

# Nutritional Status of Pregnant Women in Rural area of Muzaffarpur District of Bihar

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**Abstract :** Indian women have very high prevalence of anemia as well as malnutrition in the world. Hemoglobin (Hb) level in their blood is reported below the normal value i. e 11-14gm According to National Family health survey of India -3, prevalence of anemia among women of 15-49 years age group is found to be 55.3 %, in pregnant women it was 58% and in children less than three years of age it was 80 %. It is underlying cause for 20 -40 % maternal death, thus anemia is the most frequently observed nutritional diseases in the world. In India, anemia is the second most common cause of maternal death, accounting for 20% total maternal deaths. This study aims to determine the prevalence of anemia and to explore factors associated with anemia in rural Indian pregnant population, in Muzaffarpur district of Bihar State. A total of 200 rural pregnant women, from 20 villages in Muzaffarpur district of Bihar State were selected randomly. Data on socioeconomic status, pregnancy, nutritional status and food consumption were collected. Hemoglobin estimation of the samples was done. Observed data were analyzed statistically. It was investigated in the present study, that prevalence of anemia was significantly higher. The contributing factors found were: literacy, occupation and low standard of living of the study women; their awareness about anemia and its prevention by regular consumption of iron foliate tablets and increase in food intake. Age of marriage, parity and fetal loss also contributed to hemoglobin level. The antenatal services in the first trimester along with availability and consumption of iron foliate tablets over 3 months influenced hemoglobin levels.

**Index Terms - Anemia, pregnancy, rural pregnant women, dietary intake, nutritional status.**

## I. INTRODUCTION

Pregnant women form one of the most vulnerable segments of the population from nutritional point of view. Numerous studies in India and elsewhere have shown that in chronically undernourished women subsisting on unchanged dietary intake in pregnancy and lactation have an adverse effect on maternal nutritional status. ICMR district nutrition survey 1999-2000 reported prevalence of anemia as 84.2 % with 13.1 % with severe anemia in pregnancy [1]. Maternal under nutrition is associated with low birth weight and all its attendant adverse consequences [2]. Epidemiological studies from India documented the magnitude and adverse consequences of chronic energy deficiency (CED) on the mother child dyad and paved way for effective intervention programs to address under nutrition during pregnancy and lactation. Over 75 % of pregnant women in India are anemic and anemia remains to be a major factor responsible for maternal morbidity, mortality and low birth weight [2]. Too early, too close, too many and too late pregnancies adversely affect nutrition and health status of the mother child dyad [2]. Yet another important indirect cause of under nutrition continues to be infections; under nutrition increases the susceptibility for infections; infections aggravate under nutrition [2]. Though current decade has witnessed the progressive rise of over nutrition in women during reproductive age especially among the affluent segments of population both in urban and in rural areas. It has become imperative to assess the nutritional status of pregnant women and give them appropriate advice and care. [2] Interventions to improve dietary intake and nutritional status India has included food supplementation for pregnant and lactating women under ICDS program. Thus the present study has undertaken with the following objectives.

## II. OBJECTIVES

- To assess the health status of rural pregnant women in Muzaffarpur district of Bihar State.
- To assess socio-economic status, food consumption pattern and nutrient intake of pregnant mothers.
- To assess hemoglobin level of pregnant women through biochemical test.
- To study about ANC Awareness about anemia and consumption of Iron folic acid tablets (IFATs).

## III. METHODOLOGY

For systematic investigation chapter designing has been decided as under-

- Selection of area: Muzaffarpur district of Bihar State is begin with a well-known observation of well developed district. It is selected for the present study.
- Selection of sample: Samples will be selected randomly from Muzaffarpur district of Bihar State i.e.200 pregnant women will be selected.
- Selection of method of study: Questionnaire method will be used to obtain the information.
- Formation of Questionnaire: Mostly simple open ended questions will be used related to the objectives of the study.
- Conduction of pilot survey: Pilot survey will be administered to know the difficulties in administration of main survey.

- Data collection techniques: Anthropometric measurement of pregnant mothers will be taken. 24-hour dietary recall method will be used to know daily nutrient consumption of sample population. Biochemical analysis i. e. Hemoglobin estimation of pregnant mothers will be completed to know their anemia status.
- Collection and tabulation of data: The collected data will be tabulated.
- Statistical analysis: Necessary statistical application such as chi-square test, t-test, z-test will be applied to test the significance of the obtained data.

#### IV. RESULTS AND DISCUSSION

The study was carried out from March to September 2014. Heavy monsoon days were avoided as villages were not accessible due to heavy rains. Also, loaded farming work schedules were avoided as farming is the main occupation in India. Care was taken to approach the respondents at their leisure i.e. when they were free from household chores. The results obtained are discussed as under.

In the Table 1, name of the village with respect to their sample population is recorded Altogether Twenty villages were selected randomly from Muzaffarpur district of Bihar State for the present study.

**Table 1.**  
Total no. of villages and pregnant women (n = 200).

Sr.No	Name of Village	No of Pregnant women	Sr.No	Name of Village	No of Pregnant women
1	Akbarpur	8	11	Bahadurpur	14
2	Baijnathpur	12	12	Baikunthpur	13
3	Bakhrichandan	9	13	Bara Jagarnath	11
4	Barhanpura	13	14	Bhagwanpur	7
5	Bhagwatipur	7	15	Bhikanpur Adam	9
6	Bhikanpur Adam	11	16	Bhikanpur Dih	11
7	Binda	14	17	Chak Ahmad	7
8	Damodarapur	6	18	Dharampur	9
9	Dighrapatti	9	19	Harpur	10
10	Jhapaha	7	20	Madhubani	13
				<b>TOTAL</b>	<b>200</b>

Source : Self observation.

Percentage Distribution of Pregnant women according to hemoglobin status compared to other district of bihar is reported in Table 2. The present study demonstrated higher prevalence of anemia. ICMR study also reported major number of adolescent girls with anemia (7.3 % having severe anemia). These findings suggest continuation of anemia throughout life in women.

**Table 2.**  
Percentage Distribution of Pregnant women according to hemoglobin status compared to other states of India

Sr.No	Name of State	< 7.00 dl	7.00 to 9.90 dl	10 to 10.90 dl	≥ 11.00 dl
1	Present Study	3.00	40.00	50.00	7.00
2	Himachal Pradesh	0	29.80	38.30	31.90
3	Kerala	2.90	21.30	33.60	42.2
4	Madhya Pradesh	39.20	52.80	4.80	3.20
5	Orissa	4.90	68.30	23.80	3.00
6	Tamil Nadu	3.00	57.70	30.80	8.5

Source: Ref. No. [3]

**Table 3.**

Observation of Maternal characteristics

Sr. No.	Particulars	Observations
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1	Marriage Age	17.3+1.90
2	Pregnancy no	1.6 +1.20
3	Birth Order> 3 years	12 % (24)
4	Fetal loss	0.35+ .0.63
5	Education of Women > 10th class	35 % (70)
6	Education of Husband > 10th class	42 % (84)
7	Aware about Anemia	11.5 % (23)
8	% age given IFAT	78.5 % (157)
9	% age given IFAT > 3months	9.5 % (23)
10	% Who consumed all the supply of IFAT	8 % (16)
11	ANC by doctor (Irregular)	71 % (142)
12	ANC in last trimester( Irregular )	81 % (162)
13	No ANC Done	19 % (38)
14	Ht (cm)	150.1 +4.1
15	Body Wt (kg)	45.1+6.1
16	Hb(gm/dl)	8.9+1.80
17	Nutrient Intake Energy	1802+572
18	Protein	43+ 5
19	Fat	26+ 8
20	Iron	18+ 5
21	Vitamin C	401+ 1
22	Low economic status	(29.5%)
	Middle income level	(42.5 %)
	High	(28 %)

In the above Table 3 Maternal characteristics are focused as below

- The Literacy i.e. those who can read not write among women was 5%. It was 2% among husband. Whereas women education and standard of living in the households have a vital role in reducing anemia [4].
- Occupation -Only 15% women were housewives. The working women were engaged in agriculture, road ,building construction or other work or employed as laborer.
- Age of Marriage was 17.3+1.9 year in the present study. In Indian subcontinent, early marriage sometimes results in adolescent pregnancy, particularly in rural regions where the rate is much higher than it is in urbanized areas. Latest data suggests that teen pregnancy in India is high with 62 pregnant teens out of every 1,000 women [5]
- Economic status- The families having low income status were 29.5 % and High income group families were 28 %.
- Pregnancy and nutritional status- With anemia prevalence of 48 + 11.30 % in pregnancy, women consumed significantly lower amount of protein
- Antenatal care Over 71 % women received antenatal care in first trimester from doctor
- Consumption of IFT for 3 months or more in pregnancy was observed (8 %). Lower prevalence of severe anemia is observed when women were aware about anemia and consumed iron folic acid tablet.

**Table 4.**  
Time Trends in dietary intake (gm /day) in pregnant women in India

Sr. No.	Year	Cereal and Millets	Pluses And legumes	Green Leafy vegetables	Milk and milk products	Roots and Tubers	Other vegetables	Fruits	Fats and oils	Sugar and Jogger
1	1975-79	359	34	12	75	58	44	11	12	19
2	1996-97	463	29	17	70	34	42	26	12	15
3	2000-01	408	28	15	77	68	44	21	12	17
4	2005-06	362	27	16	87	55	49	25	14	14
5	Present Study	371	31	15	95	59	21	29	-	30

Source: Ref. No. [6]

Time Trends in dietary intake (gm /day) in pregnant women in India is recorded in Table 4.

**Table 5.**  
Time Trends in Nutrient intake in pregnant women In India

Sr. No	Year	Protein	Fats	Energy	Calcium	Iron	Vit A	Thiamin	Riboflavin	Niacin	Vit C
1	1975-79	40.8	18.8	1597	390	20	160	1	.60	10	21
2	1996-97	47.20	21.5	1994	339	23	142	.90	.80	11	28
3	2000-01	49.70	25.90	1993	463	14	227	1.2	.70	15.1	45
4	2005-06	46.80	22.5	1726	456	14	261	1.1	.60	13.70	42
5	Present Study	43	26	1802	481	18	310	1.1	.65	12.9	40

Source: Ref.No.[6]

In above Table 5 Time Trends in Nutrient intake in pregnant women In India is discussed. Data from NNMB and INP surveys (using 24 hour dietary recall method) show that between 1975 and 1995 there has been some increase in dietary intake. By the mid nineties average intake of cereals almost met the RDA. Since then there has been a reduction in cereal intake in spite of the fact that food is available, accessible and affordable. There has been a progressive reduction in the pulse intake, which might be related to the rise in the cost of pulses. Intake of vegetables and fruits continue to be low [7]. Dietary intake of pregnant and lactating women is not different from that of the non-pregnant and non-lactating women. [7].

Studies carried out by National Institute of Nutrition (NIN) during the seventies and early eighties confirmed that among urban and rural low income group population in Hyderabad there was no increase in dietary intake during pregnancy and lactation. [7]

Nutrient intake in pregnant and lactating women over the last three decades is given in the above Table 5. Between 1975 and 1996 there was increase in the total energy, protein and fat intake. However over the last decade there has been a reduction in the energy and fat intake. This might be due to the increasingly sedentary lifestyle in majority of the population and consequent reduction in energy intake. Calcium and micronutrient intake has been low throughout the period. In all periods of time there is no difference in nutrient intake of pregnant and lactating women and NPNL. All these data clearly indicate that in India women do not consume more food during pregnancy [7].

Energy and protein intake were lower than the RDA. Intake of important dietary items necessary for hemoglobin synthesis i.e. iron and folic acid were much lower than RDA as reported in the above Table 4. Vitamin A intake was lower than RDA. Intake of all nutrients was significantly more in higher hemoglobin groups, except for vitamin A.

## V. SUGGESTIONS

Efforts must be made to educate women to enhance their level of economic status. Food fortification i. e. sugar or salt with iron and folic acid, Proper ANC services from first trimester Consumption of IFAT regularly. Execution of available Food supplementation program to meet RDA, Guidance about family planning measures for fertility control, Nutrition education regarding awareness, prevention and control of anemia, dietary sources of iron, use of iron knife [8] etc and factors favoring and inhibiting dietary iron, Screening for HIV and other infections and their management primarily.

## VI. CONCLUSION

Despite the measures taken to control anemia in pregnancy in the last few decades, the severity of nutritional anemia continues to remain a public health issue of great magnitude (93%), suggesting that these measures have been largely ineffective.

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