

© 2018 The Author(s)

This is an Open Access article distributed under the terms of the [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ORIGINAL RESEARCH

ISSN: 2477-4073

EFFECT OF EDUCATIONAL INTERVENTION ON FAMILY SUPPORT FOR PREGNANT WOMEN IN PREVENTING ANEMIA

Mira Triharini^{1,2*}, Ni Ketut Alit Armini², Aria Aulia Nastiti²

¹Doctoral Student at Public Health Faculty, Universitas Airlangga, Surabaya, Indonesia

²Department of Maternity and Pediatric Nursing, Nursing Faculty, Universitas Airlangga, Surabaya, Indonesia

*Corresponding author:

Mira Triharini

Department of Maternity and Pediatric Nursing, Nursing Faculty, Universitas Airlangga
Kampus C, Jl. Mulyorejo, Mulyorejo, Surabaya, Kota SBY, Jawa Timur, Indonesia 60115
Email: mira-t@fkip.unair.ac.id

Abstract

Background: Anemia during pregnancy is a major nutritional problem that can cause health problems for mothers and their fetus. Prevention of anemia has been done but many obstacles are perceived by pregnant women. Families need to provide support to improve the prevention behavior of anemia.

Objective: This research aims to explore the effect of educational intervention on family support for pregnant women in preventing anemia.

Methods: A quasi-experimental design was carried out on 60 pregnant women who had done pregnancy checkups at Community Health Centre and had received iron supplement, in which 30 women were in the experimental group and the rests were in the control group. This study was conducted from December 2016 to January 2017. Family support was measured using questionnaires before and after educational intervention.

Results: After educational intervention, there was a significant change from the pretest score to the posttest score in the experimental group ($p < 0.05$). There was an increase in the average score in the experimental group, 14.47 ± 2.89 becomes 16.83 ± 2.32 .

Conclusion: Educational interventions can increase family support for maternal behavior in preventing pregnancy anemia such as improving adherence to taking iron supplements and high intake of food containing iron.

Keywords: anemia; family support; pregnancy; iron supplement

INTRODUCTION

Iron deficiency anemia in pregnant women is still a major nutritional issue. Appropriate data of *Riskesdas* showed that there were 37.1 pregnant women with anemia ([Riskesdas, 2013](#)). While the incidence of anemia in East Java was 25.3% ([Rizki, Widodo, & Wulandari, 2016](#)). Anemia in pregnant women has an impact on her and their fetus. Preterm delivery and low birth weight are associated with anemia for pregnant women in the third trimester ([Kumar, Asha, Murthy, Sujatha, & Manjunath, 2013](#)). Anemia can also adversely affect mothers such as the occurrence of

infection and postpartum hemorrhage in the postpartum period ([Van Bogaert, 2006](#)). Anemia in pregnancy is a condition in women with hemoglobin levels below 11 gr/dl in the first and third trimester or the hemoglobin level < 10.5 gr/dl in the second trimester ([Varney, Kriebs, & Gegor, 2007](#)).

Anemia prevention efforts can be done by increasing the intake of iron through food and reducing the consumption of foods that can inhibit the absorption of iron such as fitat, phosphate, and tannin ([Wiknjosastro, 2005](#)).

The fulfilment of iron needs in pregnant women ([Risksdas, 2013](#)). During pregnancy, there is an increase in the needs of iron. The amount of iron that can be absorbed through food has not been able to fulfil the needs of iron in pregnant women. Iron supplements are essential to prevent iron deficiency ([Bothwell, 2000](#)). Various obstacles can be felt by the pregnant women in taking iron supplements. The presence of fear of side effects that may harm the health of infants will affect adherence ([Taye, Abeje, & Mekonen, 2015](#)). Iron supplements taken also may cause gastrointestinal discomfort that mothers feel as nausea after taking that further makes them lazy to take the supplements regularly ([Tolkien, Stecher, Mander, Pereira, & Powell, 2015](#)). Iron supplements are given in addition since the food cannot fulfil the iron needs. Foods containing iron, protein, and vitamin C are excellent for preventing anemia. Iron in the diet can be found in meat, fish, chicken, liver, eggs, green vegetables, and beans. Vitamin C is widely found in spinach, broccoli, guava, papaya, and tomatoes ([Nadesul, 2000](#)).

Family support can be provided in the form of informative, emotional, instrumental and assessment support ([Setiadi, 2008](#)). Family support for pregnant women provides benefits for both mother and fetus. Family support provided will make mothers feel strong and able to overcome the perceived obstacles. Research results in India showed that emotional support is more needed by pregnant women than other types of support. There are no complications in pregnant women and neonatal ([Haobijam, Sharma, & David, 2010](#)). Other researches support the importance of family support for pregnant women. Mothers with a supportive partner were 63% less likely to experience low birth weight and nearly 2 times less likely to have pregnancy loss compared to those with no partner support ([Shah, Gee, & Theall, 2014](#)). To be able to provide good support for pregnant women in the prevention of anemia, it is necessary to increase knowledge on the family about the importance of support pregnant women. This research aims to determine the effects of educational intervention on family support for

pregnant women in preventing anemia in Surabaya.

METHODS

Study design

The research used a quasi-experimental design with two groups, pretest and posttest was conducted from December 2016 to January 2017. The population was pregnant women receiving antenatal care at Community Health Centers of Sidotopo Wetan and Tanah Kali Kedinding Surabaya, East Java, Indonesia.

Research subjects

This study used the Consecutive sampling method. Selection of sample by selecting subjects that met the criteria of research until a certain period until the fulfillment of the required number of samples ([Sastroasmoro & Ismael, 2002](#)). The sample which met the inclusion criteria were 60 mothers. 30 of them were in the experimental group and the rests were in the control group. Inclusion criteria were the pregnant women who got iron supplements from Community Health Center and gestational age of 13-33 weeks. Exclusion criteria were the pregnant women with health problems that occur during pregnancy and require medical treatment such as gestational diabetes, preeclampsia, hyperemesis gravidarum, and infection.

Intervention

Educational interventions were given to pregnant women and their families for two meetings. The first meeting discussed anemia and family support on prevention of pregnancy anemia. At the end of the first meeting, the pregnant women were given a monitoring card of the consumption of iron tablets at home. Families have a duty to remind pregnant women to take tablets appropriately. The monitoring cards will be reassembled during the second meeting in the following week. At the second meeting, an evaluation of the compliance of iron tablet consumption was based on monitoring cards that had been filled at home. At the second meeting, the family support that had been given so far and the

obstacles felt by pregnant women were discussed in each meeting and held for 2 hours through lectures and discussion methods. This research was conducted at two Community Health Centers. The experimental group at Community Health Centers of Tanah Kali Kedinding and the control group at Community Health Centers of Sidotopo Wetan. In this study the control group was only given leaflet about prevention of anemia from researchers and did not get educational intervention such as the experimental group. After the researchers obtained posttest data in the control group, the researchers conducted educational interventions in the control group.

Instrument

Data collection tools were sociodemographic characteristic questionnaires about family support. The sociodemographic characteristics questionnaire consisted of questions about age, parity, education and income. The questionnaire was developed by researchers with items according to concept of family support in the Health Promotion Model, the theory of anemia pregnancy, and forms of family support (Pender, 2011; Setiadi, 2008; Sharma & Shankar, 2010). In the preparation of the contents of the questionnaire, researchers assisted by two experienced nurses in the field of maternity nursing. Translation processes by qualified translator and proofreader from Indonesia. Before being used in data collection, questionnaires that have been compiled were tested for validity and reliability on 17 pregnant women who attending antenatal care at Community Health Center of Tanah Kali Kedinding Surabaya. The initial questionnaire composed consists of 8 questionnaires. The results of the validity test show Corrected Item-Total Correlation between 0.294-0.776 (df = 15; r = 0.482). Cronbach's alpha shows 0.791. By issuing an invalid question item, the questionnaire validity test results obtained 5 items questionnaire question with Corrected Item-Total Correlation between 0.453-0.728, Cronbach's alpha: 0.762. The family support questionnaire consisted of questions about giving advice for any complaints due to taking iron, giving compliment for taking iron tablets

regularly, understanding and helping house work, and supporting pregnancy checkup regularly. The questionnaire consisted of 5 questions with Likert scale items with options of always, often, sometimes, rarely, and never. Score range was 0-20, in which the lower score indicated lower levels of family support. Family support in this study is the perception of pregnant women to the support provided by the husband in the prevention of anemia.

Ethical consideration

Sampling began after obtaining ethical approval from the Ethics Committee of Faculty of Nursing of Universitas Airlangga Surabaya, Indonesia (Ethics code:242-KEPK). Written informed consent was obtained from all individuals who agreed to participate in the research, while information collected was used only for the intended purposes in which the confidentiality was ensured.

Data analysis

The Wilcoxon test was used to examine the differences between the pretest and posttest scores for both the experimental group and control group. Descriptive statistics including frequency, percentage, mean, and standard deviation were used to describe sociodemographic characteristics and family support. In all statistical analyses, a p-value of < 0.05 was considered significant. All data were analyzed using SPSS software.

RESULTS

Sociodemographic characteristics

Table 1 showed that the majority of respondents were aged 25-35 years both in the experimental group (66.67%) and the control group (63.33%). The majority of respondents had a 1 parity both in the experimental group (36.7%) and the control group (43.3%). More than half of experimental group (66.7%) and control groups (53.3%) had secondary education levels. More than half of experimental group (63.3%) and the control group (66.67%) had income of < 3 million rupiahs.

Table 1 Demographic characteristics of the participants

Item	Experimental group (n=30)		Control group (n=30)		P value
	n	%	n	%	
Age					
< 25 years	8	26.67	10	33.33	0.148
25-35 years	20	66.67	19	63.33	
> 35 years	2	6.67	1	3.33	
Parity					0.807
0	8	26.7	10	33.3	
1	11	36.7	13	43.3	
2	6	20.0	4	13.3	
3	5	16.7	3	10.0	
Education					0.654
Elementary	8	26.7	13	43.3	
Secondary	20	66.7	16	53.3	
University	2	6.7	1	3.3	
Income					0.005
< 3 million rupiahs	19	63.3	20	66.67	
≥ 3 million rupiahs	11	36.7	10	33.33	

Table 2 presented the distribution of participants in the experimental group before and after the intervention. There was an increasing number of participants who gave the answer 'always' to all statements in the questionnaire. In posttest, there was as much as 33.33% women that stated "Family gives advice for any complaints due to taking iron tablets", 60.00% women that stated "Family gives compliment for taking iron tablets regularly", 60.00% women that stated "Family understands and helps doing housework",

76.67% women that stated "Family provides budget for nutritional food", and 93.3% women that stated "Family supports pregnancy checkup regularly". There was a decrease in the number of participants who gave answer 'always' to the statement "Family gives advice for any complaints due to taking iron tablets" from 26.67% to 23.33%, "Family understands and helps doing housework" from 73.33% to 60.00%, "Family provides budget for nutritional food" from 90% to 86.67%.

Table 2 Distributions of participants based on family support in experimental group and in control group

Statement	Pretest					Posttest				
	always n (%)	often n (%)	sometimes n (%)	rarely n (%)	never n (%)	always n (%)	often n (%)	sometimes n (%)	rarely n (%)	never n (%)
Experimental group										
Family gives advice for any complaints due to taking iron tablets	6 (20.00)	6 (20.00)	7 (23.33)	2 (6.67)	9 (30.00)	10 (33.33)	11 (36.67)	5 (16.67)	1 (3.33)	3 (10.00)
Family gives compliment for taking iron tablets regularly	14 (46.67)	6 (20.00)	5 (16.67)	0 (0.00)	5 (16.67)	18 (60.00)	7 (23.33)	5 (16.67)	0 (0.00)	0 (0.00)
Family understands and helps doing housework	9 (30.00)	12 (40.00)	7 (23.33)	1 (3.33)	1 (3.33)	18 (60.00)	5 (16.67)	6 (20.00)	1 (3.33)	0 (0.00)
Family provides budget for nutritional food	19 (63.33)	5 (16.67)	1 (3.33)	0 (0.00)	5 (16.67)	23 (76.67)	2 (6.67)	1 (3.33)	0 (0.00)	4 (13.33)
Family supports pregnancy checkup regularly	23 (76.67)	6 (20.00)	1 (3.33)	0 (0.00)	0 (0.00)	28 (93.33)	2 (6.67)	0 (0.00)	0 (0.00)	0 (0.00)

Control group										
Family gives advice for any complaints due to taking iron tablets	8 (26.67)	6 (20.00)	8 (26.67)	0 (0.00)	8 (26.67)	7 (23.33)	10 (33.33)	3 (10.00)	0 (0.00)	10 (33.33)
Family gives compliment for taking iron tablets regularly	13 (43.33)	4 (13.33)	8 (26.67)	3 (10.00)	2 (6.67)	18 (60.00)	4 (13.33)	4 (13.33)	3 (10.00)	1 (3.33)
Family understands and helps doing housework	22 (73.33)	2 (6.67)	4 (13.33)	0 (0.00)	2 (6.67)	18 (60.00)	7 (23.33)	3 (10.00)	0 (0.00)	2 (6.67)
Family provides budget for nutritional food	27 (90.00)	3 (10.00)	0 (0.00)	0 (0.00)	0 (0.00)	26 (86.67)	3 (10.00)	1 (3.33)	0 (0.00)	0 (0.00)
Family supports pregnancy checkup regularly	28 (93.33)	2 (6.67)	0 (0.00)	0 (0.00)	0 (0.00)	28 (93.33)	2 (6.67)	0 (0.00)	0 (0.00)	0 (0.00)

Table 3 presented the analysis of the mean and standard deviation score item of family support in both the experimental and control group, before and after the intervention. Of the 5 family support statements in the posttest experimental group 'Family supports

pregnancy checkup regularly" had the highest scores (3.93 ± 0.25) and 'Family gives advice if mother has any complaints due to taking iron tablets" had the lowest score (2.80 ± 1.24).

Table 3 Items analysis of family support in experimental and control group

No	Item	Experimental group		Control group	
		Pretest M±SD	Posttest M±SD	Pretest M±SD	Posttest M±SD
1	Giving advice for any complaints	1.93 ± 1.53	2.80 ± 1.24	2.20 ± 1.54	2.13 ± 1.63
2	Giving compliment	2.80 ± 1.47	3.43 ± 0.77	2.77 ± 1.30	3.17 ± 1.21
3	Understanding and helping doing housework	2.90 ± 0.99	3.33 ± 0.92	3.40 ± 1.16	3.30 ± 1.12
4	Provides budget for nutritional food	3.10 ± 1.49	3.33 ± 1.39	3.90 ± 0.31	3.83 ± 0.46
5	Supports pregnancy checkup regularly	3.73 ± 0.52	3.93 ± 0.25	3.93 ± 0.25	3.93 ± 0.25

Table 4 Comparison of family support scores between the experimental and control group

Scale	Family support score
(a) Pretest	
E group (n=30)	14.47 ± 2.89
C group (n=30)	16.20 ± 3.18
(b) Posttest	
E group (n=30)	16.83 ± 2.32
C group (n=30)	16.37 ± 3.00
(b) Posttest- (a) Pretest	
E group (n=30)	2.36 ± 2.48
P value Wilcoxon test	0.000
C group (n=30)	0.17 ± 2.35
P value Wilcoxon test	0.835
E group = experimental group	
C group = control group	

Table 4 presented result from Wilcoxon test used to examine the differences between the pretest and posttest scores for both the experimental group and control group. After educational intervention, statistically significant changes from the pretest to the posttest were found in the experimental group ($p < 0.05$). No significant increases occurred in the control group's score ($p = 0.835$). Comparison of increased mean scores showed that the experimental group had a significant increase in score (2.36) compared with the control group (0.17).

DISCUSSION

Mothers, during pregnancy, experience physical and psychological changes that make them stressful. Support from their husband or family is very important that it gives many benefits such as happiness and anxiety decrease that will also affront the condition of the fetus. The support provided may be both emotional and physical support. Emotional support, such as giving encouragement, compliment, and advice, was given if pregnant women had problems. While physical support was such as helping doing housework, providing budget for fulfilling their needs, accompanying them during pregnancy checkup, and providing them relaxation therapy ([WebMD, 2018](#)). Maternal anxiety will increase pregnancy problems, so family support will be more necessary. Anxiety is influenced by low levels of education and income ([Gourounti, Anagnostopoulos, & Sandall, 2014](#)). Emotional support given by family also had a significant relationship with outcome during pregnancy ([Haobijam et al., 2010](#)).

Family support can be provided in the form of informative, emotional, instrumental, and assessment support ([Setiadi, 2008](#)). Informative support can be done by reminding the mothers to take tablets regularly in the right way and reminding them to have nutritious food every day. Emotional support can be done by listening to their complaints and providing time to talk about problems

experienced. Instrumental help can be done by providing them nutritious food. Fulfilling iron needs through food can also be a problem if family has no knowledge of the importance of nutritious food for pregnancy. This causes the family to provide less budget for the provision of nutritious food for the pregnant women. Assessment assistance can be done by helping pregnant women in solving their problems, providing motivation and giving them compliment.

Family support for pregnant women is influenced by several factors from the family. The lack of knowledge of the husband about the cause of anemia and how to overcome it will lead to decreased support from husbands to pregnant women ([da Costa Fernandes, 2017](#)). Culture and perception in society greatly affect the action of pregnancy care. The culture of society often set about food that may and should not be eaten by the pregnant women. Culture are difficult to change through the provision of health education in a short time ([Kavle et al., 2014](#)). Family patterns, such as the status of husband and members of the husband's family as a culture in Qatar, can also affect the health care to pregnant women, so that sensitive health education is culturally needed to increase family knowledge and able to provide support to pregnant women ([Kridli, Ilori, & Verriest, 2012](#)).

Education for family is needed to increase knowledge and provide support for pregnant women appropriately. The educational interventions provided for pregnant women and family contain materials on the understanding of anemia, the danger of anemia to mothers and infants, precautions, forms of family support, as well as the perceived benefits to pregnant women who will get support from the family.

Several pregnant women who were respondents in the experimental group, after the education intervention, claimed to have received no support from their family in preventing anemia in the statement of "Family gives advice for any complaints due to taking iron tablets" and "Family provides budget for

nutritional food". Family support in advice is related to family's education and culture, where it is difficult to change through the educational interventions that have been done. Material support on a budget provision for nutritious food is related to family income levels. The demographic data showed that the majority of pregnant women' family income was <3 million rupiahs. Although families understood the benefits of nutrition for pregnancy health, the limited income made them prioritize other needs.

The increase of the mean posttest score compared to of the pretest in the experimental group showed that the educational intervention provided had a positive effect to the family in providing support to pregnant women to prevent anemia. Educational interventions that have been given to families had explained the various barriers that might be felt by pregnant women when taking iron supplements. Researchers also emphasized the anemic hazards that could occur during pregnancy and childbirth, which will increase the understanding of the family that mothers need to continue to take iron supplements appropriately. The complications that can arise from anemia are: miscarriage (abortion), premature birth, prolonged labor due to uterine muscle fatigue in contraction (uterine inertia), postpartum hemorrhage due to absence of uterine muscle contraction (uterine atony), shock, infection both during labor and postpartum, as well as severe anemia (<4 g%) may cause cardiac decompensation. Hypoxia due to anemia can cause shock and maternal death in labor ([Winkjosastro, 2008](#)). Educational interventions that had been given also explained that family support had great benefits to pregnant women, so it could increase the motivation of families in providing support.

CONCLUSION

After intervention education given, statistically significant changes from the pretest to the posttest were found in the experimental group. No significant increases occurred in the score

of control group. Health education given by healthcare providers on prevention of anemia was not only directed to pregnant women but also to families, so that families could provide good support to pregnant women.

Declaration of Conflicting Interest

The authors declare that there is no conflict of interest.

Author contribution

All authors contributed equally in this study.

References

- Bothwell, T. H. (2000). Iron requirements in pregnancy and strategies to meet them. *American Journal of Clinical Nutrition*, 72(1), 257S-264S.
- da Costa Fernandes, A. (2017). The role of husband in assisting wife who suffer anemia in pregnancy. *Jurnal Kesehatan Masyarakat*, 13(1), 28-34.
- Gourounti, K., Anagnostopoulos, F., & Sandall, J. (2014). Poor marital support associate with anxiety and worries during pregnancy in Greek pregnant women. *Midwifery*, 30(6), 628-635.
- Haobijam, J., Sharma, U., & David, S. (2010). An exploratory study to assess the Family support and its effect on Outcome of Pregnancy in terms of Maternal and Neonatal health in a selected Hospital, Ludhiana Punjab. *Nursing and Midwifery research journal*, 6(4).
- Kavle, J., Mehanna, S., Khan, G., Hassan, M., Saleh, G., & Galloway, R. (2014). *Cultural beliefs and perceptions of maternal diet and weight gain during pregnancy and postpartum family planning in Egypt*. Washington DC: USAID
- Kridli, S. A.-O., Ilori, O. M., & Verriest, H. L. (2012). Health beliefs and practices related to pregnancy and childcare in Qatar: A qualitative study. *Journal of Nursing Education and Practice*, 3(2), 1.
- Kumar, K. J., Asha, N., Murthy, D. S., Sujatha, M., & Manjunath, V. (2013). Maternal anemia in various trimesters and its effect on newborn weight and maturity: An observational study. *International Journal of Preventive Medicine*, 4(2), 193.
- Nadesul, H. (2000). *Makanan sehat untuk ibu hamil [Healthy food for pregnant mothers]*. Jakarta: Puspa Swara.
- Pender, N. J. (2011). Health promotion model manual. Retrieved from <http://hdl.handle.net/2027.42/85350>
- Riskesdas. (2013). *Basic health research report*. Jakarta: Ministry of Health of Indonesia.
- Rizki, F., Widodo, D. A. A., & Wulandari, S. P. (2016). Faktor risiko penyakit anemia gizi besi pada ibu hamil di Jawa Timur menggunakan analisis regresi logistik [Risk factors of iron anemia in pregnant mothers in East Java using logistic regression analysis]. *Jurnal Sains dan Seni ITS*, 4(2).

- Sastroasmoro, S., & Ismael, S. (2002). *Dasar-dasar metodologi penelitian klinis [Basic clinical research methodology]*. Jakarta: Sagung Seto.
- Setiadi, G. (2008). Konsep dan proses keperawatan keluarga: Cetakan I [Concept and process of family nursing: Edition 1]. Jakarta: Penerbit Graha Ilmu.
- Shah, M. K., Gee, R. E., & Theall, K. P. (2014). Partner support and impact on birth outcomes among teen pregnancies in the United States. *Journal of Pediatric and Adolescent Gynecology*, 27(1), 14-19.
- Sharma, J. B., & Shankar, M. (2010). Anemia in pregnancy. *JIMSA*, 23(4), 253-260.
- Taye, B., Abeje, G., & Mekonen, A. (2015). Factors associated with compliance of prenatal iron folate supplementation among women in Mecha district, Western Amhara: A cross-sectional study. *Pan African Medical Journal*, 20(1).
- Tolkien, Z., Stecher, L., Mander, A. P., Pereira, D. I., & Powell, J. J. (2015). Ferrous sulfate supplementation causes significant gastrointestinal side-effects in adults: A systematic review and meta-analysis. *PLoS ONE*, 10(2), e0117383.
- Van Bogaert, L.-J. (2006). Anaemia and pregnancy outcomes in a South African rural population. *Journal of Obstetrics and Gynaecology*, 26(7), 617-619.
- Varney, H., Kriebs, J. M., & Gegor, C. L. (2007). *Buku ajar asuhan kebidanan [Teaching book of midwifery care]*. Jakarta: EGC.
- WebMD. (2018). Dad's role in labor and delivery. Retrieved from <https://www.webmd.com/baby/dads-role-in-labor-and-delivery-2>
- Wiknjosastro, H. (2005). *Midwifery science*. Jakarta: Yayasan Bina Pustaka Sarwono Prawirohardjo.
- Winkjosastro, G. H. (2008). Fisiologi janin dalam Ilmu kebidanan [Fetal physiology in midwifery science]. Jakarta: PT Bina Pustaka Sarwono Prawirohardjo.

Cite this article as: Triharini, M., Armini, N.K.A., Nastiti, A.A. (2018). Effect of educational intervention on family support for pregnant women in preventing anemia. *Belitung Nursing Journal*, 4(3), 304-311. <https://doi.org/10.33546/bnj.332>