# A Study on awareness of danger signs in pregnancy in selected hospitals of Bangladesh

**A Dissertation submitted to the Department of Pharmacy, East West University, Bangladesh, in partial fulfillment of the requirements for the Degree of Bachelor of Pharmacy**

Submitted by

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# Declaration by the Research Candidate

I, Afroja Nuri ID: 2012-1-70-012, hereby declare that the dissertation entitled "A Study on awareness of danger signs in pregnancy in selected hospitals of Bangladesh" submitted by me to the Department of Pharmacy, East West University in partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy.

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# Certificate by the Supervisor

This is to certify that the thesis entitled " A Study on awareness of danger signs in pregnancy in selected hospitals of Bangladesh" submitted to the Department of Pharmacy, East West University for the partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy is a trustworthy record of original and genuine research work carried out by  Afroja Nuri, ID: 2012-1-70-012 under our supervision and guidance.

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# Certificate by the Chairperson

This is to certify that the thesis entitled "A Study on awareness of danger signs in pregnancy in selected hospitals of Bangladesh" submitted to the Department of Pharmacy, East West University for the partial fulfillment of the requirement for the award of the degree Bachelor of Pharmacy is a trustworthy record of original and genuine research work carried out by Afroja Nuri, ID: 2012-1-70-012.

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Dr. Shamsun Nahar Khan

Associate Professor & Chairperson

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# **<u>Dedication</u>**

This Research Paper is Dedicated to My Beloved Parents**, Md. Abul Hossain Khan** and **Hasna Parvin**; My Sister, **Anjuman Ara Nila;** My brother**, Md. Ashrafur Rahman Khan;** My Friend**, Md. Faysal.**

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## List of Abbreviation

**CDC-** Centers for Disease Control and Prevention

**WHO -** World Health Organization

**PIH -** Pregnancy Induced Hypertension

**ACOG -** American Congress of Obstetricians and Gynecologists

**UNICEF -** United Nations Children's Fund

**IUGR** - Intra Uterine Growth Retardation

**NIH-** National Institutes of Health

**NCBI-** National Center for Biotechnology Information

**NICHD**- Eunice Kennedy Shriver National Institute of Child Health

**GTD**- Gestational Trophoblastic Disease

**GDM**- Gestational Diabetes Mellitus

**SCH**- Subclinical Hypothyroidism

**TSH** -Thyroid Stimulating Hormone

**APA-** American Pregnancy Association

**AACE-** American Association of Clinical Endocrinologists

**ATA-** American Thyroid Association

# Abstract

Complications during pregnancy are of worldwide concern. Therefore, this study was aimed to assess womens' awareness of danger signs of complications and to find out prevalence of current pregnancy complications. It was a survey based study where 148 pregnant women from different hospitals of Bangladesh were interviewed with a questionnaire. All the respondents were in third trimester. From the study 6.08% respondents were found with various complications. A satisfactory level (93.24%) of respondents was found who knew at least one of the warning signs and 6.67% who did not know about any of the warning signs. In addition, most (94.60%) of the respondents knew about water break as a warning sign and only 0.68% knew about the sepsis and abnormal lie. Furthermore, among the respondents 2.70% had no idea about any of the danger sign and 97.30% of the respondents had idea about at least one of the complications. Most (72.97%) of the respondents knew about vomiting as an indicative danger and only 2.03% believed that drainage of liquor could be an indicative of danger. Apparently, 54.73% respondents replied that pineapple was an abortifacient food and only 2.70% knew about fish containing mercury. In case of medication 11.49% respondents were prescribed category D drug where most of the respondents were prescribed in between category A to C. To conclude it can be said that it is important to increase the awareness level among the women and therefore further research work should be carried out with more number of respondents.

**Key Words**

*Pregnancy Awareness, Warning and Danger Signs, Antenatal Care.*

# Chapter 1
# Introduction

## 1.1 Pregnancy

It is the condition or period of being pregnant where maternal physiology undergoes many changes during pregnancy. There are largely secondary to the effects progesterone and estrogen which are produced predominantly by the ovary in the first 12 weeks of pregnancy and there-after are produced by the placenta. These changes both enable the fetus and placenta to grow and prepare the mother and the baby for childbirth (Heidemann and McClure 2003).

A male sperm penetrates an egg and fertilizes it. This usually happens in the woman's fallopian tube after ovulation. Sperm has 23 chromosomes, including one of two types of sex chromosomes - X chromosome or Y chromosome. A sperm with an X chromosome that fertilizes an egg will produce a girl, while a Y chromosome sperm will produce a boy. Each egg also has 23 chromosomes. 46 chromosomes are required to make a human. The fusion of sperm and egg makes 46. As soon as it is fertilized, the zygote starts to divide; it continues doing so until there is a cluster of cells. After five to seven days of dividing and growing, it attaches itself to the wall of the uterus (womb) and puts out root-like veins called villi. The villi make sure the embryo is well anchored to the lining of the uterus. These villi will eventually become the placenta, which feeds and protects the embryo or fetus. Through the placenta the embryo or fetus receives its oxygen and nutrition, and expels waste (Nordqvist, 2014).

### 1.1.1 Symptoms of Pregnancy

Pregnancy symptoms vary from woman to woman. A woman may experience every common symptom, just a few, or none at all. Some signs of early pregnancy include:

- **Slight Bleeding:** One study shows as many as 25% of pregnant women experience slight bleeding or spotting that is lighter in color than normal menstrual blood. This typically occurs at the time of implantation of the fertilized egg (about 6 to 12 days after conception) but is common in the first 12 weeks of pregnancy.
- **Tender, Swollen |Breasts or Nipples:** Women may notice this symptom as early as 1 to 2 weeks after conception. Hormonal changes can make the breasts sore or even tingly. The breasts feel fuller or heavier as well.
- **Fatigue:** Many women feel more tired early in pregnancy because their bodies are producing more of a hormone called progesterone, which helps maintain the pregnancy

and encourages the growth of milk-producing glands in the breasts. In addition, during pregnancy the body pumps more blood to carry nutrients to the fetus. Pregnant women may notice fatigue as early as 1 week after conception.

- **Headaches:** The sudden rise of hormones may trigger headaches early in pregnancy.
- **Nausea or Vomiting:** This symptom can start anywhere from 2 to 8 weeks after conception and can continue throughout pregnancy. Commonly referred to as "morning sickness," it can actually occur at any time during the day.
- **Food Cravings or Aversions:** Sudden cravings or developing a dislike of favorite foods are both common throughout pregnancy. A food craving or aversion can last the entire pregnancy or vary throughout this period.
- **Mood Swings:** Hormonal changes during pregnancy often cause sharp mood swings. These can occur as early as a few weeks after conception.
- **Frequent Urination:** The need to empty the bladder more often is common throughout pregnancy. In the first few weeks of pregnancy, the body produces a hormone called human chorionic gonadotropin, which increases blood flow to the pelvic region, causing women to have to urinate more often (American Pregnancy Association, 2012).

### 1.1.2 Difference between an Embryo, Fetus and Zygote

When the sperm and egg meet, a zygote is produced. The cells of the zygote start multiplying many times. The zygote grows and develops in the fallopian tubes. The moment it is implanted in the wall of the uterus it becomes an embryo. The difference between a zygote and an embryo is the timing. The embryo continues developing until most of the organs are formed - around the 12th week.

When all the organs are there it becomes a fetus. The development or the embryo is rapid - specialized cells create the vital organs, including the bones, muscles, blood, and the nervous system. When the embryo becomes a fetus it is about 1 inch long. Most of its internal organs are formed. The external features, such as the ears, mouth, nose, and eyes are evident, while fingers and toes start to appear. As the fetus gets bigger, so does the uterus.

The fetus is surrounded by a fluid, called amniotic fluid. Just before a woman gives birth her "waters break", that water is the amniotic fluid. The fetus lives in this fluid and swallows it

constantly. An amniotic test can be carried out during the pregnancy to find out about the baby's health. Most pregnancies last from 37 to about 42 weeks. Health care professionals calculate the delivery date 40 weeks from the date of conception. According to the National Health Service, UK, only about 1 in every 20 births actually takes place on the due date.A baby who is born before 37 weeks after conception is considered pre-term (Nordqvist, 2014).

### 1.1.3 Three Trimesters of Pregnancy

**First Trimester**

These are the first 13 weeks of the pregnancy. The baby develops the fastest during this period and becomes almost fully formed by the end of it. Women say this trimester is when they are most likely to feel tired, nausea, and breast tenderness.

**Second Trimester**

This is from the 14th to 26th week of the pregnancy. During this trimester it becomes obvious that the mother is pregnant. As well as weighing more because of the growing baby, the expanded uterus, the placenta, and the amniotic fluid, the mother lays down extra reserves of fat. The baby continues to grow and develop. During the second trimester the mother will feel the baby's movements, as will others if they place their hands on the mother's stomach - sometimes movement may be observed without touching.

**Third Trimester**

This is from week 27 until the baby is born. During this trimester the baby will build up fat stores, and continue growing rapidly. The baby's lungs will develop, as will his/her sense of hearing, taste and sight. The mother may experience backache and find it harder to get into the right position for a good night's sleep. The mother will also be urinating more often as the baby and everything around him/her presses against her bladder. She may also experience contractions that take place many days or weeks before the birth - they are called Braxton Hicks contractions - these are not the contractions of labor (Nordqvist, 2014).

## 1.2 Health and Pregnancy

Pregnancy initiates alterations to all body systems, which may take weeks to resolve after delivery. Understanding them is the key to managing pregnant women safely. Considerable adjustments to the reference ranges for many laboratory criteria result, and failure to appreciate these can cause diagnostic error or therapeutic disaster. The physiology of pregnancy is considered by system, emphasizing the implication of the changes for clinical practice, and the relevance in relation to complications of pregnancy.

The placenta creates a low resistance circulation, vasodilatation occurs peripherally and circulating volume increases. Increased heart rate, myocardial contractility and pre-load, and reduced after-load all influence cardiac performance in pregnancy, by expanding cardiac output.

Oxygen consumption increases during pregnancy. Ventilation increases by 40%, such that the partial pressure of oxygen is unchanged (i.e. more oxygen is consumed but more is acquired). The partial pressure of carbon dioxide is reduced by this increase in ventilation.

- There is a physiological rise in coagulation factors I (fibrinogen), V, VII, VIII, IX and XII and a fall in some endogenous anticoagulants (antithrombin, protein S, and activated protein C resistance).
- The kidneys increase in length, and the renal calyces, renal pelvis and ureter dilate. Renal blood flow increases, leading to a 50% increase in glomerular filtration. Clinically there is a rise in creatinine clearance. Glycosuria is common in pregnancy.
- About 80% of pregnant women experience heartburn.
- Liver function test results are lower in pregnancy because of haemodilution. Spider naevi and palmar erythema are common. Pruritus occurs in at least 20% pregnancies (Girling, 2004).

### 1.3 Multivitamins and Folic Acid in Pregnancy

Periconceptional use of folic acid alone or in multivitamin supplements is effective for the primary prevention of neural-tube defects. The Hungarian randomized and two-cohort controlled trials showed that periconceptional multivitamin supplementation can reduce the occurrence of some other structural birth defects, i.e. congenital abnormalities. These findings were supported by many, but not all observational studies. Recently there have been two main debated questions. The first one is whether the use of folic acid alone or folic acid-containing multivitamins is better. The second one is connected with the dilemma of whether high dose of folic acid (e.g. 5 mg) might be better than a daily multivitamin with $0.4 - 0.8$ mg of folic acid. Comparison of the pooled data of two Hungarian trials using a multivitamin containing 0.8 mg folic acid and the data of the Hungarian Case-Control Surveillance of Congenital Abnormalities using high dose of folic acid seemed to be appropriate to answer these questions.

Multivitamins containing $0.4 - 0.8$ mg of folic acid were more effective for the reduction of neural-tube defects than high dose of folic acid. Both multivitamins and folic acid can prevent some part of congenital cardiovascular malformations. Only multivitamins were able to reduce the prevalence at birth of obstructive defects of urinary tract, limb deficiencies and congenital pyloric stenosis. However, folic acid was effective in preventing some part of rectal or anal stenosis or atresia, and high dose of folic acid had effect in preventing some orofacial clefts. The findings are consistent that periconceptional multivitamin and folic acid supplementation reduce the overall occurrence of congenital abnormalities in addition to the demonstrated effect on neural-tube defects (Czeizel, 2004).

### 1.4 Causes of Complication

### 1.4.1 Exposures and Pregnancy Complication

### 1.4.1.1 Occupational Exposure

The importance of studying the harmful effects of occupational exposures is based on the fact that they can affect both parental germ cells before conception and fetal somatic cells after conception. The two mechanisms can induce cell death or dysfunction, resulting in malformation. Maternal occupations related to transportation and communications were

significantly associated with oral clefts in a study by Hemminki, who analyzed a potential association between parents' occupation and these three groups of malformations (central nervous system and muscular-skeletal) in their offspring. A study by Cordier focused on all offspring with major birth defects detected in the prenatal or perinatal period (from the 7th gestational month to the 7th day of life).

There is an increased risk observed for exposure to such products as detergents and disinfectants. Due to the small number of observations, the estimates are not very precise. Exposure to chemical compounds was evaluated one month before pregnancy and during the first trimester. In this study, mothers of controls resided more frequently in urban areas and worked as liberal or administrative professionals. Glycol ether is associated with increased incidence of spontaneous abortion and decreased fertility and is a common ingredient in products widely used in domestic cleaning activities. In the health field, some associations were shown, albeit inconclusive, with exposure to anesthetic gas and contact with cytostatic drugs.

However, a strong association was mentioned between cleft lip and maternal occupation in the leather and shoemaking industry increasing considerably for cleft palate only. Moderate associations were also found for hairdressers and dry-cleaning workers. Cleft palate showed a particularly high and statistically significant association with the leather industry. The leather industry involves intense exposure to solvents, especially aliphatic hydrocarbons, chlorinated hydrocarbons, and other aromatic solvents, although it is generally not possible to precisely measure the intensity, degree, and duration of the worker's overall exposure (Leite *et al*., 2002).

### 1.4.1.2 Environmental Exposure

Common sense associates the potential impact on reproductive health of exposure to contaminants in hazardous waste sites, where the most commonly found products are residues of solvents, pesticides, and metals. Since the 1940s there has been a dramatic rise in the use of agricultural inputs, including herbicides, insecticides, and fungicides. Such chemical substances are found throughout the environment and are manufactured specifically to be toxic to certain organisms, while some are known or suspected to be teratogenic, mutagenic, or carcinogenic in animals. Even so, relatively little attention has been paid to hundreds of chemical formulations and their effects on the health of populations. In light of these arguments, in 1981 Gordon & Shy

raised the hypothesis that intrauterine exposure to agricultural chemicals in farming areas during periods of peak use of pesticides and herbicides, especially in the first trimester, could be associated with increased risk of birth defects. This ecological study displayed the peculiar limitations of generalizing data, but shows independent effects of exposure to these products for the occurrence of clefts (Leite *et al*., 2002).

### 1.4.2 Rubella Virus

### 1.4.2.1 Rubella Virus and its Vaccine

Rubella Virus infection is of considerable concern when a pregnant woman is infected within the first trimester of gestation because in up to 50% of cases the infection leads to severe congenital malformations. Worldwide the rubella vaccine used most commonly is the live-attenuated vaccine strain RA27/3. Vaccination is highly efficient and large-scale rubella epidemics have been eradicated in immunized populations in recent years. Individual RV infections still occurs in childbearing age, however, and cases of the congenital rubella syndrome continue to be reported. Furthermore, active immunization of susceptible pregnant women includes the risk of transmission of the rubella vaccine virus across the placental barrier. In a follow up study it has been seen that infants delivered of women who were vaccinated against rubella during pregnancy, an association with congenital rubella syndrome was not detected (Hofmann *et al*., 2000).

### 1.4.2.2 Rubella Virus and Pregnancy

Over a thousand women with confirmed rubella infection at different stages of pregnancy were followed up prospectively. Two-thirds of the women were multiparous. Pregnancy continued in 40%, and the infants were followed up after birth both clinically and serologically. The frequency of congenital infection after maternal rubella with a rash was more than 80% during the first 12 weeks of pregnancy, 54% at 13-14 weeks, and 25% at the end of the second trimester. The infection rate then rose again to reach a high figure in the last month. Follow-up was to 2 years of age—the findings in infected children being compared with those in children who had escaped infection. Rubella defects occurred in all infants infected before the 11th week (principally congenital heart disease and deafness) and in 35% of those infected at 13-16 weeks (deafness alone). No defects attributable to rubella were found in 63 children infected after 16

weeks. Continued surveillance of cases of confirmed rubella during pregnancy is recommended as an additional way of monitoring the effect of rubella vaccination (Miller, 1982).

### 1.4.3 Abortifacient Foods

Pregnancy is the carrying of one or more offspring, known as a fetus or embryo, inside the womb of a female. It is quite a unique and different experience for the women and they are very much conscious about their diet chart during pregnancy. A mother's nourishment during pregnancy is vitally important for her and for her baby at all stages of foetal development. Research has shown that diet and healthy lifestyle is directly related to the baby's weight at birth, his health in childhood and even after he has grown up. Pregnant mothers always wonder that what they should eat & what not. Some says a mother should take the diet of two people because she needs to take care of one more life. But is it true, if yes what they should eat & if not how the baby will get proper diet to grow as a healthy child. It is essential to follow a proper and healthy diet when pregnant, and although there is a lot of information available about what a woman should eat during pregnancy, there is not always a lot of information of what foods to avoid during pregnancy. It is equally important to emphasize on what not to eat during pregnancy. There are a number of foods to avoid during pregnancy. These foods should be avoided as these have slight traces of harmful bacteria or other substances which could harm you and the baby. Even traces of these substances could prove hazardous. The following foods are avoided during pregnancy, (Harsoliya *et al.,* 2011).

**Table 1.1 Foods Avoided in Pregnancy**

| Foods | Constituent | Causes |
|---|---|---|
| Coffee | Caffeine | Caffeine should be avoided during the first trimester to reduce the likelihood of a miscarriage and premature birth. Caffeine is a diuretic, which means it helps eliminate fluids from the body. This can result in water and calcium loss. During pregnancy may slow fetal growth. |
| Raw Eggs | Salmonella spp. | causes food borne illness |
| Fish Exposed to Industrial Pollutants: bluefish, striped bass, salmon, pike, trout and walleye | polychlorinated biphenyls | These may cause retarded growth of the unborn child |
| Soft Cheese:such as Feta, Gorgonzol, Queso Blanco, Queso | Listeria, bacteria | It can cause miscarriage. Listeria has the ability to cross the placenta and may infect the baby leading to infection or blood poisoning, which can be life threatening. |
| Unpasteurized Milk | listeria, bacteria | It can cause miscarriage. Listeria has the ability to cross the placenta and may infect the baby leading to infection or blood poisoning, which can be lifethreatening |

| Papaya | Papein | Generate heat may cause abortion |
|--------|--------|----------------------------------|
| Pineapple | Bromelain | high sugar induce abortion or menstruation increased risk of developing gestational diabetes |
| Unwashed vegetables | *Toxoplasma gondii* | Allergy |

(Harsoliya *et al.,* 2011)

## 1.5 Complications of Pregnancy

Some women experience health problems during pregnancy. These complications can involve the mother's health, the fetus, or both. Even women who were healthy before getting pregnant can experience complications. These complications make the pregnancy a high-risk pregnancy. Getting early and regular prenatal care can help decrease the risk for problems by enabling health care providers to diagnose, treat, or manage conditions before they become serious. Some common complications of pregnancy include, but are not limited to

- High blood pressure
- Anemia
- Gestational diabetes
- Preeclampsia
- Preterm labor
- Pregnancy loss
- Ectopic pregnancy
- Gestational trophoblastic disease
- Placenta Previa
- Abruptio Placenta
- Thyroid disorder

## 1.5.1 High Blood Pressure

High blood pressure, also called hypertension, occurs when arteries carrying blood from the heart to the body organs are narrowed. This causes pressure to increase in the arteries. In

pregnancy, this can make it hard for blood to reach the placenta, which provides nutrients and oxygen to the fetus. Reduced blood flow can slow the growth of the fetus and place the mother at greater risk of preterm labor and preeclampsia.

Women who have high blood pressure before they get pregnant will continue to have to monitor and control it with medications throughout their pregnancy. High blood pressure that develops in pregnancy is called gestational hypertension. According to the Centers for Disease Control and Prevention (CDC), in 2009, more than 4% of pregnant American women developed this condition during their pregnancy. Typically, gestational hypertension occurs during the second half of pregnancy and goes away after delivery (CDC, 2011).

**Symptoms**

High blood pressure is considered when the readings are greater than 140mm Hg systolic and 90mm Hg diastolic.

**Treatment**

All antihypertensive drugs have either been shown, or are assumed, to cross the placenta and reach the fetal circulation. However, as previously stated, none of the antihypertensive agents in routine use have been documented to be teratogenic, although ACE inhibitors and ARBs are fetotoxic. The objective of treating hypertension in pregnancy is to protect the woman from dangerously high blood pressure and to permit continuation of the pregnancy, fetal growth and maturation (NCBI, 2004).

**Mild to Moderate Hypertension**

The evidence base for treatment of mild to moderate chronic hypertension in pregnancy resides in maternal benefit rather than clear evidence of an enhanced perinatal outcome for the baby. Some women with treated chronic hypertension are able to stop their medication in the first half of pregnancy, because of the physiological fall in blood pressure during this period. However, this is usually temporary, and women are monitored and treatment resumed as soon as necessary (James and Pirecy, 2004).

**First Line Agent**

**Methyldopa**

Methyldopa is a centrally acting agent and remains the drug of first choice for treating hypertension in pregnancy. It has been the most frequently assessed antihypertensive in randomised trials and has the longest safety track record. Long term use has not been associated with fetal or neonatal problems and there are safety data for children exposed in utero. Women should be warned of its sedative action and this can limit up titration. The drug may result in an elevation of liver transaminases (in up to 5% of women) or a positive Coomb's test (although haemolytic anaemia is uncommon). Methyldopa should be avoided in women with a prior history of depression, because of the increased risk of postnatal depression (James and Pirecy, 2004).

**Second Line Agents**

These agents should be used when monotherapy with methyldopa is insufficient or when women are unable to tolerate methyldopa.

**Nifedipine**

Nifedipine is popular for the treatment of hypertension in pregnancy and is widely used. It is safe at any gestation. The use of sublingual nifedipine, however, should be avoided to minimise the risk of sudden maternal hypotension and fetal distress, caused by placental hypoperfusion. Abrupt hypotension is potentiated with concomitant magnesium sulfate (used as a treatment or prophylactic agent against eclamptic seizures with severe pre-eclampsia). Amlodipine has been used in pregnancy but safety data are lacking.

**Oral Hydralazine**

Hydralazine is safe throughout pregnancy, although the occurrence of maternal and neonatal lupus-like syndromes have been reported. Hydralazine is more frequently used as an infusion for the treatment of acute severe hypertension (James and Pirecy, 2004).

**Third Line Agents**

**α and β Adrenergic Blockers**

In the past, β adrenergic blockers have been highlighted as a class of antihypertensives associated with an increased risk of IUGR. Atenolol in particular has often been singled out. However, in a recent meta-analysis of published data from randomised trials, the presence of IUGR appeared not to be related to the antihypertensive used. Nevertheless, β adrenergic blockers are still avoided in the first half of pregnancy because of concerns about growth restriction and are viewed as third line agents for the treatment of hypertension in pregnancy. β Blockers are safe throughout pregnancy and there is wide experience with oxprenolol and labetalol. The safety and efficacy of prazosin in pregnancy has been demonstrated. Doxazosin appears to be safe, although data are limited (James and Pirecy, 2004).

**Thiazide Diuretics**

Thiazide diuretics are used infrequently in pregnancy. The drugs do not appear to be teratogenic and although such drugs abbreviate the plasma volume expansion associated with normal pregnancy, this has not been proven to impair fetal growth. The obstetric community remains reluctant to use these antihypertensive agents because of concern about potentiating the plasma volume contraction, which occurs with pre-eclampsia. However, women with chronic hypertension who, before conception, responded well to a thiazide diuretic, could have the drug reinstituted in pregnancy but it should be withdrawn if pre-eclampsia develops (James and Pirecy, 2004).

**1.5.2 Gestational Diabetes**

Gestational diabetes occurs when a woman who didn't have diabetes before pregnancy develops the condition during pregnancy.

Normally, the body digests parts of your food into a sugar called glucose. Glucose is your body's main source of energy. After digestion, the glucose moves into your blood to give your body energy.

To get the glucose out of your blood and into the cells of your body, your pancreas makes a hormone called insulin. In gestational diabetes, hormonal changes from pregnancy cause the

body to either not make enough insulin, or not use it normally. Instead, the glucose builds up in your blood, causing diabetes, otherwise known as high blood sugar.

Over time, high glucose levels can cause serious health problems, such as heart disease, vision problems, and kidney disease.

Managing gestational diabetes, by following a treatment plan outlined by a health care provider, is the best way to reduce or prevent problems associated with high blood sugar during pregnancy. If not controlled, it can lead to high blood pressure from preeclampsia and having a large infant, which increases the risk for cesarean delivery (Leeman and Fontaine, 2008).

**Symptoms**

Women with gestational diabetes usually have no symptoms or mild, non-life-threatening symptoms, according to the NIH. These symptoms are mostly related to abnormal blood sugar levels, and can include fatigue, excessive thirst and increased urination (Rettner, 2015).

**Medical Treatment**

Pregnant patients are routinely screened for gestational diabetes mellitus between 24 and 29 weeks' gestation. In order to diagnose gestational diabetes, patients drink 50 grams of oral glucose solution. After one hour, a blood sample is obtained and tested for glucose tolerance. A glucose level of 140 mg/dL or higher is considered a positive screen and further investigation is warranted. A 3-hour glucose tolerance test is then typically performed.

Most patients with gestational diabetes are treated through diet. They are encouraged to consume a proper diet and obtain adequate exercise. Patients with gestational diabetes should consume a diet that provides 30 kcal/kg/day. Furthermore, patients with a body mass index greater than 30 kg/m2 may benefit from a 30%−33% caloric restriction. Besides proper diet and exercise, some patients may require insulin or oral hypoglycemia agents to manage gestational diabetes mellitus. Resistance exercise can help overweight patients with gestational diabetes avoid insulin therapy (Rettner, 2015).

### 1.5.3 Preeclampsia

Preeclampsia is a serious blood pressure disorder that can affect all of the organs in a woman's body. A woman has preeclampsia when she has high blood pressure and other signs that her organ systems are not working normally. One of these signs is proteinuria (an abnormal amount of protein in the urine). A woman with preeclampsia whose condition is worsening will develop other signs and symptoms known as "severe features." These include a low number of platelets in the blood, abnormal kidney or liver function, pain over the upper abdomen, changes in vision, fluid in the lungs, or a severe headache. A very high blood pressure reading also is considered a severe feature (American College of Obstetricians and Gynocologist, 2014).

Its cause is unknown, but some women are at an increased risk. Risk factors include:

- First pregnancies
- Preeclampsia in a previous pregnancy
- Existing conditions such as high blood pressure, diabetes, kidney disease, and systemic lupus erythematosus
- Being 35 years of age or older
- Carrying two or more fetuses
- Obesity

**Symptoms**

Woman with Preeclampsia may have swelling of face or hands ,a headache that will not go away , seeing spots or changes in eyesight, pain in the upper abdomen or shoulder, nausea and vomiting (in the second half of pregnancy), sudden weight gain, difficulty breathing (American College of Obstetricians and Gynocologist, 2014).

**Treatment**

- Bed rest either at home or in the hospital
- Careful observation with a fetal heart rate monitor and frequent ultrasounds
- Medicines to lower blood pressure
- Blood and urine tests

- Doctor also may recommend to stay in the hospital for closer monitoring. In the hospital the patient may be given

- Medicine to help prevent seizures, lower your blood pressure, and prevent other problems

- Steroid injections to help baby's lungs develop more quickly

**Other Treatments Include**

- Magnesium can be injected into the veins to prevent eclampsia-related seizures

- Hydralazine or another antihypertensive drug to manage severe blood pressure elevations

- Monitoring fluid intake and urine output (American College of Obstetricians and Gynocologist, 2014).

## 1.5.4 Preterm Labor

Preterm labor is labor that begins before 37 weeks of gestation. Any infant born before 37 weeks is at an increased risk for health problems, in most cases because organs such as the lungs and brain finish their development in the final weeks before a full-term delivery (39 to 41 weeks).

Certain conditions increase the risk for preterm labor, including infections, having a shortened cervix (for unknown reasons, in some women the cervix is shorter than normal), or previous preterm births. Sometimes preterm labor can be slowed or stopped by medication.

Progesterone, a hormone produced naturally during pregnancy, may be used to help prevent preterm birth. A 2003 study led by NICHD researchers found that progesterone supplementation to women at high risk for preterm delivery due to a prior preterm birth reduces the risk of a subsequent preterm birth by one-third (Meis *et al.,* 2003).

**Symptoms**

Patients presenting with preterm labor and birth often complain of feeling pressure in the pelvic area, abdominal and/or uterine cramping or contractions, painful or painless contractions, feeling as though the fetus is "balling up," and/or constant back pain. Amniotic membranes may rupture prematurely; therefore a sudden gush or constant trickle of vaginal fluid may be noted.

**Treatment**

Clinical criteria for a diagnosis of preterm labor include persistent uterine contractions (4 every 20 minutes or 8 every 60 minutes) and a progressive change in the cervix or cervical dilation greater than 2 cm and cervical effacement of 80% or greater (Chao *et al.,* 2011). Medical treatment for preterm labor and birth is dependent upon the gestational age of the fetus. Generally, healthcare practitioners seek to avoid delivery of patients prior to 34 weeks gestation to allow further maturation of the fetal lungs. They often prescribe antibiotics to treat infection, glucocorticoids to increase fetal lung maturity, intravenous therapy to maintain hydration, and tocolytics to control uterine contractions in patients with preterm labor.

**1.5.5 Pregnancy Loss or Miscarriage**

Miscarriage is the term used to describe a pregnancy loss from natural causes before 20 weeks. According to the American College of Obstetricians and Gynecologists (ACOG), as many as 20% of pregnancies end in miscarriage.Signs can include vaginal spotting or bleeding, cramping, or fluid or tissue passing from the vagina. However, bleeding from the vagina does not mean that a miscarriage will happen or is happening. Women experiencing this sign at any point in their pregnancy should contact their health care provider.

The loss of pregnancy after the 20th week of gestation is called a stillbirth. In approximately half of all reported cases, health care providers can find no cause for the loss. However, health conditions that can contribute to stillbirth include chromosomal abnormalities, placental problems, poor fetal growth, chronic health issues of the mother, and infection (American College of Obstetricians and Gynecologists, 2011).

**Treatment**

In most cases, no treatment is necessary for women who miscarry early in their pregnancy, because the bleeding associated with miscarriage usually empties the uterus of pregnancy-associated tissue. In some cases, however, a woman may need to undergo a surgical procedure called a dilation and curettage (D&C) to remove any pregnancy-associated tissue remaining in the uterus. A D&C is performed if the woman is bleeding heavily or if an ultrasound test detects any remaining tissue in the uterus.

An alternative to a D&C is the use of a medication called misoprostol that helps the tissue pass out of the uterus. The use of misoprostol has proven to be effective in 84% of the cases studied. Other treatments after a woman miscarries may include control of mild to moderate bleeding, prevention of infection, pain relief, and emotional support. If heavy bleeding occurs, the woman should contact her health care provider immediately (Snell, 2009).

### 1.5.6 Ectopic Pregnancy

Ectopic pregnancies occur when the ovum is fertilized by the sperm but implants outside theuterus in the fallopian tubes, cervix, ovary, or abdominal cavity. Most ectopic pregnancies occur in the fallopian tubes.

**Symptoms**

Signs and symptoms of an ectopic pregnancy include vaginal bleeding, lack of menstruation (amenorrhea), and abdominal pain. However, other disease processes (e.g., spontaneous abortion) may be responsible for such symptoms. Ultrasound and laboratory testing are necessary to diagnose an ectopic pregnancy. The outcome of an ectopic pregnancy depends on the location of implantation. The ovum may naturally reabsorb into the body, or the structure supporting the ovum may rupture. If the implantation site is a fallopian tube, the tube may rupture and cause internal hemorrhaging and hypovolemic shock, which is a life-threatening event for the patient. Signs and symptoms of a ruptured fallopian tube include vaginal bleeding; severe abdominal pain or pelvic, shoulder, or neck pain (as a result of blood leaking out of the fallopian tube and irritating the diaphragm); weakness; dizziness; decreased blood pressure; and increased pulse. It is important to note that many patients experiencing an ectopic pregnancy are asymptomatic prior to tubal rupture.

**Treatment**

An ectopic pregnancy implanted in a fallopian tube requires either pharmacologic or surgical management. Pharmacologic management with methotrexate is indicated if the tube is unruptured, the ectopic pregnancy is less than 3.5 cm, the fetus is not living, and the patient is stable hemodynamically. Often, patients require more than one dose of methotrexate for effective treatment. Methotrexate treatment is usually performed on an outpatient basis. If the fallopian tube is ruptured as a result of an ectopic pregnancy and the patient wants to become pregnant in the future, a surgical procedure called a linear salpingostomy is performed to protect the tube. A linear salpingostomy requires a small linear incision in the tube to remove the products of

conception. The tube is then allowed to heal without suturing to prevent significant scarring. Significant scarring in the fallopian tube could potentially affect the ability of the patient to have a successful pregnancy in the future. If the tube is ruptured and the patient does not desire a future pregnancy, a laparoscopic salpingectomy is performed. This procedure involves the actual removal of the affected fallopian tube (Snell, 2009).

### 1.5.7 Gestational Trophoblastic Disease (GTD)

Gestational trophoblastic disease, also known as a hydatidiform mole or a molar pregnancy, occurs when the chorionic villi of the placenta increase as a result of genetic abnormalities. The villi swell, forming fluid-filled sacs, which appear as tiny clusters of grapes within the uterus. Molar pregnancies are classified as complete or partial based on whether a fetus is present. A partial mole occurs when a fetus or an amniotic sac is present, whereas a complete mole only contains the fluid-filled sacs. The fetus is usually nonviable in a molar pregnancy. However, in 2007, according to Dente, although it is uncommon, "twinning" has been reported with a complete mole plus a surviving fetus with a normal placenta.

### Symptoms

Patients with a GTD exhibit light to heavy bleeding and even hemorrhage. Bleeding can be bright red or brown, appearing similar to prune juice. Anemia may result due to bleeding. Additionally, as a result of the proliferation of tissues and the presence of clotted blood, the uterus may appear larger than expected for gestational age. Despite an enlarged uterus, fetal heart tones and movement are absent. Serum hCG levels are also increased and patients may experience hyperemesis. Symptoms of gestational hypertension before 24 weeks' gestation are a strong indication of gestational trophoblastic disease

### Treatment

Molar tissues are removed by vacuum aspiration. Intravenous oxytocin is usually administered to contract the uterus after the vacuum aspiration. It is important to note that oxytocin should not be administered prior to vacuum aspiration to avoid tissue being forced into venous circulation and subsequent embolization (Murray *et al.,* 2013). Gentle curettage, or scraping of the uterus, is performed to ensure that the uterus is emptied of all affected tissue. Patients are followed for one year after removal of a molar pregnancy to detect choriocarcinoma, or cancer associated with GTD. If serum hCG levels do not return to pre-pregnancy levels, there is a possibility that

choriocarcinoma may be present and further investigation is necessary. Therefore, it is essential that patients understand the need for follow-up (Derricott *et al.,* 2014).

### 1.5.8 Placenta Previa

Placenta previa occurs when the placenta implants in the lower portion of the uterus by the internal cervical os. Previas are classified according to the degree to which they cover the os. Specifically, if the lower border of the placenta is close to, but does not quite reach, the internal cervical os, the previa is considered marginal. If the placenta partly covers the internal os, the previa is considered a partial placenta previa. The previa is considered a total previa if the placenta completely covers the internal cervical os. As the pregnancy nears term

and the cervix dilates, the placenta implanted near or over the internal cervical os is disrupted and bleeding can occur. The bleeding places the patient and her unborn child at risk.

### Symptoms

The most significantly recognized symptom of placenta previa is painless, bright red vaginal bleeding or hemorrhage during late pregnancy. It is imperative that vaginal examinations be avoided because stimulation of the placenta may cause hemorrhage. However, bleeding may not occur until labor begins.

### Treatment

As previously mentioned, vaginal examination must be avoided if a patient presents with painless, bright red vaginal bleeding because hemorrhage may occur. A transabdominal ultrasound can be performed to diagnose the previa. Medical management of a placenta previa is largely determined by gestational age, fetal status, amount of bleeding, and type of previa. Some patients may deliver vaginally if they are near term, the cervix is ripe, the fetal heart tracing does not show fetal compromise, and there is minimal bleeding. However, if heart tracings indicate fetal compromise, significant bleeding, or hemorrhage, or a complete previa is present, a cesarean section is usually necessary (Derricott *et al.,*2014).

### 1.5.9 Abruptio Placentae

Abruptio placentae, often referred to as an abruption or placenta abruption, is the premature separation of the normally implanted placenta from the uterine wall before labor and delivery of

the newborn. Bleeding occurs between the uterine wall and the placenta. Abruptio placentae is classified according to the degree of placental separation and subsequent hemorrhage. An abruption can be partial or complete, with apparent or concealed hemorrhage

An abruption is partial if a section of the placenta separates from the uterine wall but the margins of the placenta remain intact. A complete abruption occurs when the entire placenta detaches from the uterine wall. Apparent hemorrhage refers to bleeding that is evident, while a concealed hemorrhage denotes bleeding that is obscured.

**Symptoms**

The classic signs and symptoms of abruption placentae include vaginal bleeding, which may be dark red due to old blood from a concealed abruption; uterine tenderness; and a board-like abdomen. Patients often complain of an aching or dull pain in the abdomen or lower back. Additionally, uterine irritability with poor uterine resting tone is frequently noted.

**Treatment**

Abruptio placentae is usually diagnosed by abdominal ultrasound in addition to the presenting signs and symptoms. Treatment is based on the degree of placental separation and subsequent hemorrhage as well as the status of the patient and fetus. In the presence of severe abruption and hemorrhage, emergency cesarean section is performed, unless delivery is imminent (Derricott *et al.*,2014).

**1.5.10. Thyroid Disorder**

Pregnancy has a profound impact on the thyroid gland and thyroid function since the thyroid may encounter changes to hormones and size during pregnancy. The diagnosis and treatment of thyroid disease during pregnancy and the postpartum is complex but knowledge regarding the interaction between the thyroid and pregnancy/the postpartum period is advancing at a rapid pace (ATA, 2013).

**Hypothyroidism & Pregnancy**

When a woman is pregnant, her body needs enough thyroid hormone to support a developing fetus and her own expanded metabolic needs. Healthy thyroid glands naturally meet increased thyroid hormone requirements. If someone has Hashimoto's thyroiditis or an already overtaxed

thyroid gland, thyroid hormone levels may decline further. So, women with an undetected mild thyroid problem may suddenly find themselves with pronounced symptoms of hypothyroidism after becoming pregnant.

Most women who develop hypothyroidism during pregnancy have mild disease and may experience only mild symptoms or sometimes no symptoms. However, having a mild, undiagnosed condition before becoming pregnant may worsen a woman's condition. A range of signs and symptoms may be experienced, but it is important to be aware that these can be easily written off as normal features of pregnancy. Untreated hypothyroidism, even a mild version, may contribute to pregnancy complications. Treatment with sufficient amounts of thyroid hormone replacement significantly reduces the risk for developing pregnancy complications associated with hypothyroidism, such as premature birth, preeclampsia, miscarriage, postpartum hemorrhage, anemia and abruptio placentae (American College of Endocrinology, 2012).

**Symptoms**

Symptoms of hypothyroidism, such as extreme tiredness and weight gain, may be easily confused with normal symptoms of pregnancy. Other symptoms include:

- Constipation
- Difficulty concentrating or memory problems
- Sensitivity to cold temperatures
- Muscle cramps

**Treatment**

For a woman being treated for hypothyroidism, it's imperative to have her thyroid checked as soon as the pregnancy is detected so that medication levels may be adjusted. TSH levels may be checked one to two weeks after the initial dose adjustment to be sure it's normalizing. Once the TSH levels drop, less frequent check-ups are necessary during the pregnancy. Although thyroid hormone requirements are likely to increase throughout the pregnancy, they tend to eventually stabilize by the middle of pregnancy. The goal is to keep TSH levels within normal ranges, which are somewhat different than proper levels in a non-pregnant woman. Pre-pregnancy doses are usually resumed after giving birth.

There is no difference between treating hypothyroidism when a woman is pregnant than when she isn't. Levothyroxine sodium pills are completely safe for use during pregnancy. They will be

prescribed in dosages that are aimed at replacing the thyroid hormone the thyroid isn't making so that the TSH level is kept within normal ranges. Once it is consistently in the normal range, the doctor will check TSH levels every six weeks or so. The physician may also counsel patients to take their thyroid hormone pills at least one-half hour to one hour before or at least four hours after eating or taking iron-containing prenatal vitamins and calcium supplements, which can interfere with the absorption of thyroid hormone (ACE,2012).

**Hyperthyroidism & Pregnancy**

A woman with hyperthyroidism while pregnant is at an increased risk for experiencing any of the signs and symptoms of hyperthyroidism. And unless the condition is mild, if it is not treated promptly a woman could miscarry during the first trimester; develop congestive heart failure, preeclampsia, or anemia; and, rarely, develop a severe form of hyperthyroidism called thyroid storm, which can be life threatening. Graves' disease tends to strike women during their reproductive years, so it should come as no surprise that it occasionally occurs in pregnant women. Pregnancy may worsen a preexisting case of Graves' disease. Graves' disease can also emerge for the first time, typically during the first trimester of pregnancy. The disease is usually at its worst during the first trimester. It tends to then improve in the second and third trimesters and flare up again after delivery (ACE, 2012).

**Symptoms**

Symptoms of hyperthyroidism may mimic those of normal pregnancy, such as an increased heart rate, sensitivity to hot temperatures, and fatigue. Other symptoms of hyperthyroidism include the following:

- Irregular heartbeat
- Nervousness
- Severe nausea or vomiting
- Slight tremor
- Trouble sleeping
- Weight loss or low weight gain for a typical pregnancy (Aleppo, G., 2014).

**Treatment**

Very mild hyperthyroidism usually does not require treatment, only routine monitoring with blood tests to make sure the disease does not progress. More serious conditions require

treatment. However, treatment options are limited for pregnant women. Radioactive iodine, which is typically used to treat Graves' disease, cannot be used during pregnancy because it easily crosses the placenta, potentially damaging the baby's thyroid gland and causing hypothyroidism in the baby. Due to its potential risks, the goal of treatment is to use the minimal amount of antithyroid drugs possible to maintain a patient's T4 and T3 levels at or just above the upper level of normal, while keeping TSH levels low. When hormones reach the desired levels, drug doses can be reduced. This approach controls hyperthyroidism while minimizing the changes of a baby developing hypothyroidism.

Hyperthyroidism, if untreated, can lead to stillbirth, premature birth, or low birth weight for the baby. Sometimes it leads to fetal tachycardia, which is an abnormally fast pulse in the fetus. Women with Graves' disease have antibodies that stimulate their thyroid gland. These antibodies can cross the placenta and stimulate a baby's thyroid gland. If antibody levels are high enough, the baby could develop fetal hyperthyroidism or neonatal hyperthyroidism (ACE, 2012).

### 1.5.11. Iron-Deficiency Anemia

Anemia is a medical condition in which there is not enough healthy red blood cells to carry oxygen to the tissues in the body. When the tissues do not receive an adequate amount of oxygen, many organs and functions are affected. Anemia during pregnancy is especially a concern because it is associated with low birth weight, premature birth and maternal mortality. Women who are pregnant are at a higher risk for developing anemia due to the excess amount of blood the body produces to help provide nutrients for the baby. Anemia during pregnancy can be a mild condition and easily treated if caught early on. However, it can become dangerous, to both the mother and the baby, if it goes untreated (APA, 2015).

Pregnant women need more iron than normal for the increased amount of blood they produce during pregnancy. Symptoms of a deficiency in iron include feeling tired or faint, experiencing shortness of breath, and becoming pale. Because these symptoms are common for all pregnant women, health care providers check iron levels throughout pregnancy.The ACOG recommends 27 milligrams of iron daily (found in most prenatal vitamins) to reduce the risk for iron-deficiency anemia. Some women may need extra iron through iron supplements (Hassan, 2011).

**Some Common Symptoms of Anemia are:**

- Weakness or fatigue
- Dizziness
- Shortness of breath
- Rapid or irregular heartbeat
- Chest Pain
- Pale skin, lips and nails
- Cold hands and feet
- Trouble concentrating (APA, 2015)

**Treatment for Anemia during Pregnancy**

Anemia during pregnancy can easily be treated by adding iron or vitamin supplements to the daily routine. Typically, this is all that is needed to reverse the effects of anemia. However, in very rare cases, women with severe anemia may need a blood transfusion. Preventing anemia during pregnancy is as easy as changing, or making additions, to your diet. Medical professionals recommend a pregnant woman eat 30 mg (at least three servings) of iron each day (APA, 2015)

**Examples of Iron-Rich Foods are:**

- Lean, red meats and poultry
- Eggs
- Dark, leafy green vegetables (such as broccoli, kale and spinach)
- Nuts and seeds
- Beans, lentils and tofu

Because it can be a challenge to eat as much iron as is suggested during pregnancy, taking iron supplements is recommended in addition to consuming these foods. Foods that are high in vitamin C can actually help the body absorb more iron, so it is beneficial to make these additions as well.

**Vitamin C Rich Foods Include:**

- Citrus fruits and juices
- Strawberries

- Oranges
- Kiwis
- Tomatoes
- Bell peppers(APA, 2015)

**1.5.12 Other Complications**

Other complications of pregnancy, which are not as common, include the following:

**Severe, Persistent Nausea and Vomiting:** Although having some nausea and vomiting is normal during pregnancy, particularly in the first trimester, some women experience more severe symptoms that last into the third trimester. The cause of the more severe form of this problem, known as hyperemesis gravidarum, is not known. Women with hyperemesis gravidarum experience nausea that does not go away, weight loss, reduced appetite, dehydration, and feeling faint. Affected women may need to be hospitalized so that they can receive fluids and nutrients. Some women feel better after their 20th week of pregnancy, while others experience the symptoms throughout their pregnancy (APA, 2015).

**1.6 Awareness of the Complications:**

**1.6.1 Awareness of Obstetric Danger Signs and its Associated Factors Among Pregnant Women In Public Health Institutions, Mekelle City, Tigray, Ethiopia 2014**

Pregnancy is a normal process that results in a series of both physiological and psychological changes in expectant mothers. However, normal pregnancy may be accompanied by some problems and complications which are potentially life threatening to the mother and / or the fetus. Danger signs are signs of serious complications and they are grouped under three phases: pregnancy, childbirth and postpartum. The commonest danger signs during pregnancy include vaginal bleeding, swollen hands and face, and blurred vision. Key danger signs during labor and childbirth include severe vaginal bleeding, prolonged labor, convulsions, and retained placenta. Danger signs during the postpartum period include severe bleeding following childbirth, loss of consciousness after childbirth, and fever. There are five obstetric causes that lead to four-fifth maternal death. These causes are preventable and manageable. The direct causes are severe bleeding (81%), sepsis (15%), unsafe abortion (13%), eclampsia (12%), obstructed labor (12%) and others (8%) like ectopic pregnancy,embolism, and indirect causes (19%), like malaria,

Anemia and heart diseases. Globally, the total number of maternal deaths decreased from 543 000 in 1990 to 287 000 in 2010. Likewise, global maternal mortality ratio (MMR) declined from 400 maternal deaths per 100 000 live births in 1990 to 210 in 2010. It has fallen by 47% between 1990 and 2010. This indicates that the overall aim of million development goal (MDG 5) improving maternal health by reducing maternal mortality ratio to three quarter (75%) is very unlikely to be achieved by 2015, unless there are remarkable further reductions from 2011 to 2015. Maternal mortality is the leading cause of premature death and disability among women of reproductive age in developing countries (Abiyot T. *et al.,*2015).

## 1.6.2 Maternal Awareness of Pregnancy Normal and Abnormal Signs: An Exploratory Descriptive Study

Awareness of abnormal signs of obstetrics complications during pregnancy is the first essential step for appropriate and timely referral. The finding of this study has provided insight information on women's awareness about normal and abnormal signs of pregnancy and practices used to relieve the current complaints. The awareness of pregnant women, about normal signs of pregnancy in the present study, the majority of pregnant women mentioned nausea and vomiting, back pain, vaginal discharge, heartburn as normal signs associated with pregnancy. Meanwhile, only a minority of them did not know of any normal signs associated with pregnancy. This is generally in line with a study carried out in Egypt. The researcher found that, the majority of pregnant women consider nausea and vomiting, dizziness, fainting and back pain as a normal signs during pregnancy. This could be attributed to the fact that many women did not identify certain signs and symptoms with pregnancy, but instead with normality making the symptoms less serious in their eyes, which indicates a need for appropriate health education and services. Awareness about the significance of abnormal symptoms and signs of pregnancy may lead to timely access to appropriate emergency obstetric care. In this study, the majority of the pregnant women mentioned vaginal bleeding as abnormal symptoms associated with pregnancy, which is much higher than the findings in Burkina Faso (39.4%) and Guatemala (31.0%). This difference might be due to socio-cultural difference and difference in implementation of relevant health intervention programs. Evidence shows that the major causes of maternal mortality to be hemorrhage, sepsis, and hypertensive disorder of pregnancy and pregnant mothers need to have adequate knowledge about the signs indicating these problems. In the current study, results

revealed that minorities representing less than tenth and fifth of pregnant women mentioned mild headache and lower limb edema are considered abnormal signs during pregnancy. This finding is consistent with other studies carried out in Kenya and Jordan about lack of awareness of pregnancy danger signs.

During pregnancy, women may experience one or more of wide variety of discomforts. Most discomforts experienced during pregnancy are thought to be the result of abundant hormonal changes. Other discomforts are attributed to physical changes associated with the enlarging uterus. The present study indicated that out of the 340 mothers in the sample, most of them had some complaints of physical discomfort during their current pregnancy. The most frequently discomforts experienced by the studied group were leg cramp, nausea and vomiting and low back pain. This is in agreement with the result of the study was conducted on 193 pregnant women in Canada, the finding reported that, 130 of 193 (67.4%) of women experiencing nausea and vomiting. In another longitudinal study conducted in Portugal on 49 pregnant women, reported that 71.4% and 91.7% of women had back pain at 12 weeks and at 37 weeks of pregnancy. In the present study, heartburn was the presenting complaints in relatively high percentage representing more than two thirds. This present study finding was higher in comparison to previous prospective research conducted in Brazil, which mentioned that, heartburn occurred in 63% of the pregnant women. This difference in the results may be due to ingested high amount of polyunsaturated fatty acid. However, it seems that the heartburn is associated with dietary fat intake. For all types of complaints, there are many home remedies for treating these complaints much more frequently used when compared to seeking medical advice. Many women do not seek medical help because of the fear of child being affected. These findings are in agreement with the results of similar studies in Jordan in 2007and 2012, the researchers reported that the majority of pregnant women (62% & 55.3% respectively) delayed in seeking care. In another study, 26.1 % of pregnant women reported that home remedies were not harmful as medication use during pregnancy. In addition, Egyptian pregnant mothers used home remedies more than seeking medical advice in year 2000. In a more recent study, which stated that, Jordanians old age pregnant mothers, low income, and women who were not employed are more likely to use home remedies to manage heartburn during pregnancy than other groups. They added that, socioeconomic status, extended family size, health beliefs, access

and level of trust in available local medical care might have affected the decision to seek medical care (Amasha, 2013).

## 1.7 Antenatal Care

Studies have shown that mothers who have good prenatal care have less chance of medical problems when they are pregnant. At each visit, doctor or nurse practitioner will perform an exam and talk to the patient about their health. (Bakker, 2011)

While most pregnancies and births are uneventful, all pregnancies are at risk. Around 15% of all pregnant women develop a potentially life-threatening complication that calls for skilled care and some will require a major obstetrical intervention to survive where midwives and doctors provide women in facilities, they also have a unique role and relationship with:

- The community of health care providers within the district health system, including auxiliary and multipurpose health workers;
- Family members of patients;
- Community leaders;
- Population with special needs (e.g. adolescents, women with HIV/AIDS).

**Midwives and Doctors:**

- They support activities for the improvement of all district health services;
-  They strive for efficient and reliable referral system;
- They usually monitor the quality of health care services;
- Moreover they advocate for community participation in health related matters.

A district hospital is defined as a facility that is capable of providing quality services, including operative delivery and blood transfusion. Although many of the procedures in this manual require specialized equipment and the expertise of the specially trained providers, it should be noted that many of the life-saving procedures described can also be performed at health centers (WHO, 2003).

## 1.8 Epidemiology

Bangladesh has a high maternal mortality ratio, with 320 deaths per 100,000 births. This means there are about 11,000 to 12,000 women dying from pregnancy or childbirth complications every year in Bangladesh. And because maternal and newborn health is inextricably linked, of those women who die, only one in four of their babies will survive their first week of life. Moreover, a malnourished mother is very likely to give birth to a low birth weight baby (Unicef, 2007).

In the immediate postpartum period, 87% to 94% of women report at least one health problem. Long term health problems (persisting after 6 months postpartum) are reported by 31% of women. Severe complications of pregnancy are present in 1.6% of mothers in the US and in 1.5% of mothers in Canada (Borders, 2006).

Every day in 2015, about 830 women died due to complications of pregnancy and child birth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented. The primary causes of death are haemorrhage, hypertension, infections, and indirect causes, mostly due to interaction between pre-existing medical conditions and pregnancy. The risk of a woman in a developing country dying from a maternal-related cause during her lifetime is about 33 times higher compared to a woman living in a developed country. Maternal mortality is a health indicator that shows very wide gaps between rich and poor, urban and rural areas, both between countries and within them (WHO, 2016).

The number of women dying due to complications during pregnancy and childbirth has decreased by 43% from an estimated 532 000 in 1990 to 303 000 in 2015. The progress is notable, but the annual rate of decline is less than half of what is needed to achieve the Millennium Development Goal target of reducing the maternal mortality ratio by 75% between 1990 and 2015, which would require an annual decline of 5.5%. The 44% decline since 1990 translates into an average annual decline of just 2.3%. Between 1990 and 2000, the global maternal mortality ratio decreased by 1.2% per year, while from 2000 to 2015 progress accelerated to a 3.0% decline per year (WHO, 2016).

Most obstetric complications could be prevented or managed if women had access to skilled birth attendant – doctor, nurse, midwife – during childbirth. During the period 2006 to 2013, around 70% of women were assisted by a skilled attendant during childbirth. However, there

were significant differences across regions and between income groups. Access to skilled care is lowest in the WHO South-East Asia and African regions. In low-income countries, the coverage of skilled attendant at delivery was only 46%, compared with 64% in lower middle-income countries and 95% in upper middle-income countries.

Globally, the proportion of births attended by a skilled health personnel has increased from 59% to 68% between 1990 and 2009. In the WHO South-East Asia Region with significant decreases in maternal mortality rates, increases in skilled health personnel at delivery are seen. Conversely, in the WHO African Region where the greatest number of maternal deaths occurred in 2010, there has been only modest progress-as still fewer than 50% of births are attended by skilled health personnel (WHO, 2016).

Severe preeclampsia involves a BP over 160/110, it affects 5-8% of pregnancies. Seizures in a pre-eclamptic patient, affect around 1.4% of pregnancies (Abalos *et al.*, 2013).

Deep vein thrombosis has an incidence of 0.5 to 7 per 1,000 pregnancies, and is the second most common cause of maternal death in developed countries after bleeding. According to the United Nations estimates, approximately half of pregnant women suffer from anemia worldwide. Anemia prevalences during pregnancy differed from 18% in developed countries to 75% in South Asia (Wang, 2002).

# Chapter 2
# Literature Review

**2.1 Women With Pregnancy Induced Hypertension Have A Higher Risk of Developing Essential Hypertension—A Case Control Study From a Tertiary Care Center In Pakistan**

The aim of this study was to determine the association of essential hypertension with pregnancy-induced hypertension in women. The case-control study was conducted at Aga Khan University Hospital, Karachi, from January 2012 to March 2013, and comprised on hypertensive female patients who visited the outpatient medicine clinics. The patients were aged 18-65 years and had been pregnant at least once. Cases were women diagnosed as hypertensive or pre-hypertensive and the controls were normotensive women. The primary outcome was essential hypertension and the main exposure was pregnancy-induced hypertension. Of the 258 subjects, 175 (49.7%) were cases and 177 (50.3%) were controls. The overall mean age was 44.6±13.3 years. Odds Ratio (95% Confidence interval) for pregnancy-induced hypertension for the outcome of essential hypertension was 1.6. The odds ratio increased further to 2.5 after adjustment for age, family history of hypertension and physical activity. The association remained after further adjusting for body mass index in the final model; Women who develop hypertension in pregnancy are at higher risk of developing essential hypertension later in life (Qasim *et al.,* 2016).

**2.2 Relationship between High Serum Cystatin C Levels And The Risk Of Gestational Diabetes Mellitus**

Serum cystatin C (CysC) has recently been shown to be associated with the incidence of type 2 diabetes mellitus (T2DM) and progression to the pre-diabetic state. The aim of this study was to explore the relationship between serum CysC and the risk of gestational diabetes mellitus (GDM) in Chinese pregnant women. This cross-sectional study consisted of 400 pregnant women including111 with GDM and 289 with normal glucose tolerance at 24–28 weeks of gestation. The subjects were further divided into four groups according to the CysC quartiles, and their clinical characteristics were compared. The serum CysC concentration was measured using immunoturbidimetry and the degree of insulin resistance was assessed by the homeostasis model assessment of insulin resistance (HOMA-IR). Serum CysC levels were significantly higher in pregnant women with GDM than in the healthy pregnant women. The Spearman's correlation analysis showed that serum CysC was positively associated with HOMA-IR and the occurrence of GDM . The pregnant women were divided into quartiles according to their serum

CysC concentrations. Compared to the first quartile, pregnant women in Q2 , Q3 and Q4 had higher risk of GDM after adjusted for age, BMI, HbA1c and HOMA-IR. Further, with a rise in the serum CysC, there was an increasing trend in the HOMA-IR levels. A binary logistic regression analysis after adjusting for other confounding variables revealed a significant and independent association between serum CysC and GDM .The receiver operating characteristic curve analysis revealed that the optimal cutoff point for serum CysC to indicate GDM was 0.95mg/L. Serum CysC is significantly and independently associated with insulin resistance and GDM. It may be a helpful biomarker to identify the risk of GDM in Chinese pregnant women (Zhao *et al.,*2016).

**2.3 Management of Thyroid dysfunction during Pregnancy and Postpartum: An Endocrine Society Clinical Practice Guideline**

The aim was to update the guidelines for the management of thyroid dysfunction during pregnancy and postpartum published previously in 2007. The Task Force was composed of a chair, selected by the Clinical Guidelines Subcommittee of The Endocrine Society, experts appointed by The Endocrine Society, Asia & Oceania Thyroid Association, European Thyroid Association, and Latin American Thyroid Society, and a methodologist. This evidence-based guideline was developed according to the U.S. Preventive Services Task Force, grading items level A, B, C, D, or I, on the basis of the strength of evidence and magnitude of net benefit (benefits minus harms) as well as the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) system to describe both the strength of recommendations and the quality of evidence. The guideline was developed through a series of e-mails, conference calls, and one face-to-face meeting. An initial draft was prepared by the Task Force, with the help of a medical writer, and reviewed and commented on by members of The Endocrine Society, Asia & Oceania Thyroid Association, and the Latin American Thyroid Society. A second draft was reviewed and approved by The Endocrine Society Council. At each stage of review, the Task Force received written comments and incorporated substantive changes. Practice guidelines are presented for diagnosis and treatment of patients with thyroid related medical issues just before and during pregnancy and in the postpartum interval. These include evidence-based approaches to assessing the cause of the condition, treating it, and managing hypothyroidism, hyperthyroidism, gestational hyperthyroidism, thyroid autoimmunity, thyroid tumors, iodine

nutrition, postpartum thyroiditis, and screening for thyroid disease. Indications and side effects of therapeutic agents used in treatment are also presented (Groot *et al.,* 2012).

**2.4 The effect of counseling on nausea and vomiting in pregnancy in Turkey**

The aim of this study was to assess the effects of follow-up counseling on the duration and severity of nausea and vomiting in pregnant women. This study is quasi-experimental and included 62 pregnant women with nausea and vomiting. The group that received counseling was considered to be the experimental group, and the group that received a standard outpatient clinic service was the control group. Data were collected with a demographic data form, that is, the Nausea and Vomiting in Pregnancy Instrument and Pregnancy Unique Quantification of Emesis and Nausea. Significance tests of the differences between two mean values, the Mann–Whitney U test and survival analyses were used to test the hypotheses. In pregnant women with mild or moderate nausea and vomiting, nausea and vomiting terminated in a significantly shorter time in the experimental group than in the control group, but this difference was not significant for pregnant women with severe nausea and vomiting. In addition, the number of weekly telephone follow-ups in the experimental group was significantly smaller. Counseling effectively reduced the duration and severity of mild or moderate nausea and vomiting during pregnancy. However, it did not affect the duration of severe nausea and vomiting during pregnancy (Mete and Isbir, 2015).

**2.5 First Trimester Miscarriage: Four Decades of Study**

Miscarriage is a very common occurrence in humans. This paper sets out to present published data on research that has provided increased understanding of pregnancy failure. Clarification of definitions, exploring the range of failures from preclinical to later pregnancy losses, and the scientific tools employed to find information on the losses have been documented. What is now understood, which tools work best, and the associated limitations are all discussed. Early studies used cytogenetic methods and tissue culture to obtain results. Improvements in laboratory tools such as better tissue culture incubators, inverted microscopes, laminar flow hoods, improvements in culture media, all contributed to obtaining more results for patients.These studies demonstrated the significant contribution of unbalanced chromosomal karyotypes to pregnancy failure. Maternal age as a contributing factor in trisomy was clearly demonstrated. First trimester

miscarriage exhibits very high cytogenetic abnormality; in contrast to very low rates in later losses. Combining data across all time periods of pregnancy will affect the significance of chromosomal error in the early pregnancy failures. Cytogenetic methods investigate whole genomes, and are considered to represent the standard against which new methods must be validated. New molecular genetics methods provide the opportunity to examine samples without the necessity of tissue culture. Techniques may be site-specific or whole genome. Fluorescent in situ hybridisation (FISH), comparative genomic hybridisation (CGH), arraybased CGH, single nucleotide polymorphism (SNP) detection, quantitative polymerase chain reaction (qPCR), and quantitative fluorescent PCR (QF-PCR), have all been utilised. In comparison studies with classical/conventional cytogenetics, each newer method offers advantages and limitations. At the present time, a combined approach using conventional and molecular methods will elucidate the cause of miscarriage for almost all samples. In a clinical setting this would be optimum (Hardy and Hardy, 2015).


**2.6 Perinatal Mortality by Gestational Week And Size At Birth In Singleton Pregnancies At And Beyond Term: A Nationwide Population-Based Cohort Study**

Whether gestational age per se increases perinatal mortality in post-term pregnancy is unclear. We aimed at assessing gestational week specific perinatal mortality in small-for-gestational-age (SGA) and non-SGA term and post-term gestations, and specifically to evaluate whether the relation between post-term gestation and perinatal mortality differed before and after ultrasound was introduced as the standard method of gestational age estimation. A population-based cohort study, using data from the Medical Birth Registry of Norway (MBRN), 1967–2006, was designed. Singleton births at 37 through 44 gestational weeks, excluding preeclampsia, diabetes and fetal anomalies, were included. Odds ratios (OR) with 95% confidence intervals (CI) for perinatal mortality and stillbirth in SGA and non-SGA births by gestational week were calculated. SGA infants judged post-term by LMP had significantly higher perinatal mortality than post-term non-SGA infants at 40 weeks, independent of time period (highest during 1999–2006. When comparing years before (1967–1986) versus after (1987–2006) ultrasound was introduced, there was no decrease in the excess mortality for post-term SGA versus non-SGA births  to, while mortality at 40 weeks decreased significantly to 3.2. When assessing stillbirth risk (1999–2006), more than 40% of SGA stillbirths (11/26) judged to be ≥41 weeks by LMP

were shifted to lower gestational ages using ultrasound estimation. Mortality risk in post-term infants was strongly associated with growth restriction. Such infants may erroneously be judged younger than they are when using ultrasound estimation, so that the routine assessment for fetal wellbeing in the prolonged gestation may be given too late (Morken *et al.,*2014).

## 2.7 Prehypertension in Pregnancy and Risks of Small for Gestational Age Infant and Stillbirth

It is not fully known whether maternal prehypertension is associated with increased risk of adverse fetal outcomes, and it is debated whether increases in blood pressure during pregnancy influence adverse fetal outcomes. We performed a population-based cohort study in nonhypertensive women with term (≥37 weeks) singleton births (n=157 446). Using normotensive (diastolic blood pressure [DBP] <80 mm Hg) women as reference, we calculated adjusted odds ratios with 95% confidence intervals between prehypertension (DBP 80–89 mm Hg) at 36 gestational weeks (late pregnancy) and risks of a small-for-gestational-age (SGA) birth or stillbirth. We further estimated whether an increase in DBP from early to late pregnancy affected these risks. We found that 11% of the study population had prehypertension in late pregnancy.

Prehypertension was associated with increased risks of both SGA birth and stillbirth; adjusted odds ratios (95% confidence intervals) were 1.69 (1.51–1.90) and 1.70 (1.16–2.49), respectively. Risks of SGA birth in term pregnancy increased by 2.0% (95% confidence intervals 1.5–2.8) per each mm Hg rise in DBP from early to late pregnancy, whereas risk of stillbirth was not affected by rise in DBP during pregnancy. We conclude that prehypertension in late pregnancy is associated with increased risks of SGA birth and stillbirth. Risk of SGA birth was also affected by rise in DBT during pregnancy. Our findings provide new insight to the relationship between maternal blood pressure and fetal well-being and suggest that impaired maternal perfusion of the placenta contribute to SGA birth and stillbirth (Gunnarsdottir *et al.,*2016).

## 2.8 Maternal and neonatal outcomes of antenatal anemia in a Scottish population: a retrospective cohort study

Antenatal anemia is a major public health problem in the UK, yet there is limited high quality evidence for associated poor clinical outcomes. The objectives of this study were to estimate the

incidence and clinical outcomes of antenatal anemia in a Scottish population. Material and A method retrospective cohort study of 80 422 singleton pregnancies was conducted using data from the Aberdeen Maternal and Neonatal Databank between 1995 and 2012. Antenatal anemia was defined as haemoglobin ≤10g/dl during pregnancy. Incidence was calculated with 95% confidence intervals (CI) and compared over time using a chi-squared test for trend. Multivariable logistic regression was used to adjust for confounding variables. Results are presented as adjusted odds ratios with 95% CI. The overall incidence of antenatal anemia was 9.3 cases/100 singleton pregnancies, decreasing from 16.9/100 to 4.1/100 singleton pregnancies between 1995 and 2012. Maternal anemia was associated with antepartum hemorrhage, postpartum infection, transfusion and stillbirth, reduced odds of postpartum hemorrhage and low birth weight. No other outcomes were statistically significant.This study shows the incidence of antenatal anemia is decreasing steadily within this Scottish population. However, given that anemia is a readily correctable risk factor for major causes of morbidity and mortality in the UK, further work is required to investigate appropriate preventive measures (Rukuni *et al.,* 2015).

## 2.9 Subclinical Hypothyroidism in Pregnancy: A Systematic Review and Meta-analysis

The impact of subclinical hypothyroidism (SCH) and of levothyroxine replacement in pregnant women with SCH is unclear. The aim of the study was to assess the impact of SCH during pregnancy on maternal and neonatal outcomes and the effect of levothyroxine replacement therapy in these patients. Ovid MEDLINE In-Process & Other Non-Indexed Citations, Ovid MEDLINE, the Cochrane Controlled Trials Register, Ovid EMBASE, Web of Science, and Scopus were searched from inception to January 2015. Randomized trials and cohort studies of pregnant women with SCH that examined adverse pregnancy and neonatal outcomes were included. Reviewers extracted data and assessed methodological quality in duplicate. Eighteen cohort studies at low-to-moderate risk of bias were included. Compared to euthyroid pregnant women, pregnant women with SCH were at higher risk for pregnancy loss, placental abruption, premature rupture of membranes, and neonatal death. One study at high risk of bias compared pregnant women with SCH who received levothyroxine to those who did not and found no significant decrease in the rate of pregnancy loss, preterm delivery, gestational hypertension, low birth weight, or low Apgar score. SCH during pregnancy is associated with multiple adverse

maternal and neonatal outcomes. The value of levothyroxine therapy in preventing these adverse outcomes remains uncertain (Maraka *et al.,*2015).

## 2.10 Severe Maternal Morbidity in a Large Cohort of Women with Acute Severe Intrapartum Hypertension

Hypertensive diseases of pregnancy are associated with severe maternal morbidity and remain common causes of maternal death. Recently, national guidelines have become available to aid in recognition and management of hypertension in pregnancy to reduce morbidity and mortality. The increased morbidity related to hypertensive disorders of pregnancy is presumed to be associated with the development of severe hypertension. However, there are few data on specific treatment or severe maternal morbidity of women with acute severe intrapartum hypertension as severe intrapartum hypertension (systolic blood pressure > 160 mm Hg or diastolic blood pressure > 105 mm Hg) to women without severe hypertension. Hospital Patient Discharge Data and State of California Birth Certificate Data were used. Severe maternal morbidity using the Center for Disease Control and Prevention criteria based on international classification of diseases – 9 codes was compared between groups. The efficacy of different antihypertensive medications in meeting the one hour post-treatment goal was determined. Statistical methods included distribution appropriate univariate analyses and multivariate logistic regression. There were 2252 women with acute severe intrapartum hypertension and 93,650 women without severe hypertension. Severe maternal morbidity was significantly more frequent in the women with severe hypertension (8.8%) compared to the control women (2.3%). Severe maternal morbidity rates did not increase with increasing severity of blood pressures 0.90 for systolic and 0.42 for diastolic. There was no difference in severe maternal morbidity between women treated (8.6%) and the women not treated (9.5%). Anti-hypertensive treatment rates were significantly higher in hospitals with a Level IV neonatal intensive care unit (85.8%) compared to a Level III neonatal intensive care unit (80.2%), and in higher volume hospitals (84.5%) compared to lower volume hospitals (69.1%). Severe maternal morbidity rates among severely hypertensive women were significantly higher in hospitals with Level III neonatal intensive care unit level compared to hospitals with a Level IV neonatal intensive care unit, and significantly higher in low delivery volume hospitals compared to high volume hospitals. Only 53% of women treated with oral labetalol as first line medication met the post-treatment goal of non-severe hypertension,

significantly less than those treated with intravenous hydralazine, intravenous labetalol, or oral nifedipine. Severe intrapartum hypertension remained untreated in 17% of women opposed to severe preeclampsia.The objectives were to characterize maternal morbidity associated with women with acute severe intrapartum hypertension and to determine if there was an association between various first line antihypertensive agents and post-treatment blood pressure. This retrospective cohort study of women delivering between July 2012 and August 2014 at 15 hospitals participating in California Maternal Quality Care Collaborative compared women with Women with acute severe intrapartum hypertension had a significantly higher risk for severe maternal morbidity compared to women without severe hypertension. Significantly lower antihypertensive treatment rates and higher severe maternal morbidity rates were seen in lower delivery volume hospitals (Kilpatrick *et al.,* 2016).

**Significance of the study**

Pregnancy is a normal process that results in a series of both physiological and psychological changes in expectant mothers. However, normal pregnancy may be accompanied by some problems and complications which are potentially life threatening to the mother and / or the fetus (Fraser et al, 2003).

Globally, every minute, at least one woman dies from complications related to pregnancy or childbirth – that means 529 000 women a year. In addition, for every woman who dies in childbirth, around 20 more suffer injury, infection or disease – approximately 10 million women each year (WHO, 2005).

Women need not to die in childbirth. Women die from a wide range of complications in pregnancy, childbirth or the postpartum period. Theses life threatening complications are treatable, and thus most of these deaths are avoidable if women with the complications are able to identify and seek appropriate emergency obstetric care which makes a difference between life and death. Lack of awareness of the significance of symptoms of obstetric complications is one of the reasons of failure of women to identify and seek appropriate emergency care. Accordingly, assessment of women's awareness of obstetric danger signs and associated factors contributes to their awareness( Rashad *et al.,*2010)

**Aims and objectives of the study**

The aims of this study were

- to assess womens' awareness of danger signs of complications.
- To find out prevalence and current pregnancy complications

# Chapter 3
# Methodology

**3.1 Type of the Study**

It is a survey based study.

**3.2 Study Population**

Pregnant women who were between 28-40 weeks were the study population. The study was carried out in Chandpur (Respondents number, 40), Savar (8), Tongi (37) and Narayangonj (63). The total number of study population was 148. Data was collected from Royal Hospital, Maa o Sishu Clinic, Moon Hospital, Al- Manar General Hospital, City Hospital and Chandpur Sadar Hospital situated in Chandpur, Sheba Susrusha Clinic, Abeda Memorial Hospital, Dhaka Ark Hospital, Fatema Clinic, Cathersis Hospital situated in Tongi, Institution of Child and Mother Health situated in Narayanganj and Anam Medical College and Hospital situated in Savar.

**3.3 Inclusion Criteria**

- Pregnant women who were between 28-40 weeks.

**3.4 Exclusion Criteria**

- Anyone but pregnant women.
- Pregnant women who were not between 28-40 weeks.

**3.5 Data Collection Method**

The data was collected through questionnaire that is formed in English language. It consists of questions to find out the prevalence of pregnancy and to assess the awareness of danger sign of complications. The data was collected by face to face interview.

**3.6 Development of the Questionnaire**

The questionnaire was developed based on different findings in available journal and research paper.

**3.7 Sampling Technique**

In this study convenient sampling technique was followed.

## 3.8 Data collecting period

The duration of the study was about three months that started from January, 2016 up to March, 2016.

## 3.9 Data Analysis

After collecting, all the data were checked and analyzed with the help of Microsoft Office Excel 2007.

# Chapter 4
# RESULT

## 4.1 Age Distribution
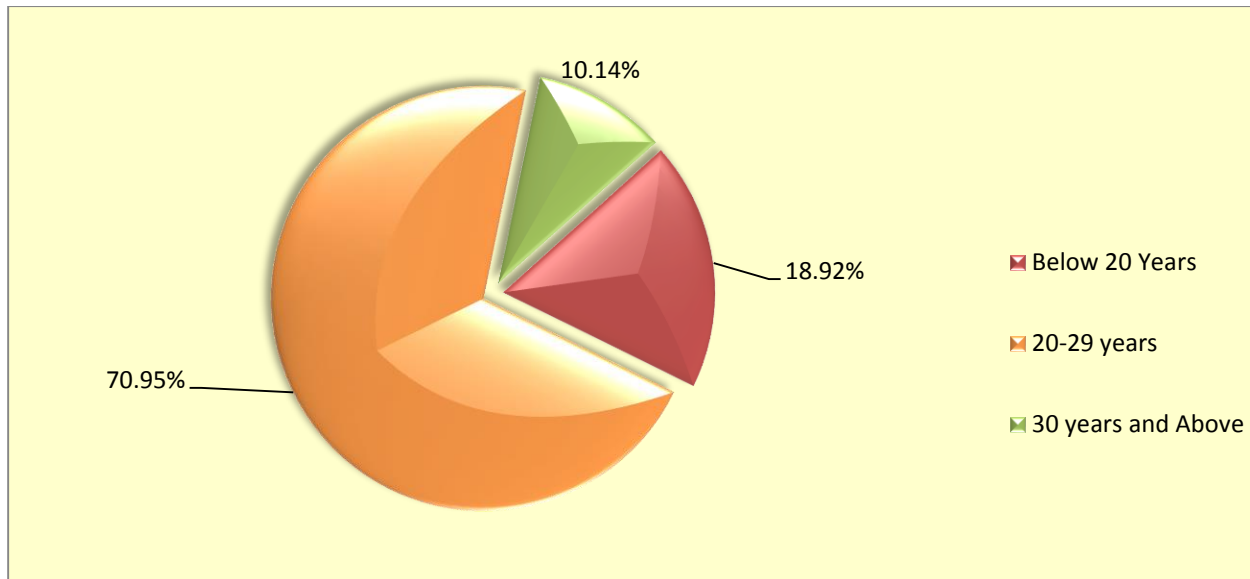


Most (70.95%) of the respondents were between the age of 20-29 and only 10.14% of the total respondents were 30 years or above.
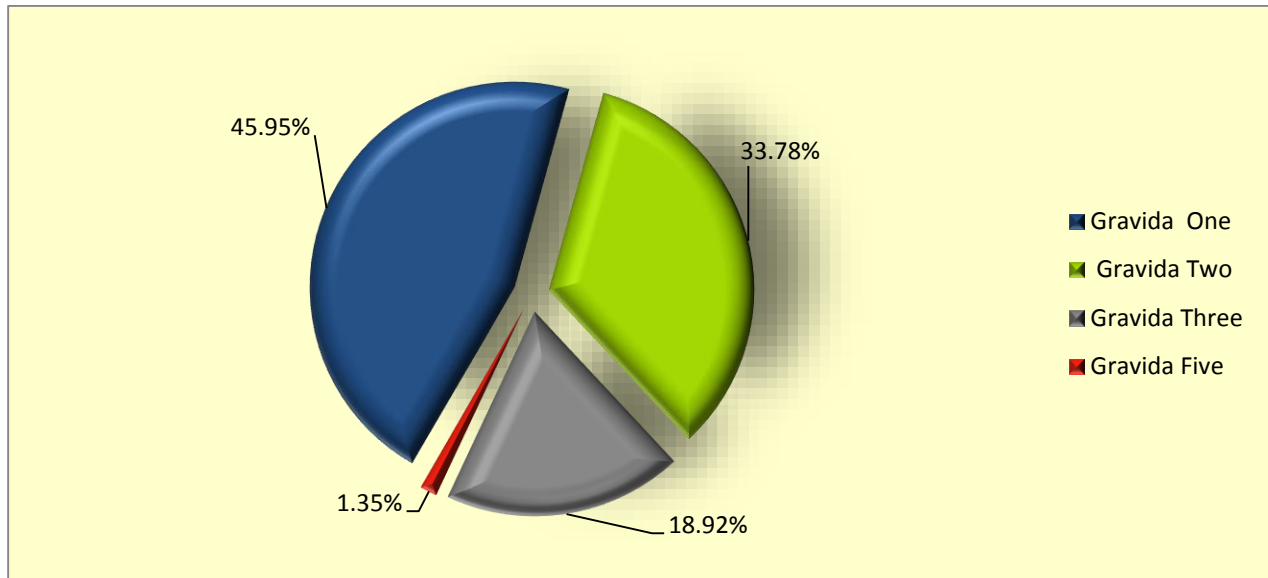
## 4.2 Educational Qualification
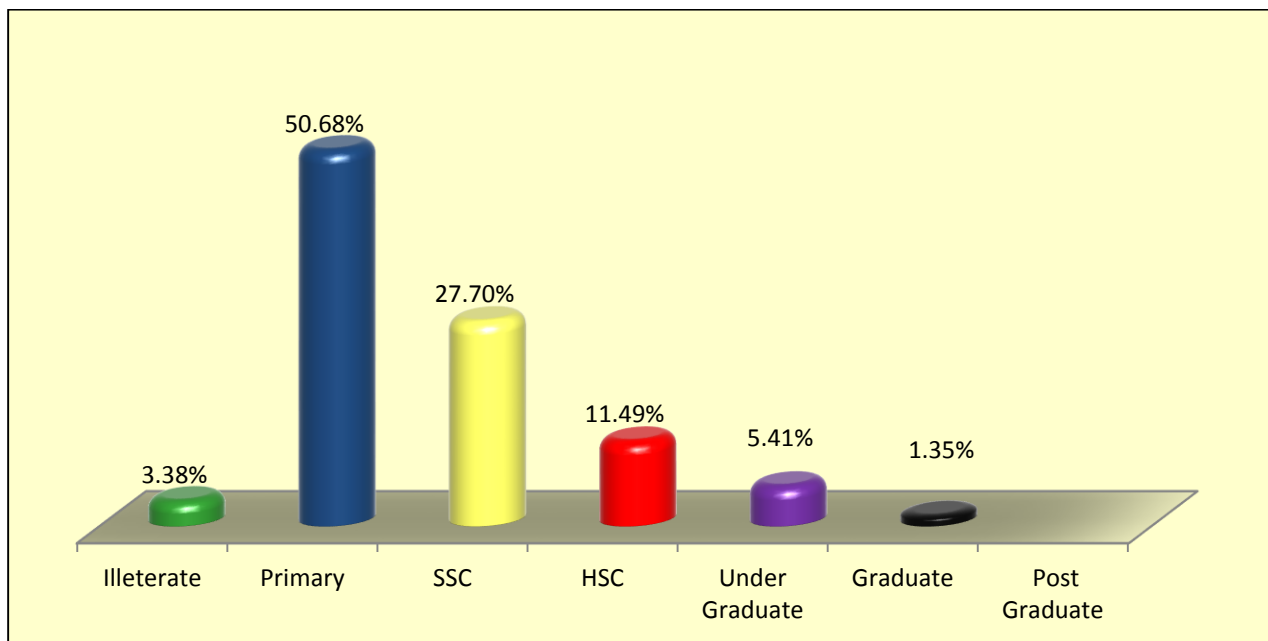


Most (50.68%) of the respondents had their primary education and only 1.35% of the respondents were graduated.

## 4.3 Obstetric History

### 4.3.1 Number of Total Pregnancy



Most (45.95%) of the respondents were pregnant for just once and only 1.35% of the respondents were pregnant for five times.

### 4.3.2 Abnormalities (N=10)
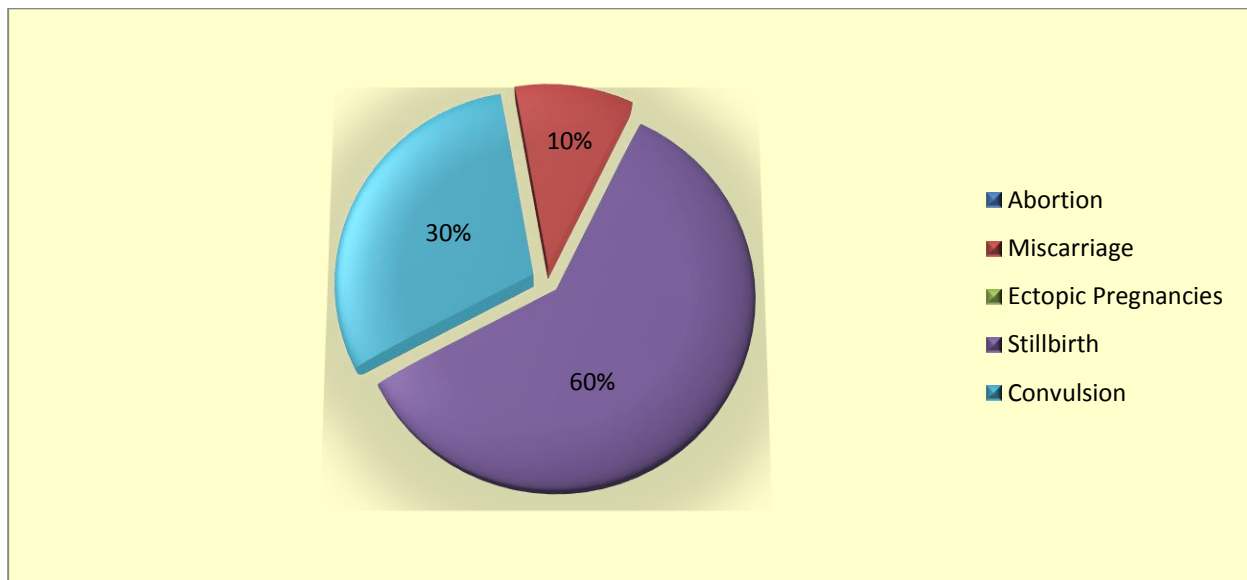


Among all the women who had abnormality, 60% had still birth and 10% had miscarriage.

## 4.4 Duration of Pregnancy
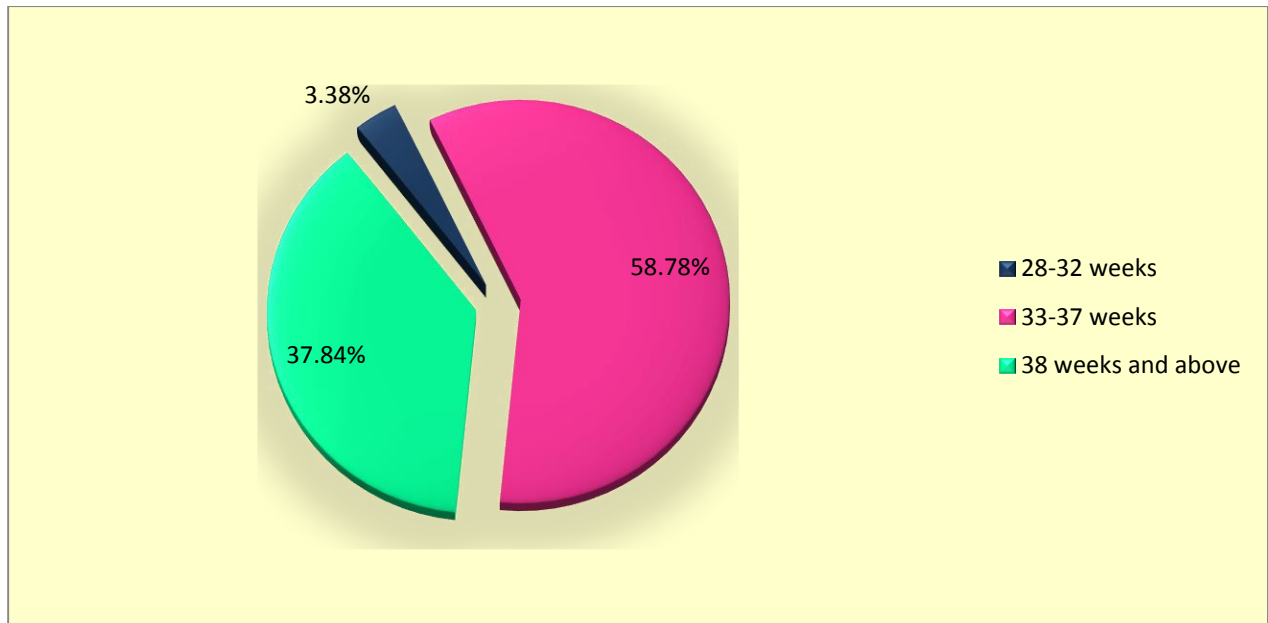


Among the total respondents, most (58.78%) were between the weeks of 33-37. Only 3.38% of the respondents were pregnant for 28-32 weeks.

## 4.5 Consultation
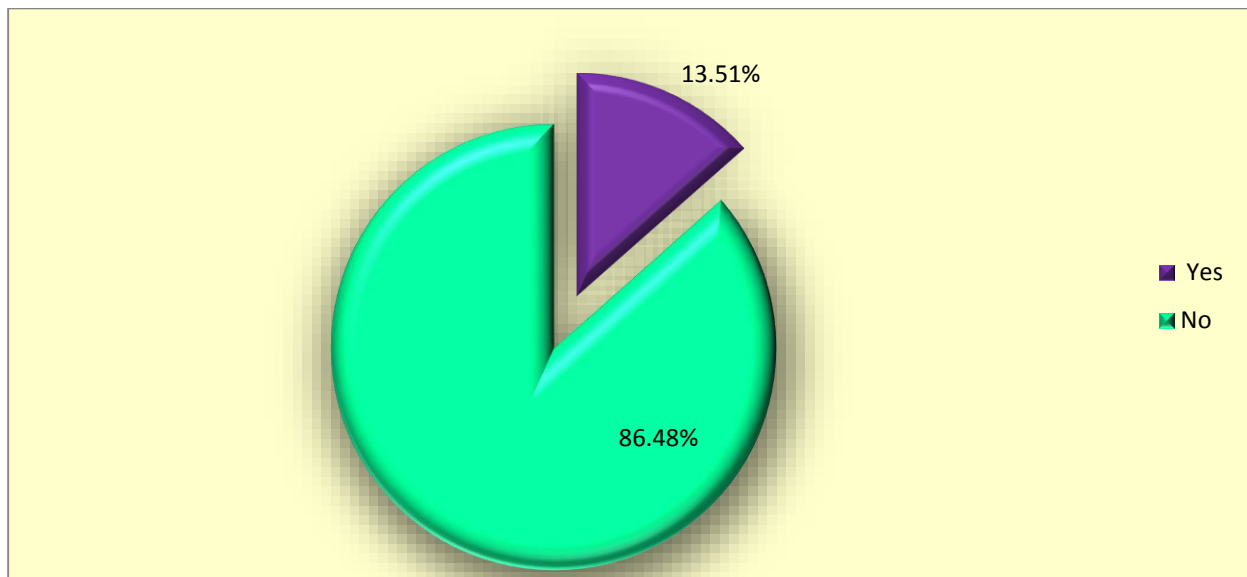


Most (86.48%) of the respondents did not consult with anyone before pregnancy. Only 13.51% respondents consulted with someone before pregnancy.

**4.6 Multivitamin Intake**
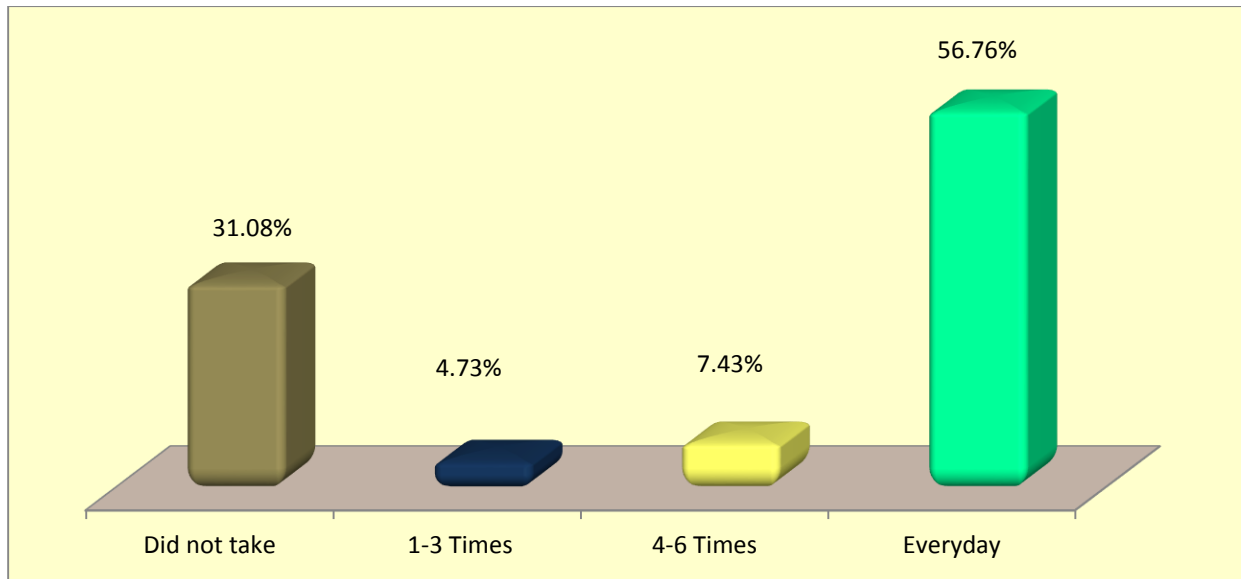


Most (56.76%) of the respondents said that they used to take multivitamin on a daily basis. On the other hand, 31.08% did not take any multivitamins.

**4.7 Occupational Distribution**
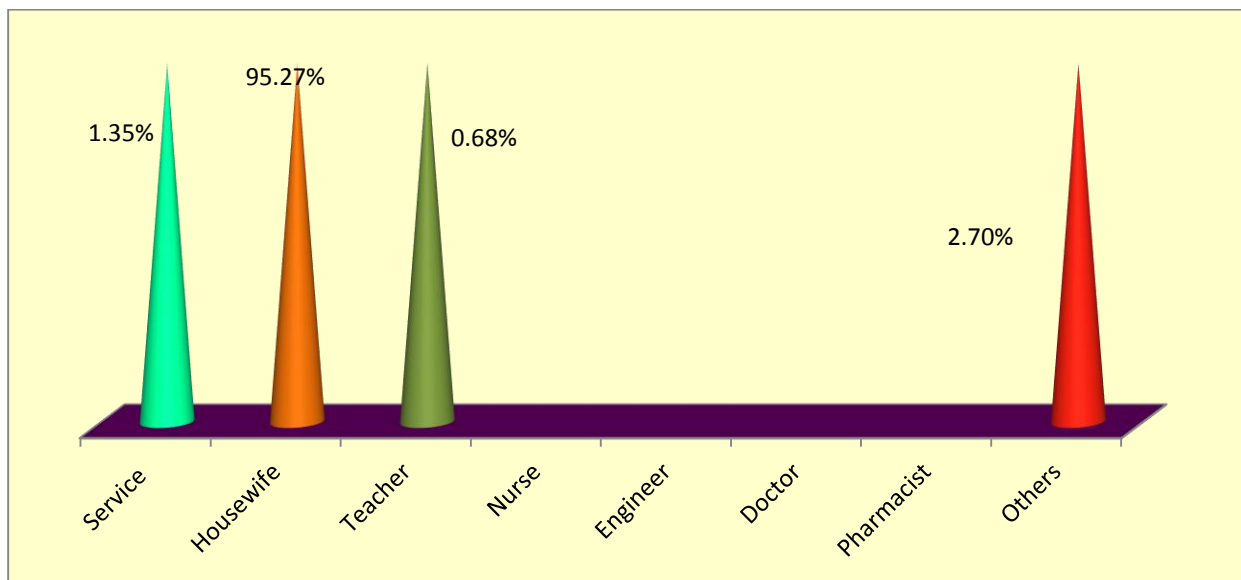


Most (95.27%) of the respondents were housewife and only 0.68% of the respondents were teacher.

## 4.8 Chemical Exposure
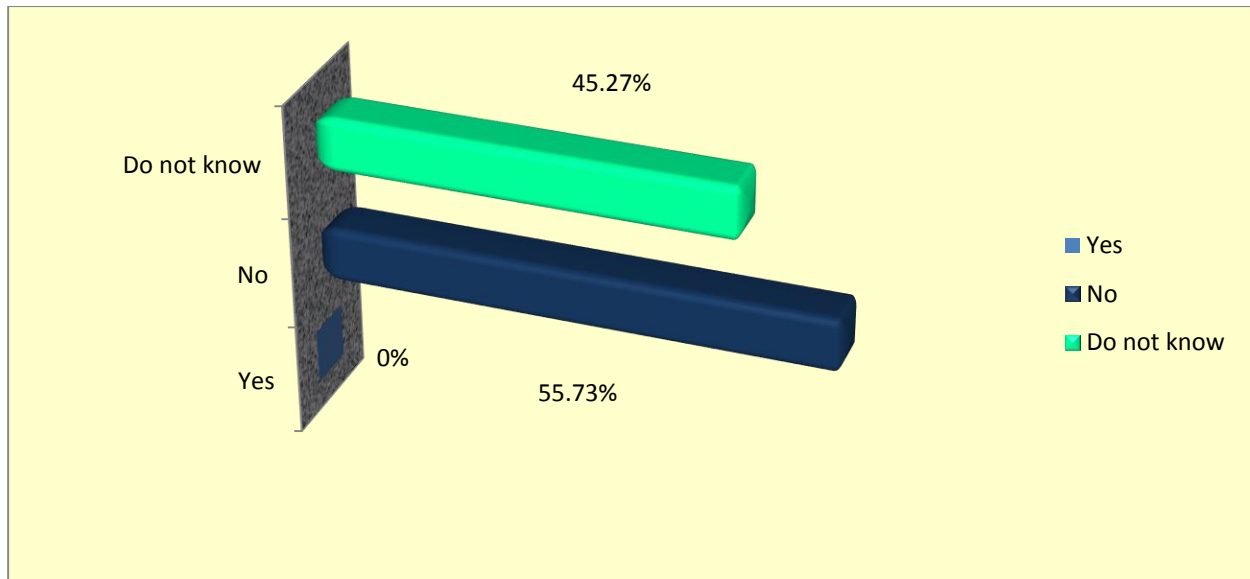


Most (55.73%) of the respondents said that they were not exposed to chemicals and 45.27% of the respondents did not know either they were exposed to any types of chemicals or not.

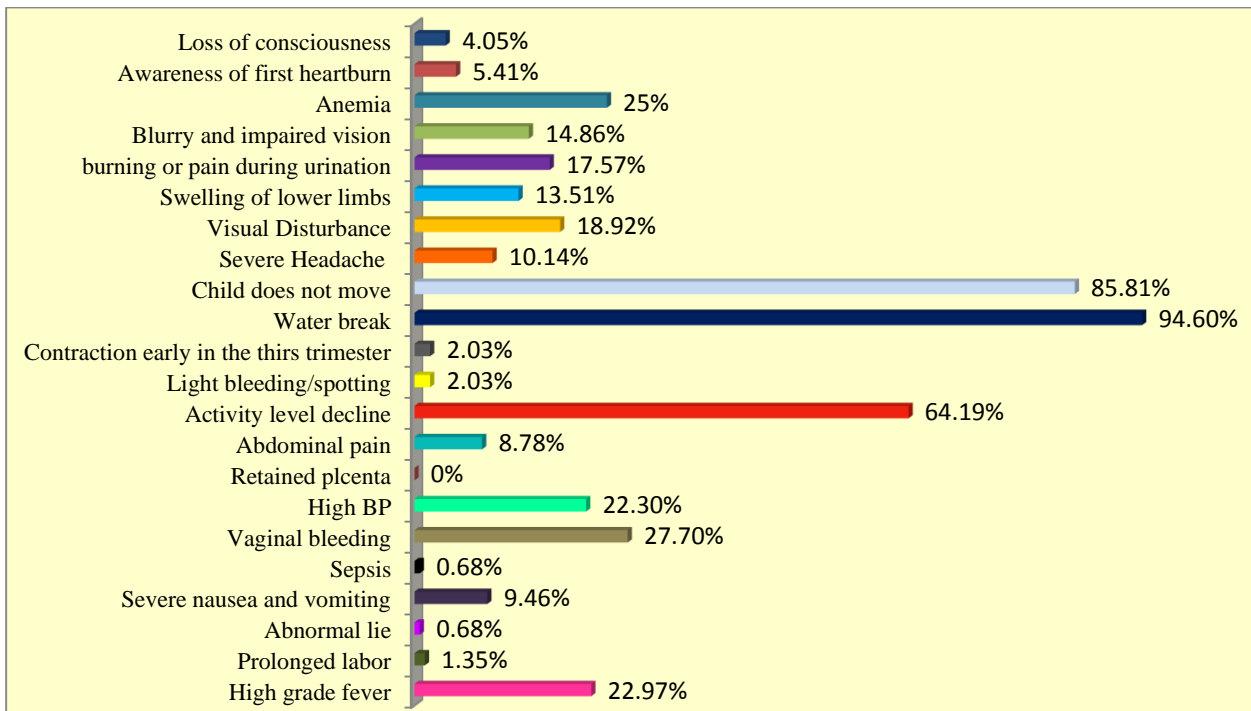## 4.9 Knowledge about Rubella Virus
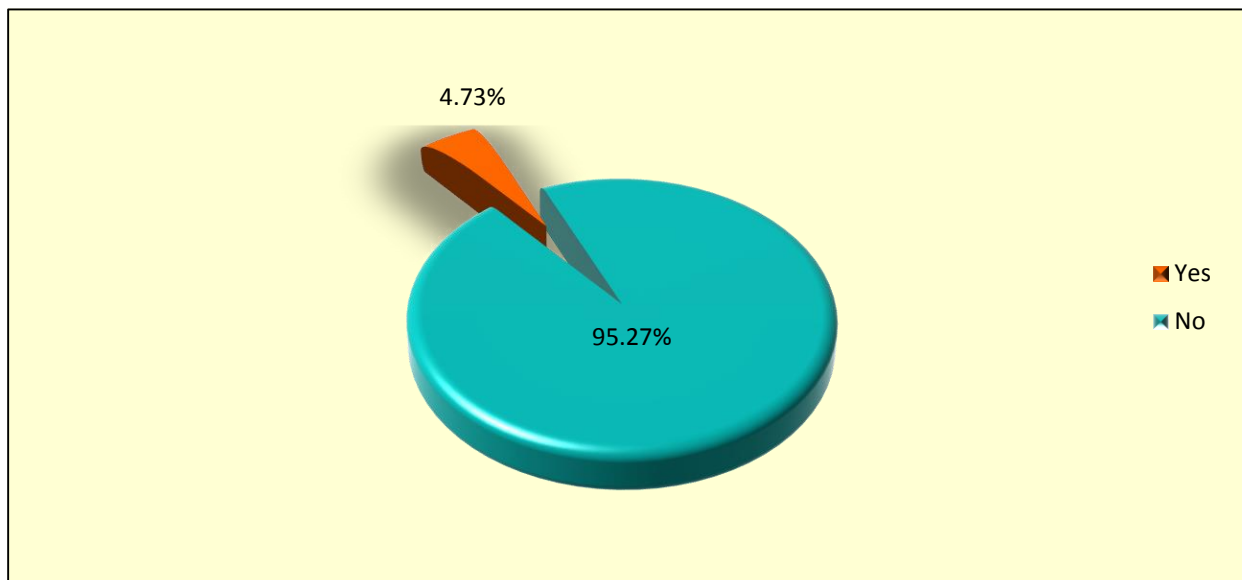


Most (95.27%) of the respondents did not know about rubella virus. Only 4.73% of the respondents had knowledge about rubella virus.
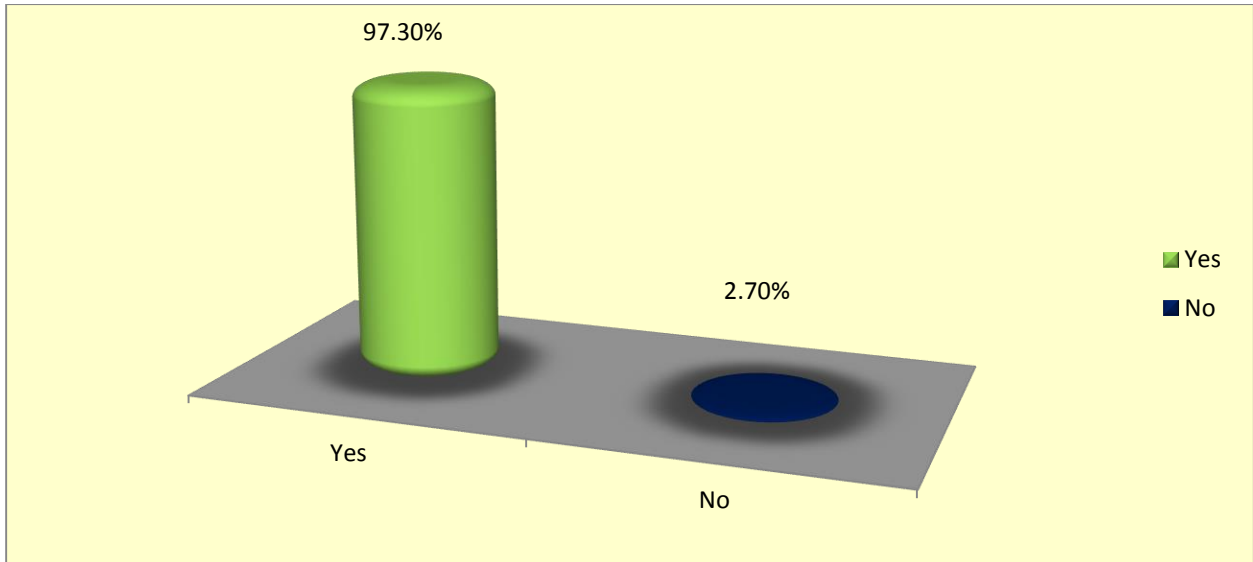
## 4.10 Awareness about Warning Sign
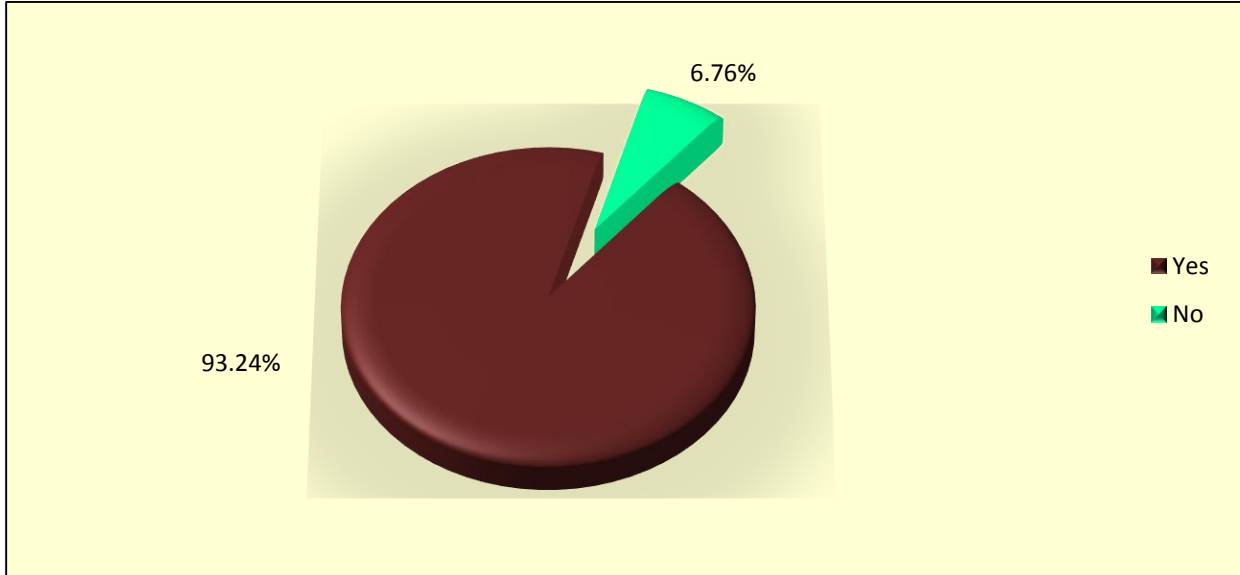


Most (93.24%) of the respondent knew at least one of the warning signs and 6.67% did not know about any of the warning signs.
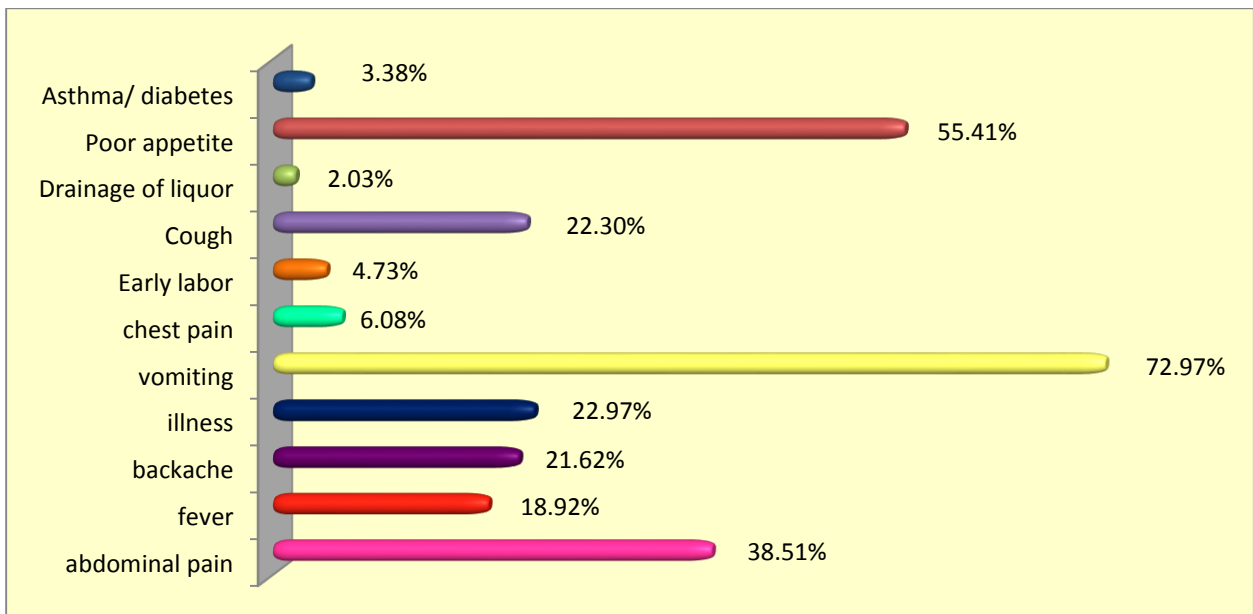
## 4.11 Warning Signs



Most (94.60%) of the respondents knew about water break as a warning sign and only 0.68% knew about the sepsis and abnormal lie.

## 4.12 Knowledge about Danger Sign



Among the respondents, 2.70% had no idea about any of the danger sign and 97.30% of the respondents had idea about at least one of the complications.
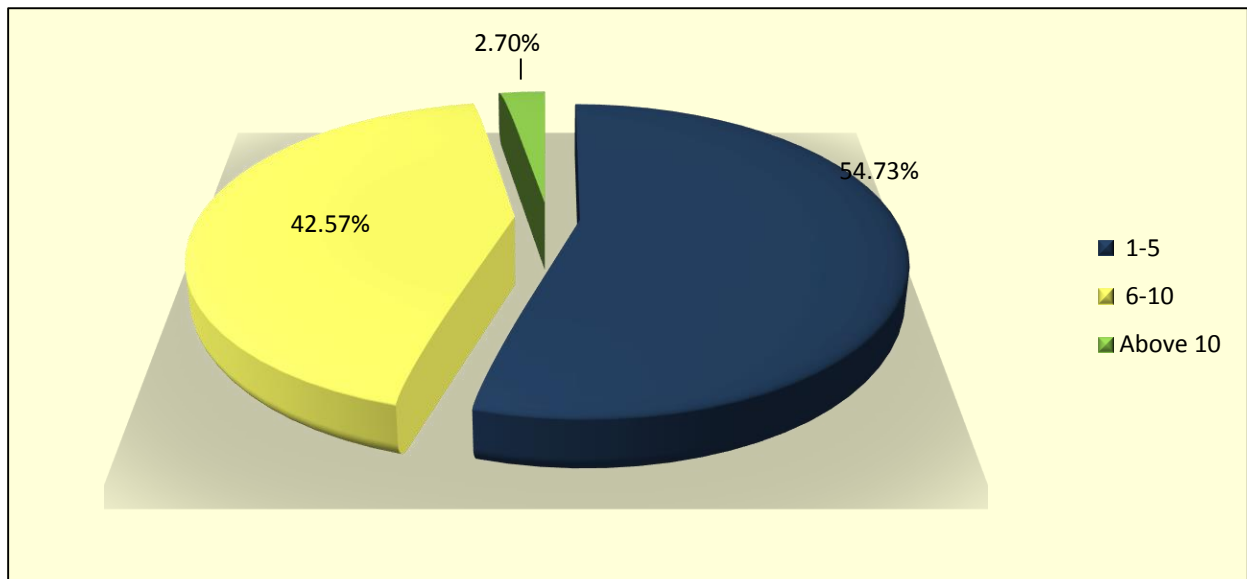
## 4.13 Indicative of Danger



Most (72.97%) of the respondents knew about vomiting as an indicative danger. Only 2.03% believed that drainage of liquor could be an indicative of danger.
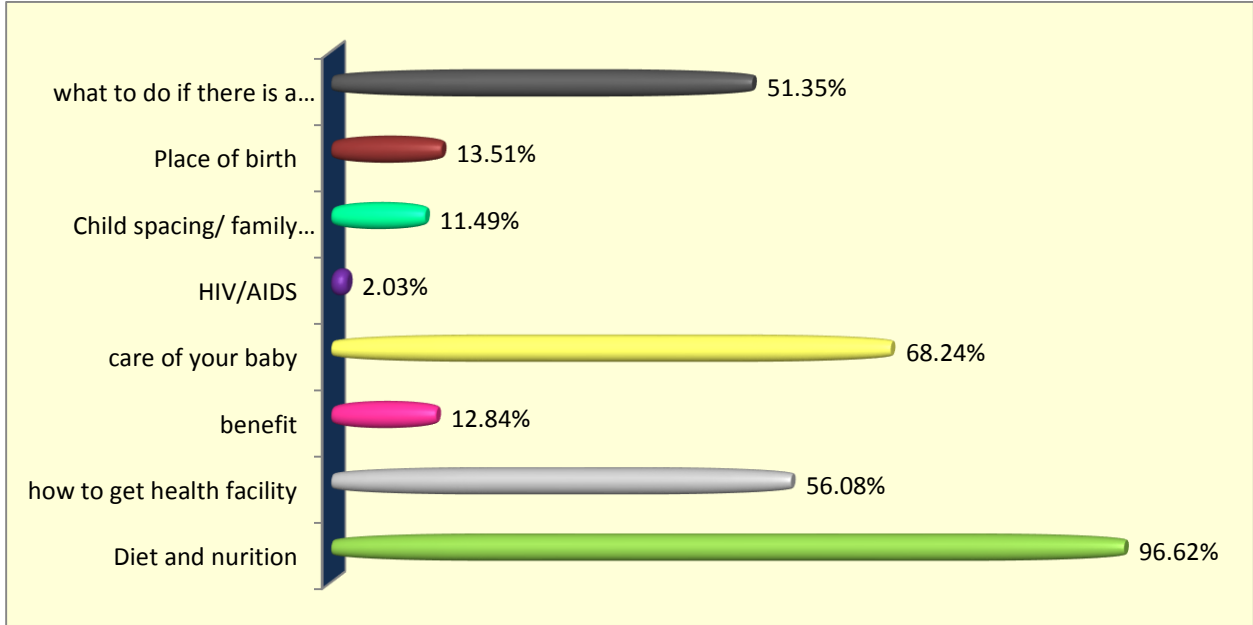
## 4.14 Source of Information
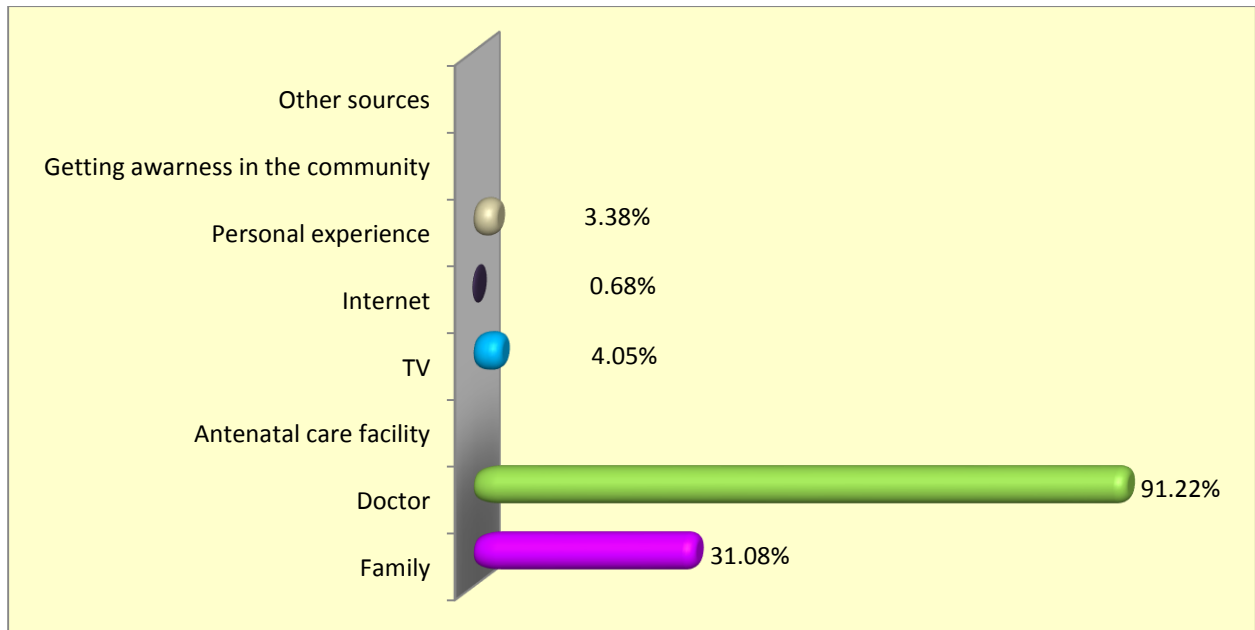


Most (91.22%) of the respondents said that doctor was their main source of information and only 0.68% said that internet was the source.

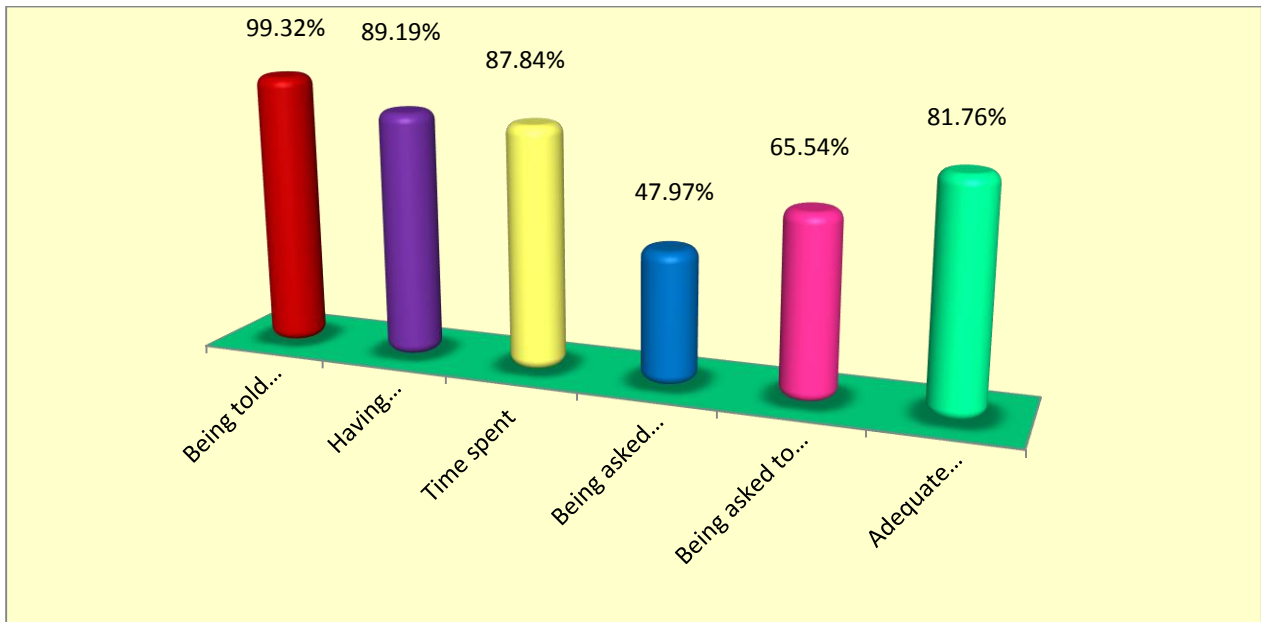## 4.15 Total Number of Visit



Most (54.73%) of the respondents had visited the doctor for 1-5 times. Only 2.70% had visited the doctor for more than 10 times.

## 4.16 Providing Information during Visit



Most (96.62%) of the respondents were provided with the information of diet and nutrition. Only 2.03% of the respondents were told about the HIV.

## 4.17 Communication



More than 99% of the respondents were provided with information about the progress of their pregnancy. Only 47.97% of the respondents asked the health worker any questions about their pregnancy.

**4.18 Abortifacient Food**
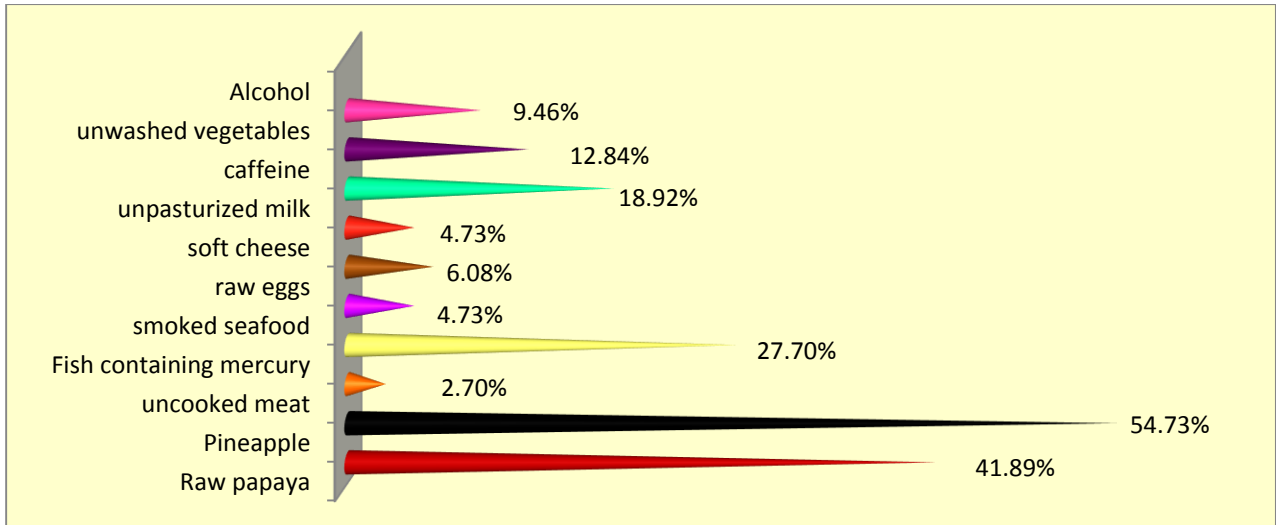


Pineapple is a potent abortifacient food and 54.73% of the respondents knew about this. Fish containing mercury can be abortifacient but only 2.70% of the respondents knew about this.

**4.19 History of Medical Problem**
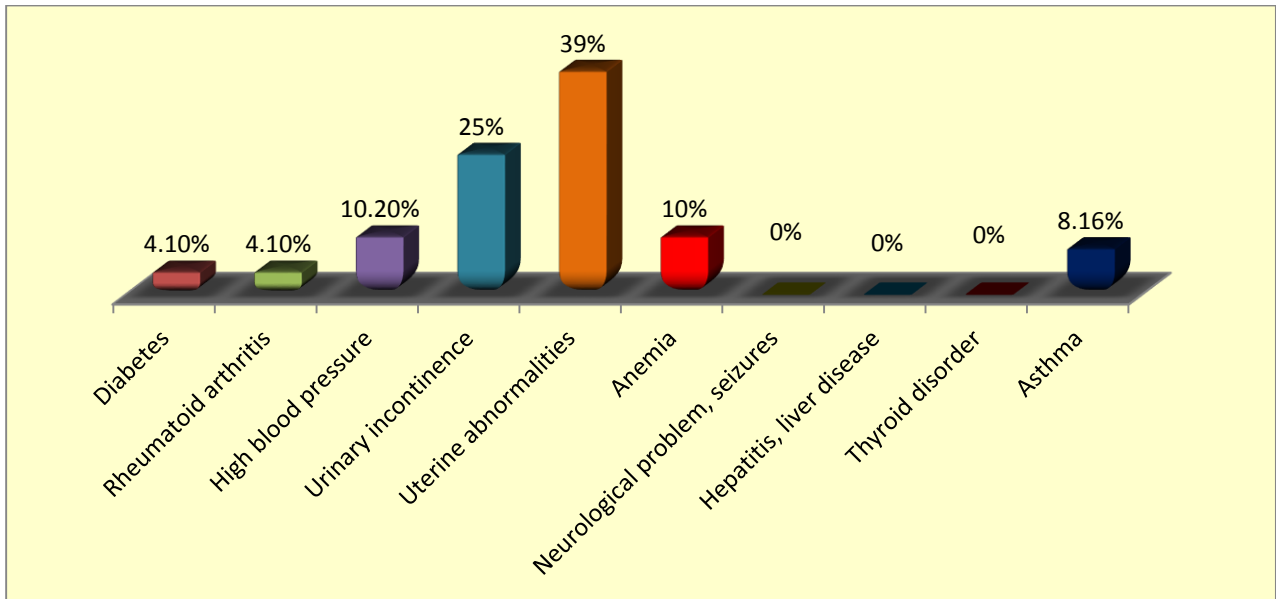


Among the respondents 39% had uterine abnormalities and only 4.10% had diabetes and rheumatoid arthritis.

**4.20 History before Pregnancy (N= 49)**
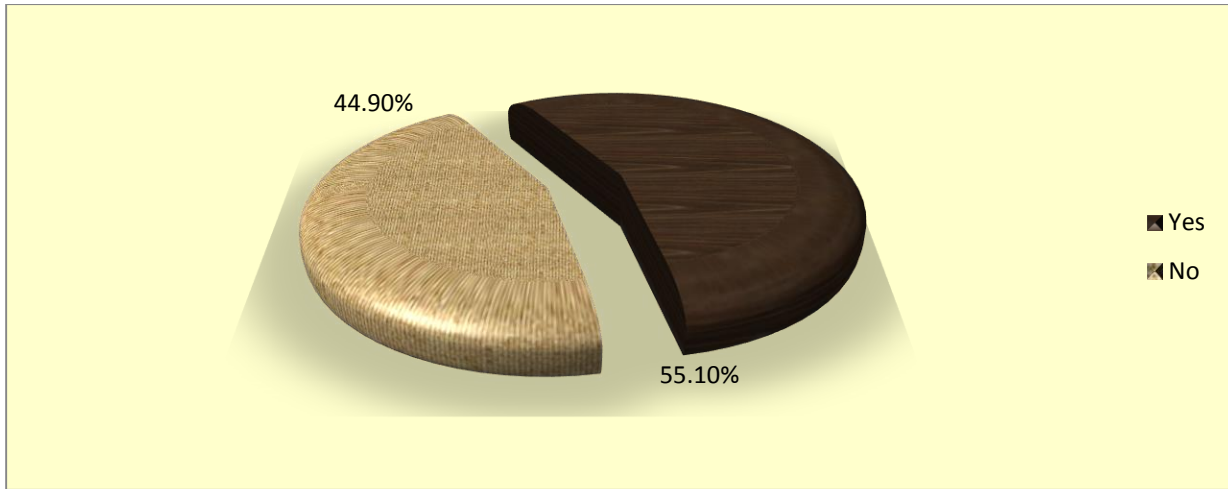


In case of 55.10% respondents who had mentioned medical problem, had it before pregnancy.

**4.21 Current Condition of Previous Problem**
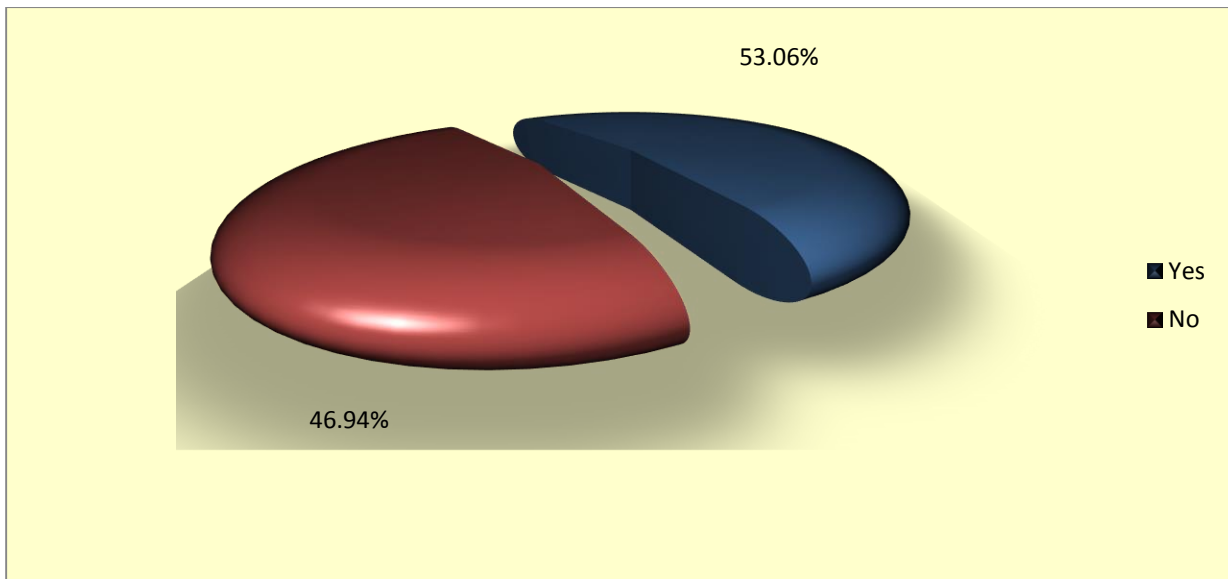


In case of 53.06% of the respondents who had previous problems were still having the problems.

## 4.22 Normal growth of the Baby
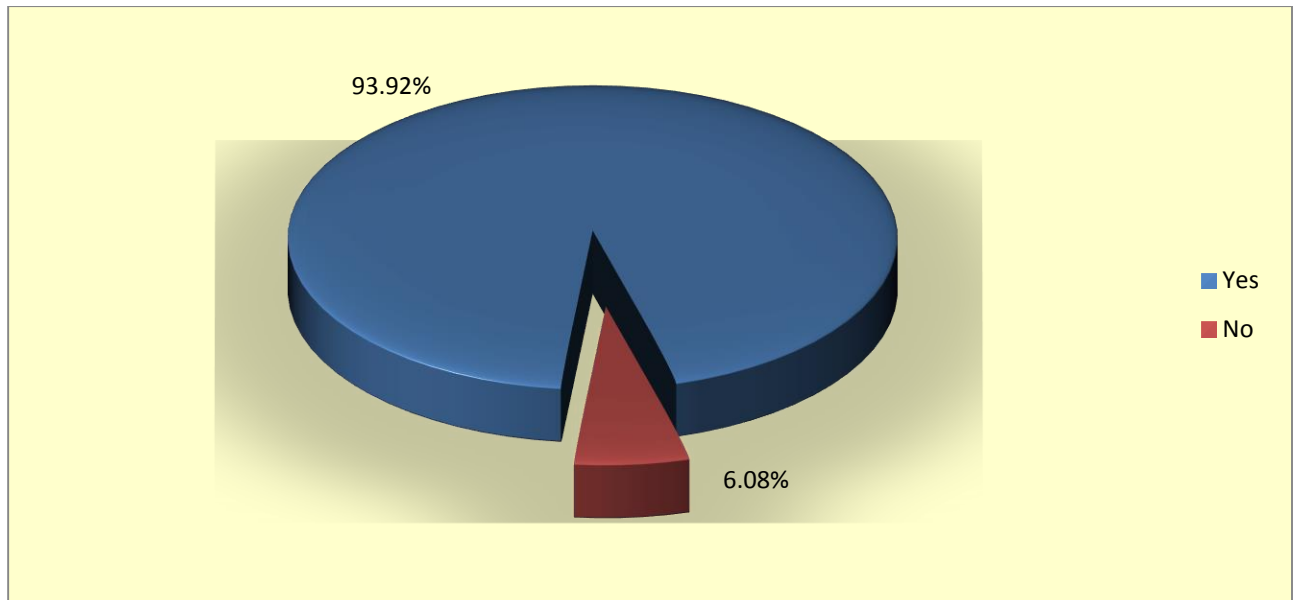


Among the respondents 6.08% had abnormal babies and the abnormalities were underweight and dead child.

## 4.24 Babies with Abnormalities
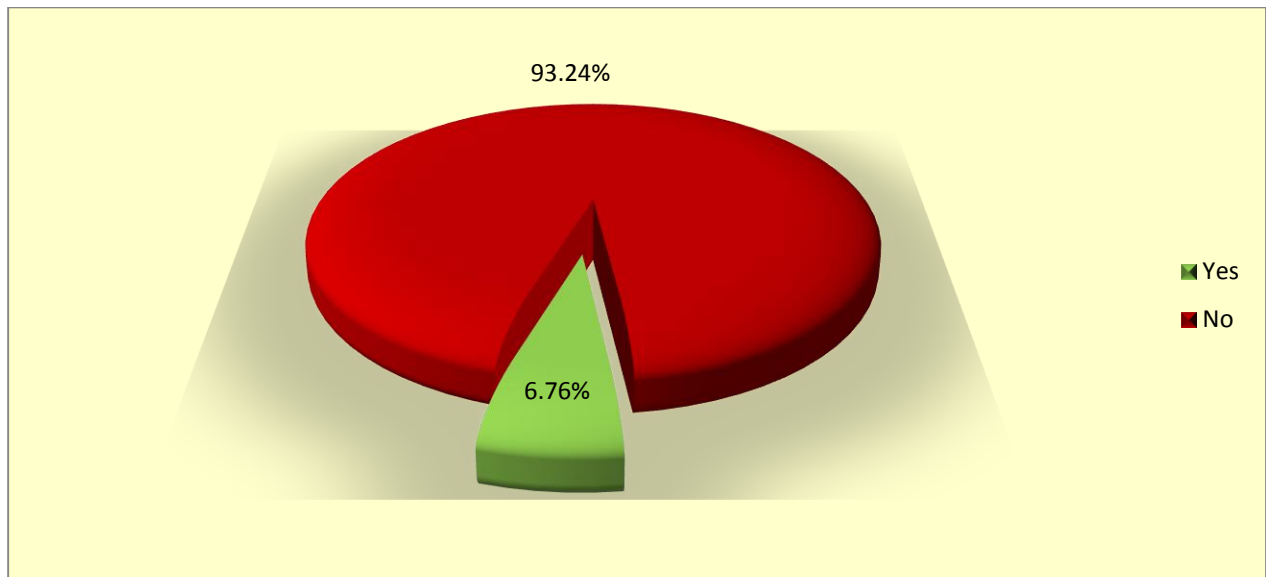


Among the respondents 6.76% had babies with abnormality.

## 4.25 Medication (N=36)

Here N is the number of women who had not gone through delivery. As maximum population of the study were without complication, among them Anti inflammatory drugs, Proton pump inhibitors, Pain killer, Antibiotics, Vitamin tablets and supplement, Calcium carbonate and Vitamin D, Folic acid were most commonly used drugs.

| Therapeutic Class | Percentage |
|---|---|
| **NSAIDs** | **36.11%** |
| Acetaminophen | 8.33% |
| Diclofenac | 13.89% |
| Ketoprofen | 2.78% |
| ketorolac | 11.11% |
| **Antacid** | 2.78% |
| **Antibiotics** | **77.23%** |
| Azithromycin | 2.78% |
| Cephalosporins | 61.11% |
| Metronidazole | 5.56% |
| Levofloxacin hemihydrates | 2.78% |
| **Benzodiazepines** | |
| Diazepam | 5.56% |
| **Dextrose solution** | **16.67%** |
| 5% DNS | 5.56% |
| Hartsol, Hartman | 11.11% |
| **Antihypertensive** | **11.12%** |
| Amlodipine | 5.56% |
| Macitentan | 5.56% |

| | |
|---|---|
| **PPI** | **83.33%** |
| Omeprazole | 30.56% |
| Pantoprazole | 19.44% |
| Esomeprazole | 33.33% |
| **Anti osteoporotic** | |
| Strontium ranelate | 2.78% |
| **H$_2$ receptor blocker** | |
| Ranitidine | 5.56% |
| **Antispasmodic drug** | |
| Tiemonium Methylsulphate | 16.67% |
| **Vitamin  Supplement** | **75%** |
| Vitamin B complex | 13.89% |
| Calcium carbonate and Vit D | 33.33% |
| Folic acid | 13.89% |
| Ascorbic acid | 8.33% |
| Fructose | 2.78% |
| Iron Supplement | 2.78% |

# Chapter 5

# Discussion

# &

# Conclusion

**Discussion**

Bangladesh has one of the world's highest rates of adolescent motherhood, based on the proportion of women younger than 20 giving birth every year. One in three teenage girls in Bangladesh is already a mother. Another 5 per cent are pregnant with their first child. Maternal mortality for adolescents is double the national figure (Unicef, 2007).

In this study, most of the respondents were between twenty to twenty nine years of age and the highest number of respondents had their primary education. Only 6.76% of the respondents had some kind of pregnancy abnormalities among which 10% had miscarriage, 60% had still birth, 30% had convulsion. When miscarriage takes place repeatedly 3 times or more, she is diagnosed with habitual miscarriage. According to saito, (2009) recurrent pregnancy loss is the syndrome that causes repeated miscarriage, stillbirth, and premature delivery impairing the ability to have a live birth.

In this survey it was found that 93.24% of the respondents had a good knowledge about the warning signs. Among the warning signs water break (94.59%), no movement of child (85.81%) and decline in activity of the baby (64.19%) were known to most of the respondents. On the other hand the survey population had a poor knowledge about abnormal lies or fetal position of the babies and sepsis or foul smelling discharge. In a study conducted in 2014 in India found that 50.73% of the respondents had an average knowledge of warning signs. Compared to this, our population had better knowledge about the warning signs and danger signs (93.24%) (Mahalingam and Venkateasan, 2014).

A survey conducted on pregnant women in Debra Birhan town in Central Ethiopia showed that only 38.6% of the respondents had knowledge about danger signs (Solmon *et.al*, 2015). In another study conducted in India showed that 45% of the pregnant women had knowledge about danger signs of pregnancy (Fernandes, 2014). Comparing to those studies, in this study the knowledge level of the respondents was found higher (97.3%).

In studies conducted in Egypt and Ethiopia showed that 26.5 % and 26.04% of the study population respectively had no knowledge of any of the danger signs of pregnancy (Wanboru, A., 2013) ( Rashad, 2010). On the other hand, in this study only 2.7% of the total population had no idea about any of the danger signs which is contrary to the above mentioned studies. More

than half of the respondents replied positively when they asked about vomiting (72.97%) and poor apatite (55.41%) as an indicative of danger.

The Rubella virus can cause malformation of the babies in pregnancy. In a report published in January 2008 it has been said that In Canada, before the introduction of rubella vaccine in 1969, rubella epidemics occurred at irregular three- to ten-year intervals. After 1970, the incidence of rubella declined markedly and has stayed at a mean endemic rate of 4/100 000 population per year (Lorraine, 2008). Rubella virus continues to circulate in the community, and not all pregnant women are immune. Some segments of the population are not immunized against rubella because they have missed or refused immunization. In this study it was found that only 4.73% of the total respondents knew about rubella virus and none of them had taken vaccine. Among the respondents who did not know about rubella virus, only 1% had taken the vaccine.

Pregnancy is quite a unique and different experience for the women and they are very much conscious about their diet chart during pregnancy. Eating a well balanced diet important for a pregnant woman. This is because of the fact that the choice of food during pregnancy affects the health of the expectant mother as well as development of the fetus. It is essential to follow a proper and healthy diet when pregnant, and although there is a lot of information available about what a woman should eat during pregnancy, there is not always a lot of information of what foods to avoid during pregnancy. Although most foods are fine and healthy to consume during pregnancy, there are a few that should be avoided until after the healthy new baby is born. The risks posed by those foods vary from potentially fatal reactions to the fetus, to minor problems during birth or pregnancy. In this study it was found that more than half (54.73%) of the respondents knew that pineapple could cause abortion and 41.89% knew that raw papaya is also an abortifacient food. Various kind of response was achieved about the other abortifacient food. The lowest number of response was obtained when they were asked about fish containing mercury.

Pregnant women are suggested with different types of medication during the time of pregnancy. Almost 36% of the respondents said that they were prescribed with NSAIDs. NSAIDs given to pregnant women cross the placenta and may cause embryo-fetal and neonatal adverse effects, depending on the type of agent, the dose and duration of therapy, the period of gestation, and the time elapsed between maternal NSAID administration and delivery. Increased risks of

miscarriage and malformations are associated with NSAID use in early pregnancy. Conversely, exposure to NSAIDs after 30 weeks' gestation is associated with an increased risk of premature closure of the fetal ductus arteriosus. Fetal and neonatal adverse effects affecting the brain, kidney, lung, skeleton, gastrointestinal tract and cardiovascular system have also been reported after prenatal exposure to NSAIDs. NSAIDs should be given in pregnancy only if the maternal benefits outweigh the potential fetal risks, at the lowest effective dose and for the shortest duration possible (Antonucci *et. al,* 2012).

Some antibiotics are considered as safe in case of pregnancy and some are considered as dangerous. Cephalosporin is considered as a safe option and 61.11% of the respondents were prescribed with cephalosporin. It is a category B drug for pregnant women. Metronidazole was prescribed in 5.56% cases and is a category B drug. Benzodiazepines fall in category D but they were prescribed to 5.56% of the respondents. Proton pump inhibitors fall in category C and were prescribed to 83% of the respondents. Folic acid was prescribed to 13.89% of the respondents and falls in the safest class. Calcium carbonate and Ascorbic acid is category C drug and was prescribed to 8.33% and 33.33% of the respondents respectively. Among the respondents 75% took at least one type of vitamin supplement.

The condition of high blood pressure during pregnancy is treated with various antihypertensive drugs. Few drugs are considered as safe while others are contraindicated. Among the preferred drugs methyldopa, labetalol and hydralazine are prescribed more often (Moser, 2012). In this study 5.56% respondents with hypertension was prescribed with amlodipine and macitentan. Amlodipine is a category c drug but does not appear to be teratogenic and it appears to be compatible with breastfeeding (Park, 2007). On the other hand macitentan is a category X drug that causes fetal harm (Khadka, 2015).

**Conclusion**

Pregnancy related complications are well known in Bangladesh but happens in large number. Pregnant women are aware about the complication that may arise but they seem to fail to avoid the complications. This is because they take it less seriously or they totally ignore the symptoms. In case of this study we must consider the fact that, respondent number was not very high and the level of complication found in pregnant women were very poor. Hence the results do not illustrate the whole scenario. There is an opportunity to carry out this research work in future with more number of respondents.

# Chapter 6
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