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The Effect Of Fe Tablet Consumption On Hemoglobin (Hb) Increase In Pregnant Women: A Systematic Literature Review

The Effect Of Fe Tablet Consumption On Hemoglobin (Hb) Increase In Pregnant Women: A Systematic Literature Review

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Anemia is still a problem in developing countries. The World Health Organization states that there are still more than 50 percent of women in the world suffering from anemia. anemia can cause life-threatening bleeding, miscarriage, low birth weight and premature birth. WHO defines anemia as a condition where the hemoglobin level is less than 11 mg / dL in the first and last trimester or 10.5 mg / dL in the second trimester or the hematocrit level is less than 37 percent. The study aim to determine the effect of Fe tablets consumption on hemoglobin (Hb) level increase in pregnant women and to find out the factors related to the compliance of pregnant women taking Fe tablets. This Systematic Literature Publication and Science uses databases with the period 2008-2018. The selection of articles was based on the inclusion and exclusion criteria. The Appraisal study employed The Joanna Briggs Institute Critical Appraisal Tools. Taking Fe tablets is very influential in increasing levels of Hb in pregnant women who suffer from anemia. Effective iron supplements to reduce anemia in pregnancy. Support from family and closest people has an important role in increasing adherence to taking Fe tablets.

Keywords: Iron deficiency, Hb Level, Pregnancy

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INTRODUCTION

Anemia is still a problem in the world, especially in developing countries. The World Health Organization (WHO) states that there are still 50 percent more women in the world suffering from anemia. Globally, anemia is a problem experienced by 38.2% of pregnant women in the world in 2011. About half of the anemia cases are caused by iron deficiency (WHO 2015). Iron deficiency anemia causes 115,000 maternal deaths per year, so the iron deficiency anemia prevention program is the right step in helping to reduce maternal mortality (Sanghvi et al. (2010)). Maternal mortality is a significant global problem, in developing countries, deaths around pregnancy affect half a million women each year (Chen et al. (2017)). Iron (Fe) is one of the micronutrients needed in the formation of hemoglobin which is needed in the circulation of

the human body. When pregnant, the blood circulation in the mother's body will increase, an increase in blood plasma volume and the volume of red blood cells. All of these will result in hemodilution and result in a decrease in hemoglobin. This condition will facilitate the occurrence of anemia in pregnant women. In pregnant women iron needs also increase because iron is used in the formation of the fetus and reserves in the placenta and for the synthesis of Hb for pregnant women. Therefore, in a state of pregnancy iron requirements also increase and it is important to maintain adequate iron intake during pregnancy. When the need for iron from daily intake is not likely to be sufficient, supplementation is needed to ensure that this micronutrient needs are adequate. In early pregnancy it is also common for morning sickness to worsen maternal inadequate nutritional intake (Eltayeb et al. (2018)).

The success of maternal health efforts, including can be seen from the indicator of Maternal Mortality Rate (MMR). AKI is the number of maternal deaths during pregnancy, childbirth and childbirth in every 100,000 live births. The decline in MMR in Indonesia occurred from 1991 to 2007, namely from 390 to 228. However, the IDHS in 2012 showed a significant increase in MMR to 359 maternal deaths 100,000 live births. AKI again showed a decline to 305 maternal deaths 100,000 live births based on the results of the 2015 Intercensal Population Survey (SUPAS) (Sebuah and Sulistyono (2018)).

The frequency of pregnant and anemia women in Indonesia is relatively high at 63.5%. Whereas in West Java the incidence of anemia was up to 51.7%. In Bekasi Regency as much as 65%, one of the factors considered as the cause of anemia is due to iron deficiency (Riskesdas (2013)).

The results of this study are A cross-sectional survey research, entitled "Iron supplement use in pregnancy e Are you taking the right amount?" The use of supplements containing iron is associated with an increase in gestational age, the diagnosis of anemia or iron deficiency (iron deficiency) in current pregnancy and the pre-pregnancy use of supplements containing iron. The results obtained were iron supplementation with MV (multi vitamins) can prevent anemia in pregnant women. In this journal pregnant women can consume various doses of iron and some high-risk women take inadequate doses to prevent or treat iron deficiency or iron deficiency anemia (Chatterjee et al. (2016)).

Anemia is a condition in which the number and size of red blood cells or hemoglobin concentration is below the normal limit value which results in disruption of blood capacity to transport oxygen throughout the body. Anemia in pregnant women is very closely related to maternal and neonatal mortality and morbidity, including the risk of miscarriage, stillbirth, prematurity, and low birth weight. Anemia is a global disease and pregnant women are often affected. Treatment of iron deficiency iron to improve pregnancy outcomes is no longer debated. Of the 48 randomized trials and 44 cohort studies, pregnant women using oral iron, compared to those who did not useiron, had significantly increased hemoglobin levels, lower levels of anemia, and a lower risk of low birth weight neonates. Absolute birth weight increases, and the risk of low birth weight neonates decreases (Govindappagari and Burwick (????)).

AIM

To determine the effect of consumption of iron supplement tablets on increasing hemoglobin (Hb) levels in pregnant women. To find out the factors related to the compliance of pregnant women taking iron supplement tablets.

TABLE 1 | Framework Penelitian

Element	Inklusi	Eksklusi
Population	Pregnant women who receive iron supplementation	Pregnant women with complications of severe comorbidities that require special medical care.
Intervention	Provision of iron supplement tablets	
Comparison	Control group with treatment.	
Outcomes	Anemia status in pregnant women is low.	

METHOD

In accordance with the objectives and research questions, the literature used in this study was obtained through a Comprehensive literature search system. The effect of whether the consumption of Fe tablets on the increase in hemoglobin (Hb) levels in pregnant women was reviewed including the method of sampling, and variables measured before and after administration of Fe tablets. Literature search method in this study in the period 2008 to 2018, and identified using electronic databases from PubMed and science direct. Database disbursement, scanning, and article screening are carried out independently by researchers. Researchers follow the conditions in fulfilling inclusion criteria. The framework used is PICO (Population, Intervention, Comparison, Outcome).

In the search for articles identified 846 articles, after filtering for relevance found 35 articles. Then a further article was filtered to find the right and complete reference regarding pregnant women who consumed Fe tablets and found 14 articles to be used for the Systematic literature Review. The author screens the titles and abstracts of all articles to be used as inclusion criteria. Full text studies are taken and reviewed independently based on these criteria. So that left 7 articles for final review. The researcher conducted a study by looking at the effect of consumption of iron supplement tablets on increasing hemoglobin (hb) levels in pregnant women by using quantitative research designs, critical appraisal in the literature that had been eliminated from the inclusion criteria. The study of quality studies using The Joanna Briggs Instrument Institute's Critical Appraisal Tools 10 question to help you make sense of a quantitative research.

DATA COLLECTION AND FINDINGS

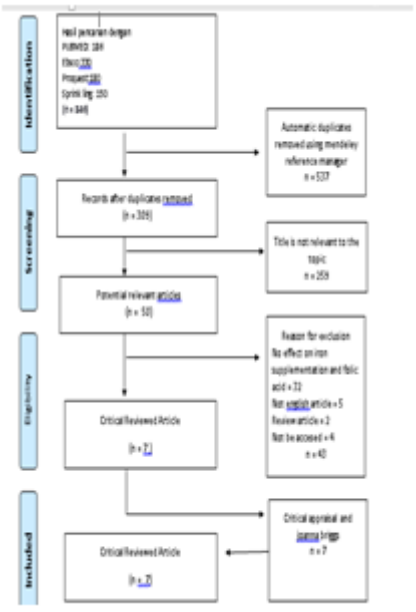

FIGURE 1 |

Systematic literature review in this study only focuses on peer review articles so that the article search strategy uses several relevant databases namely PubMed, EBSCO, Proquest and Springer Link from 2008-2018.

In the process of identifying relevant articles consists of three steps. The first step is analyzing common words contained in the title, abstract and index terms to describe the study (keywords). Keywords and terms using a boolean search strategy (for example, AND and OR are used as links that combine keywords in a search to produce relevant data).

The second step uses all the keywords and index terms entered in the search on the database used. The third stage checks the reference list of all identified studies or only checks the reference list of studies that have been selected from the full text and / or included in Systematic literature review.

The method used to criticize journal articles used using The Joanna Briggs Institute Critical Appraisal Tools Instrument, this instrument identifies literature through Screening questions after passing through screening questions, and can then proceed through Detailed Questions. The method is to reduce the bias present in the Systematic literature Review study. The form of synthesis that will be presented in a systematic literature review is identification, screening, eligibility, and included and presented data included in the flow diagram of data results.

RESULTS AND DISCUSSION

The results of a systematic literature review of 7 journals found that there was a significant effect of iron supplements with anemia in pregnant women. Iron supplementation and compliance factors in consuming iron supplements are very important for preventing anemia in pregnancy. iron supplement administration interventions have success in preventing anemia in pregnant women. Explained as follows:

1. Influential Iron Supplements on Increased Hemoglobin Levels (Hb)

The results of this study are the intervention of iron supplementation has the success to prevent anemia in pregnant women. This study shows all three iron supplementation regimens; every day, three times a week and every week is effective for the prevention of anemia during pregnancy in pregnant women without anemia. Therefore, the results suggest that health care providers adjust their weekly regimens because of better patient compliance (Bouzari et al. (2011)). The development of the initial placenta and the growth of the fetus also require iron. Adequate supply of nutrients and appropriate iron supplements. Malnutrition and lack of iron supplements as well as increased demand lead to anemia differentiation (Zehra et al. (2017)).

According to the Journal Clinical Nutrition deficiency Iron supplementation is a cause of deficiency anemia. Giving iron supplements to pregnant women is a general health action that is often practiced. Regular iron supplements (treatment of all pregnant women regardless of their iron status) or selective (only women with or at risk of iron anemia deficiency) (Chatterjee et al. (2016)).

Supplementation of iron or consuming Fe tablets and folic acid is one of the important efforts in preventing and overcoming anemia, especially iron deficiency anemia (Engmann et al. (2010)). One of the results of the study was a double-blind randomized trial conducted over 2 months entitled "A combination of iron and retinol supplementation benefits iron status, IL-2 levels and lymphocyte proliferation in anemic pregnant women" this study shows that supplementation of the retinol iron combination is beneficial for improving iron status and lymphocyte proliferation can increase iron during pregnancy. (Sun et al. (2010)).

Higher preterm birth rates are found in anemic pregnant women without iron treatment but this poor birth outcome is prevented by iron supplementation. There is no higher level of congenital abnormalities in offspring of pregnant women who suffer from anemia with iron and / or folic acid supplements. the results of the study showed that respondents who took supplements were better than respondents who did not take iron supplements. (Bouzari et al. (2011)).

Results can be analyzed that an iron supplement administration intervention can be applied to prevent anemia in pregnant women in the community. The strength of this study is that research has the same characteristics and is easy to apply to the order of health services anywhere. Health services may also include iron supplement interventions in program activities that can be carried out jointly in the community or in communities with pregnant women (Engmann et al. (2010); Chatterjee et al. (2016) Engmann et al., 2010). Actions include regularly taking iron tablets despite several obstacles. Iron supplementation will prevent heavy bleeding during labor. Non-compliance of pregnant women in taking iron tablets is influenced by the knowledge of pregnant women and the role of health workers who have not provided an expla-

nation of the benefits of iron supplementation (Puho et al. (2011)).

2. Factors Affecting Compliance with Pregnant Women in Consuming Iron Supplements

Compliance From several articles that were reviewed mentioning that compliance with consuming iron and folic acid supplementation helped mothers in increasing their hemoglobin levels (Chatterjee et al. (2016)). Supplementation of iron or consuming Fe and folic acid tablets was one of the important efforts in preventing and tackling anemia, especially iron deficiency anemia (Engmann et al. (2010)). to find out that obedient mothers are not obedient in consuming iron and folic acid supplementation mothers can rely on their spouses and families, but sometimes they are worried if the family will experience stress due to the mother's condition (Triharini et al. (2018)). In pregnancy mothers can consume iron and acid supplements Folic acid regularly as recommended by workers illustrates that mothers are obedient in consuming iron and folic acid supplementation (Jalambadani et al. (2018)).

One study stated that the distribution of adequate amounts and adherence of pregnant women to consuming iron tablets was a determining factor for the success of the anemia prevention program. In line with research (Sanghvi et al. (2010)). one of the causes is the low coverage of the program and the disobedience of pregnant women consuming iron tablets. Compliance with consuming iron tablets is important because various studies show that the positive effects are determined by the number of tablets consumed (Dibley et al. (2015)).

Based on data from 26 pregnant women who suffer from anemia in the third trimester there are still 6 pregnant women who suffer from anemia. Respondents on average experienced mild anemia with levels of Hb 9 - <11gr%. Six respondents who still suffer from anemia occur in pregnant women who do not adhere to consuming iron tablets and with husbands who do not support pregnant women to consume iron tablets. Compliance with consuming iron tablets is important considering that during pregnancy iron needs in the body increase so that pregnant women need a lot of extra iron. Family participation, especially husband, is very important as a reinforcing factor in increasing adherence to consuming iron tablets (Dutta et al. (2014)).

CONCLUSION

Deficiency Iron supplements are a cause of deficiency anemia. Giving iron supplements to pregnant women is a general health action that is often practiced. Iron supplements are routine (treatment of all pregnant women regardless of their iron status) or selective (only women with or at risk of iron anemia deficiency). An effective iron supplement to influence the reduction of anemia in pregnancy increases knowledge and influences a person to behave according to what is desired, as evidenced by various studies that have been published internationally so that they can help in increasing the discovery of cases of anemia in the community. The closest person to pregnant women who can create a physical and emotional environment that supports their health. His concern in monitoring the consumption of iron tablets every day is expected to increase compliance. Family participation and the closest people as reinforcing factors play an important role in increasing adherence to consuming iron tablets.

RECOMMENDATION

The next researcher is not only expected to be able to produce information about the roles, hopes, experiences and challenges of people who want to be more involved in maternal health issues, especially during pregnancy and childbirth, but are also expected to be able to identify important needs to identify innovative ways of operationalization of men's involvement policies in pregnancy and childbirth, and how intervention funds are applied to increase the involvement of the closest husband and family.

As a professional health worker midwives are expected to be able to make their closest family as objects to receive health information from the beginning of pregnancy to delivery. Involve the immediate family or husband to carry out their role by explaining to the mother how to provide emotional support and physical support during the process of carrying out the pregnancy and

until the time of delivery, such as giving praise, encouragement, and explaining strategies to help mothers feel cared for and respected as individuals and raising mother's confidence.

REFERENCES

Bouzari, Z., Basirat, Z., Zadeh, M. Z., Cherati, S. Y., Ardebil, M. D., Mohammadnetaj, M., et al. (2011). Daily versus intermittent iron supplementation in pregnant women. *BMC Research Notes* 4, 444–444. doi: 10.1186/1756-0500-4-444.

Chatterjee, R., Shand, A., Nassar, N., Walls, M., and Khambalia, A. Z. (2016). Iron supplement use in pregnancy – Are the right women taking the right amount? *Clinical Nutrition* 35, 741–747. doi: 10.1016/j.clnu.2015.05.014.

Chen, K., Chang, Y., Chang, H., Su, S., Peng, H., Chang, S., et al. (2017). Taiwanese Journal of Obstetrics & Gynecology Long-term outcome of pregnancy complicating with severe aplastic anemia under supportive care. *Taiwanese Journal of Obstetrics & Gynecology* 56, 632–635.

Dibley, M. J., Titaley, C. R., Este, C., and Agho, K. (2015). https://doi.org/10.3945/ajcn.111.022699.INTRODUCTION.

Dutta, A. J., Patel, P., and Bansal, R. K. (2014). *Original Article COMPLIANCE TO IRON SUPPLEMENTATION AMONG PREGNANT WOMEN : A CROSS SECTIONAL STUDY IN* 5, 457–462.

Eltayeb, R., Rayis, D. A., Sharif, M. E., Ahmed, A. B. A., Elhardello, O., and Adam, I. (2018). https://doi.org/10.1093/trstmh/try109.

Engmann, C., Adanu, R., Lu, T., Bose, C., and Lozoff, B. (2010). https://doi.org/10.1016/j.ijgo.2007.09.032.

Govindappagari, S. and Burwick, R. M. (????). Treatment of Iron De fi ciency Anemia in Pregnancy with Intravenous versus Oral Iron : Systematic Review and Meta. *Analysis* 66.

Jalambadani, Z., Borji, A., and Delkhosh, M. (2018).

Puho, H., Ph, D., D, Sci, A. E. C. P., and D (2011). https://doi.org/10.1016/j.nut.2009.12.005.

Riskesdas (2013).

Sanghvi, T. G., Harvey, P. W. J., and Wainwright, E. (2010). Maternal Iron–Folic Acid Supplementation Programs: Evidence of Impact and Implementation. doi: 10.1177/15648265100312s202. https://dx.doi.org/10.1177/15648265100312s202.

Sebuah, N. and Sulistyono, A. (2018). https://doi.org/10.1016/j.ijnss.2018.07.002.

Sun, Y. Y., Ma, A. G., Yang, F., Zhang, F. Z., and Luo, Y. B. (2010).

Triharini, M., Sulistyono, A., and Adriani, M. (2018). International Journal of Nursing Sciences Adherence to iron supplementation amongst pregnant mothers in Surabaya , Indonesia : Perceived bene fi ts , barriers and family support. *International Journal of Nursing Sciences* 5, 243–248.

Zehra, A., Abdullah, S. M. S., Saboor, M., and Moinuddin (2017). Effect of Intravenous Iron Supplementation on Hepcidin Levels in Iron Deficient Pregnant Females in Second and Third Trimester. *Indian Journal of Hematology and Blood Transfusion* 33, 396–401. doi: 10.1007/s12288-016-0736-1.

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