



RESEARCH ARTICLE

NUTRITIONAL STATUS OF ANTENATAL AND POSTNATAL MOTHERS IN SELECTED RURAL AREAS AT NELLORE

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ABSTRACT

Introduction: Nutritional assessment of antenatal and postnatal mothers is important because a balanced and adequate diet is of utmost importance during pregnancy and lactation to meet the increased needs of the mothers and to prevent nutritional stress. Hence an attempt is being made to find the nutritional status of antenatal and postnatal mothers in selected rural areas at Nellore, Andhrapradesh.

Objective: To assess the nutritional status of antenatal and postnatal mothers.

Material and methods: The present community based cross-sectional study was conducted in rural areas of Nellore City of Andhrapradesh state (India) from 15/12/13 to 20/1/14. The study sample included 52 antenatal mothers, 21 postnatal mothers of aged 20-35 years age group selected by convenience sampling method.

Results and discussion: In the present study 43 mothers belong to 20-25 years of age group. Among this group, 8(15.38%) mothers were underweight, 33(63.46%) were normal and 2(3.8%) mothers were overweight, and 9 mothers belong to 26-30 years age group. In that only one mother had underweight (1.92%), 7(13.46%) mothers were normal and one mother had over weight (1.92%). There were 21 postnatal mothers who came under the inclusion criteria of the study. In that, 15 mothers belong to 20-25 years age group. Among these, 3(10.28%) mothers were underweight and 12(57.14%) mothers had normal weight and 5 mothers belong to 26-30 years, in that only one mother was underweight (4.76%) and 4(19.04%) mothers had normal weight and one mother belongs to 31-35 years of age, had normal weight (4.76%). Multivariate analysis for height and weight with iron, protein and calories were done. It has shown that there is a significant relationship between height and weight with iron, protein and calories intake at $p=0.05$ level. In this study statistically significant association was found between nutritional status of the mothers with the education, occupation, and income of the mother. No statistical significant association was found between nutritional status and age of the mother, religion, type of family, availability of health services, environmental hygiene, source of health information, dietary pattern, following antenatal exercises, rest pattern, psychological support and antenatal visits.

Conclusion: The above results shown that there is a significant relation exists between nutritional status of the mother and the BMI and the BMI will be influenced with iron, protein, and calories intake of the mother.

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INTRODUCTION

Nutrition is the science of food and its relationship to health of an individual. Nutritional assessment is a process or a series of measurements that define nutritional status of mothers and children. It is designed to identify individual who without change or intervention will develop malnutrition. Good nutrition is essential for maintaining life.^{1&2}

Despite all efforts undertaken both nationally and internationally, poor nutritional status is still a fundamental

cause of disease and shortened life span. Most people are aware that many factors are either directly or indirectly responsible for under nutrition, including insecure food supply, lack of basic education, inadequate health services, deteriorated environment, low income and inadequate empowerment.²

Nutritional assessment of antenatal and postnatal mothers is important because a balanced and adequate diet is of utmost importance during pregnancy and lactation to meet the increased needs of the mothers and to prevent nutritional stress.³

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Women who enter prenatal care early provide a unique opportunity to assess and monitor nutritional status and to provide nutritional education throughout the reproductive cycle. Nutritional education during this time may have long term consequences for the mother, her infant, and her family. Unfortunately, many women who are at greatest nutritional risk do not enter prenatal care until late in pregnancy. Some actually appear for the first time when they are ready to deliver. Therefore, the effectiveness of nutritional assessment and intervention is contingent up on successful outreach programs to involve women in health care early in pregnancy.⁵

The health and productivity of an individual or a population are related to nutritional wellbeing. Knowledge of nutrition status provide the basis for formulating individual nutrition as well as community based nutrition intention and education programme.^{6&7}

Need For Study

Nutrition not only affects our body's ability to maintain its self but also helps to manage the risk for developing disease. Balanced and sufficient nutritional intake is most essential for children to promote optimal growth and development to protect and maintain health, to prevent nutritional deficiency conditions and various illnesses and to reserve for starvation and dietary stress. Unavailability and scarcity of suitable food, lack of money for purchasing food, traditional believes and taboos about diet and insufficient balanced diet are resulting in malnutrition.¹ The effect of nutrition deficiency is a disturbance in mood, emotion, thought, and perception of behavior. Without adequate nutrient in the diet will leads to problem in whole body of the individual. It will result into vast number of diseases and poor health. Nutritional assessment will continue to be an essential part of the nursing role and as nurses we have a professional duty to develop our knowledge and skills in this area.²

Since studies on nutritional status are scanty from this region of Nellore (Andhrapradesh-India) and there is no reported community based study in Nellore city of this region, an attempt is being made to find out the nutritional status of antenatal and postnatal mothers in selected rural areas at Nellore.

MATERIALS AND METHODS

Research Approach

Quantitative research approach was adopted to assess the nutritional status of antenatal and postnatal mothers.

Research Design

Descriptive survey was used to assess the nutritional status.

Setting of The Study

Study was conducted in selected villages at Nellore like Muthukur, Akkuthotta, N.T. R.Nagar, Rayapupalem, Vaddypalem, and Dhanalakshmi puram.

Target Population

The population for present study was all the antenatal and postnatal mothers, residing in selected villages, Nellore.

Accessible Population

The population for the present study was antenatal and postnatal mothers.

Sample

Antenatal and postnatal mothers, residing in selected villages, Nellore.

Sampling Method

Non probability convenience sampling technique was used to select the subjects.

Content Validity

Content validity was obtained from the experts in community, child health and maternal health departments. Modifications were made based on the suggestions and corrections given by the experts.

Ethical Clearance

Ethical clearance was obtained from the ethical committee of Narayana Medical College Hospital, Nellore.

Pilot study

Pilot study was conducted in selected villages at Nellore from 15/12/13 to 20/1/14. After obtaining permission from the concerned authorities of the villages, subjects were selected by using convenience sampling technique. Data was collected by using questionnaire and observational check list to assess the nutritional status.

Data Collection Procedure

After getting permission from medical officer of the PHC, concerned authority and consent from the subjects data collection procedure was carried out from 15/12/13 to 20/1/14. The sample consists of antenatal and postnatal mothers in selected villages at Nellore. Non probability convenience sampling technique was used to select the subjects. The time scheduled for data collection was 8am -1pm. Questionnaire and observational check list were used to collect the data.

Data Analysis

The data was analyzed in terms of objectives of the study by using descriptive statistics and inferential statistics.

Descriptive Statistics

Mean, frequency, percentage and standard deviation.

Inferential Statistics

chi-square test to find the association between the nutritional status of antenatal and postnatal mothers with their socio-demographic variables and multivariate analysis to find the association between height and weight with iron, protein, and calories.

Data Analysis

The data was analyzed by using Descriptive statistics and inferential statistics i.e. Mean, standard deviation, frequency, percentage, Chi square test and multivariate analysis was done.

RESULTS AND DISCUSSION

A database was created in Microsoft Excel software 2007 version. Data analysis was carried out with the help of statistical measures such as percentages, proportion, Chi-square

test and Chi-square test for trend using software Graph Pad Prism Version 5.01 and Open Epi Version 2.3.

Table 1 Frequency And Percentage Distribution Of Antenatal Mothers By Nutritional Status N=52

Demographic Variables	Under Weight		Normal		Over Weight	
	F	%	F	%	F	%
Age Of The Mother						
20-25 YEARS	8	15.38%	33	63.46%	2	3.84%
26 30 YEARS	1	1.92%	7	13.46%	1	1.92%

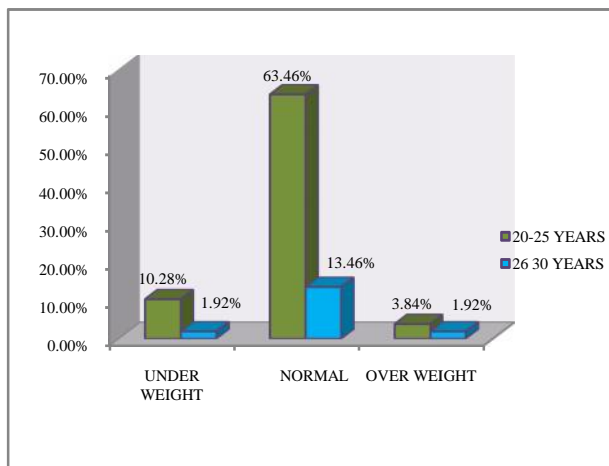


Figure 1 Percentage Distribution of Antenatal Mothers By Nutritional Status

The above table shows there were 52 antenatal mothers who came under the inclusion criteria of the study. In that, 43 mothers belong to 20-25 years of age group. Among this group, 8(15.38%) mothers were under weight, 33(63.46%) were normal and only 2(3.8%) were overweight, and 9 mothers belong to 26-30 years of age group. In that only one mother has underweight (1.92%), 7(13.46%) mothers were normal and one mother has over weight (1.92%).

The Association between Bmi and Socio Demographic Variables of Antenatal Mothers

In this study statistically significant association was found between nutritional status of the mothers with the education, occupation, and income of the mother. No statistical significant association was found between nutritional status and age of the mother, religion, type of family, availability of health services, environmental hygiene, source of health information, dietary pattern, following antenatal exercises, rest pattern, psychological support and antenatal visits.

Association between Age and Iron Intake of Antenatal Mother

There is significant association between height and calorie intake of antenatal mothers. Thus the height and calorie intake are dependent each other. So, when the calorie intake increases the height also increases.

Association between Height and Iron Intake of Antenatal Mother

There is significant association between height and iron intake of antenatal mothers. Thus the height and iron intake are dependent each other. So, when the iron intake increases the height also increases.

Association between Height and Protein Intake of Antenatal Mothers

There is significant association between height and protein intake of antenatal mothers. Thus the height and protein intake are dependent each other. So, when the protein intake increases the height also increases.

Association between Weight and Calorie Intake of Antenatal Mothers

There is significant association between weight and calorie intake of antenatal mothers. Thus the weight and calorie intake are dependent each other. So, when the caloric intake increases the weight also increase.

Association between Weight and Iron Intake of Antenatal Mothers

There is significant association between weight and iron intake of antenatal mothers. Thus the weight and iron intake are dependent each other. So, when the iron intake increases the weight also increases.

Table 2 Association between BMI and Calorie Intake of Antenatal Mothers

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.221E3 ^a	2.156	.162
Likelihood Ratio	382.157	2156	1.000
Linear-by-Linear Association	25.101	1	.000
N of Valid Cases	52		

2250 cells (100.0%) have expected count less than 5. The minimum expected count is .02.

Interpretation

- There is significant association between BMI and calorie intake of antenatal mothers. Thus the BMI and calorie intake are dependent each other. So, when the calorie intake increases the BMI also increase.

Association between Bmi and Iron Intake of Antenatal Mothers

There is significant association between BMI and iron intake of antenatal mothers. Thus the BMI and iron intake are dependent each other. So, when the iron intake increases the BMI also increases.

Association between Bmi and Protein Intake of Antenatal Mothers

There is significant association between BMI and protein intake of antenatal mothers. Thus the BMI and protein intake are dependent each other. So, when the protein intake increases the BMI also increase.

Interpretation

The above table shows that there is a significant relationship between weight, iron, protein and calories

Analysis and Interpretation of Postnatal Mothers

The findings of the postnatal mothers described in the following headings.

There were 21 post natal mothers who came under the inclusion criteria of the study.

Table 3 Multivariate Analysis for Weight, Iron, Protein and Calories Multivariate Tests

	Effect	Value	F	Hypothesis df	Error df	Sig.	Noncent. Parameter	Observed Power ^b
Intercept	Pillai's Trace	.999	2.244E3 ^a	3.000	5.000	.000	6731.593	1.000
	Wilks' Lambda	.001	2.244E3 ^a	3.000	5.000	.000	6731.593	1.000
	Hotelling's Trace	1.346E3	2.244E3 ^a	3.000	5.000	.000	6731.593	1.000
	Roy's Largest Root	1.346E3	2.244E3 ^a	3.000	5.000	.000	6731.593	1.000
WEIGHT	Pillai's Trace	2.464	2.474	39.000	21.000	.015	96.493	.962
	Wilks' Lambda	.001	4.100	39.000	15.554	.002	154.493	.993
	Hotelling's Trace	62.458	5.872	39.000	11.000	.002	229.013	.997
	Roy's Largest Root	51.613	27.792 ^c	13.000	7.000	.000	361.290	1.000

- a. Exact statistic
- b. Computed using alpha = .05
- c. The statistic is an upper bound on F that yields a lower bound on the significance level.
- d. Design: Intercept + WEIGHT

Table 4 Frequency And Percentage Distribution Of Postnatal Mothers By Nutritional Status N=21

Demographic Variables	Under Weight	Normal
Age of The Mother	F %	F %
20-25 YEARS	3 10.28%	12 57.14%
26 30 YEARS	1 4.76%	4 19.04%
31-35 YEARS	1 4.76%	

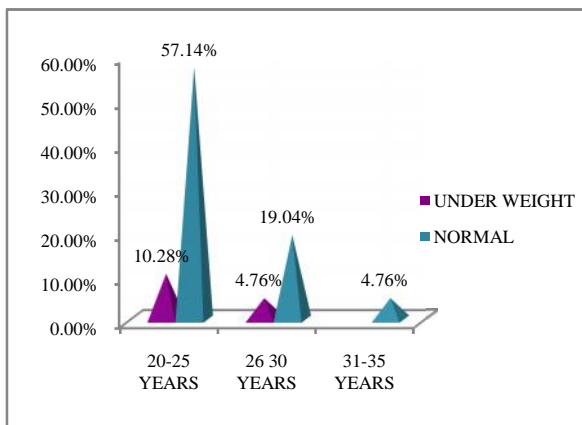


Figure 2 Percentage Distribution Of Postnatal Mothers By Nutritional Status

In that, 15 mothers belong to 20-25 years of age group. Among these, 3(10.28%) mothers were under weight and 12(57.14%) mothers were normal weight. Among 5 mothers who belongs to 26-30 years, only one mother was under weight (4.76%) and 4(19.04%) mothers were normal weight. The only mother belongs to 31-35 years of age, has normal weight.

The Association between Bmi and Socio Demographic Variables of Postnatal Mothers

In this study statistically significant association was found between nutritional status of the mothers with the education, occupation, and income of the mother and remaining were non significant

The Association between Height and Calorie Intake of Postnatal Mothers

There is significant association between height and calorie intake of postnatal mothers .Thus the height and calorie intake are dependent each other. So, when the caloric intake increases the height also increases.

The Association between Heightand Iron Intake of Postnatal Mothers

There is significant association between height and iron intake of postnatal mothers.

Thus the height and iron intake are dependent each other. So, when the iron intake increases the height also increases.

The Association between Heightand Protein Intake of Postnatal Mothers

There is significant association between height and protein intake of postnatal mothers. Thus the height and protein intake are dependent each other. So, when the protein intake increases the height also increases.

The Association between Weight and Calorie Intake of Postnatal Mothers

There is significant association between weight and calorie intake of postnatal mothers. Thus the weight and calorie intake are dependent each other. So, when the caloric intake increases the weight also increases.

The Association between Weight and Iron Intake of Postnatal Mothers

There is significant association between weight and iron intake of postnatal mothers. Thus the weight and calorie intake are dependent each other. So, when the calorie intake increases the weight also increases.

The Association between Weight and Protein Intake of Postnatal Mothers

There is significant association between weight and protein intake of postnatal mothers Thus the weight and protein intake are dependent each other. So, when the protein intake increases the weight also increases.

Table 5 The Association Between B M I And Calorie Intake Of Postnatal Mothers Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.360E2 ^a	320	.258
Likelihood Ratio	115.733	320	1.000
Linear-by-Linear Association	11.170	1	.001
N of Valid Cases	21		

357 cells (100.0%) have expected count less than 5. The minimum expected count is .05.

Interpretation

- There is significant association between BMI and calorie intake of postnatal mothers Thus the BMI and calorie intake are dependent each other. So, when the BMI intake increases the Calorie also increase.

The Association between B M I and Iron Intake of Postnatal Mother

There is significant association between BMI and iron intake of postnatal mothers Thus the BMI and Iron intake are dependent each other.

Table 6 Multivariate Analysis for Height, Iron, Protein and Calories

	Effect	Value	F	Hypothesis df	Error df	Sig.	Noncent. Parameter	Observed Power ^b
Intercept	Pillai's Trace	.998	1.221E3 ^a	3.000	9.000	.000	3661.644	1.000
	Wilks' Lambda	.002	1.221E3 ^a	3.000	9.000	.000	3661.644	1.000
	Hotelling's Trace	406.849	1.221E3 ^a	3.000	9.000	.000	3661.644	1.000
	Roy's Largest Root	406.849	1.221E3 ^a	3.000	9.000	.000	3661.644	1.000
HEIGHT	Pillai's Trace	1.837	1.930	27.000	33.000	.037	52.099	.932
	Wilks' Lambda	.042	1.962	27.000	26.927	.043	50.705	.893
	Hotelling's Trace	6.875	1.952	27.000	23.000	.054	52.708	.878
	Roy's Largest Root	4.753	5.809 ^c	9.000	11.000	.004	52.284	.970

- a. Exact statistic
- b. Computed using alpha = .05
- c. The statistic is an upper bound on F that yields a lower bound on the significance level.
- d. Design: Intercept + HEIGHT

So, when the BMI intake increases the Iron also increases.

The Association between B M I and Protein Intake of Postnatal Mothers

There is significant association between BMI and protein intake of postnatal mothers Thus the BMI and Protein intake are dependent each other. So, when the BMI intake increases the protein also increases.

Interpretation

The above table shows that there is a significant relationship between height, iron, protein and calories.

CONCLUSION

The present finding uncovered information on the nutritional status, and associated factors among antenatal and post natal mothers in selected rural areas, Nellore. This study revealed that 43 mothers belong to 20-25 years of age group. Among this group, 8(15.38%) mothers were underweight and 2(3.8%) mothers were overweight, and 9 mothers belong to 26-30 years age group. In that only one mother had underweight (1.92%), and one mother had over weight (1.92%). There were 21 post natal mothers who came under the inclusion criteria of the study. In that, 15 mothers belong to 20-25 years age group. Among these, 3(10.28%) mothers were underweight and 5 mothers belong to 26-30 years, in that only one mother was underweight (4.76%). Multivariate analysis for height and weight with iron, protein and calories were done.

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It has shown that there is a significant relationship between height and weight with iron, protein and calories intake at =0.05 level. Therefore, sustained nutrition education is recommended to the mothers and their families and communities to improve food intake, proper dietary knowledge during antenatal and postnatal in order to enhance health and nutrition outcomes of mothers and their children.

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