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Effect of Nutrition Education on Selected Minerals (Iron and Calcium) Status and Outcome of Pregnancy

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ABSTRACT

The prenatal period is very important for both the mother and the child. If the mother has the knowledge about her diet in prenatal period, it leads to good health of mother, prevention of complications and healthy child. Some of the rectifying strategies include proper intake of diet during pregnancy, creating awareness on nutrition in pregnancy and supplementation of additional requirements. The present study was under taken to assess the nutritional status during pregnancy before and after nutrition education and to assess the impact of nutrition education on birth weight. Sample of the study consisted of 400 pregnant women out of which 200 were experimental and 200 were control group subjects who are attending antenatal clinics in selected health centers, chittoor. Results revealed that A significant difference @1% was identified in the nutritional status in the experimental group when compared to control group Fifty three percent Birth weights (Between 2.5-4kgs) of newborn babies were more than the normal weight that is 2 kgs. When compared to the control group thirty six percent this may be due to effective nutrition education.

KEYWORDS :

Introduction:

Maternal nutrition is the most important determinant influence during the development of fetus. Poor nutritional status during pregnancy is associated with inadequate weight gain, anemia, retarded fetal growth and low birth weight, still births, preterm delivery, IUGR, morbidity and mortality rates. Factors like hemorrhage ante-partum and postpartum toxaemia (hypertension during pregnancy), anemia, obstructed labour, puerperal sepsis, and unsafe abortion cause a high maternal mortality rate. Thus, it may threaten the health and life of the mother and the newborn. The prenatal period is very important for both the mother and the child.

WHO estimates shows that out of the 529,000 maternal deaths globally each year, 136,000 (25.7%) are contributed by India. If the mother has the knowledge about her diet in prenatal period, it leads to good health of mother, prevention of complications and healthy child. In Indian scenario, research relating to pregnancy outcome has documented the critical need of nutrition education for optimal pregnancy outcome. Hence the present study was undertaken with the following objectives to create awareness on minerals such as iron and calcium and their influence on pregnancy outcome among pregnant women.

Objectives of the Study:

1. To assess the nutritional status of pregnant women before and after nutrition education programme.
2. To evaluate the effectiveness of structured teaching programme on pregnancy outcome (birth weight).

Materials and Methods:

The quasi experimental study was conducted at government urban health center and two private nursing homes in chittoor from 5th April 2009 – May 30th 2012. Samples were selected randomly. A sample of 500 pregnant women in the first trimester attending antenatal clinic was selected initially using random sampling. Out of this 200 selected as experimental group and 200 for control group. The structured knowledge test questionnaire was prepared for assessing the knowledge on minerals iron and calcium among pregnant women and assessed the nutritional status by 24 hrs recall method and nutrition education on selected minerals iron and calcium during pregnancy was given later assessed the effect of nutrition education on birth weight. The data was analyzed using SPSS (13 version) package. Means, standard deviations, independent sample student's t-test, paired t-test, chi-square and one way ANOVA were used.

Results and Discussion:

As per the requirement and objective of the study, quasi experimental research was applied. The sample of the study consisted of Sixty five percent of the subjects were in the age group of 21- 25yrs.Seventy five percent of the samples were housewives in the present study. Forty nine percent of the subjects were illiterates in this study.Majority of the samples were low income group (fifty five percent).A majority forty five percent of the subjects were residing at rural area.

The daily dietary intake was collected by 24hours recall method from the control and experimental group subjects. The amount of food groups consumed was noted and the nutrient content of all foods ingested was determined using "nutritive value of Indian foods" (Gopalan et al, 1999).

1. Food intake:

Table No.2: Mean daily intake of various food groups by pregnant women

S. No	Food Groups	RDA ICMR	Intervention Group		Control Group		P1	P2
			Pre NE	Post NE	Pre-Test	Post-Test		
1	Cereals	475(g)	132.4 ± (44.39)	210.2 ± (36.01)	124.9 ± (52.24)	149 ± (3.07)	<0.001	<0.001
2	Pulses	60(g)	11.36 ± (14.60)	22.4 ± (23.70)	13.8 ± (16.87)	16 ± (17.18)	<0.05	NS
3	Roots & Tubers	50(g)	15 ± (33.5)	75.8 ± (58.42)	37.3 ± (42.04)	50 ± (0.06)	<0.005	<0.001
4	VegeTables	40(g)	24.6 ± (31.15)	18.39 ± (28.47)	16.2 ± (27.03)	18.2 ± (28.09)	NS	NS
5	Fruits	75(g)	39.62 ± (62.05)	125.15 ± (88.24)	30.2 ± (65.67)	50.48 ± (72.66)	<0.001	<0.001
6	Milk	250(ml)	189.1 ± (210.78)	380.08 ± (244.7)	62.7 ± (174.10)	192.01 ± (202.01)	<0.001	<0.001
7	Sugar &Jaggery	30(g)	10.85 ± (5.54)	16.64 ± (6.90)	10.26 ± (6.73)	13.72 ± (9.83)	NS	<0.05
8	Fats & Oils	30(ml)	12.1 ± (6.33)	18.8 ± (6.96)	11.09 ± (6.58)	12.1 ± (6.60)	<0.001	<0.001

From the present study results it was clear that the intake of various foods was less than the required amount. This might be due to poverty and ignorance. Most of the respondents in the studied sample were illiterates so the role of high iron, high calcium, and high protein

diets in pregnancy outcome was ignored initially .The respondents also did not have any knowledge about low cost nutritious foods. They might be poor in purchasing power of subjects. After imparting nutrition education they gained knowledge increased intake of iron and calcium rich foods which was evident even by raise in hemoglobin and calcium levels.

2. Nutrient intake:

Table No.2 Mean nutrient intake in the Experimental and Control group before and after Nutrition education intervention

S.NO	Nutrients	ICMR(1989) RDA	Control		Experimental		t-Value
			Non NE		Before NE	After NE	
			I st	III trimester	I st	III trimester	
01	Energy (K-cal)	2525	840.15	1520	922.68	2103	3.75**
02	Protein (g)	65	27.8	57	35	64	3.8**
03	Calcium (mg)	1000	480.8	960	560.92	1110	6.24**
04	Iron (mg)	38	18.35	23.96	29	33	3.5**
05	Vitamin C (mg)	40	23.8	25.38	23.96	40.01	3.16**
06	Vitamin A (RE)	600	282.54	740.68	284.56	840.78	4.65**

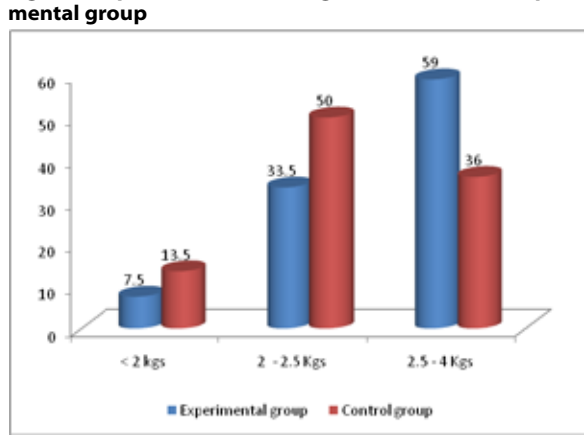
Significant at 1% (P<0.01) level

Inadequate intake might be due to poverty, low purchasing power, lack of knowledge, ignorance, illiteracy, and less availability of foods. The study shows that in low socio-economic group, nutrition education is likely to results in better nutrient intake.

Dietary intake of the experimental groups reached the recommended dietary allowance this might be due to effective nutrition education. But it did not meet the Recommended Dietary Allowance this may be due to few subjects are employee and daily wages during working hours they did not have time to eat or after doing work they get tired very soon and hence don't feel like eating anything or the women who cook by herself don't feel like cooking for herself.

After imparting education the consumption of nutrient intake in experimental group was significantly (p<0.01) higher than the control group. This might be due continuous emphasis on intake of iron rich and calcium diet during nutrition education.There was significant (p<0.005) increase in knowledge level in experimental group compared to control group this was due to effective implementation of nutrition education.

Fig: 1 Comparison of birth weight in control and experimental group



The Newborn Birth Weight between 2.5kg to 4kg, in experimental group (59%) compared to control group (36%). The results revealed that the effective nutrition education during pregnancy influenced the dietary intake inturn reflected the birth weight of newborn. There was significant increase in birth weight of newborn in experimental group than the control group.

Conclusions: A high percentage of pregnant women are not having adequate knowledge on nutrition during pregnancy and how its influence the pregnancy outcome due to low socioeconomic status, education and not interested to know.

Recommendation:

Effective nutrition education intervention should be directed towards pregnant women to improve maternal nutritional status.

Designing and implementing nutritional program that concerning women health during pregnancy starting pre-conception period at MCH centers and ensuring the use of micronutrient supplement dispensed to pregnant women.Use of media in promoting positive diet practices during pregnancy in the community.

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