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Knowledge, Attitude and Practices and Analysis of Pregnant Women towards their Nutritional Status

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ABSTRACT

Nutrition plays an important and special role in the course of pregnancy for the maintenance of sound maternal health. Hence, the requirement of nutrients for women during pregnancy increases significantly in order to meet the extra demands for rapid growth and development of foetus. Malnutrition is directly or indirectly responsible for much of the morbidity or mortality of the population specially in the young children as in the developing countries. During recent year, Parbhani, Hingoli, Thane, Gadchiroli and Amravati districts have been facing the problem of child deaths due to malnutrition. If the nourishment of mother is proper and adequate during pregnancy then not only growth and development of foetus will be good but after birth also it will have long term impact on the child.

Keywords: *Knowledge, Attitude, Practices, Pregnant, Women.*

INTRODUCTION

Pregnancy is a physiological condition in which the foetal growth is accompanied by intensive changes in maternal body composition and metabolism (Hytter & Leitch, 1964). Pregnancy is a period of considerable physiological and nutritional stress, during which the maternal requirements of almost all the nutrients are greatly increased. Pregnant women are considered as a vulnerable group because of increased physiological demands. Diet during pregnancy is one of the most important factors in achieving a successful outcome of pregnancy in terms of healthy baby and maintenance of her own health, as the overall development of a child is determined to a great extent by the type of nourishment it receives right from the conception. Various studies have revealed a direct relationship between maternal diet and the nutritional status of the new born.

Mother is the origin of human life, whether she gives birth to a male or a female baby. However only healthy mothers can produce healthy children. The foetus, which grows rapidly depends solely on its mother for the nourishment. It is unfortunate to know that nutritional status of pregnant women in India is veiy poor as the diets are grossly deficient in supplying energy and other essential nutrients such as iron, vitamin A, B - complex vitamin and ascorbic acid (Mital & Gopaldas, 1985).

Moreover it is evident from the reports of several investigators that there is no marked difference in the intake of various nutrients during different trimesters of pregnancy (Iyengar, 1967; Gopaldas et al., 1975: NIN, 1981; Rawtani & Verma, 1989; & Nerlekar, 1995). This lacuna in the supply of different nutrients widens the gap between die actual intake and the recommended dietary allowances of nutrients in meeting the additional requirements of women during the course of pregnancy.

The weight gain during pregnancy is an important test in determining maternal nutritional status. The desirable gain in weight throughout the gestation period is about 10 to 12 Kg. The average total weight gain should be at the rate of two, four and five Kgs for first, second and third trimesters respectively.

Maternal anaemia is a burning national public health problem and has been related to poor foetal outcome. Iron deficiency anaemia is one of most prevalent nutritional deficiency disease among women during pregnancy in the developing countries (Menon, 1967). The WHO report (1992) has revealed that prevalence of anaemia at global level is 55.9 per cent among the expectant mothers. In south Asia 65 per cent of pregnant women are found to be affected by nutritional anaemia. In India, the incidence of anaemia among expectant mothers is high. The reported values are found to vary from 34.6 to 98.3 per cent (ICMR, 1989; 1990; 1992).

Various risk factors of pregnancy identified in pregnant women are based on maternal anthropometric measurements like height, weight gain during pregnancy, maternal age, previous obstetric history and prevalence of anaemia. All these factors are known to be associated with low birth weight of infants and increased perinatal mortality. It is also evident from the available literature that the prevailing customs and traditions in India with regard to the inclusion or exclusion of certain foods, in the diet of pregnant women, are known to affect the maternal and child nutritional status. Papaya and egg are considered to be hot foods and hence are reported to be avoided for consumption by the women during pregnancy due to fear of causing abortion, which on the contrary are highly nutritious in supplying vitamins and minerals.

Malnutrition, in its serious form, is found among children, especially new boms and infants in the weaning and post weaning periods especially in rural areas. Nearly 75 per cent of infant mortality in India is directly attributed to low nutritional levels of pregnant mothers. Malnutrition is the direct cause of death of about 5,00,000 children every year. Malnutrition is undoubtedly the biggest public health problem in our country today. The economic condition of a vast majority of our population is so poor that they are in no position to afford even the least expensive balanced diets. (Parvati, 2001).

The tragedy of nutrition problem is that it is preventable but still exist in such a large magnitude. This affects the socio economic development of the community and leads to social inequality and poverty. India is a large country having the population of more than one billion. Nearly 400 million children constitute paediatric population under the age of 15 of which nearly 140 million are children under five years. It is not easy to provide health and nutrition care to the population particularly the most vulnerable group of pregnant, lactadng mothers and children under five years. Of the nearly 140 million children of age five years and below, nearly 70 percent have some degree of general malnutrition. While nearly 4 million children have extreme degree of protein energy malnutrition like marasmus, kwashiokar and marasmic kwashiorkor.

OBJECTIVE OF THE STUDY

The objectives of this study include:

- To study the nutritional status of pregnant women.
- To assess the food and nutrient intake of pregnant women.
- To assess knowledge, attitude and practices of women towards health and nutrition.

MATERIALS AND METHODS

Research methodology is a way to systematically investigate the research problem. It gives various steps in conducting the research in a systematic and a logical way. It is essential to define the problem, state objectives and hypothesis clearly. The research design provides the details regarding what, where, when, how much and by what means enquiry is initiated. Every piece of research must be planned and designed carefully so that the researcher precedes a head without getting confused at the subsequent steps of research. The researcher must have an objective understanding of what is to be done, what data is needed, what data collecting tools are to be employed and how the data is to be statistically analyzed and interpreted. There are a number of approaches to the design of studies and research projects all of which may be equally valid. Research is a systematic attempt to obtain answers to meaningful questions about phenomenon or events through the application of scientific procedures. It an objective, impartial, empirical and logical analysis and recording of controlled observation that may led to the development of generalizations, principles or theories, resulting to some extent in prediction and control of events that may be consequences or causes of specific phenomenon. Research is a systematic and refined technique of thinking, employing specialized tools, instruments and procedures in order to obtain a more adequate solution of a problem than would be possible under ordinary mean. Thus, research always starts from question. There are three objectives of research factual, practical and theoretical, which gives rise to three types of research: historical, experimental and descriptive.

Research design has been defined by different social scientists in a number of ways. All these definitions emphasize systematic methodology in collecting accurate information for interpretation. Selltize et al. (1962) expressed their views as, "Research designs are closely linked to investigator's objectives. They specify that research designs are either descriptive or experimental in nature." Research design tells us how to plan various phases and procedures related to the formulation of research effort (Ackoff Russell, 1961). Miller (1989) has defined research design, "as the planned sequence of the entire process involved in conducting a research study."

Kothari (1990) observes, "Research design stands for advance planning of the method to be adapted for collecting the relevant data and the techniques to be used in their research and availability of staff, time and money." In this way selecting a particular design is based on the purpose of the piece of the research to be conducted. The design deals with selection of subjects, selection of data gathering devices, the procedure of making observations and the type of statistical analysis to be employed in interpreting data relationship".

Methodology approach and the pertinent material used for conducting such methodology was studies under following subsections:

Locale of the study

Habra city in West Bengal was selected as locale of the study. In Habra city in West Bengal, a government Hospital was selected. It was selected purposively for present study as it was convenient, so regular visit could be made authentic for data collection.

Sampling Method

Random sampling method was employed to carry out this piece of research work.

Sample

The total number of 100 pregnant women was selected for the survey.

Inclusions

- Only pregnant women was included.
- Pregnant women of age 25-35 years was selected

Exclusions

- Telephonic/ web survey method interviewing
- Pregnant women having any non communicable disease was excluded from the study.

Tools and Techniques

Demographic Profile of pregnant women

The data regarding the demographic profile of pregnant women was collected using specialized questionnaire prepared for the study. Following information was collected – respondent's name, age, religion, marital status, gestational week, educational status, employment status, no. of pregnancy, age at first pregnancy, husband's – name, age, employment status, family type, no. of family members, and total income.

Anthropometric Measurement

Anthropometric information was collected by taking measurements. Height was measured in cm using measuring rod. Present weight was measured by using a digital weighing balance. Pre pregnancy weight was recorded by asking respondent and if respondent is not clear then from records. Gestational week was calculated directly by counting the days since the beginning of last menstrual period. Based on pre-pregnancy BMI, nutritional status was calculated and was categorized according to cut off values. (Institute of Medicine, 2009). Based on current weight and weight before pregnancy, their weight gain will be calculated and these values was compared with recommended value for pregnant women. (Institute of Medicine, 2009).

Pre-pregnancy BMI Grade	BMI value (kg/m^2)
Under weight	<18.5
Normal	18.5 – 24.9
Overweight	25 – 29.9
Obese	>=30.0

Blood hemoglobin

Hemoglobin value was recorded to analyse if the respondent is anemic or not. Normal hemoglobin value is 11-15.1 gms/dl.

Classification

Hemoglobin	value
Mild anaemic	9.0 – 10.9 gms/dl
Moderate anaemic	7.8-9.0 gms/dl
Severe anaemic	<7.0 gms/dl
Very severe	<4.0 gms/dl

Food and nutrient intake

24 hour recall method was used for the food and nutrient intake of pregnant women. Three days recall was done on each individual 2 working days and a holiday. The method consists of precisely recalling, describing and quantifying the intake of foods and beverages consumed in the 24 hour period prior to, or during the day before the interview, from the first intake in the morning until the last foods or beverages consumed at night (before going to bed or later, in the case of those who get up at midnight and eat and/or drink something). The estimated average interview time can vary between 20 to 30 minutes.

Pre-standardized cups and ladles were used to elicit information regarding the food intake and food composition tables were used to arrive at the nutrient intake of individual subjects (Gopalan et al., 2004).

One medium karchi of rice were taken as 100g, full plate as 400g, one cup of liquid as 150 mL, one glass of liquid as 200 mL, a tablespoon as 15g, and a teaspoon as 5g.

The nutrient values for these amounts were then calculated using ICMR's "Nutritive value of Indian foods". The day total intake of different nutrients was then compared with RDA (Recommended dietary allowances) ICMR – 2010. After recording all meals and

amount of food eaten in 24hours, the total no. of servings was added up according to each food group.

A questionnaire was prepared to assess the servings of fast foods, vegetables, fruits, sweets, chicken, fish, margarine or butter are consumed by the respondent. The most healthful dietary practices (score 2), the less healthful practice (score 1) and the least healthful practice (score 0).

KAP Analysis of pregnant women

The knowledge of the women regarding nutritional status was assessed by a questionnaire. The questionnaire was test the general knowledge of pregnant women regarding the nutrition and diet intake. The questionnaire was designed in multiple choice format. Each question was assessed with 2-point scale (0 is for wrong or don't know response and 1 for correct response).

The attitude of the pregnant women was assessed by questionnaire regarding diet intake during pregnancy. Respondent attitude towards the questions was assessed using Likert response scales and hence responses can be rated as +2 to -2. +2= strongly agree, +1= agree, 0= neutal, -1= disagree, -2= strongly disagree.

Third part comprised items on practices followed by pregnant women. Each question was scored using 2 point scales (1= most favourable practice, 0= undesirable practice).

RESULT AND DISCUSSION

Demographic Questionnaire Age

Table 1 Age wise classification of pregnant women

S. No.	Age	Pregnant women
1.	20 to 25 years	78
2.	25 to 30 years	14
3.	30 to 35 years	06
	Total	100

It is clear from table 1 that 68 per cent of the pregnant women are in the age group of 20 to 25 years, 14 per cent of the pregnant women in the ages between 25 to 30 years, 06 per cent of the pregnant women in the age group of 30 t 35 years.

Religion of Respondent

Table 2 Religion wise classification of pregnant women

S. No.	Religion	Pregnant women
1.	Hindu	60
2.	Muslim	20
3.	Christian	15
4.	Others	5
	Total	100

Table 2 reveals that 60% of the pregnant women belong to Hindu family. 20% of the pregnant women belongs to Muslim family. Where as 15% of the pregnant women belongs to Christian family and 5% of the pregnant women belong to other religion.

Education of Head

Table 3 Education of Head

S. No.	Education	Pregnant women
1.	Post-graduate or professional degree	40
2.	Graduate degree	50
3.	Higher secondary certificate	10
4.	High school certificate	0
5.	Middle school certificate	0
6.	Literate, less than Middle school certificate	0
7.	Illiterate	0

Table 3 exhibits the education level of the head of the family of pregnant women. In case of pregnant women 40% head of the family have professional degree. 50% pregnant women's family head have graduation degree. 10% pregnant women's family head have higher secondary certificate.

Occupation of Head
Table 4 Occupation of head of pregnant women

S. No.	Occupation	Pregnant women
1.	Professional	35
2.	Semi-Professional	50
3.	Arithmetic skill jobs	15
4.	Skilled worker	0
5.	Semi-skilled worker	0
6.	Unskilled worker	0
7.	Unemployed	0
	Total	100

It is clear from table occupation of head of family in case of pregnant women 35 has professional, 50% pregnant women have semi-professional occupation, 15% have arithmetic skill jobs in case of pregnant women.

Monthly Income
Table 5 Monthly Income of Respondents

S. No.	Monthly Income	Pregnant women
1.	More than 1,26,360	30
2.	63,182 – 1,26,360	40
3.	47,266 – 63,182	20
4.	31,591 – 47,266	10
5.	18,953 – 31589	0
6.	6327 – 18,953	0
7.	Less than 6323	0
	Total	100

Table 6 clearly exhibits that 30 per cent of the pregnant women's family earn income of more than 1,26,360. 40% of the pregnant women family earn monthly income between 63,182 to 1,26,360. 20% of the pregnant women have family income between 47,266 to 63,182 Further, 10% of the pregnant women's family earn monthly income between 31,591 to 47,266 It is evident from the table that majority of the pregnant women earning monthly income of 63,182 – 1,26,360.

Socio-economic
Table 6 Socio-economic status

S. No.	Status Socio-Economic Scale	Pregnant women
1.	Upper	10
2.	Upper Middle	50
3.	Lower Middle	30
4.	Upper Lower	10
5.	Lower	0
6.	Total	100

Table 6 shows that 10% of the pregnant women belong to upper class family. Further, 50% of the pregnant women belongs to upper middle class family. 30% of the pregnant women belong to lower middle class family. It is clear from the study that majority of pregnant women belongs to upper middle class family.

Type of family

Table 7 Type of family

S. No.	Type of family	Pregnant women
1.	Joint	80
2.	Nuclear	20
	Total	100

Table 67shows that 80% of the pregnant women lives in joint family where as 20% of the them lives in nuclear family.

Table 8: Anthropometric Measurement

BMI value	Pre pregnancy	Present
Underweight	1	51
Normal	70	32
Overweight	24	14
Obese	5	3

Table 8 Showed that before pregnancy majority of the respondents (70%) were of normal BMI, (24%) were overweight, (5%) were obese and only 1% was underweight but during pregnancy 51% were underweight, 32% were normal, 14% were overweight and 3% were obese.

Table 9: Blood hemoglobin

Haemoglobin (g/dL)	Pre pregnancy
Mild anaemic 9.0 – 10.9 gms/dl	30
Moderate anaemic 7.8-9.0 gms/dl	60
Severe anaemic <7.0 gms/dl	8
Very severe <4.0 gms/dl	2

Table 9 Showed that 30% of the pregnant women suffer from mild anaemic where as 60% of the pregnant women suffer from moderate level of anemia and only 2% of the pregnant women are suffer from very severe anaemic.

24-hour Dietary recall

According to my survey report, I conclude that during pregnancy, maximum respondents having energy, protein and iron below

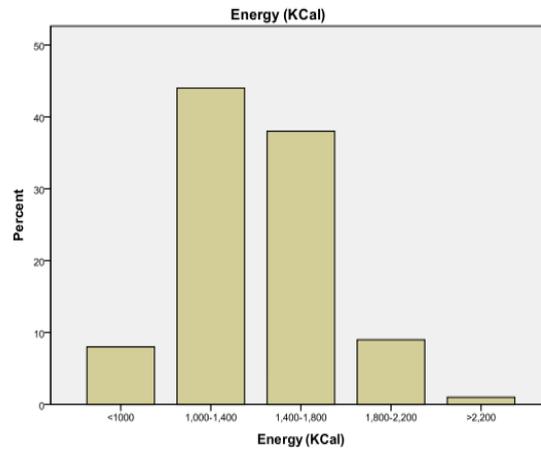benchmark as given by ICMR, 2010 except fat and calcium intake as per recommended dietary allowances (RDA).
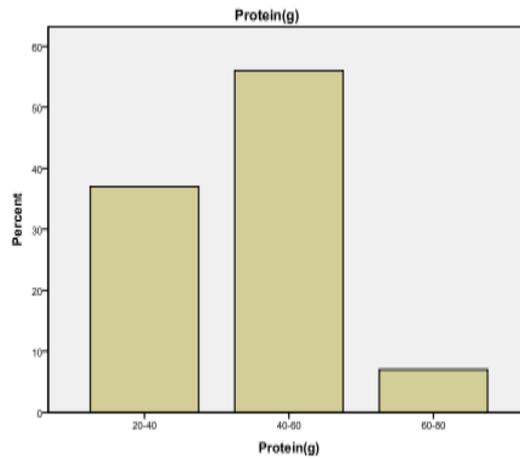

Fig1: Average energy intake of pregnant women

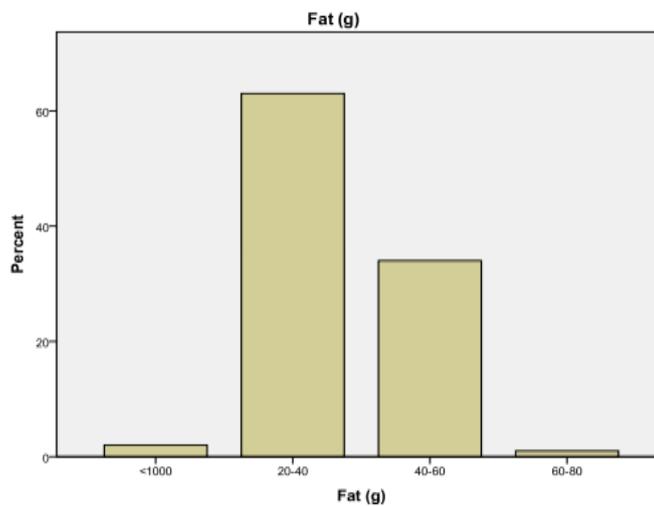**Fig2: Average protein intake of pregnant women**

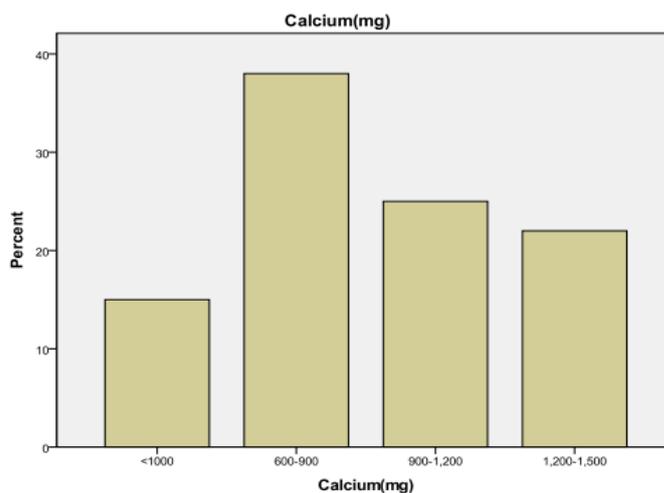**Fig3: Average fat intake of pregnant women**

Fig4: Average calcium intake of pregnant women
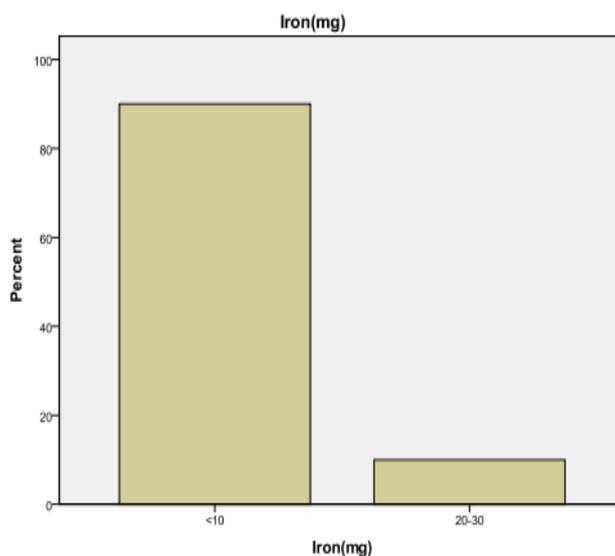

Fig 5: Average Iron intake of pregnant women

Table 10: - Average food intake of pregnant women (n=100)

Food	Amount			
Cereals	30g	No. of servings	<9	>=9
		% of respondents	94%	6%
Pulses	50g	No. of servings	<2	>=2
		% of respondents	50%	50%
Green vegetables	50g	No. of servings	<1	>=1
		% of respondents	86%	14%
Other vegetables	50g	No. of servings	<4	>=4
		% of respondents	93%	7%
Roots & tubers	50g	No. of servings	<1	>=1
		% of respondents	29%	71%
Fruits	100g	No. of servings	<2	>=2
		% of respondents	94%	6%
Milk & milk products	100g	No. of servings	<5	>=5
		% of respondents	80%	20%

Fat/Oils	5g	No. of servings	<6	>=6
		% of respondents	89%	11%
Sugar & jiggery	5g	No. of servings	<4	>=4
		% of respondents	27%	73%

DIETARY PATTERN
Table 11:- Food habits of respondents

Food habits	Pregnant
Vegetarian	62
Vegan	6
Non vegetarian	32

Table 11 showed that majority of respondents (62%) were vegetarian, 32% were Non vegetarian and only 6% were vegan.

Table 12 - Meal pattern of respondents

No. of meals	Pregnant
>7meal/day	1
6-7meal/day	47
4-5meal/day	50
2-3meal/day	2

Table 12 showed that 50% of respondents have 4-5meal/day pattern, 47% have 6-7meal/day, 2% have 2-3meal/day and 1% have >7meal/day pattern.

Knowledge related questionnaire
Table 13: Percentage showing the outcomes of under nutrition in mother

Outcomes of under nutrition	Percentage
Maternal mortality	45
Fetal and infant death	25
Low birth weight infant	20
Do not know	10
Total	**100**

The table shows that 45% of the pregnant women believe that maternal morality is the outcome of under nutrition in mother and 25% of the women believe that fetal and infant death and 10% of the women do not know.

Table 14: Percentage showing the source of energy to body

Source of energy	Percentage
Water	20
Fruit and vegetable	35
Cereals and pulses	40
Do not know	5
Total	**100**

The 20% of the pregnant women believe that water is the source of energy to the body while 35% of them think fruits and vegetable is the source of energy and 40% of them believe that cereals and pulses is the source of energy to the body.

Attitude related questionnaire

Table 15: Response of the participants on the attitude assessment Questionnaire

Questions	Responses	%
1. Good nutrition and eating habits will affect both baby and mother during pregnancy and after birth	Strongly Agree	60
	Agree	20
	Neutral	10
	Disagree	10
	Strongly disagree	0
2. Under nutrition in mother is associated with poor pregnancy outcome	Strongly Agree	40
	Agree	30
	Neutral	10
	Disagree	20
	Strongly disagree	0
3. My regular monitoring of weight gain during pregnancy is vital to support pregnancy	Strongly Agree	40
	Agree	45
	Neutral	0
	Disagree	10
	Strongly disagree	5
4. I prefer eating fresh fruits more than drinking packaged fruit juices during pregnancy	Strongly Agree	40
	Agree	30
	Neutral	5
	Disagree	15
	Strongly disagree	10
5. During pregnancy I am avoiding papaya	Strongly Agree	10
	Agree	50
	Neutral	35
	Disagree	0
	Strongly disagree	5
6. I read the Nutritional Facts Food label to help me make healthy food choices	Strongly Agree	60
	Agree	30
	Neutral	0
	Disagree	10
	Strongly disagree	0
7. Antenatal follow-up is good to monitor mother's and fetus's health	Strongly Agree	30
	Agree	50
	Neutral	5
	Disagree	5
	Strongly disagree	10
8. I restrict salt completely to lower raised blood pressure	Strongly Agree	50
	Agree	30
	Neutral	10
	Disagree	10
	Strongly disagree	0
9. Gaining less weight during pregnancy will make delivery easier	Strongly Agree	30
	Agree	35
	Neutral	0
	Disagree	20
	Strongly disagree	15
10. Skipping breakfast everyday affects fetal growth	Strongly Agree	60
	Agree	30
	Neutral	0
	Disagree	5
	Strongly disagree	5
11. One cannot prepare healthy supplementary/value added food in their home	Strongly Agree	30
	Agree	20
	Neutral	40
	Disagree	10
	Strongly disagree	0
12. Value added foods enhance the nutritive value of the product	Strongly Agree	50
	Agree	20
	Neutral	10
	Disagree	15
	Strongly disagree	5

From the above table it is cleared that majority of the pregnant women agree that good nutrition and eating habits will affect both baby and mother during pregnancy and after birth. Further, the study indicate that majority of the women agree that under nutrition in mother is associated with poor pregnancy outcome. 50% of the women agree that restrict salt completely to lower raised blood pressure. Further, the study indicate that 50% of the women agree that value added foods enhance the nutritive value of the product.

PRACTICE QUESTIONS

Table 16: Percentage showing monitoring of body weight regularly

Body Weight	Percentage
Always	40
Sometimes	30
Never	10
Do not know	20
Total	**100**

The table shows that 40% of the pregnant women always check their body weight on ANC visit and 30% of them monitor their body weight sometimes and 20% of the pregnant women do not known about the monitoring of body weight on regular basis on ANC vist.

Table 17: Percentage showing the consumption pattern of water more than 8 glasses per day

Consumption pattern of water	Percentage
Always	60
Sometimes	30
Never	10
Do not know	0
Total	**100**

The table shows that 60% of the pregnant women consumer more than 8 glasses of water per day and only 10% of the women do not consumer 8 glasses of water per day.

Table 18: Percentage showing the inclusion of snacks/fruits in main meal

Consumption of snacks and fruits	Percentage
Always	50
Sometimes	30
Never	20
Do not know	0
Total	**100**

The table shows that 50% of the pregnant women always consume snacks and fruits in between the main meal, 30% of pregnant women consume fruits and snacks in between the main meal and 20% of the pregnant women never eat snacks/fruits in between the main meal.

Table 19: Percentage showing seasonally available foods

Seasonally available food	Percentage
Always	50
Sometimes	30
Never	10
Do not know	10
Total	**100**

The table shows that 50% of the pregnant women always use seasonally available foods, 30% of them sometimes use seasonally available foods and 10% of the pregnant women do not know.

Table 20: Percentage showing supplementary food

supplementary food	Percentage
Always	40
Sometimes	25
Never	20
Do not know	15
Total	**100**

The table shows that 40% of the pregnant women always take supplementary food along with their main meal, 25% of the pregnant women sometimes take supplementary food and 15% of the pregnant women do not ware about supplementary food.

Table 21: Percentage showing consumption of home made supplementary food

Home made supplementary food	Percentage
Always	60
Sometimes	20
Never	15
Do not know	5
Total	**100**

The table shows that 60% of the pregnant women always take home made supplementary food along with their main meal, 20% of the pregnant women sometimes take supplementary food and 15% of the women never take supplementary food.

Table 22: Percentage showing meal regularity

Pattern of Meal Regularity	Percentage
Very regularly	80
Regularly	20
Irregularly	0
Very irregularly	0
Total	**100**

The table shows that 60% of the pregnant women always take supplementary food along with their main meal, 20% of the pregnant women sometimes take home made supplementary food.

Table 23: Percentage showing the meal frequency in a day

Pattern of Meal frequency	Percentage
More than 4 times	70
3times	25
2 times	5
1 times	0
Total	**100**

The table shows that 70% of the pregnant women consume more than times in a day and 25% of the pregnant women consume meal 3 times in day.

Table 24: KAP questionnaire scoring

Variable	Marks		N=100
Knowledge	1. <3		1
	2. 3-6	20	
	3.6-9	55	
	4. >9	24	
Attitude	1. <3		29
	2. 3 – 6	33	
	3.6 - 9	32	
	4. >9	6	
Practice	1. < 3		5
	2. 3 - 6	26	
	3. 6 - 8	13	
	4. >8	10	

From table 24, this can be concluded that most of the respondents (55%) have knowledge score (6 - 9), 24% have scoring >9, 20% have scoring of 3 - 6 and only 1% has score <3. 33% have attitude score of 3 - 6, 32% have 6 - 9 scoring, 29% have scoring less than 3 and only 6% have scoring >9. Practice score of maximum respondents(3 - 6) is 26, 13 % have scoring between 6 - 8, 10% have more than 8 scoring and only 5% have scoring less than 3.

CONCLUSION

The study entitled assessment of nutritional status of pregnant women was carried out on the randomly selected 100 pregnant women of government Hospital of Habra city in West Bengal. The objectives of the study were:

- To evaluate the health status of pregnant women by anthropometric measurements
- To evaluate the food and nutrient intake of the selected pregnant women.

The data pretaining the study were collected by personal interviewing the respondents, their family members, visiting their homes or hospitals. Further following 24 hours recall method and weighment method with questionnaire, for dietary and nutritional intake by taking anthropometric measurments was performed as per standard procedures.

A higher percent of the pregnant respondents from government Hospital belonged to the Joint type of family, belongs to upper status of family and having monthly income of 63,182 – 1,26,360 and were vegetarian and majority of the respondents were of normal BMI.

Among the selected pregnant women, the practice of three meal pattern was common. The respondents were found to be not fulfilling their dietary requirement, specially their diet were found to be deficit in leafy vegetable, milk and milk products, fruits etc.

The special foods which were found to be included in the diet of pregnant women were fruits, milk, leafy vegetables, eggs, non-veg and tomato. The reasons expressed were "doctor's advice", "good for health", "reduce weakness" and "increases blood".

During pregnancy period majority of the pregnant women were found to have one or the other ailments, such as loss of appetite, pain in calf muscle, back pain, oedema, blood pressure, anaemic condition, headach, weakness and nausea etc. Anaemic condition, vomitting and weakness were the major health problems found in the pregnant women. Nutrition and health education was imparted to pregnant mothers while carrying out survey.

Suggestions

Knowledge regarding pregnancy and nutritional care during this stage must be imparted through organising workshop, parents melawa. Women should be encouraged to eat more as per requirement including all nutrients and keep them healthy. Govt should

promote special nutrition and health programme for these women through health service scheme and NCOS participation.

REFERENCES

Agarwal, D. K., Kaur, R., Katiyar, G. R., & Agarwal, K. K. (2015). Pattern of care during pregnancy and lactation in Suderpur (An urban slum area of Varanasi). Indian J. *Pub. Halth, 29,* 82-87.

Agarwal, D. K., Agarwal, K. N., & Tripathi, A. M. (2016). Nutritional status in rural pregnant women of Bihar and uttar pradesh. *Indian Paediat, 24,* 15-20.

Ardhapurkar, S. S. (2010). Nutritional and health status of selected pregnant women of Parbhani. M.Sc. Thesis, MAU, Parbhani.

Aras, R., Pai, N., Baliga, A., Jain, S., & Naimuddin (2017). Pregnancy at teenage risk factor for lower birth weight. *Indian Paediatri, 26,* 823-825.

Bhatia, B. D., Baneijee, D., Agarwal, D. K., & Agarwal, K. N. (2011). Dietary intake of urban and rural pregnant, lactating and non pregnant, non-lactaing vegetarian women of Varanasi. Indian J. *Med. Res., 74,* 680 - 687.

Bhatt, V. R., Balmur, V., Bhatt, P., & Jariwala, M. (2010). Pattern of weight gain in pregnancy. *Proc. Nutr. Soc. India, 26,* 24-28.

Bhatia, B. D., Banerjee, D., Agarwal, D. K., & Agarwal, K. N. (2013). Foetal growth: Relationship with maternal dietary intakes. Ind. J. *Pediat., 50,* 113.

Bilasini Devi, S., Jatishwar Singh, K. H., Lakshmi Devi, Y., Gyaneshwar Singh, W., & Singh, P. P. (1980). Assessment of nutritional status of Manipuri expectant mothers through selected haematological parameters. *Ind. J. Nutr. Dietet., 17,* 287 – 296.

Brennan, R. E., Kohrs, M. B., Nordstrom, J. W., Sawage, J. P., & Shank, R. E. (2013). Nutrient intake of low income pregnant women laboratory analysis of foods consumed, *J. Am. Dietet. Assoc., 83,* 544 - 550.

Chaudary, & Huda, F. (2015). Determinants nutrient adequacy for lactating and pregnant mothers in a rural area of Bangladesh Nutr. *Bull., 7*(26), 32.

Chawla, S., Boora, P., Kapoor, A., Yashpal Kaur, C., & Kumari, V. (2017). Food consumption pattern of pregnant and lactating mothers in rural harayana. *Ind. J. Nutri. Diett, 34,* 40 – 48.

Dabke, M., Pohowala, J. N., Inamdar, S., & Dabke, A. T. (2012). Serum iron and iron binding capacity in the newborn in relation to maternal anaemia. *Ind. J. Pediat, 54,* 503 - 510.

Dandegaonkar, M. S. (2014). Impact of maternal nutritional status on outcome of pregnancy M.Sc. Thesis, M.A.U. Parbhani.

Delgado, Aerman, L., Valverde, Victor & Hurtado, & Elena (2015). Lactation in rural Gauatemala: Nutritional effects on the mother and the infant. *Fd. Nutr. Bull, 9,* 15.

Desai, V. I. (2011). Traditional nutrition supplements for pregnant and lactating mothers in south Gujrat proceedings ofthe Nutrition society of India. *Proc. Nutr. Soc. India, 34,* 122.

Devadas, R. P., Vijayalakshmi, P., & Aitha, R. (2017). Impact of nutrition on pregnancy, lactation and growth performance of extero-gestate foetus. *Ind. J. Nutr. Dietet., 15,* 31 – 37.

Devadas, Rajammal, R., Chandrasekhar, & Usha & Bhooma, N. (2013) Nutritional outcomes of a rural diet supplemented with low cost locally available foods. Impact on nursing mothers. *Ind. J. Nutr. Diet, 20,* 71.

Luzzi, F., & Eichinger, G. (2010). Food avoidances of pregnant women in Thailand Food Ecology and culture. Readings in the anthropology of Dietary Practices, Gorden and Breach Science Publisher, Newyork. 101-108.

Finley, D. A., Dewey, K. G., Lonnerdal, B., & Grivetti (2015). Food choices of

vegetarians and non vegetarians during pregnancy and lactation *J. Am. Dietet. Asso., 85*, 678-685.

Foreman, J. C. (1981). Anaemia of pregnancy. *Practitioner, 225*, 175: 180.

Ghosh, S., Bhargava, S. K., & Maciamma, J. M. (2017). Longitudinal study on survival and outcome of birth cohort - Report of phase, J. of Research of project 61 - 658. 2 of national centre for health statistics, USA, New Delhi105.

Gopalan, C., & Vijayaraghavan, K. (2011). Nutrition Atlas of India. ICMR, Hyderabad, 2-17.

Gopalan, C. (2016). Maternal nutrition lactation and infant growth in urban slums. Scientific report of nutrition foundation of India, viii.

Gupta, R., & Sharma, I. (2014). An Overview of die dietary consumption pattern of pregnant and lactating mothers of Haryana region. *Hissar Ind. J. Nutr. dietet., 17*, 13-19.

Hira, C. K., Murgai, V., & Pathak, V. (2017). Nutritional intake of lactating Punjabi women. *Ecology of food and nutrition, 21*, 159-166.

Hussaini, M. A., Lamid, A., Husaini, Y. K., Mulyati, S., & Memo, S. D. (2015). Study on implementation and delivery strategies of iron preparate for policy and programm, formulation to reduce nutritional anaemia among pregnant women. Bogori Nutrition Research and Development Centre and Directorate of community Nutrition. Ministry of health.

ICMR (2017). Evaluation ofthe national, nutritional anaemia prophylaxis programme, ICMR. Taskforce study. New Habra city in West Bengal.

ICMR (2010). Collaborative study on high risk pregnancies and maternal mortality, ICMR Task Force study. New Habra city in West Bengal.

Indira, B. K., Shastry, V. N., & reddy, C. C. (2011). A Comparative study of feeding pattern of infants in rural and urban areas. *Ind. J. Paediat, 49*, 277.

Iyengar, L. (2016). Effects of dietary supplements late in pregnancy on the expectant mother and her new born. *Ind. J. Med. Res., 55*, 85 - 89.

Jacob, M., Hunt, I. E., Dirige, O., & Swendseid, M. E. (2016). Biochemical assessment of the nutritional status of low income pregnant women of mexican descent. *Am. J. Clin Nutr. 29*, 650 - 656.

Kapoor, S. K., Anand, K., & Kumar, G. (2014). Risk factor of still birth in a secondary level hospital of Ballabgarh, Haryana: A case control study. *Indian J. Pediatri 61*, 161 - 166.

Kaur, Y. R., Sagar, V., & Khirwar, S. S. (2012). Nutritional ecology and food consumption pattern of expectant mothers in selected villages and suburb of Hissar. *Ind. J. Nutr. Dietet, 19*, 50 - 58.

Kirksey, A., Rahmanifar, A., wachs, T. D., Maccabe, G. R., Bassily, N. S., Bishry, Z., Galal, O. M., Harrison, G. G., & Jerome, N. W. (2011). Determinationa of pregnancy outcome and new bom behaviours of a semirural Egyption population. *Am. J. Clin. Nutri., 54*, 657 – 667.

Kushwaha, K. P., Rai, A. K., Rathi, A. K., Singh, Y. D., & sirohi, R. (2013). Pregnancies in adolescents: Fetal Neonatal and maternal outcome. *Indian, J. Pediat., 30*, 501-505.

Landman, J. P., & Hall, J. S. E. (2017). Dietary patterns and nutrition in pregnancy in Jamaica. *J. Trop. Pediat., 35*, 185- 190.

Mittal, M. C., Gorila, A. K., & Sovila, V. (2010). Social costoms and beliefs in relation of pregnancy and child birth in the area of rural health training centre. Harsola District. Indore (M. P.) *Ind. J. Prev. Soc. Med., 11*, 78.

Nagra, S. A., Anwar, T., Anwar, J., & Faroogi, M. I. (2011). Longitudinal study in the concentration of serum calcium, copper, magnesium. Zinc and haemoglobin during the last trimester

ofpregnancy in *Pakistani women Nutritional Research., 11*, 1341- 1348.

Newman, V., Norcross, W., & MCdonald, R. (2011). Nutrient intake of low income South East Asian pregnant women. *J. Am. Diet Assoc. 91*, 793 - 799.

NIN (2010). Effect of maternal nutritional status on the out come of pregnancy. Annual report of *National Institute of Nutrition, Hyderabad*, 111-112.

NIN (2013). Studies in pregnancy. Annual report. *National Institute of Nutrition, Hyderabad*, 123-128.

Pralhadrao, N. (2014). Dietary study during pregnancy. *The Indian women 8*, 2.

Prema, K., Neelakumari, S., & Ramlakshmi, B. A. (2011). Anaemia and adverse obstetric outcome. *Nutri Rep. Inter, 23*, 637- 643.

Prema, K., Ramalakshmi. B. A., & babu, S. (2012). Diuretic therapy in pregnancy induced hypertension and pregnancy oedema. *Jnd. J. Med. Res., 75*, 545-553.

Raman, L. (2011). Influence of maternal nutritional factors affecting birth weight, *Amer. J. Clin, nutr., 34*, 775 -783.

Raman, L. (2014). Maternal risk factors in intrauterice malnutrition. *Indian J. Pediatri 54*, 503-510.

Rangnekar, A. G., & Darbari, R. (2013). Foetal outcome in pregnancy anaemia J. *Obstet. Gyne.Ind., 43*, 172 – 176.

Rao, V. K., Thimmayamma, B. V. S., & Belavady. B. (2014). Relative importance of factors associated with duration of lactation in mothers of better socio-economic status. *Ind. J. Nutr. Diet., 25*, 7.

Reddi, R. P., Rani, U., Raghavan, S. S., & Rajaram, R. R. (2012). Adolescent pregnancy, *J. Obstet. Gynee Ind., 42*, 764 - 767.

Reddi, R. P., Rani, U.. Raghavan, S. S., & Rajaram, R. R. (2014). Adolescent pregnancy, *J. Obstet. Gynee Ind., 42*, 764 - 767.

Smith, & Norman, C. (2012). Detection of the fetus at risk. European *J. Clin, Nutri. 46*(Suppl. i): 51-55.

Thimmayamma, B. V. S., Jyoti, & Moyes. S. P. (2013). Socio economic conditions, diet and nutrient intake of working and non working lactating mothers attending maternity and child health centres. *Ind. J. Nutr. Diet., 20*, 276.

Vijayalakshmi, R., Jacob, M., & Devadas, (2014). Relationship between diet during pregnancy and nutritional status ofthe new born. *Ind. J. nutr. Dietet, 12*, 33 - 237.

Vijayalakshmi, P., & Shobhana, R. (2012). Impact of iron and folic acid supplementation on expectant mothers and their offsprings. *Ind. J. Nutr. Diete, 19*, 363-369.

Vijayalkshmi, P., & Lakshmi, R. N. (2012). Food consumption and metabolic profile of selected expectant mothers. *Ind. J. Nutr. Dietet., 25*, 247 – 253.

WHO (1992). Report of working group of anaemia *WHO report., 11*, 212-215.

Yayathi, & Tejaswaini (2017). Attitudes and traditional practices relating to diet during pregnancy, lactation and infant feeding in a tribal community of Andhra Pradesh, *Pro. Nur. Soc. India, 33*, 156.