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Effectiveness of treatment of anemia among pregnant women reporting to tertiary care hospital in Mandya: A cross sectional study

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ABSTRACT

Objective: Our study aims to describe the treatment provided to pregnant women with anemia and examine their compliance with diet education for controlling anemia. Additionally, we seek to assess the effectiveness of a self- instructional module in enhancing knowledge about managing iron deficiency anemia through diet among pregnant women. **Method:** Cross sectional prospective study on 200 cases of anemic pregnant women was enrolled from the OBG Department, MIMS Mandya from July 2023 to December 2023. **Results**: The present study showed that among 200 pregnant women we found that majority of pregnant women was from age group of 23-27 years (44.5%). Around 122 (61%) patients have done their education up to college, rural (78%) and multipara (59%). Most of them were recovered from anaemia from first ANC visit to last ANC visit 169 (84.5%). 185 (92.5%) were consumed about 140-179 iron folic acid tablets, and 9 pregnant women (4.5%) underwent blood transfusion. 189 (94%) of them taken fresh fruits, milk vegetables regularly and doing their normal work**. Conclusion:** majority of pregnant women anaemic condition has been improved from first ANC visit to last ANC visit. The researcher concluded that the self- instructional module was helpful in improving the level of knowledge among pregnant women. Iron tablets, multivitamins, and albendazole had a modest benefit in the effectiveness of treatment of anaemia. Effective treatment during pregnancy period will improve their clinical outcomes.

KEYWORDS: Anaemia, Effectiveness, Treatment, ANC, Cross sectional.

INTRODUCTION

Anemia, characterized by low hemoglobin levels or a decreased count of red blood cells, is the primary hematological disorder observed during pregnancy. This condition can occur due to in-sufficient intake or absorption of iron, as well as blood loss[1]. Insufficient nutrition during pregnancy is associated with insufficient weight gain, anemia, hindered fetal growth, low birth weight, stillbirths, premature delivery, intrauterine growth retardation, morbidity, and mortality rates[2]. The World Health Organization defines anemia as a hemoglobin concentration below 13 g/dl for men or below 12 gm/dl for women[4].

There exist over four-hundred varieties of anemia; certain symptoms are more prevalent during pregnancy. These include iron deficiency anemia resulting from a lack of iron, folate deficiency anemia caused by insufficient Folic acid, and vitamin B12 deficiency anemia stemming from inadequate vitaminB12. Iron deficiency anemia is the most frequently diagnosed type during pregnancy, with approximately 80% of non-supplementing pregnant women at term having hemoglobin concentrations below 11gm/dl.

Folic acid deficiency anemia is the second most prevalent type, leading to a Megaloblastic form of anemia. Folate, particularly its derivative formyl FH4, is crucial for proper DNA synthesis and amino acid production. Additionally, other nutrient deficiencies during pregnancy, such as trace elements, vitamins, and proteins, play a role in supporting the hematologic system of the mother, fetus, and newborn. These nutrients are essential for the metabolism of amino acids, carbohydrates, and fats, contributing to the development of anemia[3].

During pregnancy, having a hemoglobin (HB) level lower than 11gm/dl is categorized as anemia, which is a frequent occurrence among pregnant women. This condition is more prevalent in developing countries, reaching rates as high as 51%, compared to 14% in developed nations. On a global scale, approximately 32.4 million pregnant women are affected by anemia, with a majority of cases occurring in Southeast Asian and African countries. In India, the prevalence of anemia during pregnancy ranges from 65% to 75%[5].

Pregnant women who have mild to moderate anemia caused by a lack of iron should have a comprehensive assessment done to determine the underlying cause. Along with addressing the main issue, these patients should also be prescribed iron therapy. Oral iron replacement is the preferred method, as there is no advantage in using injections instead of taking iron orally. In cases where iron sulfate is not well tolerated, ferrous sulfate and fumarate can be used. The recommended dose is 120 to 200mg of iron daily, fractioned into multiple dosages. To effectively treat anemia and restore iron levels, it is important to maintain the oral iron treatment for a suitable period of time, typically at least 6 months. Hemoglobin levels should increase by around 2 grams per deciliter every three weeks. Possible gastrointestinal symptoms such as diarrhea, nausea, constipation, and abdominal pain are among the possible side effects associated with iron.

The dosage of intravenous iron infusion with Dextran during pregnancy (containing 50mg iron per milliliter) is calculated using the formula:

Dose (in milliliters) = 0.0442 multiplied by the difference between the desired hemoglobin level and the observed hemoglobin level, multiplied by the lean body weight (45.5 kg + 2.3 kg for each inch of the patient's height above 5 feet) in micrograms, plus (0.26 multiplied by the lean body weight) plus 1 gram.

The total amount of iron dextran is mixed with 500ml normal saline and delivered slowly over a 4-hour period. The main disadvantage of using parenteral iron is the risk of anaphylaxis, which can occur within 30 minutes of starting the infusion and can be rapidly fatal. Intramuscular iron therapy, such as iron sorption (Jectofer), can be administered at a rate of 50mg per minute. Parenteral iron may be recommended for individuals who have difficulty adhering to oral iron treatment, experience side effects or intolerance, or have problems absorbing oral iron. In these cases, parenteral iron, such as dextran or sorbitol, can be given through intravenous or intramuscular routes. The hematological response to parenteral iron is not faster than the appropriate dosage of oral iron, but it allows for quicker replenishment of iron stores. The safest form of parenteral iron, administrating ferric hydroxide sucrose through slow IV administration or infusion is typically deemed the safest choice, with each infusion containing around 200mg of iron. Iron dextran can be administered in small doses through a slow injection or infusion, or it canbe given as a single-day infusion with the complete dose.

The formula for calculating the total dose of intravenous iron infusion with Dextran in pregnancy (50mg iron per ml) is as follows: dose (ml) = 0.0442 multiplied by the difference between the desired hemoglobin (HB) level and the observed HB level, multiplied by the lean body weight (LBW) in μ (where LBW = 45.5 kg + 2.3 kg for every inch of height over 5 feet), plus (0.26 multiplied by LBW), plus 1g.

The complete amount of cosmofer is combined with 500 ml of Normal saline and administered slowly beyond the 4-hour timeframe. The main disadvantage of using iron intravenously is the possibility of experiencing a severe allergic reaction, which can happen within thirty minutes of starting the infusion and can potentially lead to death quickly. An alternative option is IM iron therapy, which has the

ability to administer as iron sorption (Jectofer) at a rate of 50mg per minute, given every 6-8 minutes[6-8].

METHODOLOGY

A Prospective study was conducted in the in-patient department of OBG MIMS, Mandya over a period of six months after getting approval from ethical committee. About 200 pregnant women records those satisfied inclusion and exclusion criteria were included in the study.

INCLUSION CRITERIA

Records among pregnant women who were discovered to have anemia at the time of their first antenatal check up visit.

EXCLUSION CRITERIA

Incomplete details

DATA COLLECTION METHOD

All the relevant data was obtained from the pregnant women medical report and through the counseling the patient who visited Department of OBG, MIMS Mandya.

SOURCE OF DATA MATERIAL:

Data have been collected who admitted in OBG department, which includes social demographic details like Name, Age. It also contains details on treatment, education, knowledge about disease.

STATISTICAL ANALYSIS:

Descriptive Statistics like Mean with suitable known parametric statistics has been applied in the present study. Simple percentage calculations have been calculated in order to reach the final determination of our research. Data

has been inputted into Microsoft excel and graphs, tables, and other visual representations have been created usingword.

RESULT

Table 1: Distribution of pregnant women based on various age groups

VARIOUS AGE GROUPS IN YEARS	18-22	23-27	28-32	32-38
NO.OF PREGNANT WOMENS	62	89	41	8
PERCENTAGE OF PREGNANT WOMEN	31%	44.5%	20.5%	4%

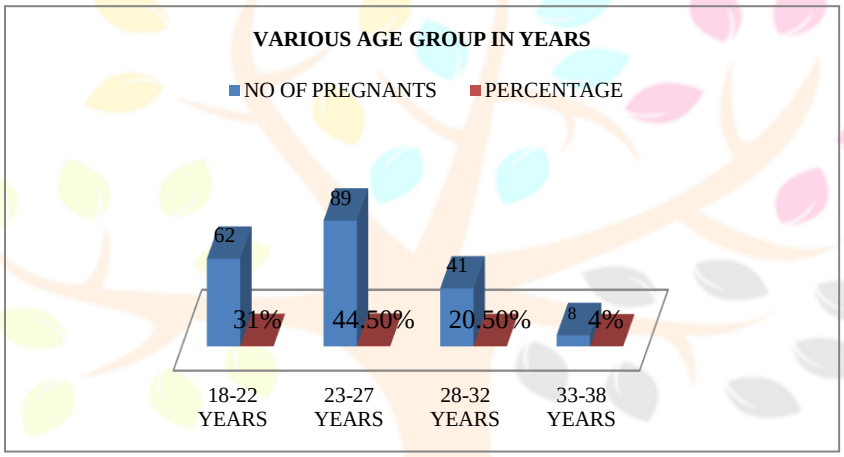

Figure 1: Distribution of pregnant women based on various age groups

Figure 1 illustrates allocation of expecting mothers across various age brackets. Out of the 200 women included in the study, 62 were between the ages of 18 and 22, surrounded by the ages of 23 & 27, there were 89 individuals , 41were in the middle of ages of 28 and 32, and 8 were amidst the ages of 32 and 38.

Table 2: Distribution of pregnant women based on residence

SL NO	RESIDENCE	NO OF PREGNANT WOMENS	PERCENTAGE

1	RURAL	157	78%
2	URBAN	43	22%

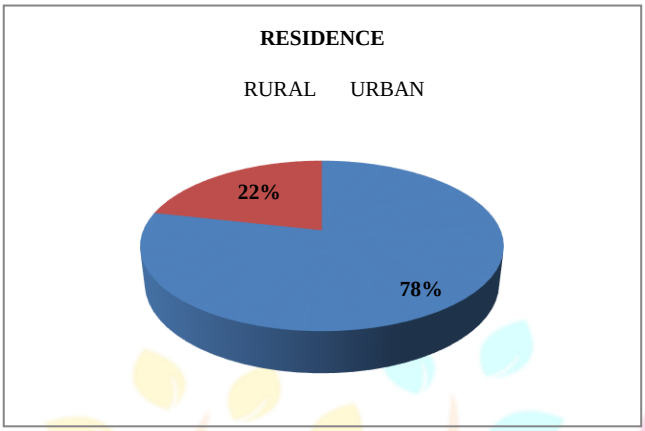

Figure 2: Distribution of pregnant women based on residence

Figure 2 shows about the residence of pregnant women. Out of 200 pregnant women, 157 (78%) were living in ruralarea and 43 (22%) were living in urban area. Patient populations in rural areas are higher than in urban areas.

Table 3: Distribution of Pregnant women based on different categories

SL NO	CATEGORY.		NUMBER OF PREGNANT WOMEN	PERCENTAGE OF PREGNANT WOMEN
01	First ANC visit	1st month	01	0.5%
		1 and half month	164	82%
		2nd month	12	06%
		2 and half month	09	4.5%
		3rd month	11	5.5%
		4th month	01	0.5%
		5th month	01	0.5%
02	Consumption of albendazole	Yes	106	53%
		No	94	47%
03	Blood transfusion	Given	09	4%
		Not given	191	96%
04	Diet: Fresh fruits, vegetables& milk	Daily	166	83%
		2 times in a week	30	15%
		Weekly	00	00
		Rarely	04	02%
05	Nature of work	Light and normal	189	94%
		Exhaustive	11	06%
06	Eating habits	Just like previous	141	70.2%
		Double than previous	34	17%
		Less than previous	25	12.5%
07	Iron folic acid tablets	Below 100 tablets	1	0.5%

		100-139 tablets	3	1.5%
		140-179 tablets	185	92.5%
		180 tablets	11	5.5%

Table 4: Distribution of pregnant women according to their level of education

SL NO	EDUCATION	NO OF PREGNANT WOMENS	PERCENTAGE(%)
1	ILLITERATE	3	1.5
2	PRIMARY	15	7.5
3	SSLC	60	30
4	COLLEGE	122	61

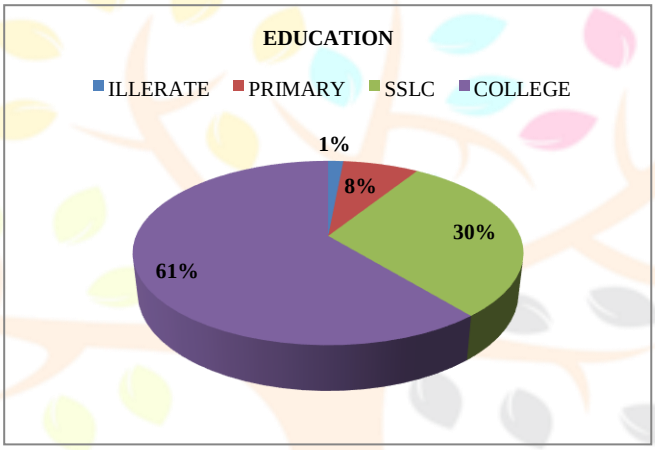

Figure 4: Distribution of pregnant women according to their level of education

The chart presented in Figure 4 illustrates the educational background of pregnant women included in the study. Outof a total of 200 pregnant women, 3 were unable to read or write, 15 had completed primary education, 60 had completed secondary education (SSLC), and 122 had graduated from college. A larger number of participants had successfully pursued higher education, beyond college level.

Table 5: Distribution of pregnant women based on haemoglobin concentration

SLNO	HB CONCENTRATION BEFORE LABOURPAIN	NO OF PREGNANTWOMEN	PERCENTAGE(%)
1	INCREASED	161	80.5
2	DECREASED	39	19.5

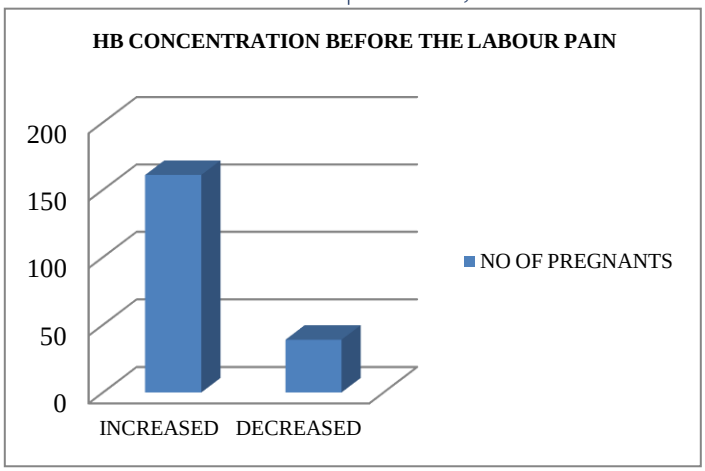

Figure 5: Distribution of pregnant women based on haemoglobin concentration

Out of 200 pregnant women, 161 recovered from anemia from the first ANC visit to the last ANC visit before laborpain, and 39 pregnant women did not recover from anemia.

DISCUSSION

A sample group of pregnant women that met the inclusion and exclusion criteria consisted of a total of 200 individuals. Our study revealed that the majority of these pregnant women fell within the age range of 23-27 years, accounting for 44.5% of the participants. Around 122 patients, which equates to 61%, had completed their education up to college level. The study findings demonstrated that most of the women resided in rural areas, with 157 individuals comprising 78% of the sample. Additionally, 118 women (59%) were classified as multigravida patients. It was found that a significant number of participants, 169 women in total (84.5%), showed improvement in anemia from their first visit to their last visit to the antenatal care unit. Among these women, 185 individuals (92.5%) consumed approximately 140-179 iron folic acid tablets, similar to the findings of a study conducted by **Ravindranath Pallika et al**[9]. Only 9 patients (4.5%) underwent blood transfusion. Furthermore, 189 women (94%) reported regularly consuming fresh fruits, milk, and vegetables, as well as being able to perform light and normal work duties.

CONCLUSION

The effectiveness of treatment for anemia among pregnant women attending MIMS Mandya, a tertiary care hospital, was investigated in a cross-sectional study. To gather the necessary information, a well-designed patient data collection form and questionnaire were utilized. These forms included patient demographic details such as age, residence, education, gravida, as well as information about hemoglobin levels during checkups and the treatment provided for anemia.

The study focused on anemic pregnant women, and a total of 200 cases were collected. According to the study we concluded that majority of these cases were observed in women aged 23–27 years who were educated, rural residents, and had previous pregnancies. Most of these women had their first antenatal care (ANC) visit within the first 1.5 months of pregnancy. The majority of the pregnant women showed improvement in their anemic condition from their first ANC visit to their last. The common treatment methods included the use of iron and folic acid tablets, vitamins, and albendazole tablets, with blood transfusions being rare. Additionally, most of these women included fresh fruits, vegetables, and milk in their diet while carrying out their normal daily activities. The use of a

self-instructional module proved helpful in increasing the pregnant women's knowledge levels. Overall, effectivetreatment during pregnancy can lead to improved clinical outcomes for these women**.**

CONFLICT OF INTEREST

'We, as the authors, do not possess any conflicts of interest.'

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