



DRINKING THE COFFEE AND THE PRESENCE OF ANEMIA AMONG PREGNANT WOMEN IN EL-OBIED CITY, WEST OF SUDAN

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ABSTRACT

Background: This study was conducted at ante natal care clinic (ANC) in the Obstetrics and Gynecology Hospital in Elobied City, West of Sudan, to detect the presence of nutritional anaemia among pregnant women, and to study the relation between the presence of anemia and drinking of the coffee among the pregnant women.

Methods: This descriptive cross-sectional study was conducted in the period from 15th August to 15th September, 2019. Systematic random sampling method was used to select 384 pregnant women. Mothers who attended ANC during the study period and who met the choosing criteria had filled the questionnaire and a blood samples were taken from the target group and analyzed in the laboratory to detect the presence of anemia according to the level of hemoglobin. The data of questionnaire were analyzed by SPSS and the results presented in tables and figures showing the percent ages. To find the relations between the presence of anaemia and some variables, the Chi-square test (McNemar's test) was used.

Results: Most pregnant women (75%) were have anemia. Most pregnant women (52.1%) were drink the coffee directly after eating.

Conclusion: The study discovered that drinking of the coffee directly after eating contributed to the anemia with 40.1%. This study recommended the pregnant women to stop the drinking of the coffee directly after eating.

KEY WORDS: Coffee, Anemia, Pregnant Women, El-Obied

INTRODUCTION

Anaemia, defined as a decreased concentration of blood hemoglobin, is one of the most common nutritional deficiency diseases observed globally and affects more than a quarter of the world's population [1]. Anaemia is a major cause of morbidity and mortality of pregnant women and increases the risks of foetal, neonatal and infant mortality [2]. Anaemia during pregnancy contributes to 20% of all maternal deaths [3]. Iron deficiency is

the cause of 75% of anaemia cases during pregnancy [4]

According to UNICEF [5] the causes of iron deficiency are: too little iron in the diet, poor absorption of iron by the body, and loss of blood (including from heavy menstrual bleeding). It is also caused by lead poisoning in children. Nutritional Anaemia develops slowly after the normal stores of iron have been depleted in the body and in the bone marrow. Women, in general, have smaller stores of iron than men and have increased loss through



menstruation, placing them at higher risk for nutritional anaemia. High-risk groups include: women of child-bearing age who have blood loss through menstruation; pregnant or lactating women who have an increased requirement for iron; infants, children, and adolescents in rapid growth phases; and people with a poor dietary intake of iron through a diet of little or no meat or eggs for several years.

Inhibitors of iron Absorption

Absorption of non-heme iron is inhibited by phytic acid (inositol hexaphosphate and inositol pentaphosphate) in grains and cereals and by polyphenols in some vegetables, coffee, tea, and wine. These inhibitors chelate non-heme iron so it is not available for uptake. [6].

Polyphenolic compounds is a large heterogeneous group of molecules which exist in colored varieties of cereals, legumes, fruits and berries, and as well in wine, tea, coffee and cocoa. Some of the more than 5000 known polyphenolic structures are potent inhibitors of iron absorption [7].

The majority of phenolic compounds are of plant origin, and they are mainly found in the leaves, stems and flowers. They are reactive substances and form iron-phenolic complexes in the intestine thereby making the iron less available for absorption. Tannins are large polyphenols, which can precipitate proteins. A number of foods such as coffee, tea, beans, spinach and aubergine contain such phenolic compounds [8]. Taking the tea or coffee after the meal directly reduce the absorption of iron [9].

Sources of iron

Non-vegetarian dietary sources of iron are red meat, fish, liver, and egg yolks; vegetarian sources include, lentils and beans, whole grains and products made from these foods [5].

Objectives: To detect the presence of nutritional anaemia among pregnant women. To study the relation between the presence of anemia and the drinking of the coffee among the pregnant women.

METHODOLOGY

Study type and design: descriptive- cross sectional study.

StudyArea : Elobied city, at Obstetrics and Gynecology Hospital which includes the departments ofaccidents, intensive care, laboratory, pharmacy, and referring clinic.

Study population : All the pregnant women attending antenatal care clinic (ANC) at Obstetrics and Gynecology Hospital in Elobied city during the study period.

Inclusion criteria : Mothers who attended antenatal care clinic (ANC) during the period from 15th August to 15th September, 2019 and who met the choosing criteria (systemic random sample) had chosen.

Sampling :

a / Sample size :

The sample size was determined according to Le [10] by the following formula:

$$n = \frac{z^2 pq}{d^2}$$

Where:

n is sample size.

z is the value of the standard normal variable corresponding to 95% level of significance (z = 1.96).

P is the prevalence of VL (p = 0.5) and (q = 1 -p) since no prior information exist.

d is a marginal error (d =0.05)

Accordingly, a sample of 384 persons will be obtained.

b / SampleTechnique : The systematic random sample was used.

Data Collection Methods and tools :

In this study a structured pre-coded and close-ended questionnaire was used to collect data . Some health workers was trained to assist in filling the questionnaire.Blood samples were collected in (2.5ml).

DATA ANALYSIS

The blood samples were analyzed in the laboratory of the hospital by Mindray Haematology Analyser to measure the level of hemoglobin.The cut-off points for the diagnosis of anaemia was according to the hemoglobin level as mentioned by Park [11], where A hemoglobin level of 10 to 11 g/dl has been defined as early anaemia; a level below 10 g/dl as marked anaemia.

The data of questionnaire were analyzed by statistical package for social sciences (SPSS) . The results were presented in figures and tables showing the percentages. The relations between some variables and the infection by anaemia were done according to Al Qassas [12]and Le [10] by McNemar's test (Chi- square (X²) test) for the correlative percentages in the table (2x2) by the formula:

$$X^2 = \frac{(B - C)^2}{B + C}$$

Where:

B and C are cells in the table 2x2 (without the cells of the total) as in the following shape:

A	B
C	D

The value of x² obtained from this formula compared with the value of x² obtained from the table of x² (appendix B). The result have statistical significance when the calculated value is larger than the tabulated

value under significance level (0.05). The null hypothesis is rejected at the 0.05 level when $X^2 \geq 3.84$.

Ethical Considerations:

Permissions for the study was obtained prior to collect data, by contacting and receiving the approvals from the competent directors in the Obstetrics and Gynecology Hospital, also the participants women in the study had assured with that the data needed from them will be in complete confidence, and used only for scientific research purposes.

RESULTS

As illustrated in table 1, anemia was found in 75% of pregnant women (23.4% of them have marked anemia and 51.6% of them have early anemia). Table 2 explained that 52.1% of pregnant women were drinking the coffee after eating (80% of them were drinking the coffee directly after eating the meal as in table 3). Table 4 showed that 40.9% of anemic pregnant women were drinking the coffee directly after eating the meal.

Table (1): Distribution of pregnant women attending ANC in Elobeid City according to the Level of hemoglobin - December, 2019

Hemoglobin Level (g/dl)	Frequency	Percentage	Diagnosis of anaemia
5-9.9 g/dl	90	23.4%	Marked anaemia
10- 11 g/dl	198	51.6%	Early anaemia
<11 g/dl	96	25%	Normal
Total	384	100%	-

Table (2): Distribution of pregnant women attending ANC in Elobeid City according to the drinking to the coffee after the eat - December, 2019

Drinking the coffee after eating	Frequency	Percent
Yes	200	52.1%
No	184	47.9
Total	384	100%

Table (3): Distribution of pregnant women according to the period of drinking the coffee after eating the meal - December, 2019

The period of drinking the coffee after eating the meal	Frequency	Percent
Directly	160	80
Half an hour after eating	5	2.5
Hour after eating	7	3.5
Tow hour after eating	28	14
Total	200	100%

Table (4): The relation between the presence of anemia and drinking the coffee directly after eating the meal among the pregnant women in Elobied city - December, 2019

The presence of anemia	The drinking the coffee directly after eating		Total
	Drink	Not drink	
Present	157(40.9%)	131(34.1%)	288(75%)
Not Present	3(0.8%)	93(24.2%)	96(25%)
Total	160(41.7%)	224(58.3%)	384(100%)

N = 384, X^2 (McNemar's test) : calculated = 31.7 and tabulated = 3.84 . Significant level = 0.05.



DISCUSSION

This study showed that anemia was found in 75% of pregnant women (23.4% of them have marked anemia and 51.6% of them have early anemia as in table 1. This evaluation was according to what mentioned by Park [10]: "A hemoglobin level of 10 to 11 g/dl has been defined as early anaemia; a level below 10 g/dl as marked anaemia".

The factor that contributes to the presence of this anaemia among the pregnant women, was drinking the coffee directly after the meal, where the coffee contains some compounds that affect the iron absorption. This opinion corresponds with what mentioned by WHO [7]: "taking the tea or coffee directly after the meal reduce the absorption of iron. Also this corresponds with what mentioned by Kathryn & et al, (6): "Absorption of non-heme iron is inhibited by ... and by polyphenols in some vegetables, coffee, tea. These inhibitors chelate non-heme iron so it is not available for uptake.

Statistically, the results of table 4 showed that the high percentage (40.9%) of the presence of anemia belongs to drinking of coffee directly after the eating, and the minimum percentage (34.1%) belongs to lack of drinking the coffee directly after the eating. These results proved that the drinking of the coffee directly after the eating increases the presence of anaemia in pregnant women. This result was statistically significant, because the calculated value of X^2 (McNemar's test) was larger than the tabulated value ($31.7 > 3.84$) under the significance level 0.05.

CONCLUSION

The study discovered that drinking of the coffee directly after eating contributed to the anemia with 40.9%. This study recommended the pregnant women to stop the drinking of the coffee directly after eating to enhance the absorption of iron from the nutritional meal.

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