blood and grade status maternal hemoglobin before pregnancy is very low, so the number of tablets added blood consumed not enough to increase hemoglobin and iron deposit (MOH, 2005).

Iron has several essential functions in the body ie as a means of transporting oxygen from the lungs to the tissues of the body, as a tool transport electrons within cells, and as an integrated part of various reactions enzymes in body tissues. Although there are many inside food but many of the world's population suffers from iron deficiency including in Indonesia. This iron deficiency can affect against work productivity, cognitive appearance and immune system.

Iron inside t terdapa food in the form of heme iron such as hemoglobin and animal food myoglobin. The hem iron is absorbed into the cell mucosa as a whole porphyrin complex. Porphyrin ring inside the mucosal cell then broken down by special enzymes (hemoxygenase) and iron freed. The hem and non-hem iron pass through the same path and leave the mucosal cells in the same form by using the same conveyance. Hem iron absorption is not significantly affected food composition and gastrointestinal secretions as well as by iron status someone. The hem iron is only a small part of the iron obtained from food (approximately 5% of total iron food), especially in Indonesia, but that can be absorbed can reach 25% while non hem only 5% (Almatsier, 2001)

Vitamin C has a very important role in absorption iron mainly from non-iron hem found in many foods vegetable. Foodstuffs containing hem iron are capable absorbed as much as 37% while the group of iron food nonhem is only 5% that can be absorbed by body. Absorption of iron nonhem can be enhanced by the presence of absorption boosters such as vitamin C and other promoting factors such as meat, chicken, fish (Berdanier, 1998). Vitamin C acts as a powerful enhancer the reduction of ferric ions into ferrous ions, that is easily absorbed in the P H higher in the duodenum and small intestine (Almatsier, 2003) Vitamin C inhibits difficult formation of hemosiderin mobilized to free the iron when necessary. Large absorption in nonhem form increases fourfold when there is vitamin C. Vitamin C plays a role in removing iron from transferrin inside plasma to ferritin (Almatsier, 2003). Saidin's research results, 1998 reported that with giving vitamin C in the form of tablets or in the form of ingredients food (papaya fruit) can increase the absorption of iron pregnant women.

Giving tablets 100 mg vitamin C increases iron absorption 37.5% - 46.0% in pregnant women with makana n staple rice, corn and Tiwul, s edangkan with vitamin C in the form of foodstuff (250 g papaya) increase the absorption of 42 - 54.2%. Influence vitamin C or ascorbic acid is dose related and significant on all kinds of food (Svanberg, 1995). The results of the same study as conducted by Saidin and Seduk, 1997 that Supplementation of one iron pill (60 mg Fe) plus with vitamin C 150 mg per week showed influence which most effectively boosts Hb levels, but has not been able to improve real body reserves. Control group given a worm drug decreased Hb level of -0.26 g / dL.

The big difference in hemoglobin levels between the two groups can caused by iron deficiency, folic acid deficiency, vitamin C and because of chronic illness. Besides, the possibility is also due to the metabolism of iron and vitamin C as well as interactions in the body.

When viewed from the difference in the changes that occur after supplementation in both groups. K elompok treatment II more high changes in hemoglobin levels compared with the group Treatment I. Theoretically that Fe is required for hemopoesis (blood formation) and is also a deep essensil micronutrient producing hemoglobin, as well as a role in hemoglobin synthesis in red blood cells and myoglobin in muscle cells.

P emberian iron tablets with the addition of vitamins C can increase hemoglobin levels highest compared to other groups. Provision of vitamin C as much as 100 mg with considering the need for vitamin C on the state of pregnancy and the amount absorbed by efficiently by the body.

In pregnant conditions the recommended needs will ascorbic acid as much as 85 mg to meet normal needs. If Ascorbic acid intake of 100 mg / day will be absorbed with an efficiency of 8 0-0 percent (Kustanto, 2003) with the provision of vitamin C in tablet form can increase iron absorption of pregnant women. Provision of vitaminC tablets 100 mg increase iron absorption 37.5-46.0% in pregnant women.

5. Conclusion

There is effect of supplementation on changes in levels of Fe Hb in pregnant women with anemia. There are differences in Hb levels in pregnant women were given Fe and Fe plus vitamin C.

Referrences

[1] Ojofeitimi EO, Ogunjuyigbe PO, Sanusi, et al. Poor Dietary Intake of Energy and Retinol among Pregnant Women: Implications for Pregnancy Outcome in Southwest Nigeria. *Pak. J. Nutr.* 2008; 7(3):480-484.
[2] Fatimah, Hadju et al. Pola Konsumsi dan Kadar Hemoglobin Pada Ibu Hamil Di Kabupaten Maros,Sulawesi Selatan. Makara,Kesehatan. 2011;Vol. 15(1): 31-36
[3] Samhadi. *Malnutrisi, Keteledoran Sebuah Bangsa* 2008 [diakses tanggal 28 September 2007]. Tersedia di: *www.kompas.com*.
[4] Cunningham dan Garry F. O*bstetri Williams* Edisi 21 Vol 2 [Hartono et al., trans]. Jakarta: Penerbit Buku Kedokteran EGC, 2001.
[5] Sukrat B. and Sirichotiyakul S. The prevalence and causes of anemia during pregnancy in Maharaj Nakorn Chiang Mai Hospital. *J. Med. Assoc. Thai* 2006; 89(Suppl 4):S142-146
[6] Broek van den NR, Letsky EA. Etiology of anemia in pregnancy in south Malawi. *Am. J. Clin. Nutr.* 2000; 72(1):247S-256S.
[7] Hinderaker SG, Olsen BE, Lie RT, et al. Anemia in pregnancy in rural Tanzania: associations with micronutrients status and infections. *Eur. J. Clin. Nutr.* 2002; 56(3):192-199.
[8] Departemen Kesehatan R.I. *Program Penanggulangan Anemia Gizi pada Wanita Usia Subur (WUS);* (Safe Motherhood Project: A Partnership and Family Approach). Direktorat Gizi Masyarakat. Jakarta: Direktorat Jenderal Bina Kesehatan Masyarakat Depkes, 2001.
[9] Ningrum.. Pemberian Tablet Fe Pada Ibu Hamil Untuk Mencegah Anemia. 2009. Http://Ningrumwahyuni.Wordpress.Com/2009/09/04/Pemberian--- Tablet---Fe---Pada---Ibu---Hamil---Untuk---Mencegah---Anemia
[10] Linda J Harvey, Jack R Dainty, Wendy J Hollands, et al. Effect of high-dose iron supplements on fractional zinc absorption and status in pregnant women. American Journal of Clinical Nutrition, 2007 Vol. 85, No. 1, 131-136.
[11] Almatsler, Soenita. Prinsip Dasar Ilmu Gizi. PT. Gramedia Pustaka. 2009. Jakarta
[12] Wirakusumah S. Perencanaan Menu anemia Gizi Besi. Edisi 2. Penerbit Trubus Agriwidya. 2009. Jakarta
[13] Arisman. Buku Ajar Gizi untuk Kebidanan. Penerbit Muha Medika, 2009. Jogyakarta
[14] Regina Tatiana Purba. Departemen Obstetri dan Ginekologi, Fakultas Kedokteran Universitas Indonesia/. Perbandingan Efektivitas Terapi Besi Intravena dan Oral pada Anemia Defisiensi Besi dalam Kehamilan. Maj Kedokt Indon, Volum: 57, Nomor: 4, April 2007. Rumah Sakit Dr. Cipto Mangunkusumo, Jakarta
[15] Winkjosastro Hanifa. Ilmu Kebidanan. Penerbit PT.EGC.2002. Jakarta 2007; Gibney *et al*., 2008).