" MATERNAL RISK FACTORS ASSOCIATED WITH TERM LOW BIRTH WEIGHT NEONATES ".

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CERTIFICATE

This is to certify that this dissertation titled **" MATERNAL RISK FACTORS ASSOCIATED WITH TERM LOW BIRTH WEIGHT NEONATES ".**is a bonafide work of **DR. SHOBANA.S**, and has been prepared under my guidance, in partial fulfillment of regulations of The Tamilnadu Dr. M.G.R. Medical University, for the award of M.S. Degree in Obstetrics and Gynecology during the year 2019 - 2022.

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I hereby declare that this dissertation / thesis entitled **" MATERNAL RISK FACTORS ASSOCIATED WITH TERM LOW BIRTH WEIGHT NEONATES ".**is a bonafide and genuine research work carried out by me under the guidance of **PROF DR. J. SRIMATHI,, MD., D.G.O.,** Department of Obstetrics and Gynecology, MADRAS MEDICAL COLLEGE, Chennai.

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CONTENTS

INTRODUCTION

Birth weight of a newborn baby is an important entity to be noted during the postnatal period. It is a single most determinant for survival, growth and development of an infant. It is used directly and indirectly as an indicator of quality of antenatal care of mother. World Health Organization (WHO) defined Low Birth Weight (LBW) as a weight at birth less than 5.5lbs or 2500g. (6) LBW is considered to be a significant public health concern globally and nationally. It is associated with both short term and long term complications. It is a major predictor of prenatal mortality. It is also found that low birth weight babies are at high risk of developing non communicable diseases like diabetes and cardiac diseases later in their lives. In order to prevent low birth weight the health care must be affordable, accessible and appropriate for all pregnant women. (7)

The risk factors or determinants of low birth weight must be found out and addressed properly. Interventions must be made in a perfect manner to tackle the low birth weight consequences. This helps to have a greater impact on reproductive health care of the nation. All the interventions should be in an evidence based process and must be intensified or enlarged later at the regional, national, state and community level. Given the best care, the low birth weight babies catch up growth and by 2nd or 3rd year of age, they will be of normal size and performance

AIM AND OBJECTIVES

AIM:

To evaluate the maternal risk factors associated with term low birth weight neonates

REVIEW OF LITERATURE

HISTORICAL ASPECTS

Many studies have been carried out in various populations in worldwide with regard to low birth weight. In early 1900s, studies of Caucasians introduced the cutoff point of 2500g for low birth weight. It was introduced by Dr.Arva Ylppo, a Finnish pediatrician in 1919. [8] His definition was accepted by the American Academy of Pediatrics in 1935. World Health Organization (WHO) later in 1948 made this criterion as a global definition of low birth weight. [9]

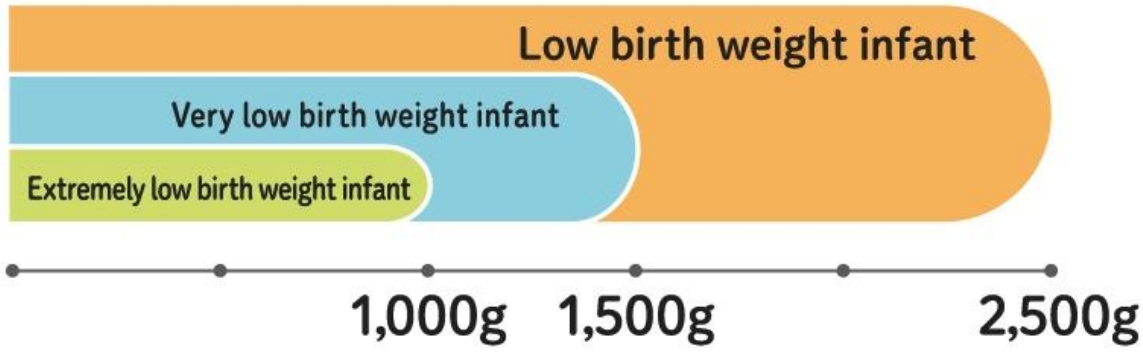
DEFINITIONS AND TERMINOLOGIES

The term "Birth weight" denotes the first weight of fetus or new born obtained after his or her birth. It reflects the health status of the mother during the pregnancy period.

As already mentioned Low Birth Weight (LBW) is a weight at birth less than 5.5lbs or 2500g. Seemingly, Very Low Birth Weight (VLBW) is a weight at birth less than 3lbs or 1500g. Extremely Low Birth Weight (ELBW) is a weight at birth less than 2lbs or 1000g. [10]

According to International Classification of Diseases (ICD-10) CM Code, Low birth weight is categorized under P07 (Disorders of newborn related to short gestation and low birth weight) and coded as P07.10. [11]

Figure 1: Classification of Birth weight



TYPES OF LOW BIRTH WEIGHT

There are two types of low birth weight babies based on the origin. The first one is Preterm babies and the second is Small For Date (SFD) or Intra Uterine Growth Retardation (IUGR).

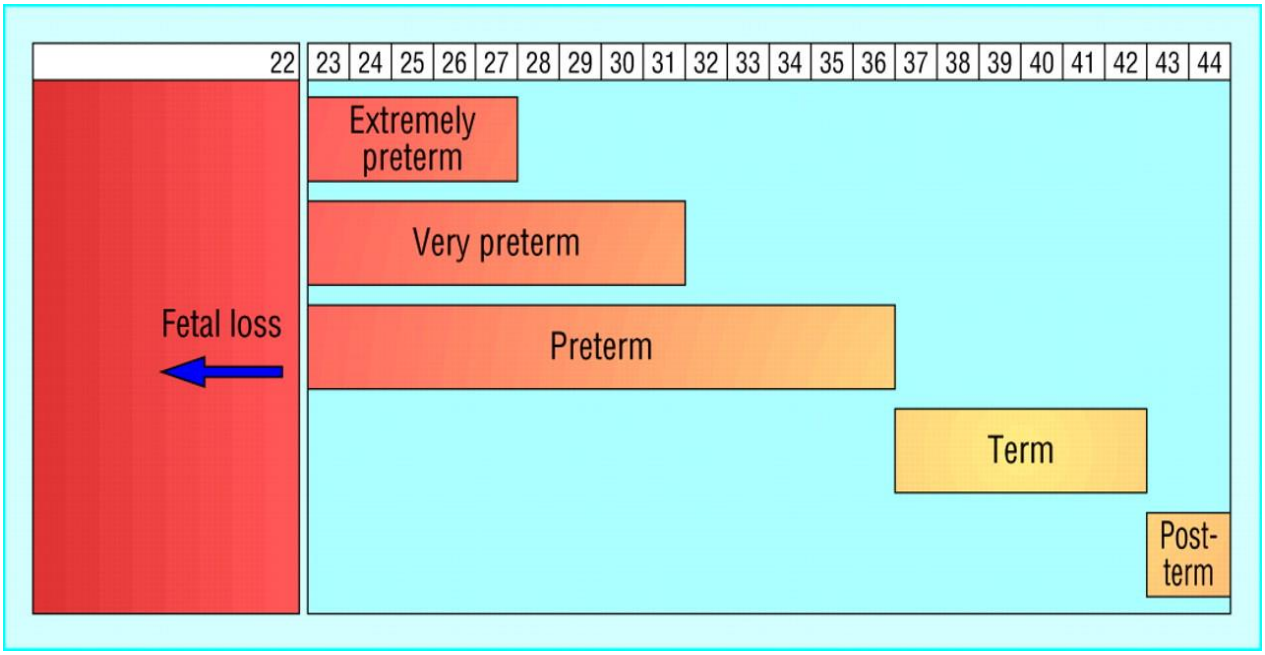
❖ **Preterm babies**

Zlatnik and Burmeister (1977) coined the concept of "low gynecological age". They defined gynecological age (GA) as "chronological age minus age at the time of menarche". [12] According to American College of Obstetricians and Gynecologists (ACOG), the newborn babies are also classified based on gestational age. Any babies born before 37 completed weeks (< 259 days) of gestation irrespective of the birth weight are called Pre term babies. Term babies are those born between 37-42 weeks (259 - 294 days) of gestation irrespective of the birth weight. Post term babies are those born at 42 weeks or thereafter (>294 days) of gestation irrespective of the birth weight. [13, 14, 15]

Furthermore preterm babies are classified into three types as:

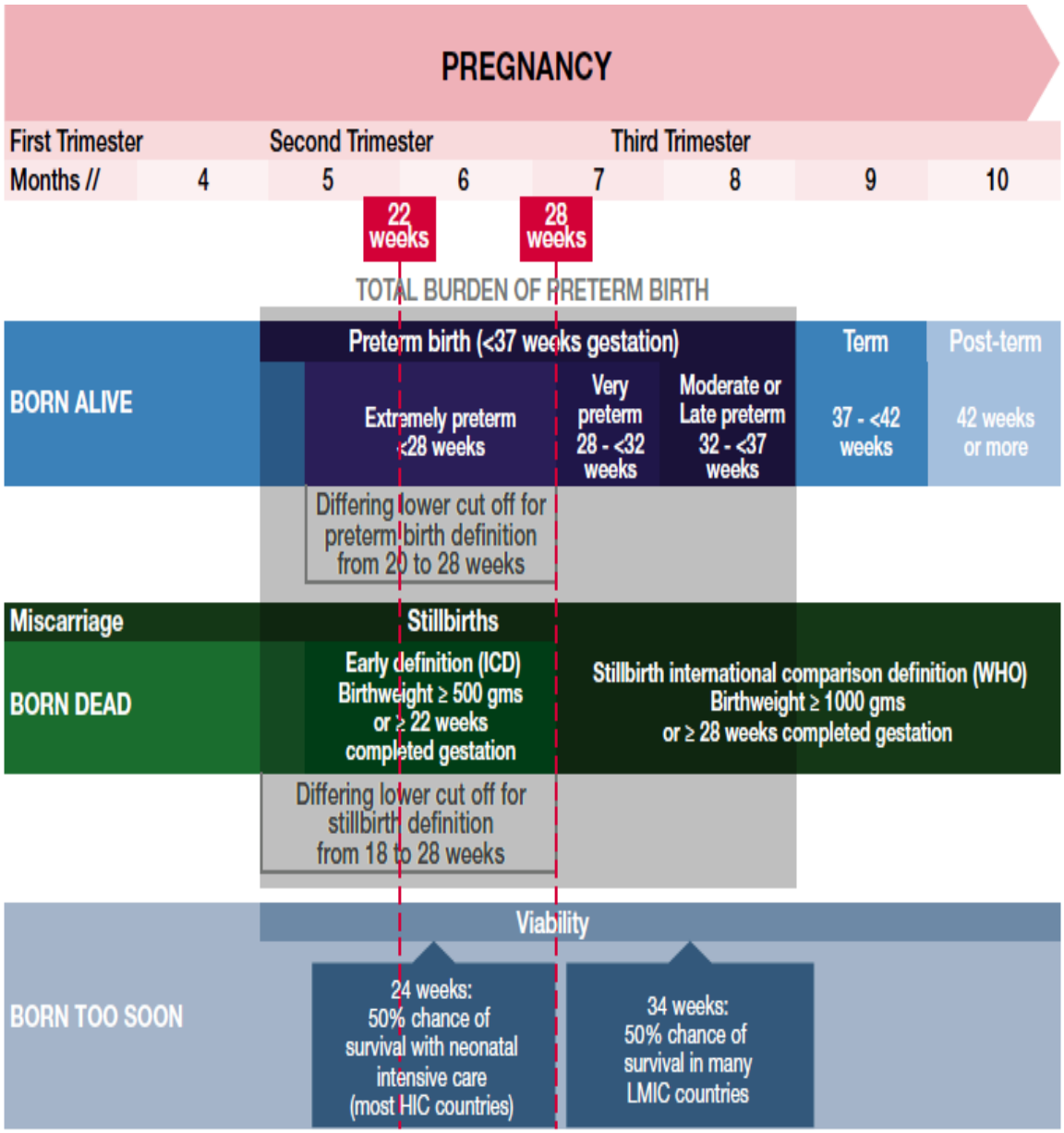
1. Extremely preterm (<28 weeks of gestation)
2. Very preterm (28 - 32 weeks of gestation)
3. Moderate to Late preterm (32 – 37 weeks of gestation)

Figure 2: Classification of Preterm



The preterm babies are more prone for severe illness or even death during their neonatal period. Preterm or prematurity complications are the single largest cause of neonatal mortality and 2nd leading cause of Under 5 mortality. (16)

Figure 3: Overview of definitions of Preterm



Source: Adapted from Blencowe et al. National, regional and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries: a systematic analysis and implications
World Bank income groupings: HIC=High-Income Countries LMIC=Low and Middle Income available from http://data.worldbank.org/about/country-classifications/country-and-lending-groups

The two groups of preterm births are as follows:

- Spontaneous preterm birth and
- Provider initiated preterm birth.

There is no specific reason for the **spontaneous preterm birth** but may occur during spontaneous onset of labor or after prelabor premature rupture of membranes (pPROM).

The following risk factors can lead to prematurity such as:

1. Genetic predisposition,
2. Age at pregnancy,
3. Teenage pregnancy,
4. Advanced maternal age,
5. Short maternal height,
6. Low maternal weight,
7. Previous preterm delivery,
8. Nutritional disorders
9. Birth spacing,
10. Infections,
11. Multiple pregnancies,

12. Short inter pregnancy intervals
13. Antepartum hemorrhage,
14. Any underlying chronic medical diseases or conditions,
15. Life style diseases,
16. Ethnicity,
17. Work related reasons,
18. Smoking,
19. Alcohol consumption,
20. Psychological aspects etc.

The pathophysiology in spontaneous preterm birth is that it is a multi-factorial process that causes the uterus to convert from inertness to active contractions and finally leading to birth before completion of 37 weeks of gestation. [17] There is a consequence of uterine over distension due to multiple pregnancy like twins, triplets etc. Moreover infections like urinary tract infections, bacterio vaginosis; HIV, Syphillis, malaria etc play a major role. Other ascending intrauterine infections and secondary premature cervical shortening results in causing cervical insufficiency. [18]

Lifestyle factors also cause prematurity. Some of these are prolonged standing, excessive physical work, stress and depression. Personal habits like smoking and alcohol consumption also causes preterm birth. [19, 20] Boy gender is more prone for prematurity and mortality when compared to female gender. [21] Preterm also differs between various ethnic groups. Black African populations are more prone for preterm births than the Caucasians. [22]

A great number of studies indicate that preterm labour is more common among adolescent pregnancies both in developing and developed countries. In pregnant adolescents with low GA (< 2 years) have more chances of delivering a preterm and low birth weight babies. The biological cause can be due to immaturity of the maternal organs primarily the uterus but possibly the hypothalamic-pituitary axis. Studies also reveal that chances of preterm birth were inversely correlated with maternal height. [23] Moreover increased weight gain during pregnancy also increases fat stores in mother causing lower fetal growth leading to LBW. [24]

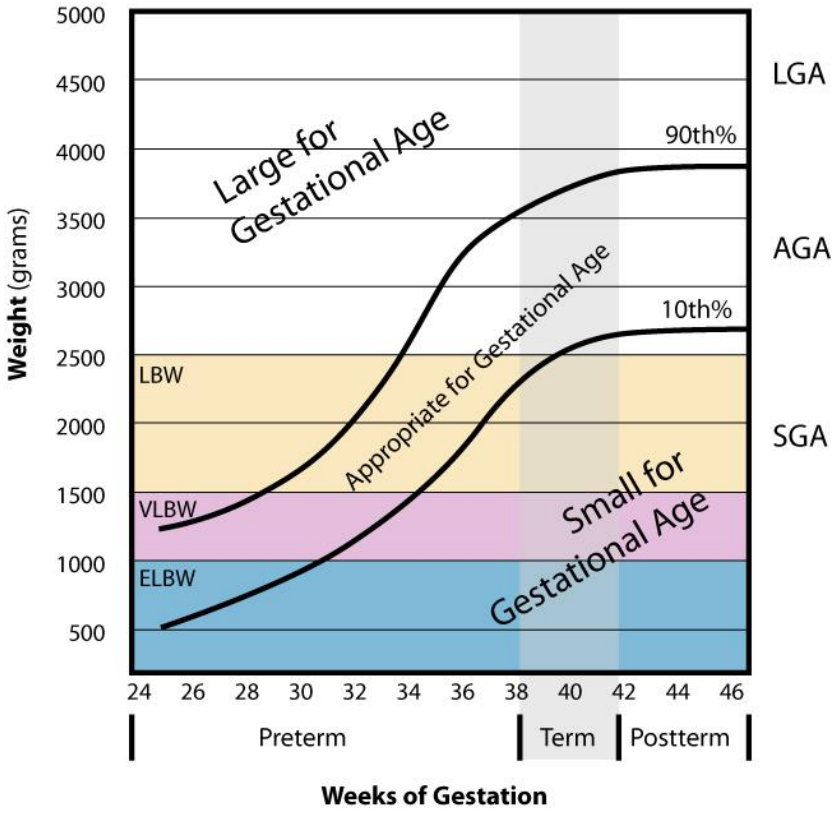
The provider initiated preterm births are those which occur due to specific indications by medical professionals called as medical induction or elective cesarean section or maternal indications or fetal indications. [25] These

indications are either urgent or discretionary. Maternal indications include severe preeclampsia, placental abruption, uterine rupture, cholestasis, maternal underlying diseases like renal diseases, hypertension, diabetes and obesity leads to preeclampsia. [26] Fetal indications include fetal distress, poor fetal growth or growth restriction etc. [27]

- **Small for date babies (SFD)**

Small for date (SFD) or small for gestational age (SGA) infants are those below the 10th percentile of birth weight for gestational age. They are smaller than 90 percent of all other babies of same gestational age.[28] These babies may be borne at term or preterm or post term. They are caused due to intrauterine growth retardation. These babies have high mortality rate. They may be physiologically and neurologically mature but they are smaller than all other babies of same gestational age. They may be of normal length or height but their weight and body mass are low.

Figure 4: Small for Gestational Age (SGA)



There are various causes of small for gestational age babies. Majority are due to genetic factor where their parents are also small. They have a common condition or disorder called Intra uterine growth retardation (IUGR) due to deficiency of nutrients and oxygen supply to the fetus thereby leading to diminished growth and development of the tissues and organs of the fetus. [29] Many risk factors or determinants have contributed to SFD babies such as:

1. Maternal factors
2. Uterus and placental factors
3. Fetal factors

Maternal factors include the following

1. Hypertension
2. Renal diseases
3. Diabetes mellitus
4. Cardiac diseases
5. Respiratory diseases
6. Maternal malnutrition
7. Anaemia
8. Smoking
9. Alcohol consumption
10. Infections

Uterine and placental factors include the following

1. Abruptio placenta
2. Placenta previa
3. Diminished uterine blood flow
4. Diminished placental blood flow
5. Uterine infections
6. Hemorrhage

Fetal factors include the following

1. Twin pregnancy
2. Triplets pregnancy
3. Birth defects
4. Infections
5. Chromosomal abnormalities

Small for gestational age babies are of three types:

1. Malnourished SGA
2. Hypoplastic SGA
3. Mixed type

Malnourished SGA is the commonest form of SGA presenting with asymmetric IUGR. Here the malnutrition occurs during the latter period of gestation due to uteroplacental insufficiency. The appearance of the baby looks long, thin and marasmic, pale, loose and dry skin, thin umbilical cord, wide eye look, dull looking etc. Usually the brain remains unaffected whereas other internal organs like liver are grossly shrunken. Their head circumference is 3 cm greater than the head circumference.

There will be only decrease in cell size but cell number will be normal. Nutritional rehabilitation and management of the child gives better prognosis.

Hypoplastic SGA babies present with symmetric IUGR. Here the growth retardation occurs during early pregnancy. It is associated with genetic defects, chromosomal abnormalities and intrauterine infections. The incidence of congenital anomalies is 10-20 times higher in Hypoplastic SGA babies. There is decrease in cell number. Here usually all the organs can be affected including the brain. All anthropometric parameters are proportionately small.

The prognosis is poor in Hypoplastic SGA which leads to permanent physical and mental retardation.

Mixed SGA babies are caused due to adverse events or factors occurring during both early and mid-pregnancy. These babies look neither malnourished obviously nor Hypoplastic grossly. Hence they are called as “mixed SGA”. There is decrease in both cell size and cell count.

The complications of SFD babies are diminished oxygen level to the fetus, very less APGAR score, hypoglycemia, hypocalcaemia, hypothermia, birth

asphyxia, congenital defects, infections, polycythemia, meconium aspiration syndrome, poor growth potential etc. The diagnostic procedures include ultra-sonogram, Doppler flow, gestational assessment etc. [30, 31]

GLOBAL FACTS

According to UNICEF data, around 20.5 million newborns had been in low birth weight in 2015. [32] This contributes to about 14.6 percent of all babies borne that year worldwide. These babies were more likely to die during their first month of life and those who survived face lifelong consequences like stunted growth, low intelligence quotient, occurrence of obesity and diabetes in their adult life.

The following figures depict the prevalence of low birth weight worldwide along with region wise data.

Figure 5: LBW Prevalence worldwide

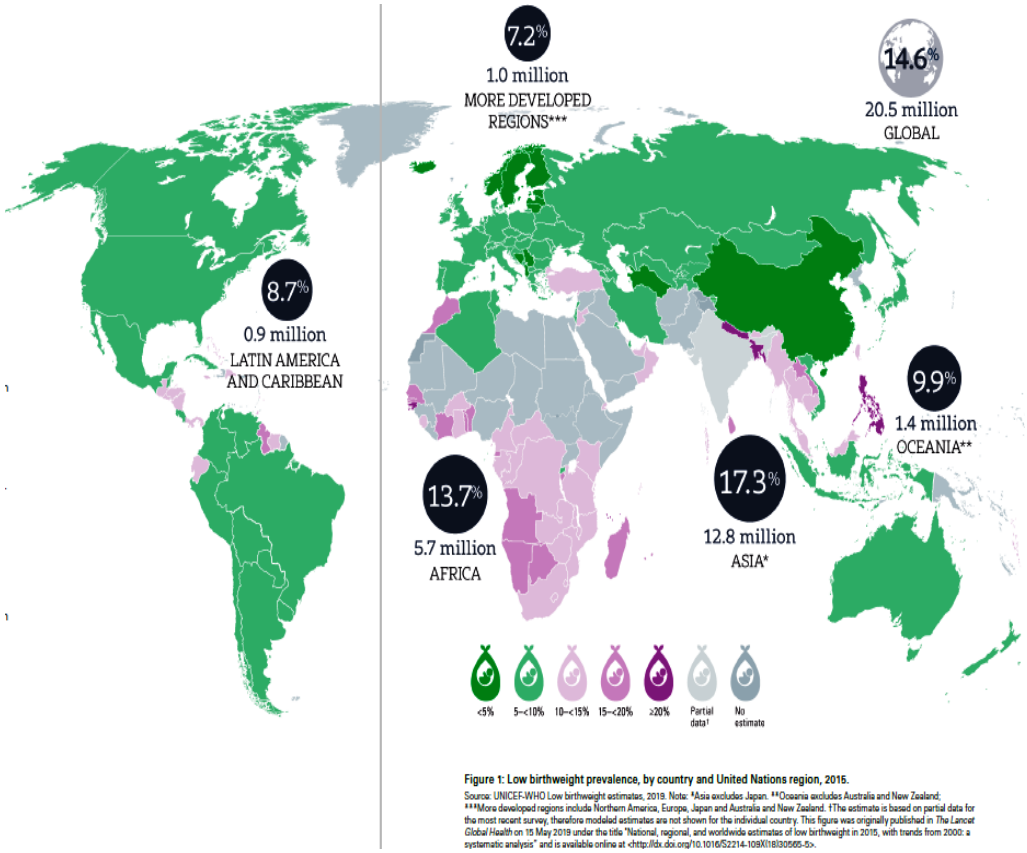


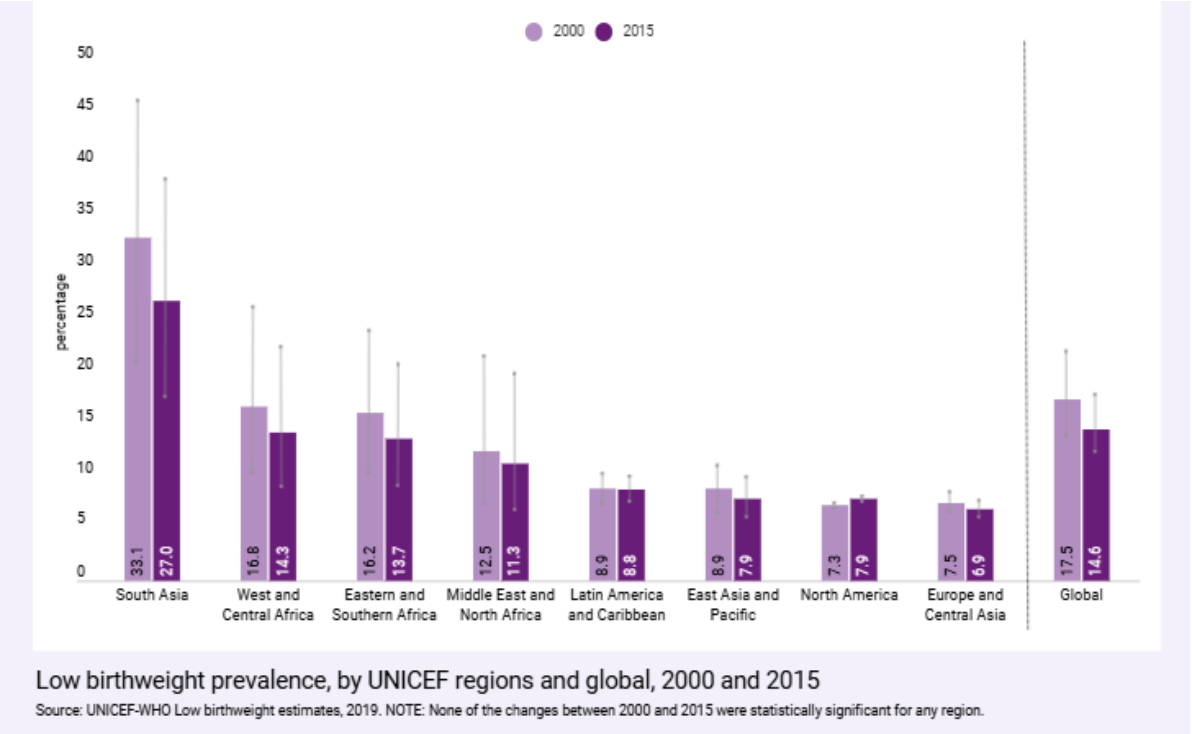
Figure 1: Low birthweight prevalence, by country and United Nations region, 2015.

Source: UNICEF-WHO Low birthweight estimates, 2019. Note: *Asia excludes Japan. **Oceania excludes Australia and New Zealand; ***More developed regions include Northern America, Europe, Japan and Australia and New Zealand. †The estimate is based on partial data for the most recent survey, therefore modeled estimates are not shown for the individual country. This figure was originally published in *The Lancet Global Health* on 15 May 2019 under the title "National, regional, and worldwide estimates of low birthweight in 2015, with trends from 2000: a systematic analysis" and is available online at <http://dx.doi.org/10.1016/S2214-109X(18)30565-5>.

There was no change in low birth weight prevalence between 2000 and 2015 in Latin America, the Caribbean and the Western Europe whereas in North America there was increase in low birth weight prevalence from 7.3 % to 7.9 % in 2000 and 2015 respectively. [33]

No region in the world has experienced a decrease in low birth weight problems during this 15 year period.

Figure 6: LBW Prevalence worldwide



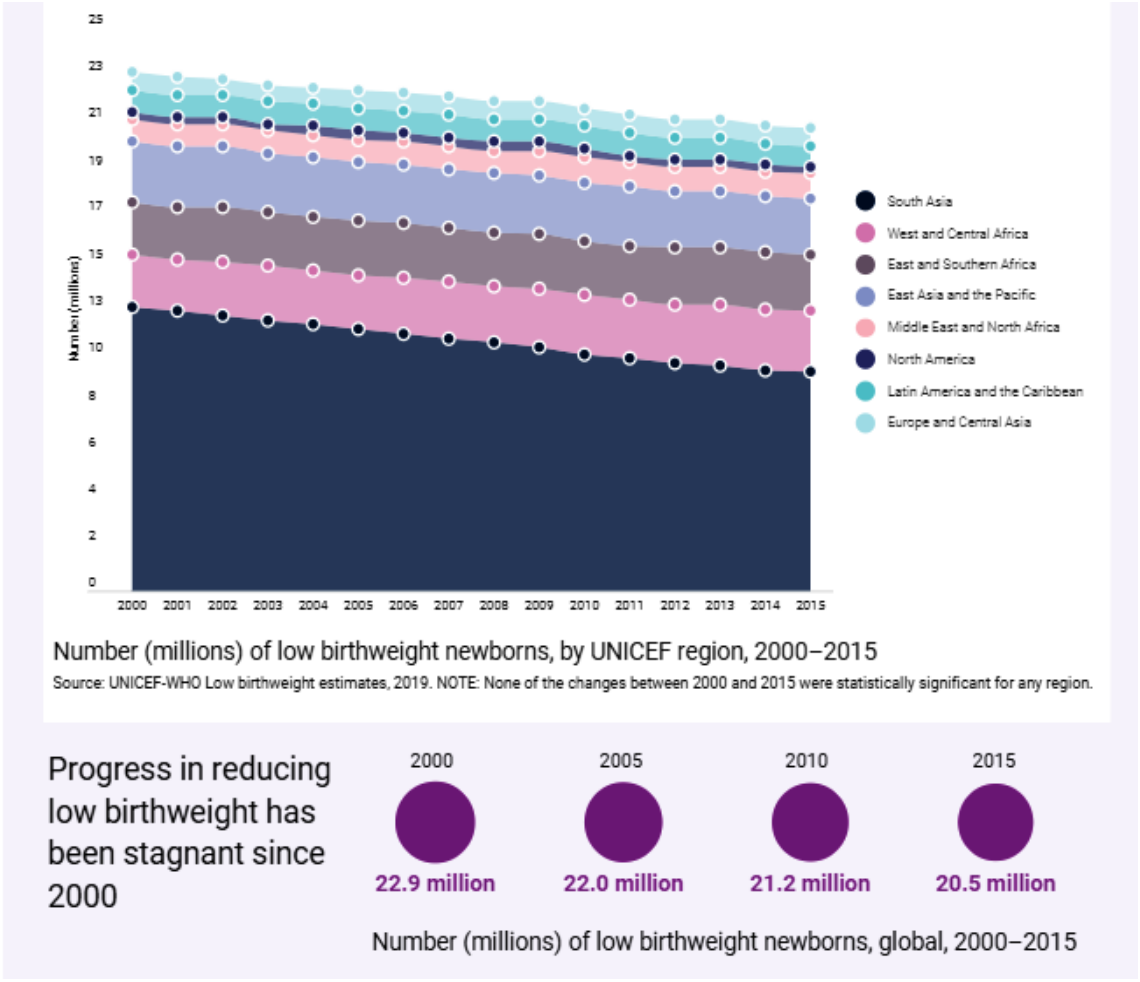
Low birthweight prevalence, by UNICEF regions and global, 2000 and 2015

Source: UNICEF-WHO Low birthweight estimates, 2019. NOTE: None of the changes between 2000 and 2015 were statistically significant for any region.

With respect to UNICEF Regions, South Asia occupies the highest percentage of low birth weight prevalence worldwide that is 47% followed by Eastern and Southern Africa 13% and West and Central Africa 12% respectively. (34)

With respect to total number of new born babies affected with low birth weight, there had been a reduction in number from 2000 to 2015 that is 22.9 million in 2002 to 20.5 million in 2015. (35)

Figure 7: Reduction of LBW numbers



The only region to have experienced a significant increase in total number of low birth weight newborns was Northern America ie 315 684 in 2000 to 34 5743 in 2015 respectively. [(36)]

Figure 8: Progress in reduction of LBW numbers

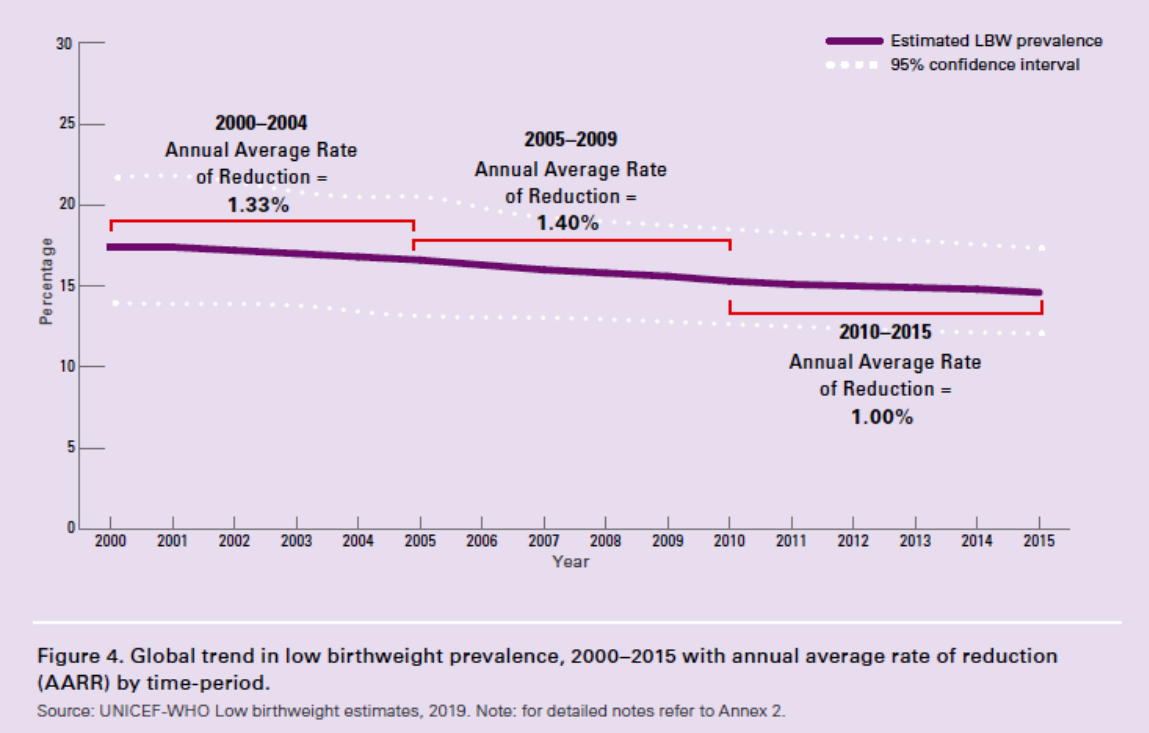
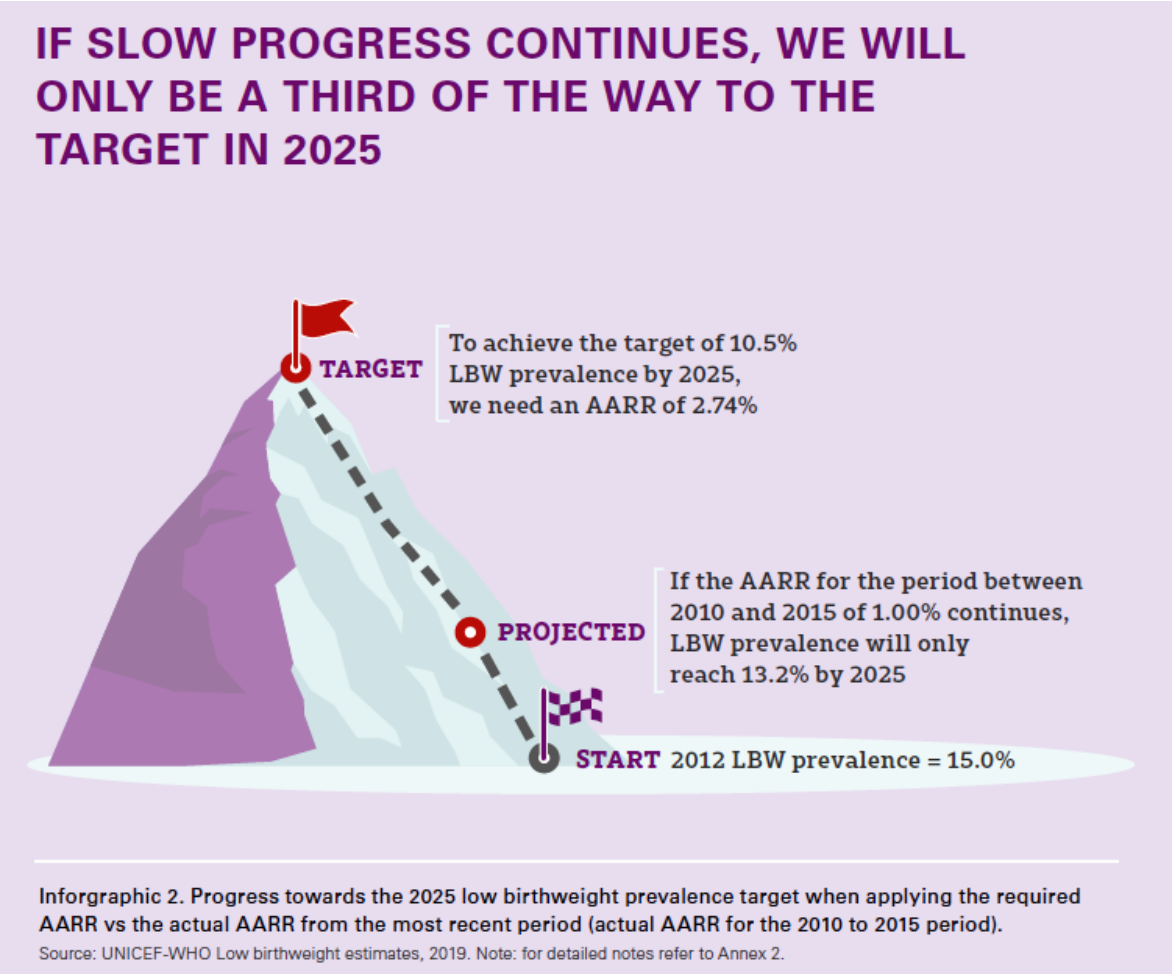


Figure 4. Global trend in low birthweight prevalence, 2000–2015 with annual average rate of reduction (AARR) by time-period.

Source: UNICEF-WHO Low birthweight estimates, 2019. Note: for detailed notes refer to Annex 2.

The progress in reducing the low birth weight has been stagnant since the year 2000 particularly during the period from 2010 to 2015. The Annual Average Rate of Reduction (AARR) from 2000 to 2004 was 1.33%; between 2005 to 2009 was 1.40% and between 2010 to 2015 was 1.00% respectively. This AARR should be in increasing manner to achieve the global target in prevention of LBW put forth by World Health Assembly by 2025. The goal is to achieve a 30% reduction in low birth weight by 2025. [37, 38]

Figure 9: Progress towards 2025 goal



If the current AARR of 1.00% per year continues till the year 2025, the projected low birth weight prevalence would be only 13.2% by 2025 instead of 10.5% target. Considering the poor progress rate, the 2030 Sustainable Developmental Goals target was set as 30% reduction in low birth weight prevalence between 2012 and 2030. However, even with these added 5 years, the current AARR is still low to achieve the 10.5% prevalence target by 2030. [37, 38]

DETERMINANTS OF LOW BIRTH WEIGHT

There are many predisposing factors for pregnant mothers to deliver low birth weight babies. The following are some of the risk factors that can be looked upon.

1. Gender of the infant

Gender of the infant is probably the easiest of the factors to evaluate. Some of the studies reveal that LBW is slightly higher in females and appear to be constant in different populations. The magnitude of the effect of Gender and intrauterine growth however depends on the ultimate potential for such growth. Many studies reveal that the gender of the infant had no effect on IUGR or prematurity. Many studies found no sex difference in in gestational duration and birth weight. Only one study reported a statistically significant difference in birth weight where females are more associated with low birth weight. [(39)]

2. Racial or ethnic differences

This factor focuses on whether to genetic differences exist in intrauterine growth or gestational duration between different racial or ethnic groups and the low birth weight rates (mostly IUGR) among different gross population groups which is evident both from comparisons between countries and regions. This

difference could be associated with other confounding factors such as parity, maternal height and weight, socioeconomic status, education, occupation and income, nutrition, smoking and alcohol consumption, antenatal care, health seeking behaviour and infection. Majority of the Indian studies reveal that short stature, low weight for height and low calorie intake were being the major causes for low birth weight among Indian children. [40]

Various studies have been conducted among white black Spanish groups, Indian, Asian, Chinese, Malaysian groups, European and American, Middle - Eastern groups in Israel, French, North African and West Indian groups. Blacks exhibit decrease in birth weight. In majority, all of these studies suggest that genetic differences in the intrauterine growth curve or an environmental factor had predominant impact during the last four weeks of gestation resulted in change of birth weight. [41]

3. Maternal Height

Maternal height during pregnancy is determined by three factors such as genetic potential for growth, state of skeletal maturity and the effect of environmental influences during the period of skeletal maturity. These factors are modifiable factors. The genetic potential is presumably fixed but delaying

childbearing among adolescents and over the long-term general improvements in addition might be achieved by interventions. [42]

Maternal height could affect intrauterine growth through either genetic or environmental mechanisms. The part of the mother's genetic potential would be passed on to the fetus and any deficit in her stature regardless of its etiology could impose physical limitations on the growth of the uterus, placenta and fetus. On the other hand there is no obvious biological mechanism whereby height could affect gestational age, IUGR or prematurity. In developing countries, the maternal height will be one of the major causes of increased rate of low birth weight. This can be caused by through difference in genetic potential or prolonged standing during the Mother's childhood however because tall women are heavier and consume more calories than other women and because pre pregnancy weight and gestational nutrition may independently effect birth weight. [43]

These are potential confounders and could be controlled in independently assessing the effect of maternal height. Another potential important confounder is age. Since adolescents who have not completed their growth will be shorter and on average they are more physiological immature women. Adolescents

may also be independently related to birth weight or gestational age. In populations with the high prevalence of short stature, low maternal height accounts for a sizeable proportion of intrauterine growth retardant infants.

4. Maternal pre-pregnancy weight

Similar to maternal height, maternal pre-pregnancy weight is also influenced by both genetic and environmental factors. The genes that control adiposity and lean body mass could theoretically be expressed in the newborn. Even in the absence of such expression, the maternal weight prior to conception affects the nutritional stores potentially available to the growing fetus. Studies revealed that elevated risk of prematurity or low birth weight were associated with thinner women. Thin woman have risk of preterm delivery eventually leading to low birth weight babies. [(44)]

5. Maternal Hemodynamics

Uterine blood flow depends on maternal hemodynamics, systolic and diastolic blood pressure and maternal plasma volume which might be expected to have an association with the birth weight. Many studies reveal that there is better evidence of lower birth weight among women with the hand and face edema and also with elevated diastolic pressure during pregnancy. [(45)]

6. Maternal age

Maternal age is an independent determinant of major intrauterine growth retardation. Young girls have not completed growing and are likely to have a lower weight for weight than older women and may consume fewer calories and other nutrients. Since many adolescent pregnancies are of an unwanted or unplanned, they are often late in seeking antenatal care. This eventually leads to prematurity or intrauterine growth retardation through its effect on stature, gestational nutrition, etc. Pregnant women over 35 years of age may also exhibit an intrauterine growth retardation or gestational duration effect. [46]

7. Socioeconomic status

Socioeconomic status depends on education, occupation and income of mother or father. Studies reveal that LBW were more common among low socio economic groups due to lack of education leading to limited awareness on antenatal care and checkups. This eventually results in poor maternal nutrition leading to low birth weight babies. [47]

8. Maternal psychological factors

Maternal psychological factors include stressful life changing events, anxiety, mental illness and unwanted pregnancy. Anxiety increases metabolic

expenditure leading to a lower gestational weight gain and hence a smaller foetus for a given caloric intake. Anxiety mediated change in catecholamine or hormonal balance could prevent preterm labour. Higher levels of epinephrine and hydrocortisone originally associated with anxiety although these changes might be expected to decrease rather than increase the uterine contractions. Many studies reveal that stress and anxiety showed positive association with prematurity or low birth weight. [48]

9. Parity

Primi and multigravidae were associated with poorer nutrition leading to IUGR. Parity is often confounded by maternal age, gestational age, maternal nutrition, poor antenatal care, shorter interval between pregnancies, etc. [49]

10. Prior spontaneous abortion

Spontaneous abortion overlap substantially with preterm delivery in particular the distinction between late second trimester abortion and prematurity has become progressively more blurred with the recent tendency towards increasing liability of infants born before 28 weeks of gestation. Thus second trimester spontaneous abortion and prematurity should probably be considered as a continuum rather than as two separate phenomena. [50]

The effect of a history of second trimester abortion in prior pregnancies may therefore be the same as a history of prior prematurity. A mechanism whereby a spontaneous abortion might affect a current pregnancy is the use of dilatation and curettage (D & C) to remove retained products of conception. Cervical dilatation could lead to Cervical Incompetence and this predispose to subsequent preterm delivery and low birth weight.

11. Prior stillbirth or neonatal death

Number of investigators has studied the effect of prior stillbirth or neonatal death on intrauterine growth or gestational duration in subsequent pregnancies. Most of them however have not adequately separated this effect from that of prior prematurity, low birth weight or spontaneous abortion. Preterm and severely growth retardant fetuses have a vastly increased risk of being stillborn or of dying in the neonatal period. Furthermore the spontaneous delivery of non-viable fetus may be termed variously stillbirth or second trimester spontaneous abortion. Thus prior low birth weight and spontaneous abortion should be controlled in measuring the independent impact of prior stillbirth or neonatal death. [51]

12.Prior infertility

Certain hormonal factors that hinder becoming pregnant might also have an adverse influence on intrauterine growth or gestational duration. The main confounding factor is genital tract infection and particularly salpingitis since it causes infertility and there is suspicion that it has an independent impact on pregnancy outcome. Congenital malformation of the uterus and fallopian tubes may also lead to both infertility and impaired pregnancy outcome but its prevalence is very low. [52]

13.Iron and anaemia

Despite increased maternal erythropoiesis during pregnancy, hemoglobin concentration falls progressively until about the 32nd week of gestation owing to even greater increase in plasma volume. Anaemia if severe could impair oxygen delivery to the foetus and thus interfere with normal intrauterine growth or pregnancy duration. Iron deficiency even without anaemia might affect key enzymes especially cytochromes and thereby also lead to adverse pregnancy outcomes. [53]

Less dietary iron intake may cause fall in haemoglobin levels during pregnancy. Studies reveal that antenatal women with anaemia were having higher risk of delivering low birth weight babies.

14.Infections

Common infections cause episodic illness and symptoms such as upper respiratory tract symptoms, fever, nausea, vomiting, diarrhea, headache and anorexia. These illnesses could affect intrauterine growth or gestational duration through any of these three mechanisms. Firstly the symptoms often result in decreased caloric intake which if a longer could lead to reduction in the energy available to the fetus. Secondly, the metabolic cost of maintaining febrile temperature or of mounting appropriate host defenses may reduce the energy available to the foetus even with a constant dietary calorie intake. [54]

Finally, the infection or symptom could lead to diminished uterine blood flow or even spread to the Placenta, amniotic fluid and hence it interferes with intrauterine growth or precipitate premature delivery and low birth weight.

15.Maternal smoking

Maternal cigarette smoking could affect intrauterine growth through several mechanisms; the most likely mediators are carbon monoxide and nicotine. Carbon monoxide can interfere with oxygen delivery to the foetus in two ways by displacing oxygen from hemoglobin and by shifting the oxyhemoglobin

dissociation equilibrium to the left so that less oxygen is released to the fetal tissues for a given partial pressure of oxygen. [55, 56]

Nicotine is an appetite suppressant and is believed to result in rapid increase in maternal catecholamines and consequent uterine vasoconstriction. Tobacco smoke also contains cyanide compounds and their possible mechanism for smoking effect involves cyanide mediated interference with fetal oxidative metabolism. This in turn finally leads to low birth weight. [57, 58]

SIMILAR STUDIES

A hospital based cross sectional study was conducted by Agarwal et al [59] among 325 women in Meerut in 2011. The study analyzed the sociodemographic variables and other determinants of low birth weight. The study revealed the following results: prevalence of LBW was higher in teenage group, primi mothers, and anaemic mothers, those addicted to tobacco chewing and smoking. This indicates the need for improving family welfare measures to reduce the complications occurring in teenage pregnancies and to improve the maternal nutrition and education.

Similar study was conducted in a cross-sectional study design by Anu et al [60] in Puducherry, India among 225 antenatal mothers in 2020 to 2021. The results conveyed the fact that about 124 were males and 101 were females. 204 were term and 21 were preterm. The mean age of pregnant mothers was 22.52. The mean maternal weight was 62.94kg and maternal height was 160 cms. The study concluded that maternal age, height, weight, anaemia, birth interval and family income were associated with LBW.

Another study was conducted among 180 cases and 380 controls of antenatal mothers in North Shewa Zone, Ethiopia by Deriba et al [61] in 2020. The study explored the predisposing factors of LBW and about its consequences. The results of the study were that lack of nutritional counseling, unable to take iron supplements, insufficient additional meal, food restriction, maternal MUAC < 23 cms, maternal height < 155 cms, anemia, pregnancy related complications and alcohol consumption were directly related to LBW. The study recommended intervention targeted nutritional counseling and behavioural change communication for pregnant mothers to prevent LBW.

A retrospective case control study was conducted in 2018 by Desta et al. [62] in Mekhelle city, Ethiopia. Data retrieved from hospital records on pregnant

mothers delivering at Tertiary Hospital were the study units. They were compared for obstetric complications and neonatal outcome. The study concluded that maternal age < 20 years, ANC follow up, history of medical illness, IFA tablets intake, maternal height < 150 cms and pregnancy weight gain were significant determinants of low birth weight.

Jayant et al [63] conducted a retrospective observational study in 2010 among 200 cases and 200 controls of pregnant women. The study revealed that those with low income, illiteracy or primary education level, farm labourer occupation, primiparas and those with spacing less than 2 years showed higher low birth weight babies. Moreover mothers with anaemia, pregnancy induced hypertension, maternal weight <45 kg, maternal height <145 cms and poor antenatal care were significant predictors of LBW.

Another study by Kader et al [64] recorded the pregnancies from 2005 to 2006 National Family Health Survey – 3 (NFHS-3) data. A total of 20946 women who gave birth atleast 5 years preceding the NFHS-3 survey were included in this study. The study concluded that maternal low educational level, BMI<18.5, short stature (maternal height <145 cms) and poor ANC visits were associated statistically with LBW infants. The study addresses the most important predictors

as maternal nutritional status and antenatal care inorder to prevent and control the incidences of low birth weight.

Similar study by Lakshmi et al [65], conducted among 185 study subjects in Madurai. The results revealed that the about 48.6% of mothers were undernourished. There was a significant association between low BMI and LBW. There was no association between maternal height, maternal weight and LBW. The study concluded that importance must be given with respect to nutritional of mother during gestational period.

Another study was conducted by Ratnam et al [66], in Ipoh city, Perak state, Malaysia. Retrospective data of 45 cases and 90 controls were analyzed in 2017. The study revealed that the factors like history of previous low birth weight babies and educational status of mother were significantly associated with the presence of low birth weight. The study recommended to initiate national policy to enhance educational component to create awareness among antenatal mothers regarding prevention of LBW thereby ensuring safe motherhood and delivery.

A retrospective observational clinical study was conducted by Siramaneerat et al [67] among data from Indonesia Demographic and Health Survey (IDHS) in

2011 and 2012. About 15126 pregnant women were taken into study for analyzing the determinants of LBW. Around 10.2% reported LBW. Maternal delivery –baby age, educational level of mother, maternal complications and antenatal care were significant predictors of LBW. The study emphasized on the importance of ANC visit to reduce the incidence of LBW.

Similar study has been conducted by Zaveri et al [(68)] using data from National Family Health Survey – 4 (NFHS-4). Data of 147762 mothers were taken and analyzed. LBW was found in 17.5% of participants. The study revealed that the factors like previous experience of stillbirth, pregnancy complications, maternal anaemia, maternal underweight and socio demographic factors like residence place, caste, religion, maternal education, income, and geographical region were positively associated with LBW. Maternal food diversity was found to be a protective variable against LBW. Moreover antenatal mothers with proper ANC visits, proper IFA intake and delivery of babies in public sector health facility were less likely to have LBW.

MATERIALS AND METHODS

1. It’s a cross sectional study
2. The study participants will be enrolled as per inclusion and exclusion criteria.

   Informed consent will be taken.

OUTCOME:

The maternal factors associated with the birth of term low birth weight neonates are studied.

STUDY PLACE:

Department of Institute of Obstetrics and Gynaecology, Egmore, Chennai-8.

STUDY PERIOD:

One year (March 2021-February 2022)

STUDY DESIGN:

Cross sectional study

SAMPLE SIZE:

300

METHODOLOGY

It's a cross sectional study. The study population will be selected based upon the inclusion and exclusion criteria. A pre designed proforma is prepared to collect information needed for the study. The birth weight of the babies are recorded within one hour of the birth using salter's weighing machine. Informed consent will be taken from the study population who are willing to participate. Mothers are interviewed within 24 hours of birth and the available medical records are reviewed.

The factors taken into account include age, education, occupation, socio economic class (according to modified kuppusamy scale), gravida, birth spacing, booking status, number of ante natal visits, associated medical illness, pregnancy weight gain (assesed from the twelfth week to term gestation), nutritional status (assesed using BMI with the weight at 37-40 weeks), iron supplementation. Mothers who are not willing to participate and those who doesn't meet the inclusion criteria are excluded from the study.

INCLUSION CRITERIA:

1. Mothers with term low birth weight neonates
2. Gestational age more than 37 weeks
3. Singleton births

EXCLUSION CRITERIA:

1. Gestational age less than 37 weeks
2. Newborns with congenital anomalies
3. Critically ill mothers(requiring ICU care)
4. Multiple pregnancy
5. PROM
6. APH
7. Severe preeclampsia

RESULTS

TABLE-1: Distribution of study participants according to Maternal age (N=300)

Age	Frequency	Percent (%)	Cumulative (%)
≤ 20	61	20.3	20.3
21-30	216	72.0	92.3
>30	23	7.7	100.0
Total	300	100.0	

Mean ± SD = 22.9 ± 2.3

Median (IQR) = 22 (18-36)

Comments:

Majority of the study participants (72.0%) were in the age group of 21-30 years.

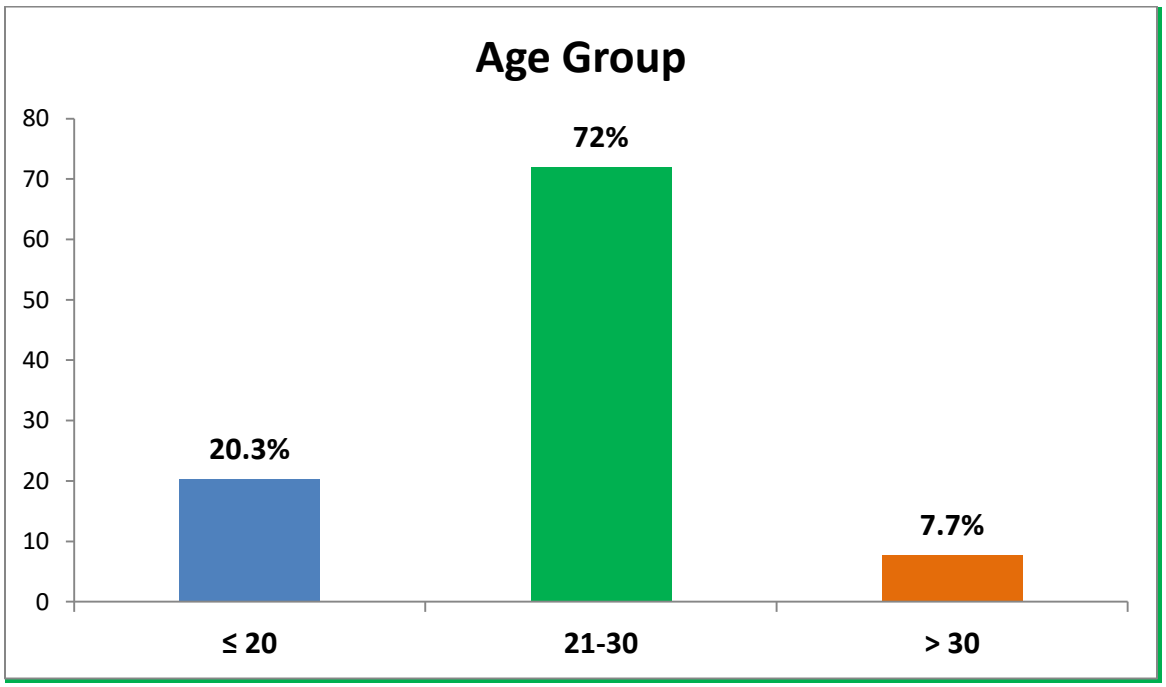


TABLE-2: Distribution of study participants according to maternal education (N=300)

Education	Frequency	Percent (%)
Illiterate	71	23.6
Primary & middle school	167	55.7
High school & above	62	20.7
Total	300	100.0

Comments:

Majority of the study participants (55.7%) had completed primary & middle school level of education.

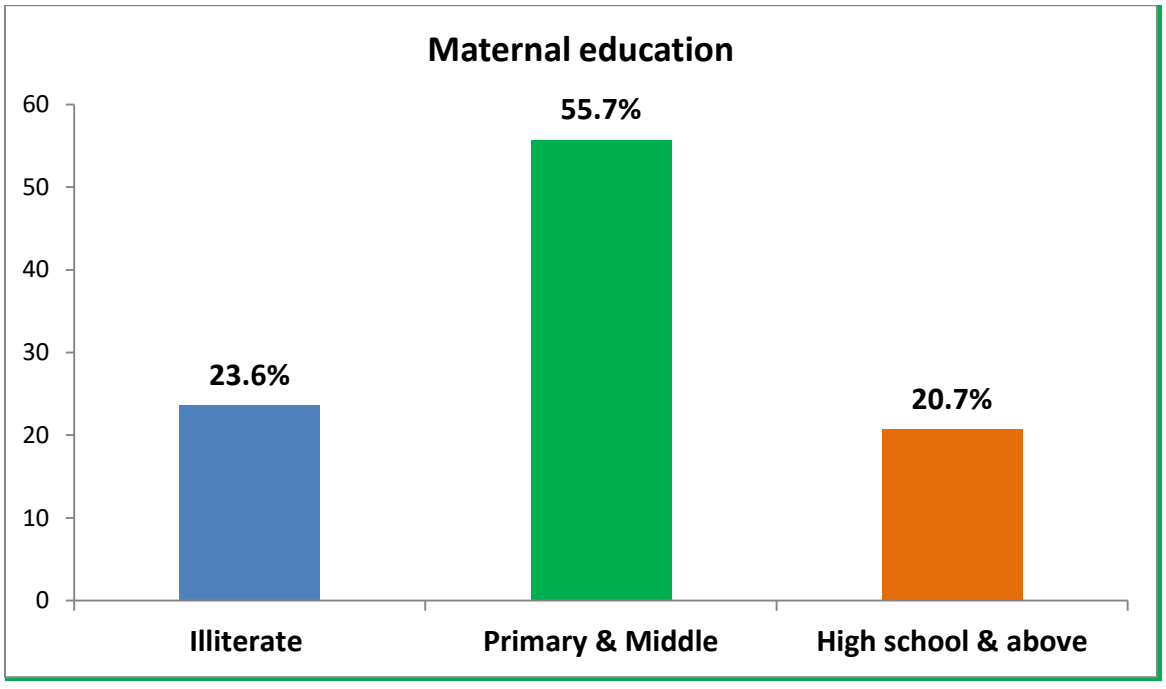


TABLE-3: Distribution of study participants according to maternal occupation (N=300)

Occupation	Frequency	Percent (%)
Housewife	228	76.0
Working women	72	24.0
Total	300	100.0

Comments:

Majority of the study participants (76%) were Housewives.

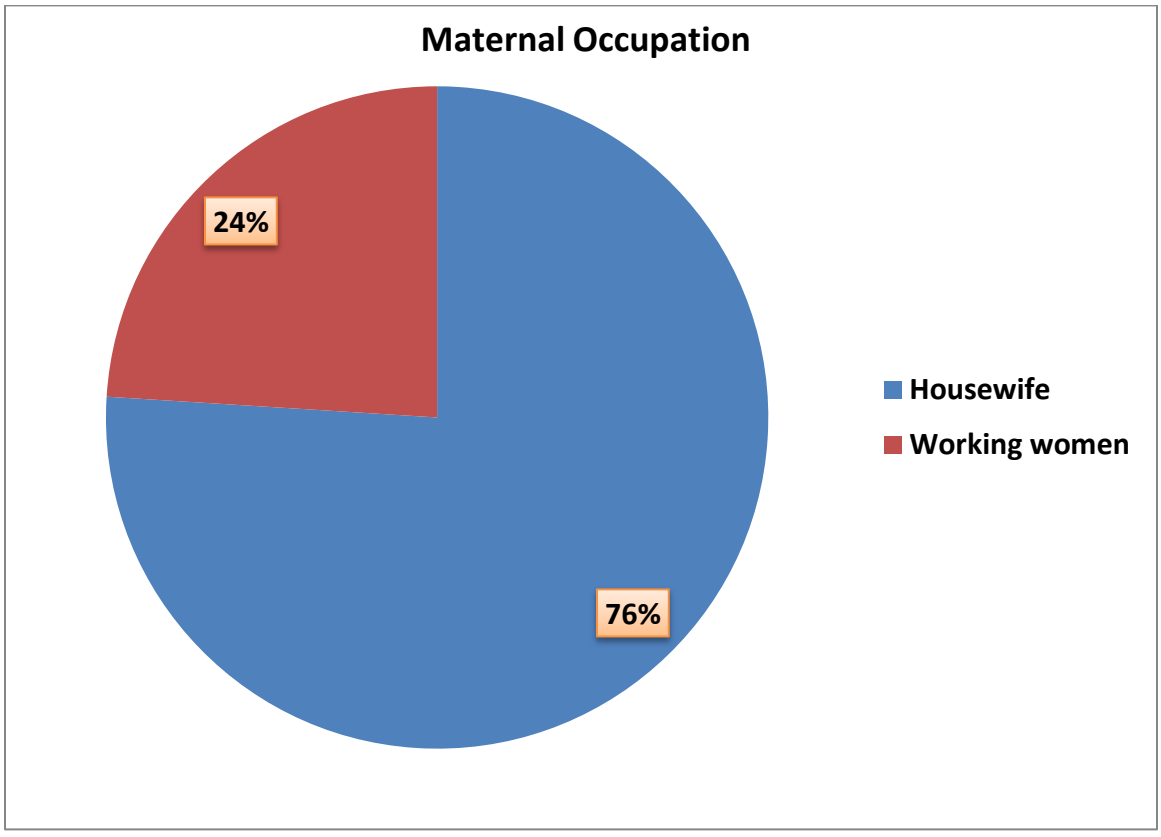


TABLE-4: Distribution of study participants according to parity (N=300)

Parity	Frequency	Percent (%)
Primi	113	37.6
2	129	43.0
3	44	14.7
>3	14	4.7
Total	300	100.0

Comments:

Majority of the study participants (43.0%) were in the 2nd parity followed by primi (37.6%)

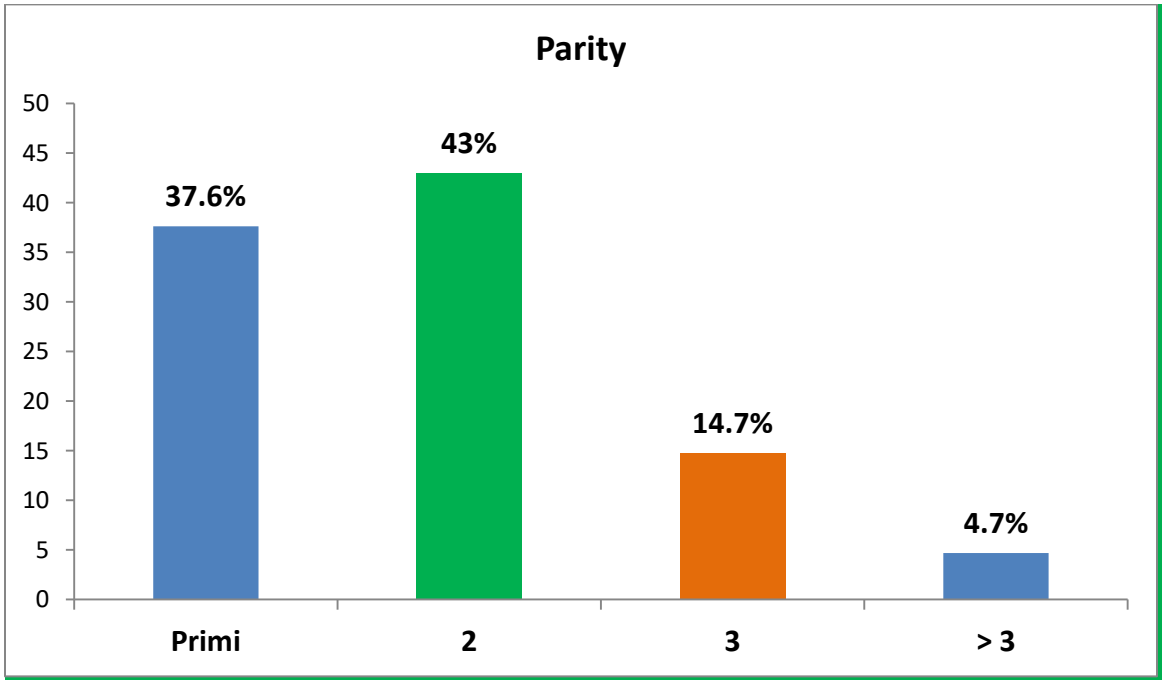


TABLE-5: Distribution of study participants according to Birth interval (N=300)

Birth interval	Frequency	Percent (%)
Primi	113	37.7
< 2 years	88	29.3
≥ 2 years	99	33.0
Total	300	100.0

Comments:

Majority of the study participants (37.7%) were primi. About 33% had birth interval between pregnancies ≥ 2 years.

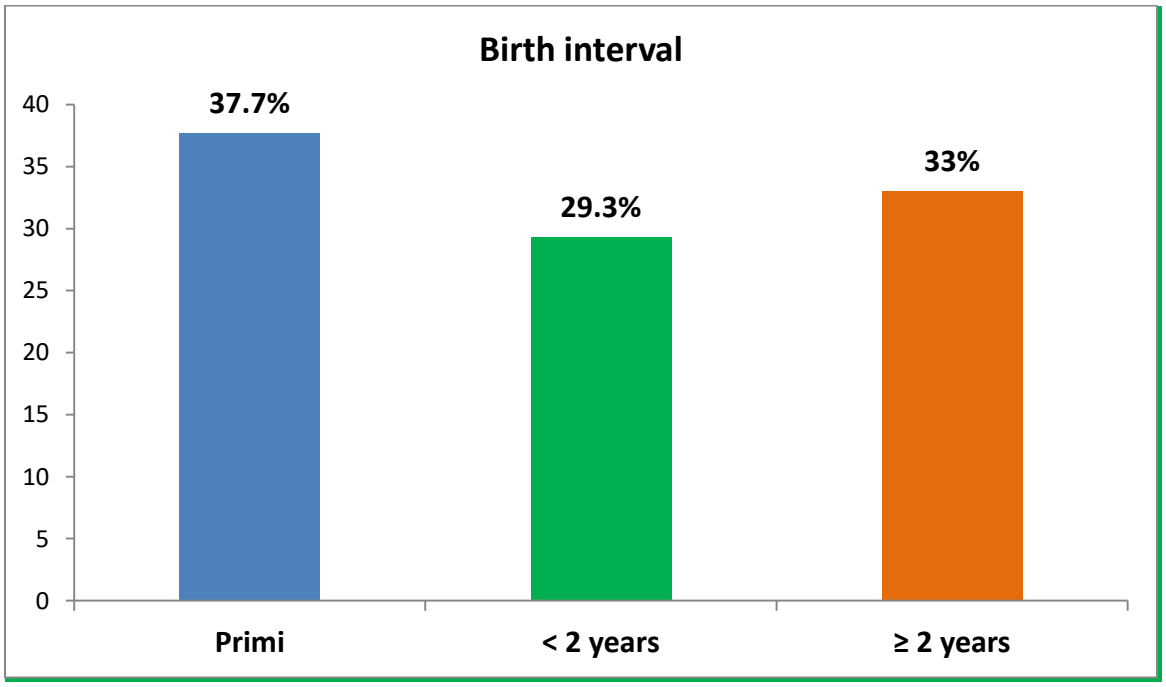


TABLE-6: Distribution of study participants according to Antenatal visits (N=300)

Antenatal visits	Frequency	Percent (%)
< 4 visits	109	36.3
≥ 4 visits	191	63.7
Total	300	100.0

Comments:

Majority of the study participants (63.7%) had ≥ 4 antenatal visits.

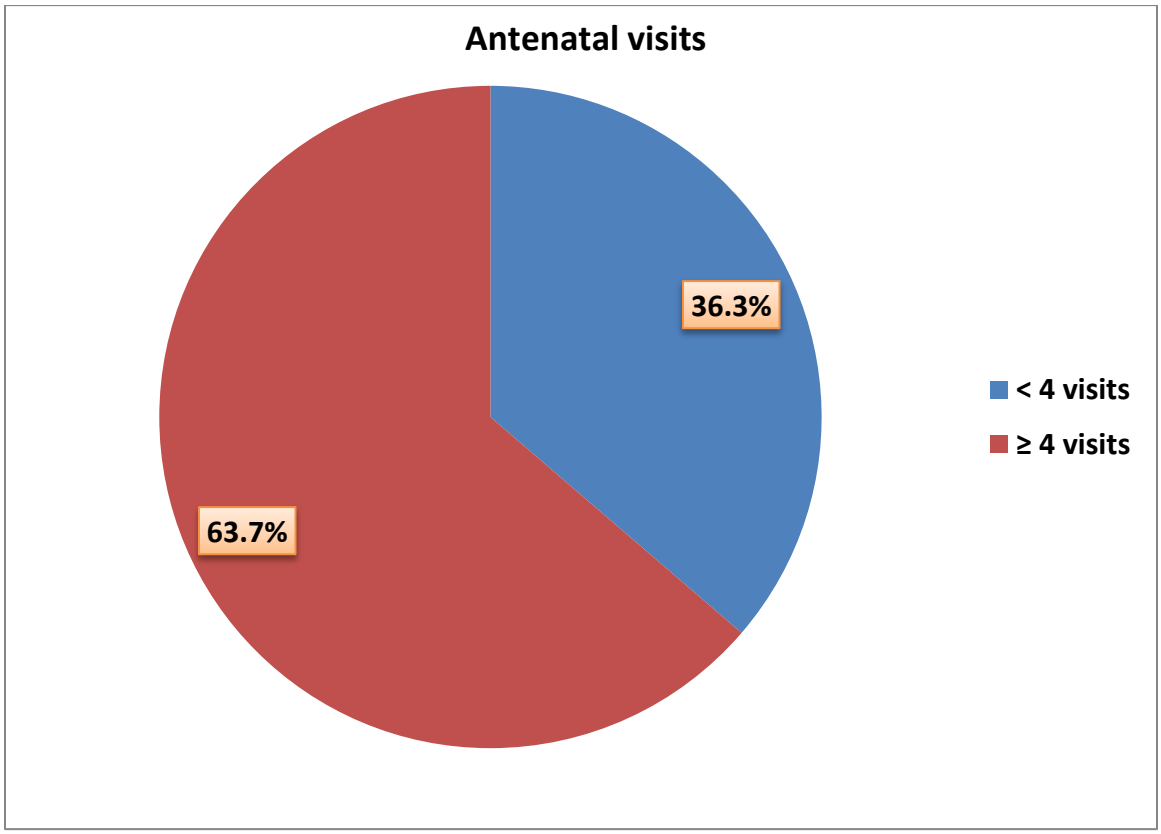


TABLE-7: Distribution of study participants according to maternal height (N=300)

Height	Frequency	Percent (%)	Cumulative (%)
≤140 cms	26	8.7	8.7
141-149 cms	87	29.0	37.7
≥150 cms	187	62.3	100
Total	300	100.0	

Mean ± SD= 148.3 ± 9.2

Median (IQR) = 148 (136-170)

Comments:

Majority of the study participants (62.3%) were of maternal height ≥150 cms.

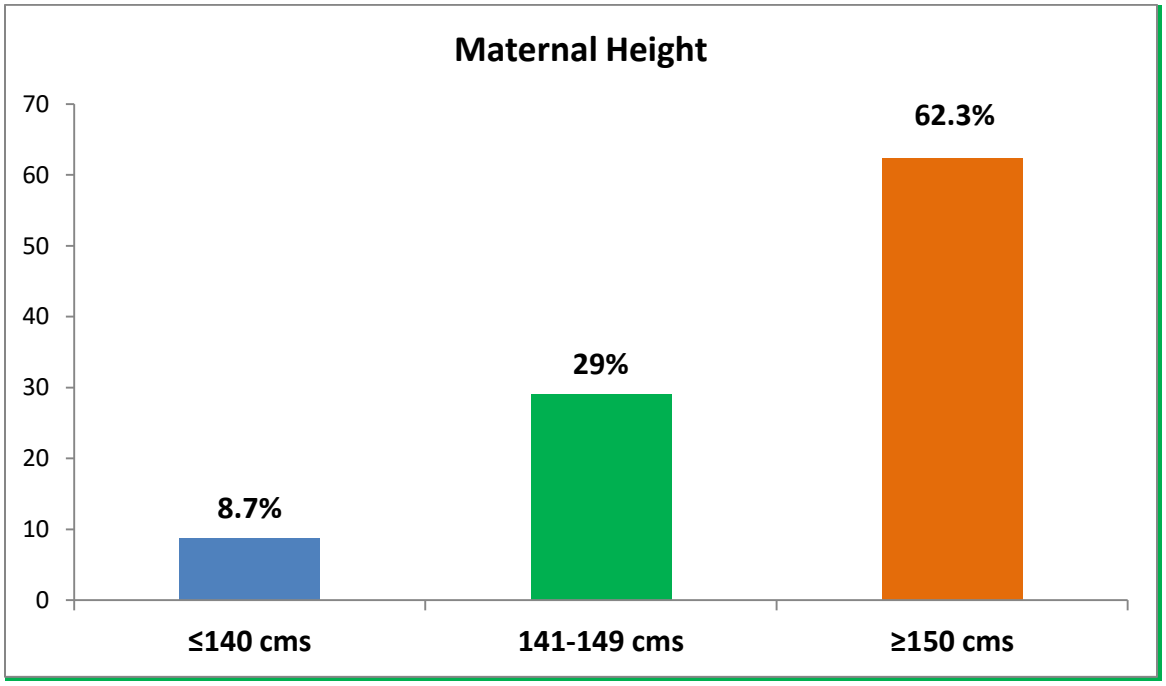


TABLE-8: Distribution of study participants according to maternal pre pregnancy weight (N=300)

Weight	Frequency	Percent (%)	Cumulative (%)
≤40 kg	20	6.7	6.7
41-49 kg	128	42.7	49.4
≥50 kg	152	50.6	100.0
Total	300	100.0	

Mean ± SD= 53.4 ± 4.2

Median (IQR) = 52.1 (38-82)

Comments:

Majority of the study participants (50.6%) had their pre pregnancy weight ≥ 50 kg.

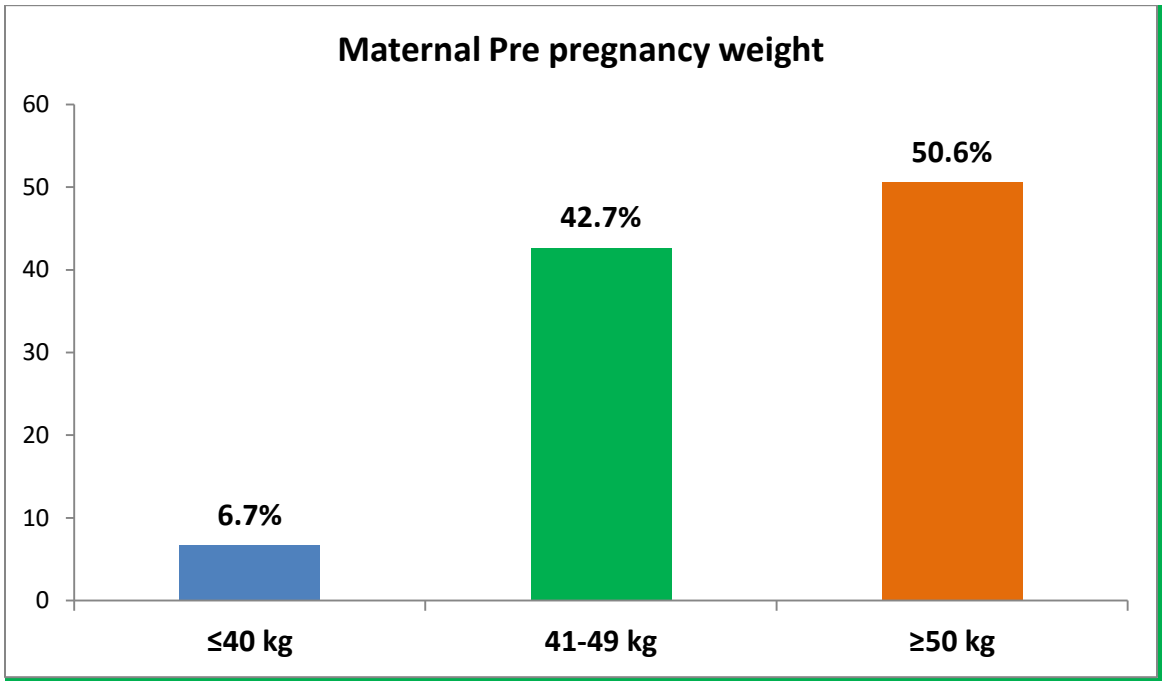


TABLE-9: Distribution of study participants according to weight gain during pregnancy (N=300)

Weight gain	Frequency	Percent (%)
< 12 kg	194	64.7
≥ 12 kg	106	35.3
Total	300	100.0

Comments:

Only 35.3% of the study participants had pregnancy weight gain of ≥ 12 kgs.

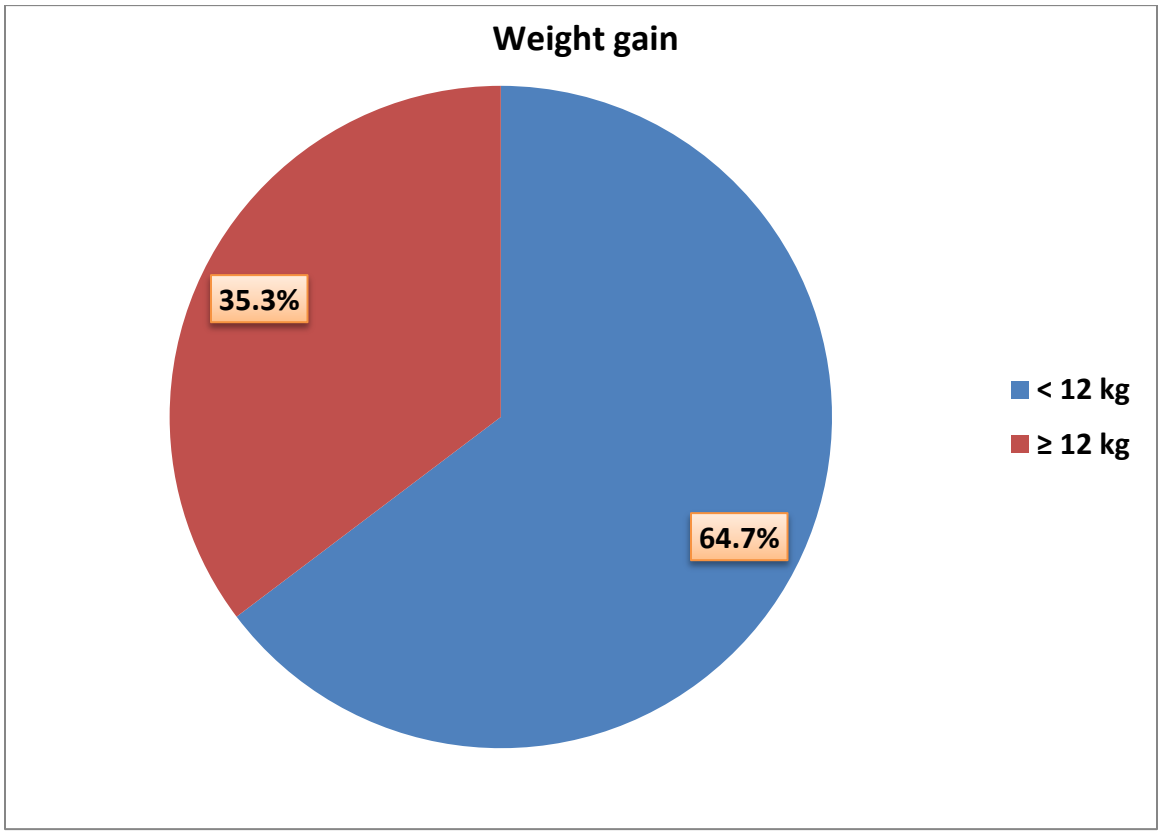
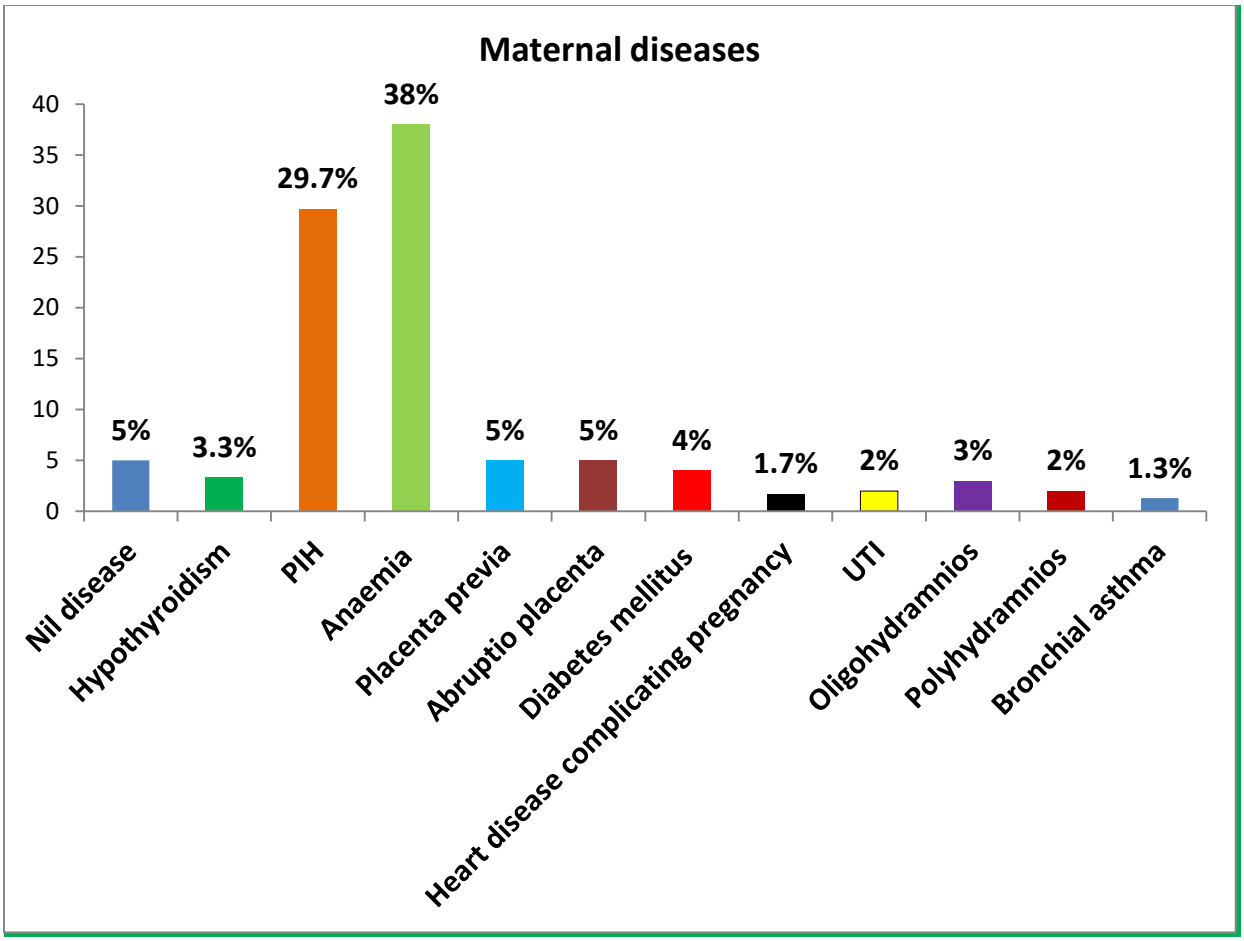


TABLE-10: Distribution of study participants according to maternal diseases (N=300)

Disease	Frequency	Percent (%)
Nil disease	15	5.0
Hypothyroidism	10	3.3
PIH	89	29.7
Anaemia	114	38.0
Placenta previa	15	5.0
Abruptio placenta	15	5.0
Diabetes mellitus	12	4.0
Heart disease complicating pregnancy	5	1.7
UTI	6	2.0
Oligohydramnios	9	3.0
Polyhydramnios	6	2.0
Bronchial asthma	4	1.3
Total	300	100.0

Comments:

Majority of the study participants (38%) had Anaemia followed by PIH (29.7%)



Comments:

Majority of the study participants (38%) had Anaemia followed by PIH (29.7%)

TABLE-11: Distribution of study participants according to mode of delivery (N=300)

Mode of delivery	Frequency	Percent (%)
Spontaneous vaginal	195	65.0
Forceps and vacuum	13	4.3
Assisted Breech delivery	11	3.7
Caesarean	81	27.0
Total	300	100.0

Comments:

Majority of the study participants (65.0%) had spontaneous vaginal delivery.

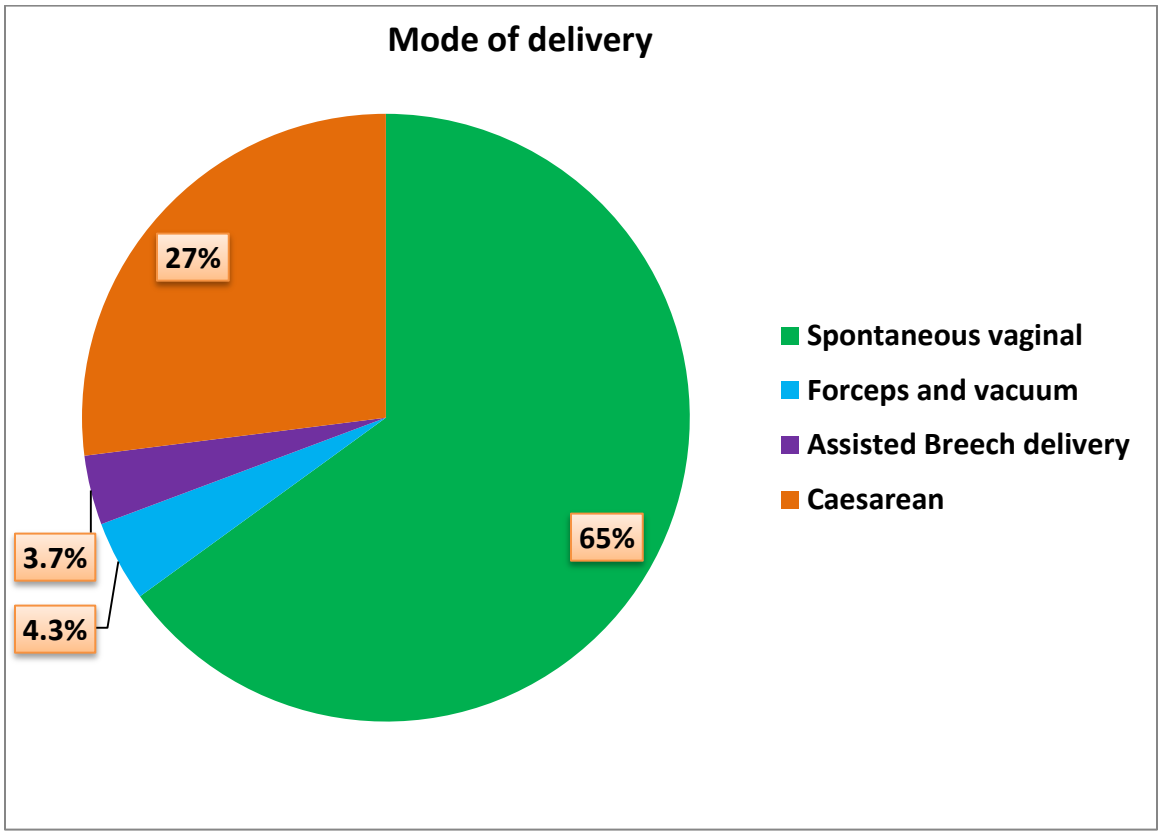


TABLE-12: Distribution of study participants according to gender of the baby (N=300)

Gender	Frequency	Percent (%)
Female	154	51.3
Male	146	48.7
Total	300	100.0

Comments:

Majority of the study participants (51.3%) had delivered Female babies.

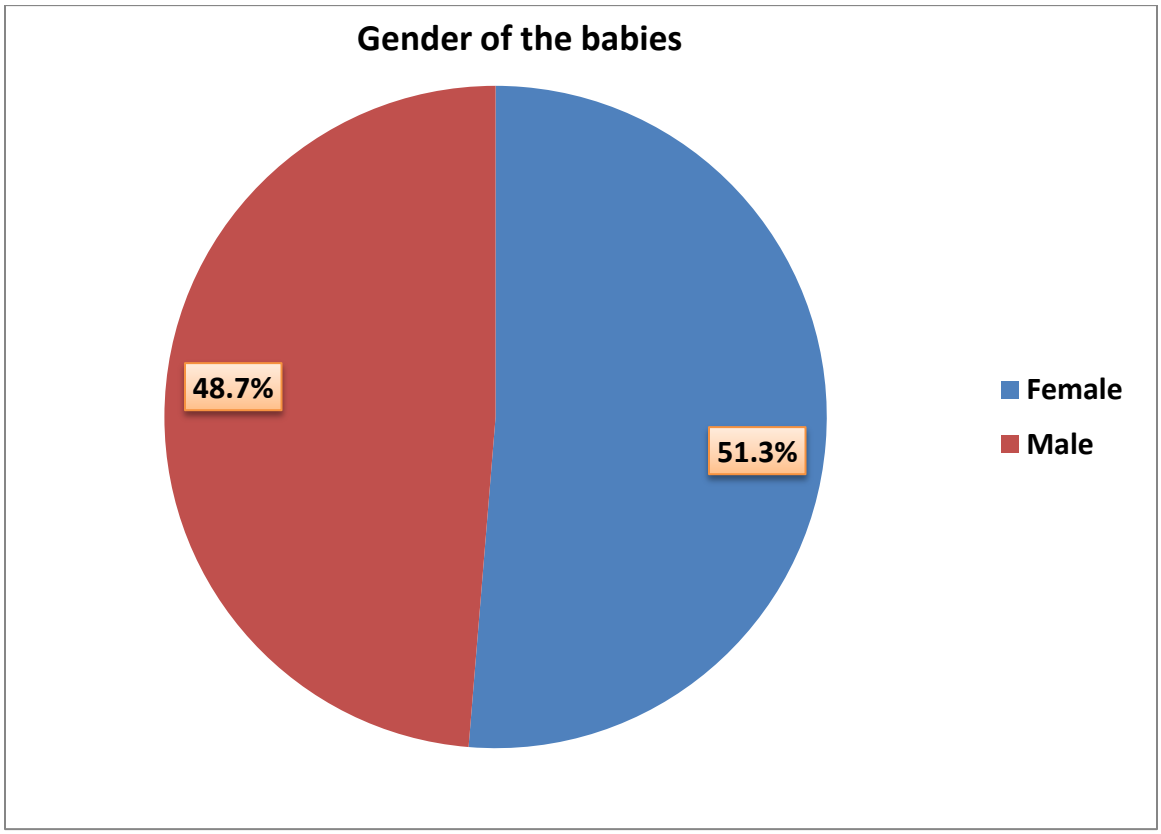
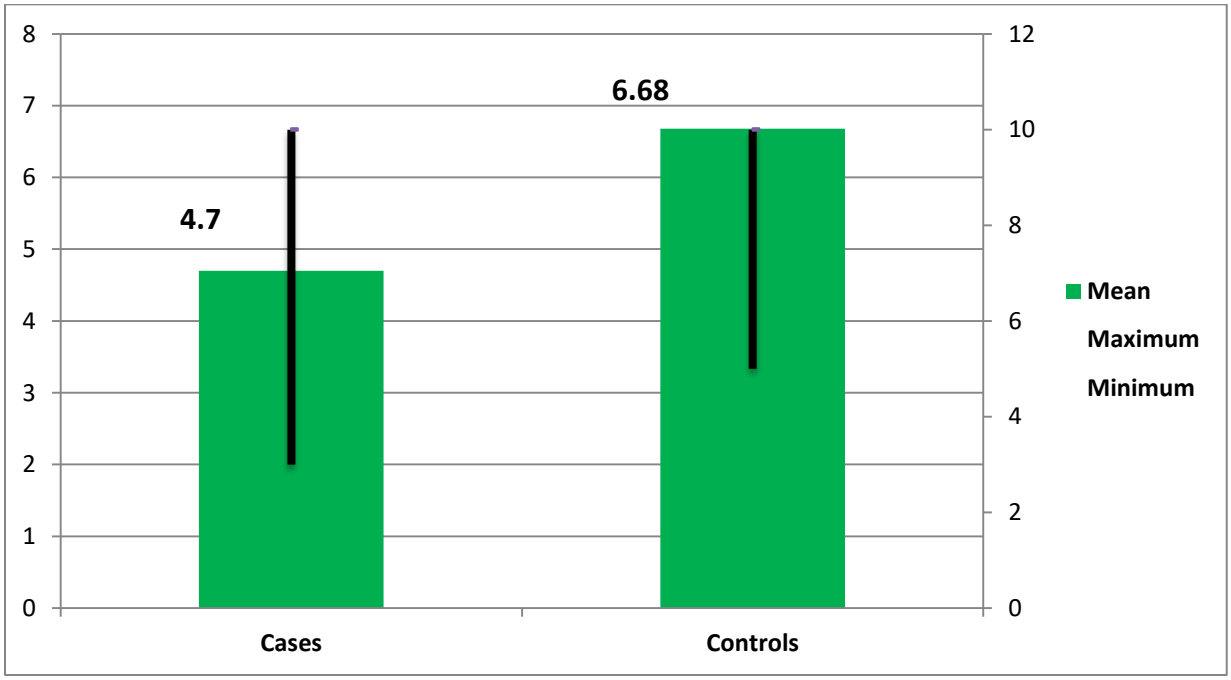


TABLE-13: Comparision of cases and controls according to APGAR score at 1 minute (N=300)

APGAR score at 1 minute	Cases	Control
Mean ± SD	4.70 ± 1.93	6.68 ± 2.05
Range	3 – 10	5-10
t-test for independent samples	't' value = - 8.60 and 'p' value < 0.0001	

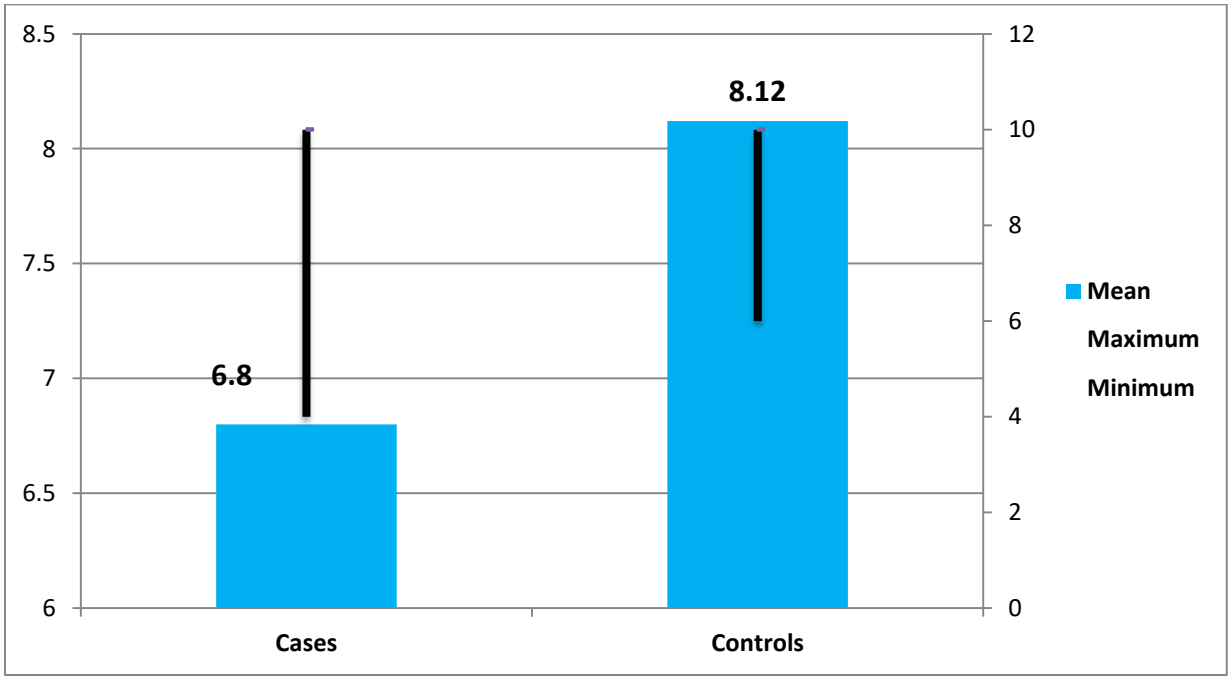


Comments:

There was significant difference between cases and control with respect to APGAR score at 1 minute.

TABLE-14: Comparision of cases and controls according to APGAR score at 5 minute (N=300)

APGAR score at 5 minute	Cases	Control
Mean ± SD	6.80 ± 2.06	8.12 ± 0.9
Range	4 – 10	6 – 10
t-test for independent samples	't' value = - 6.89 and 'p' value < 0.0001	



Comments:

There was significant difference between cases and control with respect to APGAR score at 5 minute.

TABLE-15: Distribution of study participants according to IFA tablets intake (N=300)

IFA tablets intake	Frequency	Percent (%)
Yes	287	95.6
No	13	4.4
Total	300	300

Comments:

Majority of the study participants (95.6%) had IFA tablets intake.

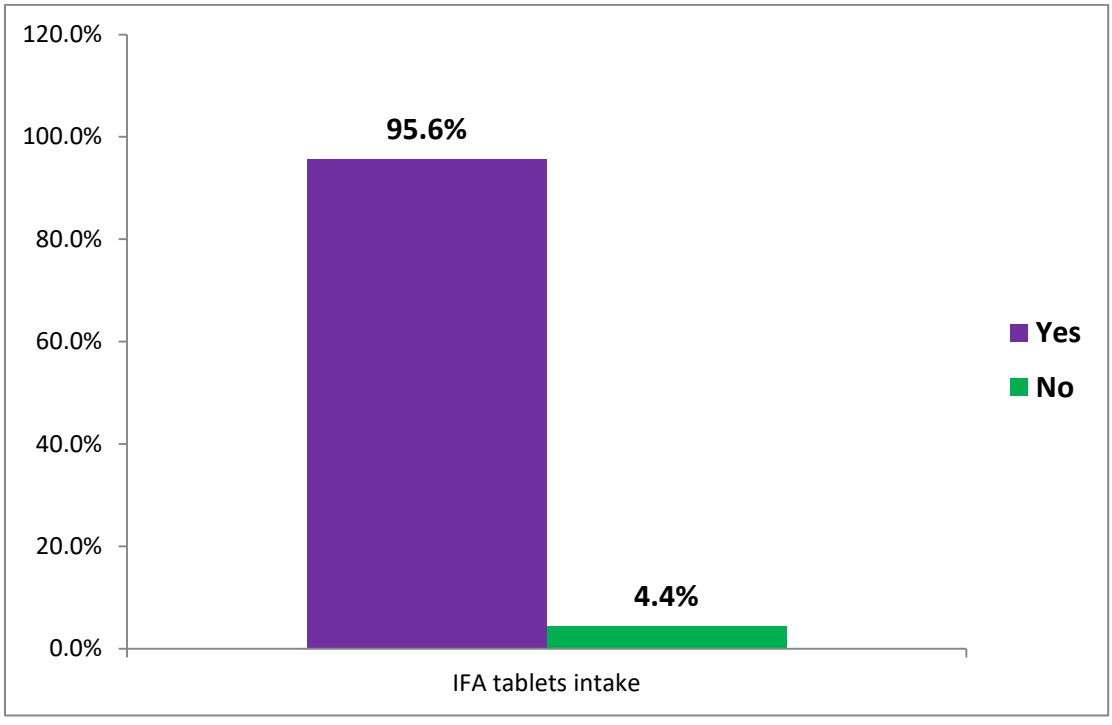


TABLE-16: Distribution of study participants according to Calcium tablets intake (N=300)

Calcium tablets intake	Frequency	Percent (%)
Yes	148	49.3
No	152	50.7
Total	300	300

Comments:

About 49.3% of the study participants had Calcium tablets intake.

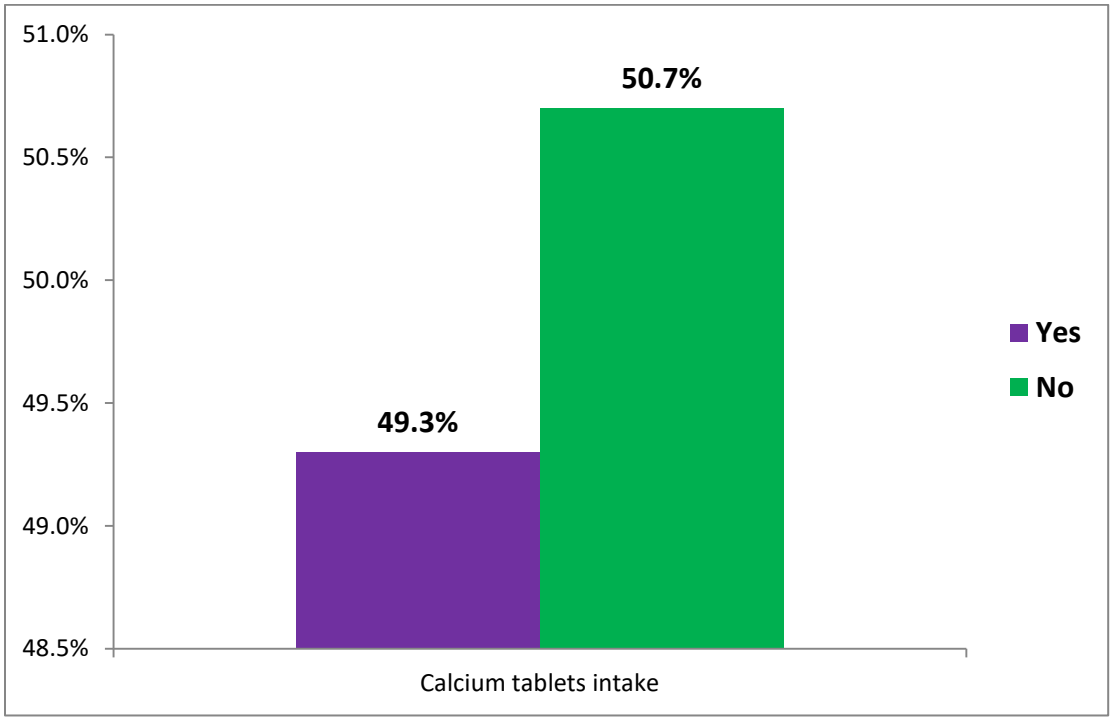


TABLE-17: Distribution of cases and controls according to maternal age (N=300)

Maternal age	Cases N (%)	Control N (%)	Total N (%)
≤ 20	45 (30%)	16 (10.7%)	61 (20.3%)
21-30	94 (62.7%)	122 (81.3%)	216 (72%)
>30	11 (7.3%)	12 (8%)	23 (7.7%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	17.46	2	0.0000162

Comments:

There was significant association between maternal age and low birth weight. Those who delivered LBW babies were of younger age group.

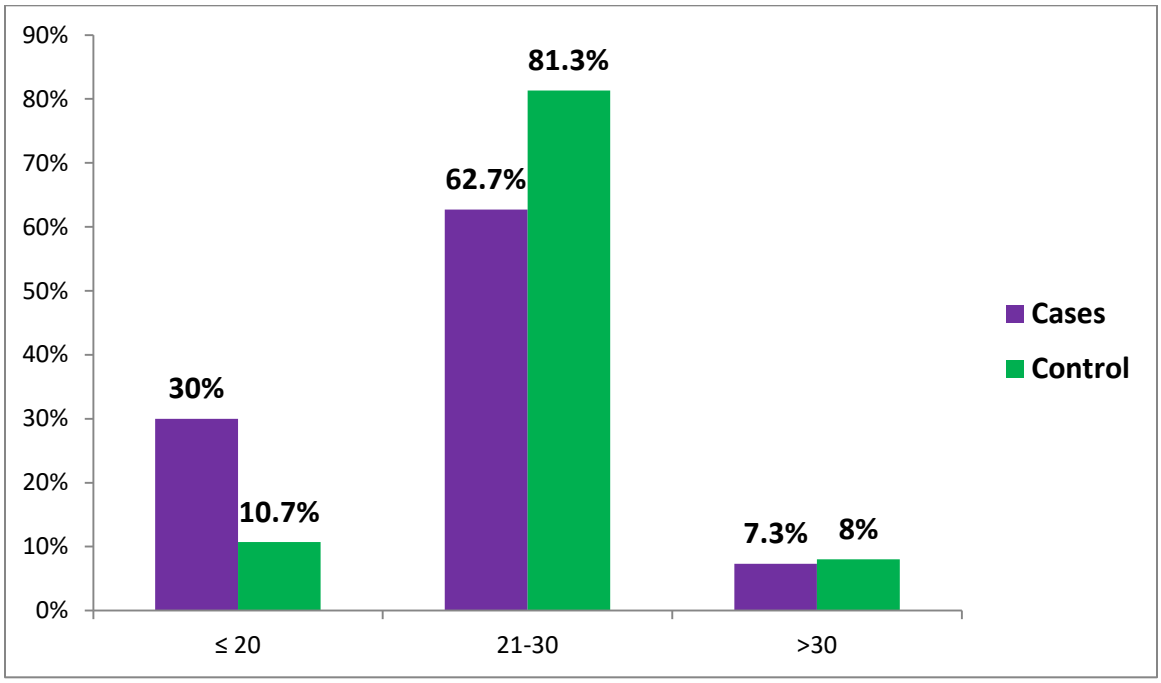


TABLE-18: Distribution of cases and controls according to maternal education (N=300)

Maternal education	Cases N (%)	Control N (%)	Total N (%)
Illiterate	46 (30.7%)	25 (16.7%)	71 (23.7%)
Primary & middle school	75 (50%)	92 (61.3%)	167 (55.7%)
High school & above	29 (19.3%)	33 (22%)	62 (20.6%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	8.2	2	0.016

Comments:

There was significant association between maternal education and low birth weight. Those who delivered LBW babies had lower level of education.

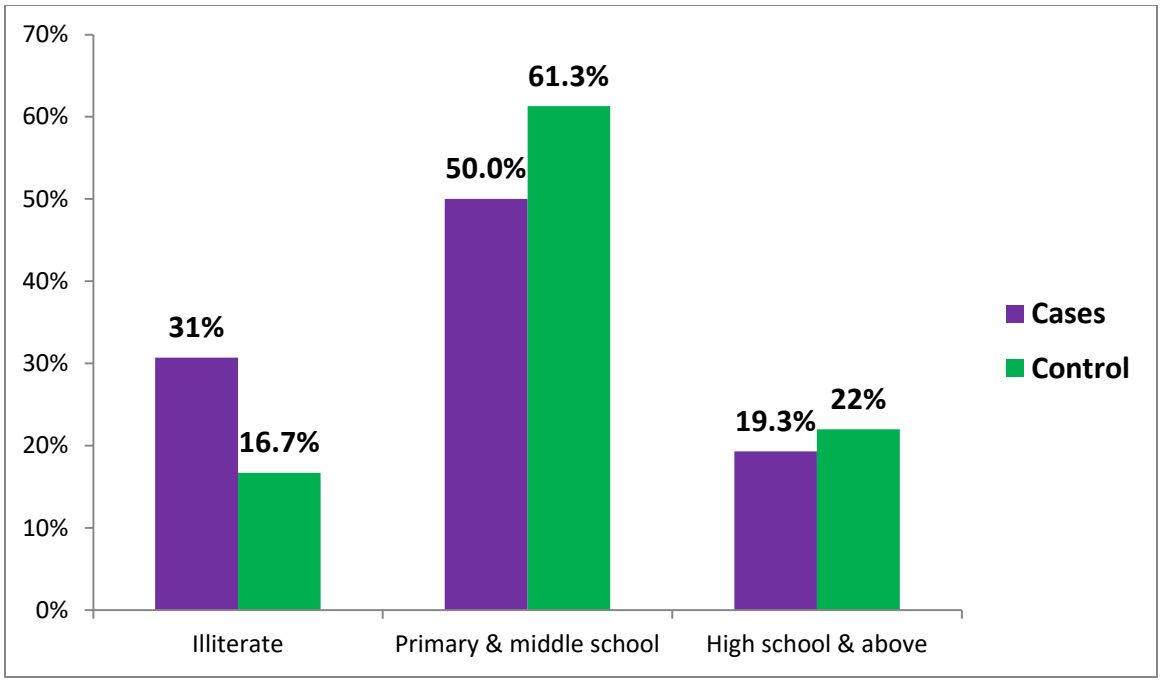

70%
60%
50%
40%
30%
20%
10%
0%
31%
16.7%
50.0%
61.3%
19.3%
22%
Illiterate
Primary & middle school
High school & above
Cases
Control

TABLE-19: Distribution of cases and controls according to maternal occupation (N=300)

Maternal occupation	Cases N (%)	Control N (%)	Total N (%)
Housewife	118 (78.7%)	110 (73.3%)	228 (76%)
Working women	32 (21.3%)	40 (26.7%)	72 (24%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	0.9	1	0.3428

Comments:

There was no significant association between maternal occupation and low birth weight.

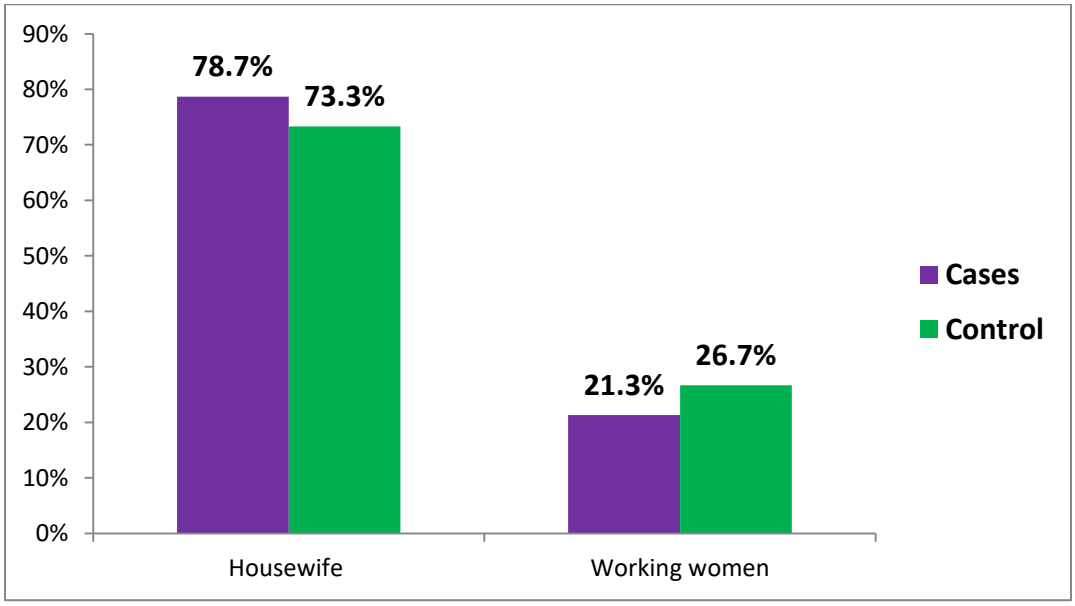


TABLE-20: Distribution of cases and controls according to parity (N=300)

Parity	Cases N (%)	Control N (%)	Total N (%)
Primi	55 (36.7%)	58 (38.7%)	113 (37.7%)
2	72 (48.0%)	57 (38.0%)	129 (43.0%)
3	19 (12.7%)	25 (16.7%)	44 (14.7%)
>3	4 (2.6%)	10 (6.6%)	14 (4.6%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	3.12	2	0.21

Comments:

There was no significant association between parity and low birth weight.

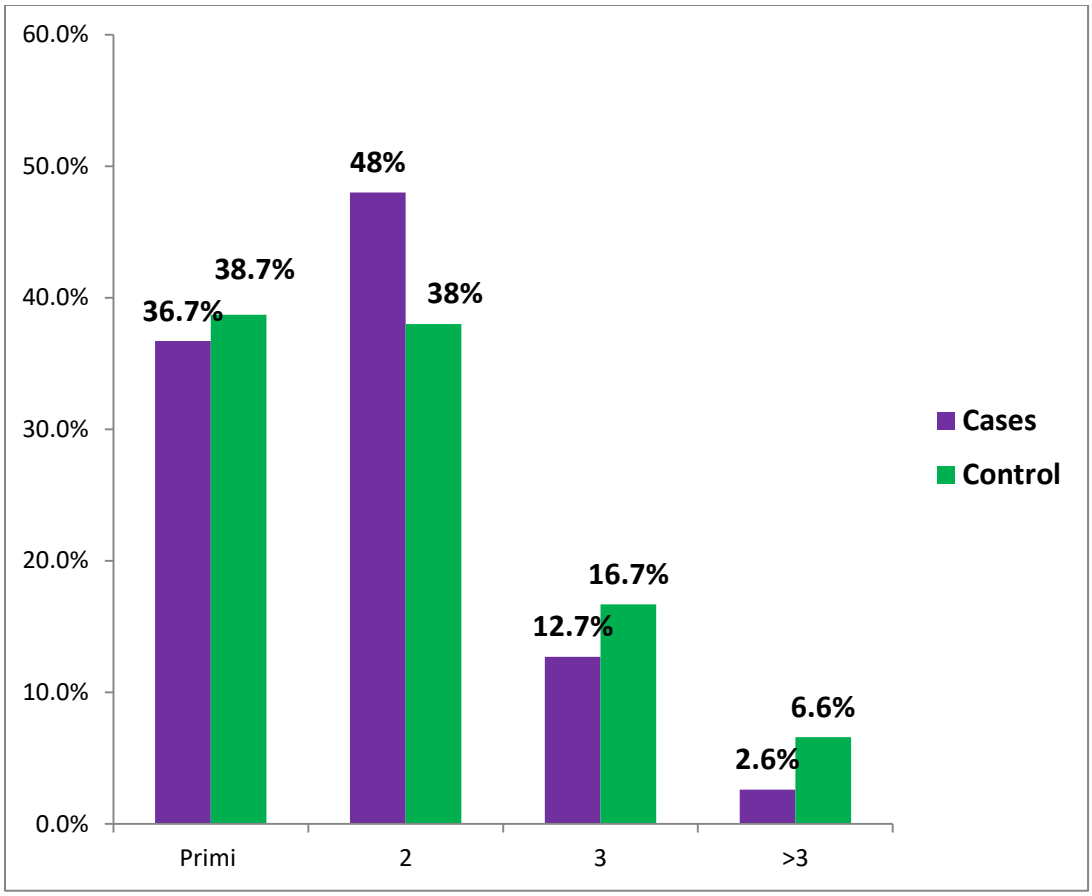

60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
36.7%
38.7%
48%
38%
12.7%
16.7%
2.6%
6.6%
Primi
2
3
>3
Cases
Control

TABLE-21: Distribution of cases and controls according to birth interval (N=300)

Birth interval	Cases N (%)	Control N (%)	Total N (%)
Primi	55 (36.7%)	58 (38.7%)	113 (37.7%)
< 2 years	51 (34%)	37 (24.7%)	88 (29.3%)
≥ 2 years	44 (29.3%)	55 (36.6%)	99 (33%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	3.53	2	0.1712

Comments:

There was no significant association between birth interval and low birth weight.

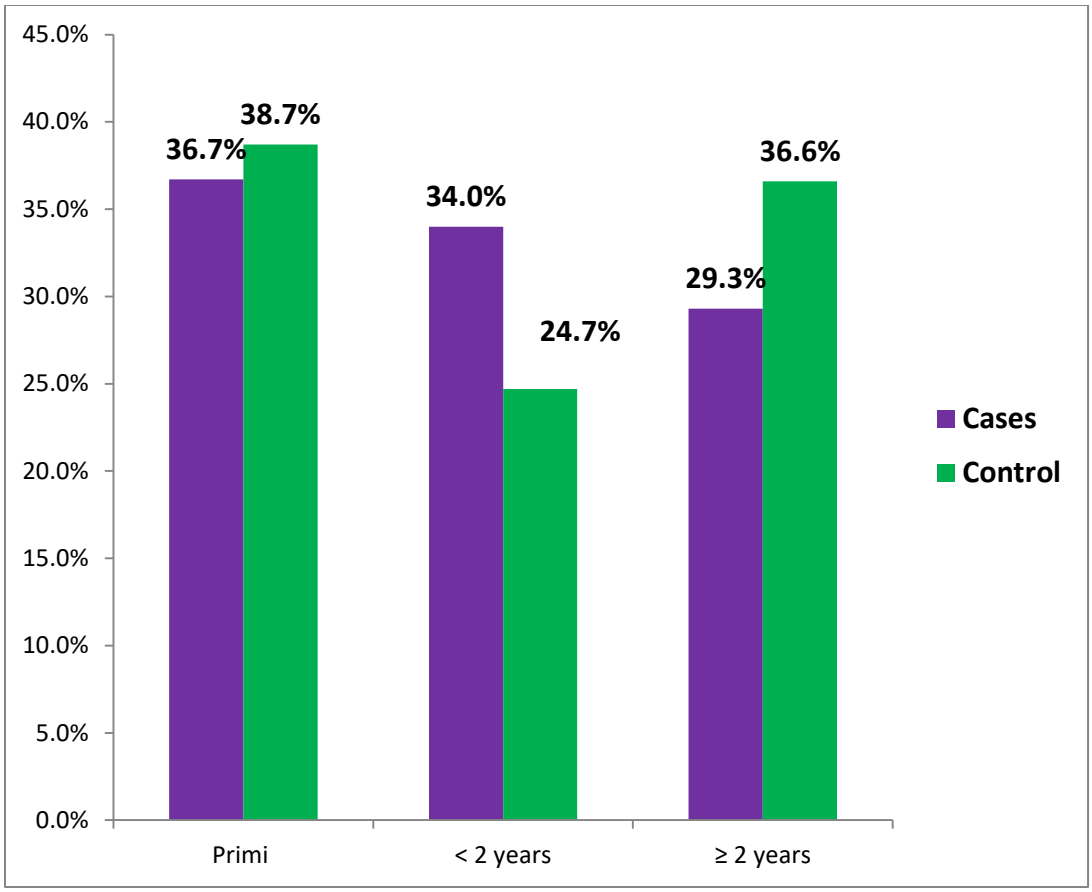

45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
36.7%
38.7%
34.0%
24.7%
29.3%
36.6%
Primi
< 2 years
≥ 2 years
Cases
Control

TABLE-22: Distribution of cases and controls according to antenatal visits (N=300)

Antenatal visits	Cases N (%)	Control N (%)	Total N (%)
< 4 visits	63 (42%)	46 (30.7%)	109 (36.3%)
≥ 4 visits	87 (58%)	104 (69.3%)	191 (63.7%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	3.69	1	0.0414

Comments:

There was significant association between antenatal visits and low birth weight. Those who delivered LBW babies had lesser number of Antenatal visits..

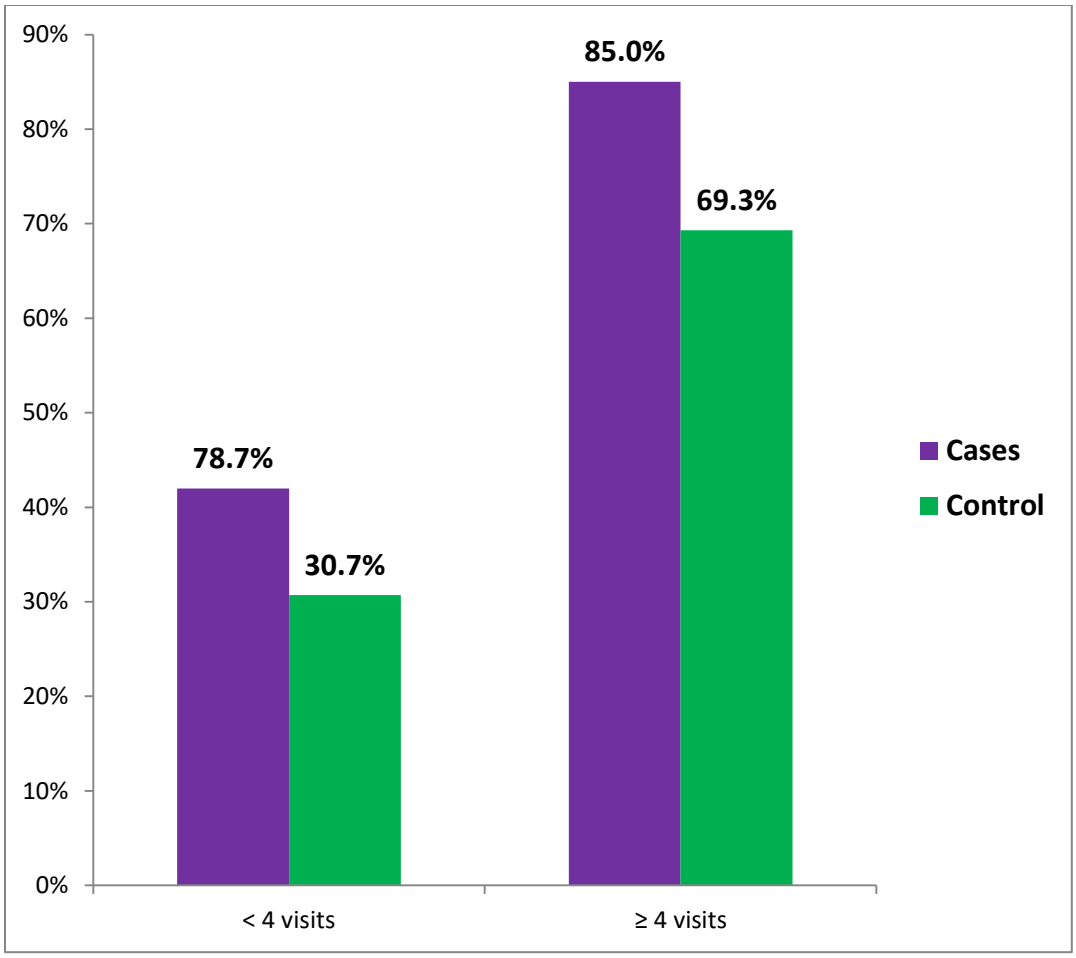

90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
85.0%
69.3%
78.7%
30.7%
Cases
Control
< 4 visits
≥ 4 visits

TABLE-23: Distribution of cases and controls according to maternal height (N=300)

Maternal height	Cases N (%)	Control N (%)	Total N (%)
≤140 cms	16 (10.7%)	10 (6.7%)	26 (8.7%)
141-149 cms	65 (43.3%)	22 (14.7%)	87 (29%)
≥150 cms	69 (46%)	118 (78.6%)	187 (62.3%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	35.48	2	0.00001

Comments:

There was significant association between maternal height and low birth weight. Those who delivered LBW babies were of short stature.

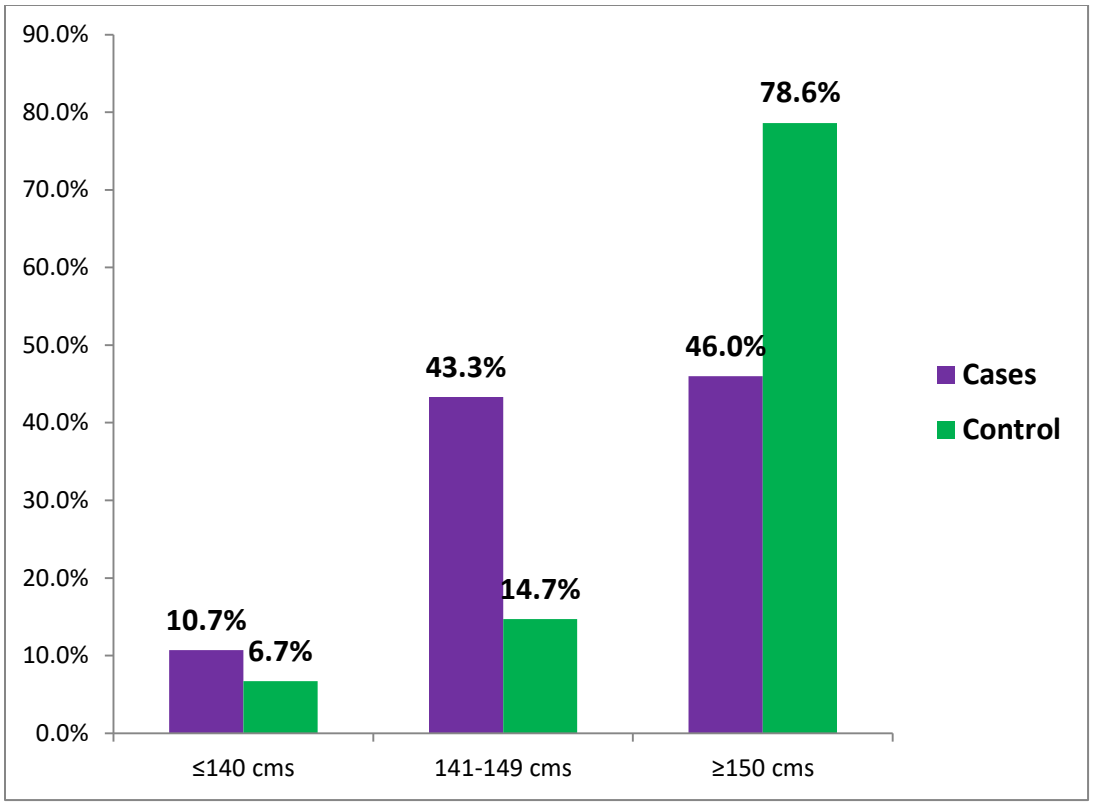

90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
10.7%
6.7%
43.3%
14.7%
46.0%
78.6%
≤140 cms
141-149 cms
≥150 cms
Cases
Control

TABLE-24: Distribution of cases and controls according to maternal pre pregnancy weight (N=300)

Weight	Cases N (%)	Control N (%)	Total N (%)
≤ 40 kg	15 (10%)	5 (3.3%)	20 (6.7%)
41-49 kg	57 (38%)	71 (47.3%)	128 (42.7%)
≥ 50 kg	78 (52%)	74 (49.4%)	152 (50.6%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	6.64	2	0.0362

Comments:

There was significant association between maternal pre pregnancy weight and low birth weight. Those who delivered LBW babies were of low pre pregnancy maternal weight.

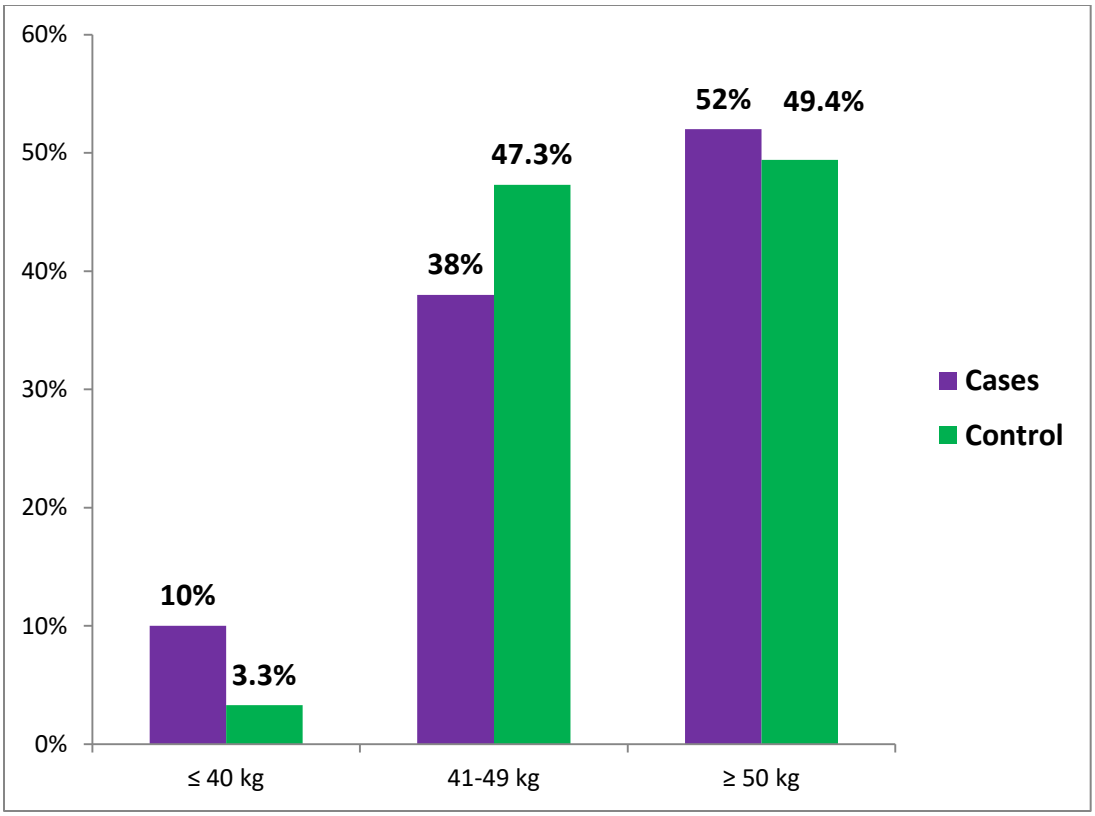

60%
50%
40%
30%
20%
10%
0%
10%
3.3%
38%
47.3%
52%
49.4%
≤ 40 kg
41-49 kg
≥ 50 kg
Cases
Control

TABLE-25: Distribution of cases and controls according to weight gain during pregnancy (N=300)

Weight gain	Cases N (%)	Control N (%)	Total N (%)
< 12 kg	115 (76.7%)	79 (52.7%)	194 (64.7%)
≥ 12 kg	35 (23.3%)	71 (47.3%)	106 (35.3%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	17.87	1	0.00001

Comments:

There was significant association between weight gain during pregnancy and low birth weight. Those who delivered LBW babies had lesser weight gain during their antenatal period.

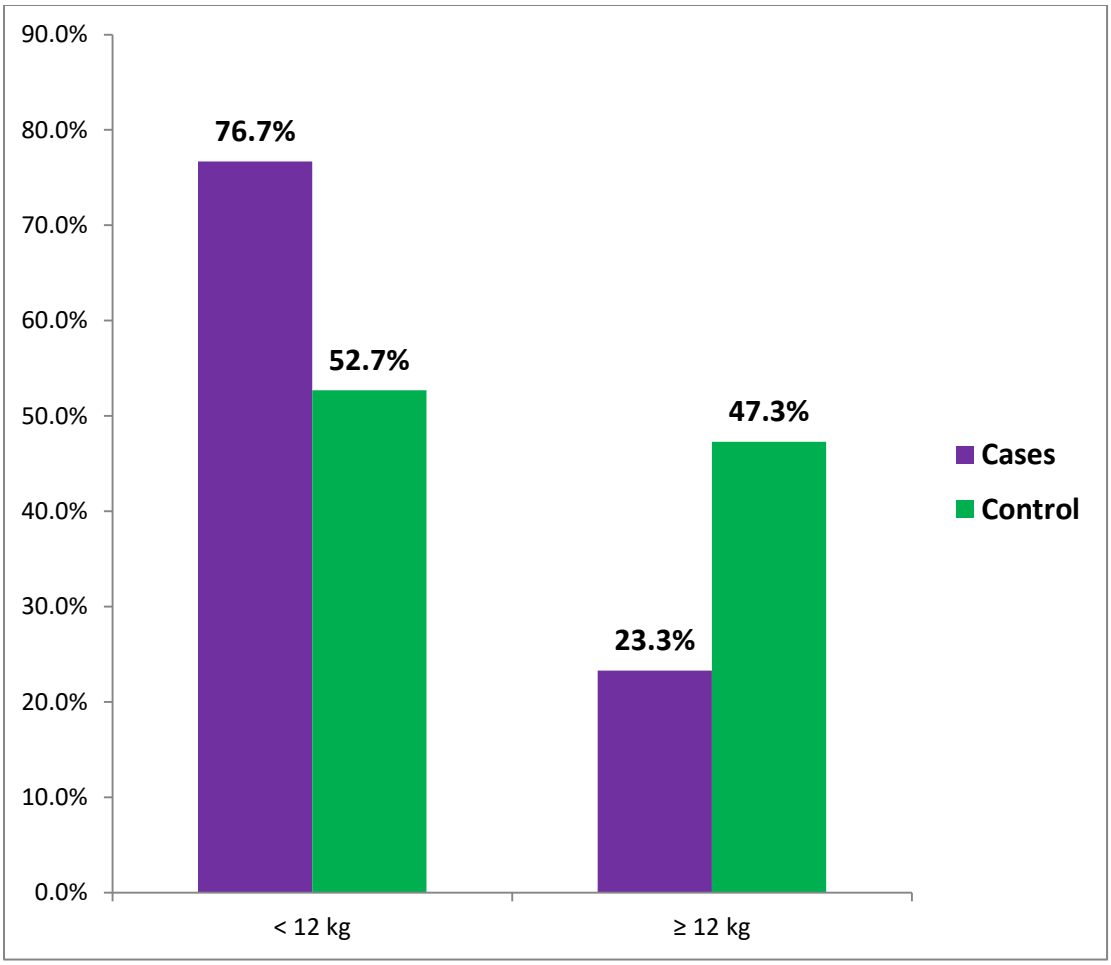

90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
76.7%
52.7%
23.3%
47.3%
< 12 kg
≥ 12 kg
Cases
Control

TABLE-26: Distribution of cases and controls according to maternal diseases (N=300)

Maternal diseases	Cases N (%)	Control N (%)	Total N (%)
Nil disease	3 (2%)	12 (8%)	15 (5.0%)
Hypothyroidism	7 (4.7%)	3 (2%)	10 (3.3%)
PIH	48 (32%)	41 (27.3%)	89 (29.7%)
Anaemia	56 (37.3%)	58 (38.7%)	114 (38%)
Placenta previa	7 (4.7%)	8 (5.3%)	15 (5.0%)
Abruptio placenta	7 (4.7%)	8 (5.3%)	15 (5.0%)
Diabetes mellitus	6 (4%)	6 (4%)	12 (4%)
Heart disease	3 (2%)	2 (1.3%)	5 (1.7%)
UTI	3 (2%)	3 (2%)	6 (2%)
Oligohydramnios	4 (2.7%)	5 (3.3%)	9 (3%)
Polyhydramnios	4 (2.7%)	2 (1.3%)	6 (2%)
Bronchial asthma	2 (1.3%)	2 (1.3%)	4 (1.3%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	2.697	9	0.975

Comments:

There was no significant association between maternal diseases and low birth weight.

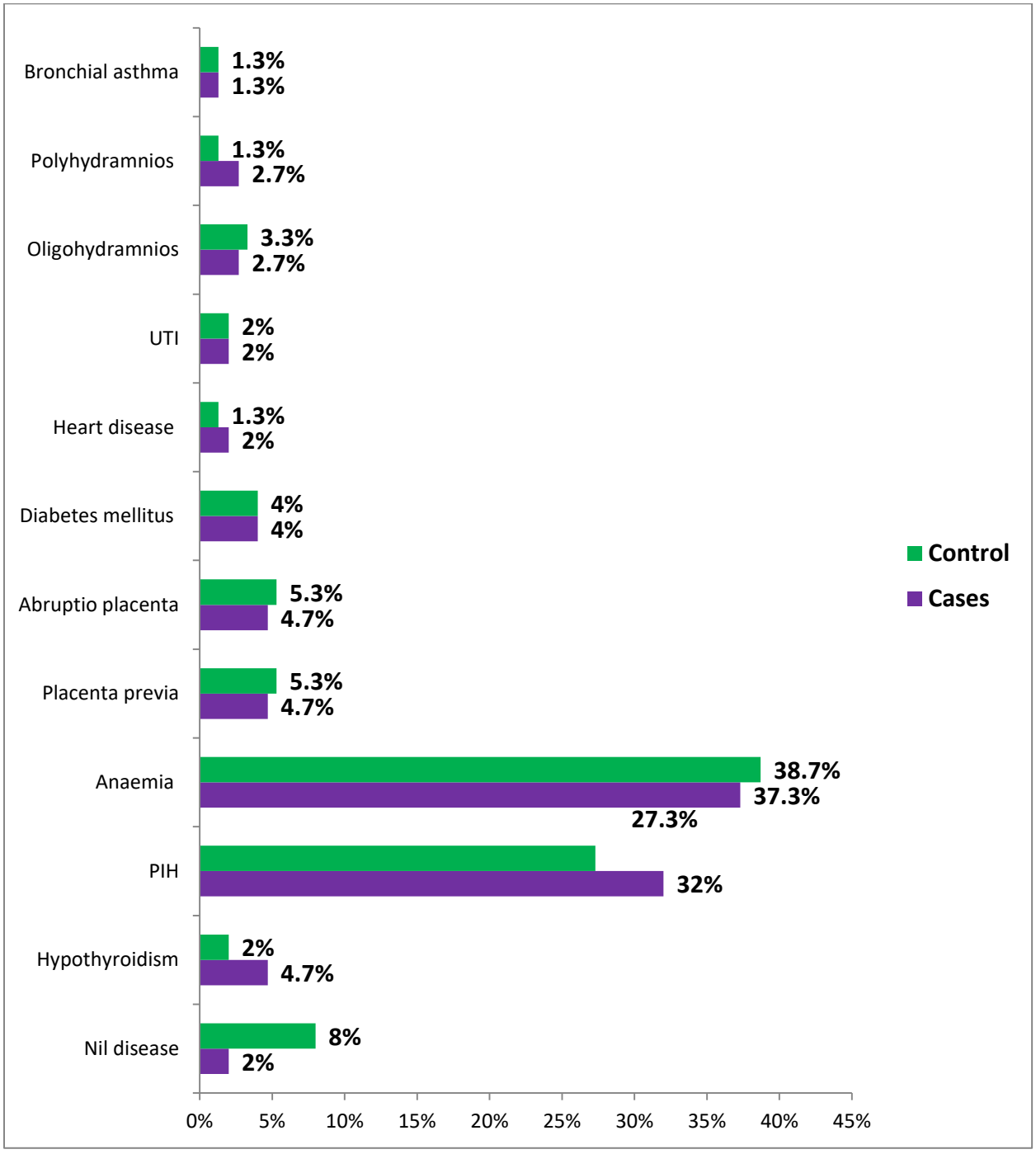

Bronchial asthma
1.3%
1.3%
Polyhydramnios
1.3%
2.7%
Oligohydramnios
3.3%
2.7%
UTI
2%
2%
Heart disease
1.3%
2%
Diabetes mellitus
4%
4%
Abruptio placenta
5.3%
4.7%
Placenta previa
5.3%
4.7%
Anaemia
38.7%
37.3%
27.3%
PIH
32%
Hypothyroidism
2%
4.7%
Nil disease
8%
2%
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
Control
Cases

TABLE-27: Distribution of cases and controls according to mode of delivery (N=300)

Mode of delivery	Cases N (%)	Control N (%)	Total
Spontaneous vaginal	85 (56.7%)	110 (73.3%)	195 (65%)
Forceps and vacuum	7 (4.7%)	6 (4%)	13 (4.3%)
Assisted Breech delivery	6 (4%)	5(3.3%)	11 (3.7%)
Caesarean	52 (34.6%)	29 (19.4%)	81 (27%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	9.9	3	0.0194

Comments:

There was significant association between mode of delivery and low birth weight.

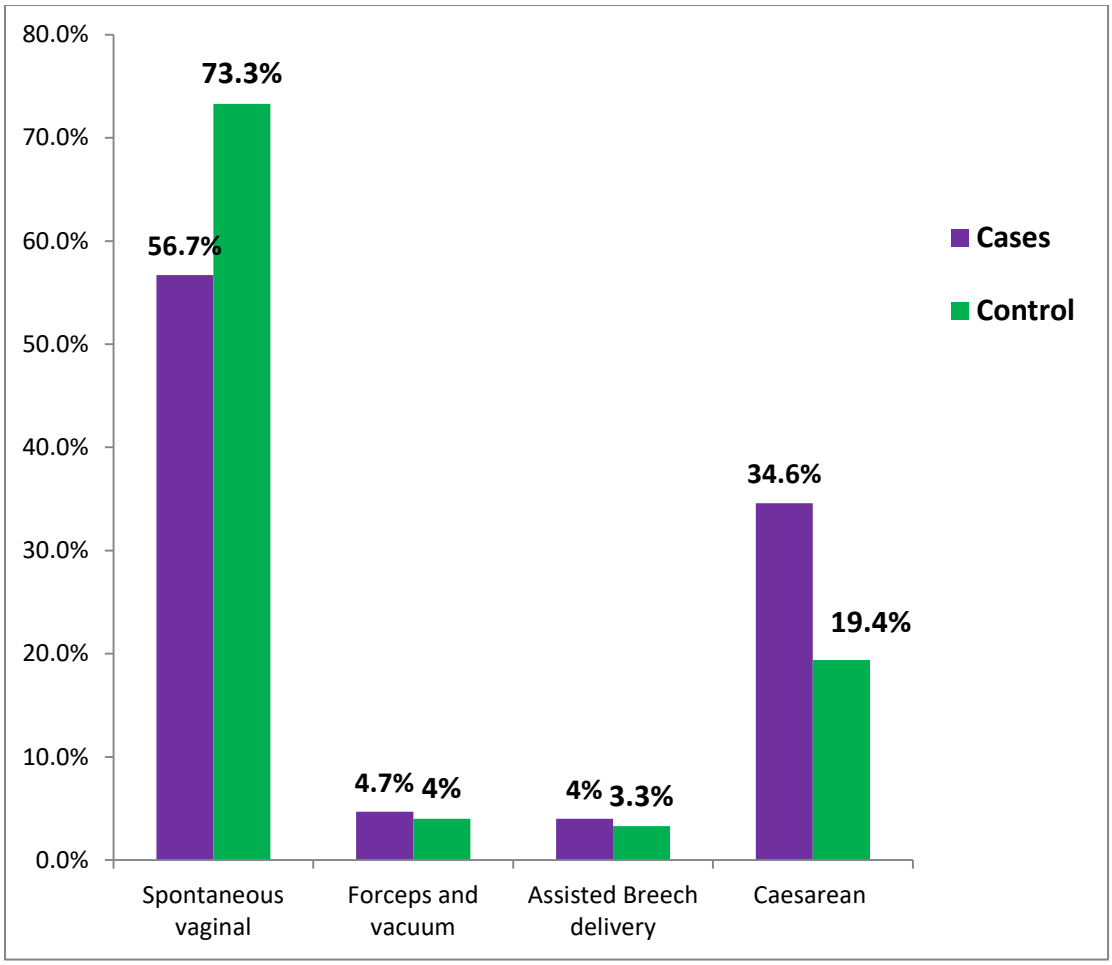

80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
73.3%
56.7%
4.7%
4%
4%
3.3%
34.6%
19.4%
Spontaneous vaginal
Forceps and vacuum
Assisted Breech delivery
Caesarean
Cases
Control

TABLE-28: Distribution of cases and controls according to gender of baby (N=300)

Gender of baby	Cases N (%)	Control N (%)	Total
Female	75(50%)	79 (52.7%)	154 (51.3%)
Male	75(50%)	71 (47.3%)	146 (48.6%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	0.12	1	0.729

Comments:

There was no significant association between gender of baby and low birth weight.

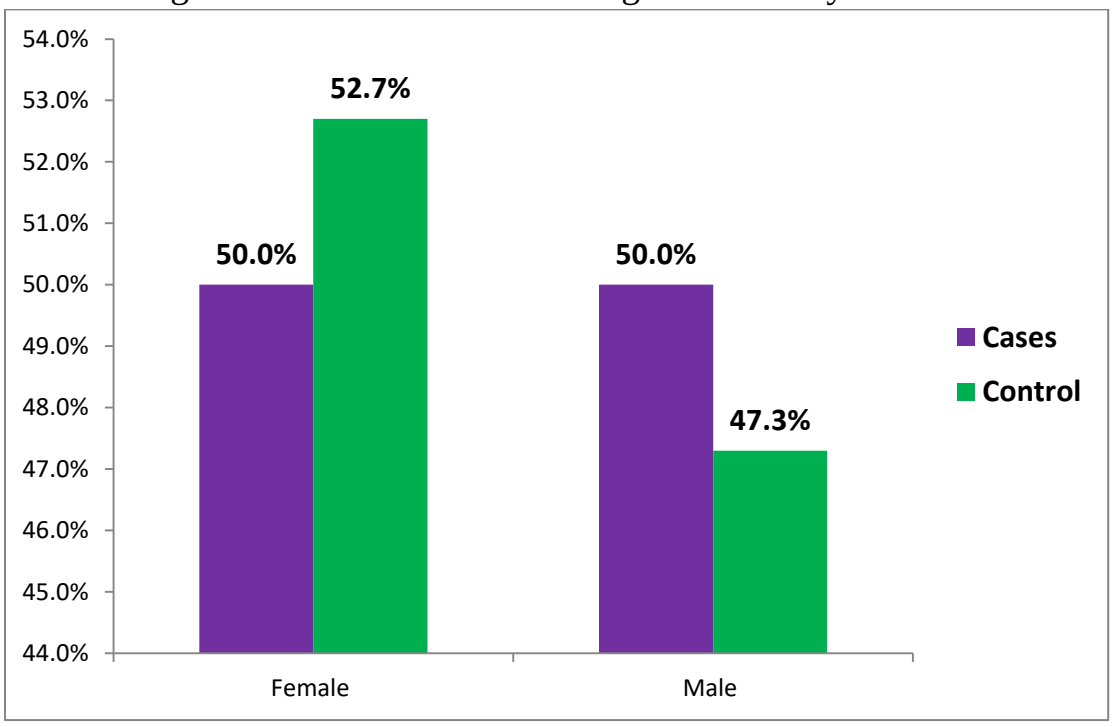


TABLE-29: Distribution of cases and controls according to IFA tablets intake (N=300)

IFA tablets intake	Cases N (%)	Control N (%)	Total
Yes	141 (94%)	146 (97.3%)	287 (95.6%)
No	9 (6%)	4 (2.7%)	13 (4.4%
Total	150	150	300

	Value	df	p value
Pearson Chi Square	0.69	1	0.40

Comments:

There was no significant association between IFA tablets intake and low birth weight.

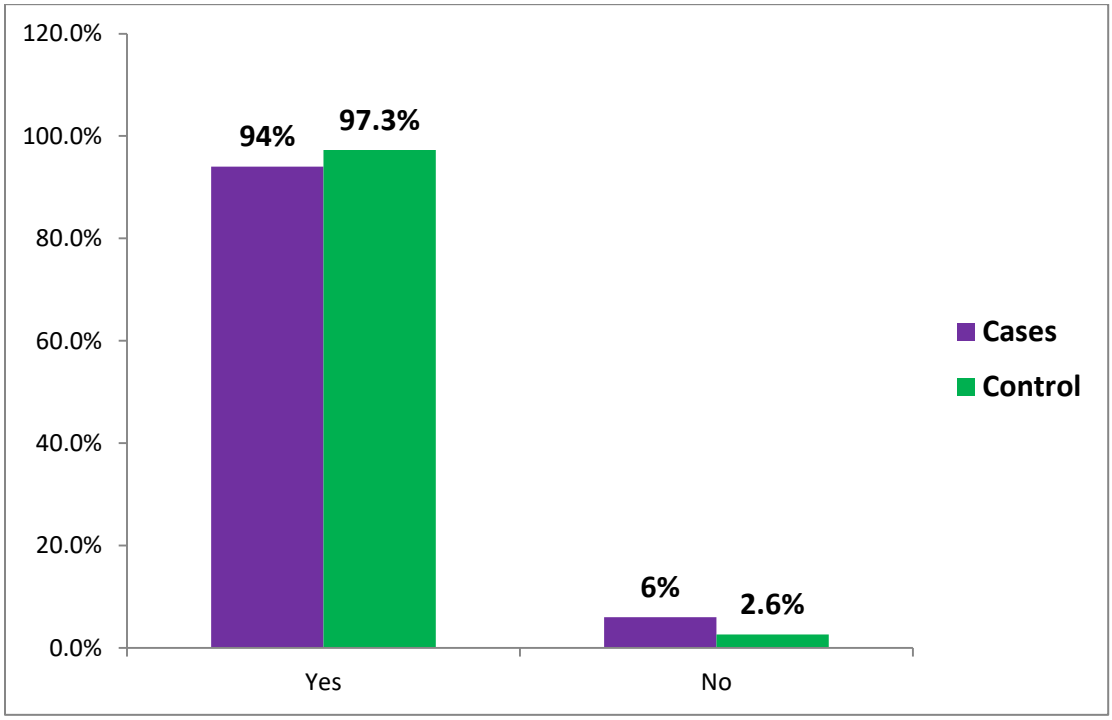


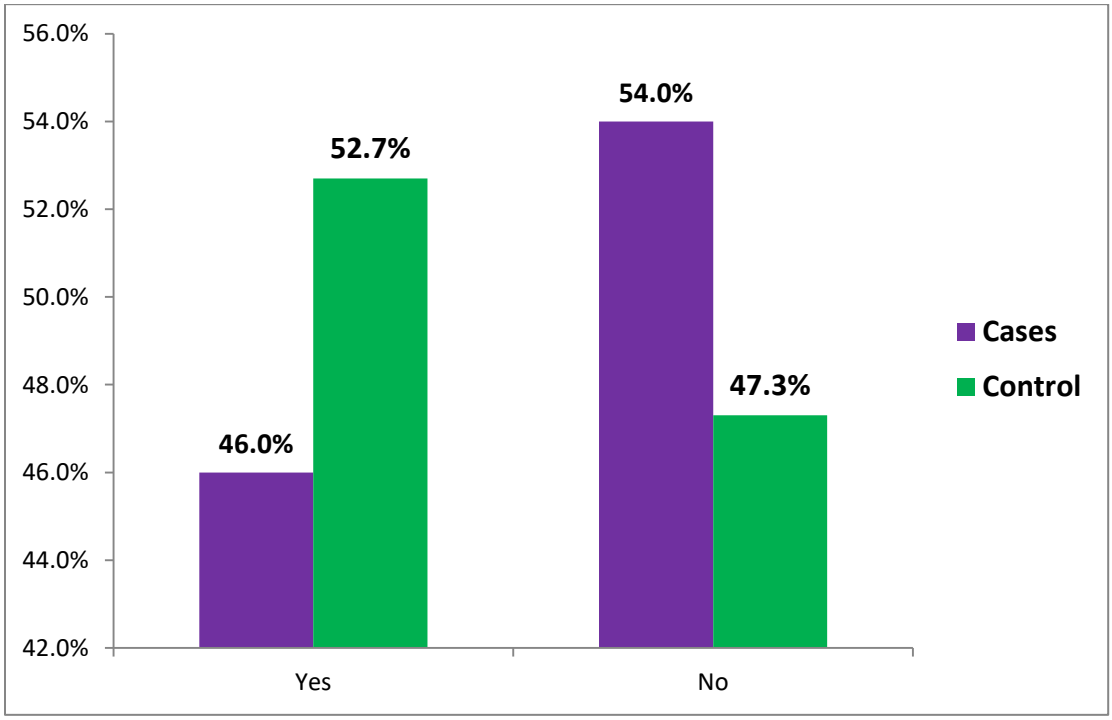
TABLE-30: Distribution of cases and controls according to Calcium tablets intake (N=300)

Calcium tablets intake	Cases N (%)	Control N (%)	Total
Yes	69 (46%)	79 (52.7%)	148(49.3%)
No	81 (54%)	71 (47.3%)	152 (50.7%)
Total	150	150	300

	Value	df	p value
Pearson Chi Square	0.66	1	0.42

Comments:

There was no significant association between Calcium tablets intake and low birth weight.



DISCUSSION

GENERAL CONSIDERATIONS

The result of the present study describes the distribution of various maternal factors like age, education, occupation, number of parity, birth interval, number of antenatal visits, maternal height, maternal pre pregnancy weight, weight gain during pregnancy, maternal diseases, previous history of abortions, and gender of the baby. The study also explains the relationship between these factors and low birth weight.

MATERNAL AGE

In the current study the mean maternal age was 22.9 ± 2.3 with the range between 18 to 36 years of age. This was similar in studies by Anu et al [60], Jayant et al [63] where the mean age for mothers were 22.52 and 22.7 respectively. In Kader et al [64], the mean maternal age was slightly higher with 25.9 years.

Majority of the antenatal mothers in the present study were in the age group between 21 to 30 years of age (72%) which was similar in studies by Deriba et al [61], Desta et al [62], Kader et al [64], Lakshmi et al [65] and Siramaneerat et al [67] where most of the mothers belonged to 21-34 years, 21-35 years, 20-35 years, 20-

24 years and 20-34 years of age respectively. Zaveri et al [68] had higher proportion in age group between 25-34 years whereas Agarwal et al [59] showed higher proportion in < 18 years age group with 42.86%.

In the present study, there was significant association between maternal age and low birth weight. Those who delivered LBW babies were of younger age group. This scenario was similar in studies by Anu et al [60], Desta et al [62] , Kader et al [64], Siramaneerat et al [67] and Zaveri et al [68].

MATERNAL EDUCATION

In the current study most of the mothers had completed only primary and middle school education whereas Agarwal et al [59] had illiterate people more (52%). Other studies by Anu et al [60], Desta et al [62] , Jayant et al [63] , Kader et al [64], Rathnam et al [66], Siramaneerat et al [67] and Zaveri et al [68] showed many antenatal mothers with secondary level of occupation respectively. In the current study, there was significant association between maternal education and low birth weight. Those who delivered LBW babies had lower level of education. Similar associations were seen in studies of Anu et al [60], Deriba et al [61], Desta et al [62] , Jayant et al [63], Kader et al [64], Rathnam et al [66] Siramaneerat et al [67] and Zaveri et al [68].

MATERNAL OCCUPATION

In the current study, majority of the mothers (76%) were housewives. This was similar in studies by Agarwal et al [59] Deriba et al [61], Desta et al [62] and Jayant et al [63] whereas studies by Anu et al [60] and Siramaneerat et al [67] showed higher proportion of working women. There was no significant association between maternal occupation and low birth weight.

PARITY

In the current study, most of the mothers had second or third parity. This was similar in studies by Deriba et al [61], Kader et al [64] and Rathnam et al [66] whereas in studies by Agarwal et al [59] Desta et al [62] Jayant et al [63] Lakshmi et al [65] and Zaveri et al [68] the majority of antenatal mothers were primi. In the current study, there was no significant association between parity and low birth weight. However a significant association is seen in studies by Jayant et al [63] and Zaveri et al [68].

BIRTH INTERVAL

In the current study, 33% and 29% of the antenatal mothers had birth interval < 2 years and ≥ 2 years respectively. Studies like Agarwal et al [59], Deriba et al [61] Desta et al [62] and Rathnam et al [66] had higher proportions of antenatal

mothers with birth interval ≥ 2 years. Studies like Jayant et al [63] had higher percentage of antenatal mothers with birth interval < 2 years.

In the current study, there was no significant association between birth interval and low birth weight. However a significant association had been seen in Anu et al [60], Jayant et al [63] and Kader et al [64],

ANTENATAL VISITS

In the present study, about 63.7% of mothers had more than 4 antenatal visits. There was significant association between antenatal visits and low birth weight. Those who delivered LBW babies had lesser number of Antenatal visits. The same scenario was seen in many other studies by Deriba et al [61], Desta et al [62], Jayant et al [63] Kader et al [64], Siramaneerat et al [67] and Zaveri et al [68] where total number of antenatal visits is related to occurrence of low birth weight babies.

MATERNAL HEIGHT

In the present study, the mean maternal height was 148.3 cms. Majority of the study participants (62.3%) were of maternal height ≥150 cms. The mean maternal height was 160.1 cms and 152.06 cms in Anu et al [60] and Jayant et

al [63] respectively. In most of the similar studies the mean maternal height was more than 145 cms. Those studies had fixed specific cut off for short maternal height such as <155 cms, <150 cms and <145 cms in Deriba et al [61], Desta et al [62] and Kader et al [64] respectively.

In the current study, there was significant association between maternal height and low birth weight. Those who delivered LBW babies were of short stature. The same scenario was seen significant in Anu et al [60] Deriba et al [61], Desta et al [62] Jayant et al [63] and Kader et al [64] respectively.

MATERNAL PRE PREGNANCY WEIGHT

In the present study, the mean maternal weight was 53.4 kgs. The mean maternal weight in various studies like Anu et al [60], Jayant et al [63] and Rathnam et al [66] were 62.9 kg, 48.58 kg and 55.9 kg respectively. In the present study, majority of the study participants (50.6%) had their pre pregnancy weight ≥ 50 kg whereas in Agarwal et al [59] majority (81%) had their weight < 40 kg in contrast. In the current study, there was significant association between maternal pre pregnancy weight and low birth weight. This was also seen in studies like Anu et al [60], Jayant et al [63] Kader et al [64], Lakshmi et al [65] and Zaveri et al [68] showed significant association between maternal pre pregnancy weight and low birth

weight. Those who delivered LBW babies were of low maternal pre pregnancy weight.

WEIGHT GAIN

In the present study, only 35.3% of the study participants had pregnancy weight gain of ≥ 12 kgs. There was significant association between weight gain during pregnancy and low birth weight. Those who delivered LBW babies had lesser weight gain during their antenatal period. Similar scenarios were seen in studies by Desta et al [62], Jayant et al [63] and Rathnam et al [66]. The mean weight gain in Jayant et al [63] and Rathnam et al [66] were 4.9kg and 8.1 kg respectively which was very much lower than the national cut off of > 12 kgs.

MATERNAL DISEASES

In the present study, majority of the study participants (38%) had Anaemia followed by PIH (29.7%), APH (10%), Diabetes (4%), Oligohydramnios (3%), Polyhydramnios (2%), UTI (2%), heart disease (1.7%) and asthma (1.3%) respectively. About 8.3% were healthy and did not have any diseases. There was no significant association between maternal diseases and low birth weight.

However in other similar studies, maternal anaemia has been significantly linked to LBW in Agarwal et al [59] Anu et al [60], Deriba et al [61], Desta et al [62] , Jayant et al [63] Kader et al [64], Lakshmi et al [65] Rathnam et al [66] Siramaneerat et al [67] and Zaveri et al [68].

Bad obstetric history had been on important predetermining factor for LBW in Anu et al [60] and Jayant et al [63].

PIH had been associated with LBW in Deriba et al [61], Desta et al [62] Rathnam et al [66] and Jayant et al [63]

PROM had also been seen associated with LBW in Deriba et al [61], Desta et al [62].

APH and Diabetes had also been seen associated with LBW in in Deriba et al [61], Desta et al [62].

GENDER OF THE CHILD

In the present study, majority of the study participants (51.3%) had delivered Female babies. There was no significant association between gender of baby and low birth weight whereas in Kader et al [(64)], female child were more prone for low birth weight.

LIMITATIONS

- Several other factors like dietary intake, Thyroid disorders, calorie requirements, and other unexplained risk factors have been missed in the study which would have added upon additional facts for the study.

- The number of cases is narrow and data on clinical and laboratory features could not be described in the study.
- Being a case control study, the study itself has certain disadvantages of recall bias, confounder bias and selection bias.

CONCLUSION

Low birth weight is one amongst the main life threatening neonatal complications after pregnancy. Numerous risk factors are recognized; however its incidence is usually unpredictable. Adequate antepartum care, early identification of risk factors will facilitate to some extent. Treatment in the main depends on the maternal nutrition and regular antenatal visits. Timely identification and management ideally in an exceedingly tertiary care centre, applicable use of blood and blood products for correction of anaemia will considerably reduce neonatal morbidity and mortality.

Low birth weight increases the risk of attaining poor developmental milestones in the child. Special emphasis must be put forth on Intensive care facilities for the treatment and care of these patients. Multidisciplinary treatment and prevention models must be encouraged to alleviate the maternal as well as foetal complications. Exceptional awareness must be given to the mothers attending ANC clinics regarding danger signs of pregnancy, high risk factors and complications with respect to low birth weight.

Randomised controlled trials of appropriate power are mandatory to evaluate interventions (for example diet, vitamin supplements and evidence based therapy) to prevent low birth weight. Studies are vital to define the optimal timing of delivery in women with any risk factors. Data regarding maternal determinants are limited. Studies are necessary to determine maternal and foetal predisposing factors in the management of low birth weight.

REFERENCES

1. WHO. Resolution WHA 65.6. Comprehensive implementation plan on maternal, infant and young child nutrition. Sixty-fifth World Health Assembly, Geneva, 21–26 May 2012. Resolutions and decisions, annexes. 2012.
2. World Health Organization. March of Dimes; The partnership for maternal, newborn & child health; save the children. Born too soon: the global action report on preterm birth. Geneva: World Health Organization. 2012.
3. Balaić T. Uzroci smrti novorođenčadi i dojenčadi danas u usporedbi s uzrocima smrti prije 10, 15 i 20 godina (Doctoral dissertation, Josip Juraj Strossmayer University of Osijek. Faculty of Medicine).
4. Resolution WH. 65.5. Sixty-Fifth World Health Assembly. 2012 May:21-6.
5. Paneth NS. The problem of low birth weight. The future of children. 1995 Apr 1:19-34.
6. https://www.icd10data.com/ICD10CM/Codes/P00-P96/P05-P08/P07-/P07.01
7. Zlatnik FJ, Burmeister LF. Low “gynecologic age”: an obstetric risk factor. American journal of obstetrics and gynecology. 1977 May 15;128(2):183-6.
8. http://www.acog.org/Patients/FAQs/Preterm-Premature-Labor-and-Birth
9. https://www.who.int/news-room/fact-sheets/detail/preterm-birth

10. Blencowe H, Cousens S, Chou D, Oestergaard M, Say L, Moller AB, Kinney M, Lawn J. Born too soon: the global epidemiology of 15 million preterm births. Reproductive health. 2013 Nov;10(1):1-4.
11. Liu L, Oza S, Hogan D, Chu Y, Perin J, Zhu J, et al. Global, regional, and national causes of under-5 mortality in 2000-15: an updated systematic analysis with implications for the Sustainable Development Goals. Lancet. 2016;388(10063):3027-35.
12. Talati AN, Hackney DN, Mesiano S. Pathophysiology of preterm labor with intact membranes. InSeminars in perinatology 2017 Nov 1 (Vol. 41, No. 7, pp. 420-426). WB Saunders.
13. Boggess KA. Pathophysiology of preterm birth: emerging concepts of maternal infection. Clinics in perinatology. 2005 Sep 1;32(3):561-9.
14. Ion R, Bernal AL. Smoking and preterm birth. Reproductive Sciences. 2015 Aug;22(8):918-26.
15. O'Leary CM, Nassar N, Kurinczuk JJ, Bower C. The effect of maternal alcohol consumption on fetal growth and preterm birth. BJOG: An International Journal of Obstetrics & Gynaecology. 2009 Feb;116(3):390-400.
16. Ingemarsson I. Gender aspects of preterm birth. BJOG: an international journal of obstetrics and gynaecology. 2003 Apr 1;110:34-8.

17. Lu MC, Chen B. Racial and ethnic disparities in preterm birth: the role of stressful life events. American journal of obstetrics and gynecology. 2004 Sep 1;191(3):691-9.
18. Han Z, Lutsiv O, Mulla S, McDonald SD, Group KS. Maternal height and the risk of preterm birth and low birth weight: a systematic review and meta-analyses. Journal of Obstetrics and Gynaecology Canada. 2012 Aug 1;34(8):721-46.
19. Hediger ML, Scholl TO, Belsky DH, Ances IG, Salmon RW. Patterns of weight gain in adolescent pregnancy: effects on birth weight and preterm delivery. Obstetrics and gynecology. 1989 Jul 1;74(1):6-12.
20. Khatibi T, Kheyrikoochaksarayee N, Sepehri MM. Analysis of big data for prediction of provider-initiated preterm birth and spontaneous premature deliveries and ranking the predictive features. Archives of gynecology and obstetrics. 2019 Dec;300(6):1565-82.
21. Bertagnolli M, Luu TM, Lewandowski AJ, Leeson P, Nuyt AM. Preterm birth and hypertension: is there a link?. Current hypertension reports. 2016 Apr 1;18(4):28.
22. Ananth CV, Vintzileos AM. Maternal-fetal conditions necessitating a medical intervention resulting in preterm birth. American journal of obstetrics and gynecology. 2006 Dec 1;195(6):1557-63.

23. Saenger P, Czernichow P, Hughes I, Reiter EO. Small for gestational age: short stature and beyond. Endocrine reviews. 2007 Apr 1;28(2):219-51.

24. McCowan L, Horgan RP. Risk factors for small for gestational age infants. Best practice & research clinical obstetrics & gynaecology. 2009 Dec 1;23(6):779-93.

25. No GT. The investigation and management of the small–for–gestational–age fetus.

26. Harvey D, Prince J, Bunton J, Parkinson C, Campbell S. Abilities of children who were small-for-gestational-age babies. Pediatrics. 1982 Mar;69(3):296-300.

27. https://data.unicef.org/topic/nutrition/low-birthweight/

28. Christian P, et al. Black RE. Risk of childhood undernutrition related to small-for-gestational age and preterm birth in low- and middle-income countries. International Journal of Epidemiology 2013;42:1340–55.

29. Gu H, Wang L, Liu L, et al. A gradient relationship between low birth weight and IQ: A meta-analysis. Sci Rep. 2017;7(1):18035. Published 2017 Dec 21. doi:10.1038/s41598-017-18234-9

30. Jornayvaz FR, Vollenweider P, Bochud M, Mooser V, Waeber G, Marques-Vidal P. Low birth weight leads to obesity, diabetes and increased leptin levels in adults: the CoLaus study. Cardiovasc Diabetol. 2016; 15: 73.

31. World Health Organization. UNICEF-WHO low birthweight estimates: levels and trends 2000-2015. World Health Organization; 2019.
32. World Health Organization. Global targets tracking tool (http://www.who. int/nutrition/trackingtool, accessed 15 March 2021).
33. Blencowe H, Krasevec J, de Onis M, Black R E, An X, Stevens G A, Borghi E, Hayashi C, Estevez D, Cegolon L, Shiekh S, Hardy V P, Lawn J E, Cousens S. National, regional, and worldwide estimates of low birthweight in 2015, with trends from 2000: a systematic analysis.
34. Roy P, Kumar A, Kaur IR, Faridi MM. Gender differences in outcomes of low birth weight and preterm neonates: the male disadvantage. Journal of tropical pediatrics. 2014 Dec 1;60(6):480-1.
35. Acevedo-Garcia D, Soobader MJ, Berkman LF. The differential effect of foreign-born status on low birth weight by race/ethnicity and education. Pediatrics. 2005 Jan 1;115(1):e20-30.
36. Fuentes-Afflick E, Hessol NA. Impact of Asian ethnicity and national origin on infant birth weight. American journal of epidemiology. 1997 Jan 15;145(2):148-55.
37. Han Z, Lutsiv O, Mulla S, McDonald SD, Group KS. Maternal height and the risk of preterm birth and low birth weight: a systematic review and meta-

analyses. Journal of Obstetrics and Gynaecology Canada. 2012 Aug 1;34(8):721-46.

38. Mohanty C, Prasad R, Srikanth Reddy A, Ghosh JK, Singh TB, Das BK. Maternal anthropometry as predictors of low birth weight. Journal of Tropical Pediatrics. 2006 Feb 1;52(1):24-9.

39. Muthayya S. Maternal nutrition & low birth weight-what is really important. Indian J Med Res. 2009 Nov 1;130(5):600-8.

40. Easterling TR, Benedetti TJ, Carlson KC, Brateng DA, Wilson J, Schmucker BS. The effect of maternal hemodynamics on fetal growth in hypertensive pregnancies. American journal of obstetrics and gynecology. 1991 Oct 1;165(4):902-6.

41. Guimarães AM, Bettiol H, Souza LD, Gurgel RQ, Almeida ML, Ribeiro ER, GoldaniV MZ, Barbieri MA. Is adolescent pregnancy a risk factor for low birth weight?. Revista de saude publica. 2013;47:11-9.

42. Gould JB, LeRoy S. Socioeconomic status and low birth weight: a racial comparison. Pediatrics. 1988 Dec;82(6):896-904.

43. Nkansah-Amankra S, Luchok KJ, Hussey JR, Watkins K, Liu X. Effects of maternal stress on low birth weight and preterm birth outcomes across neighborhoods of South Carolina, 2000–2003. Maternal and child health journal. 2010 Mar;14(2):215-26.

44. Shah PS, Knowledge Synthesis Group on Determinants of LBW/PT births. Parity and low birth weight and preterm birth: a systematic review and meta-analyses. Acta obstetricia et gynecologica Scandinavica. 2010 Jul;89(7):862-75.
45. Brown JS, Adera T, Masho SW. Previous abortion and the risk of low birth weight and preterm births. Journal of Epidemiology & Community Health. 2008 Jan 1;62(1):16-22.
46. Gold KJ, DeMonner SM, Lantz PM, Hayward RA. Prematurity and low birth weight as potential mediators of higher stillbirth risk in mixed black/white race couples. Journal of Women's Health. 2010 Apr 1;19(4):767-73.
47. Williams MA, Goldman MB, Mittendorf R, Monson RR. Subfertility and the risk of low birth weight. Fertility and sterility. 1991 Oct 1;56(4):668-71.
48. Figueiredo AC, Gomes-Filho IS, Silva RB, Pereira PP, Da Mata FA, Lyrio AO, Souza ES, Cruz SS, Pereira MG. Maternal anemia and low birth weight: a systematic review and meta-analysis. Nutrients. 2018 May;10(5):601.
49. Leviton A, Paneth N, Reuss ML, Susser M, Allred EN, Dammann O, Kuban K, Van Marter LJ, Pagano M, Hegyi T, Hiatt M. Maternal infection, fetal inflammatory response, and brain damage in very low birth weight infants. Pediatric research. 1999 Nov;46(5):566-.
50. Magee BD, Hattis D, Kivel NM. Role of smoking in low birth weight. The Journal of reproductive medicine. 2004 Jan 1;49(1):23-7.

51. Ko TJ, Tsai LY, Chu LC, Yeh SJ, Leung C, Chen CY, Chou HC, Tsao PN, Chen PC, Hsieh WS. Parental smoking during pregnancy and its association with low birth weight, small for gestational age, and preterm birth offspring: a birth cohort study. Pediatrics & Neonatology. 2014 Feb 1;55(1):20-7.
52. World Health Organization. WHO recommendations on interventions to improve preterm birth outcomes.
53. Vogel JP, Oladapo OT, Manu A, Gülmezoglu AM, Bahl R. New WHO recommendations to improve the outcomes of preterm birth. The Lancet Global Health. 2015 Oct 1;3(10):e589-90.
54. Agarwal G, Ahmad S, Goel K, Kumar V, Goel P, Garg M, Punj A. Maternal risk factors associated with low birth weight neonates in a tertiary care hospital, Northern India. J Community Med Health Educ. 2012;2(9):1000177.
55. Anu MS, Senguttuvan A, Dheepane K, Raghupathy NS. A study of maternal factors influencing birth weight in newborn in a tertiary care hospital. Int J Contemp Pediatr 2021;8:1810-4.
56. Deriba BS, Jemal K. Determinants of Low Birth Weight Among Women Who Gave Birth at Public Health Facilities in North Shewa Zone: Unmatched Case-Control Study. INQUIRY: The Journal of Health Care Organization, Provision, and Financing. 2021 Sep 1;58:00469580211047199.

57. Desta SA, Damte A, Hailu T. Maternal factors associated with low birth weight in public hospitals of Mekelle city, Ethiopia: a case-control study. Italian journal of pediatrics. 2020 Dec;46(1):1-9.
58. Deshpande Jayant D, Phalke DB, Bangal VB, D Peeyuusha BS. Maternal risk factors for low birth weight neonates: a hospital based casecontrol study in rural area of western maharashtra, India. National Journal of Community Medicine. 2011 Oct;2(3):394-8.
59. Kader M, Perera NK. Socio-economic and nutritional determinants of low birth weight in India. North American journal of medical sciences. 2014 Jul;6(7):302.
60. Lakshmi S, Rajkumar K. Predictors of low birth weight in antenatal women. Journal of Gynecological Research and Obstetrics. 2018 Oct 18;4(3):024-7.
61. Ratnam S. Maternal Risk Factors Associated with Term Low Birth Weight Infants: A Case-Control Study. Ann Community Med Public Health. 2021; 1(1): 1003
62. Siramaneerat I, Agushybana F, Meebunmak Y. Maternal risk factors associated with low birth weight in Indonesia. The Open Public Health Journal. 2018 Aug 31;11(1).
63. Zaveri A, Paul P, Saha J, Barman B, Chouhan P. Maternal determinants of low birth weight among Indian children: Evidence from the National Family Health Survey-4, 2015-16. PLoS One. 2020 Dec 31;15(12):e0244562.

PROFORMA

SERIAL No: **DATE :**

Name:
Age:
IP Number:
Socio economic class:
Occupation:
Address:

Gestational age at birth:

OBSTETRICS HISTORY:

Obstetric score:
Gravida para live

Previous pregnancy details-

Birth spacing-

Present pregnancy details:
Booked/Unbooked
No. Of AN Visits:
Iron and calcium tablet intake

PREGNANCY RELATED COMPLICATIONS

Anemia (Hb less than 11gm/dl according to WHO)

Gestational age at diagnosis:

Grade:

Treatment details:

GHTN (Non severe,BP>140/90mmhg without proteinuria)

Gestational age at diagnosis

Treatment:

DIABETES MELLITUS

Type and treatment details:

HYPOTHYROIDISM

Type

Treatment details

PAST HISTORY:

Any chronic medical illness

Any previous surgeries

EXAMINATIONS:

	HT: (in cm)	**WT: (in kg)**	**BMI:**
	Pregnancy weight gain:		
VITALS:	**PR: /min**	**BP: mmhg**	**TEMP: ^{0}C**
GENERAL EXAMINATION:	**PALLOR:**	**PEDAL EDEMA:**	

INVESTIGATIONS:

1.COMPLETE BLOOD COUNT	**HB:**	**TC:**
	PLT:	**DC:**
2.RANDOM BLOOD SUGAR:		
3.RENAL FUNCTION TEST:	**UREA:**	**CREATININE:**
4.LIVER FUNCTION TEST:	**TB:**	**SGOT:**
	URIC ACID:	**SGPT:**
		LDH:
5.URINE ROUTINE:	**ALBUMIN:**	
	SUGAR:	
6.VIRAL MARKERS (with consent) (HCV/HBV/HIV /VDRL)		
7.BLOOD GROUPING & TYPING:		

MODE OF DELIVERY

NEO NATAL OUTCOME

BIRTH WEIGHT

APGAR AT 1 MINUTE

APGAR AT 5 MINUTES

COMPLICATION

PATIENT CONSENT FORM

Patient may check ( ) these boxes:

( ) I confirm that I have understood the purpose of procedure for the above study. I have the opportunity to ask questions and all my questions and doubts have been answered to my complete satisfaction.

( ) I understand that my participation in the study is voluntary and that I am free to withdraw at anytime without giving reason, without my legal rights being affected.

( ) I understand that sponsor of the clinical study, others working on the sponsor's behalf, the Ethics committee and the regulatory authorities will not need my permission to look at my health records, both in respect of current study and any further research that maybe conducted in relation to it, even if I withdraw from the study I agree to this access.

( )However, I understand that my identity will not be revealed in any information released to third parties or published, unless as required under the law. I agree not to restrict the use of any data or results that arise from this study.

Study title: Maternal risk factors associated with term low birth weight neonates

Study Centre: Institute of obstetrics and gynaecology,Egmore, Chennai.

Patient's Name:

Patient's Age:

In/Out Patient Number:

I agree to take part in the above study and to comply with the instructions given during the study and faithfully cooperate with the study team and to immediately in

form the study staff if I suffer from any deterioration in my health or well being or any unexpected or unusual symptoms.
I hereby consent to participate in this study.
I hereby give permission to undergo complete clinical examination and diagnostic tests including hematological, biochemical, radiological tests and to undergo treatment.

Signature/Thumb impression of the patient
Patient's Name and Address:
Signature of Investigator

PATIENT INFORMATION SHEET

TOPIC : " MATERNAL RISK FACTORS ASSOCIATED WITH TERM LOW BIRTH WEIGHT NEONATES ".

You are cordially welcomed to take part in the study. The information provided by you will help in analysing the results of the study. All your questions and doubts will be cleared patiently.

Low birth weight (LBW) deliveries contribute to high neonatal mortality rates (NMR) in developing countries. Several maternal risk factors are associated with LBW newborns. Appropriate interventions will help to reduce the incidence of LBW deliveries in these countries and improve neonatal survival outcomes. This study aims to identify maternal risk factors associated with LBW.

Child who have low birth weight have immture immune function,who are also prone to have increased risk of disease, lower IQ and cognitive disabilities which could affect their performance in school, job opportunities as adults and may develop chronic illness like diabetes and coronary heart disease in adult hood. Low Birth Weight is also known to cause cerebral palsy more frequent hospitalization for all illness, more hearing and visual disability more behavioral disorders.

<u>அனுமதியுடனான ஒப்புதல் படிவம்:</u>

-இந்த ஆய்விற்கான செயல்முறையின் நோக்கத்தை நான் புரிந்துள்ளேன் என்பதை உறுதிப்படுத்துகிறேன். எனக்கு கேள்விகளை கேட்க வாய்ப்பு உள்ளது. என்னுடைய எல்லாகேள்விகளும் சந்தேகங்களும் என் முழுதிருப்திக்கு பதில் அளித்துள்ளன.

-ஆய்வில் எனது பங்கேற்பு தன்னார்வமாக இருப்பதையும், என் சட்டஉரிமைகள் பாதிக்கப்படாமல், காரணத்தைத் தெரிவிக்காமல் எப்போது வேண்டுமானாலும் விலக்கிக்கொள்ளலாம் என்பதையும் நான் புரிந்துகொள்கிறேன்.

-ஆய்வில் இருந்து நான் விலகி வந்தாலும் கூட, ஆராய்ச்சிக்கு பொருந்தக்கூடிய என் உடல்நல ஆவணங்களைப் பார்க்க என் நெறிமுறைக்குழு மற்றும் ஒழுங்குமுறை அதிகாரிகளுக்கு எனது அனுமதி தேவையில்லை என்பதை நான் புரிந்து கொள்கிறேன். இந்தஅணுகலை நான் ஏற்கிறேன்.

-இருப்பினும், சட்டத்தின்கீழ் தேவைப்பட்டாலன்றி, மூன்றாம் தரப்பினருக்கு வெளியிடப்பட்ட அல்லது வெளியிட்ட எந்த தகவலிலும் என் அடையாளத்தை வெளிப்படுத்தமுடியாது என்பதை நான் புரிந்து கொள்கிறேன். இந்த ஆய்விலிருந்து எழும் எந்தவொரு தரவு அல்லது முடிவுகளின் பயன்பாட்டைக் கட்டுப்படுத்துவதை நான் ஏற்றுக் கொள்கிறேன்.

-மேலே உள்ள படிப்பில்கலந்துகொள்ளவும், ஆய்வின் போதுகொடுக்கப்பட்ட அறிவுறுத்தல்களுக்கு இணங்கவும், ஆய்வுக் குழுவோடு ஒத்துழைக்கவும், என் உடல்நலம் அல்லது நலம் அல்லது எந்தவொரு எதிர்பாராத அல்லது அசாதாரண அறிகுறிகளிலும் நான் பாதிக்கப்படுகையில் உடனடியாக ஆய்வு ஊழியர்களுக்கு தெரிவிக்கவும், இந்த ஆய்வில் பங்கேற்க ஒப்புக் கொள்கிறேன்.
நான் இதனுடன் முழுமையான மருத்துவ பரிசோதனை மற்றும் நோயறிதல் சோதனைகள் இரத்தம், உயிர்வேதியியல், கதிரியக்க சோதனைகள் உட்பட சிகிச்சைக்கு உட்படுத்த அனுமதிக்கிறேன்.

<u>ஆய்வுதலைப்பு</u>: நிறைமாதத்தில் எடை குறைவாக பிறந்த குழந்தைகளின் தாய்மார்களிடம் இருக்கும் காரணங்களை அறிவதற்கான ஆய்வு.
<u>ஆய்வுமையம்</u>: எம்.எம்.சி, சென்னை

பங்கேற்பாளரின்பெயர்:

பங்கேற்பாளரின்வயது:

நோயாளிஎண்:

நோயாளியின்கையொப்பம்

நோயாளியின்பெயர்மற்றும்முகவரி:

ஆராய்ச்சியாளரின்கையொப்பம்:

நோயாளியின் தகவல் படிவம்

ஆய்வு தலைப்பு : நிறைமாதத்தில் எடை குறைவாக பிறந்த குழந்தைகளின் தாய்மார்களிடம் இருக்கும் காரணங்களை அறிவதற்கான ஆய்வு.

முக்கிய ஆய்வாளரின் பெயர்	:	டாக்டர். ஷோபனா
நிறுவன முகவரி	:	அரசு மகளிர் மகப்பேறு மருத்துவமனை, எழும்பூர், சென்னை – 600 008

நீங்கள் இந்த ஆய்வில் பங்கு பெற வரவேற்கப்படுகிறீர்கள், இந்த தாளில் அளிக்கப்பட்டுள்ள விவரங்கள் நீங்கள் ஆய்வில் பங்கு பெறுவது குறித்து தீர்மானிக்க உதவும். சந்தேகங்கள் மற்றும் கேள்விகள் தயக்கமின்றி வரவேற்கப்படுகின்றன.

நாங்கள் இந்த ஆய்விற்காக தலைமை நெறிமுறை குழுவின் (Institutional Ethics Committee) அனுமதி பெற்றுள்ளோம்.

பிறக்கும் குழந்தையின் எடையானது அக்குழந்தையின் நோய் எதிர்ப்பு தன்மையையும் குழந்தை ஆரோக்கிய தன்மையையும் தீர்மானிப்பத்தில் முக்கிய பங்கு வகுக்கிறது. எடை குறைவாக பிறக்கும் குழந்தைகளுக்கு எதிர்காலத்தில் மனவளர்ச்சி குறைவாக இருத்தல், பார்வை கோளாறுகள், சுவாச் கோளாறுகள் மற்றும் இது போன்ற பல்வேறு பாதிப்புகள் ஏற்பட வாய்ப்பு உள்ளது. மேலும் எடை குறைவாக குழந்தை பிறப்பதை தடுக்க முயற்சியும் மூலம் மேற்கூறிய அனைத்து விளைவுகளையும் தடுக்க வாய்ப்பிருக்கிறது. நிறைமாதத்தில் எடை குறைவாக பிறக்கும் குழந்தைகளின் எண்ணிக்கை குறைப்பது பற்றியும், அவ்வாறு பிறப்பிற்கான கர்ப்பிணிப் பெண்களிடம் உள்ள காரணங்களை அறிவதே இந்த ஆய்வின் நோக்கமாகும்.

உங்கள் தகவல் குறித்த நம்பிக்கை

உங்களை பற்றிய தகவல் (பரிசோதனை விவரங்கள்) எவருக்கும் தெரிவிக்கப்படமாட்டாது. இந்த ஆய்விலிருந்து அறியப்படும் விவரங்கள் கூட்டங்களில், பத்திரிக்கைகளில் இடப்படும் போது உங்களைப் பற்றிய தனிப்பட்ட தகவல்கள் இரகசியம் காக்கப்படும்.

நீங்கள் இந்த ஆய்வில் பங்கு கொள்ளாவிட்டாலும் உங்களுடைய மருத்துவ சிகிச்சையோ அல்லது ஆய்வாளருடன், மருத்துவமனையுடன் உங்களது உறவு பாதிக்கப்படாது. இதனால் உங்களுக்கு கிடைக்கப்பெற இருக்கும் எந்த ஒரு சிகிச்சை முறையிலும் மாறுதல் ஏற்படாது. நீங்கள் இந்த ஆய்வில் பங்கு பெறுவது உங்களுடைய விருப்பம். எந்த நேரத்திலும், எந்த விளக்கமும் அளிக்காமல் நீங்கள் விலகிக் கொள்ள உரிமை உண்டு.

ஆய்வாளரின் கையொப்பம்

பங்கேற்பவரின் பெயர் :

பங்கேற்பவரின் கையொப்பம்

நாள்

இடம்:

<u>சுய ஆய்வு ஒப்புதல் படிவம்</u>

ஆய்வு செய்யப்படும் தலைப்பு : "நிறைமாதத்தில் எடை குறைவாக பிறந்த குழந்தைகளின் தாய்மார்களிடம் இருக்கும் காரணங்களை அறிவதற்கான ஆய்வு

ஆய்விடம் : மகப்பேறு மகளிர் நோயியல் மற்றும் அரசு தாய்சேய் நல மருத்துவமனை, எழும்பூர், சென்னை.

பங்கு பெறுபவரின் பெயர் :
பங்கு பெறுபவரின் எண்:
பங்கு பெறுபவரின் வயது:
மருத்துவமனை எண்:

எனக்கு தரப்பட்ட ஆராய்ச்சியில் பங்கு பெறுவோர்க்கான தகவல் படிவத்தை முழுமையாக படித்து புரிந்து கொண்டேன்.

ஆராய்ச்சியின் தன்மை முழுமையாகவும் விரிவாகவும் எடுத்து உரைக்கப்பட்டது.

எனது எல்லா கேள்விகளுக்கும் விடையளிக்கப்பட்டது.
ஆய்வாளர் என் உரிமைகளையும், பொறுப்புகளையும் நன்கு விளக்கினார்.

நான் ஆய்வாளருக்கு முழு ஒத்துழைப்பு கொடுக்கவும், பரிசோதனை செய்து கொள்ளவும் அனுமதிக்கிறேன்.

எனக்கு இரத்த பரிசோதனை, ஸ்கேன் மற்றும் ஆய்விற்கு தேவையான அனைத்து பரிசோதனைகளும் செய்து கொள்ள சம்மதம்.

நான் இந்த ஆராய்ச்சியில் பங்கேற்பதால் ஏற்படும் சாதகபாதகங்களை ஆய்வாளர் விளக்கிக் கூற அறிந்து கொண்டேன்.

எப்பொழுது வேண்டுமானாலும் நான் இந்த ஆய்வில் இருந்து விலகி கொள்ளலாம் என்பதை அறிவேன். அவ்வாறு விலகிக் கொள்வதால் எனக்கு கொடுக்கப்படும் சிகிச்சையில் எந்த மாற்றமும் இருக்காது என அறிந்து கொண்டேன்.

இந்த ஆய்வுக்காக பெறப்படும் தகவல்களை ஆய்விதழ்களிலோ, கருத்தரங்கிலோ வெளியிட எனக்கு எந்தவித மறுப்போ, ஆட்சேபணையோ இல்லை.

எனது அடையாளங்கள் மற்றும் தனிப்பட்ட விவரங்கள் ஆய்விதழ்களிலோ, கருத்தரங்கிலோ வெளியிடப்படமாட்டாது என்று எனக்கு உறுதியளிக்கப்பட்டது.

எனக்கு இந்த ஆராய்ச்சி குறித்த சந்தேகம் இருந்தால் உடனே ஆய்வாளரை கேட்டு தெளிவுபடுத்தி கொள்ளலாம் என உறுதியளிக்கப்பட்டது.

இந்த ஒப்புதல் படிவத்தில் கையொப்பமிடுவதின் மூலம் இந்த படிவத்தில் உள்ளவையாவும் எனக்கு தெளிவாக எடுத்துரைக்கப்பட்டது. அதை நான் நன்கு புரிந்து கொண்டேன் என தெரிவித்துக் கொள்கிறேன்.

நோயாளியின் பெயர்

கையொப்பம் / பெருவிரல்சுவடு தேதி

ஆராய்ச்சியாளர் பெயர்

கையொப்பம் / பெருவிரல்சுவடு தேதி

சாட்சி 1

பெயர் கையொப்பம் / பெருவிரல்சுவடு தேதி

சாட்சி 2

பெயர் கையொப்பம் / பெருவிரல்சுவடு தேதி

S. No.	IPNumber	age	education	occupation	parity	interval	ANCvisits	height	weight	weightgain	disease	SBP	DBP	Pulserate	abortion	gender	urea	creatinine	Hb	delivery	apgar1full	apgar5full	IFA	Calcium	birthweight	Group
1	73755	19	illiterate	employed	3	<2years	4	142.00	53.00	<12kg	PIH	162	100	72	no	female	22.00	1.10	11.54	vaginal	4	5	Yes	Yes	1.75	Case
2	73756	19	illiterate	housewife	3	<2years	4	141.00	59.00	<12kg	PIH	140	90	82	no	male	32.00	0.90	11.60	vaginal	5	7	Yes	Yes	1.85	Case
3	20441	20	primary	employed	3	<2years	5	149.00	59.00	<12kg	PIH	150	100	80	no	male	28.00	0.90	11.60	vaginal	7	6	Yes	Yes	1.90	Case
4	20563	20	primary	housewife	3	<2years	5	147.00	80.00	<12kg	Hypothyroid	110	70	76	no	male	29.00	0.90	12.30	vaginal	5	7	Yes	Yes	1.90	Case
5	73757	19	illiterate	housewife	3	<2years	4	143.00	78.00	<12kg	nil	110	70	78	no	male	29.00	0.90	11.54	vaginal	5	4	Yes	Yes	1.95	Case
6	20845	23	primary	employed	3	<2years	4	160.00	45.00	>12kg	anaemia	140	70	88	no	female	32.00	0.80	10.73	vaginal	5	4	Yes	Yes	2.00	Case
7	73783	27	high school	housewife	3	<2years	1	139.00	79.00	<12kg	Hypothyroid	110	70	80	no	female	29.00	0.90	13.34	vaginal	5	4	Yes	Yes	2.00	Case
8	95727	27	primary	housewife	1	primi	4	162.00	43.00	>12kg	anaemia	110	70	98	yes	male	28.00	0.80	10.44	vaginal	6	4	Yes	Yes	2.00	Case
9	73902	21	illiterate	employed	1	primi	4	152.00	58.00	<12kg	PIH	140	90	76	no	male	29.00	0.90	13.34	vaginal	6	5	Yes	Yes	2.00	Case
10	31336	24	primary	housewife	3	<2years	4	160.00	46.00	<12kg	anaemia	110	70	72	no	female	28.00	0.80	10.73	vaginal	5	5	Yes	Yes	2.00	Case
11	73794	24	primary	housewife	3	<2years	4	170.00	40.00	>12kg	Placenta pre	110	70	86	no	female	32.00	0.80	11.60	vaginal	8	6	Yes	Yes	2.00	Case
12	20798	20	primary	housewife	3	<2years	5	145.00	63.00	<12kg	PIH	154	96	74	no	male	20.00	0.90	11.60	vaginal	5	6	Yes	Yes	2.00	Case
13	95709	22	primary	housewife	1	primi	4	155.00	46.00	>12kg	anaemia	110	70	94	yes	male	28.00	0.80	9.57	vaginal	5	6	Yes	Yes	2.00	Case
14	73903	21	illiterate	housewife	1	primi	4	152.00	59.00	<12kg	PIH	140	90	78	no	male	28.00	1.00	12.30	vaginal	5	6	Yes	Yes	2.00	Case
15	95726	27	primary	employed	1	primi	4	162.00	42.00	>12kg	anaemia	110	70	96	yes	male	31.00	0.80	10.44	vaginal	10	7	Yes	Yes	2.00	Case
16	20637	20	primary	housewife	3	<2years	5	146.00	55.00	<12kg	PIH	140	90	80	no	female	28.00	0.90	12.30	vaginal	7	10	Yes	Yes	2.00	Case
17	95708	22	primary	housewife	1	primi	4	155.00	45.00	>12kg	anaemia	106	76	74	yes	male	26.00	0.90	10.15	vaginal	6	10	Yes	Yes	2.00	Case
18	21720	24	primary	housewife	3	<2years	5	141.00	68.00	<12kg	diabetes	110	70	98	no	male	32.00	0.80	11.60	vaginal	5	5	Yes	Yes	2.15	Case
19	73781	24	primary	housewife	3	<2years	1	139.00	78.00	<12kg	Hypothyroid	110	70	82	no	female	30.00	0.90	13.34	vaginal	7	6	Yes	Yes	2.15	Case
20	73901	21	illiterate	housewife	1	primi	4	152.00	57.00	<12kg	PIH	140	86	90	no	female	32.00	0.80	11.54	vaginal	9	7	Yes	Yes	2.15	Case
21	73878	24	high school	housewife	2	>=2 years	3	138.00	70.00	<12kg	heartdisease	110	70	94	no	female	28.00	0.90	11.60	vaginal	3	7	Yes	Yes	2.15	Case
22	42985	19	primary	housewife	1	primi	2	155.00	41.00	>12kg	Placenta pre	110	70	88	no	female	32.00	0.80	11.60	vaginal	5	7	Yes	Yes	2.15	Case
23	95707	22	primary	employed	1	primi	4	155.00	44.00	>12kg	anaemia	110	70	76	yes	male	28.00	0.90	10.15	vaginal	6	7	Yes	Yes	2.15	Case
24	95706	22	primary	housewife	1	primi	4	155.00	43.00	>12kg	anaemia	110	70	74	yes	male	29.00	0.80	10.44	vaginal	5	8	Yes	Yes	2.15	Case
25	73900	21	illiterate	employed	1	primi	4	152.00	56.00	<12kg	PIH	140	90	84	no	female	24.00	1.00	11.60	vaginal	6	8	Yes	Yes	2.15	Case
26	95725	27	primary	housewife	1	primi	4	162.00	41.00	>12kg	anaemia	140	70	92	yes	male	31.00	1.00	10.44	vaginal	6	9	Yes	Yes	2.15	Case
27	95724	27	primary	housewife	1	primi	4	162.00	45.00	>12kg	anaemia	140	70	90	yes	male	30.00	0.90	9.92	vaginal	5	9	Yes	Yes	2.15	Case
28	73876	24	high school	housewife	2	>=2 years	3	138.00	68.00	<12kg	diabetes	110	70	72	no	female	34.00	0.80	13.34	vaginal	5	10	Yes	Yes	2.15	Case
29	20960	19	primary	housewife	2	<2years	5	142.00	56.00	<12kg	PIH	140	86	92	no	female	34.00	0.90	11.60	vaginal	5	10	Yes	Yes	2.15	Case
30	95723	27	primary	housewife	1	primi	4	164.00	45.00	>12kg	anaemia	110	70	86	yes	male	30.00	0.80	9.88	vaginal	9	4	Yes	Yes	2.20	Case
31	42976	23	high school	housewife	1	primi	1	152.00	46.00	>12kg	anaemia	110	70	88	no	female	31.00	0.80	9.86	vaginal	4	5	Yes	Yes	2.20	Case
32	42983	19	primary	housewife	1	primi	2	155.00	45.00	>12kg	anaemia	110	70	90	no	female	31.00	0.80	10.15	vaginal	5	5	Yes	Yes	2.20	Case
33	95704	22	primary	housewife	1	primi	4	156.00	44.00	>12kg	anaemia	110	70	80	yes	male	29.00	0.90	10.15	vaginal	4	5	Yes	Yes	2.20	Case
34	23375	24	primary	housewife	3	<2years	5	145.00	62.00	<12kg	PIH	140	90	96	no	male	31.00	0.90	12.76	vaginal	7	5	Yes	Yes	2.20	Case

35	73899	21	illiterate	housewife	1	primi	4	154.00	41.00	>12kg	Placenta pre	110	70	90	no	male	32.00	0.80	11.54	vaginal	8	6	Yes	Yes	2.20	Case
36	95722	26	primary	employed	1	primi	4	156.00	45.00	>12kg	anaemia	110	70	84	yes	male	32.00	0.80	10.02	vaginal	5	7	Yes	Yes	2.20	Case
37	56234	24	high school	employed	1	primi	2	152.00	52.00	<12kg	PIH	140	70	80	no	female	28.00	0.90	11.60	vaginal	5	7	Yes	Yes	2.20	Case
38	73898	21	illiterate	housewife	1	primi	4	154.00	45.00	>12kg	anaemia	110	70	78	yes	male	29.00	0.80	10.15	vaginal	4	7	Yes	Yes	2.20	Case
39	95705	22	primary	housewife	1	primi	4	156.00	45.00	>12kg	anaemia	110	70	82	yes	male	30.00	0.80	10.15	vaginal	5	9	Yes	Yes	2.20	Case
40	56237	24	high school	housewife	1	primi	2	152.00	55.00	<12kg	PIH	142	90	74	no	female	28.00	0.90	11.60	vaginal	5	9	Yes	Yes	2.20	Case
41	21917	24	primary	housewife	3	<2years	5	143.00	51.00	<12kg	PIH	140	90	94	no	female	34.00	0.80	11.60	vaginal	5	10	Yes	Yes	2.20	Case
42	95701	21	illiterate	housewife	1	primi	4	152.00	63.00	<12kg	PIH	140	90	82	no	male	29.00	0.90	12.76	vaginal	5	4	Yes	Yes	2.25	Case
43	26486	23	primary	employed	3	<2years	5	140.00	73.00	<12kg	oligohydram	110	70	72	no	male	28.00	0.90	11.60	vaginal	5	4	Yes	Yes	2.25	Case
44	23290	23	illiterate	housewife	3	<2years	3	156.00	49.00	<12kg	anaemia	110	70	90	no	female	22.00	0.90	10.15	vaginal	5	4	Yes	Yes	2.25	Case
45	85256	19	primary	housewife	1	primi	5	145.00	56.00	<12kg	PIH	150	100	82	no	female	24.00	1.00	11.60	vaginal	5	4	Yes	No	2.25	Case
46	95739	35	primary	housewife	1	primi	4	165.00	48.00	<12kg	anaemia	110	70	88	yes	male	20.00	1.00	9.22	vaginal	5	4	Yes	Yes	2.25	Case
47	73862	28	primary	employed	2	>=2 years	2	150.00	82.00	<12kg	Hypothyroid	110	70	88	no	female	31.00	0.80	11.54	vaginal	5	4	Yes	Yes	2.25	Case
48	95737	33	primary	housewife	1	primi	4	164.00	44.00	>12kg	anaemia	110	70	86	yes	male	34.00	1.00	10.15	vaginal	6	5	Yes	Yes	2.25	Case
49	73895	19	primary	employed	5	>=2 years	5	147.00	73.00	<12kg	oligohydram	110	70	98	no	male	28.00	0.90	11.60	vaginal	8	5	Yes	Yes	2.25	Case
50	85257	19	primary	housewife	1	primi	5	148.00	65.00	<12kg	PIH	150	100	84	no	male	24.00	0.80	11.54	vaginal	5	5	Yes	No	2.25	Case
51	95738	34	primary	employed	1	primi	4	165.00	49.00	<12kg	PIH	140	90	84	no	female	28.00	0.90	12.76	vaginal	5	5	Yes	Yes	2.25	Case
52	30046	19	illiterate	housewife	3	<2years	4	148.00	64.00	<12kg	PIH	140	88	78	no	male	32.00	0.90	11.60	vaginal	4	6	Yes	No	2.25	Case
53	73904	21	illiterate	employed	1	primi	4	152.00	60.00	<12kg	PIH	140	88	76	no	male	26.00	1.00	11.60	vaginal	5	6	Yes	No	2.25	Case
54	95734	27	primary	housewife	1	primi	4	160.00	41.00	>12kg	Placenta pre	110	70	92	no	male	32.00	0.80	11.54	vaginal	5	6	Yes	Yes	2.25	Case
55	23972	24	primary	employed	3	<2years	5	148.00	71.00	<12kg	UTI	110	70	72	no	female	32.00	0.80	12.76	vaginal	10	6	Yes	No	2.25	Case
56	73889	19	primary	housewife	4	>=2 years	5	148.00	66.00	<12kg	PIH	144	90	72	no	male	28.00	1.00	13.34	vaginal	6	6	Yes	No	2.25	Case
57	73872	27	high school	housewife	2	>=2 years	2	144.00	68.00	<12kg	diabetes	110	70	76	no	female	20.00	1.10	11.54	vaginal	5	6	Yes	Yes	2.25	Case
58	95702	21	primary	housewife	1	primi	4	154.00	47.00	<12kg	anaemia	110	70	96	yes	male	32.00	1.10	9.57	vaginal	6	6	Yes	Yes	2.25	Case
59	73891	24	primary	employed	4	>=2 years	5	141.00	60.00	<12kg	PIH	140	90	72	no	male	32.00	0.80	11.60	vaginal	7	7	Yes	No	2.25	Case
60	73861	28	primary	employed	2	>=2 years	2	150.00	81.00	<12kg	Hypothyroid	110	70	86	no	female	31.00	0.80	11.54	vaginal	5	7	Yes	Yes	2.25	Case
61	95718	26	primary	housewife	1	primi	4	158.00	48.00	<12kg	anaemia	110	70	74	yes	male	32.00	0.90	9.38	vaginal	8	7	Yes	Yes	2.25	Case
62	95720	26	primary	housewife	1	primi	4	156.00	48.00	<12kg	anaemia	110	70	78	yes	male	32.00	1.00	9.44	vaginal	7	7	Yes	Yes	2.25	Case
63	95719	26	primary	housewife	1	primi	4	158.00	49.00	<12kg	anaemia	110	70	76	yes	male	32.00	1.00	8.52	vaginal	6	7	Yes	Yes	2.25	Case
64	85258	32	primary	housewife	1	primi	1	161.00	44.00	>12kg	anaemia	110	70	94	yes	male	32.00	1.10	10.15	vaginal	7	7	Yes	Yes	2.25	Case
65	95735	27	primary	housewife	1	primi	4	160.00	42.00	>12kg	anaemia	110	70	82	yes	male	32.00	1.00	10.44	vaginal	6	8	Yes	Yes	2.25	Case
66	95736	33	primary	housewife	1	primi	4	164.00	43.00	>12kg	anaemia	110	70	84	yes	male	34.00	1.00	10.44	vaginal	9	8	Yes	Yes	2.25	Case
67	95716	25	primary	housewife	1	primi	4	156.00	42.00	>12kg	anaemia	140	70	94	yes	male	31.00	1.00	10.44	vaginal	7	8	Yes	Yes	2.25	Case
68	95717	26	primary	employed	1	primi	4	160.00	45.00	>12kg	anaemia	110	70	72	yes	male	30.00	0.90	10.02	vaginal	5	8	Yes	Yes	2.25	Case
69	73868	25	high school	housewife	2	>=2 years	2	144.00	69.00	<12kg	heartdisease	110	70	96	no	female	28.00	0.90	11.60	vaginal	4	8	Yes	Yes	2.25	Case
70	30530	19	illiterate	employed	3	<2years	4	147.00	72.00	<12kg	oligohydram	110	70	74	no	male	28.00	0.90	12.30	vaginal	8	8	Yes	Yes	2.25	Case
71	95721	26	primary	employed	1	primi	4	156.00	49.00	<12kg	anaemia	110	70	80	yes	male	24.00	1.00	8.52	vaginal	6	9	Yes	Yes	2.25	Case
72	95703	21	primary	housewife	1	primi	4	154.00	48.00	<12kg	anaemia	110	70	98	yes	male	32.00	1.00	9.50	vaginal	8	9	Yes	Yes	2.25	Case

73	73890	19	primary	employed	4	>=2 years	5	147.00	74.00	<12kg	polyhydram	110	70	88	no	female	30.00	0.90	13.34	vaginal	6	9	Yes	No	2.25	Case
74	25282	21	primary	employed	3	<2years	5	147.00	79.00	<12kg	Hypothyroid	110	70	84	no	male	30.00	0.90	12.76	vaginal	6	9	Yes	Yes	2.25	Case
75	72839	23	illiterate	housewife	3	<2years	3	156.00	45.00	>12kg	anaemia	110	70	92	no	female	24.00	0.80	10.15	vaginal	5	9	Yes	Yes	2.25	Case
76	25468	24	primary	housewife	3	<2years	5	140.00	69.00	<12kg	diabetes	110	70	74	no	male	34.00	0.80	11.60	vaginal	5	9	Yes	Yes	2.25	Case
77	73897	24	illiterate	employed	1	primi	4	154.00	49.00	<12kg	anaemia	110	70	92	yes	male	26.00	0.90	8.86	vaginal	5	9	Yes	Yes	2.25	Case
78	73896	19	primary	housewife	5	>=2 years	5	149.00	56.00	<12kg	PIH	106	76	72	no	female	26.00	1.10	11.60	vaginal	7	9	Yes	No	2.25	Case
79	85255	26	primary	housewife	1	primi	4	160.00	44.00	>12kg	anaemia	106	76	76	yes	male	26.00	0.90	10.15	vaginal	4	4	Yes	No	2.30	Case
80	56238	25	high school	housewife	1	primi	2	139.00	58.00	<12kg	PIH	140	90	86	no	female	29.00	0.90	11.60	vaginal	8	4	Yes	No	2.30	Case
81	73888	19	primary	employed	4	>=2 years	5	144.00	73.00	<12kg	oligohydram	110	70	76	no	male	28.00	0.90	11.60	vaginal	5	5	Yes	No	2.30	Case
82	95715	25	primary	housewife	1	primi	4	156.00	41.00	>12kg	Placenta pre	110	70	96	no	male	34.00	0.80	11.54	vaginal	4	5	Yes	No	2.30	Case
83	66404	24	high school	housewife	1	primi	3	170.00	40.00	>12kg	Placenta pre	110	70	94	no	male	32.00	0.80	11.60	vaginal	5	6	Yes	No	2.30	Case
84	95733	27	primary	housewife	1	primi	4	160.00	45.00	>12kg	anaemia	106	76	78	yes	male	28.00	0.90	9.92	vaginal	5	9	Yes	No	2.30	Case
85	73753	19	illiterate	housewife	3	<2years	4	145.00	55.00	<12kg	PIH	140	78	78	no	female	29.00	1.00	12.76	forceps	6	4	Yes	No	2.35	Case
86	73887	19	primary	employed	4	>=2 years	5	143.00	79.00	<12kg	Hypothyroid	106	76	90	no	male	32.00	0.80	13.34	forceps	4	4	Yes	No	2.35	Case
87	85254	26	primary	housewife	1	primi	4	160.00	43.00	>12kg	anaemia	106	76	80	yes	male	28.00	0.80	10.44	vaginal	4	6	Yes	No	2.35	Case
88	31646	24	primary	housewife	3	<2years	5	140.00	70.00	<12kg	heartdisease	110	70	98	no	male	28.00	0.90	11.54	breech	5	4	Yes	No	2.40	Case
89	73880	24	high school	housewife	2	>=2 years	3	155.00	42.00	>12kg	anaemia	106	76	82	yes	female	28.00	0.90	10.73	forceps	5	5	Yes	No	2.40	Case
90	30862	19	illiterate	housewife	3	<2years	4	146.00	52.00	<12kg	PIH	140	86	98	no	female	20.00	0.80	11.60	caesarean	7	5	Yes	No	2.40	Case
91	85251	25	primary	housewife	1	primi	4	156.00	48.00	<12kg	anaemia	106	76	84	yes	male	28.00	0.90	9.44	forceps	7	6	Yes	No	2.40	Case
92	95732	27	primary	housewife	1	primi	4	160.00	49.00	<12kg	PIH	140	86	72	no	female	22.00	0.80	13.34	breech	6	7	Yes	No	2.40	Case
93	95714	24	primary	employed	1	primi	4	156.00	43.00	>12kg	anaemia	140	70	96	yes	male	32.00	0.80	10.44	forceps	6	7	Yes	No	2.40	Case
94	56236	24	high school	housewife	1	primi	2	139.00	60.00	<12kg	PIH	140	70	82	no	female	29.00	1.00	11.31	breech	6	8	Yes	No	2.40	Case
95	85252	25	primary	housewife	1	primi	4	156.00	49.00	<12kg	anaemia	110	70	94	yes	male	24.00	0.90	8.70	forceps	4	8	Yes	No	2.40	Case
96	66405	19	high school	housewife	1	primi	3	143.00	76.00	<12kg	asthma	110	70	90	yes	male	32.00	0.80	11.54	breech	4	8	Yes	No	2.40	Case
97	85253	25	primary	housewife	1	primi	4	156.00	45.00	>12kg	anaemia	110	70	96	yes	male	24.00	0.90	10.15	forceps	8	9	Yes	No	2.40	Case
98	73854	19	illiterate	housewife	2	>=2 years	4	152.00	69.00	<12kg	diabetes	110	70	78	no	male	22.00	1.10	11.60	breech	5	9	Yes	No	2.40	Case
99	73860	21	primary	employed	2	>=2 years	2	139.00	62.00	<12kg	PIH	140	86	96	yes	male	28.00	0.90	11.80	breech	4	10	Yes	No	2.40	Case
100	95731	27	primary	housewife	1	primi	4	160.00	48.00	<12kg	anaemia	140	70	72	yes	male	32.00	1.00	9.38	caesarean	8	5	Yes	No	2.42	Case
101	56229	23	primary	employed	1	primi	2	139.00	80.00	<12kg	nil	106	76	92	no	female	32.00	0.80	12.76	caesarean	5	6	Yes	No	2.42	Case
102	95713	22	primary	housewife	1	primi	4	154.00	46.00	>12kg	anaemia	140	70	98	yes	male	32.00	0.90	9.70	caesarean	5	10	Yes	No	2.42	Case
103	95712	22	primary	housewife	1	primi	4	155.00	49.00	<12kg	anaemia	110	70	88	yes	male	29.00	0.80	8.70	caesarean	7	4	Yes	No	2.44	Case
104	73852	19	illiterate	housewife	2	>=2 years	4	152.00	67.00	<12kg	diabetes	110	70	80	no	male	24.00	1.00	12.76	caesarean	4	5	Yes	No	2.44	Case
105	85267	18	high school	housewife	1	primi	1	152.00	47.00	<12kg	anaemia	110	70	90	no	female	29.00	0.90	10.15	caesarean	5	6	Yes	No	2.44	Case
106	95730	27	primary	housewife	1	primi	4	161.00	49.00	<12kg	PIH	140	70	84	no	female	29.00	1.00	13.34	caesarean	4	7	Yes	No	2.44	Case
107	33783	24	primary	employed	3	<2years	5	140.00	71.00	<12kg	UTI	110	70	72	no	female	32.00	0.80	13.34	caesarean	4	7	Yes	No	2.44	Case
108	85250	25	primary	housewife	1	primi	4	156.00	47.00	<12kg	anaemia	110	70	98	yes	male	26.00	0.90	9.56	caesarean	7	8	Yes	No	2.44	Case
109	85249	25	primary	housewife	1	primi	4	156.00	46.00	>12kg	anaemia	140	70	74	yes	male	32.00	0.90	9.57	caesarean	5	8	Yes	No	2.44	Case
110	34996	23	primary	employed	3	<2years	5	140.00	74.00	<12kg	polyhydram	110	70	90	no	female	31.00	0.80	12.76	caesarean	6	8	Yes	No	2.44	Case

111	73853	19	illiterate	housewife	2	>=2 years	4	152.00	68.00	<12kg	diabetes	110	70	82	no	male	24.00	1.00	11.60	caesarean	6	9	Yes	No	2.44	Case
112	42982	19	primary	employed	1	primi	2	139.00	81.00	<12kg	nil	106	76	94	no	female	32.00	0.80	11.54	caesarean	6	10	Yes	No	2.44	Case
113	85241	35	primary	housewife	1	primi	4	168.00	45.00	>12kg	anaemia	110	72	98	yes	male	31.00	0.80	9.86	caesarean	5	4	Yes	No	2.45	Case
114	85268	19	high school	housewife	1	primi	1	138.00	66.00	<12kg	PIH	140	88	80	no	female	32.00	0.90	12.76	caesarean	5	4	Yes	No	2.45	Case
115	85247	25	primary	housewife	1	primi	4	156.00	44.00	>12kg	anaemia	110	70	80	yes	male	32.00	0.80	10.15	caesarean	6	4	Yes	No	2.45	Case
116	66403	23	high school	housewife	1	primi	3	170.00	38.00	>12kg	Abruptio pla	106	76	84	no	male	26.00	1.00	13.34	caesarean	6	4	Yes	No	2.45	Case
117	73905	21	illiterate	housewife	1	primi	4	152.00	61.00	<12kg	PIH	140	86	74	no	male	24.00	0.90	11.54	caesarean	5	5	Yes	No	2.45	Case
118	73886	27	illiterate	housewife	4	>=2 years	4	170.00	39.00	>12kg	nil	110	70	74	no	female	22.00	1.10	11.45	caesarean	6	5	Yes	No	2.45	Case
119	85242	36	primary	housewife	1	primi	4	168.00	43.00	>12kg	anaemia	110	70	72	yes	male	31.00	0.80	10.40	caesarean	5	6	Yes	No	2.45	Case
120	73754	19	illiterate	housewife	3	<2years	4	141.00	58.00	<12kg	PIH	104	70	86	no	male	28.00	0.90	13.34	caesarean	7	6	Yes	No	2.45	Case
121	85246	25	primary	housewife	1	primi	4	156.00	43.00	>12kg	anaemia	110	70	78	yes	male	32.00	0.80	10.44	caesarean	5	6	Yes	No	2.45	Case
122	85248	25	primary	housewife	1	primi	4	156.00	45.00	>12kg	anaemia	110	70	82	yes	male	32.00	0.80	10.15	caesarean	5	6	Yes	No	2.45	Case
123	85244	25	primary	housewife	1	primi	4	156.00	41.00	>12kg	Abruptio pla	106	76	86	no	male	26.00	1.00	11.54	caesarean	6	6	Yes	No	2.45	Case
124	73850	19	illiterate	housewife	2	>=2 years	4	154.00	44.00	>12kg	anaemia	110	70	94	yes	male	30.00	0.80	10.29	caesarean	4	7	Yes	No	2.45	Case
125	66400	21	high school	housewife	1	primi	3	170.00	39.00	>12kg	Abruptio pla	110	70	78	no	male	24.00	1.00	12.30	caesarean	7	7	Yes	No	2.45	Case
126	42978	32	high school	housewife	1	primi	2	139.00	56.00	<12kg	PIH	140	90	86	no	female	32.00	0.90	11.60	caesarean	5	7	Yes	No	2.45	Case
127	42861	23	primary	employed	3	<2years	5	140.00	75.00	<12kg	polyhydram	110	70	92	no	female	31.00	0.80	12.76	caesarean	8	7	No	No	2.45	Case
128	73906	21	illiterate	employed	1	primi	4	152.00	62.00	<12kg	PIH	140	90	76	no	male	32.00	0.80	13.34	caesarean	4	7	Yes	No	2.45	Case
129	42986	19	primary	employed	1	primi	2	139.00	82.00	<12kg	nil	106	76	72	yes	male	32.00	0.80	11.60	caesarean	6	8	Yes	No	2.45	Case
130	73864	24	high school	employed	2	>=2 years	2	146.00	82.00	<12kg	nil	106	76	98	no	female	32.00	0.80	12.30	caesarean	5	8	Yes	No	2.45	Case
131	37486	24	primary	employed	3	<2years	5	140.00	72.00	<12kg	oligohydram	110	70	78	no	male	28.00	0.90	12.76	caesarean	4	8	Yes	No	2.45	Case
132	66401	32	high school	housewife	1	primi	3	170.00	38.00	>12kg	Abruptio pla	110	70	80	no	male	24.00	1.00	12.76	caesarean	7	8	Yes	No	2.45	Case
133	85260	24	primary	housewife	1	primi	1	156.00	45.00	>12kg	anaemia	110	70	92	no	female	29.00	0.80	10.44	caesarean	9	8	Yes	No	2.45	Case
134	73884	25	primary	housewife	2	>=2 years	4	156.00	41.00	>12kg	Abruptio pla	110	70	98	no	female	34.00	0.80	11.54	caesarean	5	8	Yes	No	2.45	Case
135	61967	24	high school	housewife	1	primi	3	170.00	39.00	>12kg	Placenta pre	110	70	76	no	male	24.00	1.00	11.60	caesarean	5	8	Yes	No	2.45	Case
136	66402	18	high school	housewife	1	primi	3	170.00	40.00	>12kg	Abruptio pla	110	70	82	no	male	26.00	1.00	11.60	caesarean	7	8	Yes	No	2.45	Case
137	73863	24	high school	employed	2	>=2 years	2	146.00	81.00	<12kg	nil	106	76	96	no	female	32.00	0.80	12.76	caesarean	5	8	Yes	No	2.45	Case
138	85243	36	primary	housewife	1	primi	4	168.00	44.00	>12kg	anaemia	110	70	74	yes	male	32.00	0.80	10.15	caesarean	7	9	Yes	No	2.45	Case
139	73851	19	illiterate	housewife	2	>=2 years	4	154.00	45.00	>12kg	anaemia	110	70	96	yes	male	30.00	1.00	10.15	caesarean	6	9	Yes	No	2.45	Case
140	73801	23	high school	housewife	2	>=2 years	3	138.00	54.00	<12kg	PIH	140	70	86	no	female	30.00	1.00	12.30	caesarean	5	9	Yes	No	2.45	Case
141	73885	22	high school	housewife	4	>=2 years	3	170.00	39.00	>12kg	Abruptio pla	110	70	72	no	female	20.00	1.10	13.34	caesarean	6	10	Yes	No	2.45	Case
142	85245	25	primary	housewife	1	primi	4	156.00	42.00	>12kg	anaemia	110	70	76	yes	male	32.00	0.80	10.44	caesarean	6	10	Yes	No	2.45	Case
143	85262	23	primary	housewife	1	primi	1	152.00	45.00	>12kg	anaemia	110	70	90	no	female	34.00	0.80	9.88	caesarean	8	4	No	No	2.46	Case
144	42984	19	primary	housewife	1	primi	2	160.00	45.00	>12kg	anaemia	110	70	88	no	female	34.00	0.80	10.73	caesarean	5	6	No	No	2.46	Case
145	95729	27	primary	housewife	1	primi	4	161.00	48.00	<12kg	anaemia	110	70	86	yes	male	32.00	0.80	9.22	caesarean	6	7	No	No	2.46	Case
146	95711	22	primary	housewife	1	primi	4	155.00	48.00	<12kg	anaemia	110	70	84	yes	male	32.00	0.90	9.50	caesarean	6	10	No	No	2.46	Case
147	95728	27	primary	housewife	1	primi	4	161.00	47.00	<12kg	anaemia	110	70	94	yes	male	22.00	1.10	9.52	caesarean	7	5	No	No	2.48	Case
148	95710	22	primary	housewife	1	primi	4	155.00	47.00	<12kg	anaemia	110	70	92	yes	male	20.00	1.10	9.56	caesarean	6	8	No	No	2.48	Case

149	42979	18	primary	housewife	1	primi	2	160.00	41.00	>12kg	nil	106	76	88	no	female	26.00	0.90	11.54	caesarean	6	8	No	No	2.48	Case
150	73796	24	primary	housewife	3	<2years	4	170.00	38.00	>12kg	nil	106	76	90	no	female	28.00	0.90	11.60	caesarean	5	8	No	No	2.48	Case
151	21230	31	illiterate	housewife	2	<2years	4	170.00	39.00	>12kg	Abruptio pla	106	76	94	no	female	28.00	0.90	12.30	vaginal	9	6	Yes	No	2.50	Control
152	36618	25	primary	housewife	2	<2years	4	156.00	44.00	>12kg	anaemia	110	70	72	no	female	24.00	1.00	10.60	vaginal	4	6	No	No	2.50	Control
153	42973	19	high school	housewife	1	primi	1	138.00	64.00	<12kg	PIH	140	86	76	no	female	28.00	1.00	13.34	vaginal	8	7	Yes	No	2.50	Control
154	20782	20	high school	housewife	2	<2years	3	170.00	38.00	>12kg	Abruptio pla	106	76	92	no	female	28.00	0.90	11.60	vaginal	8	7	Yes	No	2.50	Control
155	24069	31	illiterate	housewife	2	<2years	4	170.00	38.00	>12kg	Abruptio pla	106	76	96	no	female	28.00	0.90	12.76	vaginal	5	7	Yes	No	2.50	Control
156	73800	24	high school	housewife	2	>=2 years	3	170.00	40.00	>12kg	Abruptio pla	104	70	98	no	female	28.00	0.90	11.60	vaginal	4	7	Yes	No	2.50	Control
157	31696	25	illiterate	housewife	3	<2years	4	160.00	47.00	<12kg	anaemia	110	70	98	no	female	24.00	1.00	10.15	vaginal	6	8	Yes	No	2.50	Control
158	73786	32	primary	housewife	3	<2years	1	165.00	46.00	<12kg	anaemia	110	70	82	no	female	28.00	0.90	10.44	vaginal	7	8	Yes	No	2.50	Control
159	73784	32	high school	housewife	3	<2years	1	165.00	47.00	<12kg	anaemia	110	70	78	no	female	26.00	1.00	10.44	vaginal	5	8	No	No	2.50	Control
160	42974	24	high school	housewife	1	primi	1	156.00	42.00	>12kg	anaemia	110	70	74	no	female	26.00	1.00	10.54	vaginal	4	8	No	No	2.50	Control
161	73780	22	primary	housewife	3	<2years	1	155.00	46.00	>12kg	anaemia	110	70	76	no	female	26.00	1.00	9.92	vaginal	6	9	No	No	2.50	Control
162	73799	24	high school	housewife	2	>=2 years	3	138.00	67.00	<12kg	diabetes	110	70	84	no	female	24.00	1.00	13.34	vaginal	8	9	Yes	No	2.50	Control
163	21238	23	illiterate	housewife	3	<2years	3	160.00	44.00	>12kg	anaemia	110	70	96	no	female	24.00	1.00	10.15	vaginal	5	9	Yes	No	2.50	Control
164	73785	22	primary	housewife	3	<2years	1	155.00	47.00	<12kg	anaemia	110	70	80	no	female	26.00	0.90	9.92	vaginal	5	9	Yes	No	2.50	Control
165	27646	25	illiterate	housewife	2	<2years	4	156.00	47.00	<12kg	anaemia	110	70	86	no	female	28.00	0.90	9.70	vaginal	5	7	Yes	No	2.60	Control
166	73779	28	primary	housewife	3	<2years	1	144.00	64.00	<12kg	PIH	140	90	90	no	female	30.00	0.90	11.54	vaginal	5	7	Yes	No	2.60	Control
167	73846	19	illiterate	employed	2	>=2 years	4	150.00	52.00	<12kg	PIH	140	70	72	no	female	24.00	1.00	11.54	vaginal	8	7	Yes	No	2.60	Control
168	73842	19	illiterate	housewife	2	>=2 years	4	152.00	65.00	<12kg	PIH	140	90	94	no	male	20.00	0.90	11.60	vaginal	8	7	Yes	No	2.60	Control
169	73841	19	illiterate	housewife	2	>=2 years	4	152.00	64.00	<12kg	PIH	140	80	76	no	male	32.00	0.90	11.60	vaginal	6	7	Yes	No	2.60	Control
170	73845	19	illiterate	housewife	2	>=2 years	4	150.00	51.00	<12kg	PIH	140	70	98	no	female	24.00	0.90	11.60	vaginal	8	7	Yes	No	2.60	Control
171	73782	28	primary	housewife	3	<2years	1	144.00	65.00	<12kg	PIH	140	90	90	no	female	34.00	0.90	11.54	vaginal	5	8	Yes	No	2.60	Control
172	73865	21	high school	employed	2	>=2 years	2	146.00	50.00	<12kg	PIH	140	90	92	no	female	26.00	1.00	12.76	vaginal	5	8	Yes	No	2.60	Control
173	73847	19	illiterate	employed	2	>=2 years	4	150.00	52.00	<12kg	PIH	140	80	80	no	female	34.00	0.80	11.60	vaginal	6	8	Yes	No	2.60	Control
174	73840	24	primary	housewife	2	>=2 years	3	170.00	38.00	>12kg	Abruptio pla	110	70	72	no	male	29.00	0.90	13.34	vaginal	7	8	Yes	No	2.60	Control
175	20952	27	illiterate	housewife	2	<2years	4	156.00	43.00	>12kg	anaemia	110	70	84	no	female	28.00	0.90	9.86	vaginal	5	9	Yes	No	2.60	Control
176	73844	19	illiterate	housewife	2	>=2 years	4	150.00	50.00	<12kg	PIH	140	80	78	no	female	32.00	0.90	12.30	vaginal	5	9	Yes	No	2.60	Control
177	73843	19	illiterate	housewife	2	>=2 years	4	152.00	66.00	<12kg	PIH	140	90	96	no	male	22.00	0.90	11.54	vaginal	6	9	Yes	No	2.60	Control
178	73871	23	high school	housewife	2	>=2 years	2	152.00	53.00	<12kg	PIH	140	80	74	no	female	32.00	0.90	11.31	vaginal	9	9	Yes	No	2.60	Control
179	73866	23	high school	employed	2	>=2 years	2	152.00	52.00	<12kg	PIH	140	90	92	no	female	31.00	0.80	11.31	vaginal	5	9	Yes	No	2.60	Control
180	25272	25	primary	housewife	3	<2years	4	149.00	54.00	<12kg	PIH	140	90	88	no	female	29.00	0.80	11.60	vaginal	9	9	Yes	No	2.60	Control
181	73849	19	illiterate	housewife	2	>=2 years	4	154.00	43.00	>12kg	anaemia	110	70	90	yes	male	28.00	0.90	10.44	vaginal	5	9	Yes	No	2.60	Control
182	73870	21	high school	housewife	2	>=2 years	2	146.00	51.00	<12kg	PIH	140	90	94	no	female	30.00	0.90	12.76	vaginal	9	9	Yes	No	2.60	Control
183	22463	25	primary	housewife	3	<2years	4	149.00	53.00	<12kg	PIH	140	90	88	no	female	34.00	0.90	11.60	vaginal	8	9	Yes	No	2.60	Control
184	73848	19	illiterate	housewife	2	>=2 years	4	154.00	42.00	>12kg	anaemia	110	70	88	yes	male	28.00	0.90	10.44	vaginal	8	9	Yes	No	2.60	Control
185	73839	21	primary	housewife	2	>=2 years	3	169.00	38.00	>12kg	Abruptio pla	110	70	76	no	male	29.00	0.90	11.54	vaginal	6	7	Yes	No	2.65	Control
186	73838	18	primary	housewife	2	>=2 years	3	169.00	39.00	>12kg	Abruptio pla	110	70	74	no	male	29.00	0.90	12.76	vaginal	7	8	Yes	No	2.65	Control

187	85263	18	primary	housewife	1	primi	1	161.00	46.00	<12kg	anaemia	110	70	92	no	female	29.00	0.90	10.54	vaginal	5	8	Yes	No	2.65	Control
188	85266	26	primary	housewife	1	primi	1	161.00	45.00	>12kg	anaemia	110	70	94	no	female	29.00	0.90	10.60	vaginal	5	9	Yes	No	2.65	Control
189	73837	32	primary	housewife	2	>=2 years	2	170.00	40.00	>12kg	Abruptio pla	110	70	78	no	male	30.00	0.90	11.60	vaginal	9	8	Yes	No	2.70	Control
190	73882	22	high school	housewife	2	>=2 years	3	154.00	42.00	>12kg	anaemia	110	70	96	no	female	29.00	0.90	10.15	vaginal	10	8	Yes	No	2.70	Control
191	73836	29	primary	housewife	2	>=2 years	5	147.00	75.00	<12kg	asthma	110	70	92	no	male	32.00	0.80	11.54	vaginal	6	8	Yes	No	2.70	Control
192	73883	22	high school	housewife	2	>=2 years	3	154.00	43.00	>12kg	anaemia	110	70	98	no	female	30.00	0.90	10.15	vaginal	5	10	Yes	No	2.70	Control
193	73835	28	primary	housewife	2	>=2 years	5	148.00	69.00	<12kg	heartdiseas	110	70	72	no	male	28.00	0.90	11.60	vaginal	6	6	Yes	No	2.75	Control
194	73827	28	primary	employed	2	>=2 years	5	147.00	76.00	<12kg	nil	106	76	74	no	male	32.00	0.80	11.60	vaginal	5	7	Yes	No	2.75	Control
195	73833	28	primary	employed	2	>=2 years	5	143.00	82.00	<12kg	nil	104	70	76	no	male	34.00	0.80	11.60	vaginal	8	8	Yes	No	2.75	Control
196	42987	23	primary	housewife	1	primi	2	155.00	49.00	<12kg	anaemia	110	70	72	no	female	30.00	0.90	9.86	vaginal	6	8	Yes	No	2.75	Control
197	42981	19	primary	housewife	1	primi	2	148.00	63.00	<12kg	PIH	140	90	74	no	female	24.00	0.90	11.60	vaginal	9	8	Yes	No	2.75	Control
198	73789	28	high school	housewife	3	<2years	2	164.00	41.00	>12kg	anaemia	110	70	76	no	female	31.00	0.80	10.15	vaginal	7	8	Yes	No	2.75	Control
199	56228	24	primary	housewife	1	primi	2	155.00	48.00	<12kg	anaemia	110	70	74	no	female	31.00	0.80	9.86	vaginal	8	8	Yes	No	2.75	Control
200	73829	28	primary	housewife	2	>=2 years	5	145.00	59.00	<12kg	PIH	140	90	78	no	male	26.00	0.90	11.60	vaginal	8	8	Yes	No	2.75	Control
201	73875	19	primary	employed	2	>=2 years	2	162.00	49.00	<12kg	PIH	140	80	88	no	female	29.00	0.90	12.30	vaginal	8	8	Yes	No	2.75	Control
202	73859	19	primary	housewife	2	>=2 years	2	162.00	48.00	<12kg	anaemia	106	76	80	no	female	32.00	0.80	10.15	vaginal	8	8	Yes	No	2.75	Control
203	73826	28	primary	housewife	2	>=2 years	5	148.00	68.00	<12kg	diabetes	110	70	86	no	male	26.00	1.00	11.60	vaginal	10	9	Yes	No	2.75	Control
204	73834	28	primary	employed	2	>=2 years	5	145.00	60.00	<12kg	PIH	140	86	84	no	male	29.00	0.90	11.54	vaginal	5	9	Yes	No	2.75	Control
205	73830	28	primary	housewife	2	>=2 years	5	141.00	64.00	<12kg	PIH	140	86	78	no	male	24.00	0.80	11.60	vaginal	5	9	Yes	No	2.75	Control
206	42980	19	primary	housewife	1	primi	2	148.00	62.00	<12kg	PIH	140	80	82	no	female	32.00	0.90	11.60	vaginal	7	9	Yes	No	2.75	Control
207	73828	28	primary	housewife	2	>=2 years	5	146.00	53.00	<12kg	PIH	140	90	76	no	female	24.00	1.00	11.54	vaginal	5	9	Yes	No	2.75	Control
208	56235	22	high school	housewife	1	primi	2	152.00	50.00	<12kg	PIH	140	80	84	no	female	32.00	0.90	13.05	vaginal	5	9	Yes	No	2.75	Control
209	73790	28	high school	housewife	3	<2years	2	164.00	42.00	>12kg	anaemia	106	76	78	no	female	32.00	0.80	10.02	vaginal	5	9	Yes	No	2.75	Control
210	61965	22	high school	housewife	1	primi	2	152.00	51.00	<12kg	PIH	140	80	86	no	female	32.00	0.80	13.05	vaginal	8	9	Yes	No	2.75	Control
211	73832	28	primary	housewife	2	>=2 years	5	141.00	65.00	<12kg	PIH	140	86	82	no	male	26.00	0.80	11.54	vaginal	5	9	Yes	No	2.75	Control
212	73831	28	primary	housewife	2	>=2 years	5	142.00	55.00	<12kg	PIH	140	86	80	no	female	24.00	0.80	12.76	vaginal	7	10	Yes	No	2.75	Control
213	85259	19	primary	housewife	1	primi	1	156.00	41.00	>12kg	Placenta pre	110	70	80	no	female	30.00	0.90	11.60	vaginal	9	6	Yes	Yes	2.80	Control
214	73824	32	primary	housewife	2	>=2 years	5	146.00	52.00	<12kg	PIH	150	100	98	no	female	28.00	1.00	11.60	vaginal	6	7	Yes	No	2.80	Control
215	73820	31	primary	employed	2	>=2 years	5	143.00	80.00	<12kg	Hypothyroid	110	70	82	no	male	22.00	1.10	12.76	vaginal	6	7	Yes	Yes	2.80	Control
216	73823	31	primary	employed	2	>=2 years	5	141.00	61.00	<12kg	PIH	150	100	96	no	male	32.00	0.80	11.54	vaginal	9	7	Yes	No	2.80	Control
217	85265	21	primary	housewife	1	primi	1	139.00	76.00	<12kg	asthma	110	70	94	no	female	32.00	0.80	11.54	vaginal	8	7	Yes	Yes	2.80	Control
218	73791	21	high school	housewife	3	<2years	2	158.00	47.00	<12kg	anaemia	106	76	88	no	female	32.00	0.80	10.73	vaginal	7	7	Yes	Yes	2.80	Control
219	73817	29	primary	housewife	2	>=2 years	5	148.00	67.00	<12kg	diabetes	110	70	90	no	male	26.00	1.00	12.30	vaginal	7	7	Yes	Yes	2.80	Control
220	73881	21	high school	housewife	2	>=2 years	3	156.00	48.00	<12kg	anaemia	106	76	90	no	female	32.00	0.80	10.73	vaginal	8	8	Yes	Yes	2.80	Control
221	73818	31	primary	employed	2	>=2 years	5	142.00	54.00	<12kg	PIH	150	100	88	no	female	34.00	0.80	11.54	vaginal	7	8	Yes	No	2.80	Control
222	73822	31	primary	housewife	2	>=2 years	5	145.00	57.00	<12kg	PIH	150	100	94	no	male	26.00	0.90	11.54	vaginal	6	8	Yes	No	2.80	Control
223	56232	19	high school	housewife	1	primi	2	144.00	67.00	<12kg	diabetes	110	70	88	no	female	26.00	1.00	11.54	vaginal	7	8	Yes	Yes	2.80	Control
224	26120	24	illiterate	housewife	2	<2years	4	149.00	55.00	<12kg	PIH	154	100	76	no	female	22.00	1.10	13.34	vaginal	6	8	Yes	Yes	2.80	Control

225	73819	31	primary	housewife	2	>=2 years	5	141.00	62.00	<12kg	PIH	150	100	90	no	male	26.00	1.00	13.34	vaginal	6	8	Yes	No	2.80	Control
226	42975	21	high school	employed	1	primi	1	139.00	77.00	<12kg	Hypothyroid	110	70	78	no	female	34.00	0.80	11.54	vaginal	7	8	Yes	Yes	2.80	Control
227	73814	28	primary	housewife	2	>=2 years	5	149.00	57.00	<12kg	PIH	110	70	82	no	male	26.00	0.80	11.54	vaginal	6	9	Yes	No	2.80	Control
228	42977	19	primary	housewife	1	primi	1	156.00	43.00	>12kg	anaemia	106	76	84	no	female	32.00	0.80	10.73	vaginal	6	9	Yes	Yes	2.80	Control
229	73816	28	primary	employed	2	>=2 years	5	143.00	81.00	<12kg	Hypothyroid	110	70	80	no	male	20.00	1.10	11.60	vaginal	5	9	Yes	Yes	2.80	Control
230	22742	27	illiterate	housewife	2	<2years	4	156.00	45.00	>12kg	anaemia	106	76	82	no	female	32.00	0.80	10.73	vaginal	5	9	Yes	Yes	2.80	Control
231	73787	21	primary	housewife	3	<2years	2	158.00	46.00	<12kg	anaemia	106	76	86	no	female	32.00	0.80	10.73	vaginal	5	9	Yes	Yes	2.80	Control
232	56230	19	high school	employed	1	primi	2	144.00	66.00	<12kg	PIH	140	90	80	no	female	32.00	0.80	12.76	vaginal	5	9	Yes	Yes	2.80	Control
233	73815	28	primary	housewife	2	>=2 years	5	141.00	63.00	<12kg	PIH	150	100	86	no	male	26.00	1.00	12.30	vaginal	6	9	Yes	No	2.80	Control
234	73825	28	primary	employed	2	>=2 years	5	144.00	74.00	<12kg	polyhydram	110	70	94	no	female	32.00	0.80	12.30	vaginal	9	10	Yes	No	2.80	Control
235	73821	30	primary	housewife	2	>=2 years	5	145.00	58.00	<12kg	PIH	150	100	92	no	male	26.00	1.00	12.76	vaginal	9	10	Yes	No	2.80	Control
236	33328	24	illiterate	housewife	2	<2years	4	149.00	55.00	<12kg	PIH	152	100	78	no	female	24.00	1.10	13.56	vaginal	10	10	Yes	Yes	2.80	Control
237	73877	24	high school	employed	2	>=2 years	3	144.00	70.00	<12kg	UTI	110	70	72	no	female	32.00	0.80	13.34	vaginal	5	6	Yes	Yes	2.90	Control
238	73811	24	primary	employed	2	>=2 years	5	141.00	66.00	<12kg	PIH	110	70	88	no	male	20.00	1.10	11.54	vaginal	7	7	Yes	Yes	2.90	Control
239	73813	27	primary	employed	2	>=2 years	5	147.00	77.00	<12kg	nil	110	70	84	no	male	24.00	1.00	11.54	vaginal	8	7	Yes	Yes	2.90	Control
240	73808	23	primary	housewife	2	>=2 years	5	141.00	67.00	<12kg	diabetes	110	70	92	no	male	26.00	0.90	12.76	vaginal	10	8	Yes	Yes	2.90	Control
241	61966	24	primary	housewife	1	primi	2	162.00	46.00	<12kg	anaemia	110	70	94	no	female	34.00	0.80	10.73	vaginal	7	8	Yes	Yes	2.90	Control
242	73810	24	primary	housewife	2	>=2 years	5	149.00	58.00	<12kg	PIH	110	70	86	no	male	26.00	1.10	12.76	vaginal	8	8	Yes	Yes	2.90	Control
243	73798	32	high school	housewife	4	>=2 years	2	160.00	42.00	>12kg	anaemia	110	70	98	no	female	22.00	1.10	10.54	vaginal	7	8	Yes	Yes	2.90	Control
244	61964	24	high school	housewife	1	primi	2	162.00	47.00	<12kg	anaemia	104	70	92	no	female	34.00	0.80	10.73	vaginal	5	9	Yes	Yes	2.90	Control
245	73879	23	high school	employed	2	>=2 years	3	144.00	71.00	<12kg	UTI	110	70	72	no	female	32.00	0.80	12.76	vaginal	9	9	Yes	Yes	2.90	Control
246	73809	23	primary	housewife	2	>=2 years	5	142.00	55.00	<12kg	PIH	110	70	84	no	female	26.00	0.80	13.34	vaginal	8	9	Yes	Yes	2.90	Control
247	73812	24	primary	housewife	2	>=2 years	5	143.00	50.00	<12kg	PIH	140	80	86	no	female	26.00	0.80	12.76	vaginal	5	9	Yes	Yes	2.90	Control
248	73797	31	primary	housewife	4	<2years	2	160.00	43.00	>12kg	anaemia	110	70	96	no	female	20.00	1.10	10.54	vaginal	6	10	Yes	Yes	2.90	Control
249	73867	24	high school	housewife	2	>=2 years	2	156.00	47.00	<12kg	anaemia	110	70	78	no	female	26.00	1.00	10.02	forceps	6	6	Yes	Yes	3.00	Control
250	73894	23	high school	housewife	5	>=2 years	2	169.00	40.00	>12kg	Placenta pre	110	70	86	no	female	32.00	0.80	12.76	vaginal	7	6	Yes	Yes	3.00	Control
251	73775	23	illiterate	employed	3	<2years	4	144.00	72.00	<12kg	oligohydram	110	70	80	no	male	29.00	0.90	12.76	vaginal	10	7	Yes	Yes	3.00	Control
252	73858	25	high school	housewife	2	>=2 years	1	156.00	45.00	>12kg	anaemia	110	72	76	no	female	24.00	1.00	9.92	breech	10	7	Yes	Yes	3.00	Control
253	73777	24	illiterate	housewife	3	<2years	4	153.00	43.00	>12kg	anaemia	110	70	84	yes	male	26.00	0.90	10.44	breech	5	7	Yes	Yes	3.00	Control
254	73807	23	primary	housewife	2	>=2 years	5	145.00	61.00	<12kg	PIH	140	70	98	no	male	31.00	0.80	11.54	vaginal	7	7	Yes	Yes	3.00	Control
255	73806	23	primary	employed	2	>=2 years	5	146.00	54.00	<12kg	PIH	140	80	92	no	female	30.00	0.90	13.34	vaginal	5	7	Yes	Yes	3.00	Control
256	73855	25	primary	housewife	2	>=2 years	1	156.00	44.00	>12kg	anaemia	110	70	72	no	female	24.00	1.00	10.02	breech	7	7	Yes	Yes	3.00	Control
257	73774	24	illiterate	housewife	3	<2years	4	153.00	41.00	>12kg	Placenta pre	110	70	88	no	male	32.00	0.80	11.60	vaginal	5	7	Yes	Yes	3.00	Control
258	73778	24	illiterate	housewife	3	<2years	4	153.00	44.00	>12kg	anaemia	110	70	86	yes	male	28.00	0.90	10.29	breech	7	7	Yes	Yes	3.00	Control
259	73804	23	primary	employed	2	>=2 years	5	148.00	70.00	<12kg	UTI	110	70	72	no	female	34.00	0.80	12.76	vaginal	6	8	Yes	Yes	3.00	Control
260	73776	24	illiterate	housewife	3	<2years	4	153.00	42.00	>12kg	anaemia	110	70	82	yes	male	26.00	1.00	10.44	breech	8	8	Yes	Yes	3.00	Control
261	73892	21	high school	housewife	4	>=2 years	3	152.00	54.00	<12kg	PIH	140	80	90	no	female	26.00	0.80	12.30	vaginal	6	8	Yes	Yes	3.00	Control
262	73857	19	primary	housewife	2	>=2 years	1	154.00	41.00	>12kg	Placenta pre	110	72	82	no	female	31.00	0.80	11.54	vaginal	5	8	Yes	Yes	3.00	Control

263	73893	27	primary	housewife	5	>=2 years	2	169.00	39.00	>12kg	Placenta pre	110	70	84	no	female	31.00	0.80	13.34	vaginal	8	8	Yes	Yes	3.00	Control
264	73869	27	high school	housewife	2	>=2 years	2	156.00	46.00	>12kg	anaemia	110	70	80	no	female	26.00	1.00	10.02	forceps	5	8	Yes	Yes	3.00	Control
265	73856	19	primary	housewife	2	>=2 years	1	154.00	45.00	>12kg	anaemia	110	70	74	no	female	24.00	1.00	10.44	forceps	7	9	Yes	Yes	3.00	Control
266	73802	21	high school	housewife	2	>=2 years	3	152.00	55.00	<12kg	PIH	140	80	88	no	female	26.00	0.80	13.34	vaginal	8	9	Yes	Yes	3.00	Control
267	73805	23	primary	employed	2	>=2 years	5	147.00	78.00	<12kg	nil	110	70	86	no	male	24.00	1.00	13.34	vaginal	6	9	Yes	Yes	3.00	Control
268	73803	23	primary	employed	2	>=2 years	5	144.00	75.00	<12kg	polyhydram	110	70	96	no	female	32.00	0.80	12.30	vaginal	9	9	Yes	Yes	3.00	Control
269	56231	19	high school	employed	1	primi	2	150.00	79.00	<12kg	nil	110	72	88	no	female	24.00	1.00	11.60	forceps	6	7	Yes	Yes	3.10	Control
270	73772	24	illiterate	employed	3	<2years	4	152.00	78.00	<12kg	Placenta pre	110	70	92	no	male	26.00	1.00	11.54	forceps	8	8	Yes	Yes	3.10	Control
271	56233	19	high school	employed	1	primi	2	150.00	80.00	<12kg	nil	110	70	90	no	female	26.00	1.00	11.60	forceps	8	9	Yes	Yes	3.10	Control
272	73773	24	illiterate	housewife	3	<2years	4	153.00	45.00	>12kg	anaemia	110	70	88	yes	male	28.00	0.90	10.15	caesarean	7	10	Yes	Yes	3.10	Control
273	73792	27	high school	housewife	3	<2years	2	168.00	42.00	>12kg	anaemia	110	70	92	no	female	28.00	0.90	10.73	caesarean	6	6	Yes	Yes	3.20	Control
274	73788	23	primary	housewife	3	<2years	2	168.00	41.00	>12kg	anaemia	110	70	90	no	female	28.00	0.90	9.70	caesarean	6	6	Yes	Yes	3.20	Control
275	73769	23	illiterate	employed	3	<2years	4	143.00	77.00	<12kg	Placenta pre	110	70	94	no	male	26.00	1.00	11.54	caesarean	6	7	Yes	Yes	3.20	Control
276	85264	22	primary	housewife	1	primi	1	148.00	61.00	<12kg	PIH	140	80	96	no	female	28.00	0.80	11.54	caesarean	10	7	Yes	Yes	3.20	Control
277	73768	24	illiterate	employed	3	<2years	4	152.00	75.00	<12kg	polyhydram	110	70	98	no	female	32.00	0.80	12.76	caesarean	6	7	Yes	Yes	3.20	Control
278	85261	24	primary	housewife	1	primi	1	148.00	60.00	<12kg	PIH	140	80	94	no	female	28.00	0.80	11.54	caesarean	10	8	Yes	Yes	3.20	Control
279	73771	24	illiterate	employed	3	<2years	4	152.00	77.00	<12kg	Placenta pre	110	70	96	no	male	26.00	0.90	11.60	caesarean	5	9	Yes	Yes	3.20	Control
280	73770	24	illiterate	housewife	3	<2years	4	152.00	76.00	<12kg	asthma	110	70	96	no	male	32.00	0.80	11.54	caesarean	5	10	Yes	Yes	3.20	Control
281	26454	26	primary	housewife	3	<2years	4	138.00	52.00	<12kg	PIH	140	80	98	no	female	28.00	1.10	11.31	caesarean	6	7	Yes	Yes	3.30	Control
282	73767	24	illiterate	employed	3	<2years	4	152.00	74.00	<12kg	oligohydram	110	70	84	no	male	29.00	0.90	11.60	caesarean	6	8	Yes	Yes	3.30	Control
283	73764	24	illiterate	housewife	3	<2years	4	154.00	48.00	<12kg	anaemia	110	70	98	yes	male	29.00	0.90	9.52	caesarean	5	9	Yes	Yes	3.30	Control
284	20490	27	illiterate	housewife	2	<2years	4	156.00	42.00	>12kg	anaemia	110	70	94	no	female	28.00	0.90	9.40	caesarean	10	9	Yes	Yes	3.30	Control
285	38269	26	primary	employed	3	<2years	4	138.00	50.00	<12kg	PIH	140	80	72	no	female	26.00	1.00	11.31	caesarean	5	9	Yes	Yes	3.30	Control
286	73766	24	illiterate	employed	3	<2years	4	152.00	73.00	<12kg	oligohydram	110	70	82	no	male	29.00	0.90	11.60	caesarean	5	9	Yes	Yes	3.30	Control
287	73765	24	illiterate	housewife	3	<2years	4	154.00	49.00	<12kg	anaemia	110	70	72	yes	male	29.00	0.90	8.86	caesarean	10	9	Yes	Yes	3.30	Control
288	30430	27	illiterate	housewife	2	<2years	4	156.00	46.00	>12kg	anaemia	110	70	96	no	female	29.00	0.90	9.60	caesarean	5	9	Yes	Yes	3.30	Control
289	73762	24	illiterate	housewife	3	<2years	4	154.00	47.00	<12kg	anaemia	110	70	80	yes	male	31.00	0.80	9.57	caesarean	5	8	Yes	Yes	3.50	Control
290	73760	24	illiterate	employed	3	<2years	4	152.00	72.00	<12kg	oligohydram	110	70	86	no	male	30.00	0.90	13.34	caesarean	5	8	Yes	Yes	3.50	Control
291	73874	28	high school	housewife	2	>=2 years	2	164.00	45.00	>12kg	anaemia	110	70	76	no	female	30.00	0.90	9.92	caesarean	10	8	Yes	Yes	3.50	Control
292	73763	23	illiterate	housewife	3	<2years	4	141.00	57.00	<12kg	PIH	140	80	74	no	female	28.00	1.10	11.54	caesarean	5	8	Yes	Yes	3.50	Control
293	73761	24	illiterate	housewife	3	<2years	4	154.00	46.00	>12kg	anaemia	110	70	78	yes	male	31.00	0.80	9.86	caesarean	5	9	Yes	Yes	3.50	Control
294	73873	28	high school	housewife	2	>=2 years	2	168.00	45.00	>12kg	anaemia	110	70	74	no	female	30.00	0.90	9.88	caesarean	5	9	Yes	Yes	3.50	Control
295	37733	27	illiterate	housewife	3	<2years	4	142.00	52.00	<12kg	PIH	110	72	92	no	female	28.00	0.80	11.40	caesarean	7	9	Yes	Yes	3.50	Control
296	26789	27	illiterate	housewife	3	<2years	4	142.00	52.00	<12kg	PIH	110	70	90	no	female	28.00	0.80	11.40	caesarean	7	10	Yes	Yes	3.50	Control
297	73795	27	illiterate	housewife	3	<2years	4	154.00	45.00	>12kg	anaemia	110	70	84	no	female	32.00	0.80	10.15	caesarean	6	6	Yes	Yes	3.75	Control
298	73759	24	illiterate	employed	3	<2years	4	152.00	71.00	<12kg	UTI	110	70	72	no	female	34.00	0.80	12.30	caesarean	5	8	Yes	Yes	3.75	Control
299	73758	24	illiterate	housewife	3	<2years	4	152.00	70.00	<12kg	heartdisease	110	70	74	no	male	28.00	0.90	11.54	caesarean	9	8	Yes	Yes	3.75	Control
300	73793	21	high school	housewife	3	<2years	3	154.00	44.00	>12kg	anaemia	110	70	82	no	female	32.00	0.80	10.15	caesarean	7	9	Yes	Yes	3.75	Control