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"THE STUDY OF CORRELATION OF DIET PATTERN AND ANEMIA IN PREGNANT WOMEN IN A TERTIARY CARE HOSPITAL IN MYSURU-A PROSPECTIVE STUDY"

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Keywords

Anemia, diet pattern, pregnant women, diet during pregnancy.

"THE STUDY OF CORRELATION OF DIET PATTERN AND ANEMIA IN PREGNANT WOMEN IN A TERTIARY CARE HOSPITAL IN MYSURU-A PROSPECTIVE STUDY"

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Abstract

Introduction: Anemia is a major health problem especially among pregnant women in India. Almost 50% of pregnant women in India are anemic. In anemia the RBCs or hemoglobin are not able to carry enough oxygen to the tissues which results in low oxygen level in body. Anemia is also one of the most common medical disorders seen during pregnancy. Anemia occurs due to iron deficiency due to the fetus accumulates most of its iron during the last trimester. Sufficient diet quality and intake of sufficient energy, protein and micronutrients during pregnancy are very important for suitable gestational weight gain and optimal birth outcomes.

Aim: To study the correlation of diet pattern and anemia in pregnant patients attending ANC clinic in JSS Hospital, Mysuru.

Materials and method: Pregnant patients giving consent for the study were asked to answer the questionnaire to analyze the sociographic and dietary factors affecting their hemoglobin levels. The patients were asked to get complete blood count and peripheral smear at the time of their first visit and then were categorized into mild, moderate, severe anemia. Total 122 patients participated in the study with consent.

Result: The data collected shows that out of 122 patients 65 [53.3%] patients had hemoglobin levels above 11 mg/dl (non-anemic), 49 [40.2%] patients had hemoglobin levels between 10.9 – 10 mg/dl (mild anemic), 8 [6.5%] patients had hemoglobin levels below 10 mg/dl to 7 mg/dl (moderate anemic) and 0 patients had hemoglobin level below 7 mg/dl (severely anemic). Other factors influencing the hemoglobin levels were analyzed.

Key words: Anemia, diet pattern, pregnant women, diet during pregnancy.

Introduction

Anemia is a condition where there is a shortage in the number of [red blood cells] RBCs or the amount of hemoglobin [the protein in RBCs that carries oxygen] in the blood. This leads to reduced ability of the blood to carry oxygen to tissue and organs throughout the body. Anemia in pregnancy can lead to complications such as preterm birth, low birth weight and maternal fatigue. The fetus accumulates most in its iron during the last trimester. Pregnant women are particularly at risk due to increased blood volume and the need to support the developing fetus. Anemia is a most commonly encountered issue during pregnancy. Symptoms of anemia are weakness, fatigue, dizziness, irregular heartbeats, cold hand and feet. Treatment includes, iron supplements or iron rich foods. Vitamin D and folate supplementation. Blood transfusion for severe anemia. Regular monitoring of hemoglobin and hematocrit levels throughout the pregnancy and follow up on iron and vitamin levels as needed, especially in the third trimester when the risk of anemia increases is very important. Proper management and treatment of anemia during pregnancy are crucial to ensure the health of both mother and baby. Regular prenatal care helps in early detection and effective management of anemia. Diet is extremely important in managing and recovering from anemia. Proper nutrition plays a crucial role in providing the necessary nutrients for the production of healthy red blood cells and hemoglobin.

A proper diet is important for the health of the mother and development of the fetus. A diet to recover from anemia should focus on foods rich in iron, vitaminB12 and folate which are essential for the production of healthy RBCs. Iron is crucial for hemoglobin production. Vitamin C enhances the absorption of non-heme iron. Vitamin B12 and Folate [vitamin B9] is essential for RBC production mainly found in animal products.

Materials and Method

Study design: The clearance for the study was issued on 02.05.2024 by the Institutional Ethical Committee, JSS Medical College, Mysuru. The present study is a cross-sectional study carried out among the patients attending ANC clinic in OPD of JSS Hospital.

Study population: All the pregnant women visiting JSS HOSPITAL OBG OPD for antenatal care are included.

Inclusion criteria: All the pregnant women in any trimester.

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Exclusion criteria: Pregnant women who did not give consent.
Pregnant women with sickle cell disease, beta thalessamia .

Study period: The study was conducted in the month of May & June of 2024.

Sampling method: Simple Random Sampling

Sampling technique: The study was conducted through a series of questionnaire. The questionnaire included sociodemographic profile, obstetric history, diet pattern and hemoglobin levels along with pre validated diet chart. Certain blood investigations including complete hemogram, peripheral smear are collected at the time of visit.
The hemoglobin measured is used to determine if the patient is severely anemic or not.
Sample size: A total of 122 pregnant women participated in the study with their consent.

Analysis

The data collected is analysed through SPSS [Statistical Package for Social Sciences] version 25. Descriptive statistics like percentages, mean and standard deviation will be used for descriptive data.

The patients are divided into four groups according to WHO CLASSIFICATION for anemia in pregnancy:

Group 1: Patients with hemoglobin levels above 11 mg/dl [non-anemia]

Group 2: Patients with hemoglobin levels between 10 .9 - 9 mg/dl [mild anemia]

Group 3: Patients with hemoglobin levels between 8.9 - 7 mg/dl [moderate anemia]

Group 4: patients with hemoglobin level below 7 mg/dl [severe anemia]

According to the questionnaire the data is further divided in sub groups.

RESIULTS:

TABLE 1: Age of the patients

Age [years]	Frequency [N]	Percentage [%]
19 – 25	42	34.4%
26 – 32	65	53.3%
33 – 39	15	12.3%
	N = 122	Total = 100%

Table 2: Gestational period of patients

Trimester	Frequency [N]	Percentage [%]
1st [0 to 13+6 weeks]	11	9.03%
2nd [14 to 27+6 weeks]	42	34.42%
3rd [28 to 40 weeks]	69	56.55%
	N = 122	Total = 100%

TABLE 3: Association of anemia status with sociodemographic factors.

Sr. no.	Characteristics	Hb above 11 mg/dl [non-anemia]	Hb level 10.9 - 9 mg/dl [mild anemia]	Hb level 8.9 - 7 mg/dl [moderate anemia]	Hb below 7 mg/dl [severe anemia]	Total (%)
1.	Patient hemoglobin levels	65 [53.3%]	49 [40.2%]	8 [6.5%]	--	122 [100%]
2.	Gravida Primigravida Multigravida	 30 (49.2%) 35 (57.4%)	 27 (44.3%) 22 (36.1%)	 4 (6.5%) 4 (6.5%)	 -- --	 61 (100%) 61 (100%)
3.	Education Primary Graduate Post graduate	 21 (55.3%) 35 (51.5%) 9 (56.3%)	 13 (34.2%) 29 (42.6%) 7 (43.7%)	 4 (10.5%) 4 (5.9%) --	 -- -- --	 38 (100%) 68 (100%) 16 (100%)
4.	Current status Housewife Working	 44 (47.8%) 21 (70%)	 40 (43.5%) 9 (30%)	 8 (8.7%) --	 -- --	 92 (100%) 30 (100%)

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TABLE 4 : Association of anemia status with dietary factors

Sr. No.	Characteristics	Hb above 11 mg/dl [non-anemia]	Hb level 10.9 to 9 mg/dl [mild anemia]	Hb level 8.9 to 7 mg/dl [moderate anemia]	Hb below 7 mg/dl [severe anemia]	Total (%)
1.	Daily intake of tea/ coffee					
	Once	11 (40.7%)	13 (48.2%)	3 (11.1%)	--	27 (100%)
	Twice	13 (52%)	9 (36%)	3 (12%)	--	25 (100%)
	Thrice	2 (40%)	1 (20%)	2 (40%)	--	5 (100%)
	Not at all	39 (60%)	26 (40%)	--	--	65 (100%)
2.	Consuming fruit as a source of vitamin B6 and C					
	Yes	65 (53.3%)	49 (40.2%)	8 (6.5%)	--	122
	No	--	--	--	--	(100%)
3.	Appetite for food					
	Poor	4 (50%)	2 (25%)	2 (25%)	--	8 (100%)
	Fair	26 (52%)	20 (40%)	4 (8%)	--	50 (100%)
	Good	35 (54.7%)	27 (42.2%)	2 (3.1%)	--	64 (100%)
4.	Consuming green leafy vegetables as a source of iron					
	Yes	65 (53.3%)	49 (40.2%)	8 (6.5%)	--	122
	No	--	--	--	--	(100%)
5.	Intake of milk as source of calcium (weekly)					
	Daily	59 (54.1%)	43 (39.4%)	7 (6.4%)	--	109
	Sometimes	3 (50%)	3 (50%)	--	--	(100%)
	Not at all	3 (42.9%)	3 (42.8%)	1 (14.3%)	--	6 (100%)
						7 (100%)
6.	Patients consuming non-vegetarian food	39 (54.9%)	28 (39.4%)	4 (5.6%)	--	71 (100%)
7.	Patients consuming only vegetarian food	26 (51%)	21 (41.2%)	4 (7.8%)	--	51 (100%)
8.	Patients who consume egg as a source of protein	41 (53.9%)	31 (40.8%)	4 (5.3%)	--	76 (100%)
9.	Patient consuming fast food/ outside food					
	Once	24 (66.6%)	11 (30.5%)	1 (2.7%)	--	36 9100%)
	Twice	8 (61.5%)	4 (30.8%)	1 (7.7%)	--	13 (100%0
	Thrice	--	1 (100%)	--	--	1 (100%)
	Not at all	33 (45.8%)	33 (45.9%)	6 (8.3%)	--	72 (100%)

The above table shows the percentage of the dietary factors affecting the hemoglobin levels of the pregnant women.

DISCUSSION:

Anemia is a most common occurring disorder during pregnancy. According to the data prevalence of anemnia in Mysuru is 64.2 %. In our study 53.3% pregnant patients are at normal hemoglobin level and 46.7% are anemic. Anemia results in many complications in fetus as well as the mother [18]. Diet is a key component in both the prevention and treatment of anemia. Ensuring a well balance diet rich in iron, vitamin B12 and folate is essential for producing healthy RBCs and preventing anemia [5,8,12].

There are various factors that affect the hemoglobin concentrations. The results show that patients with higher education have more knowledge about their health and have a good hemoglobin range [3]. Anemia is a major health problem during pregnancy.

According to the data collected none of the patients were HIV/ AIDS positive. None of the patients were smoking/ drinking during their pregnancy. Patients who said to have any type of stress or tension were having slight worry about life nothing serious and were advised not to take any kind of tension.

Patients who do not consume any type of non-vegetarian food were prescribed supplements for proper nourishment.

Study published by Kashis Grover etal in 2020 showed anemia levels in pregnant patients as mild, moderate and severe anemia in 19.6%, 59.8% and 5.9% respectively [3]. Another study published by Dev Ram Sunuwar et al in 2019 showed anemia levels in pregnant patients as majority of the patients has hemoglobin levels between 9 – 10.9 mg/dl [23]. The present study showed that majority of pregnant patients (53.3%) had normal hemoglobin levels above 11 mg/dl and (40.2%) had hemoglobin levels between 10 – 11 mg/dl and (6.5%) had hemoglobin levels below 10 mg/dl.

Among the 122 patient major patients were of 3rd trimester (56.55%) and 2nd trimester had (34.42%) patients and (9.03%) of patients were in 1st trimester [table 6]. For certain factors (e.g. hemoglobin, HIV/AIDS, etc.) the patients are asked to get blood test done every 1 or 2 months.

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Sociodemographic factors and dietary factors are responsible for the low and high levels of hemoglobin . After the pregnancy is confirmed through test the patient is given the primary prenatal care. The patients are provided basic knowledge about the care to be taken during the pregnancy. The patients are advised to meet the dietician and follow the diet recommended by the dietician.

Proper diet is essential for proper development of the fetus [3,6,12]. Deficiency in nutrients results in poor fetal development [8]. As the fetus absorbs all the nutrients from mother; the mother should take proper care of herself. Monitoring hemoglobin and other nutrients level time to time helps in proper fetal development.

For patients who don't consume certain food products or allergic to them are prescribed with supplements to recover the deficiencies. Proper knowledge of diet and do's & don'ts during pregnancy is the most important part. Patients should not take any kind of stress or tension because it can affect the fetus.

Dietary factors along with sociodemographic factors affect the hemoglobin levels. Hemoglobin helps in transfer of oxygen from heart to throughout the organs and tissues of the body. The diet of the pregnant patient should majorly contain all the nutrients along with daily diet.During pregnancy the fetus absorbs the nutrition and iron through mother's body. Therefore, the iron level of the patient drops. The patients are advised to take additional iron, calcium, folic acid, protein and multivitamins along with the regular diet so that the fetus can grow healthy without any complications.

CONCLUSION

The study indicates that diet plays a major role in maintaining hemoglobin levels and in nourishment of the fetus and health of the mother. The source of the fetus to absorb all the nutrients is the mother, therefore deficiency of nutrients will be present in the mothers body. To recover from the deficiency the patients should have the proper knowledge about the importance of diet.

The study showed that the questionnaire is a very easy and useful tool to analyse the factors that may be affecting the health of the pregnant patient. Patients should be aware of the

complications and consequences of not following proper diet. For both the mother and the fetus to not have any problems before and after delivery proper and healthy diet is important.

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