

# Assessment of Nutritional Status in Pregnant Women

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## ABSTRACT

**Background:** Maternal malnourishment has significant, serious, long term effects on both mother and child. Therefore, it is necessary to assess the nutritional status of pregnant women to avoid various complications.

**Objective:** To assess nutritional status of pregnant women in rural area of Belagavi.

**Methodology:** An observational, cross-sectional study was conducted to assess the nutritional status of 103 pregnant women attending ANC clinics in rural areas of Belagavi. Subjects were selected by simple random technique. Ethical clearance and Informed consent was obtained. Data to assess nutritional status was obtained by using predesigned structured questionnaire which included socio-demographic profile, anthropometric measurements, biochemical investigations and dietary intake (24 hrs dietary recall). Data was analyzed using SPSS software and was tabulated statistically using percent and proportion and chi-square test was applied.

**Results:** The study revealed that, 35% of subjects had monthly family income <10,000, 35% had between 10,000-20,000, 20.4% had between 20,000-30,000 while 9.7% had >30,000. 19.4% of subjects were underweight, 51.5% had normal BMI, 23.3% were overweight, while 5.8% were obese. 53.4% of subjects had mild anemia, 23.3% had moderate anemia while 2.9% had severe anemia. Calorie intake of 92.2% pregnant women was below Recommended Dietary Allowance (RDA) whereas only 7.8% pregnant women consumed calories equivalent to RDA.

**Conclusion:** Nutritional status of pregnant women was affected due to factors like Income, Hemoglobin levels, Poor dietary intake compared to Recommended Dietary Allowance (RDA) among rural areas of Belagavi city, India.

**Keywords:** Nutritional Status, Pregnant Women, Anemia, Calorie Intake, RDA, Socio-economic Status.

## INTRODUCTION

Pregnancy is a beautiful physiological phase in which rapid fetal development takes place within the mother's womb and a zygote develops into 3.175 kg of newborn baby within 40 weeks (9 months). [1] Pregnancy is a period of dynamic change for women requiring a lot of concentration and care in pregnancy where the foetus is nourished directly through placenta of a mother. [2] There is a need of nutritional requirement to satisfy

needs of fetus and mother. [3] Maternal nourishment and health are important factors for embryo development. Healthy women tend to produce a healthy child. If a woman is malnourished then she is more prone to give birth to weak or malnourished babies resulting high infant mortality rate. [4]

India is a vast country and ranks second most populous country in world and continues to contribute about quarter of maternal deaths. It has distinct contribution to 20% of the global births. It means that

every year about 30,000,000 women are pregnant and about 27,000,000 among these go for delivery. About one lakh thirty six thousand mothers and new-born babies die. National Family Health Survey (NFHS) revealed that every third woman in India is undernourished (33.0% have low BMI) and every second woman is anemic (56.2% women are anemic in the child bearing age).

A healthy and varied diet with RDA +350kcal/day enhances health. The anabolic process of foetus depends on healthy and sufficient amount of food intake by mother. If the mother is unable to gain optimal weight during pregnancy the nutrients transferred to the baby will be of poor quality and quantity. If the mother is overweight, it will hamper the blood circulation of uterus and restrict quantity of nutrients transferred from placenta to baby. Both low or excessive weight gain are harmful to the pregnant woman and developing foetus. [5] About 75% of pregnant women in India are anaemic and it remains a major factor responsible for maternal morbidity, mortality and even low birth weight. [6]

Maternal malnourishment can lead to intrauterine growth retardation and even it can be a cause for reduced birth weight of baby. LBW (low birth weight) baby (birth weight less than 2500 gms) are more prone to diseases and even has lesser chance for survival compared to the normal weight baby (birth weight more than 2500 gms). LBW babies even if they survived, their cognitive development may impair and they are more likely to be malnourished. [7]

During pregnancy additional nutritional requirement occurs to enable the foetus to grow normally in the uterus. [8] High prevalence of malnutrition attributes to a range of adverse health consequences on the women and their offspring. [9] Therefore, maternal nourishment is an overall public health problem and it is necessary to assess the health status of pregnant women and identify the associated risk factors related to maternal malnourishment which lead to poor outcome

## METHODOLOGY

A cross-sectional study was conducted on pregnant women of rural areas of Belagavi, for 10 months period (1<sup>st</sup> March to 31<sup>st</sup> December 2019). They were recruited by simple random sampling technique during the ANC (Ante-Natal Checkup) clinics. So the total participants recruited in this study were 103 pregnant women. Data was collected by questionnaire method which included information about Anthropometric measurements, Biochemical Investigation, Calorie intake related questions.

**Inclusion Criteria:** Pregnant women who gave consent.

**Exclusion Criteria:** Pregnant women who did not attend ANC during data collection period.

**Ethical Clearance:**

- Ethical clearance from Institutional Ethics Committee (I.E.C) of JNMC. KLE Academy of Higher Education and Research, Belagavi was obtained for this study.
- Informed consent obtained from the pregnant women attending ANC checkup.

**Sample Size Calculation:**

As per study conducted in Beed district, Maharashtra, India; prevalence of anemia in pregnant women is 7.3.

$$n = \frac{Z^2 pq}{d^2}$$

Where n= number of subjects required,

Z= 1.96

p= 7.3%

q= 92.7

d=5% (possible error)

$$\begin{aligned} \text{Hence, sample size} &= \frac{(1.96)^2 \times 7.3 \times 92.7}{(5)^2} \\ &= \frac{3.84 \times 676.71}{25} \\ &= 103 \text{ samples.} \end{aligned}$$

**Data Analysis:**

Data was analyzed using SPSS software.

Inferential data was analyzed using Chi-square test to see the association between nutritional status & demographic variables. Descriptive data was analyzed & presented in percentage & proportion.

## RESULTS

Total 103 pregnant women were included in the study. Out of 103 pregnant women majority 62.1% of them were in the age group of 20-25 years, 23.3 % of them belonged to the age of 26-30 years, 12.6% were below the age of 20 years and 1.9% was above the age n 30 years. Majority 35.0% of the participants had secondary level education, 4.9% participants were under-graduate and 1.0% was illiterate. 81.6% were unemployed and 18.4% were employed. Most of the participants had an income of RS.10000 to 20000 per month and only 9.7% had income above Rs. 30000 per month. Similarly 78.6% were from Joint family and 21.4% were from nuclear family (Table.no.1)

Table No. 1: Socio-demographic characteristics of study participants.

Variable	Category	Frequency	Percent
Age	<20 years	13	12.6
	20-25 years	64	62.1
	26-30 years	24	23.3
	>30 years	2	1.9
Qualification	Illiterate	1	1.0
	Primary	32	31.1
	Secondary	36	35.0
	HSC	13	12.6
	Undergraduate	5	4.9
	Graduate	16	15.5
Occupation	Employed	19	18.4
	Unemployed	84	81.6
Monthly Income	<10,000	36	35.0
	10,000-20,000	36	35.0
	20,000-30,000	21	20.4
	>30,000	10	9.7
Type of Family	Joint Family	81	78.6
	Nuclear Family	22	21.4

Table No.2: Distribution of Study Participants according to their BMI.

Body Mass Index	Frequency(%)
(<18.5) Underweight	20 (19.4)
(19-24.9) Normal	53 (51.5)
(25-29.9) Overweight	24 (23.3)
(<30) Obese	6 (5.8)
Total	103 (100.0)

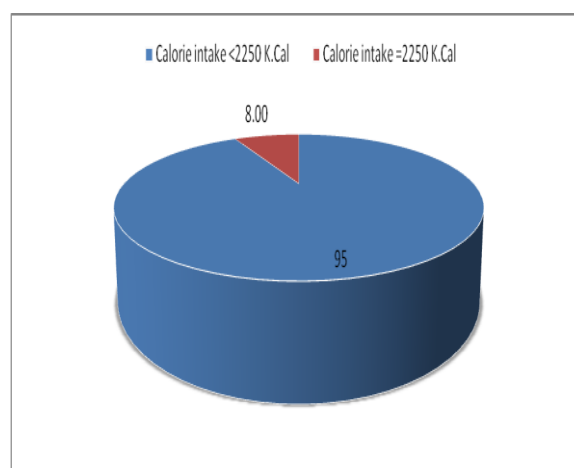
Table no.2: Reveals that out of total 103 participants, 53(51.5%) pregnant women

were normal, 24(23.3%) were overweight, 20(19.4%) were underweight and 6(5.8%) were obese.

Table No.3: Distribution of Study Participants according to their Hemoglobin Levels.

Hemoglobin Levels	Frequency	Percent
Mild Anemia (10-11 gm/dl)	55	53.4
Moderate Anemia (7-9.9 gm/dl)	24	23.3
Severe Anemia (<7 gm/dl)	3	2.9
No Anemia	21	20.4
Total	103	100.0

Hemoglobin was estimated by Sahli's method. 55(53.4%) pregnant women were mild anemic, 24(23.3%) were moderate anemic, 3(2.9%) were having severe anemia. Only 21(20.4%) were normal with normal Hb level.



Graph No.1: Distribution of Study Participants according to their Calorie Intake.

Graph No.1: Reveals that out of 103 study participants 95(92.2%) pregnant women had less energy intake than that of recommended dietary allowance, while 8(7.8%) were taking energy intake equal to the recommended dietary allowance.

## DISCUSSION

The present study aimed to assess the Nutritional Status of Rural Areas of Pregnant Women as to seek information regarding their health status i.e., nutritional status. This study was conducted on 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> trimester's pregnant women in Belagavi for 10 months period (1<sup>st</sup> March to 31<sup>st</sup> December 2019).

### Socio-Demographic Profile:

In the present study the majority of participant's age ranged between 20-25 years. Another cross sectional revealed that in rural areas of Sri Lanka majority of study participants age ranged between 20-29 years. [3] Another similar study conducted in south-west region of Bangladesh had study participants aged between 18- 34. [2] These study findings are similar to our study results

A study done in rural areas of South-West Region of Bangladesh reported that 34.50% participants had primary schooling, 30.50% 6<sup>th</sup> to 10<sup>th</sup>, 16.50% Secondary School Certificate (SSC, 10.75% Uneducated, 5.25% Higher Secondary Certificate, 2.50% Graduate. [2] In our study almost all are educated except 1% who was illiterate.

In our study, 81.6% were Unemployed while 18.4% were employed. A study in Sri Lanka, reported that 83.46% were Unemployed while 16.54% were Employed. [3] The results are similar to present study.

In our study 35% had monthly income <10,000 and 35% had monthly income between 10,000-20,000, 20.4% had monthly income between 20,000-30,000 while 9.7% had monthly income >30,000. In the previous study 60% had <5,000 monthly income, 20% had between 5000-8000, 13.25% had between 8000-10,000 while 6.75% had >10,000. [2] In our study, most of the participants have good income as compared to past study.

### Anthropometric Measurements:

In present study, BMI of participants was recorded according to WHO classification. 51.5% were normal, 23.3% were overweight, and 19.4% were underweight while 5.8% were obese. In Previous study, 44.36% were normal, 35.34% were overweight, and 15.04% were underweight while 5.26 were obese. [3]

### Biochemical Investigation:

In our study 53.4% were mild anemic, 23.3% moderate anemic, while

2.9% were severe anemic. In previous study, 61.84% had moderate anemia, 18.15% had mild anemia, and while 5.52% were severe anemic. [1] In our study, mild anemic are more as compared to other studies.

Dietary Intake: In present study, 92.2% pregnant women were consuming food below Recommended Dietary Allowance (RDA) and 7.8% pregnant women were consuming equal to Recommended Dietary Allowance (RDA. In Previous study, out of 133 pregnant women 66.92% were consuming food above Recommended Dietary Allowance (RDA) and 33.08% were consuming food below Recommended Dietary Allowance (RDA). [10]

### CONCLUSION

The study concluded that calorie intake by pregnant women was less as compared to RDA though most of the participants belonged to normal BMI. Nutritional status of most of the pregnant women was affected due to factors like income, hemoglobin levels, poor dietary intake compared to Recommended Dietary Allowance (RDA) among rural areas of Belagavi city, India.

### Recommendations:

This study recommends that though there are ongoing nutritional programs in community, anemia is still prevalent in pregnant women due to negligence, lack of knowledge or improper cooking practices thus, nutrition education should be initiated.

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