ASSOCIATION OF DIETARY PATTERN WITH HAEMOGLOBIN LEVEL AMONG REGISTERED ANTENATAL WOMEN IN RURAL MAHARASHTRA

Community Medicine

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ABSTRACT

Aim – To study the association of dietary pattern with haemoglobin level among registered antenatal women in rural Maharashtra. Study design – cross sectional observational study. Methodology – Pregnant women registered at 3 randomly selected sub-centres of a primary health centre in rural Maharashtra were included in the study (N = 63). Antenatal women with systemic diseases like diabetes, eclampsia and heart diseases were excluded from the study.

Results – Most of them belonged to the age group of 20 – 25 years (53.9%). Most of them were primigravida (42.9%). 79.4% of the total pregnant women were non-vegetarians. Analysis of the haemoglobin status revealed that 65% of the total participants were anaemic (Hb level < 11 g %). However, the association between haemoglobin levels and dietary pattern was not found to be statistically significant (p>0.05).

Conclusion – Anaemia during pregnancy is common in developing countries and is associated with significant morbidity & mortality. Dietary pattern like vegetarian/non-vegetarian in combination with Iron and Folic Acid supplementation will significantly reduce the problem of Anaemia in pregnancy.

KEYWORDS

Antenatal, diet, Anaemia

Introduction

Anaemia is the second leading cause of disability in the world and is responsible for one million deaths per year of which three quarters occur in Africa and South-east Asia. In terms of lost years of healthy life, iron deficiency anaemia causes 25 million cases of DALY that is 2.4% of total DALYs worldwide. According to WHO/World Bank ranking, iron deficiency anaemia is the third leading cause of DALYs lost for females aged 15 - 44 years. India contributes to 80% of maternal deaths due to anaemia in South Asia.[1]

Reduction in maternal mortality is an area of concern across the globe. Indirect causes including anaemia and heart diseases account for 34% of the total maternal deaths.[2] According to WHO, a haemoglobin level of < 11g% is considered as anaemia during pregnancy.[3] It is estimated that 38.2% of pregnant women worldwide are anaemic which translates to around 32.4 million pregnant women.[4] 50% of pregnant women in India are anaemic.[5]

Maternal mortality reduction remains a priority under "Goal 3: Ensure healthy lives and promote well-being for all at all ages" in the new Sustainable Development Goals (SDGs) agenda through 2030. (6) In keeping with this goal the government has taken measures to tackle anaemia in pregnant women. A major strategy used in this regard is universal screening of all pregnant women for anaemia and iron and folic acid supplementation as a part of antenatal care.

Prevalence of anaemia among pregnant women leading to various complications including low birth weight, preterm pregnancy continues to be a matter of concern. This study was taken up to determine association between dietary pattern and haemoglobin levels among registered pregnant women.

Materials and methods

Study type and design – Cross sectional observational study

Study setting – The study was conducted in the months of December 2017 and January 2018 at 3 out of 6 randomly selected sub-centres of a Primary Health Centre in rural Maharashtra. This PHC is a part of rural field practice area in post graduate curriculum.

Study population – Pregnant women registered at 3 sub-centres of a PHC who came for follow up in the months of December 2017 and January 2018.

Study sample – All the pregnant women registered in the sub-centres were included in the study after applying the exclusion criteria.

Study tools - 1. A pre validated questionnaire was used to collect data. 2. ANC card was used to obtain data on Haemoglobin levels.

Inclusion criteria – All pregnant women registered in the sub- centres that came for follow up in the months of December 2017 and January 2018 were included in the study.

Exclusion criteria – Patients with incomplete ANC records were excluded from the study. Also, patients with systemic diseases like diabetes, eclampsia and heart diseases were excluded from the study

Sample size – Total pregnant women enrolled in the study were 63 (N=63)

Sampling technique – Convenient sampling. Study variables included age of the pregnant woman, gravida status, diet and haemoglobin levels.

Data entry and Analysis – Data was tabulated and analyzed using Microsoft Excel. Frequency and percentages of categorical variables were calculated. Chi square was used to analyze association between two qualitative variables. p value of < 0.05 was taken as level of statistical significance.

Results
Table 1

Age of pregnant women		
Age (years)	Number	Percentage
< 20	6	9.5 %
20 – 25	34	53.9 %
25 - 30	16	25.4 %
30 – 35	5	7.9 %
> 35	2	3.2 %
Total	63	100 %
Gravida Status		
Gravida	Number	Percentage
Primi	27	42.9%
Gravida 2	16	25.4 %

Gravida 3 or more	20	31.7 %
Total	63	100 %

Weeks of Gestation

Gestational age (weeks)	Number	Percentage
Upto 12	8	12.7 %
13 – 24	26	41.3 %
>24	29	46 %
Total	63	100 %

Dietary pattern of pregnant women

Diet	Number	Percentage
Veg	13	20.6 %
Non veg	50	79.4 %
Total	63	100 %

Haemoglobin level of pregnant women

Haemoglobin (gm/dl)	Number	Percentage
< 11	41	65 %
>11	22	35 %
Total	63	100 %

Most of the pregnant women registered at the sub-centres belonged to the age group of 20 – 25 years (53.9 %), followed by the age group 25 - 30 years (25.4%). 9.5 % of the pregnant women were less than 20 years of age. 7.9% of them belonged to the age group of 30 – 35 years. Very few pregnant women were more than 35 years of age (3.2%).

Out of the 63 pregnant women registered, 42.9% were primigravida, 31.7% were gravida 3 or more and 25.4% were gravida 2. 46 % of the pregnant women were in the third trimester, followed by 41.3 % in the second trimester and 12.7 % in the first trimester.

Most of the pregnant women were non-vegetarians (79.4 %) and 20.6 % were vegetarians. 65% of the registered pregnant women were anaemic (Hb < 11gm/dl) and 35% had normal haemoglobin levels.

Table 2

Gravida Status	Haemoglobin levels		Total
	< 11 gm/dl	>11 gm/dl	
Primi	20	7	27
Multi	21	15	36
Total	41	22	63

(Chi square = 1.68, p value = 0.19, DF = 1)

The association between gravida status and haemoglobin levels was not found to be statistically significant (p value > 0.05).

Table 3

Diet	Haemoglobin levels		Total
	< 11 gm/dl	>11 gm/dl	
Veg	10	3	13
Non veg	31	19	50
Total	41	22	63

The association between diet and haemoglobin levels was not found to be statistically significant (p value > 0.05).

Discussion
This study was conducted among 63 registered pregnant women in 3 randomly selected sub-centres of a PHC in rural Maharashtra from December 2017 to January 2018. A pre-validated questionnaire was used to obtain data regarding the type of diet followed by the women. Haemoglobin levels were obtained from their respective ANC cards. As this study population comprised of registered beneficiaries, all received services namely, anaemia screening and iron and folic acid supplementation under antenatal care. Statistical tests were applied to study association between gravida status and haemoglobin levels as well as dietary pattern and haemoglobin levels. Haemoglobin level < 11g% was taken as cut off for anaemia during pregnancy.

According to previous studies, nutritional anaemia is the most common type of anaemia found among pregnant and that rising parity and non-diversified diet were considered as major causal factors of anaemia during pregnancy.[7,8] In this study it was found that 65% of the

pregnant women were anaemic, of which 48.8% were primigravida and 51.2 % were multigravida and there was no statistically significant association between gravida status and anaemia. Similar finding was observed in a study conducted by Srilatha J. wherein no significant difference was found in the prevalence of anaemia between primigravida and multigravida subjects.[9]

In this study 70% of the study subjects were non-vegetarians and there was no statistically significant association between dietary pattern (vegetarian versus non-vegetarian diet) and anaemia. This finding was contrary to the findings of a study conducted by Cheema et al wherein maternal anaemia was significantly associated with vegetarian dietary pattern. [10]

Statistically non-significant association between anaemia with diet and gravida status respectively suggests that effects of these factors could be overcome with the help of iron supplementation. However in a developing country like India where the adequacy of diet is questionable, anaemia persists to be a concern despite such efforts. Economic status and socio cultural influences continue to play a pivotal role in defining the dietary pattern of an individual. In this backdrop the Government of Maharashtra has devised schemes like *Amrut Ahar* to ensure adequate diet to pregnant women belonging to backward classes. [11] Such schemes along with iron and folic acid supplementation and anemia screening would prove to be important tools to provide widespread comprehensive antenatal care instrumental in decreasing the incidence of anaemia during pregnancy. Pre-conceptional iron and folic acid supplementation as well ensuring good quality diet also help in preventing anaemia during pregnancy and thus improve pregnancy outcomes.[12] Another step in this direction is iron supplementation among adolescent girls. Weekly Iron and Folic acid Supplementation (WIFS) is one such initiative started by the Government of India under which adolescent girls enrolled in Government/Municipal schools as well as school drop outs are taken as target population for weekly iron and folic acid supplementation.[13]

Conclusion
Type of diet and rising parity are known causes of anaemia during pregnancy. Iron and folic acid supplementation can overcome the effect of these factors by following life cycle approach for anaemia prevention by means of various schemes encompassing vulnerable female population in various age groups.

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