Assessment of Nutritional Status of Pregnant Women in Coimbatore District and Imparting Nutrition Education

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Abstract

Nutrition plays a major role in the growth and development of each individual from foetal life to old age. Pre-conceptual nutritional status and sufficient nutrient intake during pregnancy play an important role in promoting the nutritional status of the foetus and also the baby during the lactation period. Maternal malnutrition promotes life-threatening consequences. The aim of the present study was 1. To study the socioeconomic status of the selected pregnant women, 2. To assess the nutritional status of the selected pregnant women, 3. To identify the nutritional and health problems of the selected pregnant women, and 4. To impart a nutrition education programme. In the present study, 100 pregnant women from Coimbatore district, Tamil Nadu were selected as study participants. An interview schedule was formulated to acquire sufficient information from the participants. Nutrition education was given through leaflet and poster methods to 30 pregnant women who were willing. A checklist was used to assess the impact of the nutrition education programme. The results of the study showed that the majority of the participants were literate. Nutrients like protein, calcium, iron and folic acid intake of the selected subjects were more deficient than the Recommended Dietary Allowances (RDA). The nutrition education programme had a positive impact in creating awareness about nutrition among the target population. The present study concluded that proper knowledge of eating habits and nutritional requirements can help to promote the health status of pregnant women.

Keywords: Nutrition Education, Nutritional Status, Pregnant Women

1. Introduction

Pregnancy is a period when the nutritional requirements are different. Adequate nutritional requirements before pregnancy are vital for the survival and the mother and the child. In the action in the direction of highlighting the First thousand days, adequate nutritional status of the mother is vital to increase the nutritional status of the child and to reduce the risk of low-birth-weight babies and pre-term babies[1]. Approximately 24 million children are born every year in India[2]. According to the National Family Health Survey (NFHS-2017), 50-57% of expectant mothers and nursing mothers were anaemic due to lack of intake of micronutrient-rich foods in their daily diet[3]. It is vital to be aware that, the socio-economic factors like poverty, food insecurity, lack of knowledge and improper distribution of foods are the major contributing factors to maternal malnutrition[4]. The

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substantial contributors to malnutrition among pregnant and lactating women are inadequate food intake and unequal food supply at the household level, food forbids, misconceptions about food and dietary intake, frequent infectious diseases and inadequate care[5]. The nutritional status and food intake of pregnant mothers and lactating mothers are directly related to socio-economic factors and demographic factors. As reported by Radhika, et al (2018) and Tupe and coworkers (2009), educational status, size of the family, and community are the major influencing factors for the food intake and nutritional status of pregnant and lactating women[6,7]. Previous studies reported that preterm delivery, maternal health complications and intrauterine growth retardation are strongly associated with maternal nutritional status[8,9]. The prevalence of low Mid-Upper Arm Circumference was reported by Manohar and coworkers in 2014. The results of the study state that, 25% of non-pregnant women and 35% of pregnant women are having low Mid-Upper Arm Circumference of less than 22.5[10]. Women have different nutritional necessities throughout their life. Particularly before and during pregnancy and while breastfeeding, the nutritional susceptibility is extreme. It is vital to make sure that, women are receiving nutritious food and sufficient facilities to promote their health and the health of their children. Women require nourishing and safe foods to have adequate nutrient reserves which help them during pregnancy for the proper growth and development of the foetus. To provide sufficient nutrients for the foetus to grow, pregnant women require high nutrient intake. However, the nutritional and health status of the pregnant mother is unsatisfactory in several parts of the world[11]. The daily intake of sufficient servings of the basic five food groups during pregnancy is a healthy eating pattern. Nutrition education is a conventional intervention tool to encourage viable eating behaviours among pregnant women. Another study reports that the increased intake of fruits, vegetables, roots and tubers and fish and less intake of rice is certainly connected with nutrition education programme[12-14]. With the above context, the present study was designed with the following aims, 1. To study the socio economic status of the selected pregnant women, 2. To assess the nutritional status of the selected pregnant women, 3. To identify the nutritional and health problems of the selected pregnant women, and 4. To impart a nutrition education programme.

2. Methodology

2.1 Selection of Area and Participants

Hundred pregnant women who are visiting from different places of Coimbatore District to a private scan centre were selected as participants for the present study. The participants were selected based on their willingness to participate in the study.

2.2 Selection of Tool and Conduct of Survey

A well-formulated and standardized interview schedule was used to collect the relevant information from the participants. The interview schedule helps to collect primary data from the subjects. The details like socio-economic background, nutritional assessment, physical activity pattern, health problems and complications during pregnancy were collected from the participants. The goal of data collection was to get creditable responses to the questions and internment quality indication that permits data analysis.

2.3 Imparting Nutrition Education

From among the 100 pregnant women who participated in the present study, 30 participants who are willing to participate in the nutrition education programme were chosen and nutrition education was given through posters and leaflets. A Questionnaire was formulated to assess the nutritional knowledge of the participants before the nutrition education programme and the materials were designed based on the questionnaire.

2.4 Consolidation and Interpretation

The data collected from the participants and the impact of nutrition education were consolidated and interpreted using the statistical tools mean, percentage and stand deviation.

3. Results and Discussion

3.1 Socioeconomic Details

The socioeconomic details like age, area of residence, educational qualification, family type, family member and monthly income of the family of the 100 pregnant women who participated in the present study are given in Table 1.

Table 1. Socio-economic details of the selected pregnant women (n = 100)

Socioeconomic Indicators	Variable	Number of Subjects	Percentage
	20 – 25	46	46
	26 – 30	40	40
	31 – 35	14	14
	Urban	44	44
	Semi-urban	30	30
	Rural	26	26
	No Formal Education	10	10
Educational Profile	Literate School Education Undergraduate Post graduate Diploma	47 27 6 10	60 14 6 10
	Nuclear family	64	64
	Joint family	36	36
	3	24	24
	4	30	30
	5	36	36
	Above 5	10	10
	< 10000	14	14
	10000 – 25000	56	56
	25000 – 50000	18	18
	>50000	12	12

Pregnancy is a period during which the nutritional status and nutrient intake of the mother significantly affect the health of the mother and the baby. Several factors are involved in good nutrition, healthy pregnancy outcomes, correct supplements, alcohol and smoking, and level of activity[15]. Among the 100 pregnant women who participated in the study, 46% were in the age group between 20-25 years, 40% were in the age between 26-30 years and 14% were in the age between 31–35 years. 44% of the participants were living in an urban area, 30% of them were semi-urban and 26% of them were from a rural area. 10% of the pregnant women had no formal education, among the 90 literates 47 subjects studied school education, 27 subjects completed their undergraduate programme, six have completed their post-graduation and 10 subjects have completed diploma courses. 64% of participants were from the nuclear family and 36% were from the joint family. 24% of the participants had about three members in their family, 60% of participants had four members, 36% of them had about five members in their family and 10% of participants had more than five members in their family. A study done by Napier and Coworkers reported that out of 100 pregnant women who participated in the study, a large number of participants

were in the age above 20 years and mid-20 years. Most of the participants were educated and nearly 73 participants have completed their school education. Nearly 59% of the participant's household income was less than Rs.1500/month[16].

3.2 Nutritional Assessment

In the nutritional assessment, anthropometric details, biochemical parameters, clinical assessment and dietary patterns were assessed and the results are given in Table 2.

Body Mass Index (BMI) Classification of the selected hundred participants showed that more than half of the participants were of normal weight, only two participants were underweight, and nearly 1/3rd of the study participants were in overweight and obese category I and II. 78% of the pregnant women had normal blood pressure, 9% had low blood pressure and 13% of participants had high blood pressure. In the present study, out of a hundred pregnant women, 4% of the participants were vegetarian, 3% were ova vegetarian and most of the participants were non-vegetarian. A previous study reported that the mean height of the participants was 167 cm and the mean weight was 67.10 kg. Among the hundred pregnant women involved in the study, two of them were in the underweight category, forty had a normal BMI, twenty-eight participants were overweight, twenty participants were obese class 1 and seven participants were obese class 2 categories[16]. According to World Health Organization (WHO) it was reported that worldwide more than 30% of women are overweight. 1/3rd of pregnant women are in the obese category. The newborn of obese class 1 and 2 women usually have a higher birth weight baby and/or are at risk to develop overweight or obese and type two diabetes mellitus later in their life[17].

While comparing the Mean Nutrient intake of the participants with Recommended Dietary Allowances (RDA), the macronutrients like protein and fat were more excess than the RDA which thereby increased the total energy intake. The Micronutrients like calcium, iron and folic acid intake was less than the RDA. This lowered intake may influence the haemoglobin level of pregnant women. The mean CHO intake was excess than the required intake, however, the mean energy intake of the participants was 58.04% of the Dietary Recommended Intake (DRI) for energy with 95% of the women taking less than 100% of the recommended intake. The women consumed a mean intake of 15.05 g of fibre and the mean protein intake was 50.4 g out of the recommended intake of 71 g. From the iron and folic acid intake of

Table 2. Nutritional assessment of the selected pregnant women (n = 100)

Variables			
BMI Classification	Underweight < 18.5	2	2
	Normal 18.5–24.9	65	65
	Overweight 25–29.9	23	23
	Obese I 30–34.9	7	7
	Obese II 35–39.9	3	3
	Morbidly obese > 40	-	-
Blood Pressure	Low (90 mm Hg/ 60 mm Hg)	9	9
	Normal (120 mm Hg/80 mm Hg)	78	78
	High (140 mm Hg or above / 90 mm Hg or above)	13	13
Diet Preference	Vegetarian	4	4
	Ova vegetarian	3	3
	Non-vegetarian	93	93

the pregnant women it was noted that 32% and 74% were consuming less than the recommended allowance respectively[16].

3.2.1 Clinical Assessment

The clinical assessment of the selected subjects showed that, among the 100 subjects, 20% of them had subcutaneous fatty bodies and some of them had a skinny bodies, and hollow cheeks. Most of them had easily pluckable hair and some of them had brittle hair. None of the selected participants had night blindness, inflammation, photophobia and conjunctiva. Then some of them had discoloured teeth, dental carries and chalky teeth. Some had dry skin, and oily skin and none of the participants had wrinkled skin, some of them had a spoon-shaped nail, transverse lines and none of the participants had brittle nails.

3.2.2 Food Frequency List

The food frequency list-wise distribution showed that all the hundred pregnant women consume rice and black gram dhal daily. Most of them had fruits milk and egg daily. Most of them weekly consume cereals (wheat, ragi, bajra), pulses (red gram dhal, green gram dhal, horse gram dhal), vegetables (Roots and tubers, GLV, other veg), fruits, dried fruits and non-veg (chicken, mutton, Fish). Some of them have monthly and occasionally consumed some high-calorie foods, soft drinks, dried fruits, and vegetables.

3.3 Health Status of the Selected Pregnant Women

Questions related to health and nutritional problems among pregnant women are given in Table 4.

Health problems during pregnancy consist of both physical complications and mental conditions like depression/stress of the pregnant women which will affect the health of the mother and the child. Health problem including anaemia, urinary tract infection, depression, hypertension, gestational diabetes, obesity and weight gain are common among pregnant women[19]. Similar to the results of the present study, Semasaka Sengoma and coworkers reported that pregnancy-related complications like anaemia, gestational diabetes, vaginal bleeding and fluid discharge and swollen extremities were present among their study participants[20].

3.4 Imparting Nutrition Education

The nutritional knowledge of the selected participants was evaluated using a series of questions given below in Table 5.

GoodarziKhoigani and co-workers reported that nutrition education helped improve the nutritional knowledge and dietary habits of the participants. To increase the impact of nutrition education programmes, it is necessary to highlight the benefits of healthy dietary habits and the consequences of poor dietary intake which will increase the nutritional knowledge of pregnant women[18]. The result of the present study states that the

Table 3. Mean nutrient intake of the selected pregnant women (n = 20)

S.No	Nutrients	RDA	Intake / Day (Mean±SD)	Excess or Deficit	% (Excess or Deficit)
1	Energy (kcal)	2010	2151.52 ± 219.02	+1 41.52	+7
2	CHO (g)	-	245 ± 78.57	-	-
3	Protein (g)	43.9	47.28 ± 10.61	+3.38	+7.69
4	Fat (g)	30	33.11 ± 5.367	+ 3.11	+10.36
5	Fibre (g)	-	30.3 ± 43.57	-	-
6	Calcium (mg)	800	632.75 ± 1.153	- 167.25	-20.9
7	Iron (mg)	32	30.34 ± 11.27	- 1.66	-5.18
8	Folic acid (µg)	480	368.66 ± 392.85	- 111.34	-23.2

Table 4. Health status of the selected pregnant women (n = 100)

S. No	Particulars	Details	n	%
1	Normal Hemoglobin Level	Before pregnancy	76	76
		During pregnancy	65	65
2	Blood glucose level	Low	12	12
		Normal	47	47
		High	41	41
3	Vaccine injected recently	Yes	-	-
		No	100	100
4	Feel about baby movement	Yes	67	67
		No	33	33
5	Health problems or medical condition not related to pregnancy	Yes	24	24
		No	76	76
6	Pregnancy-related complications	Gestational diabetes	11	11
		Depression	08	08
		Prenatal depression	13	13
		Postpartum depression	18	18
		Vaginal infection	03	03
7	Dietary and other problems in pregnancy	Nausea and vomiting	40	40
		Constipation	36	36
		Heartburn	23	23
		Indigestion	06	06
		Leg cramps	18	18
		Edema	19	19
8	Hair fall	Yes	77	77
		No	33	33
9	Thyroid Problem	Yes	43	43
		No	57	57
10	Are you going for regular check- up	Yes	98	98
		No	2	2
11	Physiological changes in pregnancy	Fatigue	45	45
		Shortness of breath	23	23
		Increased heart beat	24	24
		Backache	56	56
		Frequent urination	44	44
		Itching	34	34
		Pelvic joint pain	29	29
		Vaginal bleeding or discharge	15	15
		Brownish spot	22	22

Table 5. Nutritional knowledge of the selected pregnant women (n = 30)

S.No	Particulars	Yes	No
1.	Do you know about five food groups?	-	30
2.	Do you know about diet for pregnancy?	5	25
3.	Do you know about the RDA (Recommended Dietary Allowances) of pregnant women?	-	30
4.	Do you know about the importance of the micro-minerals during pregnancy?	-	30
5.	Do you know the importance of iron-rich foods?	7	23
6.	Do you know the importance of vitamin C in the absorption of iron in the body?	-	30
7.	Do you know about anaemia?	6	24
8.	Do you know the importance of folic acid?	-	30
9.	Do you know how folic acid improves the baby's health?	-	30
10.	Do you know folic acid-rich foods?	-	30
11.	Do you know dietary-related problems in the pregnancy period?	8	22
12.	Do you know fiber-rich foods helps to prevent constipation?	3	27
13.	Do you know the healthy weight gain is during pregnancy?	-	30
14.	Do you aware of the complications of pregnancy?	-	30
15.	Do you aware of gestational diabetes?	-	30

nutritional knowledge of pregnant women was less before imparting nutrition education. Most of the participants of the nutrition education programme were not aware of the importance of taking a balanced diet.

4. Conclusion

The present study concluded that the macronutrient intake of the pregnant women was excess than the RDA however low intake of micronutrients among pregnant women increases the risk of becoming anaemic and other related consequences. The nutritional knowledge of the pregnant women was lower before imparting nutrition education programme to the beneficiaries.

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