

Nutritional Status of Pregnant and Lactating Women in Baran District of Rajasthan

By

Seema Gautam

*Dissertation submitted for the partial fulfillment of the
MBA Rural Management*

Academic year, 2015-2017



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TO WHOMSOEVER MAY CONCERN

This is to certify that Seema Gautam student of MBA Rural Management from The IIHMR University; Jaipur has undergone internship training at IIHMR University from 6th March 2017 to 5th May 2017.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



Dr. Ashok Kaushik
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THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled Nutritional status of Pregnant and Lactating Women in Baran District of Rajasthan and submitted by Seema Gautam. Enrollment No 007 under the supervision of Dr. Goutam Sadhu, Professor and Dean In Charge, IIHMR University, Jaipur for award of MBA in Rural Management of the University carried out during the period from 6th February 2017 to 5th May 2017 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.



Seema Gautam
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Certificate by Scholar

This is to certify all ethical issues have been considered while collecting data for my dissertation title Nutritional Status of Pregnant and Lactating Women”.

A handwritten signature in blue ink, appearing to read 'Seema', enclosed within a blue oval.

Signature of Student

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Abstract

Nutritional status of mothers is considered one of the major problems facing mothers in the world. The nutrition plays a major role in mothers and child health. The present study was conducted to assess the Nutritional Status of Pregnant and lactating women in Baran District through questionnaire. The study comprised of multistage systematic random sampling procedure in 30 Village of 5 Block of Baran District in Rajasthan, women (18-49 years) were selected by random sampling. Socio economic and demographic profile, dietary intake and culture practices during pregnancy and lactation period were assessed. Results indicated that of the median age of women respondent was 25 years while median age of marriage was found to be 18 years. Mean year of marital duration for pregnant and lactating women four and five years respectively. Result shows that there are no significant differences among Non-Pregnant & non-lactating women, Pregnant and lactating women in energy, protein, iron, zinc and vitamin A and C intake. The highest average energy intake (1481 Kilocalorie) is among the pregnant women 0-5 months following by lactating women having 6-11 months' child. Similarly, calcium and vitamin-A intake is high among initial two trimesters of pregnancy than in compare to later stage of pregnancy. The distribution of energy, protein, zinc, iron looks normally distributed whereas Calcium, Vitamin A, Vitamin C looks skewed towards lower intake. Comparison of actual nutrient in take with ICMR standard clearly spells that calorie consumption of pregnant and lactating women is almost half compare to the ICMR recommendation.

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LIST OF ABBREVIATIONS

AWC: Aanganwadi Center

BMI: Body Mass Index

CIFF: Children Investment Fund Foundation

DD: Dietary Diversity

FF: Food Frequency

GOI: Government of India

HH: Household

ICDS: Integrated Child Development Scheme

ICMR: Indian Council of Management Research

IIHMR: Institute of Health Management Research

LBW: Low Birth Weight

LW/L1: Lactating Women (0-5 Months)

LW/L2: Lactating Women (6-11 Months)

LW/L3: Lactating Women (12-23 Months)

MOHFW: Ministry of Health and Family Welfare

MOWCD: Ministry of Women and Child Development

N1/NPNL: Non Pregnant and Non-Lactating Women

NFHS: National Family Health Survey

NNP: National Nutrition Policy

PW/P1: Pregnant Women (0-5 Months)

PW/P2: Pregnant Women (6-10 Months)

UNICEF United Nations Children's Fund

Summary

This summary briefly describes the overall scenario of reports key findings. According to NFHS 4, In India, 50.3% pregnant women in the age (18-45) years are anemic. In Rajasthan, 46.6% pregnant women are anemic that reflect two fourth anemic pregnant women belonged from Rajasthan state. two third of the Rajasthan anemic Women belonged from the Baran District and this anemia percent reflect that nutrition status of pregnant and lactating women in Baran are Critical. There is need to be

The current study has been covered A total of 720 household of 30 villages of 5Blocks in Baran District, through using multistage random sampling procedure. This study covered pregnant, lactating women and non-pregnant and non-lactating women. From each of these categories, four contiguous HHs were covered by randomly selecting the HH from the each village. Thus, a total of 24 HHs were covered in each village and 720 HHs in Baran District.

The overall objective of this study to determine what food stuff eats by pregnant and lactating women during their period and further to analyses the micronutrient intake by them. This study also describes the socio economic status of respondents and culture practices during pregnancy and lactation period.

This study collected data on socio economic and demographic characteristics of respondent. So that median age of total respondent found 25 and the median age of marriage 18 it reflect that girls are too early commit to reproductive age. So it has bad effects on their nutritional status. More than two third (70%) of women are non-working, and only 36.4 % women, out of total population taken education up to 10th class. Majority (92.9%) of the women belonged from Hindu religion and 47.4 belonged to OBC caste. 58.3% women have tap water facility and majority of the total population have electricity. This study analyzed that 49.6% woman using grass/woods/ crop pest as a fuel for cooking. Out of total population, two third women are aware on nutrition. Study also stated that half of population taken decision on what food to be prepared and only 11.9% women taken decision about purchase of daily HHs needs goods. Study also clear that more than 80% of out of total population having their own bank A/C. so it is the briefly describe the scenario of socio economic and demographic status of respondent.

As the objective is about what food stuff eats by women of Baran District, so findings stated that there are no significant differences between food stuff eating by pregnant and lactating women and NPNL Women. highest intake of food stuff is followed by lactating women (6-11 months) i.e. 260.0g median intake of cereal/millets and their product and 120ml median intake of milk, 22.5ml median intake of oil, 85.0mg median intake of other vegetable, 100.0mg median intake of root and tubers and 20.0g median intake of sugars and study also said that does not eat some food stuff like egg, fruits, green leafy vegetable by each category of women

Result indicated that there are no significant differences among Non-Pregnant & non-lactating women, Pregnant and lactating women in energy, protein, iron, zinc and vitamin A and C intake. The highest average energy intake (1481 Kilocalorie) is among the pregnant women 0-5 months following by lactating women having 6-11 months' child. Similarly, calcium and vitamin-A intake is high among initial two trimesters of pregnancy than in compare to later stage of pregnancy. The distribution of energy, protein, zinc, iron looks normally distributed whereas Calcium, Vitamin A, Vitamin C looks skewed towards lower intake. Comparison of actual nutrient in take with ICMR standard clearly spells that calorie consumption of pregnant and lactating women is almost half compare to the ICMR recommendation.

Study also indicated that two third of pregnant women first informed about pregnancy to their mother in law and rest were informed to husband and others. Study also showed that more than 70% of pregnant women and also 70% of lactating women received food items (Daliya, Coconut, Khichari and other) from anganwadi center. Most of the women many nutritious food items avoided during their pregnancy and lactation period without any scientific reason due to their cultural beliefs. Due to their cultural practices women taken some limited food items only that not enough for their good nutrition as well as for their babies' health.

Further analysis also stated relation between the socio economic variation and food items taken and avoided. Two third of total women taken wheat chapatti during their lactation period and few percentage of women taken jiggery and Butter milk that is highest among Muslim religion and OBC cast. And food items avoided percentage is highest among rural area women. So that it reflects that socio economic variation also affects the nutritious status of women.

Major conclusion and recommendations:

The extent of dietary energy and protein inadequacy was more pronounced, reiterating the fact that, it is essentially 'food gap'. The intake of various micronutrients, particularly iron, vitamin A, Vitamin 12 and Zinc was grossly deficient with comparison to ICMR guidelines, which is in line with inadequate intake of protective foods.

Study also suggests that lack of money to purchase nutrient intake and food taboos during pregnancy and lactating women were the main reasons for not taking nutritive food.

Study also indicated that all women under the study have some restriction on their diet due to cultural practices. Money was also a constraint so that Many nutritive food items avoided by the all women.

The study highlights the need for necessary steps for more community participation in various developmental programmes for improve literacy rate among females. Nutrition Education has to be strengthened through department of health and ICDS, to bring awareness and behavioral change for better nutrition practices to improve the nutritional status of mother and child.

Indian context is required to demonstrate the effectiveness of role of ASHAs in nutrition counseling.

Develop a mobile Based Nutrition information app in suitable Language and create awareness about this app through the help of ASHAs, Aanganwadi workers and Self Help Groups (SHG), to guide women diet intake and remove beliefs regarding food restriction had no scientific explanation.

The National Rural Health Mission (NRHM) envisages that there will be village health and nutrition days where in the ANM and AWW will work together and provide the needed health and nutrition care.

The study observed that lack of money was the main reason for not buying nutritious food, to provide more Nutritious food during pregnancy and Lactation period through Department of Health, ICDS and NHM with joint coordination.

Chapter-1

1. Introduction

1.1 Background

Pregnant and Lactating women form one of the most vulnerable segments of the population from nutritional point of view. Various studies in India and elsewhere have shown that in chronically undernourished women subsisting on unchanged dietary intake in pregnancy and lactation have an adverse effect on maternal nutritional status. Over 50 % of pregnant women in the age of 15-49 years in India are anemic and the Anemia remains to be a major factor responsible for maternal morbidity, mortality and low birth weight. Too early, too close, too many and too late pregnancies adversely affect nutrition and health status of the mother child dyad; timely contraceptive care has become an indirect effective intervention to prevent deterioration in maternal and child nutrition. Yet another important indirect cause of under nutrition continues to be infections; under nutrition increases the susceptibility for infections; infections aggravate under nutrition.

The human body goes through many remarkable changes during pregnancy. The uterus grows several times its normal size, gain weight, the skin changes and the breasts often change during pregnancy. Due to the all these changes women are often most intrigue by the changes that occur in their breasts during pregnancy.

The pregnant and lactation period is a major source of concern in developing countries because of its positive impact on the health and nutrition of children. Adequate nutrition is essential for mother's good health as well as for their pregnancy and trimester period. At every stage of women's lives, nutrition is the cornerstones of good health and optimal energy. Nutrition deserves special attention during pregnancy and breastfeeding because of the high nutrient needs and the critical role of appropriate nutrition for the fetus and infant.

The Government of India has been focused on nutritional status of pregnant and lactating women through lunched several schemes that have improper impact. In India several studies showed the improper results

1.2 Nutritional status of Pregnant & lactating women

Dietary intake pattern plays an essential role in human health. Lack of dietary intake pattern especially during pregnancy and lactation period of women have resulted in the low level of essential nutrients in Baran District, where over 30 % of women malnourished and over 69 % are anemic (NFHS 4), which pose threat to physical, mental and social well-being of women. Those women who consume limited animal source foods, fruits and vegetables, increase their risk of micronutrient deficiencies. Women on low protein and carbohydrate diets can be severely malnourished mothers and are at increased risk of child mortality.

Table1. Anemia % of India, Rajasthan and Baran

Anemic % of pregnant women age (15-49)years			
Area	India (%)	Rajasthan (%)	Baran (%)
Urban	45.7	41.4	---
Rural	52.1	48.0	73.2
Total	50.3	46.6	69.5

(Source: NFHS 2015-16 survey findings)

The table no. 1 reflect the scenario of anemic percentage of pregnant women age (15-49) years of India and Rajasthan as well as Baran district. The table no. 1 shows that in India over 50% of pregnant women in the age of 15-49 in India are anemic, in which over 46% of pregnant women are anemic in Rajasthan in the age of 15-49 years that reflect the huge ratio of anemic % in Rajasthan. It describe that the majority of anemic % of pregnant women lived in Rajasthan. This table also shows that the majority % of Rajasthan anemic pregnant women over 69% found in Baran district of Rajasthan state that reflect the critical situation of Baran district in point of view of anemic percentage in pregnant women.

The table no. 1 analysis shows that in Baran district % anemia is very higher compared to other district of Rajasthan and the anemia to be major factor responsible for maternal death, mortality and low birth weight.

1.3 Statement of the problem

Women represent half the world's population and contribute greatly to the functioning of society. Their poor nutrition status presents adverse health and socioeconomic consequences in society. The potential consequences include poor reproductive health outcomes such as maternal death during and or after child birth (Gemedu et al. 2013). Women nutritional status does not only affect them but the family at large especially the young children. For example, the nutritional Status of babies and infants is closely linked to the health status of their mother before, during and after pregnancy (Smith and Haddad, 2000). However, little attention has been put to address the causes of women malnutrition as other development challenges have been viewed as more Important thus given priority (Loaiza, 1997). Women's health thus needs to be improved so that they are able to lead a productive and healthy life.

According to NFHS 4 over 69% of women in age 19-45 years are anemic in Baran District is severe and should not be taken lightly. Women nutrition interventions in the District has concentrated but little effort to address other causes of Anemia that are not related to food input and also less effort to address the availability of food and Micronutrient intake among women during their pregnancy and lactating period.

Low level of understanding about the determinants of anemia is one of the challenges faced in addressing the problem of women anemia in Baran District. This is because of the inadequate studies available concerning the problem of anemia among women of reproductive age especially at the Baran District. In Baran, most empirical studies have focused on women nutrition. There are only few studies on pregnant and lactating women nutrition, who investigated the dietary, food frequency and affecting factors of food frequency & energy intake among Baran District pregnant and lactating women. There are no studies has taken place that have focused on the Seasonal food intake by pregnant and lactating women. These few studies are limited in terms of geographical coverage and scope and cannot be used effectively to guide policy interventions at District level.

This study, observing the dearth of literature, seeks to provide understanding of the key determinants of women food frequency and availability of food as occasionally as well as seasonally and factors affecting their food intake in Baran District. The study is premised on the understanding that food intake only affects in part nutritional status and there are other

underlying determinants of women nutrition status and the availability and seasonality of their food intake during their pregnant and lactation period that need to be investigated.

This study therefore addresses the following questions:

1. What are nutrient status of pregnant women & lactating women in Baran?
2. What are the socio economic and demographic status of PW / LW and NPNLW in Baran?
3. What are the food items intake by PW / LW and NPNLW as usual?

1.4 Objective:

The broad objective of this study is to understand the nutritional status of pregnant and lactating women in Baran District. Specific objectives are:

1. To examine the socio economic characteristics of pregnant and lactating and non-pregnant and non-lactating women in Baran.
2. To assess the culture Practices during pregnant and lactation women.

Chapter 2

2. Literature Review

2.1 Introduction

This chapter presents a review of literature on the determinants of pregnant and lactating women nutrition. The first section focuses on the theoretical literature on pregnant and lactating women nutrition while the second section presents the empirical literature of studies that have been carried out in the different parts of the world relating to pregnant and lactating women nutrition. Emphasis is given to dietary practices, knowledge related to micronutrient deficiency disorder, diseases prevalence due to low level of nutrition, nutrient intake, and cultural factors. Section three provides an overview of the literature.

2.2 Theoretical Literature

Swaminathan (1970) stated that Nutrition plays a very important role in maintaining good health among expectant and lactating mothers and the newborn babies. There is evidence that a large majority of the mothers in the developing countries consumes inadequate diet and suffers from malnutrition. There is urgent need for taking measures of overcoming malnutrition and improving the health and nutritional status of expectant and lactating mothers and infants and pre-school children. Nutrition education to mothers will help in prevention of malnutrition.

Goldberg (1991) stated that like pregnancy, lactation also represents a stage wherein the health and nutritional status of the infant are dependent on the mother. In both these critical stages of the lifestyle, the relative energy costs are so high that in most women, they must be met by an increase in food intake. In both cases, if the diet is inadequate, maternal reserves begin to be utilized. It is possible that there are energy sparing adaptations that may reduce the maintenance requirements of the mother and allow the energy saved to be used to support fetal growth or lactation.

Susser (1994) stated that, adequate nutrition supports the growth both maternal and fetal tissues. Chronic under nutrition throughout pregnancy affects birth weights of newborns. Poor nutrition causes intrauterine growth retardation. Specific nutrients like zinc, iodine and folate are also required for development of the fetus. Fetal iron deficiency exists in maternal iron deficiency anemia.

Kaur and Sehgal (1989) found that energy was the most deficient nutrient in the diet of lactating mothers. Average intake of foods like pulses, milk and mild products, fats and oils and vegetables especially the green leafy vegetables were far below the recommended levels.

Norton (1994) concluded that, a study in East Java showed that maternal nutrition during pregnancy influenced growth of the offspring beyond the intrauterine period

Penrose (1954) stated that pregnancy is a physiologically demanding process and its outcome is strongly influenced by the nutritional status of the mother, both before pregnancy and her nutrient intake and utilization during gestation. Importance of mothers' nutritional status was stated by Devdas et al, (1978) that the nutritional status of the expectant mothers play a very important role in the outcome of pregnancy and the growth performance of the infant. Hence, efforts at improving the nutritional status of the infant and children must start right from conception.

Viteri (1994) found that the mother is at greater risk of death during the perinatal period. Anemia is the major contributory or sole cause in 20-40 percent of such deaths. It possesses a five-fold increase in overall risk of maternal death related to pregnancy and deliveries, the risk increasing dramatically in severe anemia. There is an inverse relation between hemoglobin status and mortality. Anemia is responsible for inadequate gestational weight gain, preterm delivery and Low Birth Weight (LBW) babies.

2.3 Empirical Literature

1. This study emphasized on the prevalence of anemia and to explore factors associated with anemia in rural Indian pregnant population, in Beed district of Maharashtra state. In this study a total of 200 rural pregnant women, from 20 villages in Beed district were

selected randomly. It was investigated in this study, that prevalence of anemia was significantly higher. The contributing factors found were: literacy, occupation and low standard of living of the study women; their awareness about anemia and its prevention by regular consumption of iron foliate tablets and increase in food intake. Age of marriage, parity and fetal loss also contributed to hemoglobin level. The antenatal services in the first trimester along with availability and consumption of iron foliate tablets over 3 months influenced hemoglobin levels (Khandat, 2014)

2. This study involved 130 pregnant women aged 19-45 years attending antenatal clinics in PMI (Mother and Child Protection) of the town of Tebessa. The study indicated that at least (40%) of pregnant women suffering from many diseases like anemia, diabetes, hypertension and inflammatory diseases 17.70% of women surveyed were taking medication, 33.85% were supplemented, including 1.54% by feeding and 32.31% from drugs, 78.46% were overweight (39.23% are overweight and 39.23% are obese). At least percent (21.54%) of women had a satisfactory weight status. The results of the analysis of biological data showed that 26.67%, 55.45% of pregnant women had hemoglobin and hematocrit, respectively, below the WHO standards. The power of women relied more heavily on plant foods than animal, making their poor food choices because of higher food prices. So resulted that the Dietary advice must be tailored, must be based on weight and body mass before pregnancy and spontaneous food intake of each woman. The power will be varied without exclusion of food groups to cover the needs for vitamins, minerals and fatty acids. (Taleb, 2011)
3. This study highlighted the differences in dietary macro and micronutrient intake in pregnant women on OMT compared to healthy controls. In this study a total of 54 subjects (34 OMT and 20 controls) were included in the nutritional analyses. It was observed that diet alone was not able to meet the requirements of several micronutrients in both the OMT and control group. It also indicated that pregnant women on OMT had low intake of various micronutrients compared to healthy controls which could lead to negative pregnancy outcomes. The results of this study reinforce the requirement of micronutrient supplementation during pregnancy. Future studies should focus on

investigating the effect of these differences in pregnancy outcomes and implement policies to promote healthy diet. (shrestha, 2011; Khandat, 2014)

4. This study showed that mean height, weight and BMI of the subjects was lactating women (0-6 months) 154.03 cm, (6-12 months) 155.18 cm, and (0-6 months) 49.36 kg, (6-12 months) 52.08 kg lactating women and (0-6 months) 20.77 kg/m² , (6-12 months) 21.63kg/m² , respectively than that reported for the State of Rajasthan (48%) (DWCD, 1998). Breastfeeding practices revealed that majority of the mothers initiated breast-feeding on the third day of the delivery. This study also reflects that the observations highlight the need for strengthening health and nutrition programmes in this area. This study also examined that In general at household level, the consumption of all the foods except cereals and millets were below the suggested levels. The intake of protein, calcium, iron, thiamin and niacin were comparable to the recommended allowances, while the intake of other nutrients such as total fat, energy, vitamin A, riboflavin, vitamin C and free folic acid were below the recommended levels. The observations highlight the need for strengthening health and nutrition programmes in this area.(Kavita Bairwa, 2017)
5. This study basically about the Evaluation of Dietary Choices, Preferences, Knowledge and Related Practices among Pregnant Women Living in An Indian Setting, Hundred pregnant women were enrolled in this cross-sectional study. That resulted that Majority of the participants (87%) reported regular antenatal care visits and intake of iron and folic acid tablets. Eighty two percent of the respondents were acquainted with standardized marks on food items and Sixty Four percent of them reported checking of these marks before purchasing. Thirty two percent of the participants did not know about balanced diet. A few of half (58%) of the participants felled in fair category of dietary recall final scores. There is still vast room for improvement of the nutritional status of pregnant women as none of the participants were able to achieve excellent status on 24 hour food record scoring sheet.(Ajantha, 2015)

6. An exploratory cross-sectional study conducted in three urban slums to identify PW and RDW that reflects almost 80% (274 out of 344) women received some form of ANC but the package was inadequate. Poverty, literacy, migration, duration of stay in the locality and high parity, these were the Determinants for non-utilization of ANC. This study also reflects that counseling on nutrition was reported by a fourth of the population. Nutrient intake indicated suboptimal consumption of protein and micronutrients like iron, calcium, vitamin a, vitamin c, thiamine, riboflavin niacin, zinc, vitamin b12 by more than of half of women. A high prevalence of anemia among pregnant women (85%) and RDW (97.1%) was observed. It showed that there was no difference in micronutrient intake and anemia prevalence among women who received ANC versus who did not. Pregnant women living in urban poor settlements have poor nutritional status. (Suparna Ghosh-Jerath, 2015)
7. In this study three-stage sampling technique were using, it was conducted in 28 villages of Jodhpur district. A total of 1193 women, 384 pregnant, 400 lactating and 409 non-pregnant non-lactating controls (15 years and above, women who have not attained their family status) were examined for three micronutrient deficiency disorders, nutritional deficiencies, dietary and associated factors. The resulted is that the Majority of the women were anemic. Anemia was higher among pregnant and lactating women (80.7 %). Severe anemia was three-fold higher among pregnant and lactating women in comparison to controls (4.1 %). Vitamin A deficiency was observed to be higher among pregnant women (8.8 %). A high percentage of women (80.8 %) consumed salt, having inadequate iodine content. Median urinary iodine values were less in pregnant and lactating women than the WHO cut-off points. Consumption of leafy vegetables was high besides pulses and legumes. Average intake of nutrients showed deficiency of protein and energy, iron and folic acid and vitamin A deficiency. Anemia and iodine deficiency disorder were found to be negatively proportional to income and education. This study also reflects that the proportion of anemia in this study was higher in comparison to national-level studies besides the low consumption of normal iodized salt. Only few percent (19 %) of salt samples had adequate iodine content, which calls for caution. In addition to iodization of

salt, the study suggests the development of nutritional packages utilizing local dietary aspects.(Singh MB, 2009)

8. A cross sectional study stated that 37% pregnant woman and 33% lactating women exhibited iodine insufficiency. Salt iodine content needs to be higher in India as the current level of iodine supplementation in India, i.e. 15 parts per million was not adequate to meet the increased demand of lactation and pregnancy. However, when the actual salt iodine content was measured, it was less than 15ppm among majority of the iodine insufficient pregnant women (65%), iodine insufficient lactating women (71%) and iodine inadequate female control (100%). The lower iodine content in salt contributes to the substantial gap between supply and demand that occurs in lactating women and pregnant. It also reflects that there is high prevalence of micronutrient deficiencies amongst the pregnant women in India including iodine, possibly due to the poor dietary intake and low frequency of consumption of food groups rich in micronutrients (pulses, vegetables, fruits, nuts and oil seeds, animal foods). Salt iodine content, unbranded source of salt, method of salt storage and the cooking process are the important factors for iodine insufficiency in pregnant and lactating women of the study population. (Anirban Majumder, 2016)
9. A Cross-Sectional Study conducted in 2012 stated that there was significantly less awareness regarding consumption of TFP directed towards both pregnant women and children among rural when compared to urban population. And also reflects Attitudes seemed to be governed by the traditional beliefs and family influences of region rather than the knowledge obtained. (Anup Nagaraj, 2013)

2.4 Overview of the Literature

Despite using different methodologies and data in studying the impact of dietary practices, knowledge related to micronutrient deficiency disorder, diseases prevalence due to low level of nutrition, nutrient intake, and cultural factors on the status of women, some variables stand out as being important factors affecting nutrition. The variables include: woman's education and knowledge; household social economic status; place of residence and traditional beliefs.

Different studies have been done in Rajasthan state as well as whole in India on the determinants of pregnant and lactating women's nutritional status but in the Baran district, the studies available are very few. There is need for empirical study to measure the impact of the different factors affecting pregnant and lactating women's nutritional status for district policy formulation level. This study attempts to fill this gap by investigating the impact of dietary practices/ frequency, seasonality and availability of food, socioeconomic, demographic and environmental factors on the determinants of women nutrition status in Baran District.

Chapter 3

3. Research Methodology

3.1 Sampling Design

It was a qualitative and quantitative study, carried out in 5 Block of Baran District of Rajasthan in India, adopting multi stage random sampling procedure.

3.2 Selection of Villages

A total of 5 Blocks has been covered based on random sampling in Baran District and from each block 6 villages (Rural/Urban) was selected based on the systematic random sampling procedure.

3.3 Selection of Households

From each selected village, 24 households (HHs) were covered. This study is covered all type of cast i.e. Hindu, Muslim and also Scheduled castes and/or Scheduled tribes. This study covered pregnant, lactating women and non-pregnant and non-lactating women. From each of these categories, four contiguous HHs were covered by randomly selecting the HH from the each village. Thus, a total of 24 HHs were covered in each village and 720 HHs in Baran District.

3.4 Sample Size Estimation

All the available subjects from the selected 720 HHs were covered for conducting a survey. A one-day 24 hour recall method of diet survey was carried out in every alternate HH covered for nutrition assessment in each village.

3.5 Data collection procedures

In each household, separate confidential interview of the women was conducted in a convenient place. About half an hour was taken for the whole procedure of conducting questionnaires. Before introducing questionnaires, the women were informed about the purpose of the study. They were made aware of the fact that they can withdraw from the study at any stage of the study. Oral consent was taken from each study subject.

3.6. Investigations

The investigations were followed out in the selected HHs:

3.6.1. Socio-economic and demographic particulars of households

Socioeconomic and demographic particulars, such as age, sex, occupation, marital status, main economic activity, average monthly family income and expenditures , family size, type of family, literacy level of individuals, type of house, religion of HHs, information of ST/SC and OBC, information about possession of agricultural land, type of wealth, source of drinking water, toilet facility, main source of lighting, mainly used fuels for cooking, etc. from all the selected 24 HHs were collected using pre-tested questionnaires.

3.6.2. Nutrition assessment

In each village, all the available women on the day of survey in 24 selected HHs were covered for the nutrition assessment, as follows:

3.6.2.1 Dietary Intake

Dietary intake pattern was determined by using a tool previously used in India. This tool was modified with consultation with experts to include as much information as possible. The data was collected through the questionnaires that comprised of fourteen groups of food items: (i) cereals (ii) pulses/legumes (iii) nuts and oil seeds (iv) roots and tubers (v) green leaves vegetables (vi) other vegetables (vii) fruits (viii) milk and milk products (ix) meat, fish & poultry (x) oils and Fats (xi) sugars (xii) beverages (xiii) special foods (xiv) spices and condiments.

3.6.2.3 Food & nutrient intakes

A one-day, 24-hour recall method of diet survey was carried out in alternate HHs covered for, to assess the food and nutrient intakes of the Women

3.6.2.4 Food consumption and culture practices during pregnancy and lactation

It has estimated that what are the foods items taken and avoided by the women during their pregnancy and lactation period in which process what are the cultural practices affects their nutrition intake.

3.7 Data Analysis

Descriptive and analytical statistics of the data were carried out using SPSS Windows version 20.0 and Excel. Appropriate statistical tools were used wherever needed.

3.8 Ethical Issues

Oral informed consent was obtained from the head of the selected HH before collecting household information.

Chapter 4

4. Socio- economic & Demographic profile

4.1 District Profile

The district of Baran was created out of the district of Kota in 1991. The district is situated in Rajasthan state in north western India. The headquarters of the district is Baran town. Situated in the south-east part of the state, it is adjacent to the Guna, Sheopur and Shivpuri districts of Madhya Pradesh which borders the district. The district is divided into six subdivisions namely Chhabra, Shahabad, Mangrol, Atru, Baran and Kishanganj. The Anta, Mangrol, Baran and Chhabra are four municipalities. The district has eight tehsils namely Anta, Atru, Chhabra, Shahabad, Mangrol, Baran, Chhipabarod and Kishanganj. Based on the physical attributes and socio-economic conditions prevailing in the regions, district Baran fall under the Humid south eastern Plain agro-climatic zone

According to the 2011 census the Baran district had a population of 1,222,755. It roughly equals to the nation of Trinidad and Tobago or the US state of New Hampshire. This gives it a ranking of 389th in India (out of a total of 640). The district has a population density of 175 inhabitants per square kilometre (450/sq mi). Its population growth rate over the decade 2001-2011 was 19.8%. Baran has a sex ratio of 926 females for every 1000 males, and a literacy rate of 67.38%.

Map of Baran District

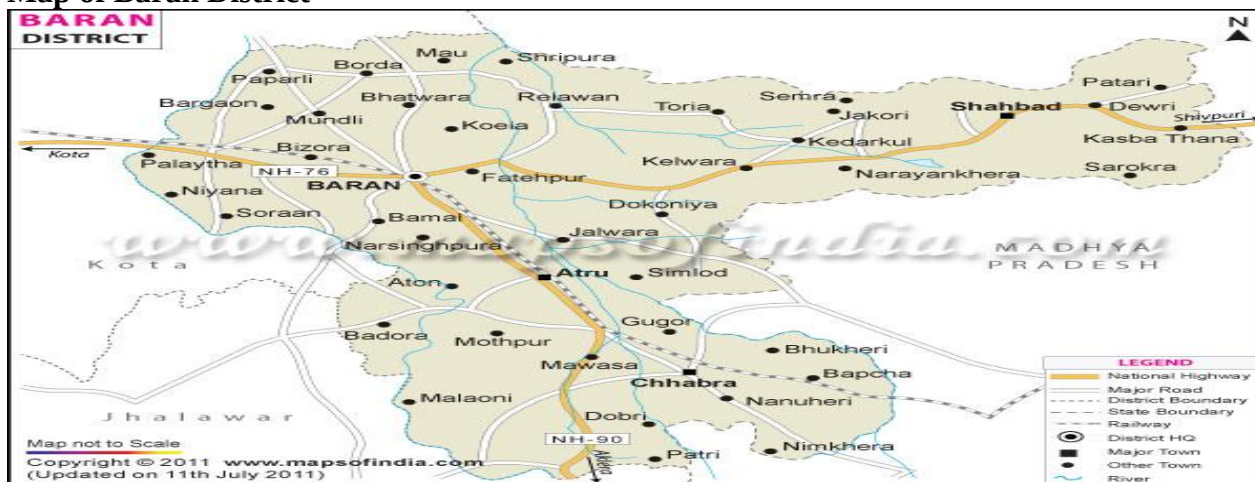


Table 2 Baran District Profile

Description	2011 Census
Actual Population	12,22,755
Population Growth	19.71
Sex Ratio (per 1000)	929
Average literacy	66.66
Female Literacy	51.96
% of Scheduled Castes	18.09
% of Scheduled Tribes	22.64

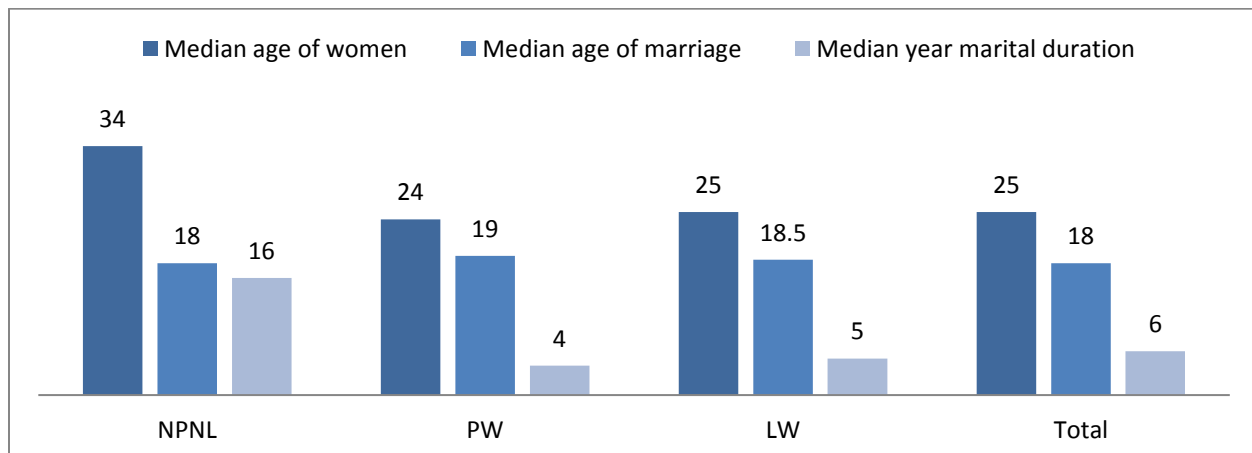
4.2 Respondent Socio Economic Background profile

Socio economic and demographic characteristics were collected for the current study. The demographic and socio-economic particulars of the respondent household (HHs) covered for the survey is provided in Table no 3.

4.2.1. Respondent Profile:

The current study collected information about the respondent age, age of marriage and also about marital year duration. Figure 1 reflects the age criteria in which the median age followed by NPNL, pregnant and lactating women is as follow 34, 24 and 25. It also stated that the median age of marriage in NPNL, pregnant and lactating women is as follow 18, 19 and 18.5. Figure 1 also highlighted the median year marital duration that is in NPNL, pregnant and lactating women as follow 16, 04 and 05 years.

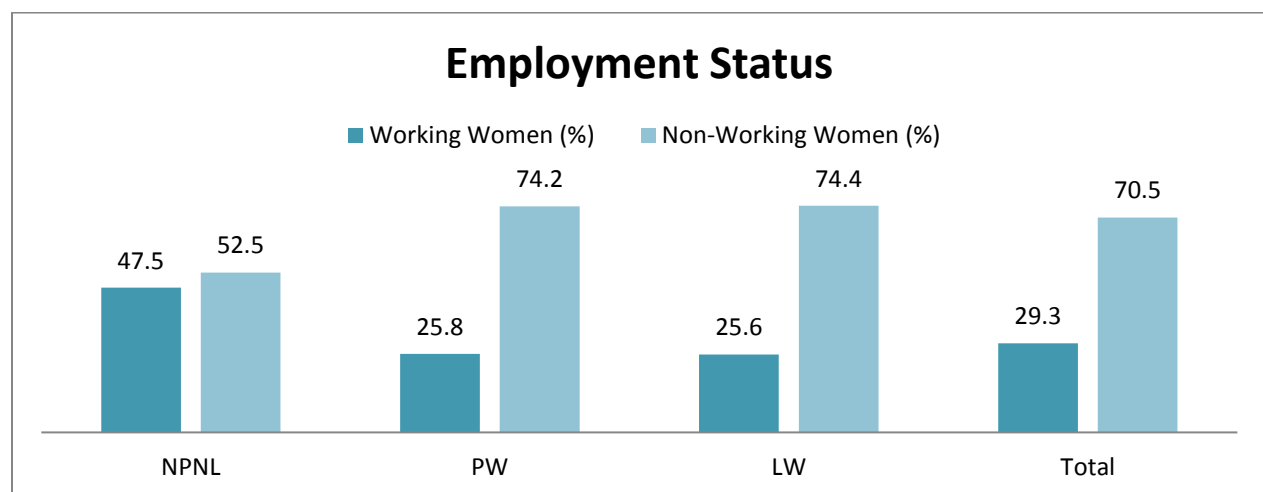
Figure 1Percentage Distribution of Respondent Status of Age, Marriage



4.2.2. Employment Status:

This study also collected information regarding respondent employment status. Employment status characteristics also play a role in influence the nutrition status of individual. Figure 2 analyses pertaining those a high proportion of pregnant women (74.2%), also lactating women (74.4%) and 52.5% NPNL women were non-working. 25.6% pregnant, 25.8% lactating women and 47.5% NPNL women were have employment. Further analysis also stated that majority percentage of non-working women is belonged to pregnant and lactating women and highest working women belonged to NPNL women category.

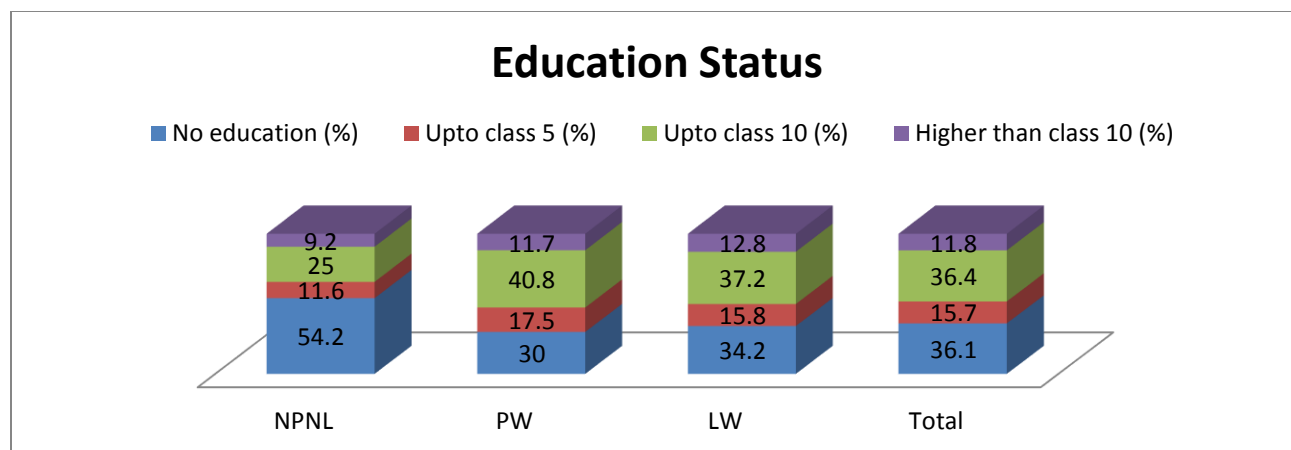
Figure 2Percentage Distribution of Occupational Status



4.2.3 Educational Status:

Education also plays a role in nutrition status of women. Education is one of the most important socio-economic factors that are known to significantly influence women behavior and attitude into nutrition intake. The analysis pertaining to the educational attainment of the respondents showed that 54.2% NPNL women, 30% pregnant women and 34.2% lactating women followed non-education attainment. Analysis also stated that percentage of women those attended the education higher than class 10 were lowest. Majority of pregnant (40.8) and lactating women (37.2) having education upto class 10 and in NPNL category majority of women followed non-education criteria.

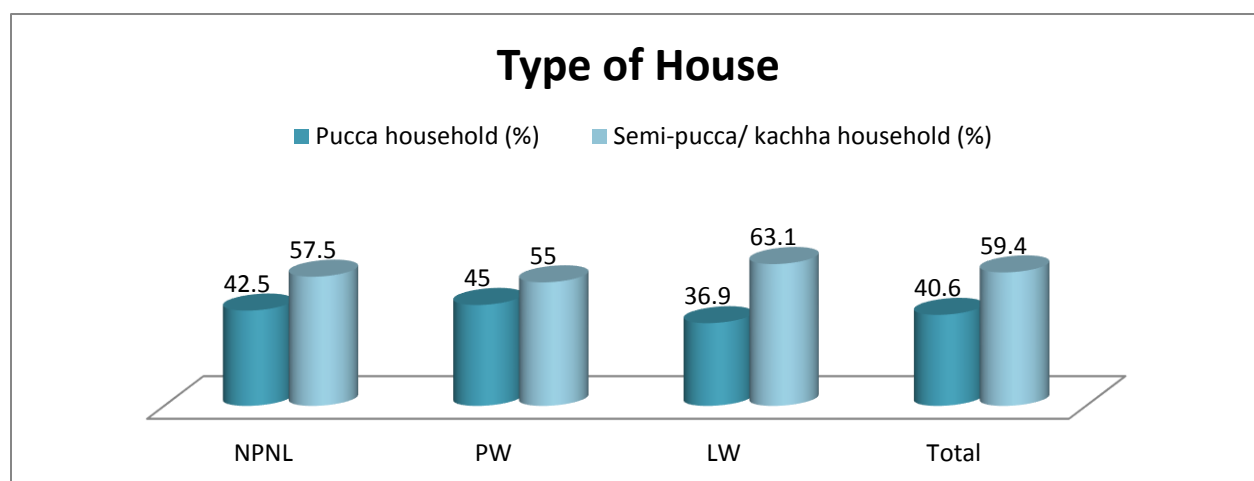
Figure 3 Percentage Distribution of Educational Attainment



4.2.4 Type of House

The type of house was considered as an index of economic status of the household. Figure 4 stated that about 57.5% of the NPNL women families were living in semi –pucca/ kachha houses, and the rest (42.5%) in Pucca houses. Similarly about 55% of PW families and 63% of LW families were living in semi pucca/ kachha house, and the rest in Pucca house. The proportion of HHs living in pucca houses was highest in pregnant women (45%), followed by Lactating women (36.9%) and NPNL women (42.5%).

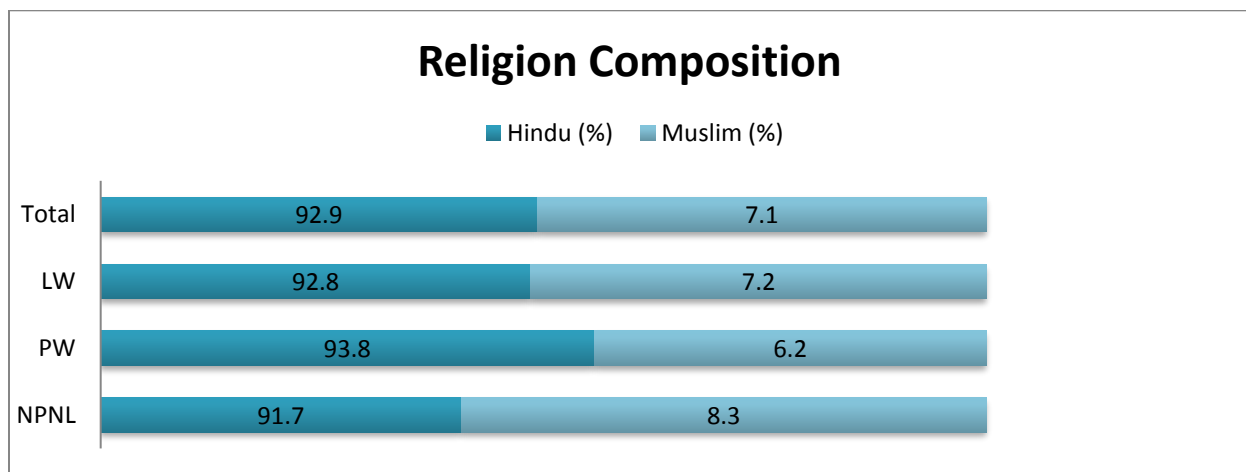
Figure 4Percentage Distribution of Type of House



4.2.5 Religion Composition

Figure 5 presented the percentage distribution of religion composition among different category of women. Majority of the women in all three category belonged to Hindu religion (92.9%), followed by Muslims (7.1%). With regard to religious the study suggests that among the interviewed different category of women a majority (93.8 %) were Hindus in pregnant women as compared to other category. Muslim women were found more that in NPNL women.

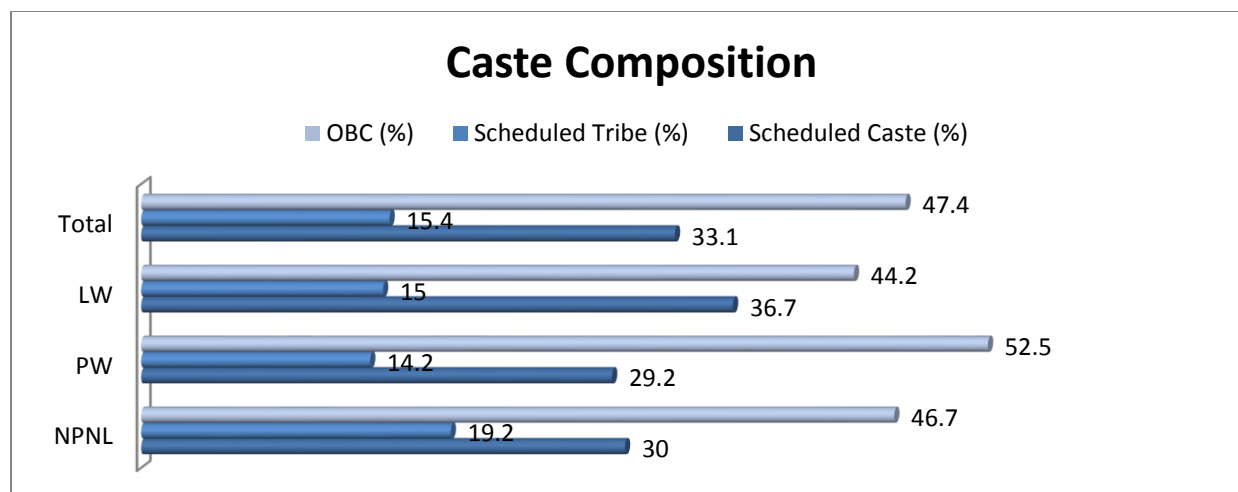
Figure 5Percentage Distribution of Religion Composition



4.2.6 Community Composition

The information on community composition is pertaining in figure 6 describe the percentage distribution of community composition among different category of women. In general, pregnant women more than half of the population (52.5%) of the pregnant women belonged to OBC community and similarly more than half of the lactating women belonged to OBC (52.5) as well as NPNL women (46.7%).analysis stated that compared to pregnant and lactating women, scheduled tribe proportion were higher in NPNL women.

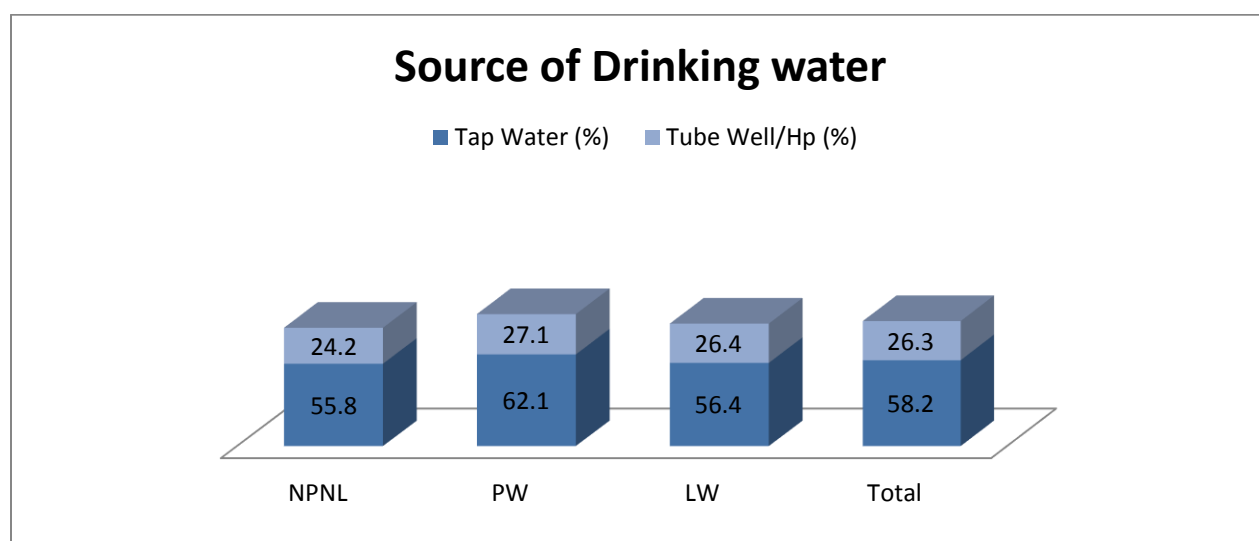
Figure 6Percentage Distribution of caste Composition



4.2.7 Drinking Water Facility

Figure 7 presents the percent distribution of different category of women by source of drinking water. Figure 7 shows more than half of the pregnant and lactating women are using tap water as a source of drinking water and least percentage of women also using tube well/HP as a source of drinking water.

Figure 7Percentage Distribution of Drinking water Facility



4.2.8 Toilet Facility

The information on usage of toilet facility was collected through question—kind of toilet facility used by the household. This helped in eliciting response set on the basis of which households have been categorized into those using own flush/pit toilet and shared facility.

Figure 8Percentage Distribution of Toilet Facility

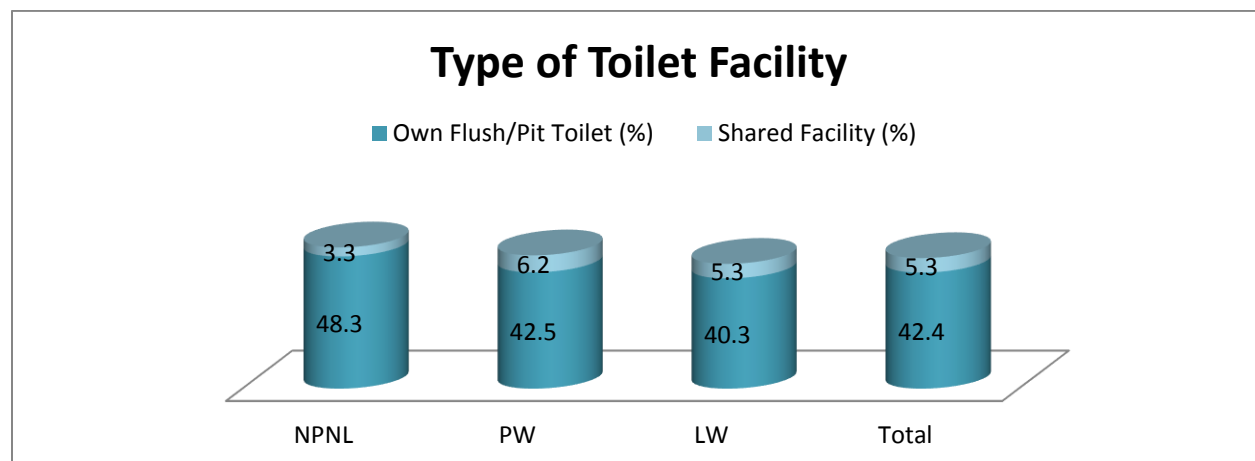
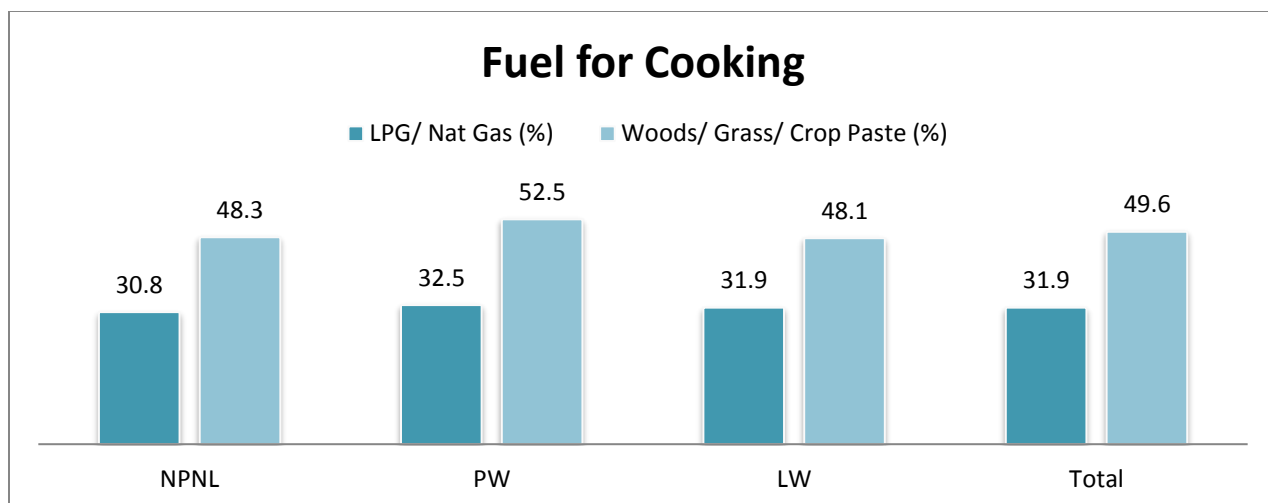


Figure 8 shows the percent distribution of type of toilet/latrine facilities among different category of women. A little less than half (48.3%) of non-pregnant and non-lactating (NPNL) reported having an own flush/pit toilet facility. NPNL women households are more than as likely to use an own flush/pit toilet facility as compared to PW and LW households. Flush/pour flush to – septic tank was the most widely used type of toilet across rural and urban households. Close to 6 percent of pregnant women and close to 5 percent lactating women households have shared toilet facility being more than in comparison to NPNL women households.

4.2.9 Fuel for Cooking

The below figure 9 pertaining the type of fuel for cooking is using among household of different category of women. About 52.5% of pregnant women HHs in general using firewood as cooking fuel and LPG (32.5%) and in lactating women families, 48.1 % LW using woods as cooking fuel and in NPNL women families using wood as cooking fuel is (48.3%). The proportion of LPG users was highest among pregnant women household, one-third (32.5%) and Lactating women (31.9%) and lowest among NPNL women (30.8%) as compare to other category.

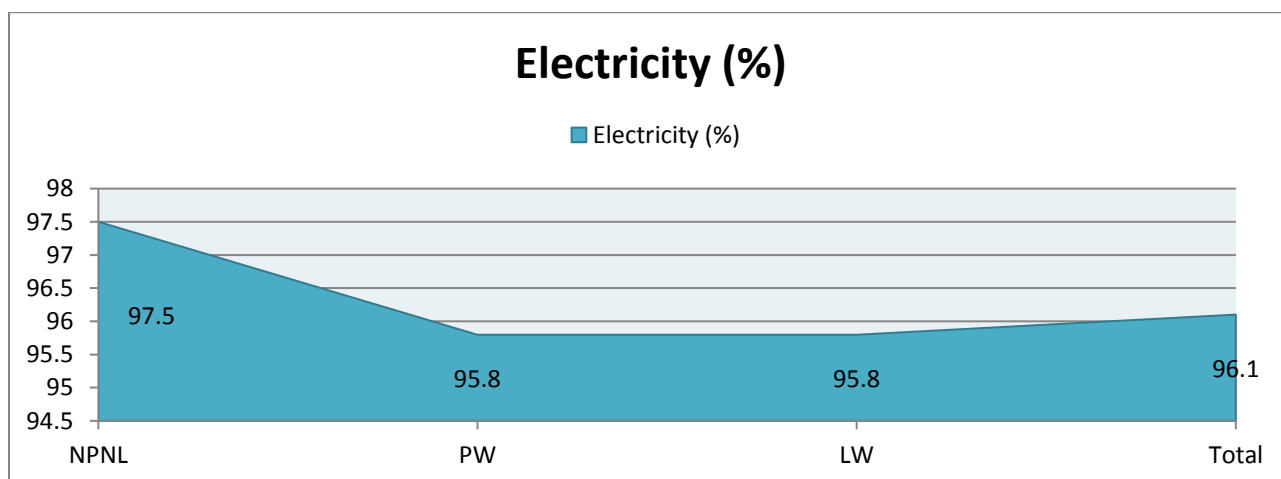
Figure 9Percentage Distribution of Fuel for Cooking



4.2.10 Electricity Facility

Figure 10 presented the variation of electricity using by different category of women. a majority of the (97%) NPNL women HHs and (95%) pregnant and lactating women households had electricity and rest had no electricity facility.

Figure 10Percentage Distribution of Electricity

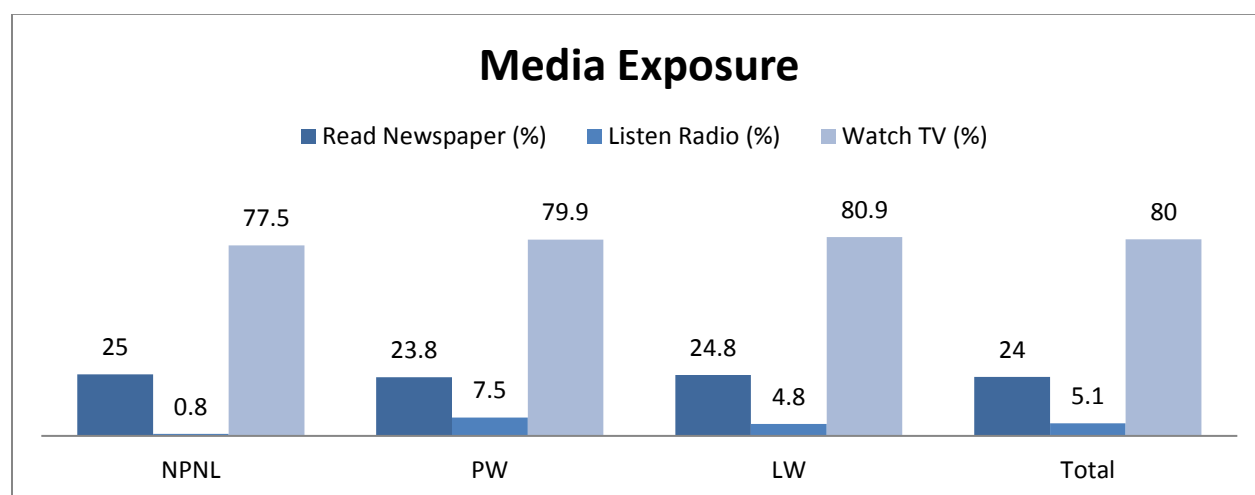


4.2.11 Media Exposure

Media Exposure is also play a great role to influence women. Media create awareness about the government program related to nutrition. The current study presented the media exposure information through asking questions about read newspaper listen radio and watched TV. Figure

11 stated more than half of proportion of pregnant; lactating and NPNL women watching TV and a very least proportion of pregnant, lactating and NPNL women listen radio. Further analysis also stated that more than of a little bit proportion of lactating women, pregnant and NPNL women read newspaper.

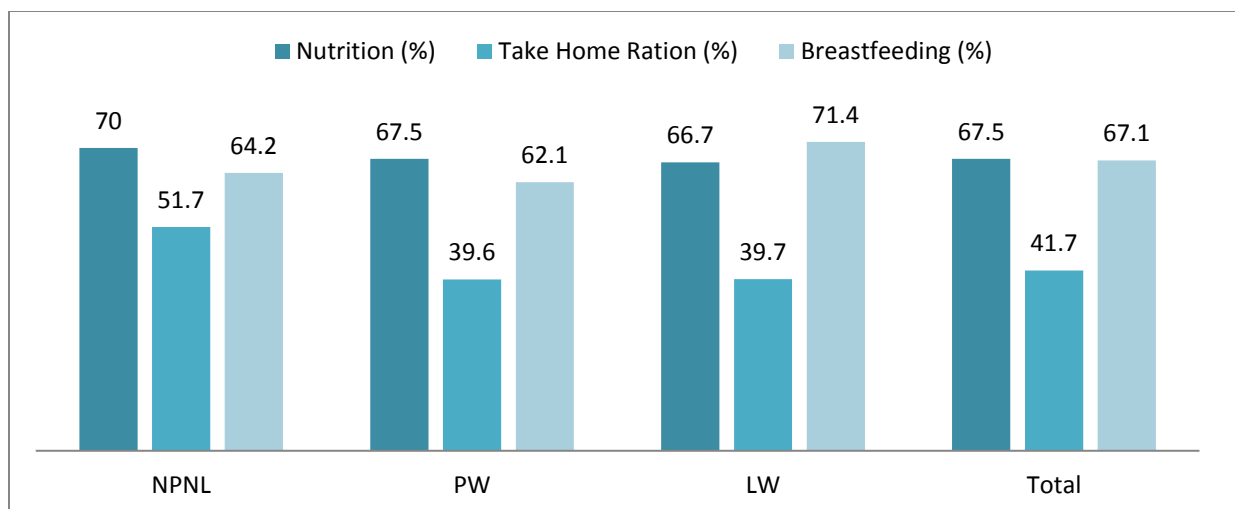
Figure 11Percentage Distribution of Media Exposure



4.2.12 Awareness Related to Nutrition, Take Home Ration and Breastfeeding

Awareness related to nutrition, take home ration and breastfeeding give information us to about their knowledge regarding to nutrition, take home ration and breastfeeding. Figure 12 presented those more than half of (70%) NPNL women aware on nutrition and in pregnant women and lactating women it is around 66% were aware. Awareness on take home ration 51.7% highest were followed by NPNL women and in Pregnant and lactating it is similar around 39%. And awareness about breastfeeding is around 65% in all category of women.

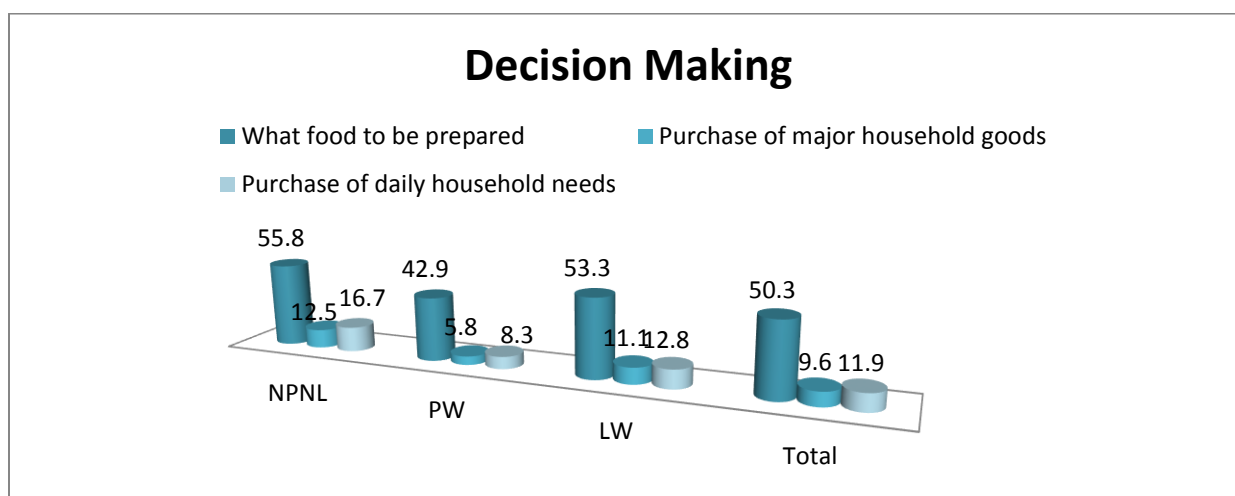
Figure 12Percentage Distribution of Awareness



4.2.13 Decision Making

Decision making is also play a major role in socio economic charaterstatics. In current study decision making information collected through asking about their decision about food to be prepared, purchase of major household goods and purchase of daily household needs. It reflects that how much they have decision making in their household. Figure 13 showed that, around two fourth (50%) of pregnant, lactating and NPNL women having their own Decision making in what food to be prepared, a vary least proporation of pregnant, Lactating and NPNL women having decision making on two dimention i.e. purchase of major household goods and purchase of daily HHs needs.

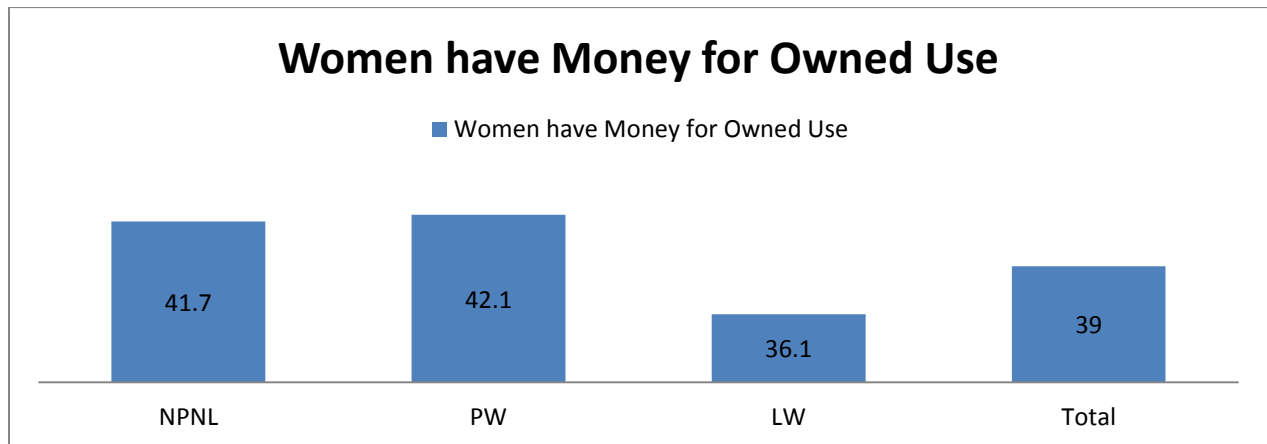
Figure 13Percentage Distribution of Decision Making



4.2.14 women have Money for Owned Use

Figure 14 highlighted on percentage of women have money for their owned use. So the current study analysis showed that 41.7% NPNL woman, 42.1% pregnant women and 36.1% lactating women having money for their owned use. Further analysis stated that percentages of lactating women are lowest in having money for their owned use.

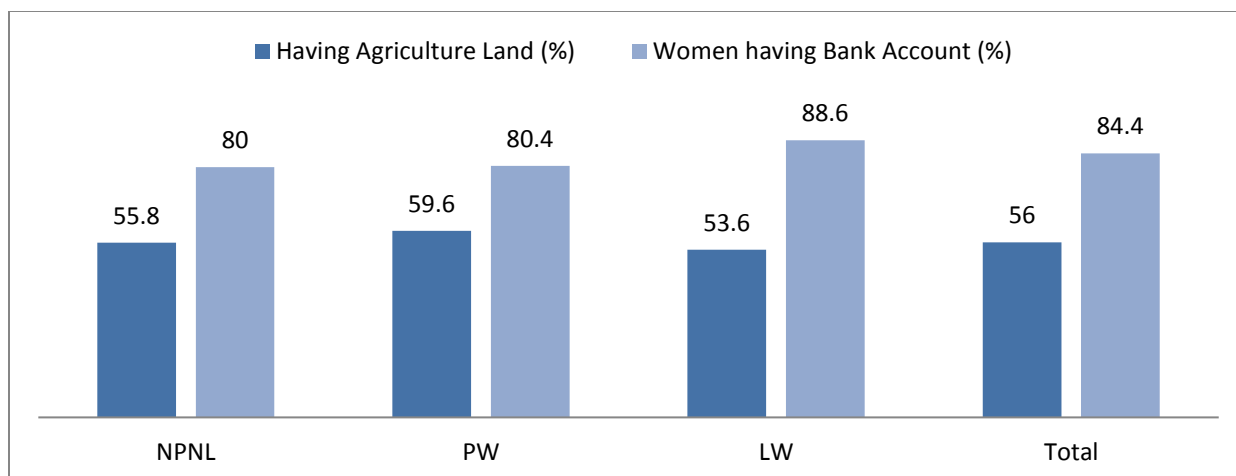
Figure 14Percentage Distribution of women has money for owned use



4.2.15 Agriculture land and Bank A/c

It is play a role in defining socio economic status of individual. Figure 15 highlighted on the percentage distribution of agriculture land and bank a/c by three categories of women. Around 88 percent lactating women having their own bank account and also 53.6 % lactating women having agriculture land. Followed by high proportion of (80%) pregnant, lactating and NPNL women having their own bank a/c and more than half of the population having agriculture land.

Figure 15 Percentage Distribution of Agriculture land and Bank A/c



4.2.16 Allowed to go to the Market, Health, outside Village

Figure 16 stated that in 99.1 % NPNL women are allowed to go market, health facility and also outside village. Analysis also stated that a majority proportion of (99.1%) NPNL women are allowed to go to the Market, health facility and also outside village. Study also clearly stated that a majority proportion of pregnant and lactating women are also allowed to go the following places i.e. market, health and outside village.

Figure 16Percentage Distribution of Allow to go

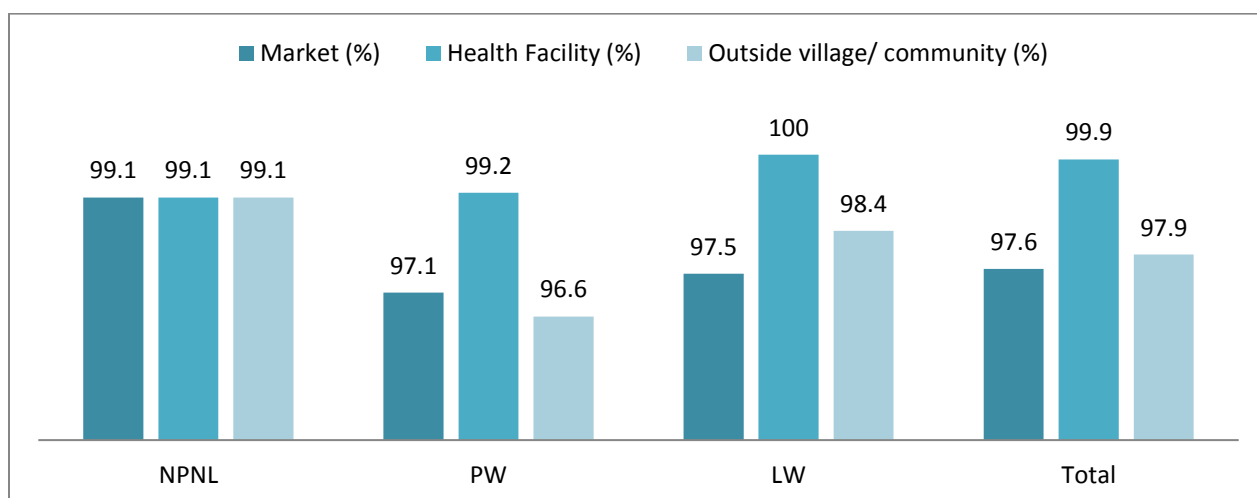


Table3.Socio Economic and Demographic Profile of Respondent

Respondent	NPNL Women (120)	Pregnant Women (240)	Lactating Women (360)	Total (720)
1.Respondent Profile				
Median age of women	34.0	24.0	25.0	25.0
Median age of marriage	18.0	19.0	18.5	18.0
Median year marital duration	16.00	4.0	5.0	6.0
2.Main Economic Activity				
Working Women (%)	47.5	25.8	25.6	29.3
Non-Working Women (%)	52.5	74.2	74.4	70.5
3.Education Status				
No education (%)	54.2	30.0	34.2	36.1
Upto class 5 (%)	11.6	17.5	15.8	15.7
Upto class 10 (%)	25.0	40.8	37.2	36.4
Higher than class 10 (%)	9.2	11.7	12.8	11.8
4.Type of House				
Pucca household (%)	42.5	45.0	36.9	40.6
Semi-pucca/ kachha household (%)	57.5	55.0	63.1	59.4
5.Religion Composition				
Hindu (%)	91.7	93.8	92.8	92.9
Muslim (%)	8.3	6.2	7.2	7.1
6.Caste Composition				
Scheduled Caste (%)	30.0	29.2	36.7	33.1
Scheduled Tribe (%)	19.2	14.2	15.0	15.4
OBC (%)	46.7	52.5	44.2	47.4
7.Type of FACILITY				
A. Drinking Water				
Tap Water (%)	55.8	62.1	56.4	58.2
Tube Well/Hp (%)	24.2	27.1	26.4	26.3
B. Toilet Facility				
Own Flush/Pit Toilet (%)	48.3	42.5	40.3	42.4
Shared Facility (%)	3.3	6.2	5.3	5.3
C. Fuel for Cooking				
LPG/ Nat Gas (%)	30.8	32.5	31.9	31.9
Woods/ Grass/ Crop Paste (%)	48.3	52.5	48.1	49.6
D. Main Source of Light				
Electricity (%)	97.5	95.8	95.8	96.1
8.Budget				
Median Monthly Income	5000	5000	5000	5000
Median Monthly Expenditures	5000	5000	5000	5000
9.Media				

Table 3 continued				
Read Newspaper (%)	25	23.8	24.8	24
Listen Radio (%)	0.8	7.5	4.8	5.1
Watch TV (%)	77.5	79.9	80.9	80
10.Awareness Related To				
Nutrition (%)	70	67.5	66.7	67.5
Take Home Ration (%)	51.7	39.6	39.7	41.7
Breastfeeding (%)	64.2	62.1	71.4	67.1
11. Decision About (%)				
What food to be prepared	55.8	42.9	53.3	50.3
Purchase of major household goods	12.5	5.8	11.1	9.6
Purchase of daily household needs	16.7	8.3	12.8	11.9
Visit to relatives or others	10.8	5.4	6.1	6.7
Attending marriage ceremony	9.2	3.8	4.2	4.9
Work outside the home	12.5	6.2	9.2	8.8
Healthcare	10.0	11.7	16.7	13.9
Schooling of Children	7.5	7.9	11.4	9.6
Treatment seeking for children	10	5.4	12.2	9.6
Women have Money for Owned Use	41.7	42.1	36.1	39.0
Characteristics				
12.Allowed to go to Following Places				
Market (%)	99.1	97.1	97.5	97.6
Health Facility (%)	99.1	99.2	100	99.9
Outside village/ community (%)	99.1	96.6	98.4	97.9
13.Women visit their Parent House				
Often (%)	22.5	24.2	28.1	25.8
Belong to any group (%)	20.0	19.6	18.3	19.0
14.Wealth Indicators				
Table (%)	32.5	31.7	34.2	33.1
Mattress(%)	93.3	92.1	92.2	92.4
Cot/Bed (%)	92.5	92.9	90.0	91.4
Watch Clock (%)	71.7	79.2	72.2	74.4
Electric Fan (%)	83.3	84.6	83.9	84.0
Radio Transistor (%)	0.8	7.1	4.2	4.6
Black & white TV (%)	7.5	5.0	8.6	7.2
Colour TV (%)	65.0	66.7	64.4	65.3
VCR/ CD player (%)	10.0	13.3	10.0	11.1
Sewing Machine (%)	39.2	43.3	48.1	45.0
Refrigerator (%)	17.5	27.1	23.9	23.9
Computer (%)	8.3	6.7	5.3	6.2
Bicycle (%)	38.3	32.9	26.9	30.8
Motorcycle/ Scooter (%)	45.0	47.1	51.4	48.9
Car (%)	6.7	7.9	5.8	6.7

Table 3 Continued				
Animal- drawn (%)	4.2	7.9	5.8	6.7
Water Pump (%)	24.2	22.9	22.2	22.8
Thresher (%)	2.5	6.7	5.0	5.1
Tractor (%)	5.8	10.0	6.9	7.8
Landline/ Mobile Phone (%)	85.8	84.6	83.6	84.3
15. Having Agriculture Land (%)	55.8	59.6	53.6	56.0
16. Women having Bank Account (%)	80.0	80.4	88.6	84.4

Table No. 3 indicates socio economic and Demographic characteristics of the pregnant, lactating and NPNL women. These socio economic and demographic characteristics were involved respondent profile, educational attainment, employment status, type of house, type of facility, decision making of the respondent and also having assets in the respondent house. Table no 3 also shows the awareness on Nutrition, Breastfeeding and take home ration characteristics and also describe the media exposure among women.

Chapter 5

5. Dietary Diversity Practices and Food Intake/ Consumption

Dietary diversity is a qualitative measure of food consumption that reflects access to a variety of foods by household, and is also a proxy for nutrient adequacy of the diet of individuals. The dietary diversity questionnaire represents a rapid, user-friendly and easily administered low-cost assessment tool. The dietary diversity scores described in these guidelines consist of a simple count of food groups that a household or an individual has consumed over the preceding 24 hours. Studies have shown that an increase in dietary diversity is associated with socio-economic status and household food security (household energy availability) (Hoddinot and Yohannes, 2002; Hatloy et al., 2000).

This study provides information on the nutritional status and dietary intake of pregnant women and lactating women in Baran District of Rajasthan, in India. Dietary intake was assessed using a previously validated 24 hour recall and qualitative food frequency questionnaire (FFQ). FAO uses a reference period of the previous 24 hours. Using 24-hour recall period does not provide an adequate indication of an individual's habitual diet, but it does provide an assessment of the diet at the population level and can be useful to monitor progress or target interventions (Savy et al., 2005).

For the 24 hour recall, the subjects were asked to recall all foods and beverages consumed during the past 24 hours. The use of common household utensils and models of portion sizes were used to aid the women estimate the amount of food they consumed and these were converted to grams using household measures. For commercially prepared foods such as biscuits, an equivalent was bought and weighed to minimize the amount of weighing the women had to do. In the case of packaged foods, information was obtained from the nutrition facts on the package.

1. Dietary Intake

Nutrient intakes of various nutrients (CU/day) are presented in Table 5. Intake of some of the selected micronutrients was below recommendation. Insufficient Micronutrient intake was evident in the pregnant and lactating women and non-pregnant and non-lactating women.

Energy

The intake of energy was highest in p1 category 1482Kcal compare to other category of women in Baran District. The proportion of energy intake among pregnant and lactating women is more than to energy intake by non-pregnant and non-lactating women. And the analysis also stated that among pregnant and lactating women, L1 category having lowest energy intake 1366. Further analysis also highlighted that energy intake by Baran District women is lowest compare to ICMR guidelines of energy Intake. And this gap is highest in L1 category 1359kcl and lowest in L3 category 860kcl. On these low calorie diets, not only will you be limiting the amount of calories your body receives that it needs to function at a normal level. (Table No 4)

Protein

The intake of protein was highest in p1 category and L1 category 43g/CU/day. Further analysis also highlighted that protein intake by Baran District women is lowest compare to ICMR guidelines of protein Intake. And this gap is highest in L1 category 33g/cu/day and lowest in L3 category and 7g/cu/day. (Table No 4)

Fats

The intake of Fats was grossly deficient as compared to ICMR guidelines of Fats for all categories of women. And this deficient was highest in L1 & L2 category (45mg) and lowest in L3 & N1 category 20mg. (Table No 4)

Calcium

The intake of Calcium was highest in p1 category 298mg. Further analysis also highlighted that calcium intake by Baran District women is lowest compare to ICMR guidelines of calcium Intake. And this gap is highest in L1 category 749mg and lowest in L3 category 120mg. (Table No 4)

Iron

The intake of iron was highest in p1 category 14mg. Further analysis also highlighted that Iron intake by Baran District women is lowest compare to ICMR guidelines of Iron Intake. And this gap is highest in P2 category 25mg. (Table No 4)

Zinc

The intake of Zinc was highest in p1 category 4.5mg. Further analysis also highlighted that Zinc intake by Baran District women is lowest compare to ICMR guidelines of Zinc Intake. And this gap is highest in L1 category 8.5mg and lowest in P1 category 2.9mg. (Table No 4)

Vitamin A

The intake of vitamin A was grossly deficient as compared to ICMR guidelines of Vitamin A for all categories of women. And this deficient was highest in L1 category 721mg and lowest in P1 category 363mg. The intake of Vitamin A was highest in L2 category 247mg. (Table No 4)

Vitamin C

The intake of vitamin C was 17-20mg and was less than ICMR guidelines of 42mg/CU/ day. The intake was lower than ICMR guidelines in all the category of women in Baran District. analysis also stated that lowest intake of Vitamin C was found in P1 category (17mg).(Table No 4)

2. Food Consumption

The Category-wise average consumption of foodstuffs (g/CU/day) is presented in Table 5. Cereals and millets formed the bulk of the diets of the category of women. Data on food consumption showed that the women consumed a variety of foods from cereals, pulses and their products, nuts and oil seeds, roots/tubers, green leafy vegetables, other vegetables and milk & milk products. In the all category of women, the consumption of milk & its products and roots and tubers was comparatively high.

Cereals & millets

The average intake of cereals and millets was 257.8g/CU/day, which ranged from a minimum 0.0g and a maximum 1108g. The median consumption of millets was observed to be high in the P1 category of women (260g) and L2 Category of women (260g) while its consumption was lower than in other category of women.

Egg

The average consumption of egg was negligible in all categories of women in Baran District.

Fruits

The average consumption of Fruits was negligible in all categories of women in Baran District.

Green leafy vegetables

The average consumption of green leafy vegetables (GLV) was 0.0g/CU/day. The ranged consumption was 462g. The analyses also clear that none of consumption in no one category.

Meat & Fish

The average consumption of Fruits was none in all categories of women in Baran District.

Milk & milk products

The average consumption of milk & milk products was 102ml/CU/day. The highest consumption of Milk was among P1 category and L2 Category.

Fats & oils

The average consumption of visible fats & oils was 20g. This ranged from a minimum consumption was 0.0g and a maximum consumption was 148g. The highest consumption of fats oil was in L2 category.

Other vegetables

The average consumption of other vegetables was 67.5g per CU/day. It ranged of low 0.0g and to a high 544.4g. The consumption of was maximum in L2 category (85g) and lowest in N1 category (49g).

Pulses & legumes

The average consumption of pulses & legumes was about 13.1g/CU/day, which is ranged from a minimum consumption 0.0 and a maximum consumption 362.0. The consumption of pulses was observed to be none in L2 category. The consumption was lowest in the L2 category (9.5g). The proportion of consuming pulses & legumes was highest ranged in P1 category (362g).

Roots & tubers

The average intake of roots & tubers (85.5g) in all category of women. The intake was higher in toL2 category (100g), followed by L3 (95.5g), L1 (93.3), and N1 (89g). The intakes were lower in the P1 (63g) and P2 (70g).

Sugar & jaggery

The average consumption of sugar and jaggery was 20g/CU/day. This was ranged from a minimum consumption was 0.0g and a maximum consumption was 180g. it was found that P1,P2,L1,L2,L3 categories have more than consumption compare to N1 category.

Table No.4 Comparison of Actual Nutrient in take with ICMR standard

Primary Data	Energy	Protein	Fats	Calcium	Iron	Zinc	Vit-A	Vit-C
L1	1366	40	12	251	13	4.2	229	19
L2	1454	43	14	274	13	4.4	247	18
L3	1377	40	13	280	13	4.3	230	20
P1	1482	43	14	298	14	4.5	238	17
P2	1364	42	12	264	13	4.3	212	20
N1	1366	41	13	278	13	4.1	233	18
			ICMR Guideline					
L1	2725	75	45	1000	30	12.7	950	42
L2	2625	68	45	1000	30	12.7	950	42
L3	2225	50	20	400	30	7.3	600	42
P1	2525	65	30	1000	38	7.3	600	42
P2	2525	65	30	1000	38	7.3	600	42
N1	2225	50	20	400	30	7.3	600	42
				Gap				
L1	-1359	-35	-33	-749	-17	-8.5	-721	-23
L2	-1171	-25	-31	-726	-17	-8.4	-703	-24
L3	-848	-10	-7	-120	-17	-3.0	-370	-22
P1	-1043	-23	-16	-702	-24	-2.9	-363	-25
P2	-1161	-23	-18	-736	-25	-3.1	-388	-22
N1	-860	-9	-7	-122	-17	-3.2	-367	-24

[illegible]

Chapter 6

6. Culture Practices

Nutrition plays an essential role with regard to maternal and child health. However, this aspect is inevitably interlinked to perceived notions and beliefs with regard to food to be consumed by pregnant and lactating women. Studies have also shown existence of cultural practices and beliefs. Such as, denying pregnant and lactating women of known nutritious food items owing to their traditional food habits.

In India most food practices and traditions have stemmed from deeply rooted traditions and customs. These food practices can be caused to malnutrition, which in turn is related to poverty, unhygienic practices, food insecurity and traditional beliefs. Beliefs are crucial in the acceptance, rejection and promotion of certain food items. These beliefs are the products of social interactions and faith which are entrenched in the minds of the community. Many of these food practices arise from the ignorance about the nutritive value of food. Most often certain cultural beliefs and practices concerning food items are due to ignorance.

Most of these food practices were age old beliefs that were handed over generation after generation, most women were forced to adhere to them for the fear of being disrespectful and defiant

6.1 During Pregnancy Period:

Pregnancy First Informed To:

The results highlighted that two third of pregnant women first reported to their Mother in law about their pregnancy and rest were reported to their Husband and other Family Members.

Pregnancy Celebration:

Every culture marks significant events in one's life, with many cultures celebrating pregnancy. Mark the occasion and celebrate your pregnancy with traditions and rituals observed around the world. In current study percentage of pregnancy Celebration was lowest, in which majority percentage of women for pregnancy celebration was higher in Pregnant Women (5-10 Months).

Many Aanganwadi center celebrate the pregnancy of women. In the current study, analysis stated that 6.7 % of women have 0-5 month's pregnancy and 13.3% of women have 5-10 months pregnancy celebrated their pregnancy at Aanganwadi center.

Food Items Received From Aanganwadi Center:

The Integrated Child Development Services (ICDS) Scheme of the Ministry of Women and Child Development is a Centrally Sponsored Scheme in which Central Government is responsible for Policy and Programme. For the implementation of the Scheme including procurement, supply and management of supplementary nutrition at the Anganwadi Centres (AWCs), Planning and States/ UTs are responsible. States/ UTs are required to provide supplementary nutrition to children (6 months to 6 years) and pregnant women & lactating mothers for 300 days in a year as per the schematic nutritional norms of the scheme.

The current study analysis pertaining that 55.8 percent of women have 0-5 month's pregnancy and 71.7 percent of women have 6-10 months pregnancy those received food items from Aanganwadi center. Major food items received from Aanganwadi Center is that Daliya, Coconut and Others (Khichari, Soyabeen, Sattu and Wheat flore etc.). In which, two third of pregnant women have 0-5 months pregnancy and around two fourth of pregnant women have 6-10 months pregnancy received daliya from Aanganwadi Center. Percentage of women Received coconut from Aanganwadi Center was lowest Compare to Daliya. 26.9% of pregnant women (0-5 Months) and 10.5% of pregnant women (6-10 months) received other food items from Aanganwadi Center. So analysis clear that percentage of pregnant women, who received food items (except Daliya and coconut) from aanganwadi center was negligible percent. (Table No.6)

Table6. Pregnancy Information

CHARATERSTICS	Pregnant women (240)	
	0-5 Months	6-10 Months
Pregnancy first informed to		
Mother in Law	65	54.2
Husband	21.7	26.7
Others	13.2	19.1
Pregnancy celebration	13.3	30
Pregnancy celebration at aanganwadi center	6.7	13.3

Women Received food items from aaganwadi center	55.8	71.7
Items received		
Daliya	61.2	48.8
Coconut	25.4	44.2
Others (khichari, soyabean, sattu, wheat flore etc.)	26.9	10.5

Major Food Taken During Pregnancy:

The current study also collected the data on culture of major food items taken by the pregnant women during pregnancy. Table No. 7 highlighted on the major food taken by the pregnant women of Baran District. The major food items these are taken during pregnancy, given below table 7 i.e. Khichari, Boiled Milk, Goat Milk, Green Gram and Kangani Halwa. The pregnant women mostly involved Calcium, energy and vitamin B-12 Micronutrients in their diet intake. In which, percentage of pregnant women, taken Khichari and Boiled milk were highest. Table 7 also stated that percentage of women, taken goat milk were lowest.

Table7. Major Food Taken During Pregnancy

Major food taken during pregnancy	Pregnant women(240)	
	0-5 Months	6-10 Months
Khichari	50	57.5
Boiled Milk	45.8	45.8
Goat Milk	13.5	15.8
Green Gram	29.2	26.3
Kangani Halwa	36.1	35.8

Major Food Avoided During Pregnancy:

The study measured the food items that avoided by pregnant women due to some Cultural Beliefs/ practices like some food items have cause of abortion, harmful for mother health etc. Table No. 8 clearly stated that the major food avoided by the pregnant women of Baran District. The major food items these are avoided during pregnancy, given below table 8 i.e. Raw Papaya, Sour Foods, Maize and Rice. In which, around Two third of pregnant women were Avoided Raw Papaya. And analysis also stated that percentage of women by avoided food items was highest for Raw papaya and Lowest was for Maize.

Table8. Major Food Avoided During Pregnancy

Major food avoided during pregnancy	Pregnant Women (240)	
	0-5 Months	6-10 Months
Raw papaya	60	61.7
Sour Foods	24.2	30
Maize	17.5	20.8
Rice	27.5	28.3

6.2 During Lactation Period:

Food Items Received From Aaganwadi Center:

The current study analysis stated that around two third of Lactating women received food items from Aaganwadi center. Major food items received from Aaganwadi Center is that Khichari (Boiled rice with mix vegetables), Daliya and Others (Soyabean, Sattu and Wheat flour etc.). In which, two third of pregnant women have 0-5 months pregnancy and around two fourth of pregnant women have 6-10 months pregnancy received dalia from Aaganwadi Center. Percentage of women Received Khichari from Aaganwadi Center was lowest Compare to Daliya. Daliya was a food items that received by Majority percentage of lactating women. Analysis also clearly stated that percentage of lactating women, who received other food items (except Daliya and Khichari) from aaganwadi center was negligible percent. (Table No.9)

Table 9. Food Items Received from Aaganwadi center By Lactating Women

Characteristics	Lactating Women (360)		
	0-5 Months	6-11 Months	12-23 Months
Women received food items from aaganwadi center	60.8	66.7	71.1
Items Received			
Khichari (boiled rice with mix vegetables)	12.3	6.2	12.8
Daliya (oats)	86.3	86.2	81.4
Others	9.6	15.0	22.1

Major Food Taken During Lactation:

The current study also collected the data on culture of major food items taken by the lactating women during Lactation period. Table No. 10 showed that the major food taken by the Lactating women of Baran District. The major food items these are taken during Lactation period, given below table 10 i.e. Wheat Chapati, Jaggery/ Bajara Raab, Jaggery Water, and Sweet Butter Milk. The lactating women mostly involved Calcium and energy Micronutrients in their diet intake. More than two third of Lactating women, considered Wheat Chapati in their diet. Table 10 also stated that more than two third of lactating women facing money constraint.

Table 10. Major Food Taken During Lactation

Food Taken During Lactation	Lactating women (360)		
	0-5 Months	6-11 Months	12-23 Months
Wheat Chapati	65.0	59.2	70.8
Jaggery/Bajra Raab	17.5	19.2	26.7
Jaggery water	10.0	11.7	9.2
Sweet Butter Milk	25.0	22.5	30.8
Money constraints	76.7	78.3	77.5

Food Avoided During Lactation:

The study collected data on the food items that avoided by Lactating women due to some Cultural Beliefs/ practices like some food items, harmful for mother and babies health, Some mothers believed that spicy food decrease breast milk, and more over increase body heat etc. Table No.11 showed that the major food avoided by the Lactating women of Baran District. The major food items these are avoided during Lactation period, given below table 11 i.e. High salt Intake, Chillies, Maize and Chutney/ sour butter milk. In which, around Two Fourth of Lactating women were Avoided Chillies. And analysis also stated that percentage of women by avoided food items was highest for Chillies and Lowest was for Maize.

Table11. Food Avoided During Lactation

Food Avoided During lactation	Lactating women (360)		
	0-5 Months	6-11 Months	12-23 Months
High Salt Intake	30.8	23.3	34.2
Chillies	45.8	41.7	50.0
Maize	16.7	11.8	14.2
Chutney/ Sour butter milk	20.0	18.3	20.0

Diet during Lactation than Usual food:

The current study collected data on mothers thinking about diet during lactation than usual food. Tableno.12 showed that 45% mothers (0-5 Months), 36.7% Mothers (6-11 Months) and 26.7% mothers (12-23 months) are think that diet during lactation has more than usual and rest were think same or less than usual/ don't know.

Table12.Diet during Lactation than Usual Food

Diet During Lactation than Usual Food	Lactating women (360)		
	0-5 Months	6-11 Months	12-23 Months
More than usual	45.0	36.7	26.7
Same/less/don't know	55.0	63.3	73.3
Any special food taken to increase breast milk	55.8	60.0	69.2

Socio-economic differentials in food choice by lactating women:

Table 13 showed that the socio economic differentials in food choice by lactating women. the table 13 clearly stated that in rural area two third of women preferred to wheat chapati and 23.6% women to jaggery/Bajara Raab, 10.5% women to jaggery water and 16.1% women to Sweet Butter Milk preferred to eaten their lactation period. In Urban area, also two third of lactating women considered to Wheat Chapati in their diet and 13.1% women to jaggery/ Bajara raab, 9.5% women to Jaggery water and 26.2% women to sweet butter milk.

As religion wise two third of Hindu women considered wheat chapati in their diet and 20.4% women to jaggery/ bajara raab, 10.2% women to jaggery water and 16.6% women to sweet butter milk and also two Third of Muslim Religion women considered to wheat chapatti in their diet and very Lowest % of lactating women consideredto jaggery/Bajara raab, jaggery water and sweet butter milk in their Diet.

Table 13 also stated that caste wise differentials in food choice by lactating women. Around two third of lactating women of SC, ST, and OBC and other involved to wheat Chapati in their Diet. Jaggery/ bajara Raab food item mostly consumed by lactating women of ST caste and lowest consumed by lactating Women of OBC cast. Jaggery water is highly used by OBC cast of Lactating women. And another is sweet Butter milk that is highly consumed by lactating women of ST caste.

Table13.Socio-economic differentials in food choice by lactating women

Characteristics	Wheat	Jaggery/Bajra	Jaggery Water	Sweet Butter
	Chapati	Raab		Milk
Region				
Rural	65.2	23.6	10.5	16.1
Urban	64.3	13.1	9.5	26.2
Religion				
Hindu	65.0	20.4	10.2	16.6
Muslim	65.4	30.8	11.5	19.2
Caste				
SC	60.6	17.4	9.1	22.7
ST	68.5	31.5	7.4	31.5
OBC	67.3	20.1	11.3	28.3
Others	66.7	26.7	20.0	13.3

Socio-economic differentials in food Avoided by lactating women

Table 14 showed that the socio economic differentials in food Avoided (High Salt, Chillies, Maize,Chutney/ Sour/ Butter Milk)by lactating women. The table 14 clearly stated that in both area around two seventh of lactating women of both area avoided to High salt. Around 46% lactating women of rural area and 42.9% lactating women of urban area avoided chillies intake. Chutney/ Sour/ Butter milk avoided percentage by lactating women was highest in Urban area compare to rural area.

As religion wise Hindu religion mothers having highest Percentage to avoided high salt compare to Muslim Religion.Table 14 also showed that Maize and chillies avoided by mothers were highest in Muslim Religion. And another is Chutney/ sour/ butter milk highly avoided by Muslim religion mother's compare to Hindu religion mothers.

Table 14 also stated that caste wise differentials in food avoided by lactating women. High salt avoided by the SC caste mothers is more than compare to other cast. Chillies intake avoided is highest among OBC cast mothers and maize intake avoided is highest in SC cast mothers. Another is Chutney/ sour/ Butter Milk is Highly avoided by ST caste mothers compare to other Cast.(table 14)

Table 14 Socio-economic differentials in food Avoided by lactating women

Characters tics	High Salt	Chilies	Maize	Chutney/ Sour butter milk
Region				
Rural	29.3	46.7	12.7	20.7
Urban	29.8	42.9	17.9	15.5
Religion				
Hindu	30.2	45.5	14.4	20.7
Muslim	19.2	50.0	17.7	3.8
Caste				
SC	25.0	42.4	15.9	18.2
ST	37.0	42.6	14.8	25.9
OBC	30.2	50.3	12.6	18.2
Others	33.3	40.0	6.7	20.0

Chapter 7

7. Conclusion & Recommendation

The extent of dietary energy and protein inadequacy was more pronounced, reiterating the fact that, it is essentially 'food gap'. The intake of various micronutrients, particularly iron, vitamin A, Vitamin 12 and Zinc was grossly deficient with comparison to ICMR guidelines, which is in line with inadequate intake of protective foods.

Study also suggests that lack of money to purchase nutrient intake and food taboos during pregnancy and lactating women were the main reasons for not taking nutritive food.

Study also indicated that all women under the study have some restriction on their diet due to cultural practices. Money was also a constraint so that Many nutritive food items avoided by the all women.

The study highlights the need for necessary steps for more community participation in various developmental programmes for improve literacy rate among females. Nutrition Education has to be strengthened through department of health and ICDS, to bring awareness and behavioral change for better nutrition practices to improve the nutritional status of mother and child.

Indian context is required to demonstrate the effectiveness of role of ASHAs in nutrition counseling.

Develop a mobile Based Nutrition information app in suitable Language and create awareness about this app through the help of ASHAs, Aaganwadi workers and Self Help Groups (SHG), to guide women diet intake and remove beliefs regarding food restriction had no scientific explanation.

The National Rural Health Mission (NRHM) envisages that there will be village health and nutrition days where in the ANM and AWW will work together and provide the needed health and nutrition care.

The study observed that lack of money was the main reason for not buying nutritious food, to provide more Nutritious food during pregnancy and Lactation period through Department of Health, ICDS and NHM with joint coordination.

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Case Studies:

Case Study 1: This study collected by the researcher through a confidential in-depth interview with a pregnant and lactating woman. These women are belonged from Muslim community. They said that they don't eat any food items without their husband Permission. They also said they have too much fear of their husband. They said their husband doesn't provide any special food items during their pregnancy and lactation period. They take as usual foods Like "Chapati and Chatuney" during their period. It reflects that they take only energy intake food that is not in proper quantity. They don't take any special food during their period.

Case Study 2: this case study is about a lactating woman. She is belonged to a Muslim Community. The researcher collected data on their personal issue that what are the reasons due to they don't have proper foods items. For this purpose researcher use the qualitative method of data collection. The respondent said that the all decisions taken by my husband about what daily food items prepared and what foods is given to me at this period. She said she taken twice in a month grapes and orange during pregnancy that is not enough for their health. She doesn't have permission to eat any other items without their husband permission.

Case Study 3: the researcher conducted an In-depth interview with a 5 women in group. These women said about the problems of their village i.e. lack of water is a major constraint, no availability of transportation facility, poor and lack of employment opportunity. It reflects that due to lack of infrastructure and employment opportunity women don't avail the nutritive food items from market.

Case Study 4: this case Study is about a 6-11 months lactating mothers. She said in their house they only eat chpati with a high quantity of butter. They eat vegetable twice in a week only. And they also said here in all village people are eat at same type. Respondent also said that a few quantity of salt they take that is less than to 5g. It reflects that they only take energy intake food and arising lack of Micronutrient and iodine intake. It is a serious issue that they face these type of constraints that is not good for their health as well as their baby health.

Case Study 5: some respondent said they don't know about nutrition word. They don't know about the quality of nutritious food and nutrient requirement in their body. The respondent also said that in their house has no media exposure reason behind their family traditional view related to TV i.e. TV has bad effects on women think. Researcher observe that their husband don't want that their wife have awareness. Their husband wants to take more on more possession on their wife life cycle.

Case Study 6: this case study is about pregnant women (6-11 months) and lactating mother (0-5 months). In this case study respondent said that they don't know about the nutrition diet. Respondent also said they didn't received any food items from aaganwadi center reason behind they don't have trust on the quality of Aaganwadi food items. Respondent also said that Aaganwadi Center have no influence in their life. The respondent also said they eat only as usual food diet. So that it reflects that there is need to be focus on awareness about quality of Aaganwadi center food items and also on women behavior change.