CODEN: IAASCA   **ORIGINAL ARTICLE**

Studies on Vgetarian and Non- vegetarian food habits during pregnancy period

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ABSTRACT
The study was conducted on 35 pregnant women who were pregnant at in Attarsuiya at Allahabad (U.P.), India during in the year 2017-18. Anaemia in pregnancy is associated with increased rates of maternal and prenatal mortality, premature delivery, low birth weight, and other adverse outcomes. Haemoglobin is expected to drop during pregnancy. It is normal for haemoglobin to drop to 10.5g/dl during pregnancy. Micronutrients like Iron, copper, pyridoxine, Vitamin-C, Vitamin-B12, the deficiency is may cause of low haemoglobin that is become a reason for Anaemia. The blood was collected from all the subjects to measure the haemoglobin (Hb) during 16-18 weeks, 22-24 weeks, and 34-35 weeks of gestation. According to food habits, it is divided into 2 groups. The first group was vegetarian and the second group was non-vegetarian both groups were taken proper routine check-ups by the gynaecologist and consult a nutritionist. Result founded that BMI Mean± SD of vegetarian pregnant women is 23.1±4.1 and on vegetarians was 22.8 ±2.9. Haemoglobin Mean± SD of a vegetarian pregnant lady is 11.9±0.4 and on non-vegetarians was 11.3±1.3. There is no significant difference (p <0.05) was observed value of BMI and haemoglobin in both groups.
Keywords: vegetarian diets, nutrition; pregnancy, anaemia, balanced diet.

CITATION OF THIS ARTICLE
B Gautam and K.K. Singh. Studies on Vgetarian and Non- vegetarian food habits during pregnancy period. Int. Arch. App. Sci. Technol; Vol 11 [2] June 2010: 23-27

INTRODUCTION
Anaemia during pregnancy increases the risks of issues such as maternal and perinatal mortality, premature delivery and a low birth rate [15]. Haemoglobin is a complicated protein in the blood that helps transport oxygen and carbon dioxide to various parts of the body [16]. Iron is the main component of red blood cells and hence the name haemoglobin where 'haemo' stands for iron and 'globulin' is the name of the protein [4]. The haemoglobin level in women should range between 12 to 16g/dl [5,4]. When a woman is pregnant, she requires more oxygen than normal as the foetus also needs oxygen. Anaemia is a drop in the amount of haemoglobin and red blood cells. Anemia is a comparatively normal finding in pregnancy. Plasma is the watery, non cellular component of blood. In pregnancy, there is an extension in plasma volume of the blood in order to help provide oxygen and nutrients to mother and baby [1, 13]. There can be a 20% increase in the total number of red blood cells but the number of plasma increases, even more, causing dilution of those red cells in the body. A haemoglobin level of pregnancy can typically lower to 10.5 gm/dL representing normal anaemia of pregnancy [5, 1]. Researchers conclude that about 20% of pregnant women in the world suffer from anaemia or low haemoglobin levels. Hence, as soon as a woman is pregnant, her haemoglobin level is estimated. This is because the oxygen-carrying capacity of the blood directly depends on the concentration of the circulating haemoglobin. Haemoglobin is measured in g/dl (gram per decilitre) [14,18].

Haemoglobin is supposed to drop during pregnancy in reality, it is considered normal for haemoglobin to drop to 10.5g/dl during pregnancy. When a woman is pregnant, her blood volume increases by 50% to provide necessary nutrients to the developing baby [6, 8]. By the 8th week of pregnancy, the increase in blood plasma is higher than red blood cells in an expecting mother. Due to a drop in the concentration of red blood cells in the blood, the haemoglobin level drops down to as low as 10.5g/dl. Anything lower than this needs attention. If the haemoglobin levels drop below 10.5g/dl, it can have an influence on the health of the pregnant woman [14,11]. Hence, it is important to take an iron supplement during pregnancy as prescribed by the doctor. The main aim of this present study to revealed anemia due to food habits, if vegetarian has taken proper diet and consults gynaecologist and nutritionist.

MATERIAL AND METHODS

This study was conducted in the Attarsuyia locality in Allahabad, Uttar Pradesh, India during the period from April 2017 to January 2018. Informed written consent was acquired from the Women before enrolment who's pleasing the inclusion and exclusion criteria engaged this study. Detailed clinical history and clinical examination were carried out. Food frequency and 24 hours of dietary recall methods were used for dietary assessment [6, 10, 11, and 7]. Randomly selected 30 women who were categorized into two groups (11vegetarians and 19 non-vegetarians) with an age ranged from 22-35 years.

An overnight fast venous blood sample was collected for the estimation of haemoglobin (Hb %) levels in the vegetarian and non-vegetarian pregnant female. The haemoglobin was estimated by Sahli's method with a standard component of Sahli's hemoglobinometer [3].

The statistical data was recorded on the Microsoft Excel programme. The comparison between two groups was done by unpaired t-test in Graph Pad Prism 8 software, ANOVA and correlation analysis were used to do statistical analyses. P-value < 0.05 was considered as statistically significant [7,8]

RESULT

The result presented in table 1. The 32 pregnant women in the third trimester were selected. 2 women's clinical data does not available. There were 11 vegetarian and19 nonvegetarian food habit third-trimester females. Majority of pregnant women were non vegetarian. The calculated average at of all pregnant women was 29±3.5 years and the majority of the women belongs24 -28 to age group 24-35 years.

Table 1: food habit of   pregnant women

Gender	No. of women's	Percentage
Vegetarian	11	36.7
Non vegetarian	19	63.3

Table2- Nutritional status pregnant women

Nutritional status pregnant women	Mean ± SD of Vegetarian pregnant women (N=11)	Mean ± SD of Vegetarian pregnant women(N=19)	Statistically significant, unpaired t-test (P<0.05)	P value
BMI	23.14±4.0	23.32±2.9	No	0.244
Hb	11.4±0.4	11.33±1.3	No	0.73

In (table 2) this study, we compare the nutritional assessment test in two groups. First, women were vegetarian, the second group were non-vegetarian that women had taken regular one egg daily and around 100 gm fish or chicken two times a week. BMI and Hb were statistically insignificantly changed. BMI evaluated vegetarian pregnant women Mean ± SD were 23.1 ±4.0 and non-vegetarian BMI Mean ± SD calculated 23.32±2.9. The haemoglobin (gm %) in vegetarian women was 11.4 ± 0.4 while the second group was 11.33 ± 1.32 respectively. The p-value is < 0.73, which is statically non-significant. In this study, Mean weight, BMI and prevalence of overweight were highest among vegetarian compared

with- vegetarian. The risk of overweight and obesity is lower in vegetarian as compared to no vegetarian [2].

Table-3: comparison of dietary intake between vegetarian and non vegetarian pregnant women

Food group (n=48)	Vegetarian (n %)	Non – vegetarian (n %)	Recommendation *(exchange)
Cereals			15(1 exchange =15 gm)
Adequate Inadequate	77.2 22	73.2 26.9	
Beans and pulse			2 (1 exchange = 30 gm)
Adequate Inadequate	98 2.1	55 45	
Meat and eggs	nil		1(1 exchange = 40 gm)
Adequate Inadequate	nil	92 8	
Fruit			2(1 exchange = 100 gm)
Adequate Inadequate	91.2 7.2	54 45.8	
Vegetables and greens			5(1 exchange = 100 gm)
Adequate Inadequate	87 22.6	68.6 31.4	
Milk and derivatives			2.5(1 exchange = 250 gm)
Adequate Inadequate	94.5 5.5	65 35	
Oils and fats			8(1 exchange = 5 gm)
Adequate Inadequate	95.8 4.2	98 2	
Sugars			9 (1 exchange = 5gm)
Adequate Inadequate	97.8 2.2	87 13	

Recommended dietary allowances (ICMR, 2011) for trimester in pregnancy*[15].

In table -3 the nutritional assessment pregnant women were carried out by 24 dietary recall methods [8,10]. The women had in the third trimester of pregnancy information about food intake from a different food group. Mean value of a month's showed vegetarian and non vegetarian intake of cereal (77% & 73%), bean and pulse (98 % & 55%), fruits (91% &54%), milk (94% & 65%), meat (nil & 92 %) and sugar (97 % & 87), oil or fat (95 % &98%) almost near recommended quantity.

DISCUSSION
In (table-1) food habit of pregnant women, Attursuyia locality in Allahabad major population is Muslim community so major food habit was omnivorous (table-2) shows the Mean & SD of vegetarian and vegetarian pregnant women BMI, haemoglobin mean and SD is slightly better in non vegetarian pregnant women. Both groups were taken regular health checkups and dietary guidelines and taken iron supplement iron tablets regular 100 days under programme National nutritional anaemia control programme in India [16]. The non-veg diet has a better source of micronutrients Iron, copper, pyridoxine, riboflavin, cyanocobalamin and Vitamin –C, these nutrients essential for blood formation and maintains haemoglobin level [13, 18]. Vegetarian diet is rich sources of iron binding factors like phytates; oxalate etc that adverse effect on the bioavailability of these nutrients. Vegetarian diet non-significant sources of Iron, cyanocobalamin [19,20].

In table-3 the result showed a comparison of dietary intake between vegetarian and non-vegetarian pregnant women were taken proper diet(with pseudo cereals like amaranths grains, kutki etc) as a guided gynaecologist and nutritionist they take regular 6 to 8 meal pattern diet in all food group[17,19]. Vegetarian taken more milk and milk products and pulse, a bean in the diet. Non-vegetarian take almost one egg per day and 4 days 100 gm meat like chicken, fish, and low intake of pulse, bean and milk compared to vegetarian preregnant women.

CONCLUSION

The present study revealed that if pregnant women proper diet and food takes all food groups (with pseudo cereals like amaranths grains, kutki etc) and iron supplementation then pregnant women have a low risk of anaemia and haemoglobin level almost the same omnivorous pregnant women. The results suggest that haemoglobin level in vegetarian women is significantly the same than the omnivore's (non-vegetarian) female. If non-vegetarian taken iron supplementation 100 day under programme National nutritional anaemia control programmes in India and follow the dietary guideline given by nutritionist then there is no major difference of haemoglobin and low risk of anaemia. Vegetarian pregnant women recommend base on this study they should follow proper dietary guidelines and take iron supplementation.

CONFLICT OF INTEREST

The author(s) declare(s) that there is no conflict of interest.

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