

# **PREVALENCE AND RISK FACTORS OF IRON DEFICIENCY ANEMIA AMONG POSTPARTUM WOMEN**

**Darmawati, Syahbandi, Aida Fitri, Masyithah Audina**

Faculty of Nursing, Syiah Kuala University

Email: darmawati.fkep@unsyiah.ac.id

## **Abstract**

One of the problems that contributes to the maternal mortality and morbidity prevalence is postpartum anemia. Globally, the commonest cause is iron deficiency. Currently, the prevalence of anemia in Aceh is still quite high, which is 37.1%. Previous study on anemia during the postpartum is still rarely conducted in Aceh so this condition needs more attention. This study aimed to identify the prevalence of anemia among postpartum women and the risk factors that influence postpartum iron deficiency anemia. This study was a quantitative study with a cross-sectional study design conducted at dr. Zainoel Abidin Hospital Banda Aceh. Participants were recruited using non-probability sampling method and obtained 102 participants. Data were analyzed using chi-square tests. This study showed that 49.0% of the postpartum women had mild anemia, 10.8% of them had moderate anemia, and another 40.2% did not have anemia. There was a significant relationship between obstetric factors (type of labor, delivery complications) with anemia prevalence among postpartum mothers (.014 and .047 respectively). It is expected that health workers should have a good knowledge of the contributor factors of iron deficiency anemia among postpartum women, thus this condition can be prevented or detected early.

Keywords: Anemia, iron-deficiency, postpartum, and risk factors.

## Introduction

Maternal Mortality Rate (MMR) is one of the indicators to measure maternal health status in a country (Riyanto & Widiastih, 2018). Indonesia has the highest maternal mortality rate in ASEAN region with 126 per 100,000 live births (Widiastih, Ermiati, & Setyawati, 2018). One of the problems that often occurs and contributes to the highest number to maternal mortality and morbidity is anemia in the postpartum period (Milman, 2015). In developing country, the prevalence of postpartum anemia ranges 50% to 80%. Postpartum anemia is common among low-income women, especially in low-income country. In a study of low socioeconomic status' women, 21% pregnant women with a normal hemoglobin at the third trimester developed anemia in postpartum period. This evidence showed that postpartum anemia is a public health problem that warrants greater attention (Rakesh et al., 2014). Globally, the commonest cause of anemia is iron-deficiency (Achebe & Gaftor-gvili, 2017). It is estimated that 50% of anemia is caused by iron-deficiency (Ayano & Amentie, 2018). Iron-deficiency anemia can occur due to lack of consuming iron-rich foods, consuming foods that inhibit iron absorption or the presence of gastrointestinal disease (Judd, 2010; Silverberg, 2012; Vir, 2011).

Antenatal health service improvement program has been launched by the Indonesian Ministry of Health through efforts in modifying service standards, but postpartum women's care remains the same as usual. Previous studies have also discussed anemia that occurs during the antenatal period, but few have examined anemia in the postpartum period (Ayano & Amentie, 2018; da Costa, Vargas, Clode, & Graca, 2016; Sumitra & Kumari, 2017). Recent study also reports that iron-deficiency and anemia in the postpartum period occur more frequently than predicted (Rakesh et al., 2014). Anemia can cause low birth weight, premature birth, fetal weight does not correspond to gestational age, and in worse cases, it can cause death (Daka, Jayanthigopal, & Demisie, 2018). Postnatal anemia is defined as hemoglobin less than 12 gr% to the end of 6 weeks of delivery (Milman, 2011).

Most of the postpartum anemia recovery occurs a few weeks or months after delivery. When the recovery process takes a long time, such as when hemoglobin levels are very low since delivery, symptoms of iron deficiency that can be felt by the mother, such as symptoms of depression cognitive deficit and fatigue. It also plays an important role in decreased immunity and milk production, delayed wound healing, increased susceptibility of mastitis, ductitis, and urinary tract infection (Rakesh et al., 2014; Selvaraj et al., 2019). In addition, there can also be a worsening of mother-child interaction and even delayed infant development (Bergmann, Richter, Bergmann, & Dudenhausen, 2010). The aforementioned situation above clearly indicated the importance of conducting a study on Iron Deficiency Anemia (IDA) among postpartum women. This study aimed to analyze the prevalence and risk factors that influence the incidence of iron deficiency anemia in postpartum women.

## Methods

This research was a quantitative study using a correlative descriptive method with a cross-sectional study approach (Grove, Gray, & Burns, 2015; Polit & Beck, 2006). The total participants in this study were obtained by purposive sampling method with the inclusion criterias were postpartum women, treated in the postpartum room, without any complications of childbirth, and willing to participate in this study. The sampling process was carried out for 3 months from June to September 2019. The total participants obtained were 102 postpartum women. This study was conducted at dr. Zainoel Abidin Hospital Banda Aceh.

The instruments used in this study were a self-developed questionnaire sheet and haemoglobin test kit that has been calibrated when we purchase the device. Content validity test of the questionnaire has been conducted involving experts from relevant areas. A reliability test on 15 participants has been done and the cronbach alpha value of the questionnaire used in this study was 0.895 and that was reliable. The hemoglobin meter used in this study (hb meter) have shown high validity and reliability scores at .91 and .80,

respectively (Barduagni, Ahmed, Curtale, Raafat, & Soliman, 2003; Pawlowski et al., 2015). Primary data collection in this study was conducted by direct interviews with patients after previously asking the patient's willingness to become a participant in this study. After participants have answered all the questions in the questionnaire, they will receive a hemoglobin test using a hemoglobin meter.

In this study, data were analyzed using descriptive statistics and chi-square tests with a confidence level of 95%. Descriptive statistics will include frequency and percentage. This study was approved by the Ethical Clearance Committee dr. Zainoel

Abidin Hospital, Banda Aceh with code number was 81/EA/FK-RSUDZA/2019.

## Results of Research

Table 1 shows that almost half of the participants had mild anemia (49.0%), another half of the participants did not had anemia (40%), and only 10.8% of them had moderate anemia. The age of majority of women was at no risk (66.7%). For obstetric status, the majority of postpartum women were multiparous (68.6%), giving birth using the section caesurae method (67.6%) with complications of labor (59.8%).

**Table 1. The obstetric status of postpartum women (N = 102)**

No.	Data	Frequency	Percentage (%)
1	Anemia prevalence		
	Mild anemia	50	49.0
	Moderate anemia	11	10.8
	No anemia	41	40.2
2	Parity		
	Primiparous	25	24.5
	Multiparous	70	68.6
	Grande multiparous	7	6.9
3	Type of giving birth		
	Normal	33	32.4
	Sectio caesarea	69	67.6
4	Complications of labor		
	Yes	61	59.8
	No	41	40.2
	Total	102	100

**Table 2. Relationship between obstetric status factors with the prevalence of iron deficiency anemia among postpartum women**

Anemia among postpartum women									
Category	Iron Deficiency Anemia								P Value
	Mild Anemia		Moderate Anemia		No Anemia		Total		
	F	%	F	%	F	%	F	%	
Obstetric Status									
Parity									
Primiparous	12	48.0	2	8.0	11	44.0	25	100	0.973
Multiparous	35	50	8	11.4	27	38.6	70	100	
Grande multiparous	3	42.9	1	14.2	3	42.9	7	100	
Type of giving birth									
Normal	11	33.3	2	6.1	20	60.6	33	100	0.014
Caesarean section	39	56.5	9	13.1	21	30.4	69	100	

Complications of labor									
Yes	33	54.1	9	14.8	19	31.1	61	100	0.047
No	17	41.5	2	4.9	22	53.6	41	100	
Total	50	49.0	11	10.8	41	40.2	102	100	

Source: Primary Data (processed on 2019)

Table 2 showed that there was a statistically significant relationship between the type of giving birth and complications of labor with the prevalence of IDA among postpartum women (p-value were 0.014 and 0.047, respectively) and there was no statistically significant relationship between parity status factors with the prevalence of IDA among postpartum women.

## Discussion

This study aimed to identify the prevalence and associated risk factors that influence IDA among postpartum women at dr. Zainoel Abidin Hospital Banda Aceh. This study result is supported by previous research by Stephen et al. (2018) who found that parity status did not have a significant relationship with anemia prevalence. The same results were also found in the meta-analysis research conducted by Adam, Ibrahim, & Elhardello (2018). However, this result has a contradiction with the research conducted by Wessells et al. (2017) who found that parity status is related to the deficiency of nutritional status among pregnant women in Nigeria. It is believed that women with a high parity status have low iron stores in their bodies and it can cause the women with high parity more at risk in experiencing anemia. This current study found there was no relationship between parity and postpartum anemia prevalence because this factor was not the main factor causing anemia in the postpartum period. The incidence of anemia is directly caused by a lack of iron stores which is basically caused when pregnant women did not consume iron supplements and iron-rich foods continuously.

Furthermore, this study found a significant correlation between the types of giving birth with the prevalence of IDA among postpartum women. This finding is related to the research conducted by Mulyawati, Azam, & Ningrum (2011) who found that anemia was one of the factors associated with Sectio Caesarea. When giving birth, a pregnant woman needs iron around 40 mg per day or double the need for no pregnant conditions. When this need is not fulfilled, blood loss during labor, especially during sectio caesarea will cause

postpartum anemia (Mulyawati et al., 2011).

Furthermore, the presence of complications during labor such as premature rupture of membranes, prolonged birth, preeclampsia, induction failure, and other complications also have a significant relationship with the prevalence of IDA among postpartum women. Indirectly, various complications during labor can lead to the condition of postpartum anemia if it is not treated immediately. One of the commonest is preeclampsia. The results of research conducted by Manik et al. (2017) found that there was a significant relationship between the incidence of preeclampsia with an increased risk of postpartum hemorrhage. The increased risk of preeclampsia with postpartum hemorrhage is due to the women with preeclampsia who have decreased plasma volume resulting in hemoconcentration and increased maternal hematocrit. Vasospasm will reduce organ perfusion by destroying red blood cells. If the fibrinogen in the blood decreases quite a lot, then bleeding during labor will be difficult to stop (Manik et al., 2017). Furthermore, postpartum hemorrhage will be associated with postpartum anemia (Rubio-álvarez, Molina-alarcón, & Hernández-martínez, 2017).

This study has a limitation that the findings in this study cannot be generalized to other regions with better conditions, health facilities and maternal health indicators. The results of this study can be used as the newest reference for nursing students to increase their knowledge related to the factors that contributed to anemia in the postpartum period. In addition, this study results can also be a basic knowledge for nurses in detecting postpartum anemia by examining whether patients treated have factors that tend to cause anemia in the postpartum period, so

this condition can be prevented. For future studies, a study of the effectiveness of some nursing interventions that can increase the hemoglobin levels in the postpartum periode can be conducted.

## Conclusions and Recommendation

The prevalence of iron deficiency anemia among postpartum women at dr. Zainoel Abidin Hospital Banda Aceh categorized as: mild anemia (49.0%), moderate anemia (10.8%), and no anemia (40.2%). There is a relationship between obstetric factors (type of giving birth, complications of labor) with the prevalence of iron deficiency anemia among postpartum women. Through the results of this study, it is expected that health workers both that take care of postpartum women and pregnant women should have a good knowledge of the factors that can cause iron deficiency anemia among postpartum women, thus anemia in the postpartum period can be prevented or detected early. For future studies, interventional studies can be conducted to examine effective interventions that can be done to increase hemoglobin levels in the postpartum period so that the prevalence of postpartum anemia can decrease.

## References

- Achebe, M. M., & Gafter-gvili, A. (2017). How I treat anemia in pregnancy: iron, cobalamin, and folate. *Blood*, 129(8), 940–949. <http://doi.org/10.1182/blood-2016-08-672246>
- Adam, I., Ibrahim, Y., & Elhardello, O. (2018). Prevalence, types and determinants of anemia among pregnant women in Sudan: A systematic review and meta-analysis. *BMC Hematology*, 18(1), 4–11. <http://doi.org/10.1186/s12878-018-0124-1>
- Ayano, B., & Amentie, B. (2018). Assessment of Prevalence and Risk Factors for Anemia Among Pregnant Mothers Attending Anc Clinic at Adama Hospital Medical Collage, Adama, Ethiopia, 2017. *Journal of Gynecology and Obstetrics*, 6(3), 31–39. <http://doi.org/10.11648/j.jgo.20180603.11>
- Barduagni, P., Ahmed, A. S., Curtale, F., Raafat, M., & Soliman, L. (2003). Performance of Sahli and colour scale methods in diagnosing anaemia among school children in low prevalence areas. *Tropical Medicine and International Health*, 8(7), 615–618. <http://doi.org/10.1046/j.1365-3156.2003.01062.x>
- Bergmann, R. L., Richter, R., Bergmann, K. E., & Dudenhausen, J. W. (2010). Prevalence and risk factors for early postpartum anemia. *European Journal of Obstetrics and Gynecology*, 150(2), 126–131. <http://doi.org/10.1016/j.ejogrb.2010.02.030>
- da Costa, A. G., Vargas, S., Clode, N., & Graca, L. M. (2016). Prevalence and Risk Factors for Iron Deficiency Anemia and Iron Depletion During Pregnancy: A Prospective Study. *Acta Medica Portuguesa*, 29(9), 514–518. <http://doi.org/10.20344/amp.6808>
- Daka, K. B., Jayanthigopal, & Demisie, D. B. (2018). Assessment of Knowledge and Practice Towards Prevention of Anemia Among Pregnant Women Attending Antenatal Care at Government Hospitals in West Assessment of Knowledge and Practice Towards Prevention of Anemia Among Pregnant Women Attending Antenatal Care. *Journal of Health, Medicine and Nursing*, 50, 31–40.
- Grove, S. K., Gray, J. R., & Burns, N. (2015). Understanding nursing research: Building an evidence-based practice. Missouri: Elsevier.
- Judd, S. J. (2010). Blood and circulatory disorders. Omnigraphics, Inc. (Ed. 3). United States: Omnigraphics, Inc.
- Manik, I. N., Dewi, R., Sari, P., Wulan, A. J., Obstetrik, B., Kedokteran, F., & Lampung, U. (2017). Hubungan Status Preeklampsia dengan Kejadian Perdarahan Postpartum pada Ibu Bersalin di RSUD Dr H Abdul Moeloek Provinsi Lampung Periode 1 Juli 2014 - 30 Juni 2015 Relationship between Status of Preeclampsia with The Insidence of Maternal Postpartum Haemo, 6, 51–57.
- Milman, N. (2011). Postpartum anemia I: definition , prevalence , causes , and



consequences. *Annals of Hematology*, 90, 1247–1253. <http://doi.org/10.1007/s00277-011-1279-z>

Milman, N. (2015). Postpartum anemia II: prevention and treatment. *Annals of Hematology*, 91, 143–154. <http://doi.org/10.1007/s00277-011-1381-2>

Mulyawati, I., Azam, M., & Ningrum, D. (2011). Faktor Tindakan Persalinan Operasi Sectio Caesarea. *KESMAS - Jurnal Kesehatan Masyarakat*, 7(1), 14–21. <http://doi.org/10.15294/kemas.v7i1.1788>

Pawlowski, M., Latute, F., Bardou-Jacquet, E., Latournerie, M., Zerrouki, S., Bendavid, C., ... Ropert, M. (2015). Portable hemoglobinometer is a reliable technology for the follow-up of venesections tolerance in hemochromatosis. *Clinics and Research in Hepatology and Gastroenterology*, 39(5), 570–575. <http://doi.org/10.1016/j.clinre.2014.09.014>

Polit, & Beck. (2006). The content validity index: Are you know whats being reported? *Research in Nursing & Health*, 29, 487–497.

Rakesh, P., Gopichandran, V., Jamkhandi, D., Manjunath, K., George, K., & Prasad, J. (2014). Determinants of postpartum anemia among women from a rural population in southern India. *International Journal of Women's Health*, 395–400.

Riyanto, S., & Widasih, R. (2018). Physical Responses Following Post-Partum Administration of Rectal Misoprostol in RSKIA Kota Bandung West Java, Indonesia. *Journal of Nursing Care*, 1(2), 85–90. <http://doi.org/10.24198/jnc.v1i2.16697>

Rubio-álvarez, A., Molina-alarcón, M., & Hernández-martínez, A. (2017). Incidence of postpartum anaemia and risk factors

associated with vaginal birth. *Women and Birth*, (7). <http://doi.org/10.1016/j.wombi.2017.09.020>

Selvaraj, R., Ramakrishann, J., Sahu, S. K., Kar, S. S., Laksham, K. B., Premarajan, K., & Roy, G. (2019). High prevalence of anemia among postnatal mothers in Urban Puducherry: A community-based study. *Journal of Family Medicine and Primary Care*, 8(8), 2703–2707. [http://doi.org/10.4103/jfmpe.jfmpe\\_386\\_19](http://doi.org/10.4103/jfmpe.jfmpe_386_19)

Silverberg, D. S. (2012). *Anemia*. Croatia: InTech.

Stephen, G., Mgongo, M., Hussein Hashim, T., Katanga, J., Stray-Pedersen, B., & Msuya, S. E. (2018). Anaemia in Pregnancy: Prevalence, Risk Factors, and Adverse Perinatal Outcomes in Northern Tanzania. *Anemia*. <http://doi.org/10.1155/2018/1846280>

Sumitra, M., & Kumari, C. T. (2017). Determinants of Anemia Among Pregnant Women Attending in a Tertiary Level Hospital, Kathmandu. *Med Phoenix*, 2(1), 24–33. <http://doi.org/10.3126/medphoenix.v2i1.18382>

Vir, S. C. (2011). *Public health nutrition in developing countries*. New Delhi: Woodhead Publishing India Pvt. Ltd.

Wessells, K., Ouédraogo, C. T., Young, R. R., Thierno Faye, M., Brito, A., & Hess, S. Y. (2017). Micronutrient status among pregnant women in zinder, niger and risk factors associated with deficiency. *Nutrients*, 9(5). <http://doi.org/10.3390/nu9050430>

Widasih, R., Ermianti, & Setyawati, A. (2018). Women's health behaviour in the perinatal period. *Journal of Nursing Care*, 1(1), 8–15.