ICASH-A65

THE ASSOCIATION BETWEEN KNOWLEDGE AND IRON TABLET CONSUMPTION AMONG PREGNANT WOMEN IN PONDOK KACANG, SOUTH TANGERANG CITY, INDONESIA

Siti Riptifah Tri Handari[1,2,*], Munaya Fauziah[1,2], Nirmala Harahap[2], Mohammad Ainul Maruf[2,*]

[1]*Doctoral student at the Faculty of Public Health, Diponegoro University, Indonesia*
[2]*College of Public Health, University of Muhammadiyah Jakarta, Indonesia*

*Corresponding author's email: ndari_drh@yahoo.co.id , el_ayn_morve@yahoo.com

ABSTRACT

Background: *Based on 2013 Indonesian Basic Health Research (IBHR), anemia prevalence among pregnant women in Indonesia was still high. Some studies found that knowledge is one of the main factor which affects the consumption of iron tablet among pregnant women. The Pondok Kacang Timur Health Center (Puskesmas Pondok Kacang Timur) in South Tangerang City was selected as our study site due to their coverage on iron tablet consumption was the lowest in the city. South Tangerang City itself is a new city or town located in the southern part of the Jakarta Capital City (DKI Jakarta).*
Aims: *This study aimed to know the association between knowledge about iron tablet and iron tablet consumption among pregnant women in Pondok Kacang, South Tangerang City, Indonesia.*
Methods: *This study was analytical descriptive research with cross-sectional method. It was conducted from 25 July to 20 August 2016. The sample size was calculated using Lemeshow formula so it was obtained a total of 120 formerly pregnant women who currently have infant age of 0 to 6 years old as participants. The data collection was done through interviews using a questionnaire.*
Results: *The study revealed that only 34.2% of respondents took iron tablet as given by health worker during their pregnancy. Mean score of knowledge was 7.8 of 13 questions. It was found that there was a correlation between knowledge and iron tablet consumption.*
Conclusion: *The study suggests to improve knowledge of pregnant women in order to increase their compliance on iron tablet consumption.*

Keywords: *Knowledge, iron tablet, pregnant women.*

INTRODUCTION

According to Indonesian Demographic and Health Survey (IDHS), maternal mortality rate increased from 228 deaths per 100,000 live births in 2007 to 359 per 100,000 live births in 2012 [1, 2]. The high of anemia prevalence is one of main factors which lead maternal mortality. Based on WHO (2013), pregnant women are stated suffer from anemia is when their hemoglobin (Hb) was less than 11 gr/dl in trimester I and III and less than 10.5 gr/dl in trimester II [3]. In Banten province, there was increasing maternal mortality rate from 216 deaths per 100,000 live births in 2013 to 230 deaths per 100,000 live births in 2014 causing by bleeding (37%), infection (22%) and hypertension (14%) [4]. In South Tangerang city, the highest number of maternal death causes are hemorrhage (60%) and preeclampsia/eclampsia (30%). Besides, it was also found that 55.8%

pregnant women did not regularly consume iron tablet during pregnancy with a reason of nausea, dizziness, and uncomfortable even forget to take it [5].

Only 18% of pregnant women who reported consume iron tablets, while there were 80.7% of pregnant women in Indonesia getting 90 iron tablets from health worker during pregnancy [6]. Iron deficiency anemia may increase the risk of death in childbirth, bleeding before or during give birth, the fetus and mother are susceptible to infection, miscarriage, and increase the risk of premature birth [7]. Noncompliance of pregnant women to consume iron tablet is one of the most influential factors for the high prevalence of anemia [8].

Several studies found that knowledge was highly correlated with iron tablet consumption [9-11]. Kamidah (2015) found that knowledge, education and family's support are the factors that influence pregnant women's compliance to consume iron tablets in Boyolali [9]. Kautshar (2013) found that knowledge, family support, role of health worker and availability of iron tablet were correlated with iron tablet consumption in Makassar [10]. Iswanto (2012) found that there was a correlation between knowledge and iron tablet consumption in Klaten [11].

This study aimed to know the association between knowledge about iron tablet and iron tablet consumption among pregnant women in Pondok Kacang, South Tangerang City, Indonesia. The results of this study was expected to be an input for program managers and policy makers to continue and improve the education program on anemia and iron tablet consumption.

METHODS

This study was part of a larger study, "Determinants of Iron Tablet Consumption Compliance among Pregnant Women in Pondok Kacang Timur Health Center in 2016". The research was conducted because of the low provision of iron tablet among pregnant women in South Tangerang City. This study was analytical descriptive design. Cross-sectional design was used in this study. Data collection started from July 25th to August 20th, 2016. Eligible respondents of this study were women who had infants aged 0-6 months, living in Pondok Kacang Timur during pregnancy, and willing to be interviewed as respondents. There were 400 women met the eligibility criteria. The sample size was determined using Lameshow's hypothesis test formula for two population proportions [12]. With 95% confidence interval, it was obtained 120 formerly pregnant women as participants. Sampling technique was using simple random sampling regardless strata that exist in the population. The instrument used in this study was a questionnaire. The questionnaire was tested to determine the validity and reliability.

Independent variable in this study was the knowledge on iron tablet and anemia, while dependent variable was iron tablet consumption. There were 13 questions about knowledge on iron tablet and anemia. One question about iron tablet consumption was a binary variable: whether mother always consume all iron tablets which has been given at the pregnancy or antenatal care. The first analysis was univariate analysis which aimed to determine the distribution, frequency and proportion of the observed variables. The second analysis was bivariate analysis which aimed to determine the relationship between independent and dependent variables. Statistical test used was the chi square (x^2) test and Fischer exact, this test was used or the data would be analyzed was the type of categorical data. To see the significance of result of statistical calculation, it was used the limit of significance with alpha = 0.05 so that if it was found the results of statistical analysis p value < 0.04 then the association between two variables were declared as significant. For examine the association between score of knowledge and iron tablet consumption, statistical test used was the two sample t test with equal variances because the data was normally distributed and had equal variances.

RESULTS

Iron tablet consumption refers to whether pregnant women always consume iron tablet which given by health worker when they did antenatal care. This study revealed that 65.8% of respondents did not consume all iron tablets and more than one-third or 34.2% of pregnant women consume all iron tablets.

Table 1. Frequency and percentage distribution of iron tablet consumption (n = 120)

Measured variable	Frequency	Percent
Iron Tablet Consumption		
Do not consume all iron tablets	79	65.8
Consume all iron tablets	41	34.2

Respondent's characteristic are shown in Table 2. Respondents with age of 30 years old and over (55.0%) is larger than respondents with age of less than 30 years old (45.0%). Only few of respondents (10.8%) had completed university, more than 40% had completed each senior and junior high school, and more than 5% of respondents had completed elementary school. Majority of respondents are unemployed, 10% work for private employer, 7.5% work for themselves and less than 1% of respondents work for government.

Table 2. Frequency and percentage distribution of respondent's characteristics (n = 120)

Variables	Frequency	Percent
Age Group		
30 and over	66	55.0
Less than 30	54	45.0
Mean = 30.22, S.D.=5.17, Min= 15, Max = 40		
Educational Level		
University	13	10.8
Senior High School	50	41.7
Junior High School	49	40.8
Elementary school	8	6.7
Occupational Status		
Unemployment (House-wife)	98	81.7
Private employee	12	10.0
Entrepreneur	9	7.5
Government officer	1	0.8

Table 3 shows knowledge about iron tablet. There were 13 questions that we asked to respondents on how extent they know about iron tablet. Nine questions could be answered by more than half of respondents, such as mineral water can be drank for taking iron tablet and do not use tea or coffee (nearly 90%), the use of iron tablet which is to prevent anemia (more than 80%), the function of iron tablet is to increase the formation of red blood cells (more than 70%), pregnant women are the most in need of taking iron tablet (more than 70%), the danger of anemia when giving birth is bleeding (nearly 70%), the danger of anemia when pregnancy is miscarriage (65%) pregnant women need to take iron tablet during trimester II and III of pregnancy (more than 50%), the signs of anemia of pregnant women are dizziness, weakness, fatigue and lethargy (more than 50%), the danger of anemia for infant is jaundice (more than 50%). Besides, three questions could only be answered by less than half of respondents, such as the meaning of anemia which is

decreasing level of hemoglobin in the bloods (40%), the number of iron tablet needed during pregnancy is 90 tablets (more than 40%), a test to examine anemia is blood test (more than 40%), the impact of no taking iron tablets is anemia (nearly 50%).

Table 3. Knowledge on whether respondent know about iron tablet (n = 120)

No	Knowledge component	Freq.	Percent
1	The use of iron tablet		
	No	20	16.7
	Yes	100	83.3
	Total	120	100.0
2	The function of iron tablet		
	No	33	27.5
	Yes	87	72.5
	Total	120	100.0
3	The need of iron tablet for pregnant women		
	No	56	46.7
	Yes	64	53.3
	Total	120	100.0
4	Number of iron tablet needed during pregnancy		
	No	68	56.7
	Yes	52	43.3
	Total	120	100.0
5	Water to be drank for taking iron tablet		
	No	13	10.8
	Yes	107	89.2
	Total	120	100.0
6	Who need iron tablet		
	No	34	28.3
	Yes	86	71.7
	Total	120	100.0
7	The impact on having no iron tablet		
	No	62	51.7
	Yes	58	48.3
	Total	120	100.0
8	Definition of anemia		
	No	72	60.0
	Yes	48	40.0
	Total	120	100.0
9	The sign of anemia of pregnant women		
	No	57	47.5
	Yes	63	52.5
	Total	120	100.0
10	A test to examine anemia		
	No	70	58.3
	Yes	50	41.7
	Total	120	100.0
11	The danger of anemia when pregnancy		
	No	42	35.0
	Yes	78	65.0
	Total	120	100.0
12	The danger of anemia when giving birth		

	No	37	30.8
	Yes	83	69.2
	Total	120	100.0
13	The danger of anemia for infant		
	No	59	49.2
	Yes	61	50.8
	Total	120	100.0

Table 4 shows percentage distribution of each knowledge by iron tablet consumption. Based on the statistical test using chi square and exact Fischer, it was shown that questions number 1, 2, 4, 6, 9, 11 and 12 were highly correlated with iron tablet consumption. Questions number 3, 5, 7, 8, 10 and 13 were not significantly associated with iron tablet consumption.

Table 4. Percentage distribution of knowledge by iron tablet consumption (n = 120)

No	Knowledge on iron tablet	Iron tablet consumption		N	p-value
		Did not consume all tablets	Consumed all tablets		
1	The use of iron tablet				
	No	90.0%	10.0%	20	0.018
	Yes	61.0%	39.0%	100	(Fischer)
	Total	65.8%	34.2%	120	
2	The function of iron tablet				
	No	81.8%	18.2%	33	0.023
	Yes	59.8%	40.2%	87	
	Total	65.8%	34.2%	120	
3	The need of iron tablet for pregnant women				
	No	73.2%	26.8%	56	0.111
	Yes	59.4%	40.6%	64	
	Total	65.8%	34.2%	120	
4	Number of iron tablet needed during pregnancy				
	No	88.2%	11.8%	68	0.000
	Yes	36.5%	63.5%	52	
	Total	65.8%	34.2%	120	
5	Water to be drank for taking iron tablet				
	No	76.9%	23.1%	13	0.539
	Yes	64.5%	35.5%	107	(Fischer)
	Total	65.8%	34.2%	120	
6	Who need iron tablet				
	No	79.4%	20.6%	34	0.049
	Yes	60.5%	39.5%	86	
	Total	65.8%	34.2%	120	
7	The impact on having no iron tablet				
	No	71.0%	29.0%	62	0.220
	Yes	60.3%	39.7%	58	
	Total	65.8%	34.2%	120	
8	Definition of anemia				
	No	70.8%	29.2%	72	0.157

	Yes	58.3%	41.7%	48	
	Total	65.8%	34.2%	120	
9	The sign of anemia of pregnant women				
	No	75.4%	24.6%	57	0.035
	Yes	57.1%	42.9%	63	
	Total	65.8%	34.2%	120	
10	A test to examine anemia				
	No	71.4%	28.6%	70	0.126
	Yes	58.0%	42.0%	50	
	Total	65.8%	34.2%	120	
11	The danger of anemia when pregnancy				
	No	78.6%	21.4%	42	0.031
	Yes	59.0%	41.0%	78	
	Total	65.8%	34.2%	120	
12	The danger of anemia when giving birth				
	No	94.6%	5.4%	37	0.000
	Yes	53.0%	47.0%	83	(Fischer)
	Total	65.8%	34.2%	120	
13	The danger of anemia for infant				
	No	67.8%	32.2%	59	0.656
	Yes	63.9%	36.1%	61	
	Total	65.8%	34.2%	120	

Table 5 shows score of knowledge by iron tablet consumption. Of respondent who did not take iron tablet, percentage of the number of correct decreases while the number of correct answer increases. Meanwhile, of respondent who take iron tablet, percentage of the number of correct increases according to the number of correct answer increases. Table 5 also shows the mean score of knowledge among respondents is 7.8 of 13 questions.

Table 5. Score of knowledge on iron tablet consumption (n = 120)

Number of correct answer	**Iron tablet consumption**		**N**
	No	**Yes**	
3	100.0%	0.0%	2
4	100.0%	0.0%	8
5	91.7%	8.3%	12
6	92.9%	7.14%	14
7	89.5%	10.5%	19
8	63.2%	36.8%	19
9	38.5%	61.5%	13
10	35.3%	64.7%	17
11	35.7%	64.3%	14
12	0.00%	100.0%	1
13 (all correct)	0.00%	100.0%	1
Total	65.8%	34.2%	120
Mean score = 7.8			

It was categorized as sufficient knowledge if respondents had score above mean score (7.8) and insufficient knowledge if respondents had score below mean score (7.8). This study revealed that 54.2% of respondents had sufficient knowledge.

Table 6. Frequency and percentage distribution of mean score of knowledge (n = 120)

Measured variable	Frequency	Percent
Knowledge on iron tablet		
Sufficient (above 7.8)	65	54.2
Insufficient (below 7.8)	55	45.8

Table 7 shows distribution of score of knowledge by iron tablet consumption. It was shown that there were significant differences between knowledge among those who took iron tablet and knowledge among those who did not take iron tablet. Meanwhile, mean score of knowledge among those who took iron tablet is higher than those who did not take iron tablet, 9.4 and 6.9 respectively.

Table 7. Distribution of score of knowledge by iron tablet consumption (n = 120)

Iron tablet consumption	n	Mean	Std. Dev.	T (t-test)	p-value
No	79	6.911392	2.04557	-6.8753	0.0000
Yes	41	9.439024	1.613208		
Combined	120	7.775	2.25091		

DISCUSSION

This study found that only 34.2% of respondent consumed all tablet which given by health professional. The result of this study was in line with the 2013 Indonesia Basic Health Research (IBHR) which revealed that only 33,3% of pregnant women consumed all tablets [13]. According to the 2014 Health Profile of South Tangerang City, coverage of iron tablet provision in the third trimester were below 95% in 6 health care centers (of 26 health care centers): one of them was Pondok Kacang Timur health care centers [5]. It means there were many pregnant women who did not consume all tablets which given by health professional whereas the government had been promoting a program for pregnant women to take a minimum of 90 iron tablets during pregnancy. In addition, iron deficiency during pregnancy poses a risk of increased morbidity and mortality, not only for the mother but also the baby [14].

This study revealed that 54.2% of respondents had sufficient knowledge and 45.8% had insufficient knowledge. It was shown that there were association between score of knowledge and iron tablet consumption. Mean score of knowledge among those who took iron tablet is higher than those who did not take iron tablet. This result was in line with preced-proceed theory of Green which mention knowledge as predisposing factor for practice [15]. Notoatmodjo mentioned that knowledge domain was very important for the formation of individual's actions [16]. A study in Banyumas, Central Java, in 2008 found that knowledge plays an important role in determining the attitudes and actions of mothers in consuming iron tablet during pregnancy [17]. A study in Jombang, East Java, in 2011 also revealed that there was association between knowledge and iron tablet consumption [18]. A study in 2012 by Budiarni and Subagia also showed that there was a significant relationship between knowledge on iron tablet and iron tablet consumption [8].

CONCLUSION

This study showed that only 34.2% of respondents consuming iron tablet which given by health professional when they did obstetric. Because of South Tangerang City was an emerging city, the characteristics of respondents seemed appropriate. More than half of respondent were in

age group of 30, with more than 80% of respondent had completed high school. However, more than 80% of respondents were housewife. More than half respondents could correctly answer at least 9 of 13 questions. Bivariate analysis result showed that some items of knowledge are correlated with iron tablet consumption, such as the use of iron tablet, the function of iron tablet, number of iron tablet needed during pregnancy, who need iron tablet, the sign of anemia of pregnant women, the danger of anemia when pregnancy, and the danger of anemia when giving birth. Respondents who took iron tablet have better knowledge, was shown as a percentage on the number of correct answers always greater as the number of correct questions increases. Using t-test, this study also revealed that the mean score of knowledge were significantly different between those who took and who did not took iron tablet. This study recommends to increase the knowledge of iron tablet on pregnant women. It can be done using a variety of media. Health providers need to provide comprehensive information about the benefits of taking iron tablet and the risks of not taking iron tablet, so pregnant women will be encouraged to take iron tablet as prescribed.

ACKNOWLEDGEMENT

We acknowledge information and assistance from Pondok Kacang Timur Health Center.

REFERENCES

[1] Statistics Indonesia, Indonesia Population and Family Planning Board, Ministry of Health, ICF International. 2007 Indonesia Demographic and Health Survey. Jakarta: Statistics Indonesia; 2008.
[2] Statistics Indonesia, Indonesia Population and Family Planning Board, Ministry of Health, ICF International. 2012 Indonesia Demographic and Health Survey. Jakarta: Statistics Indonesia; 2013.
[3] WHO Indonesia. Pelayanan Kesehatan Ibu di Fasilitas Kesehatan Dasar dan Rujukan Pedoman bagi Tenaga Kesehatan. Jakarta: WHO, UNICEF, KEMENKES RI; 2013.
[4] Banten Health Office. Banten Health Report. Serang: Banten Health Office; 2015.
[5] South Tangerang City Health Office. The Health Profile of South Tangerang City: Improving Primary Care, Education and Public Health. South Tangerang: 2014.
[6] National Institute of Health Research and Development (NIHRD). Indonesia Basic Health Research (Riskesdas). Jakarta: Indonesia Ministry of Health; 2010.
[7] Indonesia Ministry of Health. Indonesia Health Profile 2014. Jakarta: Indonesia Ministry of Health; 2014.
[8] Budiarni, Subagio. Hubungan Pengetahuan, Sikap dan Motivasi dengan Kepatuhan Konsumsi Tablet Fe pada Ibu Hamil. Journal of Nutrition College. 2012;1 No. 1 Tahun 2012.
[9] Kamidah. Faktor-Faktor yang Mempengaruhi Kepatuhan Ibu Hamil Mengonsumsi Tablet Fe di Puskesmas Simo Bayolali. Jurnal Ilmu Kesehatan. 2015;12 No. 1 Tahun 2015.
[10] Kautshar N, Suriah, Jafar N. Kepatuhan Ibu Hamil dalam Mengonsumsi Tablet Zat Besi di Puskesmas Bara-Baraya Kota Makassar Tahun 2013. Jurnal Universitas Hasanuddin Makassar. 2013.
[11] Iswanto B. Hubungan Pengetahuan Ibu Hamil tentang Anemia Defisiensi Besi dengan Kepatuhan Mengonsumsi Tablet Besi di Puskesmas Karangdowo Klaten Tahun 2012: Universitas Muhammadiah Surakarta; 2012.
[12] Lameshow S, David WHJ. Besar Sampel dalam Penelitian Kesehatan (terjemahan). Yogyakarta: Gadjah Mada University Press; 1997.
[13] National Institute of Health Research and Development (NIHRD). Indonesia Basic Health Research (Riskesdas). Jakarta: Indonesia Ministry of Health; 2013.
[14] Hamalainen H, Hakkarainen, Heinonen K. Anemia in the first but not in the second or third trimester is a risk factor for low birth weight. Clin Nutr. 2003;22:271-5.
[15] Green L, Kreuter M. Health program planning: An educational and ecological approach. 4 ed. New York: McGraw-Hill; 2005.
[16] Notoatmodjo S. Pendidikan dan Perilaku Kesehatan. Jakarta: Rineka Cipta; 2003.
[17] Rahmawati F. Kepatuhan Konsumsi Tablet Besi Folat pada Ibu Hamil dan Faktor yang Mempengaruhi. Semarang: Diponegoro University; 2012.
[18] Susilawati. Hubungan pengetahuan dan sikap dengan kepatuhan mengkonsumsi tablet besi folat pada ibu hamil dengan kejadian anemia gravidarum di Puskesmas Jabon Jombang. Surakarta: Universitas Sebelas Maret Surakarta; 2011.