Assessment of Nutritional related problems during antenatal period

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Abstract:

AIM: To assess social parameters impacting nutrition related problems during antenatal period. **Methods:** Information regarding demographic profile, anthropometric measurements (BMI), symptoms during various trimesters, support received during the course of pregnancy and consultation with dietitian was gathered from 60 pregnant women at Fernandez Hospital, Hyderabad, with the help of well-designed interview schedule. **Observations:** The incidence of pregnancy related complications increased with age. About 96% of the pregnant women were educated but only 27% were employed. Before pregnancy only 37 % of the women were overweight and 12 percent were type-1 obese, but during pregnancy 39 percent of the women were pre obese while 35 percent were type-1 obese. Pregnant women experienced various symptoms during third trimester like, morning sickness (65%), lethargy (38%), acidity (25%) and oedema (18%). Since majority of the women were living in nuclear family, 43 percent received support from their husband in preparing meals. Information regarding visit to dietician showed that 40 percent of the pregnant women consulted dietitian during 1st pregnancy and during 3rd trimester due to increased BMI. The misconception of avoiding papaya during pregnancy is strongly believed by the subjects under study. **Results:** The results indicated that age, family type, eating habits and nutrient intake could increases the risk of complication during pregnancy. It was also observed that various symptoms during pregnancy had an impact on food intake which in turn could affect pregnancy outcome. **Conclusion:** Pregnant women should be encouraged to consult dietitian to reduce complications and enhance pregnancy outcome.

Keywords: Antenatal, Social, Pregnancy Outcome, Complication, Nutritional problems, Dietitian

Introduction:

Pregnancy involves profound social, psychological, and biological changes that influence perceptions of the body as well as eating patterns. It is a time when in utero exposures may impact the long term programming for onset of diseases in offspring.[1] Dietary intake during pregnancy has the potential to influence birth outcomes and cognitive development via gene expression. As dietary habits are often cultural and influenced by the food available for consumption, understanding the characteristics of diet within a study population may provide a basis for future interventions to improve lifelong health.[2] Maternal nutrition is an important factor responsible not only for the health of the baby, but also for the baby's long term growth.[3] Pregnancy outcomes are affected by other factors such as age, occupation, family, pregnancy experiences, morning sickness and nutrient intake.[4,5] Maternal anthropometric measurements, smoking, alcohol consumption, coffee consumption, stress and physical activity are also factors affecting pregnancy outcome.[6,7,8] Nutrition is an important health determinant that can affect the course of pregnancy and its outcomes. Optimal nutritional status during pregnancy is reflected not only in the improved health of the mother but also in the improved health of the baby. The present study was conducted to determine social parameters impacting nutrition related problems during antenatal period.

Material and Methods:

Through random sampling, 60 pregnant women in the age group of 20-40 years approaching for antenatal care at Fernandez Hospital, Hyderabad, India and willing to be a part of the study were selected after taking consent from the subject and the hospital. Through well designed and pretested interview schedule information regarding demographic profile, anthropometric measurements (BMI), medical history, and biochemical parameters such as Hemoglobin, Blood Pressure and Fasting Blood Sugar was collected from the patient's case sheet. Symptoms during various trimesters, support received during the course of pregnancy, dietary information regarding the mean dietary intake, knowledge about good dietary practices, food habits, time of food consumption, did the subject undergo fasting during pregnancy, have any cravings and consultation with dietitian was gathered by interviewing the subjects.

Result and Discussion:

In developing countries low birth weight stems primarily from the mother's poor health and nutrition, and inadequate nutrition during pregnancy accounts for a large proportion of growth retardation. [9] Malnutrition has been recognized as one of the underlying factor for maternal death during the process of procreation. The causes of malnutrition are multidimensional and multi-factorial with poverty, food inadequacy and maternal illiteracy being the main culprit of the menace in developing countries. The health of the mother and her nutritional status can influence the health and survival of the child because of the biological links that exist between her and her child during pregnancy and lactation. [10]

Demographic profile of the subjects:

The socioeconomic and demographic data revealed that Majority (42%) of the subjects who faced the complications during the pregnancy were from the age 26-30 years, followed by 30 percent of the subjects were of normal age and 28 percent of the women belonged to higher age group. Educational data showed that Majority (96%) of the pregnant women were educated. 37 percent of the pregnant women were graduates while 30 percent were post graduate. 17 percent of the subjects studied till high school, 12 percent studied till intermediate and only 5 percent were illiterates Information regarding employment showed that from the total subjects, 27 percent of the total subjects were employed while majority (73%) of the pregnant women were unemployed.

It was also observed that with increasing age, the incidence of the complications was on higher side. The incidence of pregnancy related complications were more among unemployed women than in employed women. Since employed women are more physically active this could be the reason for maintaining good nutritional status.

The low educational attainment among women who become mothers has an important factor determining life chances, since lack of qualifications will compound the barriers to employment resulting from difficulties with childcare and of balancing responsibilities of motherhood and work. A study conducted by Innes *et al* , (2002) had found an inverse association between the educational level of the pregnant woman and gestational diabetes mellitus. In another study carried out in Italy, high levels of maternal education were found to be associated with reduced risks of GDM, compared to less educated women.

The results in Figure-1 revealed that a total of 69 percent of the pre-pregnant women and 89 percent of pregnant women had their BMI higher than normal and fell into the category of overweight, pre-obese and obese. Among the pre-pregnancy women's, majority (37%) were found to be Pre-obese while 26 percent were normal, 20 percent were overweight, 12 percent were obese type I and only 5 percent were

underweight. Among the pregnant women, majority (39%) were found to be Pre-obese while a gradual increase (35%) was seen towards the obese type I followed by overweight (15%), 8 percent were normal and only 3 percent were underweight.
From the results it was observed that the percent of pre-obese was high in both pre-pregnant women and pregnant women, while the percent of obese Type I was high during pregnancy compared to pre-pregnancy this increase might be because of the weight of the baby or other factors such as edema, heavy diet etc., only 3 percent accounted for underweight during pregnancy and 5 percent before pregnancy.

It should be noted that BMI does not discriminate between lean mass fat and water; it only determines a ratio between weight and height not all patient who have a high BMI have it at the expense of fat. It could be due to over hydration and weight of the baby also. It is worth mentioning that a significant increase was observed with high BMI as patients with high BMI were found to be well nourished.

There is a rising prevalence of overweight and obesity among the urban slum women. The prevalence of overweight and obesity was found to be higher among the slum women with inadequate fruit intake, increased duration of television viewing and a sleep duration of <7 hours and >9 hours per night. [11]

Anirban Dasgupta *et al,* (2004) concluded that pregnancy complications related to obesity is a growing problem with complications arising at a BMI ≥ 25 Kg/m2 at rates comparable to western definition of obesity (BMI ≥ 30 Kg/m2) the need of new Indian guidelines of weight restriction to be taken more seriously and a larger, prospective trial taking ethnic differences into consideration, is the need of the hour. [12]

Impact of clinical symptoms on nutritional status of pregnant women:

Pregnancy is a period where there are a number of symptoms seen, if left ignored can worsen the condition. Data in Table:1 shows that nausea was observed in majority (77%) of subjects followed by vomiting, morning sickness and lethargy (65%, 58% and 38% respectively). With the increasing weight of the fetus it was observed that complications such as oedema, acidity and morning sickness were reported more during 3rd trimester, which ultimately affected the food intake of the pregnant women. Constipation was seen much (27%) among the women in 2nd trimester and the occurrence of other symptoms such as hyperemesis (5%), anorexia (8%), gum problem (3%) and diarrhea (3%) was also seen.

Most studies suggest that Nausea and Vomiting during pregnancy (NVP) is not harmful to the fetus. However this condition significantly reduces the quality of life of the pregnant woman and places financial burden on the affected individual and the larger society. For women with hyperemesis gravidarum maternal and fetal morbidity may occur if the condition is unrecognized and not treated aggressively.[13]

A study conducted by Deshayne B. Fell *et al,* (2006) reported similar findings. According to their study hospitalization for hyperemesis occurs in less than 1% of pregnant women, this translates to a large number of hospital admissions. The factors associated with hyperemesis are primarily medical and fetal factors that are not easily modifiable, but identification of these factors may be useful in determining those women at high risk for developing hyperemesis [14].

Catherine S. Bradley *et al,* (2007) reported that constipation was common, affecting about half of women at some point during pregnancy and more often associated with symptoms of straining, hard stools, and incomplete evacuation, rather than infrequent defecation [15.]

Heart burn/ acidity of the total subjects were computed as 45 percent which was faced much during the third trimester. Richter J. E. (2005) reported in his study that serious reflux complications (i.e.

oesophagitis) during pregnancy are uncommon; therefore upper endoscopy and other diagnostic tests are usually not needed. Symptomatic GERD during pregnancy should be managed with a step-up algorithm beginning with lifestyle modifications and dietary changes [16].

Sohrabvand F *et al,* (2007) reported that although the high prevalence of leg cramps (55%) in the patients was not necessarily related to dietary habits, but it seemed that supplementing symptomatic patients with vitamin B could be beneficial [17].

Importance of physical support during pregnancy:

The figure-2 shows the distribution of subjects according to support recieved in preparing meals from family members. Majority (43%) of women had the support of their husband while 25 percent had the support from their in-laws followed by 9 percent had the support of their parents, 3 percent of subjects arranged for a cook to prepare meals and 20 percent did not have any support in preparing meals.

In India, the joint family system has been in existence since ancient times. However with the passage of time, the joint family system has disintegrated, giving rise to the nuclear family system as seen in the study where majority (33%) of the subjects were from nuclear families. This could be the major reason for 43 percent of the subjects to have received support from their husbands in preparing the meals.

Impact of consulting a dietitian during pregnancy:

Conflicting and mixed messages from the family, friends and social network can often mean that pregnant women are left feeling confused about what they should be eating during pregnancy. If pregnant women are unsure or concerned about diet then consulting a qualified nutritionist may help to feel more at ease. A nutritionist will be able to assess personal circumstances, current diet and will use the information in combination with the latest research to formulate a diet plan which is going to keep pregnant women healthy and give the baby the best possible start in life.
Having a good, well rounded and healthy diet has been linked to an increased chance of healthy birth weight, increased brain development and a reduction of some birth defects. In addition, the positive aspects of a healthy diet also cross over to the mother, having been linked to reduction in morning sickness, fatigue, pre-eclampsia, mood swings, constipation and post-natal recovery.

In the present study it was observed that 40 percent of the subjects met the dietician, while majority (60%) of the pregnant women did not consult the dietician. This could be due to lack of time, ignorance or financial constraints.

Among the women who consulted the dietician, majority (46%) of the women visited the dietician during the 2nd and 3rd trimester while only 8 percent of women approached during 1st trimester. It was also observed that majority of the women who visited the dietitian were on the higher side of the BMI. Twenty five percent of women who showed the concern to meet the dietician was during the first pregnancy. The trend of consulting a dietician during first pregnancy may be due to health concern of the baby or for safe delivery as they are living in nuclear families and do not have adequate knowledge regarding the diet to be taken during pregnancy for healthy pregnancy outcome.

Dietary habits during pregnancy:

During pregnancy there is a craving for different foods. In the present study it was observed that 23 percent of pregnant women had the cravings for pickles and 17 percent of the total subjects had the cravings for dairy products and spicy food followed by 15 percent of the subjects had the cravings for sweets and majority (28%) of subjects had no cravings.

The dietary pattern revealed that from the total subject's (N=60) majority (50%) of the pregnant women avoided papaya as they had the myth that Papaya intake apparently brings on labour early or causes miscarriage. 18 percent avoided fruits which included papaya, banana, apple, guava and orange. 8 percent of the subjects avoided papaya and sweets, followed by (7%) papaya and non-veg and (7%) papaya and sesame. Only 5 percent of the total subjects had good knowledge of dietary practice during pregnancy.

The misconception of avoiding papaya during pregnancy is strongly believed in India when compared to different countries. A study conducted by Kever *et al,* (2015) reported similar findings that majority of the respondent (61.22%) avoid some diets like eggs, fish, fruits, Milo drinks in pregnancy while (38.78%) do not avoid any diet during pregnancy[18].

Conclusion:

Pregnancy is a time when in utero exposures may impact the long term programming for onset of diseases in offspring (Barker, D.J *et al,* 1993)[19]. Dietary intake during pregnancy has the potential to influence birth outcomes and cognitive development via gene expression. Thus it can be concluded that socioeconomic status, age, ethnicity, family structure and support may differentially shape the beliefs and practices. The pilot study enabled to establish the feasibility of approach in terms of methodology and recruitment strategies for a larger study. What pregnant women choose to eat is also influenced by their own experiences, their access to particular foods, their socioeconomic status and family context. Whatever the minimum negative issues aroused due to ignorance of good dietary practices can be effectively controlled when the further investigations includes detailed dietary intake. As dietary habits are often cultural and influenced by the food available for consumption, understanding the characteristics of diet within a study population may provide a basis for future interventions to improve lifelong health.

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Figure: 1: Nutritional status of pregnant women based on anthropometric measurements:

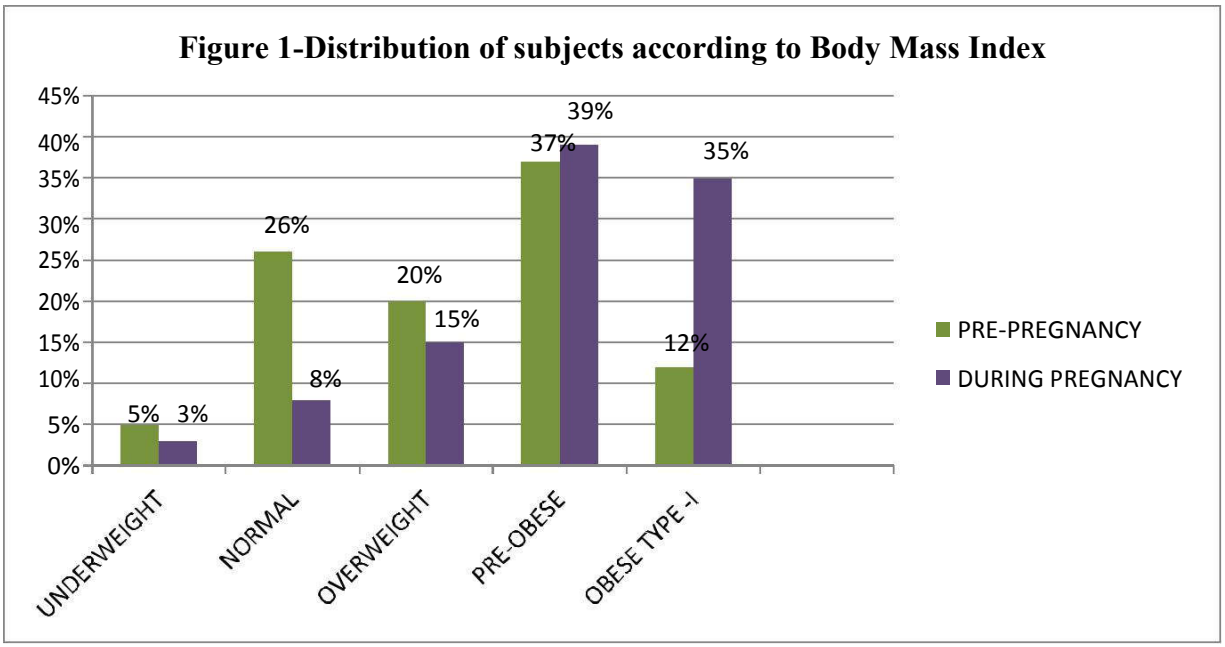

Table-1: Distribution of the subjects according to clinical symptoms:

SYMPTOMS	N=60	I TRIMESTER	II TRIMESTER	III TRIMESTER
Nausea	46(77)	4(7)	15(25)	27(45)
Vomiting	39(65)	3(5)	12(20)	24(40)
Morning Sickness	32(58)	3(5)	12(20)	17(28)
Hyperemesis	3(5)	2(3)	-	1(2)
Anorexia	5(8)	-	3(5)	2(3)
Lethargy	23(38)	3(5)	10(17)	10(17)
Oedema	12(20)	-	1(2)	11(18)
Leg Cramps	12(20)	1(2)	3(5)	8(13)
Acidity	27(45)	2(3)	10(17)	15(25)
Gum problem	2(3)	-	1(2)	1(2)
Constipation	16(27)	3(5)	8(13)	5(8)
Diarrhea	2(3)	1(2)	1(2)	-
Any other	2(3)	0	Gastric	Irritation
Total	221(368)	22(37)	76(128)	121(201)

The figures in parenthesis are percentage.

Figure-2: Distribution of subjects based on support received in preparing the meals:

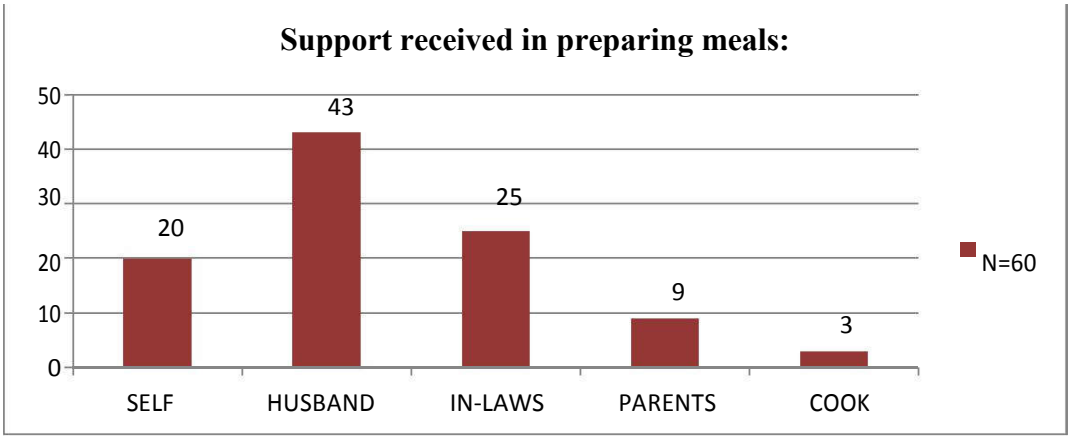

Table-2: Distribution of subjects based on visit to the dietician during pregnancy:

PREGNANCY	n=24(40)	I TRIMESTER	II TRIMESTER	III TRIMESTER
1st	15(25)	1(4)	7(29)	7(29)
2nd				
3rd	6(10)	1(4)	3(13)	2(9)
4th	2(3)		1(4)	1(4)
5th				
6th	1(2)			1(4)
Total	24(40)	2(8)	11(46)	11(46)

The figures in parenthesis are percentage.

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