ASSESSMENT OF NUTRITIONAL STATUS OF PREGNANT WOMEN: A STUDY IN NOAKHALI DISTRICT

JANNATUL FERDAUS

DEPARTMENT OF DEVELOPMENT AND POVERTY STUDIES

SHER-E-BANGLA AGRICULTURAL UNIVERSITY

SHER-E-BANGLA NAGAR, DHAKA-1207

DECEMBER, 2018

ASSESSMENT OF NUTRITIONAL STATUS OF PREGNANT WOMEN: A STUDY IN NOAKHALI DISTRICT
BY
JANNATUL FERDAUS
REGISTRATION NO.: 11-04390

A Thesis
Submitted to the Faculty of Agribusiness Management,
Sher-e-Bangla Agricultural University, Dhaka
In partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE
IN
DEVELOPMENT AND POVERTY STUDIES
SEMESTER: JULY-DECEMBER, 2018

Approved by:

_____
(Md. Abdul Latif)
Professor
Department of Agricultural Statistics
Sher-e-Bangla Agricultural University
Dhaka-1207
Supervisor

_____
(Hasan Mahammad Sammy)
Assistant Professor
Department of Agricultural Statistics
Sher-e-Bangla Agricultural University
Dhaka-1207
Co-supervisor

Dr. Ashoke Kumar Ghosh
Chairman
Examination committee

ডেভেলপমেন্ট এন্ড পোভার্টি স্টাডিজ বিভাগ
শেরেবাংলা কৃষি বিশ্ববিদ্যালয়
শেরেবাংলা নগর, ঢাকা-১২০৭, বাংলাদেশ
টেলিফোন: +৮৮-০২-৪৪৮১৪০৫৩

Dept. of Development and Poverty Studies
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar, Dhaka-1207, Bangladesh
Telephone: +88-02-44814053

CERTIFICATE

This is to certify that the research work entitled, **"ASSESSMENT OF NUTRITIONAL STATUS OF PREGNANT WOMEN: A STUDY IN NOAKHALI DISTRICT"** conducted by **JANNATUL FERDAUS** bearing Registration No.11-04390 **(July-December/2018)** under my supervision and guidance in the partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE (M. S.) IN DEVELOPMENT AND POVERTY STUDIES** in the Faculty of Agribusiness Management, Sher-e-Bangla Agricultural University, Dhaka 1207, Bangladesh. No part of this thesis has been submitted for any other degree or diploma.

I further certify that any help or source of information received during this study has been dully acknowledgement by her/him.

Dated:....................

Dhaka, Bangladesh

…………………………..
(Md. Abdul latif)
Supervisor
Professor
Department of Agricultural Statistics
Sher-e-Bangla Agricultural University

Declaration

I am Jannatul Ferdaus, Registration No.: 11-04390, hereby declare that this Thesis paper entitled **"ASSESSMENT OF NUTRITIONAL STATUS OF PREGNANT WOMEN: A STUDY IN NOAKHALI DISTRICT"**is prepared by me after successfully completed my thesis program at Sadar upazila in Noakhali district, under the kind supervision of Md.Abdul Latif, Professor, Department of Agricultural Statistics, Faculty of Agribusiness Management, Sher-e-Bangla Agricultural University.

I also confirm that the report is only prepared by me to meet the academic requirement, not for any other purpose. I, hereby declare that this dissertation or part there of has not been submitted by me to any other University or Institute for a degree or diploma.

I am hopeful that my respected faculty will consider my mistakes with graceful perspective.

....
Jannatul Ferdaus
Registration No.: 11-04390
Level-MS, Semester–5th
MSc in Development and Poverty Studies
Faculty of Agribusiness Management
Sher-e-Bangla Agricultural University
Dhaka-1207

DEDICATED

TO

MY BELOVED PARENTS

ASSESSMENT OF NUTRITIONAL STATUS OF PREGNANT WOMEN : A STUDY IN NOAKHALI DISTRICT

ABSTRACT

Nutrition is a elementary pillar of individual life, health and development throughout the entire life span. Pregnancy is such a vital phase in a woman's life, when the pregnant mother needs optimal greater quality of food to support the developing fetus. Children are vital to the nation's present and its future in recent years, there has been an increased focus on issues that affect children and on improving their health. For the study sixty pregnant women were purposively selected. A pre planned questionnaire containing the general information of the pregnant women such as age, education, income of the family, type of family, no of family members and the information regarding obstetrical history as age at first pregnancy, parity, spacing and type of delivery was prepared. The information about complications during pregnancy, biochemical examination i.e. hemoglobin content and blood group of pregnant women was also collected. The questionnaire also contained the information about meal pattern and food consumption of the pregnant women. Discuss about the nutritional health status &food consumption of pregnant women . Different types of charts, graphs etc for describing the health nutritious condition of the selected pregnant women of Sadar upazila in Noakhali district. Discuss about the effect of nutritional status of pregnant women on outcome of pregnancy by using some cross tabulation analysis, chi-square test. I have learned about how to consume nutritious food and its effect of our newborn child health. The coefficient of determination (R Square) is the summary of how well the sample regression line fits the data. The R Square value for pregnant women variation of the hemoglobin in pregnant women was explained by the independent variables such age, income, weight, BMI, parity, blood included in the model respectively.

ACKNOWLEDGEMENT

TABLE OF CONTENT

TABLE OF CONTENT (CONT)

TABLE OF CONTENT (CONT)

TABLE OF CONTENT (CONT)

LIST OF TABLE

LIST OF FIGURES

ABBREVIATION AND ACRONYMS

Hb   =   Hemoglobin

BMI   =   Body Mass Index

PSC   =   Primary School Certificate

JSC   =   Junior School Certificate

SSC   =   Secondary School Certificate

HSC   = Higher Secondary School certificate

HbsAg   =   Hepatitis B surface antigen

TT   = Tetanus

g/dl   = Grams per Decilitre

m/mol   = Millimole

WHO   = World Health Organization

cm   = Centimetre

kg   = Kilogram

%   = Percentage

CHAPTER-1

INTRODUCTION

CHAPTER-1

INTRODUCTION

1.1 Introduction

Nutrition is an elementary pillar of individual life, health and development throughout the entire life span. Proper food and good nutrition are necessary for endurance, physical growth, mental development, productivity, health and well being. Pregnancy is such a vital phase in a woman's life, when the pregnant mother needs optimal greater quality of food to support the developing fetus. It is well documented that inadequate maternal nutrition results in increased risks of short term consequences such as, intra uterine growth restriction, low birth weight, preterm birth, prenatal and infant mortality and morbidity. On the other hand, excessive intake of nutrients during pregnancy can lead to some pregnancy complications, such as, preeclampsia and gestational diabetes, macrodome, distocia and upper prevalence of cesarean section. Eating well during pregnancy means enlarge the amount of mother's diet. The mother must also consider what she eats. The capability of mother to supply nutrients and oxygen for her baby is a serious factor for fetal health and its survival.

A number of factors have the control on pregnancy outcome such as economic and educational status of mother, age of the mother, parity, weight gain during pregnancy, duration of gestation, hemoglobin level of blood, maternal nutrition, weight and height of pregnant women. It is due to fetus, placenta, maternal reproductive tissues, fluid, blood and maternal stores. They are constantly in a state of nutritional stress. During pregnancy, mother transfers to the fetus the nutrients needed for its survival and development. Among the factors that influence the nutritional status of the developing fetus, maternal nutrition is an important one, because a vital inter-dependence exists between the nutritional health of the hopeful mother and fetus the relationship between nutritional status of pregnant women and the ending of pregnancy. Although there is a vast body of literature on the physiology and disease of lactating women, the professionals that care for them often lack adequate knowledge about their nutritional requirements.

Physiological changes take place in pregnant woman. Total plasma volume increases up to 50 per cent greater than a non-pregnant woman. If the plasma volume does not increase up to the standard value, there is a risk for still birth, abortion and low birth weight babies. Blood volume expands by 50 per cent resulting in a decrease in hemoglobin levels, blood glucose values, serum levels of albumin, other serum proteins and water soluble vitamins. Anemia during pregnancy is defined as a reduction in hemoglobin awareness of less than 11 g/dl, during which plasma volume increases unreasonably compared with red cell mass resulting in a physiological confusion.

Due to turn down in serum albumin level, extracellular water is accumulated. The decrease in water soluble vitamin concentration makes purpose of an inadequate intake or a deficient nutrient state. Serum concentration of fat soluble vitamins and other lipid fractions, such as triglycerides, cholesterol and free fatty acid increases. The first symptoms of anemia will be tiredness and paleness, though these are unusual, palpitations, breathlessness and dizziness can also occur. If the anemia is severe (Hb level less than 6g/dl) it may also cause chest pain or headache. The cause of anemia among pregnant women is commonly due to low socio-economic status, customs and nutritional habits. Increased blood volume produces a high glomerular filtration rate. The ability to excrete water is lowered and oedema in the legs and ankles is common and normal. Increased progesterone level during pregnancy relaxes the uterine muscle to allow expansion with fetal growth. Gastrointestinal mortality diminishes, to allow for increased absorption of nutrients due to which constipation may occur.

Micronutrient status at the time of conception is also determined by historic nutrient consumption, and deficiency in one or more micronutrients can detrimentally affect the health of the mother and her baby. Women who experience deficiencies in specific micronutrients before pregnancy generally have an increased risk of iron deficiency anemia, vitamin B12 deficiency, vitamin K deficiency, iodine deficiency, zinc deficiency, and Magnesium deficiency. Fetal health risks which arise as a result of deficiency on particular micronutrients includes maternal vitamin D deficiency associated with fetal rickets, maternal foliate deficiency associated with an increased risk of neural tube defects in the infant, maternal iodine deficiency is associated with congenital abnormalities, increased risk of infant mortality, neurological cretinism, mental deficiency, myxoedymateous cretinism and dwarfism, psychomotor effect, maternal zinc deficiency associated with fetal growth retardation and congenital abnormalities. Human pregnancy is separated into three trimester periods of three months each. The first trimester carries the maximum risk of miscarriage,

natural death of embryo or fetus. During the second trimester, the expansion of the fetus can be more easily monitored and diagnosed. The third trimester is marked by more growth of the fetus.

Breast milk must guarantee the adequate nutrition of the infant as a continuation of intrauterine nutrition, and both the mother's nutritional status as well as her diet may influence breast milk composition and therefore nutrient intake in the infant. Nutritional requirements are higher in infancy than in any other stage of development, and there is evidence that the composition of breast milk changes with time to adjust to the changing needs of the child.7-10 In the event of famines and disasters, and when there is risk of child malnutrition, the approach recommended by the WHO is to support breastfeeding, which guarantees the correct development of the baby, and to supplement the diet of the mother.

The prevalence of nutrient deficiencies varies based on geographical region, culture, dietary habits and socioeconomic level. Under-nutrition in pregnant women is associated with a range of detrimental effects to the developing fetus, including intrauterine growth retardation (under-growth) and low-birth weight. Maternal under-nutrition during pregnancy, low birth weight are in turn associated with range adverse outcomes for the developing fetus and/or newborn baby, including an increased risk of still birth, premature birth, prenatal mortality, infant neurological, respiratory and circulatory disorders, birth defects, underdevelopment of some organs, cretinism and brain damage.

1.2 Importance of the study

Maternal nutrition and health is considered as the most important regulator of human fetal growth. Improved maternal nutrition has been associated with increased fetal growth and a reduction in adverse birth outcomes in developing countries and in populations with nutrient deficiencies. However, if women are not well nourished, they are more likely to give birth to weak babies resulting in high infant mortality rate. At birth, fetal weight is accepted as the single parameter that is directly related to the health and nutrition of the mother, and on the other hand, is an important determinant of the chances of the newborn to survive and experience healthy growth and development. This is because low birth weight has been shown to be directly related to both immediate, long-term and very long-term development and well-being. During the antenatal period, the condition for iron increases several folds due to the demands of the growing fetus as well as increasing maternal red cell mass and these often outstrip the existing supply of iron from the diet and iron stores. Though dietary iron

can be utilized with compensatory increase, iron inclusion is inadequate to prevent anemia in pregnant women, who have greatly improved need.

1.3 Rationale of the Study

The health behavior of a pregnant woman, including adequate nutritional behaviors and supply of all the necessary nutrients, exert an effect on the health of a woman, development of the fetus. A number of researches were carried out to nutritional status of pregnant women. Fewer researches were also conducted to assess the nutritional status effect on newborn child. The maximum less educated pregnant women represent nutritionally the most vulnerable group in the community. Maximum women are not aware about their food charts, habits. Based on the study, some recommendations will also be generated to overcome the existing problems and for further improvement. The outcomes of this research will be helpful to the planners, policy makers for better understanding the current structure and for taking strategies to accelerate regional development programs specifically in the rural area of Bangladesh. This study will also be helpful to the academicians and researchers for further conceptualization who will work in pregnant women and its related sectors in Bangladesh. This study aims to offer updated information on the nutrition status of pregnant women and newborns to facilitate the development of health care protocols based on current knowledge in healthcare setting of Bangladesh.

1.4 Objective of the Study

There are very few studies from this region regarding the same. Hence, the present study was undertaken to know the effect of nutritional status of pregnant women on the outcome of pregnancy with following objectives.

1. To study the socio–economic status of the selected pregnant women of Sadar Upazila in   Noakhali district ;
2. To assess the nutritional health status &food consumption of pregnant women ;
3. To find out the effect of nutritional status of pregnant women on outcome of pregnancy.

1.5 Organization of the Report

The introduction and importance of nutritional status of pregnant women, rationale of this study and objective of the study are describe in chapter one. The second chapter comprises the review of literature. The third chapter covers of the research methodology. Chapter four describes the socio-economic status, nutritional health status and food consumption of pregnant women and the effect of nutritional status of pregnant women on outcome of pregnancy. Chapter five contains summary, conclusion, recommendation and limitation of the study.

CHAPTER-2

REVIEW OF LITERATURE

CHAPTER-2

REVIEW OF LITERATURE

2 Literature Review

Nutritional status of pregnant women plays a significant function in the course and effect of pregnancy. A number of factors have the control on pregnancy outcome. Several studies reported in the literature on the nutritional status of pregnant women are reviewed here under various heads.

Pal *et al*., (2017) reported that connection of pre gestational BMI and antenatal weight increase with pregnancy outcome. Antenatal weight expand was of prime significance for successful outcome of mother and also for the baby. Maternal BMI and the weight that a mother gains during pregnancy are two of the strongest predictors of the birth weight and parental outcome

Jenniferbritto and Mary (2017) discovered the effect of heaviness on maternal and fetal outcome among overweight pregnant women compared to those of regular weight. The study was conducted in antenatal women presence antenatal outpatient department of CSI rainy multispecialty hospital located in North Chennai of South India. Hundred antenatal women with fifty in each of the two groups were included. Sixteen (32%) cases developed gestational diabetes mellitus during their antenatal period and 19 (38%) developed gestational hypertension, 10 per cent underwent in emergency caesarean section and in 28 per cent cases optional caesarean section was done.

Gupta *et al*., (2016) studied the manipulate of maternal age, parity and hemoglobin on neonatal birth weight. Study was done in obstetrics wing of LLRM Medical College and TVBP hospital, Meerut. The results were tested statistically by Chi-square test, to test the difference of two magnitudes. In this study the critical age of mother was 17-20 years and $\geq$ 36 years for LBW (33.33%). The incidence of LBW was 35 per cent. Most of LBW"s weight between 2200-2400 gm.

Lutfa *et al*., (2015) studied anthropometric evaluation of nutritional status in 245 pregnant women in different trimesters at antenatal clinic of Dhaka Medical College hospital. It was found that 38 per cent pregnant women were overweight or obese and 20 per cent were found underweight that was connected with chronic energy deficiency, vitamin deficiency and iron deficiency anemia.

Kulkarni (2015) conducted study of the maternal weight gain and various factors associated with it. It is a hospital based prospective study. Target population was 400 women booked at 12 weeks of gestational period and who delivered at hospital during period. After the delivery, the newborn baby was weighed within 30 minutes of the birth, without clothing, on a lever type of weighing machine and weight was recorded in grams.

Muhammad *et al*., (2015) studied weight gain pattern during pregnancy among women attending for normal labor at maksar Primary health care, Jakarta. Nutritional status before and during pregnancy was calculate important for optimal pregnancy outcomes concerning optimal newborn birth weight and maternal body weight after pregnancy. A total of 138 medical records were included in this study.

Nisal (2015) revealed about nutritional status of pregnant women belonging to low income group. A hospital based cross sectional study was carried out among 200 pregnant women from low socio-economic group attending the antenatal clinic for a period of three months. Height and weight were measured as per standard guidelines laid down by World Health Organization..

Eyad *et al*., (2015) studied about the determinants of pregnancy outcome. For the study 100 pregnant women were selected. Data on pregnancy outcome, including birth weights and gestational ages, were obtained from hospital records. Birth weights were divided into three groups, a low birth weight group (birth weight <2.5kg), a normal birth weight group (2.5-3.9kg) and a high birth weight group (≥4kg). The socioeconomic status was significantly associated with the birth weight ($p<0.05$) with high birth weight group babies belonging to high income group and low birth weight babies from lower income groups only

Kuche *et al*., (2015) carried out a study on nutritional status and associated factors among pregnant women in Wondo Genet district, southern Ethiopia. A representative sample of 153 pregnant women aged 19-49 was selected from three rural villages. The result of the study showed that the intake of most nutrients was lower than the recommended intake. The energy

intake of the study participants both in 2nd and 3rd trimesters of pregnancy was 2,308kcal and 1,420.5kcal compared to the recommended 2,340kcal and 2,452kcal, respectively.

Ekwere and Ekanem (2015) conducted a study on maternal knowledge, food restrictions and prevention strategies related to anemia in pregnancy. A total of 121 pregnant women with a mean age of 25.69±4.51 years participated in the study. However, restriction of food including those rich in carbohydrates, proteins and alcoholic beverages 27.3 per cent, 14.9 per cent, and 56.8 per cent respectively was a common practice.

Morsy and Alhady (2014) studied about nutritional status and socio- economic conditions influencing prevalence of anemia in pregnant women. A sample of 400 pregnant women was selected for this study. More than half of mothers (n= 224) were in the middle stage of pregnancy (second trimester) with 114 and 62 in the first and third trimester respectively. In this study the prevalence of anemia among pregnant women was investigated under the influence of some nutritional and socio- economic factors.

Mousumi (2014) conducted a study on association of maternal age and low socio-economic status of women on birth outcome. Result shows that a young and poor woman reports more complications during pregnancy and lesser use of any health care services. Young mothers develop more parental complications like preterm delivery (34.5%). Low weight at birth was significant correlation with complications during pregnancy and adverse birth outcome among adolescent women.

Osman and Nada Ali (2014) conducted a study of judgment of nutritional status using anthropometric measurements in relation to pregnancy outcome among Southern Sudanese pregnant mothers in Juna city. A total number of 200 pregnant women were selected and their weight, height, mid upper arm circumference, triceps, and skin-fold thickness were taken. Weight and height were used to calculate BMI.

Fatima *et al*., (2014) studied estimation of dietary diversity and nutritional status of pregnant women in Islamabad, Pakistan. This study aimed to identify dietary diversity and determine any relationship of dietary diversity with nutritional status of pregnant women belonging to different socioeconomic conditions in Islamabad region. For the study 360 pregnant women were selected in second and third trimesters.

Hossain *et al*., (2013) studied about nutritional status of pregnant women in selected rural and urban area of Bangladesh. In the first stage of cross-sectional study, weight gain throughout

the pregnancy period was observed as baseline and then socio-demographic status was evaluated by food habit, biochemical, clinical and anthropometric assessment. For the study 200 pregnant women were randomly selected from different government and non-government health care centers in Bangladesh. In the rural and urban region of Bangladesh about 46 per cent and 25 per cent of the pregnant women belongs to <20 years of age.

Krishna *et al*., (2013) studied the effect of anemia during third trimester of pregnancy on gestational size and birth weight of babies in rural Lucknow, India. The sample size of 343 was calculated on the basis of occurrence of low birth weight in India which was 30.0 per cent. A total of 343 pregnant women were registered during third trimester of pregnancy at primary health centre.

Solanki *et al*., (2012) reported that the result of maternal anthropometric distinctiveness and social factors on birth weight of child in 105 women in small town hospital of Gandevi block of Navsari district. Low birth weight was found in around 35 per cent of infants. Bivariate study exposed that maternal age less than 20 years (p= 0.02), education (p= 0.009), socio economic status (p =0.001) was considerably linked with low birth weight.

Deshpande *et al*., (2011) reported that low birth weight is a major determinant of infant humanity and morbidity. A total of 200 cases and 200 controls of age 18–35 years who delivered a live-born baby were enrolled. The data information was collected from the maternal health records and interviewing the mothers of these neonates. The amount of low income, illiterate/primary educated primiparas, and women among the low birth weight newborns.

Nadeem *et al*., (2010) studied the occurrence of anemia and connected factors in pregnant women in a rural Indian community. The study was conducted in the Maternity Clinic of Pravar Rural Hospital, Loni, Ahmednagar, and Maharashtra, India. Three hundred and ten subjects were enrolled, of whom 234 (74.8%) were found to be anemic. The majority (50.9%) demonstrated moderate anemia while mild and severe anemia were recorded in 70 (30.17%) and 45 (18.9%) respectively.

Theobald and Napendaeli (2010) studied the factors influencing pregnancy outcome in morogoro municipality, Tanzania. A longitudinal study was conducted among 157 pregnant women attending antenatal clinics from their second trimesters to term. Socio- economic, demographic, and obstetric information was collected. It was concluded from this study that, most women were aware of the pregnancy risk factors, they lacked the knowledge on how the factors affected the pregnancy outcome.

CHAPTER-3

METHODOLOGY

CHAPTER-3

METHODOLOGY

The present investigation was carried out to find out the effect of nutritional status of pregnant women on outcome of pregnancy from Sadar upazila in Noakhali. A study was conducted to find out nutritional status of the selected pregnant women by anthropometric measurements, determination of food consumption pattern and nutrient intake by 24 hours recall method. The details of various methods followed and material used while conducting the study are described here under various heads.

3.1 Methodology

Research methodology is a way to systematically solve the research problem. After collecting necessary data, this report is prepared on the basis of analytical way.

3.2 Source of Data

To prepare the report, data is collected from two sources are given below:

- Primary sources
- Secondary sources

3.2.1 The Primary Sources

➢ Face to face conversation with pregnant women
➢ Their husband and family member cooperate with me.
➢ Directly consult their doctor when they were going to clinic.

3.2.2 Secondary Sources

➢ Their pathological report
➢ Their previous medical report

3.3 Selection of sample

A sample of 60 pregnant women was purposively selected from Sadar Upazila in Noakhali.

3.4 Collection of data

All the selected pregnant women were personally interviewed by investigator with the help of pre- planned questionnaire, so as to elicit the information regarding socio-economic status, age, type of family, and dietary pattern. Information about the associated factors with pregnancy like age at first delivery, parity, interval between two pregnancy, type of delivery, BMI and complications during pregnancy was also collected.

3.5 Determination of body mass index of the selected pregnant women

Body mass index (BMI) was calculated from the recorded measurements of body weight (kg) and height (cm) of the subjects using following formula.

$$\text{Body mass index} = \frac{\text{Weight (kg)}}{\text{Height (cm2)}}$$

3.6 Recording the Hemoglobin content of pregnant women

All the selected pregnant women had checked their hemoglobin as per the advice of their gynecologist. Therefore they were having the blood check up report of pathological laboratory. Hence, the Hemoglobin content of subjects was recorded from the pathological reports.

3.7 Processing, Editing and Tabulation of Data

The data were collected during thesis program, was checked and verified for the sake of consistency and completeness. Editing and coding were done before putting the data in computers. All the collected data were summarized and scrutinized carefully to eliminate all possible errors. Data were presented mostly in tabular form, because it was of simple calculation, widely used and carry to understand. Data were inserted and analyzed the SPSS and Microsoft excel.

3.8 Analytical Technique

Analytical techniques enable researchers to examine complex relationships between variables. Multiple Regression line is -

$$\gamma_i = \beta_o + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \varepsilon_i$$

Where,

γ_i	=	Hemoglobin
β_o	=	Constant
β_1	=	Regression coefficient of Age
X_{1i}	=	Age
β_2	=	Regression coefficient of Income
X_{2i}	=	Income
β_3	=	Regression coefficient of Weight
X_{3i}	=	Weight
β_4	=	Regression coefficient of BMI
X_{4i}	=	BMI
β_5	=	Regression coefficient of Parity
X_{5i}	=	Parity
β_6	=	Regression coefficient of Blood
X_{6i}	=	Blood
ε_i	=	Random error

Established the errors tabulation among the attributes of respondent. In my thesis program, the data were collected from the Sadar Upazila, Noakhali. Some are secondary data. After collecting data, the data are shown graphically. I construct some graph, such as bar diagram and pie chart. There are functions of regression analysis, descriptive statistics, also summarize the data in this report at all.

CHAPTER-4
RESULT AND DISCUSSION

CHAPTER-4

RESULT AND DISCUSSION

4.1 The socio–economic status of the selected pregnant women of Sadar upazila   in Noakhali district

The present investigation was carried out to assess the nutritional status of pregnant women on outcome of pregnancy. A sample of 60 pregnant women was purposively selected for the study from Sadar upazila, Noakhali. The collected data were analyzed statistically and tabulated for the discussion under different head.

4.1.1 General information of the selected pregnant women

The general information of the selected pregnant women is depicted in Table 1. Among the selected pregnant women 26.7 per cent were belonged to age group 16 to 20 years, 40 per cent were belonged to 20 to 25 years, 26.7 per cent belonged to 26 to 30 years and only 6.7 per cent was of age group of 31 to 40 years.

Table 1: General information of the selected pregnant women

Type	Category	Number	Percent
Profession	Housewife	52	86.7%
	Service	8	13.3%
Education	Illiterate	0	0.0%
	PSC	10	16.7%
	JSC	6	10.0%
	SSC	25	41.7%
	HSC	12	20.0%
	Graduation	7	11.7%
Respondent age	16-20	16	26.7%
	20-25	24	40.0%
	26-30	16	26.7%
	31-40	4	6.7%

Among the selected pregnant women 86.7 percent belonged to housewife and only 13.3 percent involved in service. Majority (41.7%) of the pregnant women were Secondary School certificate

college educated while 20.00 % were Higher Secondary certificate.PSC & JSC belonged to 16.7% and 10%.The selected pregnant Women were Graduate 11.7%. No one was illiterate in this group. (Fig 1)
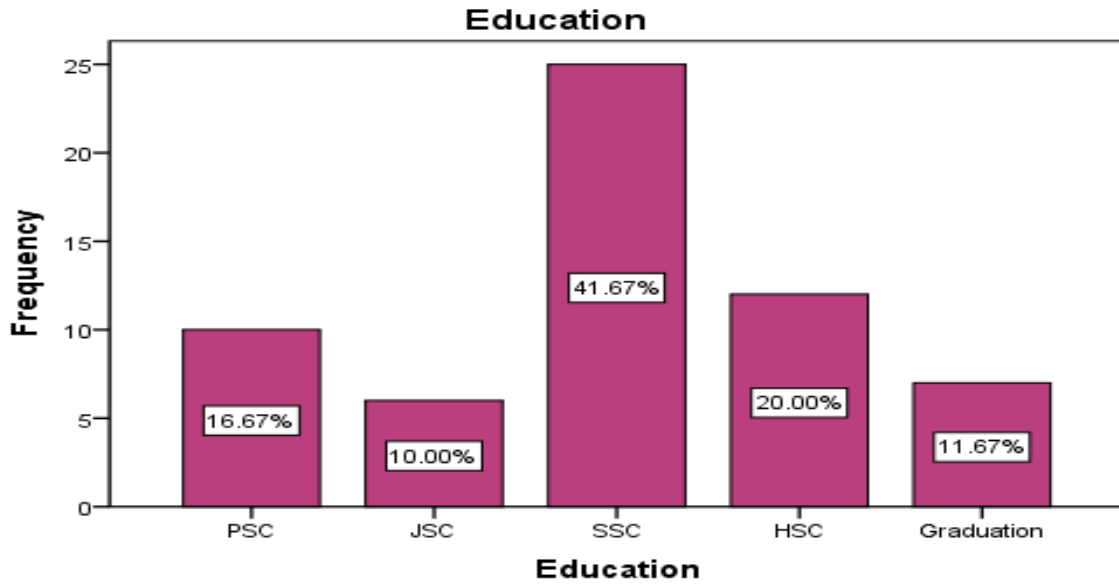
Figure 1: Education of the pregnant women

Among the selected pregnant women 51.67 per cent were belonged to nuclear family, 40.00 per cent belonged to joint family and 8.33 per cent belonged to extended family. (Fig 2)
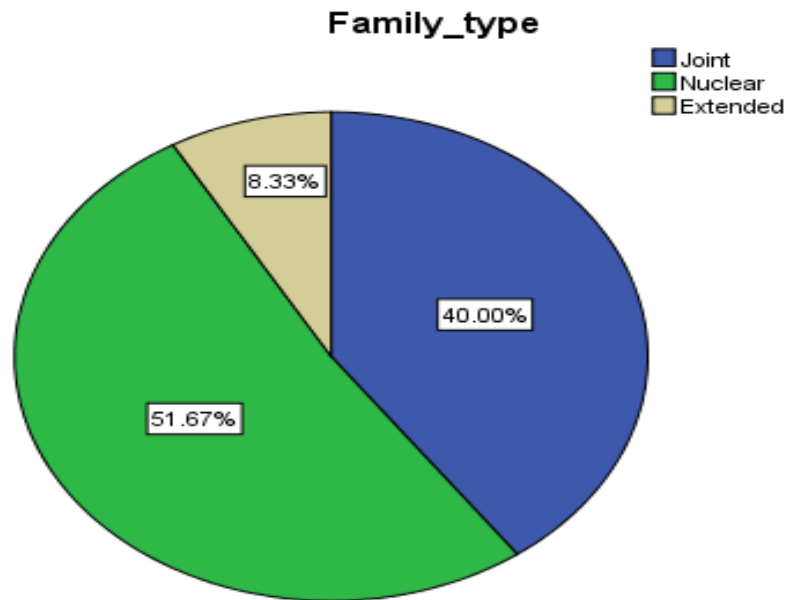
Figure 2: Family types of the pregnant women

15

Family income of the pregnant women was ranging from Tk 16000 to 20000 having 60 percent.Tk 21000 to 25000 having 28.33 percent. And only 11.67 percent had Tk 26000 to 30000 per month family income. (Fig3)
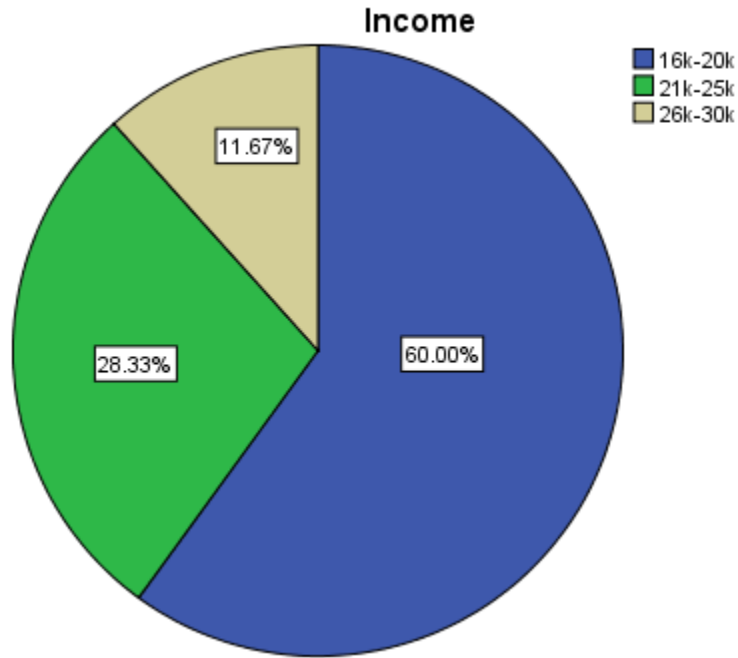
Figure 3: Income of the pregnant women family in month
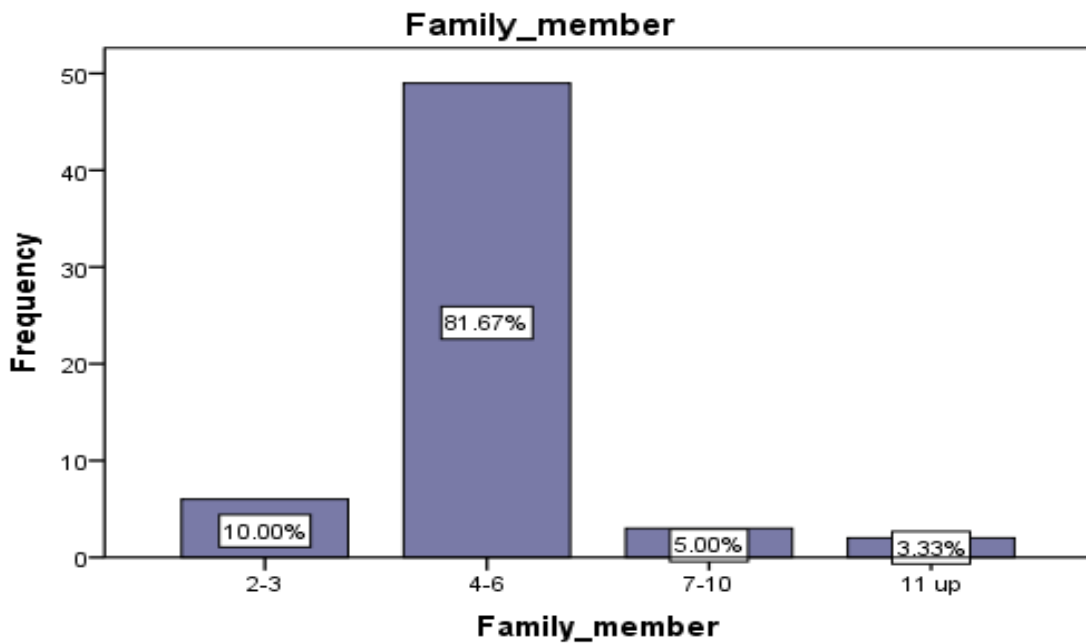
Figure 4: Family member of pregnant women

Maximum (81.7%) had 4 to 6 members in their family, while 10.00 per cent had 2-3 family members and 5 per cent had more than 7 to 10 members in their family. And only 3.3 percent had more than 11 members in their family.(Fig4)

4.1.2 Obstetrical history of selected pregnant women

Among the selected pregnant women 51.7 percent were having 1st baby and 48.3 percent telling about this pregnancy are second or another baby. In this study 31 (51.7 %) were primipara (A women who is giving birth for the first time) and 24 (40.00%) were secondgravida (A women who is pregnant for the second time) and only five (8.3 %) were multigravida (A women that is or has been pregnant for at least a second time.(Table 2)

Table 2: Obstetrical history of selected pregnant women

Type	Category	Number	Percentage
First pregnancy	No	29	48.3%
	Yes	31	51.7%
Pregnancy number	primipara	31	51.7%
	Secondgravida	24	40.0%
	Multigravida	5	8.3%
First pregnancy age	20>	24	40.0%
	20-30	36	60.0%
	30<	0	0.0%
parity	1	31	51.7%
	2	24	40.0%
	3	5	8.3%
Pregnancy interval	0 year	32	53.3%
	1 year	2	3.3%
	2 year	8	13.3%
	3 Year	11	18.3%
	avobe 3 Year	7	11.7%
Delivery	vaginal	35	58.3%
	Cesarean	25	41.7%

Among the selected pregnant women 60 per cent were of the age group of 20 to 30 years at first pregnancy, 40 per cent were less than 20 years and no anybody were above 30 years of age at first pregnancy. Majority of the pregnant women 51.7 percent were 1st parity, 40.00 percent 2nd parity and only 8.3 percent 3rd or 3 above parity. In this study 53.30 per cent pregnant women were having children, 11.7 per cent had the spacing of more than 3 years between two pregnancies whereas, 13.3 per cent had 2 years and 18.3 per cent had three years spacing between two pregnancies and 3.3 percent had one year spacing between two pregnancy. Among the selected 60 pregnant women 35 (58.30%) had vaginal delivery while 25 (41.70%) had cesarean section. (Table 2)

4.2 The nutritional health status &food consumption of pregnant women

4.2.1 Meal pattern of the pregnant women

Meal pattern of the pregnant women is given in (Fig 5). It is seen from the figure that 80.00 per cent of pregnant women were taking the meal three to five times in a day while 5.00 per cent were taking the meal two times in a day. And 15 percent were taking the meal more than 5 times.
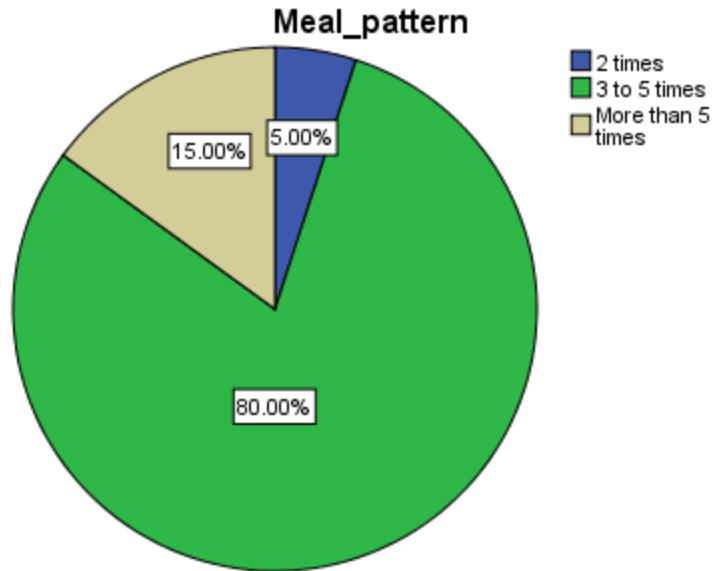
Figure 5: Meal pattern of the pregnant women

4.2.2 Biochemical examination of pregnant women

Biochemical examination of pregnant women is given in (Fig 6). The figure shows that 10 per cent of pregnant women had AB+ blood group, 26.70 per cent pregnant women had A+ blood group, 28.3 per cent had O+, 31.7 per cent had B+ blood group. Only 1.7 per cent of pregnant women belonged to O- and A- blood group. Zero percent pregnant women belonged to B- and AB- blood group. If pregnant women have lost too much blood, either in a surgery,delivery,it is vital that the correct blood type be given.
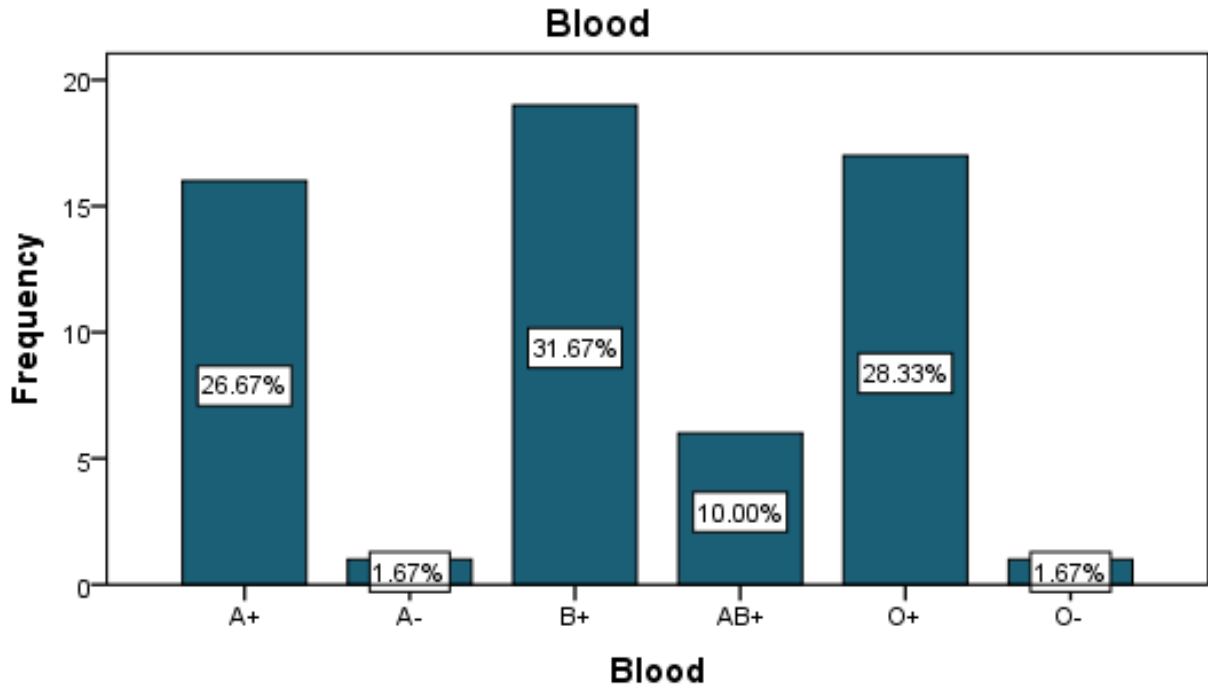
Figure 6: Biochemical examination of the pregnant women

4.2.3 Vaccination of the selected pregnant women.

In this study 96.00 per cent pregnant women were having Tetanus vaccine and only 5.0% did not take tetanus vaccine. Among the selected pregnant women 56 (93.3%) were taking HbsAg (Hepatitis B surface antigen) vaccine and 4 (6.7%) did not having HbsAg vaccine. This case most of the pregnant women 96.7 percent were having Folic acid and only 3.3 percent are not taking folic acid.(Table 3).It indicates that the pregnant women are aware about the vaccination programmed during the pregnancy period.

Table 3: Vaccination of the selected pregnant women.

Type	Category	Number	Percent
Tetanus	No	3	5.0%
	Yes	57	95.0%
HbsAg	No	4	6.7%
	Yes	56	93.3%
Folic acid	No	2	3.3%
	Yes	58	96.7%

4.2.4 Dietary foods of the pregnant women

In this study 76.7 percent pregnant women were having fruits in everyday and 23.3 percent did not take fruits in everyday. Vegetables were take 80 percent pregnant women and 20.00 percent did not take vegetables in everyday. Among 85.00 percent pregnant women were having fish and 15.00 percent women not having fish in daily. Chicken were consumed 40.00 percent pregnant women and 60 percent not consumed .Among 36.7 percent pregnant women were having meat in everyday and 63.3 percent were not talking .In this case all pregnant women were taking carbohydrate in everyday. Among 56.70 percent pregnant women were taking dairy food in everyday and 43.3 percent did not take. And no anybody was taken alcoholic beverage in total pregnancy period. (Table 4)

Table 4: Dietary foods of the pregnant women

Item	No		Yes	
	Number	**percentage**	**Number**	**Percentage**
Fruits	14	23.3%	46	76.7%
Vegetable	12	20.0%	48	80.0%
Fish	9	15.0%	51	85.0%
Chicken	36	60.0%	24	40.0%
Meat	38	63.3%	22	36.7%
Carbohydrate	0	0.0%	60	100.0%
Dairy	26	43.3%	34	56.7%
Alcoholic_ beverage	60	100.0%	0	0.0%

4.2.5 Food consumption pattern of selected pregnant women

Food consumption pattern of selected pregnant women is given in Table 5. It is evident from the Table 5 that different foods taken in the breakfast of the pregnant women were ruti, potato fry, egg, vegetable, dal .Most of the pregnant women 26.67 percent were taking ruti ,egg, potato fry.23.33 percent were having rice ,egg. Among 18.33 percent were taking bread,ruti,egg,vegetables.In this study 13.33 percent were taking ruti,egg,potato fry,vegetable,and 18.33 percent consumed ruti,potato fry , dal in everyday.(Table 5)

Kheer, milk, Chira, pitha, muri, khoi, fruit juice and coconut water were taken in mid snacks. During pregnancy it is advised by the doctor to take coconut water, milk and fruit juices, so they may be taking these foods at mid snacks.20 percent pregnant women were taking chira, pitha, fruits in everyday. Among 21.67 percent pregnant women consume muri, Fruits, Khai in daily. Only fruits consumed by 15 percent pregnant women in every mid snacks.25 percent pregnant women were taking muri, khoi,kheer and 18.33 percent women were consume payesh,muri in everyday mid snacks. The different recipes taken in the lunch were rice, other vegetables, fish, chicken green leafy vegetables and dhal. Most of the pregnant women 26.67 percent were taking rice, dal, tomato curry; vegetable.21.67 percent were having rice, chicken, dal, vegetables. Among 20.00 percent were taking rice, dal, vegetables ,fish .In this study 15.00 percent were taking rice, fish, dal, beef, vegetables ,and 16.67 percent consumed rice ,dal, fish, vegetables in everyday.(Table 5)

Tea, milk and biscuits were taken at the time of snacks. Most of the pregnant women 28.33 percent were taking Pitha, biscuit, tea, noddles, pakora. 21.67 percent were having tea, biscuit, pitha, Payesh, semy. Among 20.00 percent were taking biscuit, pitha, muri, semy. In this study 13.33 percent were taking Noodles, potato fry, tea, potato fry and 16.67 percent consumed tea, pizza, pudding, biscuit, vegetable pakora in everyday. Rice, khichuri, milk, vegetable, dal, fish were taken at the time of dinner. Most of the pregnant women 25.00 percent were taking rice, dal, tomato curry, vegetable, and fish. 23.33 percent were having rice, meat, fish, egg.khichury, dal. Among 20.00 percent were taking rice,khichury,fish,milk .In this study 18.33 percent were taking rice, ,dal, ,vegetables, chicken, salad and 13.33 percent consumed rice ,chicken,dal,fish,vegetables,salad in everyday.(Table 5)

Table 5: Daily food meal items of the pregnant women

Category	Food	Number	Percent
Breakfast	Rice, egg	14	23.33%
	Ruti, egg,Bread,vegetable fry	11	18.33%
	Ruti,egg,potato fry	16	26.67%
	Ruti,Egg,potato fry, vegetable	8	13.33%
	Ruti,potato fry,Dal	11	18.33%
Mid snacks	Chira,pitha,fruits	12	20.0%
	Fruits	9	15.0%
	Muri,Fruits,Khai	13	21.67%
	Muri,khai,kheer	15	25.0%
	Payesh,muri	11	18.33%
Lunch	Rice,Chicken,dal,vegetable	13	21.67%
	Rice,Dal,tomato curry, vegetable	16	26.67%
	Rice,dal,vegetables,fish	12	20.0%
	Rice,Fish,dal,beef,vegetable	9	15.0%
	Rice.dal.Fish,Vegetable	10	16.67%
Tea	Biscuit,pitha,muri,semy	12	20.0%
	Noodles, potato fry,tea,potato fry	8	13.33%
	Pitha,biscuit,tea,Noddles,pakora	17	28.33%
	Tea,biscuit,pitha,Payesh,semy	13	21.67%
	Tea,pizza,puding,biscuit,vegetable pakora	10	16.67%
Dinner	Rice,Khichuri,Fish,Milk	12	20.0%
	Rice,meat,dal,Fish,Egg,Khichuri	14	23.33%
	Rice,vegetable,fish,dal,Tamato curry	15	25.0%
	Rice.Vegetable,Chicken,Dal,Salad	11	18.33%
	Ruti,vegetable,fish,Chicken,salad	8	13.33%

4.2.6 Special food items of the pregnant women

Some foods must be taken every pregnant woman for their newborn healthy child. In this case 76.7 percent pregnant women were taking milk in every day and 23.3 percent did not take. Among 45 percent pregnant women consumed egg in everyday but 55 percent have not consumed egg in everyday. Pulses were consumed 58.3 percent pregnant women and 41.7 percent women not take. Any type juice are very essential for any pregnant women because its provide water and mineral .in this study 45 percent pregnant women were taking juice in everyday and 55 percent have not taken juice in everyday.(Table 6).It is revealed the most of the pregnant women were taken milk however egg and juice were taken less than 50%.

Table 6: Special food items of the pregnant women.

Special Item	No		Yes	
	Number	**Percent**	**Number**	**Percent**
Milk	14	23.3%	46	76.7%
Egg	33	55.0%	27	45.0%
Pulse	25	41.7%	35	58.3%
Juice	33	55.0%	27	45.0%

4.3 The effect of nutritional status of pregnant women on outcome of pregnancy

4.3.1 Evaluation of the height and weight of the pregnant women

This table 7 show that ,the selected pregnant women minimum height are 121.90 cm and maximum height 162.56 cm ,mean 155.55,and standard deviation are 6.68.in this case their maximum weight are 80kg ,minimum 40 kg, total mean 53.75 and standard deviation are7.87. (Table 7)

Table 7: Evaluation of the height and weight of the pregnant women

Type	N	Minimum	Maximum	Mean	Std. Deviation
Height	60	121.90	162.56	155.5517	6.68054
Weight	60	40.00	80.00	53.7500	7.87105
Valid N	60				
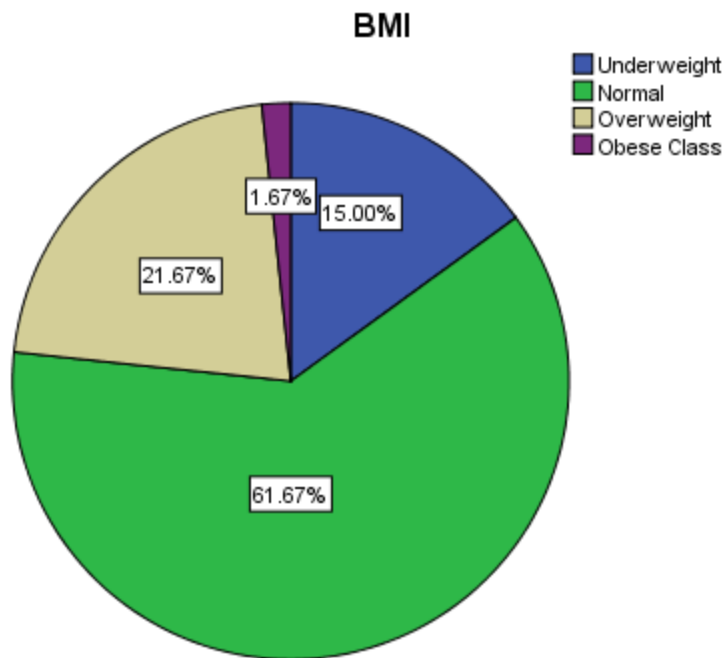
Figure 7: BMI of the pregnant women

In this study 61.7 percent women were normal weight, 21.7 percent overweight,15 percent had underweight only 1.7 percent had obese class.(Fig7)

4.3.2 Physical condition of the pregnant women

In this study 60 percent pregnant women were having gynecological surgery and 40 percent not having this surgery. Weight change is good sign of pregnancy period .In this case most of the pregnant women 73.3 percent were gaining too little weight.13.3 percent pregnant women were gaining too much and 13.3 percent were not any change for weight in pregnant women. Exercise

is very important for pregnancy period. Every pregnant woman must be doing this .In these case only 31.7 percent pregnant women doing little more exercise.63.3 percent pregnant women doing not any exercise and a lot more exercise only 5 percent pregnant women.(Table 8)

Table 8: Physical condition of the pregnant women

Type	Category	Number	Percent
Gynecological Surgery	No	36	60.0%
	Yes	24	40.0%
Weight Change	Gaining too much	8	13.3%
	gaining too little	44	73.3%
	not change	8	13.3%
Exercise	A lot more	3	5.0%
	A little more	19	31.7%
	About the same	38	63.3%

Most of the pregnant women 36.7 percent going to consult doctor at one times their pregnancy period. Among 28.3 percent pregnant women were going to consult doctor at two times during pregnancy.25 percent pregnant women consult with doctor at more than two times during their pregnancy time. And 10 percent pregnant women not consult to doctor in this period.(Fig8)
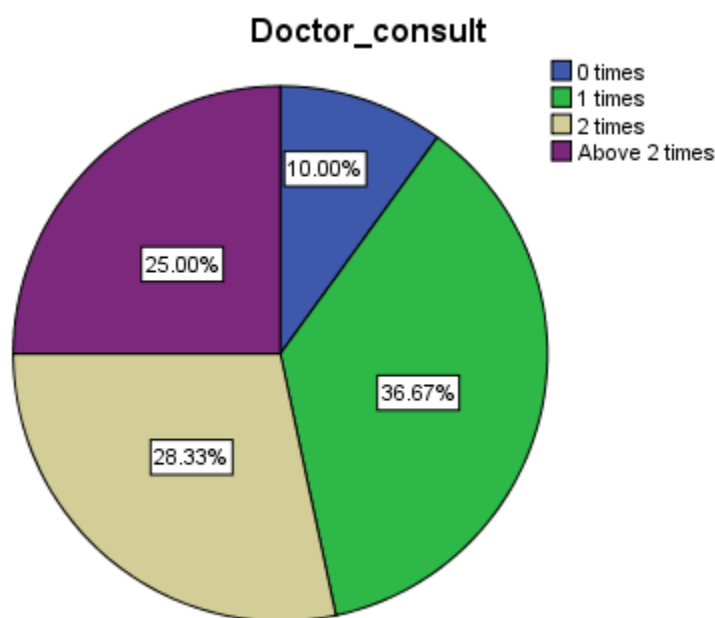
Figure 8: pregnant women consult doctors

Table 9: Information regarding complications during pregnancy.

Complication	Trimester	Number	Percent
Oedema	not seen	35	58.3%
	1st trimester	5	8.3%
	2nd trimester	12	20.0%
	3rd trimester	8	13.3%
Eye problem	not seen	52	86.7%
	1st trimester	6	10.0%
	2nd trimester	1	1.7%
	3rd trimester	1	1.7%
Sore mouth	not seen	18	30.0%
	1st trimester	39	65.0%
	2nd trimester	2	3.3%
	3rd trimester	1	1.7%
Body aches	not seen	29	48.3%
	1st trimester	7	11.7%
	2nd trimester	5	8.3%
	3rd trimester	19	31.7%
Loss appetite	not seen	22	36.7%
	1st trimester	28	46.7%
	2nd trimester	9	15.0%
	3rd trimester	1	1.7%
Pallor	not seen	35	58.3%
	1st trimester	7	11.7%
	2nd trimester	4	6.7%
	3rd trimester	14	23.3%
Muscles pain	not seen	27	45.0%
	1st trimester	1	1.7%
	2nd trimester	7	11.7%
	3rd trimester	25	41.7%
Burning feet	not seen	47	78.3%
	1st trimester	1	1.7%
	2nd trimester	4	6.7%
	3rd trimester	8	13.3%
Hypertension	not seen	25	41.7%
	1st trimester	2	3.3%
	2nd trimester	7	11.7%
	3rd trimester	26	43.3%

4.3.3 Information regarding complications during pregnancy

The information regarding complications during pregnancy is presented in Table 9. It is evident from the Table that 41.6 per cent pregnant women were suffering from oedema at whole pregnancy period and 58.3 percent women not having any complication.

In this case 13.4 per cent pregnant women were suffering from eye problem at whole pregnancy period and 86.6 percent women not having any complication. Among the selected pregnant women 70 per cent were suffering from sore mouth at whole pregnancy period especially 1st trimester and 30 percent women not suffering any complication. In this study 51.7 per cent pregnant women were suffering from body aches at whole pregnancy period specially 3rd trimester and 48.3 percent women not having any complication.63.3 per cent pregnant women were suffering from appetite loss at whole pregnancy period and 36.7 percent women not getting any complication.41.6 per cent pregnant women were suffering from pallor at whole pregnancy period specially 3rd trimester and 58.3 percent women not suffering any complication.

Among the selected pregnant women 55 per cent were suffering from muscles pain at whole pregnancy period specially 2nd and 3rd trimester and 45 percent pregnant women not having any complication. In this study 21.3 per cent pregnant women were suffering from burning feet at whole pregnancy period and 78.3 percent women not suffering any complication.58.3 per cent pregnant women were suffering from hypertension at whole pregnancy period specially 3rd trimester and 41.7 percent women not having any complication.(Table 9)

4.3.4 Hemoglobin, Blood pressure, sugar level of the pregnant women

In this study 40 per cent pregnant women had hemoglobin 10-12 g/dl, 33.3 per cent had 8-10 g/dl hemoglobin. The hemoglobin 12 g/dl up was seen in 18.3 per cent and below 7 g/dl was in 8.33 per cent. (Table 10)

Most of the pregnant women 56.7 percent having normal blood pressure. Low blood pressure carried 36.7 percent pregnant women and only 4 (6.7%) pregnant women having high blood pressure in pregnancy period. Among the selected pregnant women 81.7 percent were carrying Below 7 m/mol portion diabatics.10.0 percent pregnant women were having Above 11 m/mol

28

portion diabetics and only 8.3 percent pregnant women were carrying 7 to 10 m/mol portion diabetics at pregnancy period.(Table 10)

Table 10: Hemoglobin, Blood pressure, sugar level of the pregnant women

Item	Category	Number	percent
Hemoglobin	Below 7	5	8.3%
	8 to 10	20	33.3%
	10 to 12	24	40.0%
	12 up	11	18.3%
Blood_ pressure	low	22	36.7%
	Normal	34	56.7%
	High	4	6.7%
Sugar	Below 7 m/mol	49	81.7%
	7 to 10 m/mol	5	8.3%
	Above 11 m/mol	6	10.0%

Table 11: The effect of age and pregnancy number

Item	Category	Respondent Old				Total
		18-24	24-30	30-36	36-42	
Pregnancy number	primipara	28	3	0	0	31
	Secondgravida	7	14	3	0	24
	Multigravida	0	4	0	1	5
Total		35	21	3	1	60

4.3.5 The effect of age and pregnancy number of the pregnant women.

The effect of Pregnancy number of the mother age is shown in Table 11. It is seen from the Table that 28 primipara pregnant women belonged to the age range 18-24, 3 primipara pregnant women belonged to the age range 24-30, and 0 primpara pregnant women belonged to the age range 30-36 and36-42. From the table that 7 secondgravida pregnant women belonged to the age range 18-24.14 secondgravida pregnant women belonged to the age range24-30.3 secondgravida pregnant women belonged to the age range30-36 and 0 secondgravida pregnant women belonged

to the age range 36-42.Again from the table that 0 multigravida pregnant women belonged to the age range18-24,4 multigravida pregnant women belonged to the age range 24-30,0 and 1 multigravida pregnant women belonged to the age range between 30-36 and 36-42.(Table 11)

Pearson chi-Square value is 39.661 and chi-Square statistics degrees of freedom are 6. Asymptotic Significance (2-sided) is p value and significant value and is .000 number of the time level of testing at the high level of significant.The result would be statistically significant and will accept are alternative hypothesis. I say that it will be significantly associated between respondent age and pregnancy number. (Table 12)

Table 12: Chi-Square Tests of age and pregnancy number

Item	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	39.661[a]	6	.000
Likelihood Ratio	38.451	6	.000
Linear-by-Linear Association	25.533	1	.000
N of Valid Cases	60		
a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .08.			

4.3.6 The effect of income level of the mothers on pregnancy number

The effect of income level of the mothers on pregnancy number is presented in table 13 .It is seen from the table that 20   primipara pregnant women's income level are 15000-20000 tk,7 primipara had 20000-25000 Tk , and 4 women's had 30000-40000 tk. In this study 14 secondgravida pregnant women's income level are 15000-20000 tk,5 secondgravida had 20000-25000 tk, and 5 women's had 30000-40000 tk. the selected 2 multigravida pregnant women income are 15000-20000tk. Only 1 multigravida had 20000-25000 tk, and 2 women's had 30000-40000 tk.(Table 13)

Pearson chi-Square value is 2.337 and the chi-Square statistics degrees of freedom are 4. Asymptotic Significance (2-sided) are p-value and significant value is .674.Number of the time level of testing at the level of insignificant. Likelihood ratio is 2.107 and likelihood ratio

statistics degrees of freedom are 4. Asymptotic Significance (2-sided) is p value and significant value and is .716 number of the time level of testing at the level of insignificant. (Table 14)

Table 13: The effect of income level of the mothers on pregnancy number

Item	Category	Income of Respondent family			Total
		15000-20000	20000-25000	30000-40000	
Pregnancy number	primipara	20	7	4	31
	Secondgravida	14	5	5	24
	Multigravida	2	1	2	5
Total		36	13	11	60

Table 14: Chi-Square Tests of income level of the mothers on pregnancy number

Item	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.337[a]	4	.674
Likelihood Ratio	2.107	4	.716
N of Valid Cases	60		
a. 4 cells (44.4%) have expected count less than 5. The minimum expected count is .92.			

4.3.7 The effect of profession of the mothers on pregnancy number

The effect of profession of the mothers on pregnancy number is presented in table 15 .It is seen from the table that 27   primipara pregnant women's are housewife and 4 belongs to service. In this study 21 secondgravida pregnant women are housewife and 3 involved in service.4 multigravida women are housewife and only one woman are doing job. (Table 15)

Table 15: The effect of profession of the mothers on pregnancy number

Item	Category	Profession		Total
		Housewife	**Service**	
Pregnancy number	primipara	27	4	31
	Secondgravida	21	3	24
	Multigravida	4	1	5
Total		52	8	60

Table 16: Chi-Square Tests of profession of the mothers on pregnancy number

Item	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	$.212^a$	2	.900
Likelihood Ratio	.190	2	.909
N of Valid Cases	60		
a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .67.			

Pearson chi-Square value is .212 and chi-Square statistics degrees of freedom are 2. Asymptotic Significance (2-sided) are p value and significant value and is .900 number of the time level of testing at the level of insignificant. Likelihood ratio is .190 and likelihood ratio statistics degrees of freedom are 2. Asymptotic Significance (2-sided) is p value and significant value and is .909 number of the time level of testing at the level of insignificant. (Table 16)

4.3.8 Effect of hemoglobin of mothers blood group

The Effect of hemoglobin of mothers blood group is presented in table 17 .it is seen from the table that 7 A+ pregnant women had 8 to 10 of hemoglobin,8 had 10 to 12 hemoglobin and only one had 12up hemoglobin. In this study no one A- pregnant women had 8 to 10 of hemoglobin,1 had 10 to 12 hemoglobin and no one had 12up hemoglobin .the selected 4 B+ pregnant women had 8 to 10 of hemoglobin,10 had 10 to 12 hemoglobin and 5   had 12up

hemoglobin. The table show that 4 AB+ pregnant women had 8 to 10 of hemoglobin, only one had 10 to 12 hemoglobin and 12up hemoglobin. In this study 7 O+ pregnant women had 8 to 10 of hemoglobin,6 had 10 to12 hemoglobin and 4 had 12up hemoglobin and no one O- pregnant women had 8 to 10 of hemoglobin, only one had 10 to 12 hemoglobin and no one had 12up hemoglobin.(Table 17)

Table 17: Effect of hemoglobin of mother's blood group

Group		Hemoglobin			Total
		8 to 10	**10 to 12**	**12 up**	
Blood	A+	7	8	1	16
	A-	0	1	0	1
	B+	4	10	5	19
	AB+	4	1	1	6
	O+	7	6	4	17
	O-	0	1	0	1
Total		22	27	11	60

Table 18: Chi-Square Tests of hemoglobin of mother's blood group.

Item	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.449[a]	10	.490
Likelihood Ratio	10.820	10	.372
Linear-by-Linear Association	.070	1	.792
N of Valid Cases	60		
a. 12 cells (66.7%) have expected count less than 5. The minimum expected count is .18.			

Pearson chi-Square value is 9.449 and chi-Square statistics degrees of freedom are 10. Asymptotic Significance (2-sided) are p value and significant value and is .490 number of the time level of testing at the level of insignificant. Likelihood ratio is 10.820 and likelihood ratio

statistics degrees of freedom are 10. Asymptotic Significance (2-sided) is p value and significant value and is .372 number of the time level of testing at the level of insignificant. Linear-by-Linear Association is .070 and likelihood ratio statistics degrees of freedom are 1. Asymptotic Significance (2-sided) is p value and significant value and is .792 number of the time level of testing at the level of insignificant. (Table 18)

4.3.9 The effect of hemoglobin level of the mother pregnancy number

The effect of hemoglobin level of the mother pregnancy number is presented in table 19. It is seen from the table that 10 primipara pregnant women had 8 to 10 hemoglobin. 14 had 10 to 12 hemoglobin and 7 had 12 up hemoglobin. In this study 9 secondgravida pregnant women had 8 to 10 hemoglobin, 4 had 12 up hemoglobin. The selected 3 multigravida pregnant women had 8 to 10 hemoglobin.2 had 10 to 12 hemoglobin and no one had 12 up hemoglobin .(Table19)

Table 19: The effect of hemoglobin level of the mother pregnancy number

Item	Category	Hemoglobin			Total
		8 to 10	**10 to12**	**12 up**	
Pregnancy number	primipara	10	14	7	31
	Secondgravida	9	11	4	24
	Multigravida	3	2	0	5
Total		22	27	11	60

Table 20: Chi-Square Tests of hemoglobin level of the mother pregnancy number

Item	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.201[a]	4	.699
Likelihood Ratio	2.985	4	.560
Linear-by-Linear Association	1.749	1	.186
N of Valid Cases	60		
a. 4 cells (44.4%) have expected count less than 5. The minimum expected count is .92.			

Pearson chi-Square value is 4.162 and chi-Square statistics degrees of freedom are 5. Asymptotic Significance (2-sided) are p value and significant value and is .526 number of the time level of testing at the level of insignificant.

Likelihood ratio is 4.934 and likelihood ratio statistics degrees of freedom are 5. Asymptotic Significance (2-sided) are p value and significant value and is .424 number of the time level of testing at the level of insignificant. Linear-by-Linear Association is .153 and likelihood ratio statistics degrees of freedom are 1. Asymptotic Significance (2-sided) is p value and significant value and is .696 number of the time level of testing at the level of insignificant. (Table 20)

4.3.10 Effect of delivery system of mother on pregnancy number

Effect of delivery system of mother on pregnancy number is presented in table 21. It is seen from the table that 16 primipara pregnant women had vaginal delivery and 15 had cesarean delivery. in this study 17 secondgravida pregnant women had vaginal delivery and 7 choose cesarean. This table shows that 2 multigravida pregnant women had vaginal and 3 had cesarean delivery. (Table 21)

Table 21: Effect of delivery system of mother on pregnancy number

Item	Category	Delivery		Total
		vaginal	**Cesarean**	
Pregnancy number	primipara	16	15	31
	Secondgravida	17	7	24
	Multigravida	2	3	5
Total		35	25	60

Pearson chi-Square value is 2.810 and chi-Square statistics degrees of freedom are 2. Asymptotic Significance (2-sided) is p value and significant value and is .245 number of the time level of testing at the level of insignificant. Likelihood ratio is 2.856 and likelihood ratio statistics degrees of freedom are 5. Asymptotic Significance (2-sided) is p value and significant value and is .240 number of the time level of testing at the level of insignificant. Linear-by-Linear Association is .223 and likelihood ratio statistics degrees of freedom are 1. Asymptotic

Significance (2-sided) is p value and significant value and is .637 number of the time level of testing at the level of insignificant. (Table 2)

Table 22: Chi-Square Tests of delivery system of mother on pregnancy number

Item	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.810^a	2	.245
Likelihood Ratio	2.856	2	.240
Linear-by-Linear Association	.223	1	.637
N of Valid Cases	60		
a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.08.			

4.3.11 the effect of education on pregnancy number of pregnant women

The effect of education on pregnancy number of pregnant women is presented in Table 23. It is seen from the Table that 31 primipara pregnant women had different category of education.14 women completed JSC, 4 are illiterate,9 are HSC. In this case 24 secondgravida pregnant women completed their education.9 women had JSC, 8 had HSC,5 are educated. The selected only 5 multigravida pregnant women had completed their education. (Table 23)

Pearson chi-Square value is 6.533 and chi-Square statistics degrees of freedom are 10. Asymptotic Significance (2-sided) is p value and significant value and is .769 number of the time level of testing at the level of insignificant. Likelihood ratio is 8.510 and likelihood ratio statistics degrees of freedom are 10. Asymptotic Significance (2-sided) is p value and significant value and is .579 number of the time level of testing at the level of insignificant. Linear-by-Linear Association is 1.077 and likelihood ratio statistics degrees of freedom are 1. Asymptotic Significance (2-sided) is p value and significant value and is .299 number of the time level of testing at the level of insignificant. (Table 24)

Table 23: The effect of education on pregnancy number of pregnant women

Type	Category	Education						Total
		Illiterate	PEC	JSC	SSC	HSC	Graduate and above	
Pregnancy number	primipara	4	3	14	0	9	1	31
	Secondgravida	5	1	9	1	8	0	24
	Multigravida	1	1	3	0	0	0	5
Total		10	5	26	1	17	1	60

Table 24: Chi-Square Tests of education on pregnancy number of pregnant women

Item	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.533[a]	10	.769
Likelihood Ratio	8.510	10	.579
Linear-by-Linear Association	1.077	1	.299
N of Valid Cases	60		
a. 13 cells (72.2%) have expected count less than 5. The minimum expected count is .08.			

4.3.12 Effect of drinking milk on educated pregnant women

The effect of drinking milk on educated pregnant women is presented in table 25. It is seen from the table that most of the women drinking milk at daily. The selected 46 different level of educated women drinking milk at everyday.9 women are illiterate, 19 women are completed JSC, 15 women completed HSC. And 14 pregnant women cannot take milk at every day.

Table 25: Effect of drinking milk on educated pregnant women

Item	Type	Education						Total
		Illiterate	**PEC**	**JSC**	**SSC**	**HSC**	**Graduate and above**	
Milk	No	1	3	7	1	2	0	14
	Yes	9	2	19	0	15	1	46
Total		10	5	26	1	17	1	60

Table 26: Chi-Square Tests of drinking milk on educated pregnant women

Item	Value	df	Asymptomoc Significance (2-sided)
Pearson Chi-Square	9.801^a	5	.081
Likelihood Ratio	9.356	5	.096
Linear-by-Linear Association	.421	1	.517
N of Valid Cases	60		
a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .23			

Pearson chi-Square value is 9.801 and chi-Square statistics degrees of freedom are 5. Asymptotic Significance (2-sided) are p value and significant value and is .081 number of the time level of testing at the 5% level of significant..The result would be statistically significant and will accept are alternative hypothesis. I say that it will be significantly associated between educated women and drinking milk. (Table 26)

4.3.13 Effect of intake egg on educated pregnant women

The effect of intake egg on educated pregnant women is presented in table 27. It is seen from the table that most of the women intake egg at daily. The selected 27 different level of educated women intake egg at everyday.5 women are illiterate,8 women are completed JSC,9 women completed HSC. And 33 pregnant women cannot take egg at everyday.18 are completed JSC, 8 had Completed HSC,5 are illiterate. (Table 27)

Table 27: Effect of intake egg on educated pregnant women

Item	Type	Education						Total
		Illiterate	PEC	JSC	SSC	HSC	Graduate and above	
Egg	No	5	2	18	0	8	0	33
	Yes	5	3	8	1	9	1	27
Total		10	5	26	1	17	1	60

Table 28:Chi-Square Tests of intake egg on educated pregnant women

Item	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.561^a	5	.351
Likelihood Ratio	6.379	5	.271
Linear-by-Linear Association	.328	1	.567
N of Valid Cases	60		
a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .45.			

Pearson chi-Square value is 5.561 and chi-Square statistics degrees of freedom are 5. Asymptotic Significance (2-sided) is p value and significant value and is .351 number of the time level of testing at the level of insignificant. Likelihood ratio is 6.379 and likelihood ratio statistics degrees of freedom are 5. Asymptotic Significance (2-sided) is p value and significant value and is .271 number of the time level of testing at the level of insignificant. Linear-by-Linear Association is .328 and likelihood ratio statistics degrees of freedom are 1. Asymptotic Significance (2-sided) is p value and significant value and is .567 number of the time level of testing at the level of insignificant. (Table 28)

4.3.14 Effect of intake pulse on educated pregnant women

The effect of intake pulse on educated pregnant women is presented in table 29. It is seen from the table that most of the women consume pulse at daily. The selected 35 different level of educated women consume pulse at everyday.9 women are illiterate, 15 women are completed JSC, 7 women completed HSC. And 25 pregnant women cannot take pulse at everyday.11 had completed JSC, 10 women completed HSC. (Table 29)

Table 29: Effect of intake pulse on educated pregnant women

Item	Type	Education						Total
		Illiterate	**PEC**	**JSC**	**SSC**	**HSC**	**Graduate and above**	
Pulse	No	1	3	11	0	10	0	25
	Yes	9	2	15	1	7	1	35
Total		10	5	26	1	17	1	60

Pearson chi-Square value is 8.309 and chi-Square statistics degrees of freedom are 5. Asymptotic Significance (2-sided) is p value and significant value and is .140 number of the time level of testing at the level of insignificant. Likelihood ratio is 9.811 and likelihood ratio statistics degrees of freedom are 5. Asymptotic Significance (2-sided) is p value and significant value and is .081 number of the time level of testing at the 5% level of significant.The result would be statistically significant and will accept are alternative hypothesis. I say that it will be significantly associated between educated women and intake pulse.

Linear-by-Linear Association is 3.092 and likelihood ratio statistics degrees of freedom are 1. Asymptotic Significance (2-sided) are p value and significant value and is .079 number of the time level of testing at the 5% level of significant..The result would be statistically significant and will accept are alternative hypothesis. I say that it will be significantly associated between educated women and intake pulse. (Table 30)

Table 30: Chi-Square Tests of intake pulse on educated pregnant women

Item	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.309[a]	5	.140
Likelihood Ratio	9.811	5	.081
Linear-by-Linear Association	3.092	1	.079
N of Valid Cases	60		
a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .42.			

4.3.15 Effect of drinking juice on educated pregnant women

The effect of drinking juice on educated pregnant women is presented in table 31. It is seen from the table that most of the women drinking juice at daily. The selected 27 different level of educated women drinking juice at everyday.5 women are illiterate, 9 women are completed JSC, 9 women completed HSC. And 33 pregnant women cannot take juice at everyday.5 are illiterate, 17 women completed JSC and 18 had HSC. (Table 31)

Pearson chi-Square value is 4.162 and chi-Square statistics degrees of freedom are 5. Asymptotic Significance (2-sided) is p value and significant value and is .526 number of the time level of testing at the level of insignificant. Likelihood ratio is 4.934 and likelihood ratio statistics degrees of freedom are 5. Asymptotic Significance (2-sided) is p value and significant value and is .424 number of the time level of testing at the level of insignificant.

Linear-by-Linear Association is .153 and likelihood ratio statistics degrees of freedom are 1. Asymptotic Significance (2-sided) is p value and significant value and is .696 number of the time level of testing at the level of insignificant. (Table 32)

Table 31: Effect of drinking juice on educated pregnant women

Item	Type	Education						Total
		Illiterate	PEC	JSC	SSC	HSC	Graduate and above	
Juice	No	5	2	17	1	8	0	33
	Yes	5	3	9	0	9	1	27
Total		10	5	26	1	17	1	60

Table 32: Chi-Square Tests of drinking juice on educated pregnant women

Item	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.162[a]	5	.526
Likelihood Ratio	4.934	5	.424
Linear-by-Linear Association	.153	1	.696
N of Valid Cases	60		
a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .45.			

4.3.16 Effect of sugar of mother on pregnancy number

The effect of sugar level of the mother on the pregnancy number is presented in table 33. It is seen from the table that 27 primipara pregnant women had below 7 m/mol of sugar, only one had 7 to 10 m/mol sugar and 3 had above 11 m/mol sugar. In this study 19 secondgravida pregnant women had below 7 m/mol of sugar, 4 had 7 to 10 m/mol sugar and only one had above 11 m/mol sugar. This table shows that, 3 multigravida pregnant women had below 7 m/mol of sugar, no one had 7 to 10 m/mol sugar and 2 had above 11 m/mol sugar. (Table 33)

Table 33: Effect of sugar of mother on pregnancy number

Item	Category	Sugar			Total
		Below 7 m/mol	7 to 10 m/mol	Above 11 m/mol	
Pregnancy number	primipara	27	1	3	31
	Secondgravida	19	4	1	24
	Multigravida	3	0	2	5
Total		49	5	6	60

Table 34:Chi-Square Tests of sugar of mother on pregnancy number

Item	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.125^a	4	.058
Likelihood Ratio	7.689	4	.104
Linear-by-Linear Association	1.881	1	.170
N of Valid Cases	60		
a. 7 cells (77.8%) have expected count less than 5. The minimum expected count is .42.			

Pearson chi-Square value is 9.125 and chi-Square statistics degrees of freedom are 4. Asymptotic Significance (2-sided) is p value and significant value and is .058 number of the time level of testing at the 5% level of significant. The result would be statistically significant and will accept are alternative hypothesis. I say that it will be significantly associated between sugar of mother and pregnancy number. (Table 34)

4.3.17 Multiple Regression Analysis

Table 35: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.349[a]	.122	.022	.717
a. Predictors: (Constant), Blood, Age, Income, BMI, parity, Weight				

The coefficient of determination (R Square) is the summary of how well the sample regression line fits the data. Table 35 shows that the R Square value for pregnant women is 12.2% variation of the hemoglobin in pregnant women was explained by the independent variables included in the model respectively. The values of adjusted R Square were .022 for pregnant women. This means that after taking into account the degrees of freedom (df), independents variables in the model still explained 2.2% of the variation of the hemoglobin in pregnant women. (Table 35)

Table 36 : ANOVA[s]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.771	6	.628	1.224	.309[b]
	Residual	27.213	53	.513		
	Total	30.983	59			
a. Dependent Variable: Hemoglobin						
b. Predictors: (Constant), Blood, Age, Income, BMI, parity, Weight						

Significant value is .309.P value is greater than alpha (.05),I say that the model is insignificant. (Table 36)

Table 37: Coefficients

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.167	.888		2.439	.018
Age	.010	.031	.063	.316	.754
Income	2.842	.000	.179	1.273	.208
Weight	-.032	.024	-.349	-1.344	.185
BMI	.044	.055	.195	.796	.430
parity	-.288	.218	-.257	-1.320	.193
Blood	.014	.042	.047	.338	.737
a. Dependent Variable: Hemoglobin					

The estimated multiple Regression line is -

Hemoglobin = 2.167 +.010 * Age + 2.842 * Income - .032 * Weight + .044 * BMI - .288 * Parity + .014 * Blood

Table 37 shows that the regression coefficient of age for pregnant women are .010 which is positive and t-value are .316 and significant value are .754.so I say that it would be statistically insignificant. the regression coefficient of income for pregnant women are 2.842 which is positive and t-value are 1.273 and significant value are .208 .so I say that it would be statistically insignificant . The regression coefficient of weight for pregnant women are .032 which is negative and t-value are -1.344 and significant value are .185 .so I say that it would be statistically insignificant .

The regression coefficient of BMI for pregnant women are .044 which is positive and t-value are .796 and significant value are .430 .so I say that it would be statistically insignificant .The regression coefficient of Parity for pregnant women are .288 which is negative and t-value are .-

1.320 and significant value are .193 .so I say that it would be statistically insignificant .The regression coefficient of Blood for pregnant women are .014 which is positive and t-value are .338 and significant value are .737.so I say that it would be statistically insignificant. (Table 37)

CHAPTER-5

SUMMARY, CONCLUSION AND RECOMMENDATION

CHAPTER-5

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Nutrition is a elementary pillar of individual life, health and development throughout the entire life span. Proper food and good nutrition are necessary for endurance, physical growth, mental development, productivity, health and well being. Pregnancy is such a vital phase in a woman's life, when the pregnant mother needs optimal greater quality of food to support the developing fetus. Children are vital to the nation's present and its future in recent years, there has been an increased focus on issues that affect children and on improving their health. Children have begun to be recognized not only for whom they are today but for their future roles in creating families, powering the workforce, and making democracy work.

The present study entitled "Assessment of nutritional status of pregnant women: A study in Noakhali district" was carried out in Sadar upazila, Noakhali. For the study sixty pregnant women were purposively selected. A pre planned questionnaire containing the general information of the pregnant women**.** Here first chapters basically discuss about the background of the thesis. In second chapter literature of review is discussed. Third chapter methodologies are used in preparation of the report. Data is collected from primary and secondary source. Chapter four discuss about total thesis result and its other factors.. In this part I discuss about the socio–economic status of the selected pregnant women of Sadar upazila in Noakhali district. A pre planned questionnaire containing the general information of the pregnant women such as age, education, income of the family, type of family, no of family members and the information regarding obstetrical history as age at first pregnancy, parity, spacing and type of delivery was prepared. The information about complications during pregnancy, anthropometric measurements, biochemical examination i.e. hemoglobin content and blood group of pregnant women was also collected. The questionnaire also contained the information about meal pattern and food consumption of the pregnant women. Then discuss about the nutritional health status &food consumption of pregnant women .their daily consuming food menu, I showed different types of charts, graphs etc for describing the health nutritious condition of the selected pregnant women

of Sadar upazila   in   Noakhali district. Then I discuss about the effect of nutritional status of pregnant women on outcome of pregnancy by using some cross tabulation analysis, chi-square test. And For preparing this report the main objective is to concentrate on the activities related with healthy newborn child who is an asset for future development. I have learned about how to consume nutritious food and its effect of our newborn child health.

From my practical experience, observation and discussion with the 60 pregnant women I tried to find out the general information of the pregnant women such as age, education, income of the family, type of family and the information regarding obstetrical history as age at first pregnancy, parity and type of delivery was prepared. The information about complications during pregnancy, anthropometric measurements, biochemical examination of the selected pregnant women of Sadar upazila   in   Noakhali district.

Among the selected pregnant women 26.7 per cent belonged to age group 16 to 20 years, 40 per cent belonged to 20 to 25 years, 26.7 per cent belonged to 26 to 30 years. Among the selected pregnant women 86.7 percent belonged to housewife and only 13.3 percent involved in service. Majority (41.7%) of the pregnant women were Secondary School Certificate College educated while 20.00 % were Higher Secondary certificate. The selected pregnant Women were Graduate 11.7%. No one was illiterate in this group. 51.67 per cent belonged to nuclear family, 40.00 per cent joint family and 8.33 per cent extended family. Maximum (81.7%) had 4 to 6 members in their family, while 10.00 per cent had 2-3 family members and 5 per cent had more than 7 to 10 members in their family. And only 3.3 percent had more than 11 members in their family. In this study 31 (51.7 %) were primipara and 24 (40.00%) were secondgravida and only five (8.3 %) were multigravida. Among the selected pregnant women 60 per cent were of the age group of 20 to 30 years at first pregnancy, 40 per cent were less than 20 years..Among the selected 60 pregnant women 35 (58.30%) had vaginal delivery while 25 (41.70%) had cesarean section. In this study BMI of the selected pregnant 61.7 percent women were normal weight,21.7 percent overweight,15 percent had underweight only 1.7 percent had obese class. Meal pattern of the pregnant women is given in Table 6. It is seen from the Table that 80.00 per cent of pregnant women were taking the meal three to five times in a day while 5.00 per cent were taking the meal two times in a day. And 15 percent were taking the meal more than 5 times. Biochemical examinations of pregnant women are given in Table 5. The Table shows that 10 per cent of pregnant women had

AB+ blood group, 26.70 per cent pregnant women had A+ blood group, 28.3 per cent had O+, 31.7 per cent had B+ blood group. Only 1.7 per cent of pregnant women belonged to O- and A- blood group. Zero percent pregnant women belonged to B- and AB- blood group. In this study 96.00 per cent pregnant women were having Tetanus vaccine .Among the selected pregnant women 56 (93.3%)were taking HbsAg (Hepatitis B surface antigen) vaccine and 4 (6.7%) did not having HbsAg vaccine. This case most of the pregnant women 96.7 percent were having Folic acid .Food consumption pattern of selected pregnant women were ruti, potato fry, egg, vegetable, dal,potato fry. bread, in every day. Kheer, milk, Chira, pitha, muri, khoi, fruit juice and coconut water were taken in mid snacks. During pregnancy it is advised by the doctor to take coconut water, milk and fruit juices,. The different recipes taken in the lunch were rice, other vegetables, fish, chicken green leafy vegetables and dhal. Tea, milk and biscuits were taken at the time of snacks.Rice, khichuri, milk, vegetable, dal, fish were taken at the time of dinner..In this study 60 percent pregnant women were having gynecological surgery and 40 percent not having this surgery. 73.3 percent were gaining too little weight.13.3 percent pregnant women were gaining too much and 13.3 percent were not any change. 31.7 percent pregnant women doing a little more exercise.63.3 percent pregnant women doing not any exercise The information regarding complications during pregnancy is presented in oedema eye problem sore mouth body aches appetite loss pallor muscles pain burning feet hypertension .In this study 40 per cent pregnant women had hemoglobin 10-12 g/dl, 33.3 per cent had 8-10 g/dl hemoglobin. 12 g/dl up was seen in 18.3 per cent and below 7 g/dl was in 8.33 per cent. 56.7 percent having normal BP. Low 36.7 percent and only 4 (6.7%) high .81.7 percent were carrying Below 7 m/mol portion diabatics.10.0 percent Above 11 m/mol portion diabetics and only 8.3 percent pregnant women were carrying 7 to 10 m/mol portion diabetics at pregnancy period.

The coefficient of determination (R Square) is the summary of how well the sample regression line fits the data. Table shows that the R Square value for pregnant women is 12.2% variation of the hemoglobin in pregnant women was explained by the independent variables such age,income,weight,BMI,parity,blood included in the model respectively. The value of adjusted R Square was .022 for pregnant women. This means that after taking into account the degrees of freedom (df), independents variables in the model still explained 2.2% of the variation of the

hemoglobin in pregnant women. Significant value is .309.P value is greater than alpha (.05),I say that the model is insignificant

Table shows that the regression coefficient of age for pregnant women are .010 which is positive and t-value are .316 and significant value are .754.so I say that it would be statistically insignificant. the regression coefficient of income for pregnant women are 2.842 which is positive and t-value are 1.273 and significant value are .208 .so I say that it would be statistically insignificant . The regression coefficient of weight for pregnant women are .032 which is negative and t-value are -1.344 and significant value are .185 .so I say that it would be statistically insignificant .Regression line is

Hemoglobin = 2.167 +.010 * Age + 2.842 * Income - .032 * Weight + .044 * BMI - .288 * Parity + .014 * Blood

I hope that the all respondent can provide excellence service with efficiency, accuracy and proficiency. The study is based on the primary data. But some also use on secondary data. Data were collected from the Face to face conversation with pregnant women. Their husband and family member cooperate with me. Directly consult their doctor when they were going to clinic. Their pathological report and their previous medical report.

5.2 Conclusion

It is evident that as the education level is increasing then also increasing consumes some nutritious food. It can also help for give us healthy child for our country. In this study healthy newborn is also increasing but it was found that there is insignificant. Finally it can be concluded from the above results that pregnant women of Sadar upazila, Noakhali were undernourished. As the hemoglobin level will be increasing the health of the newborn will also increasing. The diet of the pregnant women was deficient in amount as well as in nutrient content. Most of the pregnant women take all vaccine such as, tetanus, hepatitis b and also take some medicine like folic acid, vitamin, and iron tablet.

Augmentation in education and socioeconomic status are the key components of good pregnancy outcome, which are still at dwarf phase and effective antenatal care is lacking among the pregnant women, in rural and resource limited healthcare background for which a structured referral system and increased awareness in women are essential, regarding significance of maternal nutrition and risks of under nutrition. Low birth weight in India has been attributed to widespread maternal under nutrition. Further, study bearing large number of study subjects shall better give insight regarding the prevalence of malnutrition. Most of the selected pregnant women live in village; they have not getting good facilities and service .That's why its problematic for new healthy born child .but today's healthy born child are futures healthy adults and leaders for any country .Today's very important thinking should be government concern our all pregnant women and creating huge community clinic, and provide enough efficient doctors in village side. And provide medicine, vaccine, and some financial support for poor pregnant women.

In this study some pregnant women were little educated that's are reason they are not conscious about their health and nutritious situation .they are not concern about food items what are helping their baby growth properly and healthy. But its good sign recent many community clinic, and health workers who also going door to door and advice medical suggestion .so my selected areas some pregnant women also follow their roles and going to doctors clinic. And they are aware how to increasing newborn healthy child. Children have begun to be recognized not only for who they are today but for their future roles in creating families, powering the workforce, and making democracy work.

5.3 RECOMMENDATION

Today's children are future machine of development. So their strong health should be build from mother embryo. Then we will get healthy children and they will wealth of our country. From my analysis I can recommend some points to increasing healthy newborn children for any developing countries.

- ➢ Pregnant women should be given nutrition knowledge to take the required food and nutrients so that their health will be good and good result of pregnancies will be seen.
- ➢ The pregnant women should be take proper meal regularly
- ➢ The pregnant women should be consult doctors regularly and follow their suggestion properly.
- ➢ They should be take vaccine at right time.
- ➢ The pregnant women should check up at community clinic and hospital.
- ➢ They should be performing regular pregnancy exercise.
- ➢ I recommend that the pregnant women should be take folic acid, zinc tablet and iron tablet according to doctor's prescription.
- ➢ They should not do heavy work at home or outside
- ➢ I suggested that the pregnant women should eat sufficient amount of protein, carbohydrate, fat, vitamin, mineral, health food regularly.
- ➢ The pregnant women should be take sufficient rest
- ➢ They should take proper amount of sleep.

5.4 Limitation of the study

I faced the following obstacles while preparing this thesis-

- ➢ Most of the pregnant women came from conservative family, so they can not share their pregnancy information.
- ➢ Some pregnant women are little educated, so they are not clearly answered about my question
- ➢ Some pregnant women feel shy so they cannot provide their information
- ➢ My selected most of the pregnant women live in village, so they can not going to consult doctors and community clinic, then they have not get proper medical report so it's tough for me collect information.
- ➢ Most of the pregnant women are housewife so they are too much busy that's why I got less time for collect information.

References

Jenniferbritto J and Mary M (2017). Maternal and fetal outcomes of obese pregnant women: a prospective cohort study. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 6(2):725-729.

Pal R, Maiti M, Bidisha R, Pushily S and Chowdhury B (2017). Association of presentational body mass index and antenatal weight gain with pregnancy outcome: a prospective observational cohort study .*International Journal of Women's Health and Reproduction Sciences*, 5 (1): 37-40.

Gupta P, Dev P and Kumar A (2016). Study of influence of maternal age, parity and hemoglobin on neonatal birth weight. *The Pharma Innovation Journal*, 5(7): 54-57.

Eyad A, Rafia B, Shahida B, Bushra S. F and Asma S (2015). Study on the determinants of pregnancy outcome. *International Archives of Integrated Medicine*, 2 (6): 160-171.

Ekwere T. A and Ekanem A. M (2015). Maternal knowledge, food restriction and prevention strategies related to anemia in pregnancy: a cross-sectional study. *International Journal of Community Medicine and Public Health*, 2(3): 331-338.

Kuche D, Singh P, M Debebe and Belachew T (2015). Nutritional status and associated factors among pregnant women in Wondo Genet district, Southern Ethiopia. *Journal of Food Science and Engineering*, 5: 85-94.

Kulkarni V. S (2015). Study of the maternal weight gain and various factors associated with it. *International Medical Journal*, 2(6): 372-374.

Lutfa A, Hossain MB, AMAA Awal and Nesa A (2015). Anthropometric Assessment of nutritional status in pregnant women in different trimesters attending at the antenatal clinic of DMCH. *AKMMC Journal*, 6(1): 20-24.

Muhammad Y. F, Biyan R, Muhammad I. M, Nabella Q. L. D, Mentari S.P , Ikhwanuliman P, Aliefatin and Herbert S (2015). Weight gain pattern during Pregnancy among women attending for normal labor at Makasar primary health care, Jakarta. *Indian Journal of Nutrition*, 2 (1):1-3.

Nisal K. M (2015). Assessment of nutritional status of pregnant women belonging to low income group. *Journal of Science*, 5 (8): 580-582.

Osman G.S.M and Nada Ali (2015). Assessment of nutritional status using anthropometric measurements in relation to pregnancy outcome among Southern Sudanese pregnant mothers in juba city. *International Journal of Science and Research*, 4 (11): 1451-1457.

Fatima A, Thaver I & Khan S.A (2014). Assessment of dietary diversity and nutritional status of pregnant women in Islamabad, Pakistan. *J Ayub Med Coll Abbotttabad*, 26 (4): 506-509.

Morsy N and Alhady S (2014). Nutritional status and socio- economic conditions influencing prevalence of anemia in pregnant women. *International Journal of Scientific & Technology Research*, 3 (7): 54-60.

Mousumi G (2014). Association of maternal age and low socio- economic status of women on birth outcome. *International Research Journal of Social Sciences*, 3(10): 21-27.

Hossian B, Tanvir S, Salim R and Nasima A (2013). Nutritional status of pregnant women in selected rural and urban area of Bangladesh. *J Nutr Food Science*, 3(4): 1-3.

Krishna K.S, Idris M.Z, Agarwal M, Singh S.K , Wahid Ali, Pratap Shaankar and Dixit R.K. (2013). Effect of anemia during third trimesters of pregnancy on gestational size and birth weight of babies in rural Lucknow, India. *World journal of pharmacy and pharmaceutical sciences*, 2(6): 4942-4950.

Solanki N, Kavishwar A, Chaudhari V and Chhasatiya N (2012) . The effect of maternal anthropometric characteristics and social factors on birth weight of child in small town hospital of Gandevi block of Navsari district. International Journal of Medical Science and public Health, 1(2):32-37.

Deshpande J. D, Phalke DB, Bangal VB, Peeyuusha D and Bhatt S (2011). Maternal risk factors for low birth weight neonates: A hospital based case- control study in rural area of western Maharashtra India. *National Journal of Community Medicine*, 2 (3): 394-398.

Nadeem Ahmad, Piyush Kalakoti, Rubeena Bano and Syed M.M. Aarif (2010). The prevalence of anemia and associated factors in pregnant women in a rural Indian community. *Australasian Medical Journal*, 3(5): 276-280.

Theobald C. E. Mosha and Napendaeli philemon (2010). Factors influencing pregnancy outcomes in Morogoro Municipality, *Tanzania. Tanzania Journal of Health Research*, 12(4): 249-260.

World Health Organization. Promoting Optimal Felat Development: report of a technical consultion(2006).Available_from:*http://www.who.int/nutrition/publications/fetal_dev_re port_EN*.pdf.[Cited 2010,May 2].

https://www.science20.com/humboldt_fellow_and_science/blog/healthy_nations_are_wealthy_nations_0

https://www.ncbi.nlm.nih.gov/pubmed/22536616

https://support.minitab.com/en-us/minitab-express/1/help-and-how-to/basic-statistics/tables/cross-tabulation-and-chi-square/interpret-the-results/all-statistics/

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6351719/

https://apps.who.int/iris/bitstream/handle/10665/267508/PMC2555677.pdf?sequence=1&isAllowed=y

http://ijopp.org/sites/default/files/10.5530ijopp.10.1.5.pdf

SURVEY FOR RESPONDENT PREGNANT WOMEN DEPARTMENT OF DEVELOPMENT AND POVERTY STUDIES, SHER-E-BANGLA AGRICULTURAL UNIVERSITY

Thesis Title:

Assessment of nutritional status of pregnant women: A study in noakhali district

Target respondent: To be completed by pregnant women of Sadar upazila   in Noakhali district-

a) Name   :

b) Age   :

c) Profession :

d) Phone no   :

Please spare a few minutes of your valuable time to answer this simple questionnaire.

❖ What is your educational status?
a) School

b) College

c) Illiterate

❖ How many members is your family?
    Ans:

❖ What type of your family?
a) Joint
b) Nuclear
c) Extended

❖ Tell about your family income?
a) 10k-15k
b) 15k-20k
c) 20k-30k

❖ Is this your first pregnancy?
a) Yes
b) No

❖ What is your
a) Height (cm):
b) Weight(kg):
c) BMI:

❖ Tell about Your First pregnancy age?
a) 20>
b) 20-30
c) 30<

❖ Did you suffer from any one of the following aliments from the time of Pregnancy?

S.N	disease	Period (Trimester)		
1	Oedema			
2	Eye problems			
3	Sore mouth			
4	Body aches			
5	Loss of appetite			
6	Pallor			
7	Pain in calf muscles			
8	Burning feets			
9	Hypertension			
10	Any other			

❖ What is your Blood group?
a) A+/A-
b) B+/B-
c) AB+/AB-
d) O+/O-

❖ Are you in the habit of consulting a doctor about health during pregnancy?
a) Yes
b) No

❖ What is the number of pregnancy in this case?
a) Primipara
b) Secondgravida
c) Multigravida

❖ Parity:
a) 1 children
b) 2 children
c) 3/4 children

❖ Interval between the pregnancies
a) 1year
b) 2year
c) 3year
d) Above 3year

❖ Do you have any special dietary requirements? If yes, please list below and reason.

Special Food	Reason

❖ Which you prefer for your baby delivery?
a) Normal
b) Cesarean

❖ Do you consume dairy products (such as milk, cheese, yogurt) every day?
a) Yes
b) No

❖ Do you eat whole grain carbohydrate foods at least once a day?
a) Yes
b) No

❖ How much level of your hemoglobin?
a) 8-9
b) 9-10
c) 10-11
d) 12 up

❖ Tell about your meal pattern.
a) 2 times
b) 3 times

❖ Do you eat meat or chicken 2-3 times per week?
a) Yes
b) No

❖ Do you regularly eat more than 2 – 3 portions of fruit or vegetables per day?
a) Yes
b) No

❖ Do you eat fish at least 1-2 times per week?
a. Yes
b. No

❖ What about your blood pressure?
a. High
b. Medium
c. Low

❖ What about your sugar condition?
a) 5-8
b) 9-111
c) 12 up

❖ Do you take properly meal everyday?
a) Yes
b) No

❖ Did/Do you take folate/folic acid supplements in pre-pregnancy and in early pregnancy (first 12weeks)?
a) Yes
b) No

❖ How do you feel about your weight change since you became pregnant?
a) Gaining too much
b) Gaining too little
c) Not changed

❖ How does the amount of exercise you get now compare with before you were pregnant?
a) A lot more
b) A little more
c) About the same

❖ Have you had any gynecological surgical procedures such as cervical conization?
a) Yes
b) No

❖ Have you had any alcoholic beverages?
a) Yes
b) No

❖ Did you take tetanus vaccine?
a) Yes
b) No

❖ Meal pattern of the respondent during pregnancy.

Meal pattern	Menu
Breakfast	
Mid snacks	
Lunch	
Tea	
Dinner	