

Study Of Nutritional Status Of Pregnant Women In Rural Area (Maharashtra).

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Abstract

Nutrition is the basic vital part of life of human, also health and development along the whole life span. From earliest stages of fetal development to old age proper food and nutrition is necessary for survival, mental development, physical growth, health and wellbeing. Nutrition is the basic need of human body. all individuals need to have a food if they want their body should work in proper manner for their daily activities. survey carried out in rural areas of different states in India the nutrition of pregnant is neglected. Mother nutrition is one of the general health problem in India, as few of causes responsible are lack of ANC, neglected towards health of girl child during her adolescent age, lack of education about general health, early marriages, poor socioeconomic condition, poor family planning. aim of the study was to evaluate the nutritional position of pregnant women in rural areas with a objective of to know the socio demographic features of pregnant women and To record the food and nutrient intake of pregnant women and compare the same with recommended daily allowances (RDA). **Methodology:** observational study was carried out in rural areas of Nagpur by using purposive sampling technique in PHC near Nagpur district within the span of six month. **Result:** This study shows that the nutrient intake of pregnant women was significantly low as compared to RDA. Only folic acid was met with RDA. **Conclusion** Diet of women was found to be inadequate in Iron, Protein, Calcium and other micronutrient. In this study only 36 pregnant women were had normal hemoglobin and remaining 64 were found anemic. Therefore considerable attention should be paid towards maternal nutrition.

Keywords: Hb- hemoglobin, LBW- Low birth weight, LBWB- Low birth weight baby, MMR- Maternal mortality rate RDA – Recommended daily allowances

Introduction

According to WHO, nourishment is the consumption of food, measured in relation to the body's dietetic needs. Good nutrition – an enough, well balanced diet collective with regular bodily activity is a foundation stone of good health.¹ It is also necessary for national development. About 30 % of humanity all age groups persons in developing countries are still suffering from multiple forms of malnutrition.²

In pregnancy the woman's normal nutritional requirement gets increased to fulfill the needs of the developing fetus and the mother's tissues associated with pregnancy. During the period of pregnancy the fetus gets nourished directly by the mother through placenta. Since the baby is totally depended on its mother for the nourishment. Thus the pregnant women should be provided with proper and adequate well balanced diet. Maternal nutrition reflects human fetal growth and is considered as predictor of birth outcomes in developing countries.³ Therefore, anemia has significant impact on fetus health as well as health of mother and predictor of maternal mortality and morbidity.^{3,4} If pregnant women are not well nourished then there will be more chances that they will give birth to the weak babies which will result in high infant mortality rate.⁷

Nutrition is the basic integral part of life, also health and development along the whole life span. From earliest stages of fetal development to old age proper food and nutrition is necessary for

survival, mental development, physical growth, health and wellbeing. It is also necessary for national development. About 30 % of humanity all age groups persons in developing countries are still suffering from multiple forms of malnutrition.⁸ According to UNICEF, Every day nearly 800 women die globally due to causes related to pregnancy and childbirth from which 20% are from India.⁹ Indian statistical institute reported that in year 2011 nearly 20% of newborn had LBW in India.¹⁰ Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of nutrients.¹¹ According to RICE June 11th 2015, Worldwide, India tops the highest rate of childhood malnutrition and poor maternal health and it is major contributor to the problem.¹²

Nutrition in India for pregnant women: According to WHO, when we talk about reproductive in India what we can see undernourished women of reproductive age in India.²¹ The distinctive period in life of women is pregnancy which shows a considerable influence not only on maternal health but also the health of the new generation. Nutrition plays a very important role in mother as well as child's health. Intervention of diet in pregnancy can affect maternal, fetal and infant health.¹³ Below 2500 gm is referred as Low birth weight baby.¹⁴ According to UNICEF data 2013, It is estimated that globally 22 million or 16% new births were undernourished or said as LBWB.¹⁴ In India MMR (maternal mortality rate) was 130 per 1, 00,000 live births in 2016.¹⁵ In Maharashtra it was 61 per 1, 00,000 live birth in 2014-16. (National Institute for transforming India).¹⁵ Complications during pregnancy can lead to stillbirth. According to WHO still birth is the death of infant after 28 weeks of pregnancy but before birth.

It was shown that India has the largest numbers of still births globally in 2015. Improper intake of iron in diet during pregnancy can cause iron deficiency anemia. Anemia is decreased concentration of blood hemoglobin.¹⁶ Pregnancy is an extreme physiological condition. In India it was observed that the women from low socioeconomic category had alike in taking of diet during their pre pregnancy, pregnancy and lactating phase. Thereupon, there is high prevalence of LBW infants and high maternal mortality due to widespread of maternal malnutrition. Right amount of weight gain during pregnancy helps to protect the maternal and infant's health. Less amount of weight gain in pregnancy leads to premature baby and low birth weight baby, so to improve the weight gain in pregnancy (10-12 kg) and birth weight (about 3kg) additional diet is required.^{16 17} According to Indian council of medical research, Anemia has divided in 3 categories Mild (10-10.9), moderate (7-10) and severe (<7). Hb<11 is considered as anemic. According to World Bank, the prevalence of anemia was 50.10% in 2016.¹⁸ Hence the study has carried out to study the nutritional status of pregnant women in rural areas of Nagpur.

Need of the study

According to different survey carried out in rural areas of different states in India the nutrition of pregnant is neglected. Maternal nutritional problem remain as one of the public health problem in India, as few of causes responsible are lack of ANC, neglected towards health of girl child during her adolescent age, lack of education about general health, early marriages, poor socioeconomic condition, poor family planning. As a physiotherapist we can create awareness among women regarding the importance of proper diet intake necessary to maintain their nutrition during pregnancy and also the benefits of exercise during pregnancy. As proper nutrition and exercise will be helpful for having safe delivery and prevent unwanted complication to mother and child and also reduce the chances of low birth weight babies.

AIM

- To study the nutritional status of pregnant women in rural areas of Nagpur (Maharashtra).

OBJECTIVES

- To study the socio demographic conditions in pregnancy.
- To know the food and nutrient intake of pregnant women in comparison with recommended daily allowances (RDA).
- To study the prevalence of nutritional anemia in pregnancy.
- To study the weight gain in pregnancy.

MATERIALS AND METHODOLOGY

❖ Materials :

- Pen
- 24 hours recall diet survey
- Nutritive value of Indian food (Gopalan,1991)
- Blood report

Methodology :

- **Study design** : observational
- **Sample size** : 100
- **Sampling** : convenient
- **Study place**: PHC at district place at MAHARASHTRA
- **Study duration**: 6 months

SELECTION CRITERIA

Inclusion criteria- 1.Pregnant women from all 3 trimester

2. Pregnant women from rural areas

Exclusion criteria- 1.Pregnant women who is not willing to participate

2. Pregnant women from urban areas

Outcome measure: Interview questionnaire

DATA ANALYSIS

| Sr. No | Variable | Groups | Frequency | Percentage |
|--------|----------|--------|-----------|------------|
|--------|----------|--------|-----------|------------|

| | | | | |
|---|---------------------------|---------------------|----|-------|
| 1 | Age | up to 20 | 17 | 17.00 |
| | | 21-25 | 47 | 47.00 |
| | | 26-30 | 29 | 29.00 |
| | | 31 & above | 7 | 7.00 |
| 2 | Occupation | Housewife | 76 | 76.00 |
| | | Self-Independent | 24 | 24.00 |
| 3 | Month of Pregnancy | I st trimester | 19 | 19.00 |
| | | II nd Trimester | 31 | 31.00 |
| | | III rd trimester | 50 | 50.00 |
| 4 | Per capita Income | < 300 rs | 52 | 52.00 |
| | | 301-600 | 22 | 22.00 |
| | | 601-900 | 11 | 11.00 |
| | | Rs 901 & above | 15 | 15.00 |
| 5 | Age of Marriage | up to 20 | 60 | 60.00 |
| | | 21-25 | 38 | 38.00 |
| | | 26-30 | 2 | 2.00 |
| 6 | Education | Illiterate | 3 | 3.00 |
| | | up to middle school | 45 | 45.00 |
| | | up to high school | 24 | 24.00 |
| | | up to intermediate | 28 | 28.00 |
| 7 | Gravida | 1 | 42 | 42.00 |
| | | 2 | 33 | 33.00 |
| | | 3 | 15 | 15.00 |
| | | 4 & above | 10 | 10.00 |
| 8 | Number of living children | 1 | 44 | 44.00 |
| | | 2 | 38 | 38.00 |
| | | 3 | 8 | 8.00 |
| | | 4 | 9 | 9.00 |
| | | 4 & more | 1 | 1.00 |

Table no.1 represents distribution of samples on the basis of demographic characteristics

Table no.2 represents average intake of protein, Iron, niacin and vit c as compare to RDA.

| Nutrient | RDA | Actual intake | | Excess / deficit |
|-------------|-----|---------------|-------|------------------|
| | | Mean | ± SD | |
| Protein(gm) | 65 | 39.08 | 10.76 | -25.92 |
| Iron (mg) | 38 | 7.49 | 2.34 | -30.51 |
| Niacin(mg) | 16 | 6.33 | 1.77 | -9.67 |
| Vit C(mg) | 40 | 24.34 | 14.95 | -15.66 |

Table no.3 represents average intake of thiamine, riboflavin and folic acid as compare to RDA.

| Nutrient | RDA | Actual intake | | Excess / deficit |
|----------------|-----|---------------|------|------------------|
| | | Mean | ±SD | |
| Thiamine(mg) | 1.3 | 0.97 | 0.3 | -0.33 |
| Riboflavin(mg) | 1.5 | 1 | 0.3 | -0.5 |
| Folic Acid(mg) | 0.4 | 0.77 | 2.92 | 0.37 |

Table no.4 represents average intake of energy and calcium as compare to RDA.

| Nutrient | RDA | Actual intake | | Excess / deficit |
|--------------|------|---------------|-------|------------------|
| | | Mean | ± SD | |
| Energy(kcal) | 2525 | 1703.5 | 382.7 | -821.5 |
| Cal(mg) | 1000 | 623.5 | 211.8 | -376.5 |

Table no.5 represents prevalence of anemia according to degree.

| Degree of Anemia | Hb level | Number | Percentage |
|------------------|----------|--------|------------|
| Normal | > 11 | 36 | 36.00 |
| Mild | 10-10.9 | 33 | 33.00 |
| Moderate | 7-10. | 31 | 31.00 |
| Severe | < 7 | 0 | 0.00 |

Result

A] Socio demographic profile:

1. It was observed that maximum samples (47 women) belongs to 21-25 age groups.
2. Among 100 women 76 were housewife and 24 were self- Independent.
3. From 1st trimester there were 19 women, from 2nd there were 31 women and in 3rd trimester there were 50 women.
4. Among 100 women total 52 women were having per capita income <300 rs. Which shows their socioeconomic status was low.
5. 60 women were up to age 20 during marriage.
6. Educational status revealed that only 3 women were illiterate, 45 were up to middle school, 24 were up to high school and 28 up to intermediate.
7. Maximum women that is 42 women were had gravida1.
8. Maximum women that is 44 women had only 1 living children, 38 women had only 2 living children, 8 women had 3 living children and 9 women had only 4 and more living children.

B] Comparison of RDA with present regular intake.

1. Intake of protein, iron, niacin and vitamin c was low as compare to RDA.
2. Intake of thiamine and riboflavin was low and intake of folic acid was excess as compare to RDA.
3. Intake of energy and calcium was low as compare to RDA.

C] Prevalence of anemia:

Among 100 pregnant women only 36 women had hemoglobin normal and remaining 64 were anemic.

D] Trimester wise anemia:

Among all three trimesters it was found that women from 1st trimester was more anemic than 2nd and 3rd trimester.

E] Among 50 pregnant women from 3rd trimester only 22 women gained their weight up to 10 kg and more.

Discussion

The study was proposed to know the status of nutrition among pregnant women in rural areas of Nagpur. Our study shows that among 100 pregnant women 3 of them were illiterate, 45 were had middle school education, 24 were had high school education and 28 had up to intermediate education. Even though the pregnant women were having better education the nutrition was low. This may be due to poor knowledge about nutrition. This study shows that the 52% pregnant women

from rural areas were having per capita income <300rs .Previous studies shows that the socially backward areas are the major determinants of malnutrition. In India it is observed that diets of women from low socioeconomic groups are same during prepregnancy , pregnancy and lactating periods.¹⁸

The pregnancy period is a exponential growth period. Pregnant women's nutritional requirement increases to facilitate the growth of fetus and other developments.¹⁹

- Present study of pregnant women was 39.08 gm which was low when compared to RDA. This is due to lack of knowledge about food and food taboos which is also the most common factors contributing to maternal undernutrition. Proteins are the complex molecule composed of amino acids. They found in every cells of the body and are structural and functional properties of the cell. They are the primary component of muscles, organs and endocrine glands. Almost half of the protein in human body is in form of muscles and rest of it is in bone, cartilage, skin, hairs and blood. Protein is required for growth and maintenance of every cell in the body. Besides this they help to built up the infants soft tissues, placenta and women's RBCs. Protein helps to maintain the blood sugar stable to lower the risk of gestational diabetes. Also it helps to gain weight during pregnancy. Low intake of protein results in protein deficiency and LBWB.¹⁹

- Our study shows energy intake lower than the RDA. For energy RDA is 2525 kcal but the women had only 1703.5 kcal intake. It might be due to less calorie food intake. Extra energy is required during pregnancy for the growth and maintainance of the fetus, placenta and maternal tissues.

- In previous study it shows that the intake of calcium and iron was less as compare to RDA , similarly our study shows the lower intake of calcium and iron when compare to RDA. It might be due to inadequate intake of peas, lentils , dry fruits ,dairy products , milk and animal food like meat and fish. Calcium and iron are essential nutrients. It is usually deficient in Indian diet. Increased calcium intake is required for growth and development of bones, tooth buds in growing fetus. Also it is important for blood clotting mechanism. The iron make extra hemoglobin for women and her baby during pregnancy. Imbalance in iron can lead to iron deficiency anemia and improper intake of calcium can lead to osteoporosis in mother and rickets in children.¹⁹

- The intake of thiamine, riboflavin and niacin was low as compare to RDA. Because of occasional consumption of legumes, fish, eggs, beef, beans. Peas etc. thiamine and riboflavin are the controlling agent in energy metabolism. Thiamine plays crucial role in development of muscle function, nervous system, placental function and growth of fetus. Deficiency of thiamine can lead to beriberi. Riboflavin minimizes the birth defects, helps in absorption of iron. Niacin is essential for development of brain in infants. It is also important for healthy skin and proper digestion. Deficiency of niacin can leads to headache, pellagra, severe diarrhea etc.²⁰

- Intake of vit c was lower as compare to RDA. It might be due to poor consumption of citrus fruits and poor knowledge about proper nutrition. Vit c is a water soluble vitamin. It helps for the development of tissues and organs. Vit c (ascorbic acid) are highly soluble in water, most easily destroy by oxygen,alkalies and high temperature. It helps to makes up and maintain the bone matrix, cartilage, dentine, collagen, capillaries, connective tissue and general body tissue. It helps to improve the iron absorption and also reduces the risk of iron deficiency anemia. Deficiency of vit c leads to joint pain, anemia, shortness of breath, poor wound healing, growth retardation in infant. Deficiency of vit c is scurvy which will lead to have pain, tenderness and swelling at the thigh and legs.²¹

- In our study the intake of folic acid met with RDA. This might be due to proper intake of green vegetables, spinach, egg and veg foods. Folic acid helps to form RBCs. It helps to prevent neural tube defects and birth defects in the infants during pregnancy.²²

- Anemia is condition in which Hb content of blood is lower than normal. The lower Hb level and insufficient number RBCs due to lack of iron reduces the oxygen carrying capacity to various tissue, impairs brain development and physical work capacity. Our study shows only 36% women were having normal Hb level and other 64% were anemic. This might be due to irregular intake of iron supplements or due to improper diet.^{23,24,25}

Conclusions

Study was carried out know about pregnant women nutritional status of rural areas where we found out nutrient intake of pregnant women was significantly low as compared to RDA. Only folic acid was met with RDA. Diet of women was found to be inadequate in Iron, Protein, Calcium and other micronutrient. In this study only 36 pregnant women were had normal hemoglobin and remaining 64 were found anemic Therefore considerable attention should be paid towards maternal nutrition.

Limitations

- Small sample size
- Samples were not taken from urban areas

Future scope

Future survey can be carried out with bigger sample size and precise measurement of weight gain during pregnancy on basis of different independent and dependent which was used in this study

References

1. Nutrition [Internet]. Who.int. 2020 [cited 31 July 2020]. Available from: <https://www.who.int/topics/nutrition/en/>
2. World Health Organization, Nutrition for Health and Development (NHD), Sustainable Development and Healthy Environments (SDE).
3. Malnutrition [Internet]. Who.int. 2020 [cited 31 July 2020]. Available from: <https://www.who.int/westernpacific/health-topics/malnutritio>.
4. Women's nutrition [Internet]. Unicef.org. 2020 [cited 31 July 2020]. Available from: <https://www.unicef.org/india/what-we-do/womens-nutrition>
5. Cetin, I. The importance of maternal nutrition for health. Journal of Pediatric and Neonatal Individualized Medicine [Internet]. 2015 [cited 31 July 2020];2(DOI: 10.7363/040220):11. Available from: <http://Journal of Pediatric and Neonatal Individualized Medicine>A Study of Nutritional Status of Pregnant Women of Some Villages in Balasore District, OrissaSubarnalataSahoo&Basumati Panda
6. Assessment of Nutritional Status of Pregnant Women in a Rural Area in Sri Lanka A.M.N.T. Adikari* , R. Sivakanesan1 , D.G.N.G. Wijesinghe2 and C. Liyanage3 Post Graduate Institute of Agriculture University of Peradeniya Sri Lanka
7. Low birthweight - UNICEF DATA [Internet]. UNICEF DATA. 2020 [cited 31 July 2020]. Available from: <https://data.unicef.org/topic/nutrition/low-birthweight/>.
8. Prevalence and associate factors of low birth weight in North Indian babies: a rural based study Manoj Kumar1, Ramesh Verma1*, Pardeep Khanna1, Kapil Bhalla2,Raj Kumar1, Rohit Dhaka1, Vinod Chayal1.
9. G, B.V. 1, S.C B. The Nutritive Value of Indian Foods and the Planning of Satisfactory Diets. Journal of the American Medical Association. 1937;109(5):385.

- 10 Khandat D. Nutritional Status of Rural Pregnant Women in Beed District of Maharashtrastate of India. Nutritional Status of Rural Pregnant Women in Beed District of Maharashtrastate of India. 2020;IPCBEE vol.67(10.7763/IPCBEE):
- 11 Madhavi L, Singh H. Nutritional Status of Rural Pregnant Women. People's Journal of Scientific Research. 2020;Vol. 4(2),(July 2011):4.
- 12) KUMAR M, BHARTI K, PRASAD P. Health and nutritional status of pregnant women: An assessment of rural anganwadicentre and primary health centre. FOOD SCIENCE RESEARCH JOURNAL. 2016;7(1):130-136.
- 13) Nutritional Status of Pregnant Women and Newbornsin a Secondary Referral Health Care Setting of IndiaMohanrajRathinavelu Mudhaliar^{1,2}, IshrarShaik Mohammad Ghouse^{1,2}, Jagadeesh Neppali^{3*}, Divya Asavadi⁴,Veerendra Uppara⁴, Vidyasagar Chinnakotla⁴
- 14) World Health Organization,Nutrition for Health and Development (NHD),Sustainable Development and Healthy Environments (SDE)
15. Nutritional Status Research Articles | OMICSInternational | JournalOf Nutritional Disorders And Therapy [Internet]. Omicsonline.org. 2020 [cited 31 July 2020]. Available from: <https://www.omicsonline.org/nutrition-disorder-and-therapy/nutritional-status-research-articles.php>
16. Ranjit S. Ambad, Roshan Kumar Jha, Nandkishor Bankar, Brij Raj Singh, Deepti Shrivastava. Effect of Minerals on Markers of Risk of Pre-Eclampsia in Pregnant Women: A Hospital Based Study. Indian Journal of Forensic Medicine & Toxicology, October-December 2020, Vol. 14, No. 4;6819-6824.
17. Kumar Y, Pallavi T, Kumar Y, Milind K. Prevalence and Referrals for Physiotherapy in Patients of Hysterectomy in Rural Hospital in Nagpur. Indian Journal of Physiotherapy and Occupational Therapy - An International Journal. 2013;7(4):271.
- 18)Prevalence of anemia among pregnant women (%) | Data [Internet]. Data.worldbank.org. 2020 [cited 31 July 2020]. Available from: <https://data.worldbank.org/indicator/sh.prg.anem>
- 19) Madhuri Agnihotri, Ranjit Ambad, Anil Rahule. Study of Evaluation of Sensitivity and Specificity of Simple Screening Methods for Assessment of Anemia in Pregnant Women. J Cont Med A Dent January-April 2015 Volume 3 Issue 1.
- 20). Joshi S. NUTRITION AND DIETETICS. 4th ed. NEW DELHI: McGRAW HILL EDUCATION INDIA PRIVATE LIMETED; 2010.
- 21) Nutrition [Internet]. Who.int. 2020 [cited 31 July 2020]. Available from: <https://www.who.int/topics/nutrition/en/>
22. Women's nutrition [Internet]. Unicef.in. 2020 [cited 31 July 2020]. Available from: <https://unicef.in/whatwedo/6/women-nutrition>
- 23). M Durrani* A. Prevalence of Anemia in Adolescents: A Challenge to the Global Health. Acta Scientific Nutritional Health. 2018;Volume 2 Issue 4 April 2018(Issue 4 April 2018):4.
- 24). 12. Ambike, A, Shankar Poyekar S, Ambike, D. Effect of Maternal Nutritional Status, Socioeconomic Class and Literacy Level on Birth Weight of Babies. Indian Journal of Neonatal Medicine and Research. 2018;Vol-6(1): PO01-PO05(10.7860/IJNMR/2018/34720.2221):PO01-PO05.
- 25). 13. saber Imran m, yahmed helm y. Anemia WithPrgnanc. SOHAG MEDICAL JOURNAL Vol 23 No 3 July 2019. 2019;Vol. 23 N(No. 3 July 2019):5.