



**Article : A COMPARATIVE STUDY ON NUTRITIONAL STATUS OF
SELECTED PREGNANT WOMEN**

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ABSTRACT

The pregnant women constitute the most vulnerable segment of a population from the nutritional standpoint; in particular the conditions of pregnant women belonging to low income group is a matter of serious concern. Proper nutrition during pregnancy is critically important for both the mother and foetus. The study was conducted to determine and compare the nutritional status of pregnant women belonging to the low income group in rural and urban areas of Bangalore and to find out whether the nutritional knowledge of the pregnant woman has any influence on her nutrient intake. Total of 100 pregnant women were selected, among these 50 were from urban area of Bangalore and 50 were from rural area of Kankapur and Kengeri. Random sampling technique was used to gather the information. A survey cum interview method was used to obtain the relevant information. The result reveals that the nutrient intake of both the groups fell short of the RDA. It was also found that there was a significant difference in nutrient intake and hemoglobin levels. Assessment for clinical deficiency signs revealed that the nutritional status of the urban group was better when compared to the rural group. Nutritional awareness was found to be significantly more in the urban pregnant women, when compared to rural pregnant women and it was associated with increased nutrient intake in both the groups of pregnant women.

Introduction

Pregnancy is a prominent event in a woman's life, able to transform her life forever. Pregnancy is a physiological state, which produces several normal and expected changes, in all the maternal organ systems. The nutrient demands of the embryo or the foetus developing in the uterus must be met in addition to those for maintenance of the adult women; this calls for quality nutrition both before and during pregnancy. The future health of the developing child depends to a larger extent on the nutritional foundation established in prenatal life. The selection of a

diet to meet the needs of pregnancy requires careful choices of food and is not particularly complicated.

The pregnant women constitute the most vulnerable segment of a population from the nutritional standpoint; in particular the conditions of pregnant women belonging to low income group is a matter of serious concern. These groups are the most deprived, down trodden, illiterate, neglected and weakest group of the population. All these factors influence the dietary intake of the pregnant women belonging to the low income group, which in turn affects their nutritional status. A matter of particular concern is the nutritional status of pregnant women of the rural population.

Therefore the present study was taken to assess and compare the nutritional status and nutritional knowledge of the pregnant women in rural and urban areas in order to identify prospective mothers at increased risk which would in turn be helpful in the development of methods to communicate current knowledge as a public health measure.

The present study focussed on the following objectives:

- Assess the nutritional status of pregnant women
- Assess the nutritional knowledge of the pregnant women
- Elicit information on whether the nutritional knowledge of the pregnant woman has an influence on her nutrient intake

The research was conducted in five phases:

Phase I: Identification and Development of an appropriate tool:

Two tools were self designed by the researcher:

1. **A Questionnaire to elicit information on the nutritional status of pregnant women. This schedule elicited the following information**

- Socio demographic details of the respondents
- Dietary habits
- 24 hour dietary recall
- Food consumption pattern
- Supplements consumed during pregnancy

- Special foods consumed during pregnancy
- Assessment of general health conditions

2. A questionnaire to assess Nutritional knowledge of the respondents

3. Jollife's chart to assess clinical signs of deficiency.

Phase II: Pilot study:

In order to assess the feasibility of the investigation and the ease of response from the subjects to the questionnaire developed, a pilot study was conducted. A representative sample (10%) was selected from both urban and rural areas. This pilot study formed the basis for further in-depth study.

Phase III: Sample selection:

Purposive random sampling was used to select the sample. The urban sample consisted of 50 pregnant women attending the antenatal clinic in government hospitals in Bangalore. The rural sample of 50 pregnant was selected from kengeri and kankapur government hospitals.

Phase IV: Conducting the study:

The self designed questionnaire was the main tool used to collect information such as dietary pattern, supplements taken, food beliefs, taboos and food habits. Anthropometric measurements were recorded. Medical case sheets were also used to obtain the relevant information. Haemoglobin levels of the subjects were noted from the medical records.

Phase V: Compilation, analysis and interpretation of data:

The collected data was compiled, tabulated, statistically analysed and interpreted.

TABLE-1: SOCIO-DEMOGRAPHIC INFORMATION OF THE RESPONDENTS

Basic characteristics	URBAN		RURAL	
	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
Age in years				
18-21	24	48	39	79
21-24	12	24	6	12
24-27	8	6	4	7
27-30	6	12	1	2
Educational level				
Illiterate	-	-	22	44
Below SSLC	16	32	14	28
SSLC	23	46	13	26
PUC	9	18	1	2
DEGREE	2	4	-	-
Chqui square				33.28*
Type of Family				
Nuclear	32	64	24	48
Joint	18	36	26	52
Occupation				
working	38	76	4	8
Non working	12	24	46	92

Analysis of the socio-demographic data of the respondents indicates that a majority of the women in both the groups were aged between 18-21 years. Majority of the urban women (46%) were matriculates, followed by 32% of women who were school dropouts. A small percentage (4%) of graduates was also seen in the urban group, while no graduates were seen in the rural group. Among the rural respondents, it was observed that a majority of them (44%) were illiterates, followed by 28% of women who were school dropouts, 26% were matriculates and a small percentage (2%) had completed their pre-university education. The difference in the educational level of both the groups was found to be statistically significant. Majority of the urban respondents hailed from nuclear families, while a majority of the rural respondents hailed from joint families. It was also observed that a majority of the urban respondents were working women, while a majority of the rural respondents were found to be home makers.

TABLE- 2: ANTHROPOMETRIC DETAILS

	URBAN		RURAL	
	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
WEIGHT(IN kgs)				
>40	3	6	-	-
40-50	22	44	25	50
50-60	21	42	19	38
60-70	4	8	-	-
Height (in cms)				
<150	4	8	6	12
150-155	27	54	13	26

155-160	13	26	12	24
160-165	6	12	19	38

Anthropometric measurements of the respondents in both the groups reveal that a majority of the respondents from the urban areas (86%) were in the weight range of 40-60 kgs. On the other hand most of the rural respondents (50%) weighed 40-50 kgs, while 38% weighed between 50-60 kgs.

A majority of the urban respondents (54%) and 26% rural respondents were in the height range of 150-155 cms. While 12% of the urban women were in the height range of 160-165cms, over three times the percentage (38%) was recorded in the rural sample.

TABLE-3: NUMBER OF MEALS CONSUMED PER DAY

No. of meals per day	Urban		Rural	
	Number	percentage	Number	percentage
2	2	4	10	20
3	45	90	38	76
4	3	6	2	4
>4	-	---	-	-

Analysis of the table reveals that a majority of the urban (90%) and rural (76%) women consumed three meals a day while the remaining respondents from both groups consumed either 2 or 4 meals per day.

TABLE-4: NUTRIENT INTAKE

	Urban		Rural		RDA	't' value
	Consumption		consumption			
	Mean	Sd	mean	Sd		
Calories (kcal)	1883.21	482.26	1542.5	576.6	2525	3.2*
Proteins(g)	48.68	14.94	38.6	16.8	65	3.17*
Fat (g)	35.36	15.79	26.2	17.78	30	2.72*
Iron (mg)	19.0	11.50	17.1	7.1	38	0.99
Calcium(g)	2.43	2.93	1.24	1.40	1	3.68*
Vitamin A(ug)	476	793	383	375	400	0.68
Thiamine(mg)	1.06	0.58	0.95	0.35	1.3	1.15
Riboflavin (mg)	0.69	1.18	0.94	1.28	1.5	0.62
Niacin(mg)	11.8	5.68	10.47	4.48	16	1.33
Vitamin C(mg)	129	90	45.7	6.09	40	5.42*
Folic acid(mg)	209.5	132	140	85.36	400	5.58*

□ Significant at 1% level

A comparison of nutrient intake between the urban and rural respondents indicates that except for nutrients like fat, calcium and vitamin C, both the groups were found to have insufficient intake of all other macro and micro nutrients.

Further analysis and comparison of the intake of nutrients of urban and rural groups indicate that the intake of all the macro nutrients was higher in the urban group. The urban respondents differed significantly from the rural respondents in the consumption of calories, protein, fat, calcium, vitamin C and folic acid. The respondents of both groups did not differ in the consumption of iron, thiamine, riboflavin, niacin and vitamin A.

TABLE-5: SUPPLEMENTS TAKEN DURING PREGNANCY

Supplements	Urban		Rural	
	Number	percentage	number	percentage
iron	2	4	10	20
calcium	45	90	38	76
Multi vitamin	3	6	2	4
All three	-	---	-	-
Iron + calcium	37	74	17	34
Multi vitamin +iron	3	6	-	-
none	2	4	15	30

Analysis of the supplements taken during pregnancy in both the groups indicates that a majority (74%) of the respondents in the urban group had taken a combination of iron and calcium supplements. A small percentage (6%) of the respondents took iron, calcium, and multivitamins individually or as a combination of all three. A negligible percentage took no supplements.

Among the rural group respondents a majority (76%) took calcium supplements while 34% of the respondents consumed a combination of iron and calcium supplements. 30% of the rural respondents were not on any supplements.(Note: All the supplements were consumed on a daily basis)

Table-6: HAEMOGLOBIN LEVELS OF THE RESPONDENTS

Haemoglobin level	Urban		Rural		't' value
	number	Percentage	number	percentage	
>11	13	26	2	4	
10.0 – 11.0 (mild anemia)	25	50	15	30	5.75*
7.0- 9.9 (moderate anemia)	12	24	26	52	
<7 (severe anemia)	-	---	7	14	

□ Significant at 1% level

An examination of the haemoglobin status of the respondents in both the groups indicates that a majority of the respondents in both the groups were anaemic. When the degrees of anaemia between the two groups were compared, it was observed that most of the pregnant women (50%) in the urban sample were mildly anaemic, while in the rural sample a majority (52%) had moderate anaemia and 14% had severe anaemia.

TABLE-7: ASSESSMENT OF CLINICAL SIGNS OF DEFICIENCY IN THE RESPONDENTS

Signs	Urban		Rural	
	Number	percentage	number	percentage
Pale inner surface of the eyes	13	26	13	26
Pale lips	-	-	-	-
Pale nails and pale palm	-	-	-	-
All three	10	20	23	46
Angular stomatitis	1	2	-	-
none	26	52	14	28

Jollife's chart was used for assessing the clinical signs of deficiency. Analysis of the data obtained indicates that the clinical signs of deficiency were more prevalent in the rural respondents than in the urban respondents. 46% and 20% of the rural and urban women respectively showed all three signs of anaemia. Equal percentage (26%) of both groups had pale inner surface of the eyes A very small percentage of the urban sample had angular stomatitis.

TABLE-8: NUTRITIONAL KNOWLEDGE OF THE RESPONDENTS

RESPONDENTS	mean	Sd	't' value
Urban	8.9	2.37	2.66*

Rural	7.7	2.16	
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□ Significant at 1% level

The respondents of both the groups differed significantly in their nutritional knowledge. When the mean nutritional knowledge score out of a possible 15 was computed it was observed that the urban pregnant women scored 8.9 points on an average, while the rural pregnant women scored 7.7 on an average indicating they had less nutritional knowledge than their urban counterparts.

TABLE-9: RELATIONSHIP BETWEEN NUTRITIONAL KNOWLEDGE AND
 NUTRIENT INTAKE

NUTRIENT	'b' (regression)value	
	Urban	Rural
Calories (kcal)	9.6	9.5
Protein(g)	0.48	0.42
Iron(mg)	-0.09	0.23
Calcium(mg)	0.12	0.08

The above Table brings out the relationship between nutritional knowledge and nutrient intake. When nutritional knowledge was regressed on nutrient intake, it was found that there was a definite relationship between nutrient intake and nutritional knowledge.

It can be inferred that in both the groups for every one point increase in nutritional knowledge score there was a corresponding increase in the nutrient intake, which is indicated by the 'b' value.

However, in the urban group there was a decrease in the intake of iron by 0.09 gms with an increase of one point in the nutritional knowledge score.

Conclusion:

The study concludes that, the diets of the both urban and rural pregnant women were inadequate for all major nutrients, except for fat, calcium and vitamin C. Severity of anaemic condition was higher in rural pregnant women, as interpreted from their haemoglobin status and assessment of clinical signs. The study also clearly shows that there was a definite relationship between nutrient intake and nutrition knowledge. Hence the study concludes that, imparting nutritional knowledge for pregnant women especially in the first trimester; bring forth an increase in the nutritional status of those women and health status of their children.

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