

Correlation of Iron Tablet (Fe) Consumption in Adolescent Pregnant Women with Birth Weight of Infant

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ABSTRACT

Background: Fe tablets have benefits such as reducing the risk of death during bleeding, preventing anemia, and increasing nutritional intake for the fetus. Teenage pregnant women have a higher risk of anemia and death than pregnant women of sufficient age. The impact of low consumption of iron tablets in adolescent pregnant women causes BBLR. Most pregnant women forget to consume and do not know the benefits of iron tablets given.

Objective: This study aimed to analyze the relationship between consumption of iron tablets for pregnant women in adolescent pregnant women with the weight of their babies.

Methods: This study was a quantitative study using secondary data from the 2017 IDHS with a sample of 692 respondents based on inclusion criteria in the form of teenage pregnant women who gave birth to their first child and consuming iron tablets during pregnancy or not, while the exclusion criteria were teenage pregnant women who did not know to consume iron tablets or not and the child born is not the first child. Data analysis in research using the test Chi-Square.

Results: Adolescent pregnant women who consumed iron tablets were 70.8% and those who did not consume were 29.2%. Most of the categories of babies born to non-BBLR were 89.3%. Meanwhile, the BBLR category was 10.7%. The results of the statistical test Chi-Square showed p-value = 0.005 < 0.05 (95% CI) and the Contingency Coefficient showed a value of 0.106.

Conclusion: There is a relationship between the consumption of iron tablets in adolescent pregnant women with the weight of babies born with low birth weight and not low birth weight in Indonesia.

Key words: iron tablets, teenage pregnant women, birth weight

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INTRODUCTION

Iron (Fe) tablets are the most important mineral tablets in the order of red blood cells or hemoglobin to meet the body's needs¹. Iron is naturally obtained from foods such as whole grains, red meat, beans, green vegetables, and liver. The factors that cause iron intake not in accordance with the needs of the body, one of which is a lack of knowledge about foods containing iron and proper food processing methods. Anemia or lack of blood can meet the daily needs of human consumption with low iron intake. The high number of anemia cases is due to the low iron intake for each individual. So it requires the intake of other iron such as iron tablets or added blood because food ingredients in which there is iron content, including foods that are expensive.

Pregnant women are a group that is prone to malnutrition, especially iron deficiency in the body to meet the needs of the fetus⁴. Iron (Fe) tablets are one of the alternatives to meet the needs of iron intake needed by pregnant women, so that during pregnancy, pregnant

women are required to consume at least 60 tablets of Fe tablets. The need for iron during pregnancy is around 800 mg to 1040 mg, as much as 300 mg is needed for fetal growth⁴. Benefits for pregnant women when taking iron tablets include reducing the risk of death during bleeding, preventing anemia, and increasing nutritional intake for the fetus. If pregnant women experience a lack of blood it will have a negative impact on the condition of the baby to be born. The low level of compliance with Fe tablets consumption in pregnant women is due to several reasons, such as forgetting, not following the recommendations of health workers and side effects of Fe³ tablets. Inadequate consumption of iron tablets in pregnant women at this time is because most pregnant women forget to consume and do not know the benefits of iron tablets provided by health workers for the body of pregnant women and their fetuses⁵. Health workers play an important role in increasing awareness of pregnant women to consume Fe⁶ tablets. High knowledge regarding the importance of the nutritional status of pregnant women, especially about anemia, will have an



effect on the level of compliance with the consumption of iron tablets well⁷.

The mother's age at pregnancy can also affect the condition of the baby being born. Teenage mothers have a short cervix and a small uterine volume, this causes problems in the fetus⁸. According to Sari et al (2017), it is evident that the cause of the occurrence of babies with low birth weight is due to pregnancies at a risky age or are still teenagers. Therefore, the consumption of iron tablets during adolescence is highly recommended to overcome the occurrence of babies born with stunting and LBW conditions. According to Retni, Margawati and Wijanarko (2017), teenage pregnancies aged 15-18 years are very risky for pregnant women because the fetus in the womb requires high nutritional intake to achieve perfect reproductive organs and good physical development of the fetus but in fact the food intake is only sufficient to meet the needs of the body of pregnant women only. Inhibition of fetal growth and development due to adolescent reproductive organs that are not ready for pregnancy can add to the burden on the mind and result in stress, which makes it difficult for socio-economics. Linear growth is generally completed at the age of 18 years, followed by the maturation of the pelvic cavity growth until the age of 22 years and the maximum bone mass is reached until the age of 25 years⁹. Pregnant women of high risk age (under 20 years and over 35 years) consider that age and pregnancy have no relationship between the two, even though pregnant women of a risky age are likely to get pregnancy complications and pose a greater risk than pregnant women who are not at the age at risk¹⁰. Maternal age, both during pregnancy and childbirth, is at the age of 20-35 years.¹

Berat badan bayi saat lahir langsung ditimbang setelah lahir dengan menggunakan alat pengukuran berat badan yang relatif murah dan mudah digunakan yaitu timbangan bayi². Berat bayi lahir merupakan salah satu indikator kesehatan untuk mengetahui status gizi bayi dan memperkirakan pertumbuhan maupun perkembangan fisik bayi dalam jangka waktu yang panjang. Berat bayi lahir dikatakan normal dengan berat antara 2.500-3.999 gram, sedangkan berat dibawah 2.500 gram termasuk kategori berat bayi lahir rendah dan berat diatas 4.000 gram adalah berat bayi lahir lebih⁵.

The baby's weight at birth is weighed immediately after birth using a relatively inexpensive and easy-to-use weight measurement tool, namely baby scales². Birth weight is one of the health indicators to determine the nutritional status of the baby and predict the baby's physical growth and development in the long term. Birth weight babies are said to be normal with a weight between 2,500-3,999 grams, while those under 2,500 grams are categorized as low birth weight and

weighing over 4,000 grams is the weight of babies born over

Babies in the womb who are not getting enough nutrition from their mother will be at risk of infant death. Pregnant women in their teens who are deficient in consuming iron tablets will also be at risk of causing maternal death. Reportedly, the maternal and infant mortality rates in Indonesia are still high compared to other Southeast Asian countries. One of the causes of high maternal and infant mortality is the low consumption of iron tablets in adolescent pregnant women.

Research on the consumption of iron tablets in teenage pregnancy on the condition of babies born is still rarely done and is underestimated by some people. Therefore, researchers will analyze the relationship between consumption of iron tablets for pregnant women in adolescent pregnant women with the birth weight of the baby.

METHODS

This research is a quantitative study using secondary data in the form of data from the 2017 Indonesian Demographic and Health Survey (IDHS). The IDHS is part of the DHS (Demographic and Health Survey) program which contains data collection designs related to fertility, family planning and maternal health and child¹¹. This data was obtained from a survey conducted by the Central Statistics Agency in collaboration with the National Population and Family Planning Agency (BKKBN), the Ministry of Health of the Republic of Indonesia, USAID (United State Agency for International Development) and UNFPA (United Nations Population Fund)¹².

The data used in the study were respondents of teenage pregnant women aged 15-18 years and who were giving birth throughout Indonesia from 2012 to 2017. The population of pregnant women who gave birth in that year was 24,428 respondents. There was a sample of 692 respondents based on two criteria, namely the inclusion and exclusion criteria as a determination of the sample to be studied. The inclusion criteria were adolescent pregnant women who gave birth to their first child and consumed or did not consume iron tablets during pregnancy, while the exclusion criteria were teenage pregnant women who did not know whether to take iron tablets or not and children born who were not the first children in the year studied. The independent variable used was the consumption of iron tablets in pregnant women at adolescence who gave birth to their first child. Consumption of iron tablets is categorized into "Yes" if the mother is taking the iron tablets given and "No" if the mother does not take the iron tablets given.



Meanwhile, the dependent variable in the study was the birth weight of the babies born in the form of grouping the birth weight into two categories, namely the LBW category with a weight <2,500 grams and the non-LBW category with an average weight > 2,500 grams.

The data will be analyzed using the Chi-Square test to determine the relationship between variables on the data scale in the form of categorical data for the two variables. Descriptive statistical analysis first was to determine the frequency distribution of each variable. The results of data analysis using the Chi-Square test are displayed in the form of p-value and correlation contingency. The p-value indicates whether or not there is a relationship between the consumption of iron tablets in adolescent pregnant women and the birth weight of the baby. The correlation contingency value shows the strong relationship between iron consumption during pregnancy and babies born to adolescent pregnant women. The p-value <0.05, which means that there is a relationship between the pattern of consumption of iron tablets in adolescent pregnant women and the weight of the baby born.

RESULTS AND DISCUSSION

The distribution of the characteristics of the respondents of adolescent pregnant women in this study included age, consumption of iron tablets and baby weight. This has been explained in Table 1 which shows the characteristics of the respondents of adolescent pregnant women and babies born. Characteristics of the age of adolescent pregnant women when giving birth to their first child between 2012 and 2017 were mostly found at the age of 18, namely 326 people (47.1%). In line with Riyanti and Sipayung's research which explains that the mother's age is closely related to the weight of the baby to be born, the mother's age is at risk for the incidence of low birth weight, namely at the age <20 years and > 35 years¹³. Another study conducted by Sari, Setianingsih and Rahayu (2017) showed an odds ratio value of 0.146 which means that every pregnant woman with adolescent gestational age has a risk of 0.146 times the occurrence of low birth weight compared to productive age (OR <1, the protective factor)¹⁴. According to Purba et al in their research, teenage pregnancies occur in rural areas or areas far from the capital city or districts that experience pregnancy while still in school⁸. Pregnancy of adolescent mothers can improve their nutritional status by consuming iron tablets given by health professionals⁷. Based on table 1, it can be seen that there were 490 pregnant women who consumed iron tablets (70.8%) while those who did not consume were 202 people (29.2%). Consumption of iron tablets

greatly affects the health of the mother and the condition of the baby in the womb. This is explained in Zuliati and Hestiyana's research that the administration of iron tablets during pregnancy greatly affects the baby's birth weight⁴. There are still many teenage pregnant women who do not regularly consume iron tablets, usually pregnant women do not follow the advice of health workers to take iron tablets, so awareness is needed from each of the pregnant women.

Table 1. Distribution of Characteristics of Adolescent Pregnant Women throughout Indonesia in 2012-2017

Variable	n	%
Age at birth (years)		
15	43	6.2
16	106	15.3
17	217	31.4
18	326	47.1
Total	692	100
Consume iron tablets		
No	202	29,2
Yes	490	70,8
Total	692	100

The research of Shofiana et al also explained that pregnant women of risky age do not know how important the need for iron tablets is for pregnant women and their fetuses¹⁰. The results of research conducted by Sarah and Irianto (2018) show that pregnant women who have a low level of adherence to consuming iron tablets have a higher risk of developing anemia than pregnant women who have a high level of compliance with iron tablet consumption³.

One of the consequences of not taking iron tablets can be seen from the weight of the baby born. Based on Table 2, it shows that the lowest baby weight ever born to adolescent pregnant women in 2012 to 2017 is 300 grams, while the excess weight of babies born is 7,000 grams. Most of the babies born weighed 3,000 grams, as many as 82 babies (11.8%) with a mean / average value of 3.021.03. According to Fanni and Adriani, in their research, 3,000 grams of baby weight is included in the category of normal birth weight⁵.

The characteristics of the category of babies born mostly in the non-low birth weight category (non-LBW) were 618 people (89.3%). Meanwhile, the category of non-low birth weight (LBW) was 74 people (10.7%) with a fairly high number of pregnant women. This relatively high number in the low birth weight category is related to the age of pregnant women who are still adolescents as evidenced by statistical tests which produce a significant value, this is in line with the research of Latifah and Anggraeni explaining that there is a significant relationship between teenage pregnancy



and low birth weight. and has 7 times the chance of giving birth to a baby whose weight category is low compared to non-adolescent pregnant women¹⁵.

Table 2. Distribution of Characteristics of Babies Born to Adolescent Pregnant Women throughout Indonesia in 2012-2017

Weight of the baby born	
N	692
Minimum	300
Maximum	7.000
Mean	3.021,03
Baby weight category	
BBLR	74 (10.7%)
Non BBLR	618 (89.3%)
Total	692 (100%)

Based on Table 3, it can be seen the relationship between the consumption of iron tablets during adolescent pregnancy with the birth weight of the baby. Cross tabulation was carried out between the two variables whether there was a relationship or not. Seen from the 490 pregnant women who took iron tablets in the LBW category, 42 people (52.4%) and 448 people without LBW category (72.5%). Meanwhile, the 202 pregnant women who did not take iron tablets with LBW category were 32 people (43.2%) and 170 people without LBW category (27.5%).

The results of the Chi-Square statistical test in Table 3 show a p value of 0.005, which means that there is a relationship between the consumption of iron tablets during teenage pregnancy and the weight of the baby born (95% CI). The Chi-Square value of 7.916 is used to compare it with the Chi-Square table. Meanwhile, the Contingency Coefficient shows a value of 0.106, which means that the consumption of iron tablets in adolescent pregnant women and the weight of the baby born has a weak relationship between the two. The strength of the weak relationship in this study could be because the consumption of iron tablets in adolescent pregnancy is not the main factor that causes low birth weight babies. This is in line with the research of Sari et al. (2017) which explains that the strength of the relationship is weak because these variables are not the main factor causing low birth weight, but there are other factors such as environmental factors, factors in the use of health facilities and other factors¹⁴. According to Wigunantingsih and Fakhidah in their research, it was explained that there are several internal factors that affect birth weight including maternal age, parity, pregnancy distance, nutritional status, gravidarum, anemia and Hb¹⁶ levels. Other factors such as the condition of mothers who gave birth <37 weeks had a 6.2 greater risk of giving birth to LBW and the conditions of mothers who were classified as KEK were also 6.6 times more likely to experience LBW, this is based on research from Amima and Annas (2018)¹⁷

Table 3. Relationship of Iron Tablet Consumption during Adolescent Pregnancy and Birth Weight

Take iron tablets	Baby Weight Category				Score <i>p</i>	Score <i>Chi-Square</i>	Contingency Coefficient
	BBLR		Non BBLR				
	n	%	n	%			
No	32	21.6	170	27.5	0.005	7.916	0.106
Yes	42	52.4	448	72.5			
Total	74	100	618	100			

Other factors explained by other studies can be used as a guideline for conducting further research related to other variables which are causal factors that have a negative impact on low birth weight, because it is not only the factor of iron tablet administration which is the main factor in the occurrence of low birth weight babies. The strength of this study is that the variable consumption of iron tablets by adolescent pregnant women is very rarely carried out in the relationship test with the condition of the weight of the baby born, other studies have only examined pregnant women of normal age. While the shortcomings of this study in the results of the study explain that the strength of the relationship is weak, it is necessary to examine other causal factors, this is because researchers did not analyze other factors in adolescent pregnant women in the 2017 IDHS data.

CONCLUSION

Consumption of iron tablets in pregnant women in adolescence is related to the weight of babies born in the Indonesian territory through the 2017 IDHS data. Adherence to consuming iron tablets needs to be increased, especially in infants with low infant weight. Consumption of iron tablets is not a major factor related to the weight of babies born to teenage pregnant women because the strength of the relationship between these factors is still weak. Further research is needed to determine several other factors associated with low birth weight, normal weight and more. It is hoped that further research can find other data and can be analyzed in more



depth to determine the strength of the relationship to other causative factors.

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REFERENCES

1. RI, D. P. K. dan P. M. K. K. Pentingnya Konsumsi Tablet Fe Bagi Ibu Hamil. (2018). Available at: <http://promkes.kemkes.go.id/pentingnya-konsumsi-tablet-fe-bagi-ibu-hamil>.
2. Astutik, R. Y. & Ertiana, D. *Anemia dalam Kehamilan*. (Pustaka Abadi, 2018).
3. Sarah, S. & Irianto. Pengaruh Tingkat Kepatuhan Minum Tablet Fe Terhadap Kejadian Anemia Pada Ibu Hamil Trimester III di Puskesmas Pejeruk Tahun 2017. *Yars. Med. J.* **26**, 075 (2018).
4. Zulliaty & Hestiyana, N. Pengaruh Zat Besi (Tablet Fe) Terhadap Berat Badan Lahir Pada Ibu Bersalin Normal. **10**, (2019).
5. Rahinda, D., Fanni, Y. & Adriani, M. Hubungan Usia Gestasi dan Kadar Hemoglobin Trimester 3 Kehamilan dengan Berat Lahir Bayi. 162–171 (2017). doi:10.20473/amnt.v1.i3.2017.162-171
6. Susilawati, D. & Sudarmiati, S. Efektivitas Paket Sayang Ibu Terhadap Kepatuhan Minum Tablet Besi Pada Ibu Hamil di Puskesmas Ungaran Barat. *J. Keperawatan Matern.* **3**, 75–81 (2015).
7. Nurhayati, Halimatusakdiah & Asniah. Pengaruh Asupan Tablet Zat Besi (Fe) Terhadap Kadar Haemoglobin (Hb) Pada Ibu Hamil di Puskesmas Kopelma Darussalam Tahun 2014. *Idea Nurs. J.* **6**, 76–82 (2015).
8. Purba, E. M., Rahayujati, T. B. & Hakimi, M. Kehamilan usia remaja dan kejadian bayi berat lahir rendah di kabupaten Gunungkidul. *BKM J. Community Med. Public Heal.* **32**, 13–20 (2016).
9. Retni, R., Margawati, A. & Widjanarko, B. Pengaruh status gizi & asupan gizi ibu terhadap berat bayi lahir rendah pada kehamilan usia remaja. *J. Gizi Indones.* **5**, 14 (2017).
10. Widari, F. I. S. D. & Sumarmi, S. Pengaruh Usia, Pendidikan, dan Pengetahuan Terhadap Konsumsi Tablet Tambah Darah pada Ibu Hamil di Puskesmas Maron, Kabupaten Probolinggo. *Open access under CC BY – SA Licens.* 356–363 (2018). doi:10.2473/amnt.v2i4.2018.356-363
11. SDKI. *Survei Demografi dan Kesehatan Indonesia 2017*. (2017).
12. BKKBN. *Survei Demografi dan Kesehatan Indonesia*. (2019). Available at: <http://sdki.bkkbn.go.id/?lang=id&what=highlight&id=4>.
13. Riyanti, R. & Sipayung, N. A. Faktor Risiko yang Berhubungan dengan Kejadian Bayi Berat Badan Lahir Rendah (BBLR) pada Wanita Pekerja Petani Kopi di Kabupaten Bener Meriah. *J. Bidan Komunitas* **1**, 39 (2018).
14. Sari, D. P., Setianingsih & Rahayu, W. Pengaruh Kehamilan Remaja Terhadap Bayi Berat Badan Lahir Rendah. *J. Smart Keperawatan* **4**, 56–66 (2017).
15. Latifah, L. & Anggraeni, M. D. Hubungan Kehamilan pada Usia Remaja dengan Kejadian Prematuritas, Berat Bayi Lahir Rendah dan Asfiksia. *Kesmasindo* **06**, 26–34 (2013).
16. Wigunantiningih, A. & Fakhidah, L. N. Faktor Internal yang Mempengaruhi Berat Badan Lahir Bayi di Kabupaten Karanganyar. **II**, (2017).
17. Fajriana, A. & Buanasita, A. Faktor Risiko Yang Berhubungan Dengan Kejadian Bayi Berat Lahir Rendah Di Kecamatan Semampir Surabaya. *Media Gizi Indones.* **13**, 71 (2018).

