

Knowledge of Postpartum Women's Toward Iron Deficiency Anemia at Al-Nasiriyah City

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Abstract:

Background: Iron deficiency anemia is the most prevalent and common micronutrient disorder in the world which is negatively affecting women's health during postpartum period.

Objectives: To assess postpartum women's knowledge toward iron deficiency anemia and To find out the relationship between the hemoglobin, serum iron and total iron binding capacity and knowledge toward iron intake .

Methodology: A descriptive analytic study is conducted on non-probability sample of (200) postpartum women from four primary health care centers at Al-Nasiriyah City. This study has been conducted during the period of April 16th 2015 to May 28th 2015. A questionnaire is used as a tool of data collection to fulfill according to the objectives of the study. A pilot study is carried out to test the reliability of the questionnaire and content validity which is carried out through 17 experts. A descriptive and inferential statistical are used to analyze the data.

Results: The results of the study are : (31.5%) of the study sample are within the age group (21-25) years old with mean and standard deviation $\bar{X},SD = (28.39 \mp 6.58)$. In regard to the levels of education (52%) are Primary school graduates and less, (65.5%) of the study sample are housewives, (54.5%) of the study sample are from urban area and (63.5%) of the study sample had sufficient to some extent in their economic status. There are a statistical significant differences between Hb, serum iron and total iron level and the other studied variables at p-value less than 0.05.

Recommendations: The study is recommended to increase awareness of postpartum women about anemia related to iron deficiency through mass media (TV & radio) and posters and the internet and establishing workshops on the subject of iron deficiency anemia for nurses / midwives to increase for women awareness. Regular postpartum women are to attend primary health care center to receive adequate knowledge about iron deficiency anemia.

Keywords: Hemoglobin ,Iron, postpartum women and Prevention.

I. Introduction

Iron deficiency is the most prevalent nutritional deficiency and the most common cause of anemia among women during fertile age⁽¹⁾. Iron deficiency is defined by two or more abnormal measurements (serum ferritin, transferrin saturation and /or erythrocyte protoporphyrin), continues to be relatively prevalent in U.S. females is affecting 7.8 million adolescents and women of childbearing age⁽²⁾. The prevalence of iron deficiency and anemia in males and females, based on the 5th percentile, NHANES III data, a two to three times higher prevalence of iron deficiency is found in Mexican-American compared to white, non-Hispanic females. Higher rates are also noted in other minority and low income populations⁽³⁾.

Iron deficiency anemia is characterized by a defect in hemoglobin synthesis, resulting in red blood cells that are abnormally small (microcytic) and contain a decreased amount of hemoglobin (hypochromic). Iron is absorbed primarily in the duodenum and upper jejunum, where the acidic environment keeps iron in its soluble form. Beyond these sites, bicarbonate makes iron less soluble⁽⁴⁾. Iron is essential to all cells. Functions of iron include involvement in energy metabolism, gene regulation, cell growth and differentiation, oxygen binding and transport, muscle oxygen use and storage, enzyme reactions, neurotransmitter synthesis, and protein synthesis⁽⁵⁾. Females are vulnerable to iron deficiency because of increased iron requirements related to rapid growth. Iron needs are highest in males during peak pubertal development because of greater increase in blood volume, muscle mass and myoglobin⁽⁶⁾.

After menarche, iron needs continue to remain high in females because of menstrual blood loss, which averages about 20 mg of iron per month, but may be as high as 58 mg in some females.

Oral contraceptives decrease menstrual losses, while some intrauterine devices may increase losses. In spite of increased iron needs, many females, may have iron intakes of only 10-11

mg/day of total iron, resulting in approximately 1 mg of absorbed iron⁽⁷⁾. About three fourths of females do not meet dietary iron requirements, compared to 17% of males. The Centers for Disease Control and Prevention (CDC) recommendations for screening women for anemia suggest that all females be screened at least once every five years unless risk factors for anemia are present, resulting in the need for annual anemia screening. When iron status is adequate, iron stores and erythropoiesis remain normal. With iron depletion, stores are reduced while erythropoiesis is maintained. Iron deficiency is associated with depleted stores and abnormalities in iron metabolism and red blood cell biochemistry. Although there is no single laboratory test that specifically indicates iron deficiency anemia, several tests are used to determine iron status and the presence of anemia. The measurement of hemoglobin or hematocrit is the most cost efficient and commonly used method to screen anemia. Determining the concentration of hemoglobin, an iron-containing protein, in red blood cells is a more sensitive and direct indicator of anemia than hematocrit (percentage of red blood cells in whole blood). The values obtained from capillary (fingerstick) blood are less reliable than those from venous blood since variation in technique can alter results. Low capillary values should thus be confirmed using blood obtained from veni puncture. Altitudes above 3000 feet raise the cut point for anemia because of lower oxygen partial pressure, areduction in oxygen saturation of blood, and an increase in red blood cell production. Cigarette smoking also raises the cut point for anemia because carboxy hemoglobin formed from carbon monoxide during smoking has no oxygen-carrying capacity⁽¹⁾. Delayed release iron preparations, although better tolerated, may be less effective and are expensive. A multivitamin containing copper and zinc will prevent impaired absorption or utilization of these nutrients when therapeutic dosages of iron are used. Since the calcium, phosphorous and magnesium contained in multivitamins can impair iron absorption, the iron content of these supplements should not be included in the therapeutic iron dose. For the same reason, the iron supplements and multivitamin should be taken at separate times. Iron supplements are absorbed most effectively when taken on an empty stomach. If gastrointestinal intolerance occurs (nausea, constipation, diarrhea, abdominal pain or cramping), taking the supplements with food or at bedtime may alleviate these symptoms. Side effects can also be minimized by increasing the dosage gradually, using a lower dosage of iron, or using a preparation with a lower elemental iron content, such as ferrous gluconate. Taking iron supplements on a less than daily basis may not only improve tolerance, but may be as effective, since saturation of the red cells with iron reduces absorption for few days⁽⁸⁾. The etiology of anemia is multifaceted and often several factors are at play in an anemic individual. Nutritional anemia as result of iron deficiency is the most common cause of anemia worldwide, with approximately 50% of all cases attributed to lack of iron in the diet⁽⁹⁾. Maternal risks include depleted blood reserves during delivery and thus an increased risk of an allergenic blood transfusion in case of significant blood loss, cardiovascular stress, anemia symptoms (fatigue, reduced physical and mental capacities, headaches, orthostatic dizziness, exhaustion, decreased milk production in the puerperium, depleted maternal iron stores postpartum and subsequently. For these reasons, the efficient treatment of anemia following its diagnosis has a positive impact on maternal as well as fetal outcomes. Iron deficiency is the most prevalent nutrient deficiency in the world, particularly during pregnancy and postpartum. Anemia, particularly severe anemia, is associated with increased risk of maternal mortality. It also puts mothers at risk of multiple perinatal complications⁽¹⁰⁾.

II. Methodology

A purposive sample "Non-probability" of (200) postpartum women, who have attended Imam Reza health center, Sumer Health Center, Imam Mahdi Health center and Salehia Health Center at Al-Nasiriyah city. The questionnaire has been constructed after extensive review of available literature and related studies. The study instrument consists of three parts; The first part; includes socio demographic and reproductive of study sample characteristics of age, occupation, level of education, economic situation, age at marriage, number of gravida, number of para, number of abortion, type of previous birth and Pregnancy status. The second part includes information pertaining to iron deficiency anemia of study sample characteristics of sign and symptoms of iron deficiency anemia (9 items), causes of postpartum iron deficiency anemia (14 items), effectiveness of iron deficiency anemia on mothers and newborn (5 items). The third part includes screening for hemoglobin, serum iron and total iron binding capacity. Data Collection were obtained through direct interview with each postpartum women who attended PHCC through using, adopting and developing questionnaire format. The data collection process had been performed from (16)th April until (28)th May 2015. An approximately (20-30) minutes was spent with each responded to complete the filling the questionnaire format and laboratory test. The study sample was conducted with drawing blood (5 ml) from women on the tenth day of the birth and after six week to determine and measure Hb, serum

iron, total iron binding capacity on Ibn AL-Beetar laboratory. For all the study specimens, a blood sample was put in the two tubes; the first tube to measure Hb by (5MI) drabkin's solution, (20 MI) blood and mix & wait 5 minute of determinate by Hb meter. The second tube was to measure serum iron & TIBC after separated from the blood plasma by centrifuge for 5 minute and held on plasma screening using (human Kit).

III. Results

Table 1. Distribution of study sample according to socio demographic characteristic (N=200).

Socio demographic characteristics	Rating	No.	%
Age /years	20 and less	22	11.0
	21-25	63	31.5
	26-30	42	21.0
	31-35	37	18.5
	36-40	33	16.5
	More than 40	3	1.5
	\bar{X} SD = 28.39 \mp 6.58		
Level of education	Primary school graduated & less	104	52
	Intermediate school graduated	37	18.5
	Secondary school graduated	24	12
	Institute and College graduated	35	17.5
Occupation status	Employee	13	6.5
	Housewife	131	65.5
	student	28	14
	Free Job	28	14
Resident	urban	109	54.5
	suburban	59	29.5
	rural	32	16
Economic status	sufficient	38	19
	Sufficient to some extend	127	63.5
	Insufficient	35	17.5

This table shows that (31.5%) of the study sample are within the age group (21-25) years old with mean and standard deviation \bar{X} ,SD =(28.39 \mp 6.58). In regarding to the levels of education (52%) are graduated from Primary school graduated and less. (65.5%) of the study sample are housewives. (54.5%) of the study sample their residency are from urban area and (63.5%) the study sample have sufficient to some extent in their economic status.

Table 2. Distribution of the study sample according to their knowledge toward taking of iron tablets (N=200).

Reproductive characteristics	Rating	No.	%
Age at Marriage / year	15	16	8
	16 – 19	75	37.5
	20 – 23	82	41
	24 – 27	22	11
	28 & above	5	2.5
Gravida	1	19	9.5
	2 – 4	116	58
	5 times & more	65	32.5
Para	1-2	51	25.5
	3-4	101	50.5
	5 & more	48	24
Number of Abortion	Non	95	47.5
	1 – 2	56	28
	3 & more	59	25
Number of alive children	1	47	23.5
	2 – 3	62	31
	4 – 5	44	22
	6 & more	47	23.5
Interval among last pregnancy/ year	1 & less	136	68
	2 – 3	59	29.5
	4 & more	5	2.5
Type of Delivery (last of delivery)	Normal	113	56.5
	C/S	68	34
	Both	19	9.5
Number of regular attend to a clinic	Non	9	4.5
	Irregular	91	45.5
	Regular	100	50
Pregnancy status (full term pregnancy)	Single	187	93.5
	Twin	13	6.5

This table shows that (41%) of the study sample their age of marriage are between 20-23 years, (58%) the study sample have (2- 4) number of pregnancy, (50.5%) the study sample have (2-3) deliveries, (47.5%) do not have any type of abortion, (31%) have two to three live children, (68%) have one year and less as Interval among last pregnancies, (56.5%) have a normal delivery (last of delivery), (50%) of the study sample have regular attended primary health care center in last pregnancy and (93.5%) of them have single in their current deliveries.

Table 3. Distribution of the study sample according to their knowledge toward taking of iron tablets(N=200).

Knowledge toward Iron intake	Rating	No.	%	MS	assessment
1-Taking iron tablets with the following liquids : *1-A-tea	Yes	87	43.5	1.97	Failure
	unsure	33	16.5		
	No.	80	40		
*1-B- coffee	Yes	82	41	2.05	Pass
	unsure	27	13.5		
	No	91	45.5		
*1-C- milk	Yes	2	1	2.97	Pass
	unsure	3	1.5		

	No	195	97.5			
1-D- juice	Yes	87	43.5	2.04		Pass
	unsure	33	16.5			
	No	80	40			
2-Taking iron tablets with eating a meal	Yes	120	60	2.33		Pass
	unsure	26	13			
	No	54	27			
*3-Taking iron tablets with other drugs (levofloxacin, tetracycline, minocycline)	Yes	0	0	2.73		Pass
	unsure	55	27.5			
	No	145	27			
4-Taking iron tablets lead to have dark color stools	Yes	82	41	1.96		Failure
	unsure	27	13.5			
	No	91	45.5			
5-Taking iron pills cause constipation	Yes	31	15.5	1.45		Failure
	unsure	26	13			
	No	143	71.5			
6-List the intervention used to treat the constipation: 6-A-adequate intake of fluid	Yes	26	13	1.29		Failure
	unsure	5	2.5			
	No	169	84.5			
6-B- Exercises	Yes	20	10	1.21		Failure
	unsure	2	1			
	No	178	89			
6-C- maintain regular bowel motion	Yes	24	12	1.30		Failure
	unsure	13	6.5			
	No	163	81.5			

*Negative response

Table (3) shows that the highest mean score is (2.97) in items taking iron tablets with milk, while the lowest mean score (1.21) in item implement exercise as intervention used in management of constipation. So the result shows that study sample responses are pass at some items which are a positive behaviors and failure in others items which considered a negative responses needs to be modified.

Table 4. Correlation between the hemoglobin, serum iron and total iron binding capacity and knowledge toward iron intake (N=200).

Knowledge toward iron intake	HB		Serum Iron		TIBC	
	x ²	P-value	x ²	P-value	x ²	P-value
1-Taking iron tables with the following liquid :						
1-A- tea	46.82	0.002	125.1	0.001	188.9	0.001
1-B –coffee	52.62	0.001	195.1	0.001	196.5	0.088
1 – C- milk	53.92	0.012	128.2	0.001	163.2	0.002
1- D – juice	27.36	0.098	118.4	0.001	167.1	0.001
2-Taking iron tablets with eating a meal	35.33	0.001	187.2	0.001	244.1	0.004
3-Taking iron tablets with other drugs (levofloxacin, tetracycline & amoxicillin)	40.44	0.010	144.5	0.001	146.8	0.021
4- Taking iron tablets lead to have dark color stools	52.62	0.001	128.2	0.001	163.2	0.002
5- Taking iron pills cause constipation	36.76	0.025	79 .0	.0300	129.0	0.158
6- List the intervention used to treat the constipation 6-A- Adequate intake of fluid	49.68	0.001	85.3	0.011	147.4	0.019
6- B- Exercises	42.34	0.006	97.5	0.001	117.1	0.002
6- C- Maintain regular bowel motion	47.12	0.001	92.4	0.003	147.9	0.018

This table shows that there are high- statistical significant differences between level of hemoglobin, serum iron, and total iron binding capacity and knowledge toward iron intake at p.value less than 0.05

IV. Discussion

1- Socio-demographic characteristics: The study result shows that the highest percentage of the study sample is (31.5%) within sixth age groups (21-25) years old. Regarding the levels of education (52%) of the study sample show that they are primary school graduates and less. In addition to (65.5%) of the study sample are housewives. Also (54.5%) of the study sample are from urban residential area⁽¹¹⁾, who report that demographic and spatial predictors of anemia in women of reproductive age in Timor-Leste findings agree with the findings of the present study consistently which indicate that more of the women are housewives⁽¹²⁾.

2- Reproductive characteristic for the postpartum women: The study result indicates that more of the study sample (41%) of their age of marriage are between 20-23 years, (58%) of the study sample have (2- 4) numbers of pregnancy, (50.5%) of the study sample have (2-3) deliveries, (47.5%) do not have any type of abortion, (31%) have two to three live children, (68%) have one year and less as interval between last pregnancies, (56.5%) have a normal delivery (last of delivery), (50%) of the study sample have regular attended primary health care center in last pregnancy and (93.5%) of them have single in their current deliveries. In addition to the finding (58.5%) of the study sample do not suffer from iron deficiency anemia, (41.5%) complain from iron deficiency anemia in last pregnancy, (95%) do not have any menstrual disturbance, (95.5%) do not have hypertension and (97.5%) do not have Diabetic mellitus⁽¹³⁾. who study the routine iron supplementation and screening for iron deficiency anemia in pregnant women. They find that the pregnant women are more prone to get anemia than others because they need iron in large quantities⁽¹⁴⁾. conduct a study which focuses on the low hemoglobin level is a risk factor for postpartum depression. Their findings show that women (n = 37) are recruited from two hospitals in central Pennsylvania within 24 h of giving birth, more normal vaginal delivery without complications including postpartum hemorrhage, full-term singleton infant, both mother and infant leaving the hospital to gather within 72 h, and neither mother or infant demonstrating any acute or chronic illness upon discharge or at any time⁽¹⁵⁾. study the effect of maternal iron deficiency anemia on the iron store of newborns in Ethiopia, their findings indicate that the majority of women are born their babies through normal vaginal delivery, with age of delivery less than 24 years, adherence to primary health care centers and primipara.

3- Knowledge toward taking of iron tablets: The result shows that the study sample responses are failure at all items except in taking iron tablets with eating a meal and taking iron tablets with the juice, their responses are a positive behavior, tea, coffee and cocoa, there is a negative response. It was reported that should not be consumed with meals if poor iron status is suspected. polyphenols in these beverages inhibit absorption of nonheme iron⁽¹⁶⁾. Furthermore, the study results indicate of the study sample take iron rich medicines orally⁽¹⁷⁾. who study the iron deficiency anemia in pregnancy and postpartum: pathophysiology and effect of oral versus intravenous iron therapy. Their results indicate that oral iron therapy is the most widely prescribed treatment for iron deficiency anemia; however, there are many issues that may prevent oral iron supplementation from successfully managing IDA. For instance, many women do not respond adequately to oral iron therapy due to the difficulties associated with ingestion of the tablets and their side effects. furthermore, the presence of bowel disease may affect the absorption of iron and by minimizing the benefit received from oral iron therapy, they may use iron supplement as injection.

4- Correlation between the hemoglobin, serum iron, and total iron binding capacity and knowledge toward iron intake: The study results indicate that there is a high significant correlation between the levels of hemoglobin, serum iron, and the total iron binding capacity and the mothers' knowledge toward the dietary intake at p-value less than 0.01⁽¹⁸⁾. who study the knowledge on management of anemia during pregnancy. Their finding indicates that the mothers' knowledge about the dietary intake is an important factor that leads to a prevention of the occurring of anemia. In addition, these results come because the knowledgeable mothers are able to take essential diet that leads to support the formation of hemoglobin inside her body so the anemia could be not occurs.

V. Conclusions

The study confirms the iron deficiency for women during postpartum, majority of the study sample from age group (25-30) years, primary school graduates and less, housewives, urban and Sufficient to some extent, More of the study subject the age marriage for women at (20-23) years old, normal vaginal delivery, and single pregnancy state and More of the study sample include postpartum women in regard to demographic characteristics and reproductive data effect upon iron deficiency anemia according to (Hb, serum iron, and TBIC). The result shows that study sample responses are pass in some items related to knowledge concerning iron deficiency anemia which are a positive behaviors and failure in others items which considered a negative responses needs to be modified.

VI. Recommendations:

The study recommends to increase awareness of postpartum women about anemia related to iron deficiency through mass media (TV & radio) and posters and the internet and establishing workshops on the subject of iron deficiency anemia for nurses / midwives to increase for women awareness. Regular postpartum women are to attend primary health care center to receive adequate knowledge about iron deficiency anemia.

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