Executive summary submission of the minor research project of Principal Investigator (PI) Dr. Maya S. Khandat

India has made special efforts towards improving the health status of women. Very slow progress is noticed in case of nutritional status of rural pregnant women in India. Based on the literature review reports, several research reports and investigations of present study it can be stated that the undernourishment of rural pregnant women is more prevalent in rural areas of Beed District of Marathwada region of Maharashtra state.

Socio demographic factors as maternal education, occupational status, income level and size of the family are dominant factors responsible for poor nutritional status of rural pregnant women.

Early marriages are a common practice in rural parts of country. Mother's immature and poor health at first delivery is the main factor for low birth weight babies at birth leading to malnourishment in their future life.

In general, environmental sanitation, drainage system , toilet facility and disinfected drinking water sources should be improved to change the scenario of nutritional status.

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 problem. Hemoglobin estimation of sample population is anemic due to lack of iron rich foods in their diet. Women's nutritional ignorance is an important reason responsible for it. Clinical assessment reported vitamin deficiencies and increased morbidities.

Dietary assessment using 24 hour recall method concluded that cereals, pulses, green leafy vegetables, fruit and milk consumption was very poor as compared to RDA. All above factors are affected on the nourishment of pregnant women. It is reflected in increasing in the number of mild, moderate and severe nutritional status, when anthropometric measurements are height , weight is compared with standards.

Supplementation of need based low cost nutritional recipes i.e. protein rich, calcium rich, iron rich, vitamin A rich, fiber rich etc. improved nutritional status. Imparting knowledge about importance of IFAT resulted in regular consumption of them. Implementation of nutritional education program for rural pregnant women and it's evaluation for gain in knowledge proved beneficial to rural pregnant women in improving nutritional awareness. As a result, change in the choice of food and cooking practice was noticed.

It is very miserable to note that many types of food fads were present inhibiting the nutritious food sources during pregnancy in rural areas. This again made the condition more worst.

Hence, to improve nutritional status of rural pregnant women, it is necessary to change mentality of rural people at gross root level i.e. improving health of girls before marriage, educational status, prohibition of early marriages , health concern of women during pregnancy , medical consultation during pregnancy to avoid complications like low birth weight of neonate .

Thus, efforts taken during pregnancy will make healthy citizen of tomorrow's India.

Nutritional Status of Rural Pregnant Women in Beed District of Maharashtrastate of India

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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 Beed district of Maharashtra state. A total of 200 rural pregnant women, from 20 villages in Beed district 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

Keywords: Anemia, pregnancy, rural pregnant women, dietary intake, nutritional status

1. 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

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India has included food supplementation for pregnant and lactating women under ICDS program. Thus the present study has undertaken with the following objectives.

2. Objectives

- To assess the health status of rural pregnant women in Beed district of Marathwada zone of Maharashtra 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).

3. Methodology

For systematic investigation chapter designing has been decided as under-

- Selection of area: Beed district is most backward district in Maharashtra state. It is selected for the present study.
- Selection of sample: Samples will be selected randomly from Beed district 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.

4. Results and Discussions

The study was carried out from March to September 2013.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 Beed district of Maharashtra 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	Nalwandi	8	11	Khakal wadi	14
2	Dongarkini	12	12	Jawala	13
3	Parner	9	13	Dombari	11
4	Autade Waddi	13	14	Rohat wadi	7
5	Chumbali	7	15	Hanuman wadi	9
6	Khadkdoh	11	16	Wadzari	11
7	Abewadi	14	17	Dhangarjawalka	7
8	Chandanwadi	6	18	Bhayala	9
9	Wane wadi	9	19	Dashkhed	10
10	Gandhanwadi	7	20	Bedukwadi	13
				TOTAL	**200**

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

5. 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.Execuetion 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

6. 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.

7. Acknowledgement

8. References

[1] wcd nic in Nutrition in pregnancy and lactation P.185-191

[2] Toteja G ,SINGH P. Micronutrient deficiency disorders in 16 districts of India, Report of an ICMR task force study-District Nutrition Project Part 1,2001.

[3] Agarwal KN , Agarwal DK , Sharma A , Sharma K ,Prasad K ,KALITHA MS, Khetarpaul N, Kapoor A C, Vijayalekshi L, Govilla A K, Panda SM, Kumari P. Prevalence of anemia in pregnant and lactating women inIndia.Indian Journal of Medical Research. 124 August 2006, pp 173-184.

[4] Bharti,Premananda and Som,Suparna and Chakraborty, Suman and Bharti , Susmita and Pal, Manoranjan Prevalence of anemia and its determinants among non pregnant and pregnant women in India. .Asia Pacific Journal of Public Health.2008,20: 4,pp:347-359

[5] Dawan, Himanshi (28 November 2008).   "Teen pregnancies higher in India than even UK, US". The Economic times. Retrieved 2 May 2013

[6] NNMB National Nutrition Monitoring Bureau. 1979-2002.NNMB Reports. National Institute Of Nutrition, Hyderabad

[7] Women and Nutrition in India edited by C. Gopalan and Suminder Kaur; Nutrition Foundation of India, special publication series 5.

[8] Kapur D, Agarwal KN, Agarwal DK. Nutritional anaemia and its control.Indian Journal of Pediatrics. 2002,69,p.607-16.

analyzed using percentages, chi square test and multiple regressions. **RESULT:** Of the 400 sample analyzed 35% (144) of sample had NCD. The sample of 144 was further analyzed. Seventy nine % of sample was above 40yrs of age, 59% were males and 44% of the sample had a family history of NCD. Fifty seven % of sample had a BMI of above 25. Of the normal BMI 23% sample had abnormal WC, showing that the adiposity is raised even in normal BMI subjects. There is a significant association between BMI and WC at 1% level (chi square test). While the eating habits were studied only 60% subjects were taking 200gm of vegetables/day, 35% were taking oil as recommended, 23% were taking fruits/ day, 48% included some form of exercise daily and 78.4% sample were non vegetarians. Multiple regression equation was fitted by taking WC as dependent variables and Fruits, vegetables, oil intake, Non-vegetarian and eating outside/day as independent variables. It was found that there is no significant overall regression between dependent variables and independent variable. **CONCLUSION** From the collected data it could be inferred major % of sample was not following healthy life style. Thus regular motivational counseling is necessary in all NCD to prevent long term complications.

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HIGH CALORIE INTAKE BUT STILL LEAN, MYTH OR MYSTERY? *Simran, Chidgopkar*[1], Shashank Shah[2]. 1.Bariatric Nutritionist, Laparo-Obeso Centre, Pune.Email:s_chidgopkar@yahoo.com. 2.Director,ConsultantLaproscopic& Bariatric Surgeon, Laparo-Obeso Centre, Pune.

Introduction: Even though it is said that high calorie intake will lead to obesity some are the lucky slims! **Method:**Total16 lean patient comprising 12females &4males visiting Lapro-ObesoCentre. Undergoing treatment for weight gain were evaluated . Dietary record was done using a dairy method for a month. Regular assessment of their intake and activity was done for about 1 year by interview method as a follow up. **Observations:** The mean age of the females was 37 and that of males was 21 .the physical activity being below average and the caloric intake being above 2400 kcals, their mean BMI of 24.6 kg/m2 remain persistent all over the study. **Conclusion:** Furtherstudies are required to study the factorsresponsible for metabolic changes in such patients which protect them from obesity.

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PREVALENCE OF UNDERNOURISHMENT AMONG RURAL PREGNANT WOMEN AND IMPACT OF NEED BASED LOW COST NUTRITIONAL RECIPES ON SELECTED POPULATION OF BEED DISTRICT. *Maya S. Khandat* Department of Home Science Mrs K.S.K. College Beed Email : maya.khandat@gmail.com.

Introduction: Adequate nutrition, meeting all specific needs, is one of the essential determinants of mother and child health, the right to adequate food being one of the fundamental human rights Nutrition of mother is important during pregnancy. Influence of maternal nutrition upon fetal growth and development is well known. **Objectives:** The following study To assess the health status of rural pregnant women in their respected trimesters for nutritional deficiencies through socio economic food pattern of rural pregnant women effect of nutritional supplements and nutritional education was determined clinical observations in Beed district of Marathwada zone of Maharashtra state. **Methods:** The study was conducted on 200 pregnant women from from near by villages located in the rural areas of Beed District, which is one of the most backward district from Marathwada region of Maharashtra state . Nutritional staus was accessed using anthropometry, dietaryclinicaland selected biochemical parameters. The sample (i.e 200) is further dividedin four groups i.e nutrional foodsupplements , nutritional education based control group and routin synthetic supplements for iron ,folic acid etc. The supplemention intervention wasdone over three months period. The impact of supplemention was evaluated through change in anthropometric and biochemical parameters before and after intervention. **Results and discussion:** Majority of the pregnant women were found to be from poor joint family, lower economic level ,primary level educated, not availing health facilities, inadequeate dietary intake.(Only 14 %have pucca house. The intake of all the nutrients lower than RDA levels suggested by I.C.M.R. The deficient was more in iron, vit A , riboflavin , folic acid , protein and energy. The deficit in energy intake was

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ranged from 25 -30 %. Thus nutritional deficiencies was observed. **Conclusion:** The study strongly significantly favors food supplements to improve nutritional dtatus and promote health and well being of pregnant women.

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IMPACT OF NUTRITION KNOWLEDGE ON THE NUTRITIONAL STATUS AMONG SCHOOL CHILDREN.

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School age is a strategic point of entry for improving attitudes and well being of children. It is a detrimental period of nutritional care. An appropriate diet has a considerable effect on the improvement of a society's health. A situational analysis as part of the School Education Program - *Nutrition and Health education* was extended among school children in the urban Mysore district. Around 28 girls and 45 boys aged between 8 to14 years were assessed for Nutritional knowledge practices using pretested standardized questionnaire. Finding revealed a 35 to 25% of girls and boys with poor knowledge, while 40 to 35% of girls and boys had average knowledge about nutrition and health. Notably, girls showed greater nutrition knowledge level in comparison with boys. Anthropometric Evaluation revealed a difference of 2.0-3.3kgs in actual weight and respectively 10.2-6.7cms of difference in actual height among Boys and girls as compared to NCHS data. Evidently, children were observed to be shorter and lighter for their age as compared to NCHS standards. A marked significance of 0.007and 0.003 correlations was noted between Nutrition Knowledge Aptitude Practice and Nutritional status among girls and boys. Relatively, Prevalence of anemia was observed among children. Thus, Research suggests that students should concentrate more towards healthy nutrition practices. It can be hypothesized that Nutrition education program conducted among children showed a positive effect on attitudes and nutrition behavior improvements.

Key Words: School Children, Nutrition knowledge, School Education, Anthropometry, NCHS Standards

PS-14

PREVALENCE OF ANEMIA IN COLLEGE GOING GIRL'S OF ALLAHABAD.

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Anemia is a condition in which the body doesn't have enough healthy red blood cells to carry oxygen to your tissues. The red blood cells contain hemoglobin, an iron-rich protein that enables the cells to carry the oxygen. To produce hemoglobin and red blood cells, your body needs iron, minerals, protein and vitamins. There are 400 types of anemia, but the most common types are as follows: 1.Iron-deficiency anemia: - This is the most common type of anemia. It occurs when the body can't make enough hemoglobin. 2. Pernicious anemia: - This is also called Vitamin B-12 anemia. Pernicious anemia is caused by your intestines' inability to absorb enough Vitamin B-12, a vitamin your body requires to make red blood cells. 3. A plastic anemia: - A plastic anemia is when your body cannot make enough red blood cells. 4. Sickle Cell anemia: - This is a hereditary condition that is characterized by red blood cells taking on a crescent (sickle) shape. 5. Trauma related anemia: - This occurs when your body loses a large amount of red blood cells at one time. Anemia remains the public health challenge worldwide. Little is known about anemia among college female students from a preliminary study of iron deficiency anemia that was conducted on Allahabad University under Graduate girls. This study aimed to estimate the prevalence of anemia among female college students attending university of Allahabad. A secondary analysis of the records of 500 complete blood cell count, results from consenting female college students. Hemoglobin estimation was used to determine the prevalence of and classify anemia according to RBC indices and disease severity. The overall prevalence of anemia (Hb < 12 g/dl) was 74% and the majority

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