A Study on Frequency of Consumption of food and Nutritional Supplements by Pregnant women in Kashmir.

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Abstract

It is very essential for mothers to obtain a balanced nutrition during the period of pregnancy for fetal growth and her own health. The present study was as such conducted with an objective to assess the frequency of consumption of food and nutritional supplements by pregnant women in Kashmir. The present study was conducted in Maternity Hospital of Sher-e-Kashmir Institute of Medical Sciences(SKIMS) Soura Srinagar. A total of 400 pregnant women were randomly selected for the study. A structured questionnaire-cum-interview schedule was devised for collecting the desired information from the pregnant women. Frequency of consumption of different foods was assessed by Food Frequency Questionnaire (FFQ).The results of the study revealed that less than half the women (42.5%) were in the age group of 25-30 years. Respondents from nuclear family formed the majority, representing more urban than rural habitat. All of the respondents were taking rice, wheat and milk on daily basis.37.75% used to eat pulses daily. Majority of the respondents took meat on weekly basis. Less than half of the subjects used to take chicken once weekly. Green leafy vegetables and eggs were taken by less than half of the respondents on daily basis. Supplements including folic acid, iron, and calcium were taken by most of the respondents on regular basis throughout the course of gestation.

Keywords: Pregnancy, Food frequency, daily, consumption, supplements.

Introduction

Pregnancy is the state of carrying a developing foetus within the female body. It is also called the period of gestation. It starts from the moment of conception to birth. For human beings, the average length of a healthy gestation is 40 weeks. Pregnancy is often divided into three periods of three months each called trimesters (**Rolfes *et al*., 2009**).

Optimum nutrition in early stage of life is the foundation for long-term health. A healthy maternal nutrient intake/dietary pattern involving nutrient dense foods, along with adequate maternal body composition and supply of nutrients through the placenta reduces the risk of maternal, fetal and long-term effects in the developing fetus. While under nutrition is more prevalent in low-income countries such as that of India, malnutrition due to poor quality diet both in terms of quantity as well as quality is becoming a global health problem. Poor maternal nutritional status has been related to adverse birth outcomes especially in terms of birth weight of the newborn. However the association between maternal nutrition and birth outcome is much complex process and

is influenced by many biological, socioeconomic and demographic factors, which vary widely in different populations of the World **(Villar *et al*., 2003)**

Supplements of iron decrease appetite, causes nausea and constipation, taking them between meals or just before going to bed is best way to eliminates these side-effects. Milk, coffee as well as tea should never be consumed with an iron supplement because these beverages have substances that interfere with iron absorption. Vitamin C rich foods such as citrus fruits (lemon, oranges etc.) helps in enhancing iron absorption and as such should be included in the diet.

Normal adult woman requirement of dietary folate is 200mcg/d and ICMR recommendations during gestation for folate is 500mcg/d. Folic acid requirements increase during gestation for maternal erthropoiesis, DNA synthesis as well as fetal and placental growth. The U.S. Public Health service and the Institute of Medicine (IOM) of the National Academy of Sciences both recommend that all women of child-bearing age i.e. during the reproductive years consume 400 micrograms of synthetic folic acid each day to reduce the risk of delivering neonate with neural tube defect such as spina bifida. This recommendation covers all women of childbearing age not just pregnant women because neural tube development occurs before the sixth week of fetal life. During this period a woman may not know she is pregnant **(Insel *et al*., 2007)**.

Objectives:
1. To study demographic characteristics of the pregnant women.
2. To assess the frequency of consumption of food by the respondents during pregnancy.
3. To assess the consumption of nutritional supplements by the respondents during pregnancy.

Review of Literature:

A women needs to eat well once she becomes pregnant, but her nutritional status at the moment of conception is also very important. In addition, a women's weight at the time of conception can have a major influence on her pregnancy outcome, delivery as well as health status of the neonate. For these reasons it is quite important for a women to get care before she gets pregnant. Experts recommend extending prenatal care, the routine health care that a woman receives during the period of gestation to include the pre-conception period as well. About half of the pregnancies in the United States are unplanned and as such good nutrition for all women of childbearing age is a vital public health objective. (**Insel *et al*., 2007**)

The Federation of International Gynecologists and Obstetricians (FIGO) recommendations, "Think Nutrition First" have listed the top 6 essential nutrients women need for future Healthy and Save motherhood. These include Folic acid, iron, iodine, vitamin B12, and vitamin D. It also highlights the role of antioxidants in pregnancy outcomes **(Hanson *et al*., 2015)**.

Folic Acid lowers the danger of birth defects. (**Czeizel *et al*., 2013**) Cohrane in his review article (**De-Regil *et al*., 2015**) revealed that folic acid supplementation prevents the occurrence of neural tube defects (NTD). 400mcg of folic acid are recommended for women of reproductive age group.

It has been found that Women with higher folic acid levels have lower risk of

miscarriage **(Gaskins *et al*., 2014)**, whereas insufficient maternal folate status is associated with delivering LBW babies, preterm delivery and fetal growth retardation **(Fekete *et al*., 2012)**.

Vitamin B12 in the pre-conception period with folic acid was associated with a reduced risk of con genital malformations **(Botto *et al*., 2004; Sutton *et al*., 2011)**.

Cochrane review revealed that iron supplementation during gestation reduced the risk of delivering LBW babies (birth weight <2.5kg) and prevented iron deficiency anemia in pregnancy **(Pena-Rosas *et al*., 2012)**.

Iodine is very important for normal brain development of the fetus. Moderate iodine deficiency during gestation results in developmental delay in children. For example, a study conducted in UK revealed that older children were more likely to have low level of IQ, if their mothers had mild iodine deficiency in early stage of gestation than children of mother with normal iodine levels during gestation **(Bath *et al*., 2013)**.

Calcium supplementations before or during early stage of pregnancy prevents mothers from pre-eclampsia/toxemia, reduces maternal mortality and morbidity, as well as showed to improve fetal & neonatal outcomes. **(Hofmeyr and Manyame, 2017)**.

Vitamin D deficiency during gestation promotes the development of fibroids as well as endometriosis, as in Humans it has been observed that the vitamin D receptor is expressed in the ovary, endometrium and myometrium **(Buggio *et al*., 2016)**.

Vitamin A as well as vitamin E and zinc can also affect pregnancy outcome. WHO recommends vitamin A supplementation during the period of gestation only in areas where there is endemic vitamin A deficiency . This will improve maternal and fetal outcomes such as mortality and morbidity. Prevent anaemia, infection as well as xeropthalmia **(WHO, 2009).** The risk of pregnancy complications involving oxidative stress such as pre-eclampsia is reduced by antioxidant supplementation taken by the pregnant women.

Methodology:

In the present study both the primary as well as secondary sources of data were used to obtain the desired information.

➢ **Primary Data**

The present study was conducted in a hospital based setting.The sample was primarily collected from Maternity Hospital of Sher-e-Kashmir Institute of Medical Sciences (SKIMS) Soura Srinagar.A structured questionnaire-cum-interview schedule was devised for collecting information from Pregnant Women.The Questionnaire was prepared in accordance with the latest standards.

➢ **Secondary Data**

Data collected from secondary sources represented the information obtained from books, published research papers, medical and public health journals and latest information from internet etc.

Sample Size and Sampling Technique

➢ **Sample Size**

A minimum sample size of 350 pregnant women was required as study

participants. An additional sample size of 150 (30%) was added to take care of attrition (follow up loss),in order to get power of test 80% and as such the sample size including follow up loss was 500. Out of the total ten districts of Kashmir Valley, five districts were selected randomly keeping in view both urban and rural areas. The sample size was distributed among the selected districts on the basis of probability proportional to size The sample size was calculated with the help of the following formula:

$$n = \frac{NZ_{\alpha/2}^2 p(1-p)}{d^2(N-1) + NZ_{\alpha/2}^2 p(1-p)}$$

Where,

n =minimum sample size required for the study

N= population size.

Z = 1.96 at level of significance 5%

α = level of significance (5%).

p= proportion of registeredPregnant women in Kashmir valley

d = margin of error at 5%.

The present study included a total no. of 400 pregnant women and their neonates. Out of them 211 were from urban area and 189 from rural area. Pregnant women were selected purposively from the hospital until the desired number of subjects was reached.

➢ **Sample Selection Procedure**

Pregnant women attending the department of Obstetrics and Gynecology SKIMS hospital situated in Srinagar district were selected for data collection. From among all pregnant women attending the OPD, randomly every 3rd pregnancy was included .

A well formulated interview-cum -questionnaire schedule was used to elicit the information pertaining to socio-demographic characteristics and nutritional supplements. Dietary intake was assessed by FFQ at the hospital visit during the 2nd trimester in order to ascertain consumption of different types of food by the pregnant women. Information regarding the frequency of consumption of different foods on a daily, weekly, monthly and yearly basis was collected in order to have an insight into the dietary pattern of the respondents. The data on food frequency obtained was then recorded in a predesigned proforma.

Results:

Table 1.1: Distribution of Respondents as per Age

(N=400)

Variables	Category	N	%
Age (years)	≤20	23	5.8
	20-25	124	31.0
	25-30	170	42.5
	30-35	62	15.5
	>35	21	5.2

Table 1.1 shows the distribution of respondents as per age , it is clear from the table that majority i.e. 42.5% of the respondents were in the age group of 25-30 years, followed by 31.0% were in the age group of 20-25years.Only 5.8% and 5.2% were in the age group of ≤20 years and >35 years respectively.
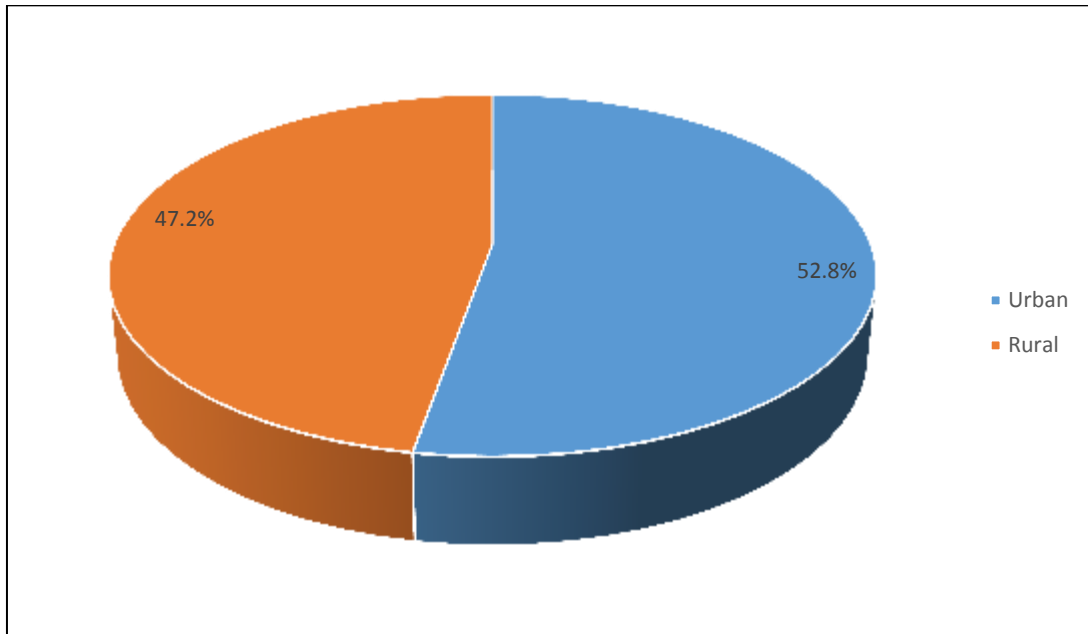

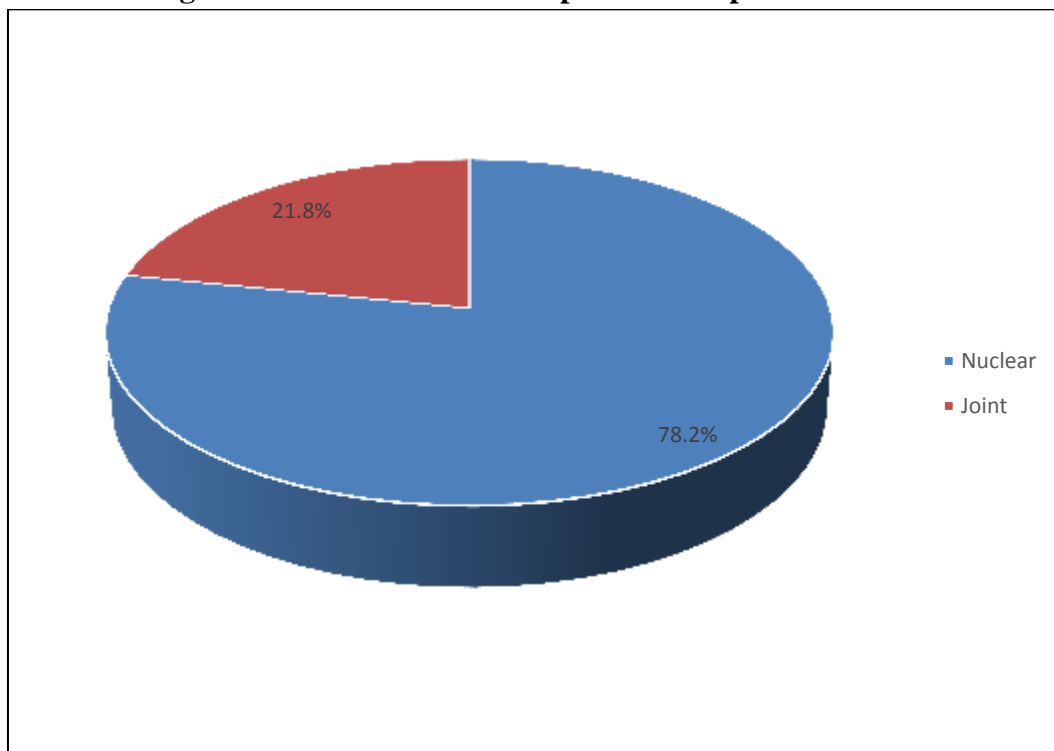**Figure1.1: Distribution of Respondents as per Residence**

Figure 1.2: Distribution of Respondents as per Type of family
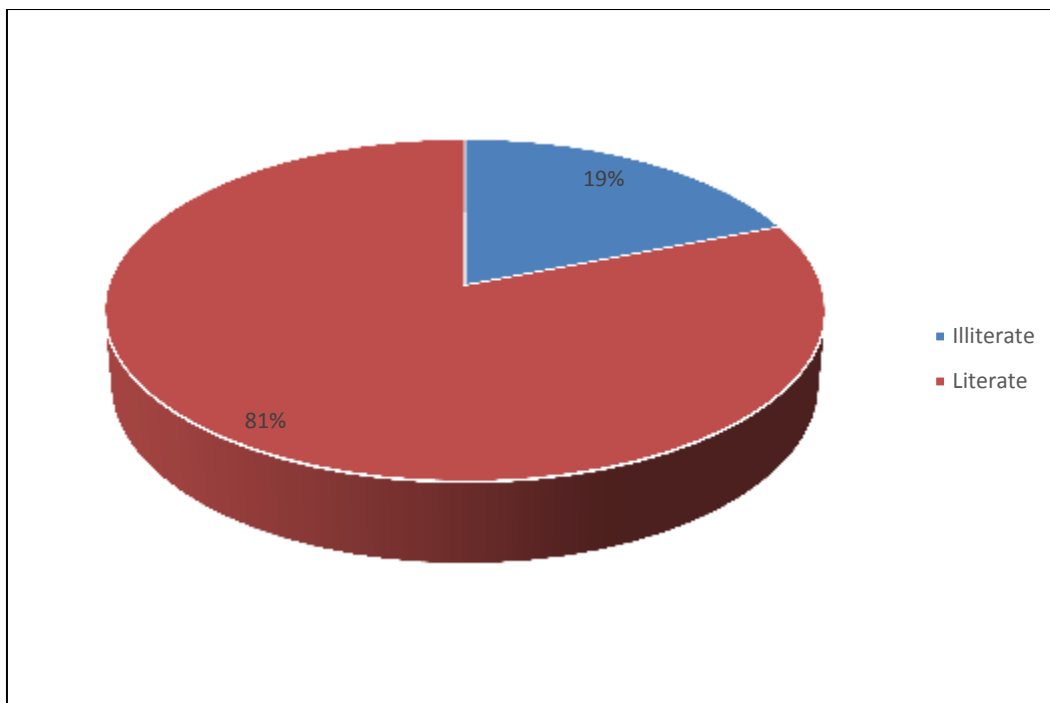
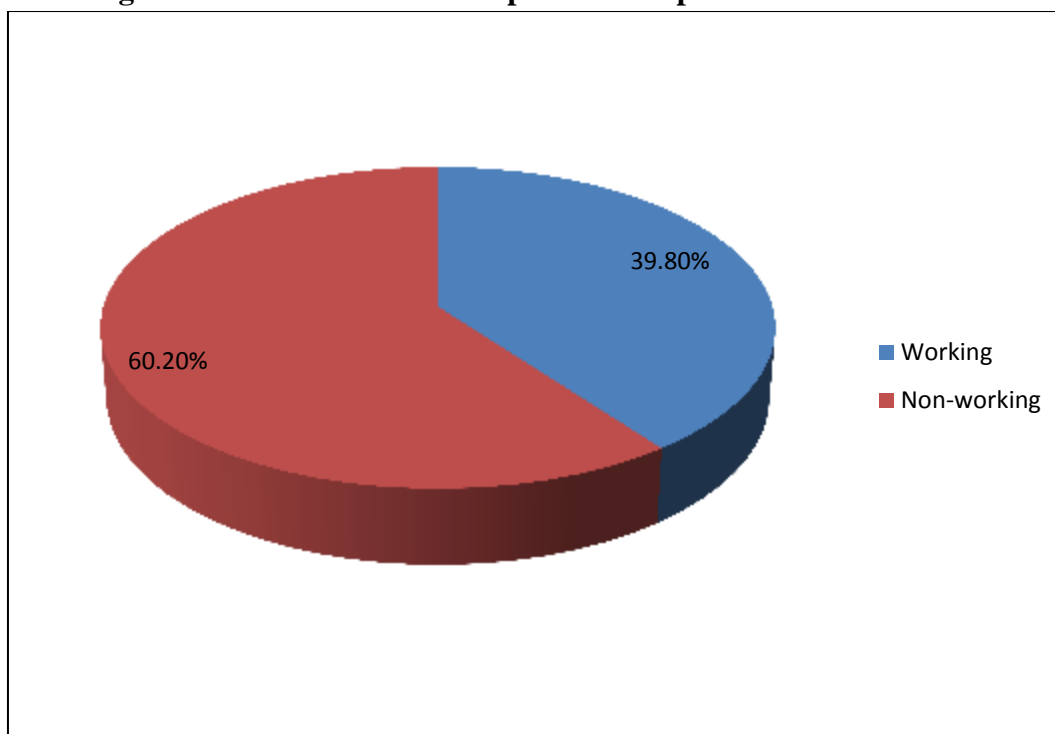**Figure 1.3: Distribution of Respondents as per Educational Status**

Figure 1.4 Distribution of respondents as per occupation

Figure 1.1 reveals that 52.8% and 47.2% of the respondents were from urban and rural area respectively. Majorities i.e. 78.2% of the respondents were from nuclear family and only 21.8% were belonging to joint family(Figure 1.2).

Figure 1.3 reveals that majority i.e. 81% of the respondents were literate and only 19% were illiterate .Figure 1.4 reveals that majorities i.e. 60.20% of the respondents were non-working (housewives) and only 39.8% were working.

Table 1.2: Distribution of Respondents as per Monthly Income (Rs.) of the family

(N=400)

Variable	Category	N	%
Monthly Income (Rs)	<5000	14	3.5
	5000-10000	74	18.5
	10000-20000	139	34.8
	20000-30000	58	14.5
	30000-40000	58	14.5
	≥40000	57	14.2

Table 1.2 shows the distribution of respondents as per monthly income of the family. Majority of the respondents i.e. 34.8% were having monthly income in the range of Rs 10000-20000, followed by 18.5% were having monthly income in the range of Rs 5000-10000.14.5% were having monthly income in the range of Rs 20000-30000 and 30000-40000 respectively. Only 3.5% were having monthly income of family Rs<5000.

Table 1.3 :Consumption pattern of Cereals and pulses by the Respondents

Variable	Category	Daily Once (D_1)	Daily Twice (D_2)	Alternatively (A)	Weekly Once (W_1)	Weekly Twice (W_2)	Monthly Once (M_1)	Yearly	Never
		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Cereals(gm)	Rice	6(1.5)	394(98.5)	-	-	-	-	-	-
	Wheat(Roti)	2(0.5)	398((99.5)	-	-	-	-	-	-
	Corn Flour	7(1.75)	-	-	49(12.25)	-	197(49.25)	102(25.5)	45(11.25)
	Rice Flour(Roti)	-	-	5(1.25%)	45(11.25)	-	154(38.5)	176(44)	20(5)
Pulses(gm)	Pulses	151(37.75)	-	17(4.25)	67(16.75)	43(10.75)	85(21.25)	30(7.5)	7(1.75)

Table 1.4: Consumption Pattern of Flesh Foods and Eggs by the respondents

Variable	Category	Daily Once (D_1)	Daily Twice (D_2)	Alternatively (A)	Weekly Once (W_1)	Weekly Twice (W_2)	Monthly Once (M_1)	Yearly	Never
		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Flesh Foods (gms)	Meat	14(3.5)	11(2.75)	53(13.25)	147(36.75)	126(31.5)	45(11.25)	4(1)	-
	Beef	-	-	-	18(4.5)	-	35(8.75)	234(58.5)	113(28.25)
	Chicken	17(4.25)	11(2.75)	42(10.5)	193(48.25)	103(25.75)	34(8.5)	-	-
	Fish	-	-	-	5(1.25)	6(1.5)	17(4.25)	367(91.75)	5(1.25)
	Eggs	181(45.25)	-	112(28)	55(13.75)	15((3.75)	17(4.25)	20(5)	-

Table 1.5: Consumption Pattern of Fruits and Vegetables by the Respondents

Variable	Category	DailyOnce (D$_1$)	Daily Twice (D$_2$)	Alternatively (A)	Weekly Once (W$_1$)	Weekly Twice (W$_2$)	Monthly Once (M$_1$)	Yearly/Occasionally	Never
		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Vegetables (gms)	Fruits	100(25)	283(95.75)	5(1.25)	-	10(2.5)	2(0.5)	-	-
	Green Leafy Vegetables	167(41.75)	20(5)	36(9)	38(9.5)	123(30.75)	16(4)	-	-
	Roots and Tubers	140(35)	18(4.5)	67(16.75)	81(20.25)	45(11.25)	44(11)	5(1.25)	-
	Other Vegetables	29(7.25)	-	75(18.75)	88(22)	138(34.5)	91(22.75)	14(3.5)	3(0.75)

Table 1.6: Consumption Pattern of Milk and Milk Product by the Respondents

Variable	Category	Daily Once (D$_1$)	Daily Twice (D$_2$)	Alternatively (A)	Weekly Once (W$_1$)	Weekly Twice (W$_2$)	Monthly Once (M$_1$)	Yearly/Occasionally	Never
		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Milk and Milk Products(gm/ml)	Milk(Tea)	41(10.25)	359(89.75)	-	-	-	-	-	-
	Milk	190(47.5)	94(23.5)	65(16.25)	20(5)	15(3.75)	6(1.5)	-	10(2.5)
	Curd	87(21.75)	66(16.5)	103(25.75)	80(20)	57(14.25)	4(1)	3(0.75)	-
	Cheese	15(3.75)	-	11(2.75)	119(29.75)	44(11)	172(43)	29(7.25)	10(0.4)

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While assessing the frequency of intake of cereals and cereal products among the respondents (Table 1.3). It was found that rice was consumed by all of the respondents (100%) on daily basis with majority i.e. 98.5% consumed it twice daily and a only a minor section i.e. 1.5% used to ate it daily once. Wheat in the form of roti was also consumed by all of the respondents on daily basis. Corn flour on the other side was consumed by only 1.75% and 12.25% on daily and weekly basis respectively. Almost upto half i.e.49.25% of the respondents consumed corn flour on monthly basis.1/4th i.e. 25.5% consumed it on yearly basis. As per the intake of rice flour is considered, it was found that none of the pregnant women were taking rice flour on daily basis. Very minor section i.e.1.25% used to take it on alternative days of the week. Less than half i.e. 38.5% and 44.5% used to take it on monthly and yearly basis respectively. However a petite section of the respondents i.e. 11.25% and 5% never ate corn and rice flour throughout the year respectively.

With respect to intake of pulses by the respondents it was observed that majority i.e.37.75% used to eat pulses daily, followed by 21.25% used to take it once every month.16.75% and 10.75% took pulses once or twice in a week respectively.

Table 1.4 represents the frequency of consumption of flesh foods& eggs by the respondents. As per the illustration of the table, it is quite clear that very few i.e.3.5% and 2.75% of the subjects used to consume meat on daily basis once or twice respectively.36.75%, and 31.5% which formed the majority of the respondents took meat once weekly and twice in a week respectively. More than half of the respondents i.e.58.5% used to consume beef on yearly basis, followed by 28.25% who never consumed beef throughout the entire year. Very few i.e. 8.75% and 4.5% took beef once in a months period and weekly once respectively. None of the respondent was found of having beef on daily basis. As per consumption pattern of chicken by the respondents it was observed that majority i.e. 48.25%, less than half of the subjects used to take it once weekly, followed by 25.75% ate it twice in a week's period. Very little percentage (4.25% and 2.75%) consumed chicken daily once or twice respectively.Only a miner group i.e.10.5% and 8.5% took it on alternative days and on monthly basis respectively. A large group i.e.91.75% of the respondents took fish occasionally on yearly basis. None of the respondents took fish on daily basis. Less than half (45.25%) of the respondents took eggs once on daily basis, followed by 28% ate eggs on alternative days of the week. Very low percentage consumed eggs on weekly and monthly basis.

Perusal of the table 1.5 illustrates fruits and vegetable consumption by the respondents. It is observed from the table that 95.75%,which form majority of the respondents used to take fruits daily twice, followed by 1/4th i.e.25% used to take fruits daily once. Very less no of respondents took fruits on weekly and monthly basis. As far different types of vegetable are concerned, it was observed that less than half i.e.41.75% of the respondents took Green Leafy vegetables (GLV) once on daily basis, followed by 30.75% took it twice on a weekly basis. Majority i.e.35% of the

respondents took roots and tubers once daily and only 4.5% ate it twice daily.

Table 1.6 gives distribution of the respondents as per frequency of intake of milk and milk products on daily, weekly, monthly and yearly basis. It is clear from the table that all of the respondents (100%) were taking milk in tea on daily basis. Curd was taken by majority i.e.25.75% (1/4th of the selected sample) of the respondents on alternative days of the week, followed by 21.75% and 20% used to take it daily and weekly once respectively. As per consumption pattern of cheese is considered, it was observed that majority i.e.43% of the respondents took it once in a month, followed by 29.75% ate it twice weekly. Minor section of the respondents took it on daily basis, with a percentage of only 3.75%.
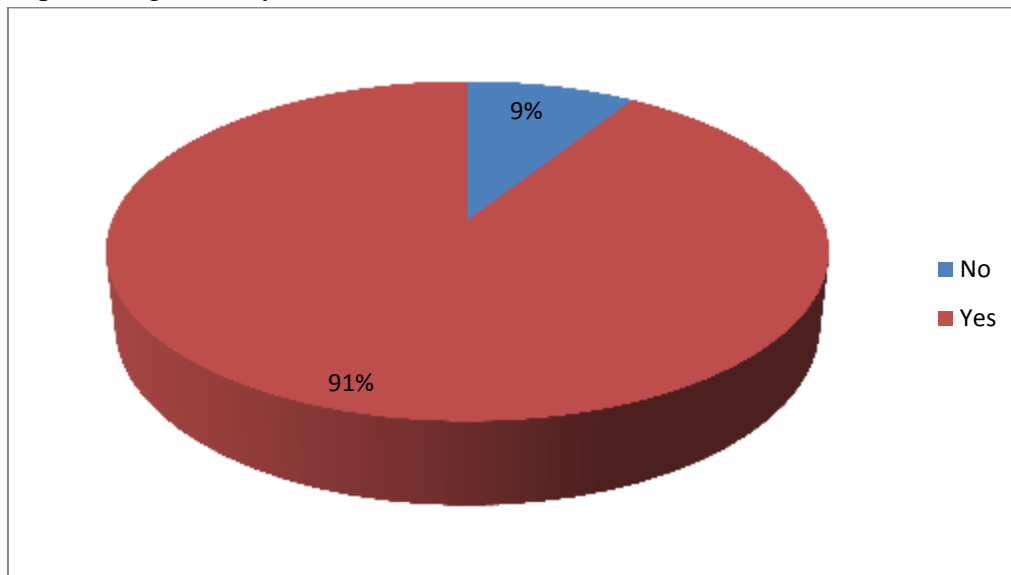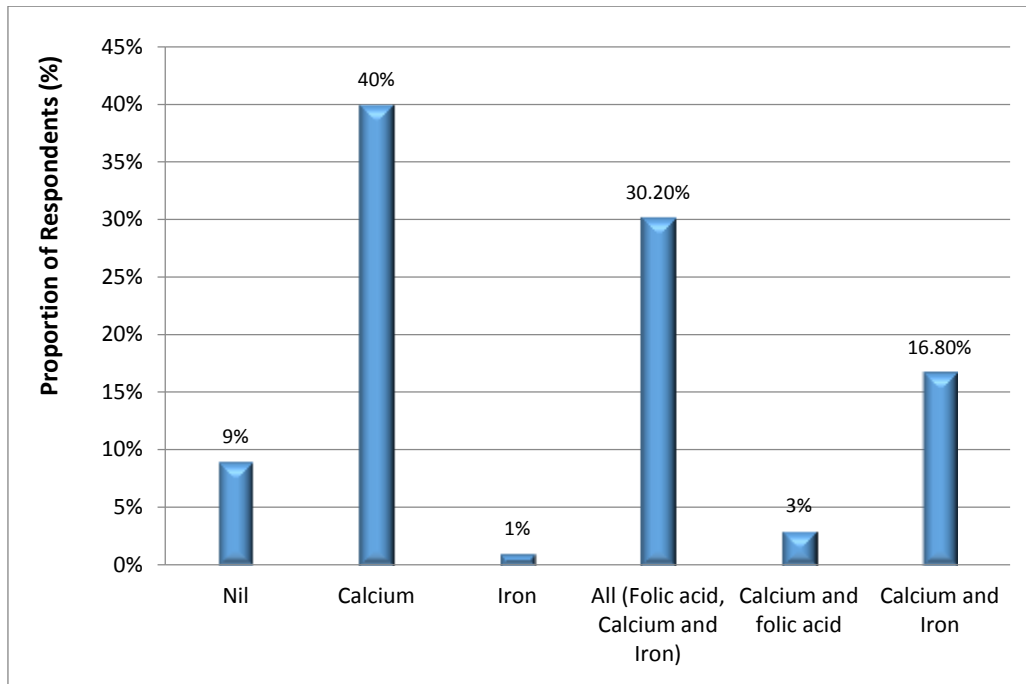

Figure 1.5: Intake of Supplements among the Respondents

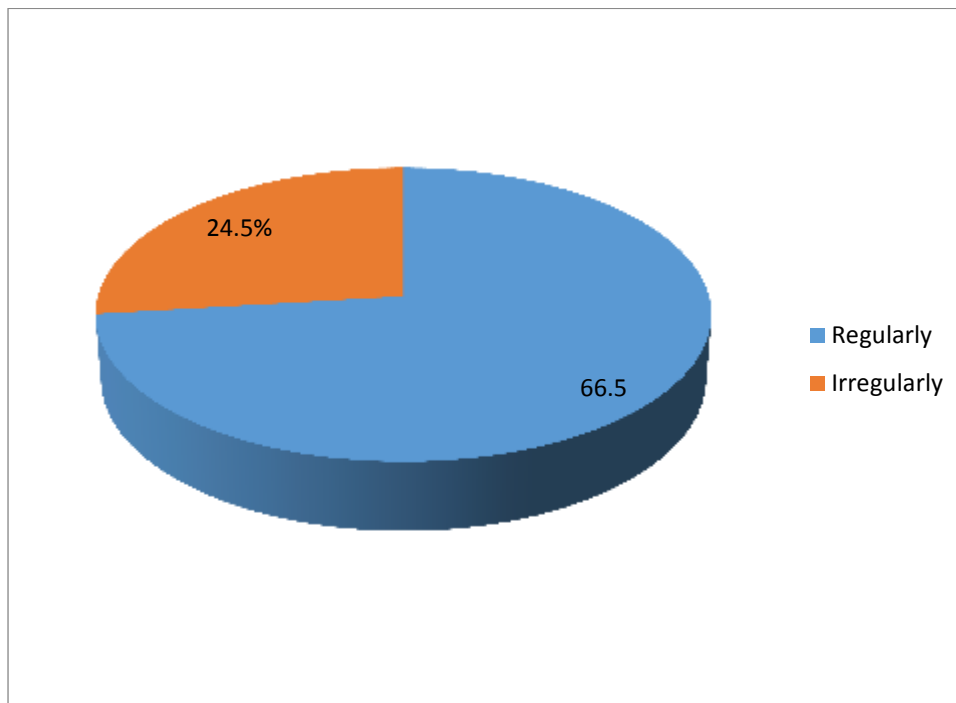**Figure 1.6: Type of Supplements taken by the Respondents**

Fig. 1.7: Frequency of Intake of supplements

As per figure 1.5 ,majority i.e. 91% of the respondents were taking supplement during pregnancy and only 9% have not taken any supplement.40% were taking calcium, followed by 30.2% were taking all supplements (Folic acid, calcium and iron)

during pregnancy (Figure 1.6). Further it was revealed in the study (Figure 1.7) that majority i.e. 66.5% were taking supplements regularly and only 24.5% had taken supplement during pregnancy irregularly.

Major Findings:

- Majority (42.5%)of the respondents were in the age group of 25-30 years,with more than half (52.8%) of the respondents were from urban area. Majorities (78.2%)of the respondents were from nuclear family and only 21.8% were belonging to joint family.

- Majority(81%) of the respondents were literate and only 19% were illiterate. Majorities i.e. 60.20% of the respondents were housewives and only 39.8% were working.

- Majority of the respondents i.e. 34.8% were having monthly income in the range of 10000-20000

- While assessing the frequency of intake of cereals and cereal products among the respondents it was found that Rice was consumed by all of the respondents (100%) on daily basis with majority i.e. 98.5% consumed it twice daily and a only a minor section i.e. 1.5% used to ate it daily once. Wheat in the form of roti was also consumed by all of the respondents on daily basis.

- With respect to intake of pulses by the respondents it was observed that majority i.e.37.75% used to eat pulses daily, followed by 21.25% used to take it once every month.16.75% and 10.75% took pulses once or twice in a week respectively.

- 31.5% which formed the majority of the respondents took meat once weekly and twice in a week respectively. More than half of the respondents i.e.58.5% used to consume beef on yearly basis.As per consumption pattern of chicken by the respondents it was observed that less than half of the subjects used to take it once weekly.Less than half (45.25%) of the respondents took eggs once on daily basis, followed by 28% ate eggs on alternative days of the week.

- 95.75%,which form majority of the respondents used to take fruits daily twice, followed by 1/4th i.e.25% used to take fruits daily once. As far different types of vegetable are concerned, it was observed that less than half i.e.41.75% of the respondents took Green Leafy vegetables (GLV) once on daily basis, followed by 30.75% took it twice on a weekly basis.

- All of the respondents (100%) were taking milk in tea on daily basis. Curd was taken by majority i.e.25.75% (1/4th of the selected sample) of the respondents on alternative days of the week, As per consumption pattern of cheese is considered, it was observed that majority i.e.43% of the respondents took it once in a month, followed by 29.75% ate it twice weekly.

- Majority i.e. 91% of the respondents were taking supplement during pregnancy and only 9% have not taken any supplement.40% were taking calcium, followed

by 30.2% were taking allsupplements (Folic acid, calcium and iron) during pregnancy.Further it was revealed in the study that majority i.e. 66.5% were taking supplements regularly and only 24.5% had taken supplement during pregnancy irregularly.

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