"A ONE-YEAR CROSS SECTIONAL STUDY OF GESTATIONAL WEIGHT GAIN IN PREGNANT WOMEN ATTENDING KAHER'S DR. PRABHAKAR KORE CHARITABLE HOSPITAL, BELAGAVI."

BY

REG NO: BJ0122007

Dissertation

Submitted to

KAHER, Belagavi, Karnataka,

In partial fulfilment of the requirements for the degree of

MASTER OF SURGERY (M.S.)
In
OBSTETRICS AND GYNECOLOGY

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

JAWAHARLAL NEHRU MEDICAL COLLEGE, KAHER,

BELAGAVI – 590010, KARNATAKA.

SEPTEMBER/OCTOBER – 2025

KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH,

BELAGAVI, KARNATAKA.

Endorsement

This is to certify that the dissertation entitled **"A ONE-YEAR CROSS SECTIONAL STUDY OF GESTATIONAL WEIGHT GAIN IN PREGNANT WOMEN ATTENDING KAHER'S DR. PRABHAKAR KORE CHARITABLE HOSPITAL, BELAGAVI."** is a bonafide research work done by **REG NO: BJ0122007.**

Dr. Yeshita. Pujar
Consultantand HOD OBG
KMC Reg. No. 39908
KLES Dr. Prabhakar Kore Hospital &
MRC, Belagavi-590...

Dr. YESHITA PUJAR MS, FICOG
Professor and HOD,
Department of Obstetrics and Gynaecology,
J. N. Medical College,
Nehru Nagar, Belagavi – 10

Date: 8/4/25
Place: Belagavi

Dr. N. S. MAHANTASHETTI MD
Principal,
J. N. Medical College,
Nehru Nagar,
Belagavi – 10

PRINCIPAL
Jawaharlal Nehru Medical College
BELAGAVI

Date: 8/4/25
Place: Belagavi

UNDERTAKING

I, **Reg.No. BJ0122007** hereby declare that the information and the data mentioned in my dissertation entitled **"A ONE-YEAR CROSS SECTIONAL STUDY OF GESTATIONAL WEIGHT GAIN IN PREGNANT WOMEN ATTENDING KAHER'S DR. PRABHAKAR KORE CHARITABLE HOSPITAL, BELAGAVI."** belongs to me and is original.

- An act or instance of using are closely imitating the language and thoughts of another author without authorization and the representation of that authors work as one's own, as by not crediting the original author.
- A piece of writing or other work reflecting such unauthorised use or imitation.
- The deliberate or reckless representation of another's words, thoughts, or ideas as one's own without attribution in connection with submission of academic work, whether graded or otherwise.

I hereby declare that the dissertation prepared by me is original one and does not involve plagiarism anywhere. In case at a later stage, it is found that I have indulged in plagiarism, then, I am solely responsible for the same and the institution is at liberty to take any disciplinary action against me including cancellation of dissertation or any other penalties imposed by the university.

Date: 11/04/2025

Place: Belagavi

REG. NO. BJ0122007

PLAGIARISM CLEARANCE

KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH

JAWAHARLAL NEHRU MEDICAL COLLEGE

(A constituent unit of KLE Academy of Higher Education & Research Deemed-to-be-University)

(Recognized by National Medical Commission, New Delhi)

Accredited 'A+' Grade by NAAC (3rd Cycle) **Placed in Category 'A' by MoE (GoI)**

Nehru Nagar, Belagavi- 590 010, Karnataka, INDIA

0831 – 2471350 0831 – 2470759 www.jnmc.edu rincipal@jnmc.edu

Ref No: MDC/PG/ Date: 07-04-2025

"ACCEPTANCE LETTER"

The softcopy of thesis entitled: **"A ONE-YEAR CROSS SECTIONAL STUDY OF GESTATIONAL WEIGHT GAIN IN PREGNANT WOMEN ATTENDING KAHER'S DR. PRABHAKAR KORE CHARITABLE HOSPITAL, BELAGAVI"** has been submitted for anti-plagiarism check through Turnitin software. The scan has been carried out and the scanned output reveals a match percentage of **03%** which is within the acceptable limits of **10%** as per the guidelines given by UGC.

Guide.

KAHER J.N. MEDICAL COLLEGE BELAGAVI

Dr. (Mrs.) N.S. Mahantashetti.
Chairperson-Antiplagiarism Committee &
Principal,
J. N. Medical College, Belagavi.

To,
Reg. No. BJ0122007
Postgraduate Student,
2022-23 Batch,
Department of Obst. & Gynaecology
J. N. Medical College, Belagavi.

ETHICAL CLEARANCE

K.L.E. ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed – to- be- University)
Accredited 'A+' Grade by NAAC in (3rd Cycle) Placed in Category 'A' by MHRD (GoI)
JNMC INSTITUTIONAL ETHICS COMMITTEE
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
Website: http//www.jnmc.edu
E-Mail : jomc@jnmc.edu
Phone: (+ 91-(0)831 Office : 2472550
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref No.MDC/JNMCIEC/ 209 **Date: 28/04/2023**

To,

BJ0122007
PG Student in Obstetrics And Gynaecology
J. N. Medical College,
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"A -ONE YEAR CROSS SECTIONAL STUDY OF GESTATIONAL WEIGHT GAIN IN WOMEN ATTENDING KAHER'S DR. PRABHAKAR KORE HOSPITAL, BELAGAVI"**, is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee.

(Dr. Smita Sonoli)
Member Secretary
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi.

(Dr. Harsha Hegde)
Chairman,
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi

LIST OF ABBREVIATIONS USED

GLOSSARY	ABBREVIATIONS
ACOG	American College of Obstetrics and Gynaecology
AC	Abdominal Circumference
AGA	Appropriate for Gestational Age
AHRQ	Agency for Healthcare Research and Quality
ANC	Antenatal Care
APGAR	Appearance, Pulse, Grimace, Activity and Respiration
BW	Birth Weight
CARDIA	Coronary Artery Risk Development in Young Adults
CPD	Cephalopelvic Disproportion
DEXA	Dual Energy X-ray Absorptiometry
EFW	Expected Foetal Weight
FGR	Foetal Growth Restriction
FPG	Fasting plasma glucose
GA	Gestational Age
GAD	Gestational Age at Delivery
GDM	Gestational Diabetes Mellitus
GWG	Gestational Weight Gain
Hb	Haemoglobin
hCG	human Chorionic Gonadotropin
ICU	Intensive Care Unit
IGT	Impaired Glucose Tolerance
IOM	Institute of Medicine
IUGR	Intra Uterine Growth Restriction

Kg	kilogram
Lb	Lebra (pounds)
LGA	Large for Gestational Age
LMP	Last Menstrual Period
LSCS	Lower Segment Caesarean Section
NICU	Neonatal Intensive Care Unit
NMIHS	National Maternal and Infant Health Survey
NM	Nurse-Midwives
OGTT	Oral Glucose Tolerance Test
OR	Odd's Ratio
PIH	Pregnancy Induced Hypertension
SGA	Small for Gestational Age
TPO	Thyroid Peroxidase
TSH	Thyroid Stimulating Hormone
WHO	World Health Organisation

ABSTRACT

Aim and objective: Gestational weight gain (GWG) is a pivotal factor influencing maternal and foetal health. It is calculated by subtracting weight measured in the first antenatal visit from the weight measured in the last visit. Recommendations for GWG in Indian women are not available, leading to reliance on international standards that may not be entirely applicable to the Indian population. The study is carried out to assess the gestational weight gain during pregnancy in women delivering in KLE Dr. Prabhakar Kore charitable Hospital, Belagavi, in normal and different morbidities of pregnancy.

Material & methods: This cross-sectional study is conducted at KAHER's KLE Dr. Prabhakar Kore Charitable Hospital, Belagavi, from November 2023 to November 2025. The study includes pregnant women admitted for delivery with documented first-trimester weight records. BMI is calculated using the earliest first-trimester weight and height. It is categorized based on WHO Asia-Pacific guidelines. Total GWG is determined by the difference between weight at delivery and first-trimester weight. The study participants were analysed based on normal outcome and outcomes with morbidities. Statistical analysis includes descriptive statistics, paired t-tests, ANOVA, and logistic regression (univariate) to examine associations between GWG and pregnancy outcomes. Data is analysed using IBM SPSS version 22.

Results: There were 350 participants included in the study. The mean normal outcome GWG was 10.27kg. The mean GWG in ante-natal outcomes with morbidities were, pregnancy induced hypertension (PIH)- 12.91 ± 4.97 kg (OR: 1.17, 95% CI: 1.07–1.29, *P value*=0.001), diabetes in pregnancy- 12.96 ± 5.86 kg (OR = 1.17, 95% CI: 1.04–1.32, *P value* = 0.011), macrosomia -15.40 ± 5.35 kg (OR: 1.34,

95% CI: 1.15–1.61, P value =<0.001), foetal growth restriction (FGR) - 8.71 ± 3.15 kg (OR: 0.86, 95% CI: 0.74–0.99, *P value* =0.037) . Among the outcomes with intra-natal morbidities, NICU admission was statistically significant with mean GWG 8.58 ± 3.34 kg (OR: 0.854, 95% CI: 0.737–0.975, P value =0.026).

Conclusion: Given the substantial role played by GWG as a determinant of maternal-foetal health, it is important to delineate country-specific thresholds of GWG in Indian women for better antenatal care and a positive pregnancy experience.

Key Words: gestational weight gain (GWG), pregnancy induced hypertension (PIH), diabetes, macrosomia, foetal growth restriction (FGR), neonatal intensive care unit (NICU) admission.

TABLE OF CONTENTS

LIST OF TABLES

TABLE OF FIGURES

INTRODUCTION

Gestational weight gain during pregnancy (GWG) is conventionally defined as the weight gained during pregnancy by subtracting the weight documented at the first prenatal visit and last prenatal visit prior to delivery. [1] Appropriate gestational weight gain (GWG) is essential for fetal growth and positive maternal and childbirth outcomes.[2]

The incidence of pregnancy complications tends to be higher at both extremes of weight gain. [3] Women who had excess weight gain were observed to more likely have gestational hypertension, chorioamnionitis, induced labour, premature rupture of membranes, caesarean delivery, intensive care unit (ICU) admission, sepsis (puerperal sepsis), respiratory morbidity, post-partum haemorrhage with transfusions and potentially lifesaving interventions, severe neonatal morbidity and perinatal deaths macrosomia , child hood obesity, post-partum weight retention, obesity in later life , gestational diabetes .[3,4,5]

Women who had less weight gain during pregnancy experienced cerebrovascular/ central venous system morbidity, still births, low birth weight infants, preterm births, foetal growth restriction, birth asphyxia, neonatal intensive care unit admission. [4,5,7]

Gestational weight gain (GWG) is studied in relation to the pre pregnancy or earliest first trimester recorded BMI. It is calculated by subtracting weight in pre pregnancy weight/earliest 1st trimester weight from weight at the time of delivery. [5,6] However, pre pregnancy BMI is not always available and is subjected to recall bias, so the earliest first trimester (<14 weeks) recorded weight is recommended for assessing the gestational weight gain according to previous research. [9]

WHO has categorised the BMI for different ethnic populations of the globe which are being used for assessing weight gain in pregnancy among different categories of BMI.[10] The United States 2009 Institute of Medicine (IOM) has proposed the limits of GWG under different BMI categories for the western population. ACOG has recommended these GWG limits as reference to reduce potentially adverse outcomes during pregnancy for both mother and baby. [11]

These guidelines are derived from white North American women, ethnically different from Asians who are at risk of developing metabolic disorders at a lower BMI. Nevertheless, it is being used universally in research studies for assessing the weight gain in pregnancy. [6,10] The same recommendation is being followed universally in clinical practice for assessing weight gain in pregnancy among different ethnic population across the world. However, GWG gets influenced by different factors like ethnicity, genetic potential, nutritional and socioeconomic status, available health care facilities etc. [6,13] The effect of ethnicity on weight gain in pregnancy is not studied in previous research among Asian population. [6,13] There are no reference ranges of GWG available for Indian population based on WHO proposed BMI categories for adult Asian population. [10] Hence this study is carried out with the objective of assessing the weight gain during pregnancy in normal pregnancy and pregnancy with morbidity in women delivering in KLE Dr. Prabhakar Kore Charitable Hospital, Belagavi.

AIMS AND OBJECTIVES

PRIMARY OBJECTIVE: To assess the gestational weight gain during pregnancy in women delivering in KLE Dr. Prabhakar Kore charitable Hospital, Belagavi, in women with normal outcome and with different morbidities of pregnancy.

SECONDARY OBJECTIVE: To check the association of gestational weight gain in pregnancies with morbidities.

REVIEW OF LITERATURE

In recent years, Body Mass Index (BMI) has gained widespread acceptance as a standard measure of weight. However, alternative metrics such as the waist-hip ratio, waist circumference, and absolute body weight have also been utilized. [2,3] Research suggests that the waist-hip ratio may provide a more precise assessment, though relevant data is often limited. It is important to note that BMI does not directly measure body fat. While it is commonly employed to evaluate weight-related concerns at a population level, it is not suitable for individual diagnoses. [12,13,14]

Body Mass Index (BMI) is a numerical value derived from a person's height and weight, serving as a general measure to categorize individuals based on body size. It is calculated by dividing weight in kilograms by the square of height in meters. [15]

However, over the past two decades, changes in lifestyle patterns have contributed to a surge in obesity rates across both developed and developing nations. In countries like India, disparities in socioeconomic conditions have resulted in a dual burden of obesity and underweight populations. For example, by 1995, more than half of the U.S. adult population had either overweight or obese status, with a body mass index (BMI) of 25 kg/m^2 or higher. [16]

According to the updated 2009 IOM guidelines, individuals are categorized as underweight, normal weight, overweight, obese, or morbidly obese based on their BMI. [17]

HISTORY OF GESTATIONAL WEIGHT GAIN:

Gestational weight gain (GWG), which refers to the total weight gained from conception to delivery, varies significantly among women. During World War I

(1914-1918), a decline in food availability was linked to a reduced incidence of preeclampsia, reinforcing the societal preference for thinness, even during pregnancy. As a result, women were often advised to limit weight gain to less than 7 kg (15 lbs), based on the assumption that the foetus could obtain sufficient nutrients for growth while any additional calories would be stored as maternal fat.[18]

However, the Dutch famine of 1944 revealed the consequences of severe maternal undernutrition, leading to increased rates of stillbirth, low birth weight, and infant mortality. These adverse outcomes prompted a more lenient approach to GWG, though it did not lead to the widespread acceptance of the notion of "eating for two." On a global scale, growing concerns about underweight women entering pregnancy and maternal malnutrition led to the first international guidelines for pregnancy weight gain in 1990. [19]

Physiology and Composition:

Pregnancy involves remarkable physiological and developmental adaptations that sustain the foetus from conception through birth. [20] These changes ensure foetal nourishment, adequate oxygen supply to both maternal and foetal tissues, and preparation for postnatal nutrition via lactation. Throughout pregnancy, maternal metabolism adapts in response to hormonal shifts, foetal demands, nutritional intake, and physical activity levels. [21] These adjustments are reflected in gestational weight gain (GWG), which includes increases in maternal and foetal fat mass, fat-free mass (muscle, bone), placental tissue, and amniotic fluid. [22] While a comprehensive review of pregnancy physiology is beyond this scope, understanding how these processes influence GWG is essential for healthcare providers. [23]

TRAJECTORIES OF GWG:

Several factors, including maternal age, race, parity, and pre-pregnancy BMI, have been identified as key predictors of cumulative weight gain during pregnancy. In a study conducted by Abrams et al (1995), older women were found to gain more weight during the first trimester but less during the second and third trimesters. [24] Hispanic women exhibited a faster weight gain rate in the second trimester compared to other racial groups. Similarly, research by Hickey et al (1995), indicated that non-Hispanic Black women experienced greater weight gain in the first trimester but a slower increase in the second trimester. [25]

Carmichael et al in 1995 have presented patterns of maternal weight gain associated with good pregnancy outcome. [26] Their conclusion is that, among normal-weight women, the rate of weight gain should be smallest during the first and largest during the second trimester of pregnancy with a slight decrease in the rate during the third trimester. [26]

Nohr et al in 2009 studied that, in the second and third trimesters, first-time mothers (nulliparous) were more likely to gain excessive weight compared to those who had previously given birth (multiparous). Additionally, cigarette smokers tended to gain less weight than non-smokers. [27]

Findings from Misar et al (2010), also highlighted that the African American women gained weight at a higher rate from preconception to approximately 16–20 weeks of gestation compared to non-African American women. [28]

While many studies have shown that gestational weight gain (GWG) is influenced by maternal characteristics, a more recent study by Lisa et al in 2011, contradicted this assumption, finding no significant link between GWG guidelines and maternal

traits.[29] Their research examined the impact of different maternal characteristics on pregnancy outcomes and found no notable differences. Similarly, Sahu et al. concluded that there was no strong association between GWG and maternal demographic factors. The uncertainty regarding the influence of maternal characteristics on GWG was also acknowledged in the Institute of Medicine (IOM) guidelines, which recommended further research to better understand the complex interactions between maternal factors, GWG trajectories, and health outcomes. [30]

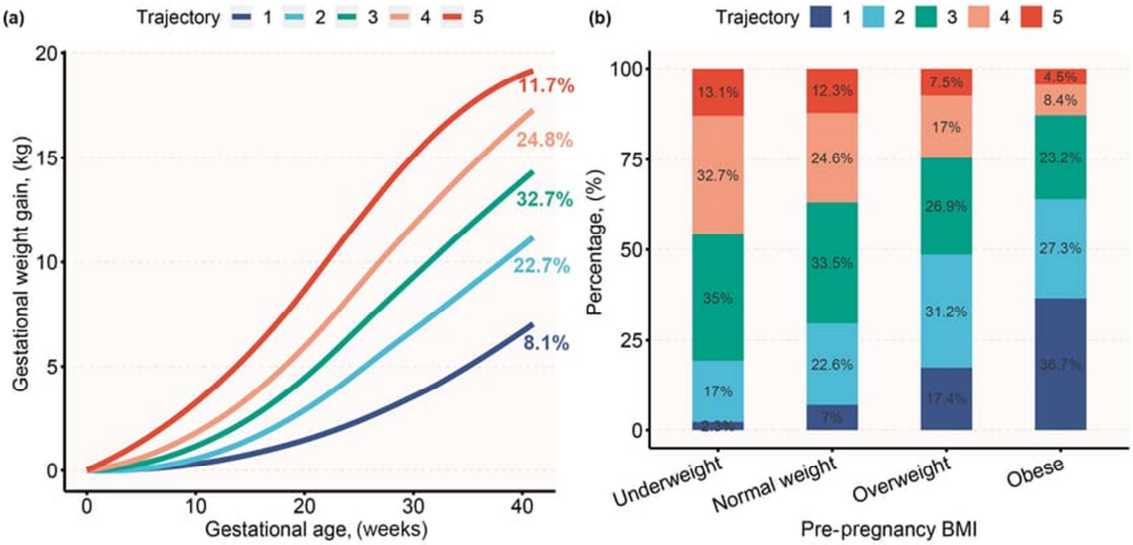


Figure-1 Trajectories and distribution of weight gain during pregnancy

a) Trajectories of weight gain during pregnancy and b) its distribution among different pre-pregnancy body mass index (BMI; calculated as weight in kilograms divided by the square of height in meters) categories. [31]

MODERN NUTRITION AND GWG:

The analysis in 2005 estimated that pregnant women in the highest quartile of the 'Fast food' dietary pattern gained an average of 1.3 kg more between the 10th and 40th week of pregnancy compared to those in the lowest quartile. Similarly, those

following a 'Traditional bread' dietary pattern gained 0.9 kg more, whereas women in the highest quartile of the 'Alcohol and butter' dietary pattern gained 0.7 kg less on average. [32]

Previous studies in 2006 and 2009 after adjusting for factors such as maternal age, initial BMI, parity, education level, smoking, living area, birth weight of the baby, and gestational week of the first weight measurement, only three dietary patterns remained significantly linked to weight gain: 'Fast food', 'Traditional bread', and 'Alcohol and butter'. [33,34]

Uusitalo Ulla et al in 2009 investigated the relationship between dietary patterns and maternal weight gain rate. Their findings indicated that the 'Fast food' and 'Traditional bread' dietary patterns were positively associated with weight gain, while the 'Traditional meat', 'Coffee', and 'Alcohol and butter' dietary patterns showed an inverse association. [34]

MORNING SICKNESS AND GWG:

King JC et al in 2000 mentioned that the pregnancy-associated hormones, along with elevated levels of existing hormones, significantly impact GWG. Human chorionic gonadotropin (hCG), often termed the "pregnancy hormone," is detectable shortly after embryo implantation. Its serum levels rise sharply, peaking around 7 weeks post-last menstrual period (LMP). [35] This surge, combined with increasing oestrogen and progesterone, is linked to morning sickness—a common early pregnancy symptom characterized by nausea and vomiting. Mild nausea and vomiting may lead to modest weight loss in the first half of pregnancy. If dehydration is avoided and weight loss remains under 5% of pre-pregnancy weight, non-pharmacologic remedies (e.g., ginger, vitamin B6, acupuncture) can be effective as recommended by WHO in 2016.

[36] Notably, studies in 2015 suggest nausea may reduce the risk of excessive GWG, particularly in individuals with higher pre-pregnancy BMIs. [37]

HORMONAL CONTRIBUTION TO GWG:

Elevated oestrogen levels modulate carbohydrate, lipid, and bone metabolism, while also stimulating uterine and breast tissue growth. [35] Progesterone, vital for maintaining pregnancy, ensures uterine relaxation, suppresses maternal immune responses to prevent foetal rejection, and supports the significant increase in maternal blood volume (40–50% above baseline). This expanded blood volume enhances nutrient and oxygen delivery to the foetus and contributes to GWG, alongside extracellular fluid retention (oedema) as suggested by King TL et al in 2015.[38]

BODY MASS INDEX (BMI):

Currently, BMI is the predominant method used globally to assess body fat composition. The World Health Organization (WHO) in 2004 has established BMI categories that indicate varying degrees of underweight and overweight, helping to identify individuals or populations at risk for health issues such as cardiovascular diseases, type 2 diabetes, and other related conditions. [39]

Body mass index (BMI) serves as a common metric for evaluating body composition, particularly in terms of fat content. While there are various other methods to measure body fat, such as skin fold thickness, underwater weighing, magnetic resonance imaging, dual energy X ray absorptiometry (DEXA), and ultrasound, these techniques are less frequently utilized during pregnancy. This is primarily due to their impracticality, potential risks, or the confounding effects of pregnancy-related

changes, such as an increase in total body water by 5–8 litres as given by Widen EM et al in 2014. [40]

These BMI categories are employed in policy-making to analyse population data, inform preventive measures, and evaluate the outcomes of interventions. Additionally, they are used to pinpoint high-risk individuals for screening, assess absolute risk, determine the necessary type and intensity of treatment, and monitor treatment effects over time. [41]

ETHNICITY AND POPULATION BASED CONSIDERATION WITH GESTATIONAL WEIGHT GAIN:

In 2004, WHO experts recommended revised BMI cut-offs for Asians, recognizing that their body fat distribution differs from that of Europeans. The WHO Asian BMI classification adjusts the normal weight range and lowers the thresholds for overweight and obesity, thereby identifying more individuals at risk for metabolic disorders. [41]

Increasing attention is being given to GWG guidelines that consider ethnic and population differences. Research by Unnikrishnan et al in 2017 shows that despite having lower BMIs, many Asian populations exhibit a higher proportion of body fat, particularly in the abdominal area (central obesity), which increases the risk of type 2 diabetes and cardiovascular disease.[42,43]

Following the adoption of WHO Asian BMI categories, researchers began investigating whether distinct GWG guidelines should also apply to Asian women like India. [44] Xin et al (2014) study has shown that 1,529 multi-ethnic Asian women (Chinese, Malay, Indian) in Singapore evaluated GWG ranges that optimize infant

and maternal outcomes, such as appropriate-for-gestational-age (AGA) infants and delivery methods (caesarean vs. vaginal birth).

Findings suggested that underweight women benefitted from greater weight gain (12.9–23.9 kg) compared to IOM recommendations (12.5–18 kg), while overweight women had better outcomes with lower weight gain (2.6–14.0 kg) than the IOM guidelines (7–11.5 kg) [(44)].

In the obese category, even weight loss during pregnancy (−5.0 to 7.0 kg) was associated with optimal maternal and foetal outcomes, contrasting with the IOM guideline of 5–9 kg, by Johansson K et al in 2024. [(45)] For this discussion, the IOM GWG guidelines are referenced as they are widely applicable across various racial and ethnic groups. However, further research is necessary to refine recommendations to accommodate distinct body composition characteristics in different populations. [(46)]

ASSOCIATION OF MATERNAL AGE AND GWG:

Howie LD et al in 2003 studied that younger women and adolescents are more prone to excessive weight gain during pregnancy. [(48)] Gould et al in 2011 looked into this tendency being linked to concurrent maturation and raises concerns regarding the risk of postpartum weight retention and the possibility of these young women entering a higher BMI category in subsequent pregnancies. [(49)] The relationship between maternal age and GWG is less consistent among older women. For instance, Deputy et al (2015) found that inadequate GWG was more prevalent among multiethnic women aged 35 and older. [(37)]

CONCERNS OF PARITY AND GWG:

Adolescent first-time mothers (primiparas) gained an average of 5.28 pounds more than women who had previously given birth (multiparas) and were twice as likely to experience excessive GWG compared to multiparas as studies mentioned in 1988 and 1994. [50,51]

The experience of even a single pregnancy alters a woman's body fat composition. One aspect of the CARDIA study in 1994 indicated that both White and Black women who had one pregnancy exhibited increased adiposity compared to those who remained nulliparous. [50] Parity has a significant correlation with GWG, independent of other known factors. In a study involving women from England in 2023, parity was the most influential factor contributing to GWG, followed by birth weight and BMI. [47]

Additionally, extensive multiethnic studies have reported primiparity as a significant factor in excessive GWG compared to subsequent pregnancies. [52]

MULTIPLE PREGNANCY AND GWG RECOMMENDATION:

Provisional guidelines (2011) were established: normal-weight women should aim to gain between 17–25 kg (37–54 lbs), overweight women should gain 14–23 kg (31–50 lbs), and obese women should gain 11–19 kg (25–42 lbs) throughout the term. [29] There was not enough information available to formulate even provisional guidelines for underweight women expecting multiple foetuses.

In pregnancies involving twins, the recommended gestational weight gain (GWG) is higher compared to singleton pregnancies. This recommendation in 2013 by ACOG is inversely related to the pre- pregnancy BMI category. [53]

By Lak AK 2015, for instance, a woman of normal weight expecting twins should be advised to gain more weight than her overweight counterpart who is also expecting twins. However, her weight gain recommendation is still greater than what would be advised if she were only carrying a single baby. [54]

The Institute of Medicine (IOM) was unable to conduct a thorough analysis for twin pregnancies as it did for singleton pregnancies. [54]

POSTPARTUM CONSEQUENCES OF GWG:

Many women of reproductive age associate their rising BMI with pregnancy. Research by Kiel et al in 2007 shows that over five years postpartum, 89% of women who had a normal BMI before pregnancy transitioned to overweight or obese. [55]

Since the postpartum phase of the first pregnancy serves as the preconception period for subsequent pregnancies, women often enter their next pregnancy at a higher BMI, increasing their likelihood of excessive gestational weight gain (GWG) and postpartum BMI elevation.[56,57] This cycle of continuous weight gain contributes to the rising prevalence of overweight and obesity in both reproductive-age and postmenopausal women. [58]

Research by Oken et al in 2009 indicates that weight gain beyond the recommended IOM guidelines plays a crucial role in postpartum health. [59] Several studies, including a large meta-analysis in 2011 involving over 69,000 women, reveal that excessive weight gained during pregnancy can persist for up to two decades. [60]

Women who experience excessive GWG tend to retain more weight postpartum, while those with a higher preconception BMI are more likely to struggle with greater postpartum weight retention. [61,62]

CONSEQUENCES DURING PREGNANCY

GESTATIONAL DIABETES AND IMPAIRED GLUCOSE TOLERANCE:

Pregnancy is often associated with a significant physiological decline in peripheral insulin sensitivity. When this decrease is coupled with beta-cell dysfunction, it can lead to the onset of abnormal glucose regulation during pregnancy, known as gestational diabetes mellitus (GDM). [63]

The prevalence of GDM has risen sharply in recent years. Between 1989 and 2004, the overall incidence of GDM in the U.S. increased by 122%, with a 260% rise among African American women. [64]

Among 11 studies analysed, four indicated a positive association between GWG above the recommended range and abnormal glucose tolerance. [65] Meanwhile, three studies in 2007 found that inadequate GWG increased the risk of developing GDM, while four studies reported no significant link between GWG and glucose metabolism. [66] A major limitation in most studies, except one (Saldana et al) was the use of total GWG rather than weight gain up to the point of diagnosis. [65] This poses challenges because managing GDM typically involves dietary modifications and weight control efforts.

Research by Chu et al in 2007, has shown that women who are already obese before pregnancy experience a greater degree of insulin resistance and are at a higher risk of developing GDM compared to those with normal weight. [67]

The IOM report did not address the relationship between gestational weight gain (GWG) and abnormal glucose metabolism. However, since then, studies reviewed in

the AHRQ report in 2008 provide limited evidence supporting a link between GWG and abnormal glucose metabolism (such as GDM or impaired glucose tolerance). [68]

INFLUENCE OF GWG IN HYPERTENSION:

Hypertensive disorders during pregnancy include pregnancy-induced hypertension (PIH), preeclampsia and eclampsia. Women who are overweight or obese before conception face a significantly higher risk of developing pregnancy-induced hypertension. [69] A study by Thadhani et al, 1999 examined the link between pre-pregnancy BMI, cholesterol levels, and hypertensive conditions in pregnancy among 15,262 women. [70] After adjusting for age, the study by Bodnar et al, 2007 determined that the relative risk of gestational hypertension was 1.7 for women with a BMI between 25 and 29.9 and 2.2 for those with a BMI of 30 or above, compared to women with a BMI below 21. Similarly, the likelihood of preeclampsia is nearly twice as high in overweight women and close to three times greater in obese women. [71]

While the connection between pre-pregnancy BMI and hypertensive disorders is well established, the role of gestational weight gain (GWG) in these conditions remains uncertain. The 2007, Macdonald et al explained that Institute of Medicine (IOM) report emphasized the lack of definitive evidence linking GWG to hypertensive disorders, a gap that persists today.[72] Preeclampsia, for instance, is associated with reduced maternal plasma volume expansion, which typically increases by 50-60% during pregnancy. This condition may also influence early pregnancy weight gain patterns. [73] Moreover, factors such as increased vascular permeability and lower plasma oncotic pressure in preeclampsia can lead to excessive weight gain due to fluid retention in later pregnancy.

GWG IN ANAEMIA:

Several studies have explored whether maternal anaemia influences GWG. The effect of anaemia on birth outcomes, particularly in relation to GWG, has been widely debated. weight differences are not statistically significant between anaemic and non-anaemic mothers when controlling for GWG as mentioned by Kang et al, 2018.[74] Findings by Lee et al in 2019, suggest that anaemic women tend to have lower weight gain during pregnancy, possibly due to nutritional deficiencies or underlying health conditions affecting metabolism and appetite. [75] A study by Ren et al in 2020 found that insufficient iron intake and low haemoglobin levels were associated with inadequate GWG, increasing the risk of intrauterine growth restriction (IUGR). [76]

Furthermore, research suggests that weight gained at gestational age at delivery (GAD) remains unaffected by maternal anaemia in many cases, with no significant disparities between male and female infant (Patel et al, 2020). [77]

Zhang et al in 2021, indicated no significant correlation between anaemia and total GWG, suggesting that while anaemia affects maternal health, it does not necessarily impede appropriate weight gain during pregnancy. [78]

While some studies indicate that anaemia may contribute to lower birth weights due to compromised placental function as described by Luo et al in 2022. [79]

These findings highlight the importance of proper dietary interventions and physical activity during preconception and antenatal care needs to be ensured for optimal maternal weight gain. [80]

INDUCTION OF LABOR AND GWG:

The evidence from the studies conducted were considered weak regarding an association between excessive GWG and the need for labour induction or failure of induction. [81] Although all five studies reported statistically significant increases in related outcomes, variations in defining high GWG and a lack of control for confounding factors limited meaningful comparisons across studies. [82]

LENGTH OF LABOUR AND GWG

Three studies in the AHRQ review of 2009 assessed the link between GWG and labour duration. Two studies indicated a significant increase in labour duration with higher GWG, but both lacked adequate control for confounding variables. Consequently, the evidence supporting this association was deemed weak. [83,84,85]

IMPACT OF GWG IN MODE OF DELIVERY:

Since the IOM (1990) report, extensive research has examined the relationship between GWG and mode of delivery. The AHRQ review (Viswanathan et al) in 2009 analysed 21 studies that treated GWG as either a continuous or categorical variable unrelated to the IOM (1990) guidelines. [86] These studies provided moderate evidence of a connection between high GWG and an increased likelihood of caesarean delivery. Only four studies did not find a significant association. [87]

When GWG was categorized based on IOM (1990) recommendations, moderate evidence suggested that weight gain beyond the recommended range increased caesarean delivery risk among normal-weight and underweight women. However, the evidence was weaker for obese and morbidly obese women. [82]

LONG-TERM CONSEQUENCES OF GWG:

The IOM (1990) report mainly focused on infant outcomes and did not consider long-term maternal effects of GWG. Arendas et al in 2008, suggested that excess postpartum weight retention has been linked to chronic health conditions, including diabetes, hypertension, and other cardiovascular risk factors. [88] Below is a discussion on GWG's potential long-term health impacts.

Consequence of GWG and Type 2 diabetes/metabolic disorders:

Research by Berg and Scherer in 2005 further highlighted the importance of both fat distribution and volume in systemic inflammation, with visceral fat being more strongly correlated with insulin resistance in obese individuals than in lean individuals. [89] 2005

Similarly, Lim et al in 2007 found that women with gestational diabetes mellitus (GDM) exhibited abnormal glucose tolerance one year postpartum, a condition linked to increased visceral fat independent of maternal age and BMI. [90]

No published studies were found examining the direct association between GWG and later-life metabolic disorders. However, such a link is biologically plausible due to the known relationship between GWG and postpartum weight retention. Although GWG data were not collected, Gunderson et al in 2008 reported that childbirth was associated with increased visceral fat postpartum. [87]

Consequence of GWG and Cardiovascular disorders:

There is no direct evidence linking GWG to the development of cardiovascular disorders later in life. However, obesity, preeclampsia, and toxaemia during pregnancy are known risk factors for long-term cardiovascular disease. [91]

Consequence of GWG and Mental health:

Two small studies, Jenkin et al and Walker, 1997 provided weak evidence suggesting an association between postpartum weight retention (up to one year after delivery) and self-esteem or depression. [92] Notably, these studies did not account for pre-pregnancy BMI, limiting their conclusions. [93]

CONSEQUENCES OF GESTATIONAL WEIGHT GAIN FOR THE CHILD:

Effects on Neonatal Morbidity and Mortality:

A considerable amount of research has explored the connection between maternal pre pregnancy BMI and neonatal health outcomes, including morbidity and mortality. Pre pregnancy BMI is significantly linked to infant mortality and several other crucial clinical outcomes, such as stillbirth and preterm birth. [94]

Effects on Preterm birth:

Preterm birth, defined as birth before 37 weeks of gestation, is a crucial indicator of developmental maturity. The risk of morbidity and mortality is directly related to the degree of prematurity. Infants born between 33-36 weeks face slightly elevated health risks, whereas those born before 33 weeks experience much more severe complications. Preterm birth-related health risks include acute respiratory, central nervous system, and gastrointestinal disorders, as well as long-term neurodevelopmental impairments (IOM, 2007).

Women who are underweight (BMI below 19.8) or obese (BMI over 30) before pregnancy face a 2 to 4 times higher risk of delivering preterm, highlighting nutritional status as a key factor influencing preterm birth rates. [95]

Gestational weight gain plays a crucial role in preterm birth risk. Deviations from the recommended weight gain outlined by the Institute of Medicine (IOM), whether insufficient or excessive, double the likelihood of preterm birth. Women with inadequate nutritional status during pregnancy face an increased risk of preterm birth, a relationship that has been well-documented in other studies as studied in a systematic review of Han Z et all in 2011. [96]

Conversely, having a normal pre-pregnancy nutritional status may serve as a protective factor against preterm birth. These findings align with previous researches (Masho et al study in 2013). [97]

In the Albanian context, as per the study conducted by Xinxo.S et al in 2013, there is a notable association between pre-pregnancy nutritional status, gestational weight gain, and the rate of preterm birth. [98] Although more than half of women begin pregnancy with a normal nutritional status, the majority (63%) fail to achieve the recommended weight gain during pregnancy. Among those who are undernourished before conception, only 28% attain the advised gestational weight.

Pre-pregnancy nutritional status, as measured by BMI, appears to be a significant predictor of adverse pregnancy outcomes, specifically preterm birth (Cornish et al in 2024). [99]

Effects on still birth:

Research by Naeye R. L. et al in 1979 suggest that women with a low pre-pregnancy BMI and inadequate GWG face a heightened risk of foetal or perinatal mortality, which includes both stillbirth and neonatal death. Likewise, women with a high pre-pregnancy BMI and excessive GWG are also more prone to these adverse outcomes. [100]

Both insufficient and excessive gestational weight gain (GWG) can affect foetal viability in the later stages of pregnancy, increasing the likelihood of stillbirth, which is defined as pregnancy loss occurring after 20 weeks of gestation by a cohort study in 2017 (Yao R et al).[101]

Effects on birth defects:

The 1990 Institute of Medicine (IOM) report found no studies examining a direct link between GWG and birth defects. Since congenital abnormalities typically develop early in pregnancy, GWG is unlikely to be a primary contributing factor. However, research on pre-pregnancy BMI indicates that an increase in BMI raises the risk of birth defects. [102] Only one study has directly explored the connection between GWG and congenital anomalies—Shaw's research suggested that infants born to mothers who gained less than 5-10 kg during pregnancy were at a higher risk of neural tube defects. [103] Another study found that maternal weight loss during pregnancy was also associated with an increased likelihood of neural tube defects. [102] It is more plausible that any observed relationship between GWG and birth defects results from reverse causality, where foetal abnormalities influence maternal weight gain rather than GWG causing birth defects.

Effects on infant mortality:

Infant mortality is a major public health concern and serves as an indicator of a population's reproductive health status. Interest in foetal growth and preterm birth largely stems from their known associations with infant mortality and morbidity. However, research directly linking GWG to infant mortality remains limited. [3] The IOM (1990) report cited only one study on perinatal mortality (NCHS, 1986), and since then, only one additional study has been conducted- The National Maternal and

Infant Health Survey (NMIHS), led by Chen et al in 2009. [105] Their findings revealed that inadequate GWG significantly increased the risk of infant mortality, particularly among underweight and normal-weight women, where the relative risk was 3-4 times higher than in those with the highest GWG. [106] Among overweight and obese women, both low and excessive GWG nearly doubled the risk of infant mortality. The effect was more pronounced in neonatal deaths (within the first 30 days of life) than in post-neonatal deaths (occurring after one month but before the child's first birthday). For the group with the lowest weight gain, the relative risk for neonatal mortality was 3.6 for underweight women, 3.1 for normal-weight women, 2.0 for overweight women, and 1.2 for obese women.

Effect on LGA and SGA babies:

Alberico, S et al in 2014, confirms that excessive gestational weight gain (GWG) is a significant and independent predictor of macrosomia, regardless of pre-pregnancy BMI. Excessive GWG increases the risk of macrosomia independently of pre-gestational BMI. [107] No significant interaction was found between pre-pregnancy BMI and GWG, meaning that excessive weight gain is a risk factor for macrosomia in both obese and non-obese women.

As per a study in 2016, In women with gestational diabetes (GDM), excessive GWG remained an independent risk factor for macrosomia (adjusted OR 2.6). [109]

Women with excessive GWG had a higher incidence of macrosomia, even when adjusting for other risk factors such as parity, maternal height, gestational age, and neonate sex. [107]

Inadequate GWG by Chen et al in 2019, significantly increased the risk of LBW and SGA, particularly in women with pre-pregnancy obesity. [110]

A study analysed by Lewandowska, M. et al in 2021, shows the impact of gestational weight gain (GWG) on newborn birth weight outcomes, particularly large-for-gestational-age (LGA) and small-for-gestational-age (SGA) infants. [111] The findings highlight that both insufficient and excessive GWG influence foetal growth patterns, with maternal obesity play a significant role. Excessive GWG was more common in obese women (55.1% vs. 28.7% in women with normal BMI) and was strongly associated with an increased risk of LGA. [108,111] In the subgroup of women with normal GWG, the adjusted risk of LBW due to maternal obesity was 17 times higher, GWG was identified as a major confounding factor influencing birth weight outcomes. [111]

Nan Li, Enqing Liu et al (2013) - Maternal Pre-pregnancy Body Mass Index and Gestational Weight Gain on Pregnancy Outcomes: [112]

This study analysed health care records from 33,973 pregnant women between June 2009 and May 2011, focusing on the relationship between pre-pregnancy BMI, gestational weight gain (GWG), and pregnancy outcomes. The study revealed that maternal pre-pregnancy obesity and excessive GWG increased the risk of gestational diabetes, pregnancy-induced hypertension, caesarean delivery, large-for-gestational-age (LGA) infants, and macrosomia. Inadequate GWG was linked to higher risks of preterm delivery and small-for-gestational-age (SGA) infants, while excessive GWG was associated with lower risks of preterm delivery and SGA. Women who were obese pre-pregnancy and gained excessive weight had significantly higher risks of complications compared to those with normal BMI and adequate GWG. The study concluded that health care providers should advise women to enter pregnancy with a normal BMI and limit GWG according to their pre pregnancy BMI to prevent adverse pregnancy outcomes and future health issues for both mothers and infants. [112]

Balaji Bhavadharini, Ranjit Mohan Anjana et al (2017) - Gestational Weight Gain and Pregnancy Outcomes in Relation to Body Mass Index in Asian Indian Women: [10]

This retrospective study examined the pregnancy outcomes of 2,728 women in Chennai, India, in relation to their BMI and weight gain during pregnancy. It found that overweight and obese women who gained more weight during pregnancy were more likely to deliver macrosomia infants. Additionally, obese women faced a higher risk of preterm labour, caesarean section, and preeclampsia. In contrast, women with normal weight or who were overweight and gained less weight had a reduced risk of caesarean sections and macrosomia. The study highlighted the importance of gaining adequate weight during pregnancy and suggested preconception counselling for overweight and obese women to emphasize healthy eating and physical activity, potentially improving outcomes for Asian Indian women. [10]

Juliana Chen Xu et al (2022) - Association Between Body Mass Index and Gestational Weight Gain with Obstetric and Neonatal Complications in Pregnant Women with Gestational Diabetes: [114]

This retrospective cohort study in Portugal analysed 13,467 pregnancies with GDM between 2014 and 2018 to examine the relationship between pregestational BMI, GWG and pregnancy outcomes. The results showed that both pregestational BMI and GWG were significantly associated with a variety of complications. Overweight and obese women had a higher risk of gestational hypertension, caesarean section, and macrosomia. Obesity was also linked to preeclampsia, respiratory distress syndrome, and admission to the neonatal intensive care unit. Inadequate GWG was associated with a lower risk of gestational hypertension and caesarean section but an increased risk of low birthweight. Excessive GWG was associated with increased risks of

gestational hypertension, macrosomia, and LGA. The study concluded that both pregestational BMI and GWG significantly impacted maternal and neonatal health, highlighting the need for effective monitoring and control during pregnancy to minimize complications. [114]

Thanyawalai Chairat, Ameporn Ratinthorn et al (2023) - Prevalence and Related Factors of Inappropriate Gestational Weight Gain Among Pregnant Women with Overweight/Obesity in Thailand: [113]

This cross-sectional, retrospective study conducted in Thailand between July and December 2019 examined 685 pregnant women with overweight or obesity and 51 nurse-midwives (NMs) from ten tertiary hospitals. The study found that 62.34% of the women experienced excessive gestational weight gain (GWG), and 12.99% had inadequate GWG. Factors associated with appropriate GWG included ANC counselling on weight gain, good quality ANC services, and NMs' positive attitudes toward GWG control. Maternal factors such as sufficient income and access to low-fat foods also contributed to better GWG outcomes. Excessive GWG was significantly associated with an increased risk of primary caesarean sections, foetal large-for gestational-age (LGA), and macrosomia. The study concluded that the high prevalence of inappropriate GWG, especially excessive GWG, among women with overweight or obesity in Bangkok underscores the need for better ANC services and the establishment of training programs for GWG management. [113]

Ikeola A. Adeoye, Elijah A. Bamgboye et al. (2023) - Gestational Weight Gain Among Pregnant Women in Ibadan, Nigeria: Pattern, Predictors, and Pregnancy Outcomes: [(115)]

This study, part of a multicentre prospective cohort in Ibadan, Nigeria, involved 1,745 pregnant women to assess gestational weight gain (GWG) and its impact on pregnancy outcomes. The women were categorized based on the Institute of Medicine's (IOM) GWG classification into insufficient, adequate, and excessive weight gain groups. The study found that 56.8% of the participants had excessive GWG, while 16.9% had optimal GWG, and 26.9% had insufficient GWG. Predictors of excessive GWG included higher income, being overweight or obese, and certain demographic factors like religion and physical activity. Although excessive GWG was associated with higher rates of caesarean section and postpartum haemorrhage, there was no significant association with most pregnancy outcomes. The study concluded that achieving appropriate GWG is crucial for maternal health in Nigeria, particularly in light of the higher prevalence of excessive GWG. [(115)]

Lisa M. Bodnar, Kari Johansson et al (2024) - Gestational Weight Gain Below Recommendations and Adverse Maternal and Child Health Outcomes for Pregnancies with Overweight or Obesity: A United States Cohort Study [(116)]

This study examined data from a cohort of nulliparous women in the United States who were classified as either overweight (955 participants) or obese (897 participants), tracking them from early pregnancy through 2–7 years postpartum. Using multivariable Poisson regression, researchers analysed the association between pregnancy weight gain z-scores and a composite outcome of 10 adverse health events, including gestational diabetes, preeclampsia, unplanned caesarean delivery,

postpartum weight gain, metabolic syndrome, infant death, stillbirth, preterm birth, small-for-gestational-age births, and childhood obesity.

Pregnancy weight gain was categorized into three groups: below, within, and above the IOM-recommended ranges. Findings indicated that weight gain below the lower limit of the IOM recommendations (6.8 kg for overweight women and 5 kg for obese women) was not linked to an increased risk of adverse outcomes. These results suggest that reassessing the lower threshold of the IOM guidelines for weight gain during pregnancy in women with higher pre-pregnancy BMI may be warranted, as gaining less than the currently recommended amount could still be safe.

Girma Alemayehu Beyene, Mukrem Abdulwehab Yunus et al (2024) - Gestational Weight Gain and Its Determinants Among Pregnant Women in Gurage Zone, Central Ethiopia: A Cohort Study. [(117)]

This cohort study conducted in Gurage Zone, Ethiopia, followed pregnant women who began antenatal care before the 16th week of pregnancy. Researchers assessed gestational weight gain by subtracting early pregnancy weight from the last pregnancy weight and categorized it according to the Institute of Medicine's recommendations. Results revealed that 10% of women were underweight, 83% had normal weight, and the average weight gain was 13.3 kg. More than half (56%) gained adequate weight, while 44% either gained inadequate or excessive weight. Maternal age, occupational status, and early pregnancy weight were significantly associated with gestational weight gain. The study emphasized the need for targeted antenatal counselling, especially for younger, employed women, and those with either underweight or overweight statuses, to ensure better health outcomes for both mother and child. [(117)]

Jenna L. Hollis, Kristine Deroover et al (2024) - Antenatal Care Addressing Gestational Weight Gain (GWG): [118]

A Cross-Sectional Study of Pregnant Women's Reported Receipt and Acceptability of Recommended GWG Care and Associated Characteristics. A telephone survey conducted between September 2018 and February 2019 surveyed 514 women who had recently delivered babies in Australia. The study focused on whether these women received recommended antenatal care for gestational weight gain (GWG) in line with Australian guidelines. Results showed that only 13.1% of women received weight assessments at both their first and a subsequent visit, and less than one-third (30%) received advice on recommended GWG ranges, dietary intake, and physical activity. While 92% of Aboriginal and 93% of non-Aboriginal women found the care acceptable, most did not receive the full recommended care. Factors such as younger age, higher pre-pregnancy BMI, and first-time pregnancies were linked to higher likelihoods of receiving proper GWG care. The study concluded that although there is high acceptability for GWG care, a broader, service-wide practice change is needed to improve adherence to the guidelines. [118]

MATERIALS AND METHODS

TYPE OF STUDY: Cross Sectional Study.

STUDY DURATION: December 2023 to December 2024

PLACE OF STUDY: KAHER'S KLE Dr. Prabhakar Kore Charitable Hospital, Belagavi.

INCLUSION CRITERIA: Pregnant women who were admitted for delivery in KAHER'S Dr. Prabhakar Kore Charitable Hospital, Belagavi and have their 1st-trimester weight records.

EXCLUSION CRITERIA:

1) Pregnant women who do not have their 1st trimester weight records.

2) Women who did not deliver in Dr. Prabhakar Kore Charitable Hospital.

SAMPLE SIZE: 300

Sample size calculation:

The sample size was calculated based on the prevalence of women who gained ideal weight Indian women during pregnancy according to the Institute of Medicine (IOM) recommendations, which was reported as 30% in a study by Bhavadharini B et al. [10] Other parameters considered for the calculation included an absolute precision of 5.31% and a 95% confidence level. The following formula, as described by Daniel WW et al, was used to determine the sample size: [119]

$$N = \frac{Z^2 P(1-P)}{d^2}$$

Where *n* = Sample size

Z= Z statistic for confidence level 95% is 1.960

P = Expected prevalence/proportion of outcome= 0.30

d = Precision= 0.0531

The required size as per the above-mentioned calculation was 286. To account for a non-participation rate of a about 5%, another 14 subjects will be added to the sample size. Hence the final required sample size would be 300.

SOURCE OF DATA: Case records and antenatal visit records of women who delivered in KAHER' S Dr. Prabhakar Kore Charitable Hospital, Belagavi with first trimester weight records.

CTRI NUMBER: CTRI/2023/12/060690.

ETHICAL CLEARANCE: Ref No. MDC/JNMCIEC/209

WAIVER OF CONSENT: Ref: MD/DOME/363

DATA COLLECTION METHOD:

Pregnant women admitted in KAHER' S Dr. Prabhakar Kore Charitable Hospital, Belagavi for delivery were screened as per inclusion and exclusion criteria by convenient sampling. Demographic information such as name, age, address, in-patient number and date of admission was recorded. Detailed current antenatal history of three trimesters were obtained such as number of antenatal visits, nutritional supplement intake (folic acid, hematinic and calcium), parity, period of gestation at the time of delivery, past obstetric history such as medical illnesses, previous mode of deliveries were noted from the available records. Examination details such as pulse

rate, blood pressure, cardiovascular system, respiratory system, per abdomen, per speculum and per vaginal examination were also obtained.

Intra-natally, the duration of labor, complications such as malpresentation, antepartum/post-partum hemorrhage, cephalopelvic disproportion (CPD) were obtained from the case records.

Delivery details i.e. Vaginal delivery (spontaneous/induced labor/instrumental), Cesarean sections (elective &emergency) and birth details (gender, birth weight, time of birth, APGAR score, NICU admissions) were noted.

The enrolled women in this study were checked for their height (in cm) using stadiometer (figure-2) which is wall mounted on an even surface (product type used in this study: Hard tape, Length: 200cm, Calibration: centimetres, Blade material: steel).

Figure-2: Stadiometer

Weight (in kg) was recorded with light weight clothing and without footwears using mechanical weighing machine (Figure 3) before the delivery. The weighing scale has a zero adjuster which is adjusted to zero kg before measuring the weight. (The weighing machine used in this study is a mechanical manual analogue weighing scale, model type: classic, capacity: up to 150 kg, measures in kg, material: plastic).

Figure-3: Mechanical Weighing Machine

Immediately after the delivery weight of baby is measured (if resuscitation was required, measured immediately after resuscitation) using an electronic infant weighing scale (figure-4). (In this study the electronic BWS 101 was used to measure the baby weight, has an accuracy of 5g and a resolution of 1g. The BWS 101 features an easy-to-read LCD screen display, providing accurate measurements up to 10kg. This baby weighing scale is equipped with a 6V, 1.2Ah battery backup for uninterrupted operation).

Figure:4- Electronic Infant Weighing Scale

BMI of the woman is calculated based on earliest 1st trimester weight record available with the patients and the height measured.

$$\text{Body mass index}^{(2)} = \frac{\text{Earliest 1st trimester weight record (in kg)}}{(\text{Height in meter})^2}$$

and categorized as per the WHO BMI cut-off for the Asia-Pacific population. [120]

Table:1- WHO BMI* cut-off for the Asia-Pacific population

BMI categories	BMI range
Underweight	<18.5
Normal	18.5-22.9
Over weight -At risk	23-24.9
Obese-1	25-29.9
Obese-2	>/=30

**BMI- Body Mass Index*

Total gestational weight gain was calculated by taking difference between the weight in kg at delivery and weight in 1st trimester. [(1)] Gestational weight gain in different trimesters (1^{st}, 2^{nd}, 3^{rd} trimesters) was calculated by taking the difference of weight in the beginning and end of each trimester. [(1)]

The total weight gain, trimester wise (1^{st}, 2^{nd} and 3^{rd} trimester) weight gain and < 20 weeks / > 20 weeks period of gestation weight gain are studied based on different categories of BMI for normal outcome and the outcomes with morbidities.

A univariate regression model was performed to study the association of GWG in the occurrence of the morbid outcomes by comparing with the weight gained by study participants who had normal outcome.

OUTCOME MEASURES &OPERATIONAL DEFINITIONS:

1. Period of gestation:

a. Preterm: It is defined as birth between the age of fetal viability and 37 completed weeks of gestation. [(121)]

b. Term: A pregnancy is said to be term between 37- and 42-weeks' gestation. [(121)]

c. Post-datism: It is defined in the study as pregnancy which crosses the expected date of delivery. [(122)]

2. Vaginal delivery:

a. Spontaneous

b. Induced: Induction of labour is defined as the artificial initiation of labour before its spontaneous onset for the purpose of delivery of the foeto- placental unit. [(123)]

c. Instrumental: ventouse/ forceps

3. Caesarean section:

a. Elective: An elective caesarean section (ECS) is one performed before the onset of labour in the absence of a foetal or maternal indication necessitating delivery. [124]

b. Emergency

4. Normal outcome- Normal outcome included the study participants who delivered a term, live baby >/= 2500grams, by spontaneous mode of vaginal delivery or delivered by elective LSCS / emergency LSCS (which had indications of LSCS- previous LSCS/ maternal request) and did not have any antepartum morbidities (PIH, Diabetes, thyroid disorders, macrosomia, FGR, heart diseases, ICU admissions, any other medical illnesses) or intra partum morbidities [induced or instrumental vaginal delivery, Caesarean section (other than previous LSCS and maternal request as indication), malpresentations, prolonged labor, post-partum hemorrhage, CPD, still birth and NICU admission].

5. Antenatal morbidities

5a. Anemia: Anaemia is defined as haemoglobin concentration less than 11.0 g/dl [125]

a) Mild: haemoglobin = 10.0–10.9 g/dl [125]
b) Moderate: haemoglobin = 7.0–9.9[125]
c) Severe: haemoglobin < 7.0 g/dl[125]

5b. Hypertension in pregnancy:

a. Chronic hypertension in pregnancy refers to elevated blood pressure (BP) that is present before conception or develops before the 20th week of gestation. It is diagnosed when systolic BP is 140 mm Hg or higher and/or diastolic BP is 90 mm Hg or higher on at least two separate occasions, spaced 4–6 hours apart. If hypertension

persists beyond 12 weeks postpartum, it is retrospectively classified as chronic hypertension. [121]

b. Gestational hypertension is diagnosed when BP reaches at least 140 mm Hg systolic and/or 90 mm Hg diastolic on two occasions at least 4 hours apart after the 20th week of pregnancy, in women who were normotensive before pregnancy and prior to 20 weeks' gestation. This condition is distinguished by the absence of proteinuria, and BP levels typically return to normal postpartum. [121]

c. Preeclampsia is characterized by gestational hypertension without proteinuria but with at least one severe feature, including Thrombocytopenia (Platelet count below 100,000 × 10^9/L), Liver Dysfunction (Elevated liver enzyme levels [twice the upper normal limit]), Severe and Persistent Pain(Right upper quadrant or epigastric pain unrelated to other conditions), Renal Impairment (Serum creatinine levels above 1.1 mg/dL or a doubling of baseline creatinine in the absence of kidney disease), Pulmonary Oedema, Neurological Symptoms (Persistent headache unresponsive to acetaminophen or visual disturbances).[121]

d. Eclampsia: Seizures that cannot be explained by any other condition in a woman with preeclampsia. It typically occurs after 20 weeks of gestation in previously normotensive women and is associated with new-onset hypertension, proteinuria and other organ dysfunction. [121]

e. HELLP syndrome is a severe complication of pregnancy characterized by Haemolysis (Identified through anaemia and specific peripheral blood smear findings), Liver Enzyme Elevation (Lactate dehydrogenase (LDH) levels exceeding the upper normal limit, total bilirubin >12 mg/L, and alanine aminotransferase (ALT)

levels more than twice the normal upper limit), Low Platelet Count (A nadir platelet count below 125,000/mm³). [126]

f. DIC

5c. Diabetes:

a. Gestational diabetes is diagnosed when the blood glucose level exceeds 140 mg/dL after a 2-hour, 75g oral glucose tolerance test (OGTT) during pregnancy, as per the Diabetes in Pregnancy Society of India. [127]

b. Overt: Overt diabetes in pregnancy is confirmed if any of the following criteria are met Fasting plasma glucose (FPG) of 126 mg/dL or higher, HbA1c of 6.5% or more (measured using a standardized assay), Random plasma glucose exceeding 200 mg/dL, with confirmation through fasting glucose or HbA1c levels. [121]

c. Impaired Glucose Tolerance (IGT) is characterized by fasting plasma glucose (FPG) between 100–125 mg/dL (5.6–6.9 mmol/L), 2-hour plasma glucose levels between 140–199 mg/dL (7.8–11.0 mmol/L) during an OGTT, Either or both criteria being met. [128]

5d. Thyroid disorders:

a. Hypothyroidism: According to the 2014 European Thyroid Association guidelines, hypothyroidism in pregnancy is diagnosed based on trimester-specific thyroid-stimulating hormone (TSH) thresholds First trimester: TSH > 2.5 m IU/L, Second trimester: TSH > 3.0 m IU/L, Third trimester: TSH between 3.0–3.5 m IU/L. [129]

b. Hyperthyroidism in pregnancy is diagnosed based on the following criteria- TSH level below 0.1 m IU/mL, Elevated free T4 levels, Presence of raised anti-thyroid peroxidase (TPO) antibodies, Clinical symptoms indicative of hyperthyroidism. [130]

5e. Heart diseases

5f. Maternal intensive care unit (ICU) admissions

6. Fetal outcomes /morbidities:

a. Foetal growth restriction is defined as expected foetal weight (EFW) or abdominal circumference (AC) < 10th percentile for gestational age (GA) [131].

b. Macrosomia: Foetuses with expected foetal weight (EFW) or abdominal circumference (AC) above 90 percentile. [132]

c. Live birth

d. Still birth is typically defined as foetal death at or after 28 weeks of pregnancy. It results in a baby born without signs of life. [122]

e. Low birth weight (LBW) was assigned if the neonate weighed < 2500g. [122]

f. Neonatal intensive care unit (NICU) admission

STATISTICAL ANALYSIS:

Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables. Data was also represented using appropriate diagrams like bar diagram, pie diagram and box plots.

The association between paired quantitative explanatory variables was assessed by paired sample t-test (2 time points) or repeated measures ANOVA (>2 time points) will be used to assess statistical significance.

For binary categorical outcome variables, univariate logistic regression was performed to estimate crude odds ratios (OR) with corresponding 95% confidence intervals (CI). With a *P-value* <0.05 in the univariate analysis were considered statistically significant regression model. IBM SPSS version 22 was used for statistical analysis. [10]

RESULTS

This study was conducted in KAHER'S Dr. Prabhakar Kore Charitable Hospital and Medical Research Centre conducted from December 2023 to December 2024. Figure 5 depicts the STROBE-Strengthening the Reporting of Observational Studies in Epidemiology. A total number of 350 participants were included in this study after screening 2003 women for eligibility by convenient sampling method out of 3603 women who delivered in KAHER'S Dr. Prabhakar Kore Charitable Hospital and Medical Research Centre. Of the 2003 women screened for eligibility, 1501 did not have 1st trimester weight records and 152 had insufficient records, hence excluded from the study. 350 participants were included and their outcomes were studied and grouped as normal outcome (104 study participants) and outcomes with morbidities (246). The 246 participants were observed to have antepartum and intra partum morbidities (morbidities based on mode of deliveries and birth outcomes). The antepartum outcomes were studied in terms of Hypertension: 45 (18.2%), Thyroid disorders: 28 (11.38%), FGR: 27 (7.7%), Diabetes: 18(7.3%), Anaemia:11(4.47%), Macrosomia:11(4.47%), Heart disease: 7(2.85%), Maternal ICU admission: 9 (3.6%). Intrapartum morbidities were observed in modes of deliveries as LSCS 216(61.7%) [Emergency LSCS- 172 (49.14%) and elective LSCS- 44 (12.5%)], Vaginal delivery [Induced:48 (13.7%) and Instrumental:15 (4.29%)] and in birth outcomes as Low Birth Weight: 75(22.57%), Neonatal ICU admission: 27 (7.7%), Stillbirth: 5 (1.4%).

Figure: 5-Strobe Diagram

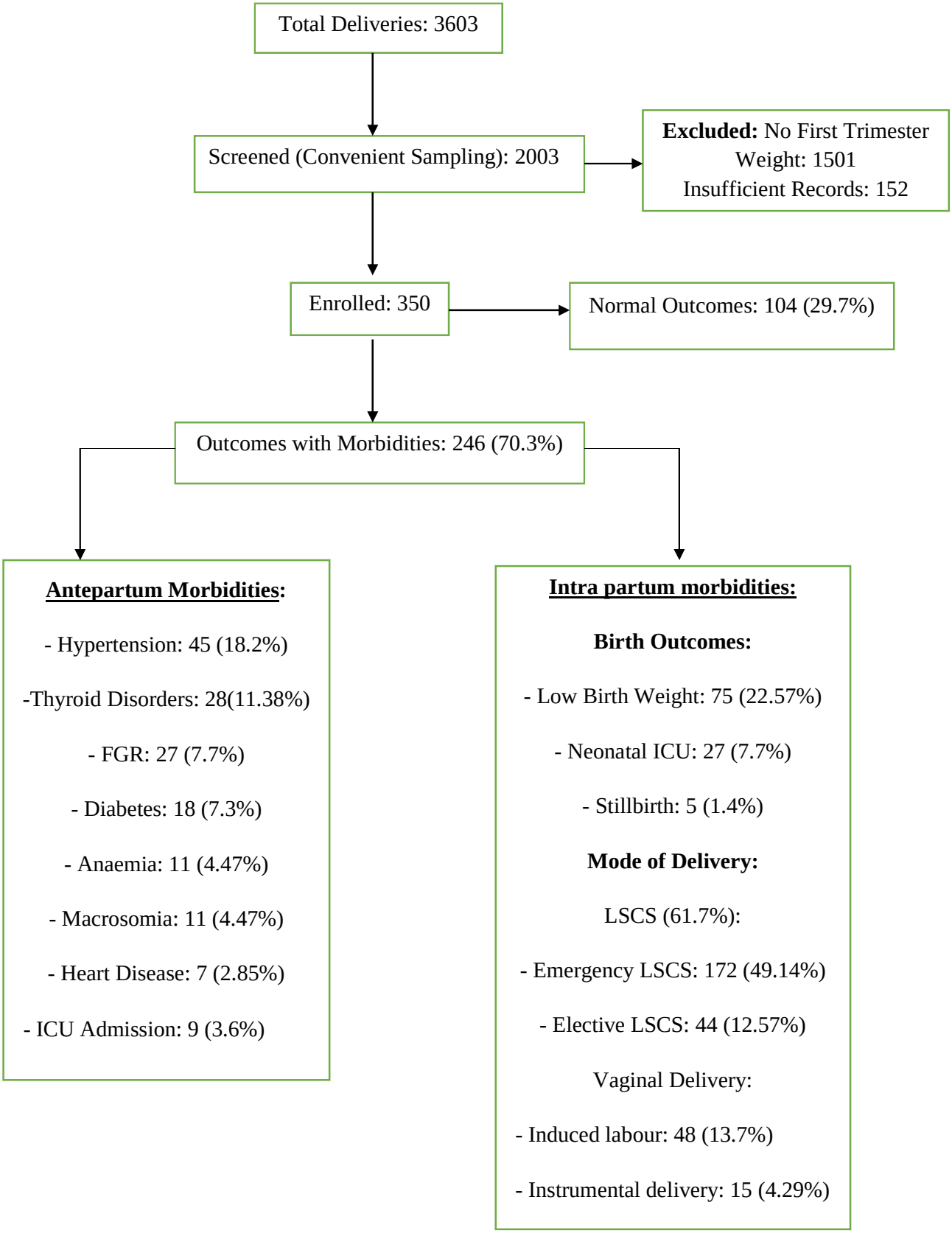


Table-2 depicts that in this study the distribution of age group of study participants is shown in above table with the mean age of the sample participants (N=350) was 25.94 years (SD = 4.2), with a median of 25 years, and they ranged from 19 to 39 years. Maximum participants belonged to age group 21-25 years (46.86%), which suggests that nearly half of the participants fall within this age range followed by 26-30 years (30.86%). Figure-6 gives the bar chart for age group distribution based on the above-mentioned results.

Table 2: Clinical characteristics of study participants

Clinical characteristics	Subcategory	Frequency	Percentages
Age	≤20yr	25	7.14%
Mean ± SD	21-25yr	164	46.86%
25.94 ± 4.2	26-30yr	108	30.86%
Median (min^, max$)	31-35yr	42	12.00%
25.0(19.0, 39.0)	>35yr	11	3.14%
Parity	Nulliparous	174	49.71%
	P1	128	36.57%
	P2	42	12.00%
	P3	4	1.14%
	P4	2	0.57%
Period of Gestation	Preterm	49	14.00%
	Term	264	75.43%
	Post datism	37	10.57%
Height (cm*)	<140	2	0.57%
Mean ± SD	140-150	65	18.57%
155.41 ± 5.99	150-160	204	58.29%
Median (min, max)	160-170	79	22.57%
155.0 (138.0, 170.0)			

**cm- centimetres, ^min- minimum, $max- maximum*

Figure:6 Distribution of study participants by age:

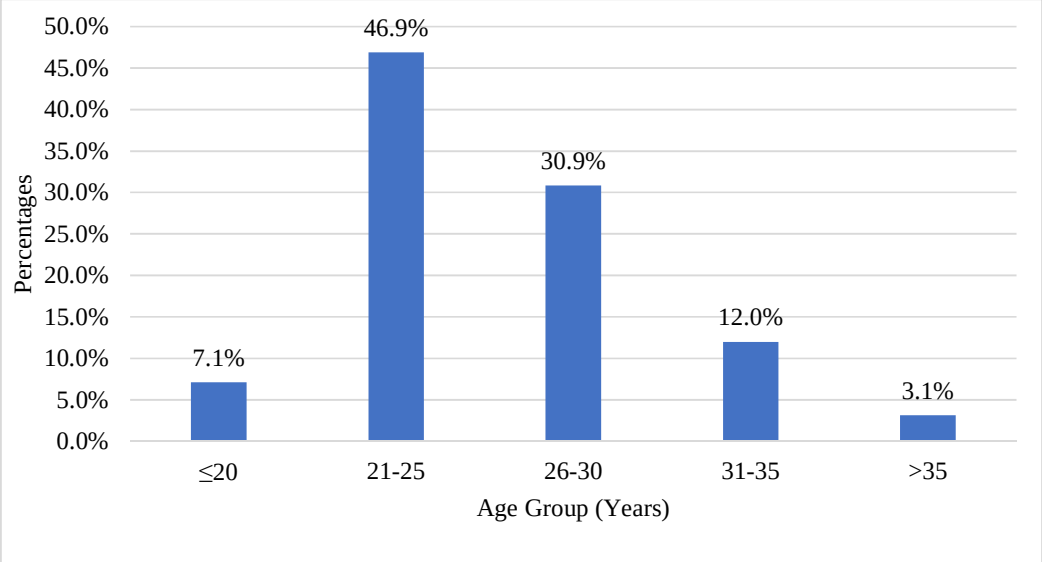
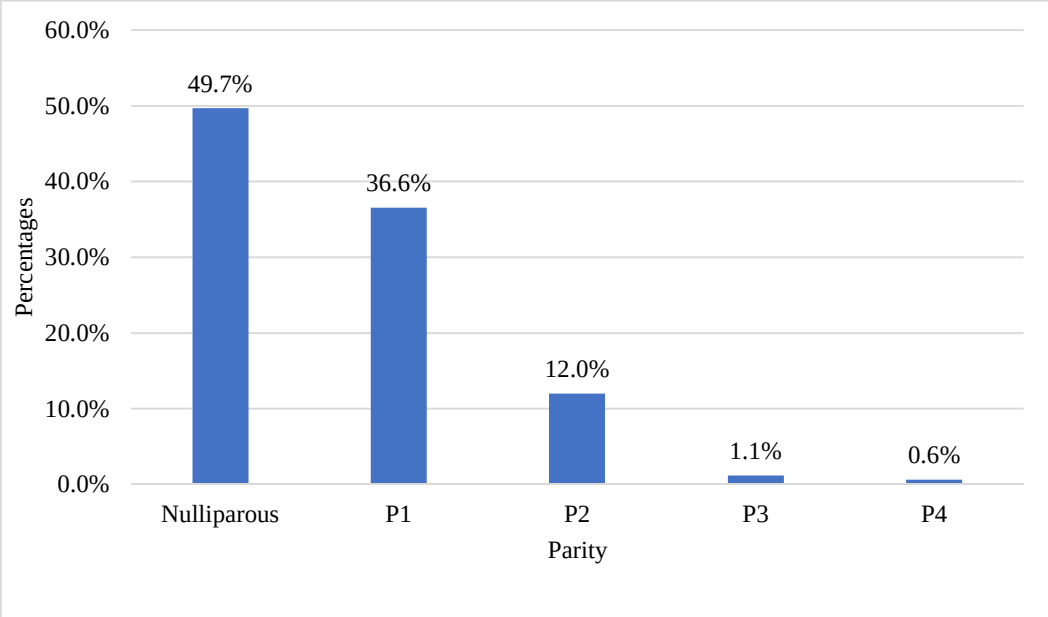


Table-2 demonstrates that the analysis of parity distribution among the study participants (N=350) is presented in the table. Parity is the quantity of births that a woman has given birth to after crossing the period of viability. The maximum 49.71% (n=174), are nulliparous, which means they have never given birth followed by the proportion of women with one prior birth (P1) is 36.57% (n=128) in this study.

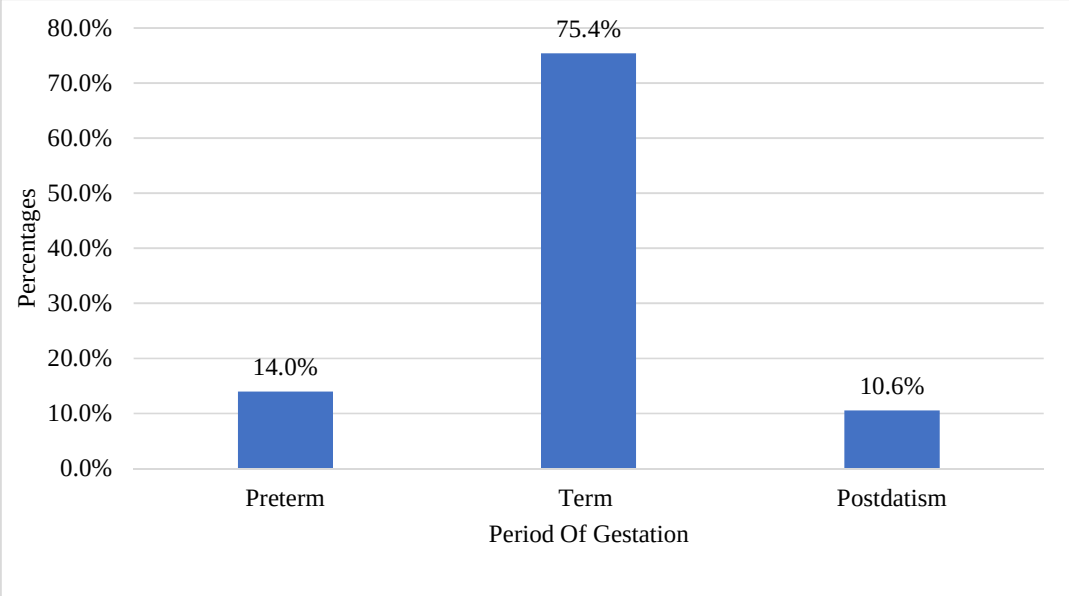
Figure-7 gives the bar chart for distribution of parity based on the given results.

Figure:7 Distribution of study participants by Parity:



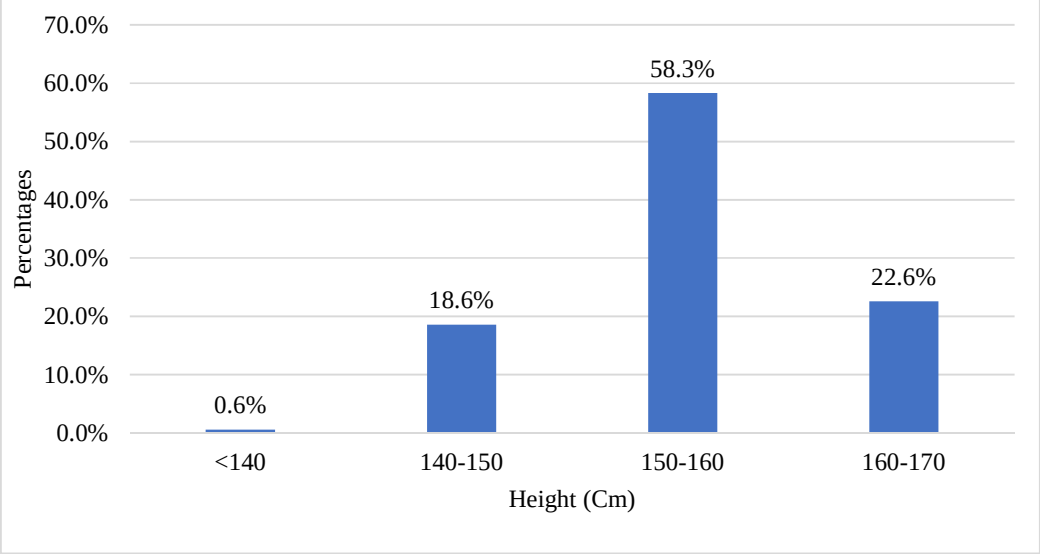
The figure-8 concentrates on the gestational period of delivery of the study participants. Table- 2 classified cases into preterm, term, and post-datism. The preterm pregnancies of 49 participants (14.00%) were a result of delivery prior to 37 weeks of gestation. The majority, 264 (75.43%), had term pregnancies, which are deliveries that occur between 37 and 40 weeks. Furthermore, 37 cases (10.57%) were classified as post-datism, which refers to deliveries that occurred after 40 weeks of gestation, which is also term but studied separately considering its excessive perinatal risk associated. This data indicates that term pregnancies are the most prevalent, while preterm as well as post-datism cases are substantially lower in comparison. This distribution emphasizes the gestational trends underneath the study participants, offering a glimpse into the outcomes of pregnancy.

Figure:8-Distribution of study participants by Period of Gestation:



As per table-2 the median height was 155 cm, with a range of 138 to 170 cm, and the mean height was 155.41 cm (SD = 5.99). The 95% confidence interval (CI) for height was 154.8 to 156.0 cm, which represents the likelihood that the true mean falls within this range. The bar chart of height distribution is given in figure-9.

Figure: 9 - Distribution of study participants by Height (cm*):



**cm- centimetres*

Table-3 gives the analysis of number of antenatal visits among 350 study participants. The majority of participants attended between four and six antenatal visits, with six (25.43%), five (22.86%), and four (18.00%) being the most common. Additionally, a substantial number of individuals underwent seven (14.86%) and eight (11.71%) visits. A minor percentage of participants attended fewer than four visits, with only 0.57% attending two visits and 0.86% attending three visits. This may suggest that there is limited awareness or access to healthcare. Furthermore, only a small number of individuals had more than ten visits, with 1.43% attending ten, 0.86% attending twelve, as well as 0.29% each attending thirteen and eighteen visits. The analysis indicates that the majority of participants had an adequate number of visits, while a small percentage had either exceptionally high or very low attendance. This variation may be indicative of disparities in healthcare access, economic circumstances, or pregnancy complications necessitating greater number of check-ups. The pictorial representation of number of antenatal visits is in figure- 10.

Table 3: Distribution of number of antenatal visits in the study participants (N=350)

No of Antenatal Visits	Frequency	Percentages
2	2	0.57%
3	3	0.86%
4	63	18.00%
5	80	22.86%
6	89	25.43%
7	52	14.86%
8	41	11.71%
9	10	2.86%
10	5	1.43%
12	3	0.86%
13	1	0.29%
18	1	0.29%

Figure:10 Distribution of study participants by number of antenatal visits

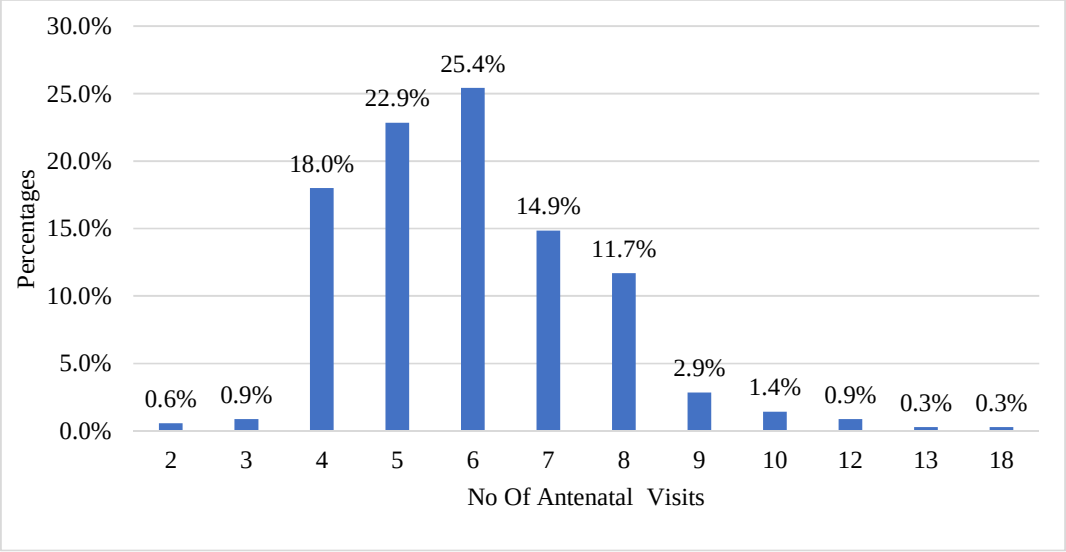


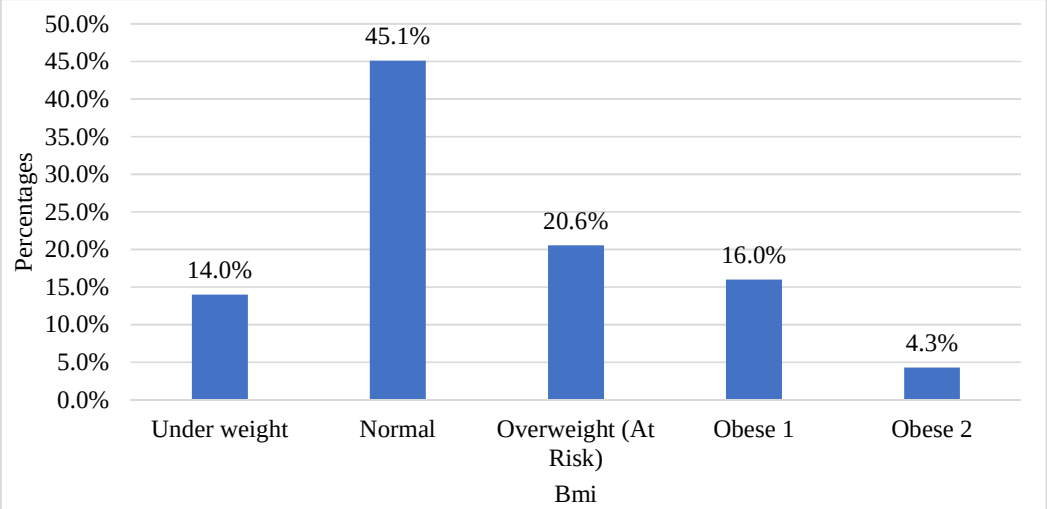
Table-4 explains the distribution of study participants based on their BMI of first trimester weight record. 45.14% have a normal BMI, as evident from the descriptive analysis of BMI in the study participants (N=350). Potential health concerns are indicated by the fact that a significant portion, 20.57%, is classified as overweight (at risk). Furthermore, 16% are classified as Obese 1, and 4.29% are classified as Obese 2, which is a more severe condition. This classification highlights a smaller but significant group that is at increased health risk. The results indicate that a significant proportion of the participants lies outside the conventional BMI range, despite the fact that nearly half of the participants sustain a normal BMI. Figure-11 explains the above.

Table 4: Distribution of the study participants based on BMI^ at 1st visit (N=350)

BMI	Frequency	Percentages
Underweight	49	14.00%
Normal	158	45.14%
Overweight (At Risk)	72	20.57%
Obese 1	56	16.00%
Obese 2	15	4.29%

* ***WHO BMI cut-off for the Asia-Pacific population:*** *Underweight: <18.5, Normal: 18.5-22.9, Overweight, At risk: 23-24.9, Obese-1: 25-29.9, Obese-2:>/=30.* ^***BMI:*** *Body Mass Index*

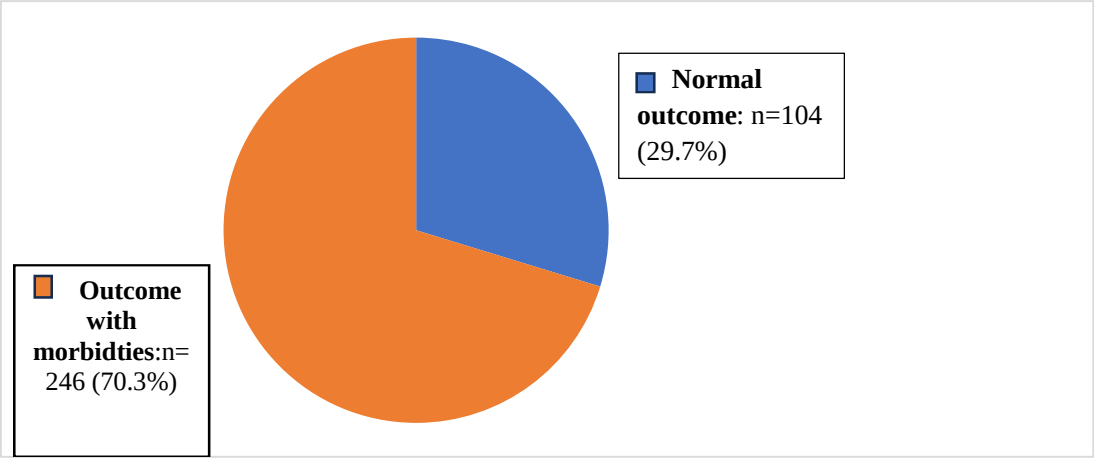
Figure:11 Distribution of study participants by BMI*



**BMI*: *Body Mass Index*

The analysis of the outcomes in the study participants (N=350) indicates that the majority of participants exhibited anomalous/abnormal outcomes. This is shown in figure-12. Only 104 individuals (29.71%) had normal outcomes, while 246 individuals (70.29%) had aberrant results out of the total study population. This suggests that the incidence of aberrant cases is more than twice as prevalent as that of normal cases.

Figure:12 Distribution of study participants by outcomes:



The table-5 provides a descriptive analysis of gestational weight gain (GWG) across pregnancy trimesters among various body mass index (BMI) groups. The sample consists of women who are underweight (14%), normal weight (45.14%), overweight (20.57%), Obese 1 (16%) and Obese 2 (4.29%). Weight gain pattern differs among BMI categories, with normal-BMI women acquiring an average of 11.11 ± 3.88 kg overall. Maximum weight gain is by obese-2 category of 14.4 ± 8.67 kg as total weight gain. The underweight category has gained total weight gain of 11.66 ± 4.46 kg. Overweight category gained 10.01 ± 3.72 kg while the least weight gain was obtained by obese-1 BMI of 9.48 ± 3.46 kg.

Table: 5- Analysis of GWG[$] among different BMI[^] categories of overall study participants

WHO[#] BMI category	n (%) (n-350)	1st Trimester GWG	2nd Trimester GWG	3rd Trimester GWG	<20 Weeks GWG	>20 Weeks GWG	Total GWG
Under Weight	49 (14%)	0.91 ± 1.76	5.35 ± 3.04	5.76 ± 2.73	1.58 ± 1.97	10.07 ± 3.69	11.66 ± 4.46
Normal	158 (45.14%)	0.95 ± 1.29	4.52 ± 2.32	6.32 ± 3.12	1.19 ± 1.41	9.93 ± 3.43	11.11 ± 3.88
Overweight	72 (20.57%)	0.93 ± 1.68	3.91 ± 2.08	5.85 ± 2.74	0.88 ± 1.46	9.13 ± 3.58	10.01 ± 3.72
Obese 1	56 (16%)	0.68 ± 1.55	3.61 ± 2.22	5.83 ± 2.69	0.82 ± 1.73	8.66 ± 2.82	9.48 ± 3.46
Obese 2	15 (4.29%)	0.97 ± 1.05	5.07 ± 2.49	10.54 ± 6.69	0.97 ± 1.25	13.43 ± 8	14.4 ± 8.67

** **WHO BMI cut-off for the Asia-Pacific population**: Underweight: <18.5, Normal: 18.5-22.9, Overweight, At risk: 23-24.9, Obese-1: 25-29.9, Obese-2: >/=30 ^**BMI:** Body Mass Index $**GWG:** Gestational Weight Gain #**WHO:** World Health Organization*

An analysis of maternal gestational weight gain across various BMI categories for expectant women with normal pregnancy outcomes is presented in the table-6. The data is divided into 5 categories: underweight, normal, overweight, and Obese 1 and Obese 2. The further breakdown of weight gain is based on the trimesters (1^{st}, 2^{nd} and 3^{rd} trimesters) and the period preceding and following 20 weeks of gestation. Based on the data, the most significant total weight gain was observed in underweight women (10.76 ± 4.32 kg) and normal-weight women (10.73 ± 3.33 kg) following closely behind. The weight gain of overweight women was marginally lower (10.58 ± 2.24 kg), while the total weight gain of the Obese 1 and Obese 2 categories was the least (8.13 ± 3.55 kg and 10.25 ± 4.12 kg, respectively). This implies that women with a higher body mass index (BMI) tend to acquire less weight during pregnancy.

Table: 6- Analysis of GWG among study participants of different BMI having Normal Outcome

WHO[#] BMI[$] category	**n**-104 (29.71%)	**1st Trimester GWG^**	**2nd Trimester GWG**	**3rd Trimester GWG**	**<20 Weeks GWG**	**>20 Weeks GWG**	**Total GWG**
Under Weight	16	1.34 ± 1.53	5.08 ± 3.02	5.13 ± 2.5	1.19 ± 1.3	9.57 ± 3.93	10.76 ± 4.32
Normal	42	0.68 ± 1	4.49 ± 2.28	6.01 ± 2.51	1.28 ± 1.43	9.45 ± 2.64	10.73 ± 3.33
Overweight	24	0.1 ± 1	4.09 ± 1.61	6.43 ± 2.05	0.55 ± 1.03	10.03 ± 2.45	10.58 ± 2.24
Obese 1	16	0.5 ± 2.26	2.85 ± 1.92	4.93 ± 2.37	0.63 ± 1.42	7.49 ± 2.8	8.13 ± 3.55
Obese 2	6	0.35 ± 1.34	4.56 ± 1.93	6.7 ± 1.3	0.32 ± 0.87	9.93 ± 3.43	10.25 ± 4.12

** **WHO BMI cut-off for the Asia-Pacific population**: Underweight: <18.5, Normal: 18.5-22.9, Overweight, At risk: 23-24.9, Obese-1: 25-29.9, Obese-2:>/=30. [$]**BMI**: Body Mass Index. ^**GWG**: Gestational Weight Gain [#]**WHO:** World Health Organization*

The table-7 explains the comparison of GWG recommended in this study based on the normal outcome population's mean GWG and the GWG recommendation by IOM for Asian population. It is seen that our study advices a lesser weight gain recommendation compared to IOM recommendation of weight gain pregnancy for BMI categories underweight (-4.74 kg) and normal (-3.02 kg). A weight gain recommendation greater to IOM recommendation is prescribed for overweight, obese-1 and obese-2 categories by +1.53kg, +1.13kg, +3.25 kg respectively.

Table-7: Comparison of GWG recommendation between our study and IOM among normal outcome

WHO[$] BMI[&] Categories	**GWG^ recommended by this study (in kg)**	**IOM* recommendation of GWG (in kg)**	**Difference between GWG in this study and IOM recommendation**
Under Weight	10.76 ± 4.32	13-18	-4.74
Normal	10.73 ± 3.33	11.5-16	-3.02
Overweight	10.58 ± 2.24	7-11.5	+1.53
Obese 1	8.13 ± 3.55	5-9.1	+1.13
Obese 2	10.25 ± 4.12		+3.25

** **WHO BMI cut-off for the Asia-Pacific population:** Underweight: BMI <18.5, Normal :BMI 18.5-22.9,Overweight ,At risk: BMI 23-24.9,Obese-1: BMI 25-29.9, Obese-2: BMI >/=30, ***IOM classification of BMI**: Underweight: BMI <18.5, Normal weight: BMI 18.5–24.9, Overweight: BMI 25.0–29.9, Obese: BMI **≥30.0**, [#]**BMI**: Body Mass Index, ^**GWG:** Gestational Weight Gain, [$]**WHO**: World Health Organization,*

Table-8 gives the analysis of maternal gestational weight gain among various BMI categories and hypertensive participants offers critical insights into the ways in which maternal health conditions affect weight gain patterns throughout the pregnancy. In

the chronic hypertensive group (1.22%), mothers with a normal body mass index (BMI) exhibited a consistent weight gain pattern, with an increasing trend from the first to the third trimester, resulting in a total of 14.4 ± 0 kg and in obese-1 category resulting in a weight gain of 8.5 ± 0.71 kg, this demonstrated a slightly reduced weight gain.

The analysis of pregnancy induced hypertension (PIH) including gestational hypertension, PIH with imminent signs, pre-eclampsia, HELLP syndrome shows underweight mothers lost weight (-1.3 ± 1.21 kg) in the first trimester but they eventually gained weight and achieved 14.16 ± 4.8 kg by term. The majority of them belonged to normal BMI category resulted in a weight gain of 12.56 ± 4.42 kg. The maximum weight gain in PIH has been noted among the obese-2 category with 18.75 ± 5.82 kg of total weight gain. In all the categories of the BMI in the hypertensive participants it is noted that there is a significant weight gain in the 2^{nd} and 3^{rd} trimester.

Table 8: Analysis of GWG^ among women having Hypertension in pregnancy.

Hypertension in Pregnancy	N	WHO" BMI! category	N (45) 18.9 %	1st Trimester GWG	2nd Trimester GWG	3rd Trimester GWG	<20 Weeks GWG	>20 Weeks GWG	Total GWG
PIH#	42 (17.07%)	Under Weight	5	-1.3 ± 1.21	6.5 ± 3.3	7.96 ± 4.49	1.2 ± 1.89	12.96 ± 4.79	14.16 ± 4.8
		Normal	19	1.4 ± 0.73	5.15 ± 2.19	7.61 ± 4.29	1.63 ± 1.21	10.94 ± 4.02	12.56 ± 4.42
		Overweight	6	4 ± 0	6.07 ± 1.91	6.67 ± 4.37	2.25 ± 1.64	11.15 ± 6.19	13.4 ± 6.3
		Obese 1	8	0.98 ± 0.56	5.5 ± 2.99	5.43 ± 2.32	1.75 ± 1.57	8.85 ± 2.91	10.6 ± 3.93
		Obese 2	4	0.8 ± 0	6.97 ± 2.89	13.33 ± 1.7	1.1 ± 0.89	17.65 ± 5.3	18.75 ± 5.82
Chronic HTN@	3 (1.22%)	Under Weight	0	-	-	-	-	-	-
		Normal	1	2.2 ± 0	5.4 ± 0	6.8 ± 0	3.8 ± 0	10.6 ± 0	14.4 ± 0
		Overweight	0	-	-	-	-	-	-
		Obese 1	2	0 ± 1.41	3.3 ± 1.84	5.2 ± 2.55	0.4 ± 0.85	8.1 ± 1.56	8.5 ± 0.71
		Obese 2	0	-	-	-	-	-	-

** **WHO BMI cut-off for the Asia-Pacific population:** Underweight: <18.5, Normal: 18.5-22.9, Overweight, At risk: 23-24.9, Obese-1: 25-29.9, Obese-2: >/=30. [!]**BMI**: Body Mass Index ^**GWG:** Gestational Weight Gain "**WHO:** World Health Organization. [#]**PIH-** pregnancy induced hypertension. [@]**HTN**-hypertension*

Table-9 demonstrates the analysis of different BMI categories having thyroid disorders contributing 11.38% of the participants with morbid outcomes. It is observed that the obese-2 category has gained the maximum weight gain of 18.75 ± 4.6 kg while normal, obese-1, over weight categories gained a total weight of 10.68 ± 3.03 kg, 10.64 ± 4.49 kg and 10.02 ± 4.32 kg respectively.

Table 9: Analysis of GWG^ among women with Thyroid disorders:

WHO" BMI# category	n 28 (11.38 %)	1st Trimester GWG	2nd Trimester GWG	3rd Trimester GWG	<20 Weeks GWG	>20 Weeks GWG	Total GWG
Under Weight	3	0.45 ± 2.76	3.7 ± 1.82	7.33 ± 5.27	1 ± 2.65	10.33 ± 5.01	11.33 ± 5.06
Normal	12	1.63 ± 1.22	4.3 ± 2.09	6.35 ± 3.54	1.28 ± 1.14	9.41 ± 2.54	10.68 ± 3.03
Overweight	6	1.5 ± 2.12	2.85 ± 1.24	6.67 ± 2.09	0.97 ± 1.48	9.05 ± 3.55	10.02 ± 4.32
Obese 1	5	1 ± 2.14	3.92 ± 1.63	5.92 ± 3.06	1.3 ± 2.12	9.34 ± 3.94	10.64 ± 4.49
Obese 2	2	0 ± 0	8 ± 0	11 ± 4.24	3 ± 1.41	15.75 ± 6.01	18.75 ± 4.6

** **WHO BMI cut-off for the Asia-Pacific population:** Underweight: <18.5, Normal: 18.5-22.9, Overweight, At risk: 23-24.9, Obese-1: 25-29.9, Obese-2: >/=30 #**BMI:** Body Mass Index ^**GWG**: Gestational Weight Gain "**WHO:** World Health Organization*

Table-10 represents the weight gain analysis of this study among the study participants who had foetal growth restriction (FGR). The least weight gain has been observed among the obese-2 and over weight participants with 5 ± 0 kg and 6.4 ± 2.55 kg respectively. The maximum weight gain of all the categories have been observed among underweight BMI category of 10.22 ± 3.57 kg.

Table 10: Analysis of GWG^ among women having Foetal Growth Restriction (FGR[#]):

WHO[$] BMI[“] category	n 27 (7. 71%)	1st Trimester GWG	2nd Trimester GWG	3rd Trimester GWG	<20 Weeks GWG	>20 Weeks GWG	Total GWG
Under Weight	5	0.32 ± 0.99	3.33 ± 1.94	6.55 ± 4.44	1.02 ± 2.03	9.2 ± 3.37	10.22 ± 3.57
Normal	14	0.8 ± 1.43	3.63 ± 1.97	5.07 ± 2.99	0.91 ± 1.05	8.29 ± 2.69	9.2 ± 3.01
Overweight	4	0.07 ± 0.12	2.1 ± 0.85	4.05 ± 2.64	0.2 ± 1.07	6.2 ± 3.35	6.4 ± 2.55
Obese 1	3	1 ± 0	2.5 ± 0.71	6.23 ± 4.76	0.5 ± 0.87	7.73 ± 3.66	8.23 ± 3.04
Obese 2	1	0.2 ± 0	1.6 ± 0	3.2 ± 0	0.2 ± 0	4.8 ± 0	5 ± 0

*****WHO BMI cut-off for the Asia-Pacific population:*** *Underweight: <18.5, Normal: 18.5-22.9, Overweight At risk: 23-24.9, Obese-1: 25-29.9,Obese-2: >/=30* [“]***BMI-*** *body mass index* ^***GWG-*** *Gestational weight gain* [$]***WHO:*** *World Health Organization* [#]***FGR-*** *Fetal Growth Restriction*

Discrete variations across the trimesters are revealed in the analysis of GWG among various BMI categories within the diabetic participants is given in table-11. The diabetic participants contributed 7.32% of the total morbid outcome participants, including the study participants having overt DM, gestational DM, impaired glucose tolerance. Majority of them belonged to the normal BMI category and ended up gaining an average of 12.49 ± 4.49 kg. The maximum weight gain has been observed

among the Obese 2 participants, who gained an average of 20.33 ± 4.73 kg while the underweight and overweight categories had almost similar weight gain of 13.25 ± 10.96 kg and 13.25 ± 3.89 kg respectively. It is noted that, among the diabetic participants there is excessive weight since < 20weeks especially from the first trimester itself.

Table 11: Analysis of GWG^ among women having Diabetes in pregnancy

WHO" BMI# category	N 18 (7.32%)	1st Trimester GWG	2nd Trimester GWG	3rd Trimester GWG	<20 Weeks GWG	>20 Weeks GWG	Total GWG
Under Weight	2	5 ± 0	5.25 ± 3.89	5.5 ± 3.54	2.5 ± 3.54	10.75 ± 7.42	13.25 ± 10.96
Normal	7	1.7 ± 1.64	6 ± 3.39	6.37 ± 2.37	2.2 ± 1.71	10.29 ± 3.94	12.49 ± 4.49
Overweight	2	4 ± 0	6.5 ± 2.12	3.75 ± 2.47	-0.25 ± 0.35	13.5 ± 3.54	13.25 ± 3.89
Obese 1	4	1.5 ± 0	3.85 ± 2.66	3.73 ± 1.85	1.1 ± 0.86	6.85 ± 2.04	7.95 ± 2.26
Obese 2	3	1.4 ± 0.85	8.6 ± 0.85	13.67 ± 0.58	1.6 ± 0.69	18.73 ± 5.22	20.33 ± 4.73

** **WHO BMI cut-off for the Asia-Pacific population:** Underweight: <18.5, Normal: 18.5-22.9,Overweight ,At risk: 23-24.9,Obese-1: 25-29.9,Obese-2: >/=30 #**BMI-** body mass index ^**GWG-** Gestational weight gain "**WHO:** World Health Organization*

Macrosomia as an outcome has been studied in table-12 among different BMI categories. Maximum participants belonged to normal BMI category. There is a maximum total weight gain observed in normal and obese-2 of 17.66 ± 4.24 kg and 19.5 ± 6.36 kg respectively. The maximum total weight gain after obese-2 and normal BMI categories have been observed in obese-1with a total weight gain of 10.83 ± 3.01 kg. There were no study participants in over weight BMI category. Macrosomia

constituted about 3.14% of the population among the morbid population. Among the macrosomia study participants, it is observed that <20 weeks the weight gain has been rapid, especially during the 2nd trimester the weight gain has been nearly 50% of the total weight gain obtained.

Table 12: Analysis of GWG^ among women having Macrosomia

WHO" BMI$ category	n-11 (4.47%)	1st Trimester GWG	2nd Trimester GWG	3rd Trimester GWG	<20 Weeks GWG	>20 Weeks GWG	Total GWG
Under Weight	1	0.6 ± 0	3.4 ± 0	5.6 ± 0	0.6 ± 0	9 ± 0	9.6 ± 0
Normal	5	0.4 ± 0	9.06 ± 2.24	8.52 ± 3.17	2.26 ± 1.79	15.4 ± 3.83	17.66 ± 4.24
Overweight	0	-	-	-	-	-	-
Obese 1	3	1.75 ± 0.35	5.15 ± 3.75	6.23 ± 5.04	1.83 ± 0.29	9 ± 2.78	10.83 ± 3.01
Obese 2	2	1.4 ± 0.85	9.2 ± 0	13.5 ± 0.71	1.4 ± 0.85	18.1 ± 7.21	19.5 ± 6.36

** **WHO BMI cut-off for the Asia-Pacific population:** Underweight: <18.5, Normal: 18.5-22.9,Overweight ,At risk: 23-24.9,Obese-1: 25-29.9,Obese-2: >/=30 $**BMI-** body mass index ^**GWG-** Gestational weight gain "**WHO:** World Health Organization*

The analysis of maternal gestational weight gain among various BMI categories of anaemic participants in table-13 demonstrates noticeable trends. The study comprises 246 participants with morbid outcomes, among whom 4.46% (n=11) of the population had anaemia. There were no participants in obese-2 BMI group. Weight gain was gradual across trimesters among women of normal BMI, resulting in a total gestational weight gain of 12.26 ± 2.15 kg. Individuals who were overweight experienced a modest increase in weight 11.5 ± 0, whereas those who were obese 1 experienced 5.7 ± 0 kg GWG. A maximum weight gain has been observed in underweight BMI group of total weight gain 14 ± 8.49 kg.

Table 13: Analysis of GWG^ among women having Anaemia in pregnancy

WHO[@] BMI[$] category	n 11 (4.47%)	1st Trimester GWG	2nd Trimester GWG	3rd Trimester GWG	<20 Weeks GWG	>20 Weeks GWG	Total GWG
Under Weight	2	3.5 ± 0	5.95 ± 2.76	6.3 ± 3.25	2.45 ± 1.48	11.55 ± 7	14 ± 8.49
Normal	7	1.42 ± 1.5	5.13 ± 0.99	6.86 ± 1.91	1.99 ± 1.9	10.27 ± 1.09	12.26 ± 2.15
Overweight	1	0 ± 0	3.6 ± 0	7.9 ± 0	1.2 ± 0	10.3 ± 0	11.5 ± 0
Obese 1	1	0 ± 0	2.7 ± 0	3 ± 0	-1.8 ± 0	7.5 ± 0	5.7 ± 0
Obese 2	0	-	-	-	-	-	-

** **WHO BMI cut-off for the Asia-Pacific population:** Underweight: <18.5, Normal: 18.5-22.9,Overweight ,At risk: 23-24.9,Obese-1: 25-29.9,Obese-2: >/=30 [$]**BMI-** body mass index ^**GWG-** Gestational weight gain [@]**WHO:** World Health Organization*

Significant variations in weight gain patterns across trimesters are observed in the comparative analysis of maternal gestational weight gain in table-14 between BMI categories and maternal ICU admission. Weight gain varied by BMI classification among the 9 women admitted to the ICU. The weight of underweight mothers in the ICU increased consistently throughout the trimesters, culminating in a total of 21 ± 0 kg. The cumulative weight gains of women classified as Obese 1 and Obese 2 were 13.75 ± 3.18 kg and 10.8 ± 0 kg, respectively, while those classified as Normal-weight women in the ICU gained a total of 10.02 ± 2.47 kg. It is noted that there were no reports of overweight women in the ICU.

Table 14: Analysis of GWG^ among women having MICU[@] admissions

WHO[$] BMI[!] category	n 9 (3.6%)	1st Trimester GWG	2nd Trimester GWG	3rd Trimester GWG	<20 Weeks GWG	>20 Weeks GWG	Total GWG
Under Weight	1	5 ± 0	8 ± 0	8 ± 0	5 ± 0	16 ± 0	21 ± 0
Normal	5	2.2 ± 1.56	3.3 ± 1.72	6.06 ± 4.83	1.8 ± 1.54	8.22 ± 3.7	10.02 ± 2.47
Overweight	0	-	-	-	-	-	-
Obese 1	2	0.6 ± 0	8.6 ± 2.55	4.85 ± 0.21	3.8 ± 0.42	9.95 ± 3.61	13.75 ± 3.18
Obese 2	1	-	-	10.8 ± 0	0 ± 0	10.8 ± 0	10.8 ± 0

** **WHO BMI cut-off for the Asia-Pacific population:** Underweight: <18.5, Normal: 18.5-22.9, Overweight, At risk: 23-24.9, Obese-1: 25-29.9, Obese-2: >/=30 [!]**BMI-** body mass index ^**GWG-** Gestational weight gain [$]**WHO:** World Health Organization [@]**MICU-** maternal intensive care unit*

The table-15 describes the weight gain distribution among the participants who had Heart diseases in different BMI categories. The normal BMI category gained a maximum total weight gain of 10.2 ± 3.33 kg compared to other BMI categories and least by obese-1 of 7 ± 0 kg.

Table 15: Analysis of GWG^ among women having Heart disease

WHO" BMI$ category	n 7 (2.85 %)	1st Trimester GWG	2nd Trimester GWG	3rd Trimester GWG	<20 Weeks GWG	>20 Weeks GWG	Total GWG
Under Weight	0	-	-	-	-	-	-
Normal	3	0 ± 0	4.65 ± 2.62	3.65 ± 1.91	2.73 ± 3.04	7.47 ± 0.76	10.2 ± 3.33
Overweight	3	0.8 ± 1.13	2.63 ± 0.32	4.83 ± 3.01	0.97 ± 1.27	7.03 ± 3.73	8 ± 2.65
Obese 1	1	-0.7 ± 0	2.5 ± 0	5.2 ± 0	-0.7 ± 0	7.7 ± 0	7 ± 0
Obese 2	0	-	-	-	-	-	-

** **WHO BMI cut-off for the Asia-Pacific population:** Underweight: <18.5, Normal: 18.5-22.9, Overweight, At risk: 23-24.9,Obese-1: 25-29.9,Obese-2: >/=30 $**BMI-** body mass index ^**GWG-** Gestational weight gain "**WHO:** World Health Organization*

The table-16 gives the weight gain information among the study participants who had vaginal delivery spontaneously, induced labour and instrumentally (ventouse or forceps) in all three trimesters, below and after 20 weeks and total weight gain in different BMI categories. The normal BMI of spontaneous, induced and instrumental vaginal delivery participants had total weight gain of 10.67 ± 4.23 kg, 10.93 ± 3.81 kg and 9.2 ± 1.69 kg respectively. The maximum total weight gain has been among the obese-2 BMI in induced and instrumental vaginal delivery of 13 ± 0 kg and 15 ± 0 respectively while obese -2 in spontaneous vaginal delivery had 6 ± 0 kg total weight

gain. The least weight gain among the spontaneous vaginal delivery was among over weight and obese-1 with 10.32 ± 3.34 kg and 10.46 ± 1.28 kg respectively while in induced vaginal delivery also the least weight gain has been among over weight and obese-1 with 8.85 ± 3.85 kg and 8.99 ± 4.19 kg respectively.

The analysis of weight gain in LSCS as a mode of delivery studied in elective and emergency categories in table-16. The elective and emergency LSCS participants were further divided into their respective BMI categories and analysed in different trimesters, before 20 weeks and after 20 weeks period of gestation for weight gain and also the total weight gain was studied and observed that maximum weight gain has been in Normal BMI of 12.66 ± 4.17 kg followed by close range of 12.38 ± 7.23 kg among obese-2 and least weight gain seen in over weight with 9.23 ± 3.25 kg gain among the elective LSCS category. Whereas in emergency LSCS 16.56 ± 10.48 kg total weight gain has been observed in obese-2, followed by underweight with 12.17 ± 4.78 kg the least gained by obese-1 9.49 ± 3.38 kg.

Table 16: Analysis of GWG^ among different Modes of Deliveries

Mode of delivery	N	WHO[$] BMI[!] category	n	1st Trimester GWG	2nd Trimester GWG	3rd Trimester GWG	<20 Weeks GWG	>20 Weeks GWG	Total GWG
Spontaneous Vaginal Delivery	71 (20.29%)	Under Weight	12	1.08 ± 1.23	6.05 ± 3.14	5.13 ± 2.68	1.55 ± 1.7	9.84 ± 4.11	11.39 ± 4.67
		Normal	35	1.09 ± 1.43	4.31 ± 2.32	6.47 ± 3.46	0.96 ± 1.43	9.7 ± 3.88	10.67 ± 4.23
		Overweight	18	0.39 ± 1.4	4.07 ± 1.83	6.69 ± 2.86	1.07 ± 1.18	9.24 ± 3.31	10.32 ± 3.34
		Obese 1	5	-1.5 ± 0.42	5.23 ± 0.53	5.68 ± 1.42	0.26 ± 1.91	10.2 ± 2.1	10.46 ± 1.28
		Obese 2	1	-0.6 ± 0	1.6 ± 0	5 ± 0	-0.6 ± 0	6.6 ± 0	6 ± 0
Induced labour	48 (13.71%)	Under Weight	9	0.75 ± 1.74	4.89 ± 2.46	6.16 ± 2.82	1.84 ± 1.21	9.97 ± 4.32	11.81 ± 4.56
		Normal	21	0.97 ± 0.85	5.36 ± 2.3	5.12 ± 2.64	1.35 ± 1.58	9.58 ± 2.68	10.93 ± 3.81
		Overweight	10	-0.6 ± 1.9	3.28 ± 2.16	5.99 ± 2.88	-0.05 ± 1.49	8.9 ± 3.81	8.85 ± 3.85
		Obese 1	7	0.37 ± 1.87	3.74 ± 1.5	5.09 ± 2.56	0.7 ± 1.3	8.29 ± 3.37	8.99 ± 4.19
		Obese 2	1	1.3 ± 0	4.7 ± 0	7 ± 0	1.3 ± 0	11.7 ± 0	13 ± 0
Instrumental Vaginal Delivery	15 (4.29%)	Under Weight	2	2.2 ± 0	2.75 ± 0.35	6.75 ± 3.18	1.45 ± 1.06	9.15 ± 4.03	10.6 ± 5.09
		Normal	6	-1.05 ± 0.21	4.77 ± 1.43	4.43 ± 1.64	0.98 ± 0.86	8.22 ± 1.68	9.2 ± 1.69
		Overweight	6	1.73 ± 2.53	4.25 ± 1.95	6.3 ± 2.78	1.13 ± 1.83	10.28 ± 2.06	11.42 ± 1.63
		Obese 1	0	-	-	-	-	-	-
		Obese 2	1	0 ± 0	6.5 ± 0	8.5 ± 0	1.5 ± 0	13.5 ± 0	15 ± 0
Elective LSCS	44 (12.57%)	Under Weight	5	0.45 ± 2.76	5.75 ± 1.61	5.52 ± 2.24	0.62 ± 2.04	9.68 ± 3.23	10.3 ± 3.47
		Normal	16	0.93 ± 1.1	4.3 ± 2.33	8.05 ± 3.32	1.38 ± 1.24	11.28 ± 4.02	12.66 ± 4.17
		Overweight	8	0.78 ± 0.55	3.7 ± 2.29	5.24 ± 2.15	0.46 ± 1.62	8.76 ± 3.5	9.23 ± 3.25
		Obese 1	11	1 ± 1.61	4.03 ± 3.37	4.98 ± 2.56	1.34 ± 1.38	7.99 ± 3.26	9.33 ± 4.15
		Obese 2	4	0 ± 0	6 ± 2	9 ± 4.36	0.43 ± 1.06	11.95 ± 6.24	12.38 ± 7.23
Emergency LSCS	172 (49.14%)	Under Weight	21	0.88 ± 2.07	5.38 ± 3.55	5.86 ± 2.99	1.73 ± 2.45	10.43 ± 3.56	12.17 ± 4.78
		Normal	80	1 ± 1.38	4.41 ± 2.39	6.39 ± 2.97	1.22 ± 1.44	9.98 ± 3.35	11.19 ± 3.76
		Overweight	30	1.51 ± 1.6	4.02 ± 2.27	5.38 ± 2.82	1.13 ± 1.42	9.01 ± 4.05	10.14 ± 4.32
		Obese 1	33	0.96 ± 1.41	3.17 ± 2	6.33 ± 2.89	0.75 ± 1.9	8.74 ± 2.67	9.49 ± 3.38
		Obese 2	8	1.28 ± 0.93	4.98 ± 3.22	12.5 ± 8.09	1.34 ± 1.38	15.23 ± 9.97	16.56 ± 10.48

* ***WHO BMI cut-off for the Asia-Pacific population:*** *Underweight: <18.5, Normal: 18.5-22.9, Overweight, At risk: 23-24.9, Obese-1:25-29.9, Obese 2:>/=30* [!]***BMI-*** *body mass index* ^***GWG-*** *Gestational weight gain* [$]***WHO:*** *World Health Organization*

Comparative analysis of maternal gestational weight gain in relation to BMI and NICU admission is illustrated in table-17. Underweight mothers gained an average total gain of 8.48 ± 2.87 kg, among the 27 cases requiring NICU admission (7.7%). The total weight gain of normal BMI mothers in this group was 10.4 ± 3.47 kg, while overweight as well as obese mothers had lower total weight gain (8.21 ± 3.7kg and 9.64 ± 2.67 kg respectively). The most significant difference was observed in obese category 2, where the total weight gain was only 5 ± 0 kg.

The distribution analysis of gestational weight gain in different categories of BMI among still birth morbidity is given in table-17. The current study analysed stillbirth parameters, including fresh stillbirths (FSB) and macerated stillbirths (MSB). FSB accounted for 0.57% of cases, while MSB accounted for 0.86% together accounting to 1.43%. Stillbirths showed significant variations in maternal weight gain across BMI categories. Underweight mothers had a total weight gain of 8 ± 0 kg, normal BMI had 11.8 ± 5.19 kg weight gain while overweight category had weight gain of 1.6 ± 0 kg. there were no study participants in obese1 and 2 categories.

The analysis of gestational weight gain (GWG) among 350 participants, stratified by BMI categories and birthweight, reveals significant patterns and variations. For low birthweight (LBW) infants (22.57%, n=79), the total GWG varied across BMI categories: underweight women gained 12.47 kg (±4.24), normal-weight women gained 10.73 kg (±4.37), overweight women gained 8.21 kg (±3.7), and obese women (Obese1) gained 9.64 kg (±2.67).

Table 17: Analysis of GWG^ among Birth outcomes among study participants

Birth outcomes	n	WHO# BMI[$] category	n	1st Trimester GWG	2nd Trimester GWG	3rd Trimester GWG	<20 Weeks GWG	>20 Weeks GWG	Total GWG
Low birth weight	79 (22.57%)	Under Weight	12	-0.51 ± 1.56	4.98 ± 2.84	7.88 ± 2.95	1.75 ± 2.52	10.72 ± 3.91	12.47 ± 4.24
		Normal	40	0.95 ± 1.24	3.99 ± 1.92	6.52 ± 3.85	0.86 ± 1.22	9.88 ± 4.03	10.73 ± 4.37
		Overweight	18	0.76 ± 0.94	3.49 ± 1.95	4.54 ± 2.59	0.85 ± 1.14	7.36 ± 3.28	8.21 ± 3.7
		Obese 1	8	-0.25 ± 1	3.64 ± 1.64	5.94 ± 1.79	1.23 ± 1.93	8.41 ± 2.52	9.64 ± 2.67
		Obese 2	1	0.2 ± 0	1.6 ± 0	3.2 ± 0	0.2 ± 0	4.8 ± 0	5 ± 0
NICU[@] admission	27 (7.71%)	Under Weight	4	-	6.03 ± 3.16	3.95 ± 2.95	0.75 ± 1.14	7.73 ± 1.85	8.48 ± 2.87
		Normal	13	1 ± 1.47	4.47 ± 2.79	5.82 ± 2.76	1.25 ± 1.08	9.15 ± 3.14	10.4 ± 3.47
		Overweight	7	0.8 ± 0.71	2.65 ± 1.74	3.1 ± 1	0.74 ± 0.71	5.19 ± 1.28	5.93 ± 1.59
		Obese 1	2	0.25 ± 1.77	2.25 ± 0.35	5.5 ± 2.12	1.25 ± 0.35	6.75 ± 0.35	8 ± 0
		Obese 2	1	0.2 ± 0	1.6 ± 0	3.2 ± 0	0.2 ± 0	4.8 ± 0	5 ± 0
Still Birth	5 (1.43%)	Under Weight	1	-	4 ± 0	4 ± 0	1.4 ± 0	6.6 ± 0	8 ± 0
		Normal	3	-	2.5 ± 0	7 ± 0	2.13 ± 1.98	9.67 ± 3.75	11.8 ± 5.19
		Over weight	1	-	1.6 ± 0	0 ± 0	0.4 ± 0	1.2 ± 0	1.6 ± 0
		Obese 1	0	-	-	-	-	-	-
		Obese 2	0	-	-	-	-	-	-

** **WHO BMI cut-off for the Asia-Pacific population:** Underweight: <18.5, Normal: 18.5-22.9, Overweight ,At risk: 23-24.9,Obese-1: 25-29.9,Obese-2: >/=30 [$]**BMI-** body mass index ^**GWG-** Gestational weight gain [#]**WHO:** World Health Organization [@]**NICU-** neonatal intensive care unit*

The table-18 depicts univariate regression model, its *P value* of different outcomes with morbidity, its mean GWG and the weight gain difference when compared to the normal outcome population. The univariate regression model for PIH suggests that increased total maternal weight gain (OR: 1.17, 95% CI: 1.07–1.29, *P value*= 0.001) is significantly associated with an increased risk of HTN and observed to have +2.64

kg excess to the normal outcome. These results indicate that higher maternal weight gain, may contribute to a greater likelihood of developing HTN. Total maternal weight gain was linked to a higher risk of Diabetes in pregnancy with statistical significance (OR = 1.17, 95% CI: 1.04–1.32, *P value*= 0.011) and +2.69 kg extra gain to normal outcome. Total maternal weight gain (OR: 1.34, 95% CI: 1.15–1.61, *P value*= <0.001) was also significantly associated with Macrosomia in the univariate regression model and observed to have +5.13 kg above the normal outcome. The above table shows less total maternal weight gain (OR: 0.86, 95% CI: 0.74–0.99, *P value*= 0.037) is significantly associated with FGR statistically and -1.56 kg less gain of GWG was noted. This finding indicates unadjusted analysis is a potential protective effect of maternal weight gain. The univariate regression performed for maternal weight gain was not significantly associated with Thyroid disorders in pregnancy (OR: 1.07, 95% CI: 0.95–1.20, *P value*= 0.238), Anaemia (OR: 1.14, 95% CI: 0.96–1.35, *P value*= 0.141) and ICU admission (OR: 1.15, 95% CI: 0.96–1.38, *P value*= 0.126). The confidence intervals for all these estimates include 1, indicating a lack of strong evidence for a relationship.

Total maternal weight gain was not significantly associated with the mode of Instrumental (OR 0.96 95%CI: 0.63-1.41, *P value*= 0. 0.862) and Induced (OR 1.02 95%CI: 0.91-1.13, *P value*= 0.782) vaginal delivery. Total maternal weight gain (OR: 1.06 95%CI:0.99-1.13, *P value*= 0.085) did not show statistically significant association with emergency delivery outcomes, although the odds ratio suggests a slight trend toward increased risk with higher weight gain, there is a lack of statistical significance.

The GWG (less weight gain) showed a statistical significance against NICU admission (OR: 0.854, 95% CI: 0.737–0.975, *P value*= 0.026). Total maternal weight

gain did not show any meaningful association with LBW (OR:1.00 95% CI:0.92-1.08, *P value*=0.95) and still birth (OR:0.90 95%CI: 0.69-1.16, *P value* =0.42) risk which suggests that GWG does not significantly influence the likelihood of delivering a low-birth-weight and still birth baby in this study participants.

Table: 18: Univariate regression model for mean gestational weight gain in different morbidities

Variable/morbidity observed	Mean GWG* in kg	Difference in weight(kg) with normal outcome	Odds ratio	*P value*
Pregnancy induced hypertension(PIH)"	12.91 ± 4.97	+2.64	1.17 (95%CI[!]: 1.07-1.29)	**0.001**
Macrosomia	15.40 ± 5.35	+5.13	1.34 (95%CI: 1.15-1.61)	**<0.001**
Diabetes	12.96 ± 5.86	+2.69	1.17 (95%CI**:** 1.04-1.32)	**0.011**
FGR[!]	8.71 ± 3.15	-1.56	0.86 (95%CI: 0.74-0.99)	**0.037**
Thyroid disorders	11.18 ± 4.19	+0.91	1.07 (95%CI: 0.95-1.20)	0.238
Anaemia	11.91 ± 3.85	+1.64	1.14 (95%CI: 0.96-1.35)	0.141
ICU admissions[^]	12.16 ± 4.22	+1.89	1.15 (95%CI: 0.96-1.38)	0.126
Emergency LSCS[$]	11.21 ± 4.75	+0.94	1.06 (95%CI: 0.99-1.13)	**0.085**
Induced vaginal deliveries	10.53 ± 4.08	+0.26	1.02 (95%CI: 0.91-1.13)	0.782
Instrumental vaginal deliveries	9.85 ± 1.91	-0.42	0.96 (95%CI: 0.63-1.41)	0.862
Still birth	9 ± 5.77	-1.27	0.90 (95%CI: 0.69-1.16)	0.429
Low birth weight (LBW)[#]	10.24 ± 4.23	-0.03	1.00 (95%CI: 0.92-1.08)	0.953
NICU[@] admissions	8.58 ± 3.34	-1.69	0.854 (95%CI: 0.73-0.975)	**0.026**

GWG- Gestational weight gain! CI- confidence interval [“]PIH**- Pregnancy Induced Hypertension [!]**FGR**-Fetal Growth restriction [^]**ICU**- Intensive Care Unit [$]LSCS- Lower Segment Caesarean Section [#]**LBW**- Low Birth Weight [@]**NICU**- Neonatal Intensive Care Unit*

DISCUSSION

The results of this one-year cross sectional study have revealed gestational weight gain among the South Indian pregnant females with normal and morbid outcomes under the different BMI categories as described by the WHO classification of the Asia-Pacific population. [133]

Pregnancies with normal outcome had mean overall GWG of 10.27 ± 3.43 kg in this study. Traditionally, GWG in Indian population has been studied in previous research based on IOM recommendation for GWG under different BMI of the western population. It is being generalized for assessing the GWG in Indian females even if WHO cut off for Asian BMI are applied in the research studies. [10]

According to IOM recommendation, GWG ranges vary from 5-18 kg for different BMI categories. While 2009 IOM GWG recommendations have been extensively validated in Western countries, there is a dearth of data on the impact of GWG in Asian antenatal cohorts, especially in the Indian subcontinent and South-East Asia.[134,135]

The limited studies and meta-analyses assessing the applicability of the 2009 IOM recommendations for Asian women, using Asian-specific BMI cut-offs, have primarily focused on East Asian countries such as China, Taiwan, Korea, and Japan. These nations have notably high rates of underweight individuals, which tilts maternal BMI towards the lower end of the spectrum. [135,136,137,138]

The mean GWG observed under different BMI categories at first visit, was 10.73 ± 3.33 kg in gravidas with normal BMI, 10.58 ± 2.24 kg in over weight BMI group, 8.13 ± 3.55kg in obese-1 group, 10.76 ± 4.32 kg underweight group and 10.25 ± 4.12 kg in obese-2 group in this study. There are no established specific gestational weight

gain (GWG) guidelines tailored to Asian-specific BMI categories for Indian population whereas few studies conducted in South Asian countries have attempted to make their own population specific recommendation. A Chinese population based study had a mean weight gain of underweight 15.8kg, normal 14.7 kg, over weight 12.7kg and obese had 12 kg.[144] A Korean population based study has observed GWG of underweight 20.8 kg (16.7–24.7kg), normal 16.6 (11.5–21.5)kg, overweight 3.1 (8.0–17.7)kg, obese 14.4 (7.5–21.9)kg.[145] The cut off of GWG observed in these studies is higher than the GWG ranges observed in our research. It appears that Indian women in general tend to gain less weight during pregnancy than women from other parts of the globe. It gets reflected into the birthweight of Indian newborn babies who are nearly 300 grams lighter than WHO standards. [146]

It remains uncertain whether the findings from these analyses can be generalized to all Asian ethnic groups. A study evaluating the relevance of the Institute of Medicine (IOM) guidelines for Indian women found that the average gestational weight gain (GWG) was around 7 kg-nearly half of the minimum recommended gain for normal weight women in Western populations. This contrast emphasizes the necessity for guidelines specifically suited to the Indian population. [139]

Due to the significant lack of consensus and conflicting data, efforts have been made to develop an alternative to the 2009 IOM recommendations—namely, the INTERGROWTH-21st reference, which includes data from India and China. However, this reference was found to have low sensitivity, despite its high specificity, in predicting adverse outcomes. Few research studies have analyzed Indian GWG based on INTERGROWTH 21 ranges. In REVAMP study, trimester specific GWG was studied in the pregnant population from western India and was compared with the INTERGROWTH 21st International and an Indian reference (GARBH-Ini cohort-

group of advanced research on birth outcomes). [140] It reported average cumulative GWG in western Indian population was consistently lower than those prescribed by the INTERGROWTH 21st standards. Another study by Ramachandran et al, described the pattern of GWG specific to the North Indian population and compared the weight gain across different period of gestation with INTERGROWTH 21st reference. [141] They observed that GWG in Indian women is significantly less than the INTERGROWTH 21st reference. These findings highlight the importance of creating GWG guidelines that account for the distinct physiological and cultural factors of Indian women. Implementing such guidelines would arm healthcare providers with suitable tools to track and promote healthy weight gain during pregnancy, ultimately enhancing maternal and neonatal health outcomes in India.

In our study, the maximum number of participants 158 (45.14%) belonged to normal BMI at first antenatal visit followed by overweight BMI category 72 (20.57%), obese-1 category 56 (16%), while underweight were 49 (14%) of the total study participants. Recent NHFS data of the year 2021, indicates that among Indian women, the most prevalent Body Mass Index (BMI) category is 'normal weight' is 39% (BMI 18.5–24.9), followed by 24% over weight and 15% underweight females. [142] This could be attributed to multiple factors by ethnicity, urbanisation, economic growth, sedentary lifestyle, increased processed food intake. It is important to note that while the 'normal weight' category remains the most common, there has been a significant increase in the prevalence of overweight and obesity among Indian women over recent decades. This shift underscores a growing public health concern regarding weight management and associated health risks in this population. [143]

In our study, among the study participants, 104 (29.7%) had normal outcome and 246 (70.6%) outcomes with morbidities.-Among antenatal morbidities, pregnancy induced

hypertension 45 (18.2%), diabetes in pregnancy 18(7.3%), macrosomia 11 (4.47%), ICU admissions 9 (3.6%), thyroid disorders 28 (11.38%), emergency LSCS 172 (49.14%), induced labour 48 (13.71%) and instrumental vaginal deliveries 15 (4.29%) showed excessive GWG compared to the pregnancies with normal outcome in this study. Among these morbidities, following morbidities showed statistically significant excessive GWG with higher odds and significant *P value* i.e. Pregnancy Induced Hypertension (PIH) [OR 1.17 (95%CI: 1.07-1.29) *P value*–0.001], Diabetes in pregnancy [OR 1.17 (95%CI: 1.04-1.32, *P value*-0.011], Macrosomia [OR 1.34 (95%CI: 1.15-1.61) *P value*- <0.001].

It is observed that gravidas with normal BMI at first antenatal visit constituted the most common BMI category who later developed pregnancy induced hypertension (PIH). They showed mean excessive weight gain of 2.64 kg compared to the individuals who had normal outcome. Notably, this excessive GWG coincides with GWG reference ranges recommended by IOM for the normal outcome in this BMI category. Among all BMI categories, obese-2 category gained a maximum mean GWG of 18 kg and developed PIH subsequently. Excessive GWG in PIH was also observed in previous research studies. [(10,147)] However, the excess GWG range for PIH is not studied in previous researches. It was noted that, pregnancies who developed PIH, showed significant weight gain in the second half of the pregnancy (during 2nd and 3rd trimesters), which can be explained by the fact that medical disorder of hypertension of pregnancy typically presents in the second half of the pregnancy itself. This group of gravidas retain fluids in the extra cellular space before developing increased blood pressure. Hence prospective monitoring of GWG is recommended in all the antenatal women.

The next common morbidity of diabetes in pregnancy also showed excessive GWG of 2.69 kg. However, when compared to the pattern of excessive GWG in PIH, it was observed that diabetes in pregnancy group was gaining consistently excessive weight starting early in pregnancy. The first trimester GWG average was 2.7 kg and in 2nd and 3rd trimester it was around 6-6.5 kg. Maximum weight gain has been by obese-2 category which had around 10.1 kg excess when compared to normal outcome population in this study. These findings align with prior research emphasizing early pregnancy weight gain has strong association with risk of gestational diabetes mellitus (GDM). Studies conducted earlier have reported that rapid early GWG increases insulin resistance**,** predisposing women to glucose intolerance later in pregnancy. [135,148,149] Hence it is recommended that excessive GWG should be monitored closely and controlled from early pregnancy itself to reduce the chances of developing diabetes in pregnancy.

A similar pattern of excess GWG was observed in individuals having macrosomia babies where they demonstrated a higher trend of weight gain (mean GWG of 15.40 ± 5.35 kg, 5.13 kg excess to normal outcome weight gain) since early period of pregnancy below 20 weeks weight gain (1.52 kg). These observations align with research conducted by Wang et al and Simko et al, who also noticed similar pattern of excess GWG starting early in pregnancy. Further research is required to gain a deeper understanding of the relationship between maternal weight gain, metabolic factors, and the risk of macrosomia. [5,150]

Other antenatal morbidities like thyroid disorders (mean GWG of 11.18 ± 4.19kg) and anaemia in pregnancy (mean GWG of 11.91 ± 3.85kg) showed excessive GWG pattern (thyroid had 0.91kg and anaemia had 1.94 kg excess to normal outcome population) which was not statistically significant in this study. Earlier research

studies have found that thyroid dysfunction during pregnancy was more closely linked to pre-existing conditions rather than gestational weight gain. [151,152] The lack of significant associations in the current study aligns with these findings, suggesting that thyroid disorders during pregnancy may be influenced more by intrinsic factors such as pre-pregnancy thyroid status or genetic predisposition, maternal age, parity rather than weight gain patterns. This highlights the need for further research to explore other potential risk factors for thyroid dysfunction in pregnant women, such as iodine deficiency or autoimmune conditions, which may play a more critical role than gestational weight gain.

Among the 246 participants with morbid outcomes, 9 women (2.57%) required ICU admission [OR1.15 (95%CI: 0.96-1.38)]. A mean of 1.89 kg is noticed excess to the GWG of normal outcome. Maternal pre pregnancy BMI (obese category) was positively associated with maternal ICU admissions as concluded in a prior research study. [153] However, data exploring association of excessive GWG and maternal ICU admissions is lacking in research studies.

Our data is depicting higher trend of GWG with emergency caesarean-section, however it is not found to be statistically significant. Previous literature is showing conflicting association of excessive GWG with emergency C-sections**.** Ke JF et al concluded that maternal weight gain has minimal effect on the need for emergency caesarean sections. [154] Whereas Goldstein et al found that excessive weight gain has significant association with emergency LSCS as a mode of delivery. [135] Similar excess GWG trend was also noted for induced labour and instrumental vaginal deliveries, though it was not significant statistically in this study. This should be explored further in large scale studies.

Low GWG was observed in Low Birth Weight (LBW) 75(22.57%), Foetal Growth Restriction (FGR) 27 (7.7%), Neonatal Intensive Care Unit (NICU) admissions 27(7.7%) and Still births 5(1.4%) in this study. Among these morbidities, the following showed statistically significant low GWG with higher odds and significant *P value* [FGR- 0.86 (95%CI: 0.74-0.99) *P value*- 0.037, NICU admissions 0.854 (95%CI: 0.737-0.975) *P value*- 0.026]. A less GWG pattern has been observed in FGR among all the categories of BMI especially with overweight and obese-2 categories where there is 4.1 kg and 5.2 kg less weight gain respectively when compared with the same BMI population having normal outcomes in this study. There is significant association between lower maternal weight gain and FGR risk [OR: 0.86, (95% CI: 0.74–0.99), *P value*=0.037]. This finding aligns with Ehrenberg et al who reported that low maternal weight gain during pregnancy is a risk factor for FGR, particularly when combined with other factors such as poor placental function [(155)]. Similarly, former research studies found that inadequate gestational weight gain, especially in the second and third trimesters, was associated with adverse pregnancy outcomes, including FGR. [(8,156)] These comparisons underscore the importance of adequate gestational weight gain to reduce the risk of FGR, while also highlighting the need for further research to explore other contributing factors that may influence foetal growth. Tailored prenatal care strategies, including nutritional interventions and close monitoring of weight gain, may help mitigate the risk of FGR in at-risk populations.

This study illustrates significant variations in weight gain patterns across trimesters and their relationship to NICU admission rates among 246 participants. Underweight mothers gained an average of 6.03 ± 3.16 kg in the second trimester and 3.95 ± 2.95 kg in the third trimester, resulting in a total gestational weight gain of 8.48 ± 2.87 kg,

which is 1.69 kg less weight gain when compared to the normal outcome population. Among NICU admissions, extremes of BMI categories had low GWG when compared to normal outcome (underweight, overweight, obese-2). This implicates that even if the women belonged to obese categories, it is necessary to gain adequate weight gain as per recommendation to avoid morbidities due to less GWG.

The most significant difference was observed in the obese (category- 2 group), where total weight gain was only 5 ± 0 kg, which is 5.2 kg less weight gain than normal outcome with same category, while overweight mothers had 4.65 kg less weight gain when compared to normal outcome population in the same group. Ukah UV et al also observed similar pattern of low weight gain which was associated with adverse perinatal outcome in women with obesity. [(4)] Bhavadharini et al found that lower gestational weight gain, particularly among underweight and obese mothers, was associated with adverse neonatal outcomes in Indian women. [(10)] Similarly, studies in the past identified inadequate gestational weight gain had association with poor perinatal outcomes, including preterm birth and NICU admission. [(155,157,158)]

The similar trend of low GWG in extremes of BMI was also observed in still births. (underweight BMI which gained 2.7 kg less weight gain and overweight category had 8.9 kg less weight gain). Lijun Wang et al and Vivian Ukah et al investigated the association of gestational weight gain with neonatal morbidity and mortality in the United States. [(3,4)] They found that deviations from recommended weight gain guidelines were linked to higher risks of stillbirths, particularly in underweight and obese women. The current study supports these findings.

Though Low Birth Weight (LBW) was showing low GWG trend among overweight and obese category in the present study, it was not statistically significant [mean GWG- 10.24 ± 4.23 kg, OR 1.00 (95%CI:0.92-1.08), *P value*= 0.953]. Retnakaran R

et al also reported weak associations between maternal weight gain (particularly in the 1st trimester) and LBW in their cohort. [159] When compared to the study by Rahman et al**,** which analysed GWG and birth outcomes in low and middle-income countries, underweight women had lower GWG (average 10.5 kg) compared to normal-weight women (average 12.0 kg), aligning with the current study's findings. **[160]** However, an earlier study found that greater weight gain in the third trimester was associated with a reduced risk of LBW, suggesting that the relationship may vary by population or study design. **[161]** These discrepancies highlight the need for further research to clarify the role of gestational weight gain in foetal growth and LBW risk.

Strengths of the Study

To the best of our knowledge, this is the first study in the Indian setup, which has demonstrated trend of GWG in Indian population based on WHO Asia Pacific BMI categories. Our study is showing the trend of GWG among different BMI categories of Indian population. It is recommended that results of this study should be validated in large scale nation based prospective research to frame country specific guidelines for pregnancy weight management and maternal healthcare interventions. The findings of this study highlight the complex relationship between maternal weight gain and pregnancy outcomes, including pregnancy induced hypertension (PIH), diabetes in pregnancy, macrosomia, foetal growth retardation (FGR), low birth weight (LBW), mode of delivery, ICU admissions. The results of this study contribute to valuable regional data of significant public health importance. It provides valuable insights into the association between GWG and maternal-fetal health outcomes, aiding healthcare professionals in improving prenatal care strategies.

Limitations of the Study

The study is limited by the factors like convenient sampling, no data on maternal diet, nutritional status and maternal exercise, which may be potential confounders and they could not be adjusted to derive sensitivity analysis like adjusted odds. The study does not track postpartum weight retention or long-term maternal and child health outcomes, limiting insights into the extended impact of GWG.

CONCLUSION

The mean average GWG found among different categories of normal outcome is 10.27 ± 3.43 kg. Pregnancies with excess GWG were 12.91 ± 4.97 kg for pregnancy induced hypertension (PIH) with 2.64 kg excess weight gain, 12.96 ± 5.86kg for pregnant women with diabetes with 2.69 kg in excess, macrosomia had 15.40 ± 5.35 kg with 5.13kg excess weight gain whereas low GWG was observed in women who had FGR with 8.71 ± 3.15 kg mean GWG and 1.56kg less weight gain, 8.58 ± 3.34 kg with 1.69 kg less gain for the women who had babies requiring NICU admission. It is emphasised to monitor and control prospective GWG during routine prenatal care for a positive maternal and perinatal outcome. Formulating country-specific GWG guidelines is highly recommended for the Indian population considering variations in pattern of GWG observed in the study. This would enhance the quality of maternal and neonatal care by providing more accurate, tailor-made recommendations for Indian population.

SUMMARY

The study is a one-year cross-sectional study conducted from December 2023 to December 2024 at KLE Dr. Prabhakar Kore Charitable Hospital, Belagavi, includes 350 pregnant women who were admitted for delivery with first-trimester weight records. Data is collected from case records, antenatal visits, and delivery details, including maternal BMI, gestational weight gain and pregnancy outcomes. Various maternal morbidities (e.g., anaemia, hypertension, diabetes, thyroid disorders) and foetal outcomes (e.g., low birth weight, stillbirth, NICU admission) are analysed. Statistical analysis includes descriptive methods, logistic regression, and paired sample t-tests, with IBM SPSS version 22 used for data processing. Study highlights that maternal weight gain during pregnancy, particularly in second & third trimesters, is associated with certain pregnancy outcomes like PIH with 12.91 ± 4.97 kg mean GWG, +2.64 kg excess weight gain compared to our normal outcome population [OR 1.17 (95%CI: 1.07-1..29), *P value*--0.001], gestational diabetes 12.96 ± 5.86 kg mean GWG and +2.69 kg excess weight gain [OR 1.17(95%CI: 1.04-1.32, *P value*-0.011], macrosomia with 15.40 ± 5.35 kg mean GWG and +5.13 kg excess weight gain, [OR 1.34 (95%CI: 1.15-1.61) *P value*- <0.001], MICU with 12.16 ± 4.22 kg mean GWG and +1.89kg excess weight gain [OR 1.15 (95%CI: 0.96-1.38), *P value*- 0.126] and NICU admissions with 8.58 ± 3.34 kg mean GWG and -1.69 less weight gain [OR 0.854 (95%CI: 0.737-0.975), *P value*-0.026]. However, the impact of weight gain on other outcomes, such as anaemia with 11.91 ± 3.85 kg mean GWG [OR (95%CI: 0.96-1.35), *P value*-0.141], thyroid disorders with mean GWG 11.18 ± 4.19 kg [OR 1.07 (95%CI: 0.95-1.20), *P value*-0.238], low birth weight with 10.24 ± 4.23 kg mean GWG 11.18 [OR0.90 (95%CI:0..69-1.16), *P value*-0.429] and delivery modes: instrumental vaginal delivery- mean GWG 9.85 ± 1.91 kg [OR. 0.96 (95%CI: 0.63-

1.41), *P value*-0.862], vaginal delivery by induced labour- mean GWG 10.53 ± 4.08 kg [OR. 1.02 (95%CI:0.91-1.13), *P value*- 0.78], emergency LSCS- mean GWG 11.21 ± 4.75 kg [OR. 1.06 (95%CI:0.99-1.13), *P value*-0.08] appears minimal or non-significant, suggesting that factors beyond maternal weight, such as maternal health conditions, nutrition, and medical history, may play a more prominent role. Given these findings, it is recommended that healthcare providers monitor maternal weight gain carefully, particularly in the later stages of pregnancy, as excessive weight gain could contribute to adverse outcomes like hypertension and less weight gain leads to the need for outcomes like NICU care. Future studies should explore the role of other factors like diet, exercise, and genetic predispositions to better understand the complex relationship between maternal weight gain and pregnancy outcomes. Additionally, interventions aimed at promoting healthy weight gain during pregnancy, along with regular screenings for gestational diabetes and hypertension, should be considered to improve maternal & neonatal health outcomes. The findings of this study highlight the complex relationship between maternal weight gain and pregnancy outcomes, including low birthweight (LBW), vaginal delivery, & emergency delivery. While gestational weight gain (GWG) is a critical component of prenatal health, its influence on these specific outcomes appears to be limited, with no significant associations observed in most cases. These findings underscore the importance of considering maternal weight gain within the broader context of overall maternal and foetal health, rather than as an isolated factor.

Healthcare providers should emphasize importance of balanced weight gain, pre-pregnancy BMI and nutritional status, while also addressing other important factors such as gestational diabetes, hypertension etc., Additionally, further research is needed to explore interplay between maternal weight gain & other variables,

including genetic, environmental and socioeconomic factors, to better understand their combined impact on pregnancy outcomes. By adopting a holistic approach to prenatal care, healthcare providers can optimize maternal and foetal health, reducing risk of adverse outcomes and improving overall pregnancy experiences.

.

BIBLIOGRAPHY

1. Amorim AR, Linné Y, Kac G, Lourenço PM. Assessment of weight changes during and after pregnancy: practical approaches. Matern Child Nutr. 2008 Jan;4(1):1-13.
2. The American College of Obstetricians and Gynecologists. Weight Gain during Pregnancy. vol. 20. Women's Health Care Physicians; 2014:548.
3. Wang L, Zhang X, Chen T, Tao J, Gao Y, Cai L, Chen H, Yu C. Association of Gestational Weight Gain With Infant Morbidity and Mortality in the United States. JAMA Netw Open. 2021 Dec 1;4(12):e2141498.
4. Ukah UV, Bayrampour H, Sabr Y, Razaz N. Chan W-S, Lim KI, et al. (2019) Association between gestational weight gain and severe adverse birth outcomes in Washington State, US: A population-based retrospective cohort study, 2004-2013. PLoS Med 16(12): e1003009.
5. Simko M, Totka A, Vondrova D, Samohyl M, Jurkovicova J, Trnka M, Cibulkova A, Stofko J, Argalasova L. Maternal Body Mass Index and Gestational Weight Gain and Their Association with Pregnancy Complications and Perinatal Conditions. Int J Environ Res Public Health. 2019 May 17;16(10):1751. doi: 10.3390/ijerph16101751. PMID: 31108864; PMCID: PMC6572546.
6. Dangat K, Gupte S, Wagh G, Lalwani S, Randhir K, Madiwale S, Pisal H, Kadam V, Gundu S, Chandhiok N, Kulkarni B, Joshi S, Fall C and Sachdev HS (2022) Gestational weight gain in the REVAMP pregnancy cohort in. Western India: Comparison with international and national references. Front. Med. 9:1022990.

7. Trivikrama HS, Remash K, Nirupama A Y, Naseemabeevi A, Durvasula S. Is there any materno- foetal risks in mothers with gestational weight gain (WHO & IOM) based on their pre-pregnancy body mass indices? Our experience in a tertiary care teaching institution in North Kerala. Indian J Obstet Gynecol Res 2024;11(2):157-161.

8. Wen T, Lv Y. Inadequate gestational weight gain and adverse pregnancy outcomes among normal weight women in China. Int J Clin Exp Med. 2015;8(2):2881.

9. Ipsita, M., Nikku, H., Samantaray, S. R., & Gitismita, N. (2022). Association between early pregnancy body mass index and gestational weight gain in relation to neonatal birth weight. *Cureus, 14*(7) doi:https://doi.org/10.7759/cureus.27089.

10. Bhavadharini B, Anjana RM, Deepa M, Jayashree G, Nrutya S, Shobana M, et al. Gestational weight gain and pregnancy outcomes in relation to body mass index in Asian Indian women.Indian J Endocr Metab 2017;21:588-93.

11. Liu X, Wang H, Yang L, Zhao M, Magnussen CG, Xi B. Associations Between Gestational Weight Gain and Adverse Birth Outcomes: A Population-Based Retrospective Cohort Study of 9 Million Mother-Infant Pairs. Front Nutr. 2022 Feb 14;9:811217.

12. J.M. Cancela-Carral, Pedro Bezerra, Adriana Lopez-Rodriguez, Bruno Silva, Degree of association between the body mass index (BMI), waist-hip ratio (WHR), waist-height ratio (WHR), body adiposity index (BAI) and conicity index (CI) in physically active older adults, Clinical Nutrition ESPEN, Volume 58, 2023,Pages 335-341, ISSN 2405-4577

13. Alaa Youssef Ahmed Ahmed Baioumi, Comparing Measures of Obesity: Waist Circumference, Waist-Hip, and Waist-Height Ratios,Nutrition in the Prevention and Treatment of Abdominal Obesity (Second Edition),Academic Press, 2019, Chapter 3, 29-40, ISBN 9780128160930,
14. Byker Shanks, C., Bruening, M. & Yaroch, A.L. BMI or not to BMI? debating the value of body mass index as a measure of health in adults. Int J Behav Nutr Phys Act 22, 23 (2025)
15. Zierle-Ghosh A, Jan A. Physiology, Body Mass Index. [Updated 2023 Nov 5]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan
16. Bhandari P, Gayawan E, Yadav S. Double burden of underweight and overweight among Indian adults: spatial patterns and social determinants. Public Health Nutrition. 2021 Jul;24(10):2808-22.
17. Yaktine AL, Rasmussen KM, editors. Weight gain during pregnancy: re-examining the guidelines.
18. Warsh C, ed, Gender, Health, and Popular Culture. Waterloo, Ontario, Canda: Wilfrid Laurier University Press; 2011.
19. IOM, Sciences NAO. Nutrition During Pregnancy: Part I: Weight Gain, Part II: Nutrient Supplements: Institute of Medicine (US), National Research Council (US), National Academy of Engineering (US), and National Academy of Sciences (US), Committee on Nutrition Status During Pregnancy and Lactation; 1990.
20. Soma-Pillay P, Nelson-Piercy C, Tolppanen H, Mebazaa A. Physiological changes in pregnancy. Cardiovasc J Afr. 2016 Mar-Apr;27(2):89-94. doi: 10.5830/CVJA-2016-021. PMID: 27213856; PMCID: PMC4928162.

21. Armistead B, Johnson E, VanderKamp R, Kula-Eversole E, Kadam L, Drewlo S, Kohan-Ghadr HR. Placental Regulation of Energy Homeostasis During Human Pregnancy. Endocrinology. 2020 Jul 1;161(7):bqaa076. doi: 10.1210/endocr/bqaa076. PMID: 32417921; PMCID: PMC10061055.

22. Hytten FE. Weight gain in pregnancy. In: Hytten FE, Chamberlain G, editors. Clinical Physiology in Obstetrics. London: Blackwell Scientific Publications; 1991.

23. Kominiarek MA, Peaceman AM. Gestational weight gain. Am J Obstet Gynecol. 2017 Dec;217(6):642-651. doi: 10.1016/j.ajog.2017.05.040. Epub 2017 May 24. PMID: 28549978; PMCID: PMC5701873.

24. Abrams B, Selvin S. Maternal weight gain pattern and birth weight. Obstetrics & Gynecology. 1995 Aug 1;86(2):163-9.

25. Hickey CA, Cliver SP, McNeal SF, Hoffman HJ, Goldenberg RL. Prenatal weight gain patterns and birth weight among nonobese black and white women. Obstetrics & Gynecology. 1996 Oct 1;88(4):490-6.

26. Abrams B, Carmichael S, Selvin S. Factors associated with the pattern of maternal weight gain during pregnancy. Obstet Gynecol. 1995 Aug;86(2):170-6

27. Nohr, E. A., M. Vaeth, J. L. Baker, T. I. Sorensen, J. Olsen and K. M. Rasmussen. Pregnancy outcomes related to gestational weight gain in women defined by their body mass index, parity, height, and smoking status. Am J Clin Nutr 2009; 90(5):1288-1294.

28. Misra VK, Hobel CJ, Sing CF. The effects of maternal weight gain patterns on term birth weight in African-American women. J Matern Fetal Neonatal Med. 2010 Aug;23(8):842-9.

29. Bodnar, L. M., J. A. Hutcheon, R. W. Platt, K. P. Himes, H. N. Simhan and B. Abrams. Should gestational weight gain recommendations be tailored by maternal characteristics? Am J Epidemiol 2011; 174(2): 136-146.

30. Bogaerts A, Van den Bergh B, Nuyts E, Martens E, Witters I, Devlieger R. Socio-demographic and obstetrical correlates of pre-pregnancy body mass index and gestational weight gain. Clin Obes. 2012 Oct;2(5-6):150-9.

31. Li, Haibo & Miao, Chong & Xu, Liangjie & Gao, Haiyan & Bai, Meng & Liu, Wenjuan & Li, Wei & Wu, Zhengqin & Zhu, Yibing. (2021). Maternal pre-pregnancy body mass index, gestational weight gain trajectory, and risk of adverse perinatal outcomes. International Journal of Gynecology & Obstetrics. 157. 10.1002/ijgo.13922

32. McNamara, TK, Orav, EJ, Wilkins-Haug, L & Chang, G (2005) Risk during pregnancy – self-report versus medical record. Am J Obstet Gynecol 193, 1981–1985

33. Key, J, Hodgson, S, Omar, RZ, Jensen, TK, Thompson, SG, Boobis, AR, Davie s, DS & Elliott, P (2006) Meta-analysis of studies of alcohol and breast cancer with consideration of methodological issues. Cancer Causes Control 17, 759–770.

34. Uusitalo, U., Arkkola, T., Ovaskainen, M., Kronberg-Kippilä, C., Kenward, M. G., Veijola, R., . . . Virtanen, S. M. (2009). Unhealthy dietary patterns are associated with weight gain during pregnancy among finnish women. Public Health Nutrition, 12(12), 2392-9.

35. King JC. Physiology of pregnancy and nutrient metabolism. The American Journal of Clinical Nutrition. 2000;71(5):1218S-1225S.

36. World Health Organization. WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience. Geneva, Switzerland: WHO Press; 2016.

37. Deputy NPMPH, Sharma AJPMPH, Kim SYMPH, Hinkle SNP. Prevalence and charac teristics associated with gestational weight gain adequacy. Obstetrics and Gynecology. 2015;125(4):773-781.

38. King TL, Davidson MR, Avery MD, Anderson CM. Anatomy and physiology of pregnancy: Placental, fetal, and maternal adaptations. In: King T, Brucker M, Kriebs J, Fahey J, Gegor C, Varney H, editors. Varney's Midwifery. 5th ed. Burlington, MA: Jones & Bartlett Learning; 2015. pp. 599-627.

39. Organization WH. Global database on body mass index: BMI classifications 2011.

40. Widen EM, Gallagher D. Body composition changes in pregnancy: Measurement, predictors and outcomes. European Journal of Clinical Nutrition. 2014;68(6):643-652

41. WHO Expert Consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. The Lancet. 2004;363(9403):157 163

42. Unnikrishnan R, Pradeepa R, Joshi SR, Mohan V. Type 2 diabetes: demystifying the global epidemic. Diabetes. 2017 Jun 1;66(6):1432-42.

43. Li G, Chen X, Jang Y, Wang J, Xing X, Yang W, et al. Obesity, coronary heart disease risk factors and diabetes in Chinese: an approach to the criteria of obesity in the Chinese population. Obes Rev. 2002;3(3):167–72.

44. Xin ET, Carson AJ, Rahul M, Huishan K, Truls Ø, Chye TT. Determining optimal gestational weight gain in a multiethnic Asian population. Journal of Obstetrics and Gynaecology Research. 2014;40(4):1002-1008

45. Johansson K, Bodnar LM, Hutcheon JA, Stephansson O, Åkerud H, Cnattingius S, et al. Safety of low weight gain or weight loss in pregnancies with class 1, 2, and 3 obesity: a population-based cohort study. Lancet. 2024;403(10435):1472–81.

46. Park JH, Lee BE, Park HS, Ha EH, Lee SW, Kim YJ. Association between pre-pregnancy body mass index and socioeconomic status and impact on pregnancy outcomes in Korea. J Obstet Gynaecol Res. 2011;37(2):138–45.

47. Chiba, T., Ebina, S., Kashiwakura, I."Influence of maternal body mass index on gestational weight gain and birth weight: A comparison of parity". Experimental and Therapeutic Medicine 6, no. 2 (2013): 293-298. https://doi.org/10.3892/etm.2013.1167

48. Howie LD, Parker JD, Schoendorf KC. Excessive maternal weight gain patterns in ado lescents. Journal of the American Dietetic Association. 2003;103(12):1653-1657.

49. Gould Rothberg EB, Magriples U, Kershaw TS, Rising SS, Ickovics JR. Gestational weight gain and subsequent postpartum weight loss among young, low-income, ethnic minor ity women. American Journal of Obstetrics and Gynecology. 2011;204(1):52.e1 52e11.

50. Smith DE, Lewis CE, Caveny LL, Perkins GL, Burke GL, Bild DE. Longitudinal changes in adiposity associated with pregnancy. The CARDIA study. Coronary Artery Risk Development in Young Adults Study. JAMA. 1994;1(22):151-158

51. Scholl TO, Salmon RW, Miller LK, Vasilenko P, Furey CH, Christine M. Weight gain during adolescent pregnancy. Associated maternal characteristics

and effects on birth weight. Journal of Adolescent Health Care: Official Publication of the Society for Adolescent Medicine. 1988;9(4):286-290

52. Abrams B, Parker JD. Maternal weight gain in women with good pregnancy outcome. Obstetrics and Gynecology. 1990;76(1):1-7.

53. Weight gain during pregnancy. Committee Opinion No. 548. American College of Obstetricians and Gynecologists. Obstet Gynecol 2013;121:210–2.

54. Lal AK, Kominiarek MA. Weight gain in twin gestations: are the Institute of Medicine guidelines optimal for neonatal outcomes? Journal of Perinatology. 2015 Jun;35(6):405-10.

55. Kiel DW, Dodson EA, Artal R, Boehmer TK. Gestational weight gain and pregnancy outcomes in obese women. Obstetrics and Gynecology. 2007;110(7):752-758

56. Ketterl TG, Dundas NJ, Roncaioli SA, Littman AJ, Phipps AI. Association of Pre-pregnancy BMI and Postpartum Weight Retention Before Second Pregnancy, Washington State, 2003-2013. Matern Child Health J. 2018 Sep;22(9):1339-1344.

57. Rong K, Yu K, Han X, Szeto IM, Qin X, Wang J, Ning Y, Wang P, Ma D. Pre-pregnancy BMI, gestational weight gain and postpartum weight retention: a meta-analysis of observational studies. Public Health Nutr. 2015 Aug;18(12):2172-82

58. Blomberg M. Maternal and neonatal outcomes among obese women with weight gain below the new Institute of Medicine recommendations. Obstet Gynecol. 2011; 117(5):1065–1070.

59. Oken E, Kleinman KP, Belfort MB, Hammitt JK, Gillman MW. Associations of gestational weight gain with short- and longer-term maternal and child health outcomes. Am J Epidemiol. 2009; 170:173–180. [PubMed: 19439579]

60. Kominiarek MA, Hibbard J. Gestational weight gain and obesity: is 20 pounds too much? J Womens Health. 2011; 20:1405.

61. Bodnar LM, Siega-riz AM, Simhan HN, Himes KP, Abrams B. Severe obesity, gestational weight gain, and adverse birth outcomes. Am J Clin Nutr. 2010; 91:1642 1648. [PubMed: 20357043]

62. Catalano PM, Mele L, Landon MB, et al. Inadequate weight gain in overweight and obese pregnant women: what is the effect on fetal growth? Am J Obstet Gynecol. 2014; 211(2):137. e131–137.

63. Plows JF, Stanley JL, Baker PN, Reynolds CM, Vickers MH. The Pathophysiology of Gestational Diabetes Mellitus. Int J Mol Sci. 2018 Oct 26;19(11):3342. doi: 10.3390/ijms19113342. PMID: 30373146; PMCID: PMC6274679.

64. Getahun D., C. Nath, C. V. Ananth, M. R. Chavez and J. C. Smulian. 2008. Gestational diabetes in the United States: temporal trends 1989 through 2004. American Journal of Obstetrics and Gynecology 198(5): 525 e521-e525

65. Saldana T. M., A. M. Siega-Riz, L. S. Adair and C. Suchindran. 2006. The relationship between pregnancy weight gain and glucose tolerance status among black and white women in central North Carolina. American Journal of Obstetrics and Gynecology 195(6): 1629-1635.

66. Hackmon R., R. James, C. O'Reilly Green, A. Ferber, Y. Barnhard and M. Divon. 2007. The impact of maternal age, body mass index and maternal weight

gain on the glucose challenge test in pregnancy. Journal of Maternal-Fetal & Neonatal Medicine 20(3): 253 257

67. Chu S. Y., W. M. Callaghan, S. Y. Kim, C. H. Schmid, J. Lau, L. J. England and P. M. Dietz. 2007. Maternal obesity and risk of gestational diabetes mellitus. Diabetes Care 30(8): 2070-2076.

68. Viswanathan M., A. M. Siega-Riz, M.-K. Moos, A. Deierlein, S. Mumford, J. Knaack, P. Thieda, L. J. Lux and K. N. Lohr. 2008. Outcomes of Maternal Weight Gain, Evidence Report/Technology Assessment No. 168 . (Prepared by RTI International University of North Carolina Evidence-based Practice Center under contract No. 290 02-0016.) AHRQ Publication No. 08-E-09. Rockville, MD: Agency for Healthcare Research and Quality.

69. Lewandowska M, Więckowska B, Sajdak S, Lubiński J. Pre-Pregnancy Obesity vs. Other Risk Factors in Probability Models of Preeclampsia and Gestational Hypertension. Nutrients. 2020 Sep 2;12(9):2681.

70. Thadhani R., M. J. Stampfer, D. J. Hunter, J. E. Manson, C. G. Solomon and G. C. Curhan. 1999. High body mass index and hypercholesterolemia: risk of hypertensive disorders of pregnancy. Obstetrics and Gynecology 94(4): 543-550.

71. Bodnar L. M., J. M. Catov, M. A. Klebanoff, R. B. Ness and J. M. Roberts. 2007. Prepregnancy body mass index and the occurrence of severe hypertensive disorders of pregnancy. Epidemiology 18(2): 234-239.

72. Macdonald-Wallis C, Tilling K, Fraser A, Nelson SM, Lawlor DA. Gestational weight gain as a risk factor for hypertensive disorders of pregnancy. Am J Obstet Gynecol. 2013 Oct;209(4):327.e1-17.

73. Faupel-Badger JM, Hsieh CC, Troisi R, Lagiou P, Potischman N. Plasma volume expansion in pregnancy: implications for biomarkers in population studies. Cancer Epidemiology Biomarkers & Prevention. 2007 Sep 1;16(9):1720-3.

74. Kang, Y., Zhang, Y., Zhang, Q., & Cheng, J. (2018). The effect of maternal anemia on neonatal birth weight: A meta-analysis. *BMC Pregnancy and Childbirth, 18*(1), 121.

75. Lee, S., Kim, J., & Oh, S. (2019). Gestational weight gain and iron status in pregnant women: A prospective cohort study. *Nutrients, 11*(10), 2458.

76. Ren, M., Li, H., Cai, Y., & Zhang, Q. (2020). The impact of maternal anemia on pregnancy weight gain: A systematic review. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 251*(1), 95-102.

77. Patel, A., Prakash, A., Das, P. K., & Bhargava, A. (2020). Hemoglobin levels in pregnancy and their association with gestational outcomes. *International Journal of Gynecology & Obstetrics, 150*(2), 167-173.

78. Zhang, L., Wang, F., & Chen, J. (2021). Relationship between anemia, gestational weight gain, and birth outcomes: A cohort study. *Maternal and Child Health Journal, 25*(3), 378-385.

79. Luo, Z., Yuan, X., & Zhang, P. (2022). The influence of maternal anemia on fetal growth and birth outcomes. *Journal of Maternal-Fetal & Neonatal Medicine, 35*(4), 1-8.

80. Sehgal, Rohini. (2017). Impact of pre-pregnancy body mass index, anaemia and gestational weight gain on neonatal outcomes. Indian Obstetrics & Gynaecology. 7. 11-20.

81. Wolfe KB, Rossi RA, Warshak CR. The effect of maternal obesity on the rate of failed induction of labor. Am J Obstet Gynecol. 2011 Aug;205(2):128.e1-7.

82. DeVader S. R., H. L. Neeley, T. D. Myles and T. L. Leet. 2007. Evaluation of gestational weight gain guidelines for women with normal prepregnancy body mass index. Obstetrics and Gynecology 110(4): 745-751.

83. Consequences of Gestational Weight Gain for the Mother." Institute of Medicine and National Research Council. 2009. Weight Gain During Pregnancy: Reexamining the Guidelines. Washington, DC: The National Academies Press.

84. Consequences of Gestational Weight Gain for the Child." Institute of Medicine and National Research Council. 2009. Weight Gain During Pregnancy: Reexamining the Guidelines. Washington, DC: The National Academies Press.

85. Determining Optimal Weight Gain." Institute of Medicine and National Research Council. 2009. Weight Gain During Pregnancy: Reexamining the Guidelines. Washington, DC: The National Academies Press.

86. Siega-Riz AM, Viswanathan M, Moos MK, Deierlein A, Mumford S, Knaack J, Thieda P, Lux LJ, Lohr KN. A systematic review of outcomes of maternal weight gain according to the Institute of Medicine recommendations: birthweight, fetal growth, and postpartum weight retention. *Am J Obstet Gynecol.* 2009;201(4):339.e1-339.e14.

87. Gunderson E. P., B. Sternfeld, M. F. Wellons, R. A. Whitmer, V. Chiang, C. P. Quesenberry, Jr., C. E. Lewis and S. Sidney. 2008. Childbearing may increase visceral adipose tissue independent of overall increase in body fat. Obesity (Silver Spring) 16(5): 1078-1084.

88. Arendas K, Qiu Q, Gruslin A. Obesity in pregnancy: pre-conceptional to postpartum consequences. Journal of Obstetrics and Gynaecology Canada. 2008 Jun 1;30(6):477-88.

89. Berg A. H. and P. E. Scherer. 2005. Adipose tissue, inflammation, and cardiovascular disease. Circulation Research 96(9): 939-949

90. Lim S., S. H. Choi, Y. J. Park, K. S. Park, H. K. Lee, H. C. Jang, N. H. Cho and B. E. Metzger. 2007. Visceral fatness and insulin sensitivity in women with a previous history of gestational diabetes mellitus. Diabetes Care 30(2): 348-353.

91. Bellamy L., J. P. Casas, A. D. Hingorani and D. J. Williams. 2007. Pre-eclampsia and risk of cardiovascular disease and cancer in later life: systematic review and meta analysis. British Medical Journal 335(7627): 974.

92. Jenkin W, Tiggemann M. Psychological effects of weight retained after pregnancy. Women & health. 1997 Jun 30;25(1):89-98.

93. Walker L. O. 1997. Weight and weight-related distress after childbirth: relationships to stress, social support, and depressive symptoms. Journal of Holistic Nursing 15(4): 389 405.

94. Aune D, Saugstad OD, Henriksen T, Tonstad S. Maternal Body Mass Index and the Risk of Fetal Death, Stillbirth, and Infant Death: A Systematic Review and Meta-analysis. *JAMA.* 2014;311(15):1536–1546. doi:10.1001/jama.2014.2269

95. Siega-Riz AM, Adair LS, Hobel CJ. Maternal underweight status and inadequate rate of weight gain during the third trimester of pregnancy increases the risk of preterm delivery. J Nutr. 1996 Jan;126(1):146-53. doi: 10.1093/jn/126.1.146. PMID: 8558295.

96. Han Z, Lutsiv O, Mulla S, Rosen A, Beyene J, McDonald SD, Knowledge Synthesis Group. Low gestational weight gain and the risk of preterm birth and

low birthweight: A systematic review and meta-analyses. Acta obstetricia et gynecological Scandinavica. 2011 Sep;90(9):935-54.

97. Masho SW, Bishop DL, Munn M. Pre-pregnancy BMI and weight gain: where is the tipping point for preterm birth?. BMC pregnancy and childbirth. 2013 Dec;13:1-0.

98. Xinxo, S., Bimbashi, A., Kakarriqi, E. Z., & Zaimi, E. (2013). Association between maternal nutritional status of pre pregnancy, gestational weight gain and preterm birth. *Materia Socio-Medica, 25*(1), 6-n/a.

99. Cornish, R., Magnus, M., Urhoj, S. *et al.* Maternal pre-pregnancy body mass index and risk of preterm birth: a collaboration using large routine health datasets. *BMC Med* **22**, 10 (2024).

100. Naeye R. L. 1979. Weight gain and the outcome of pregnancy. American Journal of Obstetrics and Gynecology 135(1): 3-9.

101. Yao R, Park BY, Foster SE, Caughey AB. The association between gestational weight gain and risk of stillbirth: a population-based cohort study. Ann Epidemiol. 2017 Oct;27(10):638-644.e1

102. Correa A, Marcinkevage J. Prepregnancy obesity and the risk of birth defects: an update. Nutr Rev. 2013 Oct;71 Suppl 1(Suppl 1):S68-77.

103. Gary M Shaw, Karen Todoroff, Suzan L Carmichael, Donna M Schaffer, Steve Selvin, Lowered weight gain during pregnancy and risk of neural tube defects among offspring, *International Journal of Epidemiology*, Volume 30, Issue 1, February 2001, Pages 60–65

104. Carmichael S. L., G. M. Shaw, D. M. Schaffer, C. Laurent and S. Selvin. 2003. Dieting behaviours and risk of neural tube defects. American Journal of Epidemiology 158(12): 1127-1131

105. Chen A., S. A. Feresu, C. Fernandez and W. J. Rogan. 2009. Maternal obesity and the risk of infant death in the United States. Epidemiology 20(1): 74-81.

106. Davis RR, Hofferth SL, Shenassa ED. Gestational weight gain and risk of infant death in the United States. American journal of public health. 2014 Feb;104(S1):S90-5.

107. Alberico, S., Montico, M., Barresi, V., Monasta, L., Businelli, C., Soini, V., . . . Maso, G. (2014). The role of gestational diabetes, pre-pregnancy body mass index and gestational weight gain on the risk of newborn macrosomia: Results from a prospective multicentre study. *BMC Pregnancy and Childbirth, 14*, 23. doi:https://doi.org/10.1186/1471-2393-14-23

108. Maimaen S, Russameecharoen K, Boriboonhirunsarn D. Incidence of excessive gestational weight gain among overweight and obese women. Obstet Gynecol Sci. 2024 Sep;67(5):489-496.

109. Blackwell SC, Landon MB, Mele L, Reddy UM, Casey BM, Wapner RJ, Varner MW, Rouse DJ, Thorp JM Jr, Sciscione A, Catalano P, Saade G, Caritis SN, Sorokin Y, Grobman WA; Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Maternal-Fetal Medicine Units (MFMU) Network. Relationship Between Excessive Gestational Weight Gain and Neonatal Adiposity in Women With Mild Gestational Diabetes Mellitus. Obstet Gynecol. 2016 Dec;128(6):1325-1332.

110. Chen YH, Li L, Chen W, Liu ZB, Ma L, Gao XX, He JL, Wang H, Zhao M, Yang YY, Xu DX. Pre-pregnancy underweight and obesity are positively associated with small-for-gestational-age infants in a Chinese population. Scientific reports. 2019 Oct 29;9(1):15544

111. Lewandowska M. Maternal obesity and risk of low birth weight, fetal growth restriction, and macrosomia: multiple analyses. Nutrients. 2021 Apr 7;13(4):1213.

112. Li N, Liu E, Guo J, Pan L, Li B, et al. (2013) Maternal Prepregnancy Body Mass Index and Gestational Weight Gain on Pregnancy Outcomes. PLoS ONE 8(12): e82310. doi:10.1371/journal.pone.0082310.

113. Chen Xu J, Coelho Â. Association between Body Mass Index and Gestational Weight Gain with Obstetric and Neonatal Complications in Pregnant Women with Gestational Diabetes. Acta Médica Portuguesa. 2022 Apr 26;35(13).

114. Chairat T, Ratinthorn A, Limruangrong P, Boriboonhirunsarn D. Prevalence and related factors of inappropriate gestational weight gain among pregnant women with overweight/ obesity in Thailand. BMC Pregnancy and Childbirth. 2023 May 5;23(1).

115. Adeoye IA, Bamgboye EA, Omigbodun AO (2023) Gestational weight gain among pregnant women in Ibadan, Nigeria: Pattern, predictors and pregnancy outcomes. PLoS ONE 18(8): e0290102.

116. Bodnar LM, Johansson K, Himes KP, Dmitry Khodyakov, Abrams B, Parisi SM, et al. Gestational weight gain below recommendations and adverse maternal and child health outcomes for pregnancies with overweight or obesity: a United States cohort study. American Journal of Clinical Nutrition. 2024 Jun 26;120(3):638–47.

117. Beyene GA, Yunus MA, Aberash Beyene Deribew, Abebaw Wasie Kasahun. Gestational weight gain and its determinants among pregnant women in Gurage zone, Central Ethiopia: a cohort study. BMC Women s Health. 2024 Jun 28;24(1).

118. Hollis JL, Deroover K, Licata M, Tully B, Farragher E, Christophe Lecathelinais, et al. Antenatal care addressing gestational weight gain (GWG): a cross sectional study of pregnant women's reported receipt and acceptability of recommended GWG care and associated characteristics. BMC Pregnancy and Childbirth. 2024 Feb 6;24(1).

119. Daniel WW. Determination of sample size for estimating proportions. Biostatistics A foundation for analysis in the health sciences. 1999;8:189-90.

120. The Asia- Pacific Perspective: Redefining obesity and its treatment

121. Arias' Practical Guide to High-Risk Pregnancy and Delivery: A South Asian Perspective, 5e, Amarnath Bhide, Sir Sabaratnam Arulkumaran, Kaizad R Damania, and Shirish N Daftary

122. Kahsay, Z. G., Weldemariam, S., Gebre, G., & Mihret-Ab Mehari. (2020). Intimate partner violence during pregnancy and risk of still birth in hospitals of tigray region ethiopia. *Italian Journal of Pediatrics, 46,* 1-6. doi:https://doi.org/10.1186/s13052-020-00857-w

123. Mensah, T.A., Asah-Opoku, K., Adu-Bonsaffoh, K. *et al.* Induction of labour outcomes in a tertiary hospital: the **G**hanaian **c**ervix and **m**isoprostol 25ug (GCAM-25 STUDY)—a cross-sectional study. *BMC Pregnancy Childbirth* **25**, 123 (2025).

124. Macallister, K. J., Tho, L. W., Mathias Epee-Bekima, Resnick, S., & Davis, J. W. (2019). Impact of elective caesarean section on neonatal retrieval in western australia during a 12-year period. *Journal of Perinatology, 39*(1), 34-38.

125. Wemakor, A. (2019). Prevalence and determinants of anaemia in pregnant women receiving antenatal care at a tertiary referral hospital in northern ghana. *BMC Pregnancy and Childbirth, 19,* 1-11.

126. Thuong DL, Tieulie N, Costedoat N, Andreu MR, Wechsler B, Vauthier-Brouzes D, Aumaitre O, Piette JC. The HELLP syndrome in the antiphospholipid syndrome: retrospective study of 16 cases in 15 women. Annals of the rheumatic diseases. 2005 Feb 1;64(2):273-8.

127. Khursheed R, Shivalingappa J, Maldar A et al. Prevalence, clinical profile, and maternal and perinatal outcomes of hyperglycemia in pregnancy in a tertiary care hospital in South India. J Sci Soc 2022; 49:265-71

128. Kgosidialwa, O., Newman, C., Carmody, L., McGrath, B., Paula M O'Shea, & Dunne, F. (2024). Abnormal glucose tolerance in women diagnosed with gestational diabetes (WHO 2013) 10 years after index pregnancy. *Journal of the Endocrine Society, 8*(3)

129. Zhao, L., Selvaratnam, I., Cunningham, J., Filion, K. B., & Grandi, S. M. (2024). Maternal hypothyroidism and subsequent metabolic outcomes in children: A systematic review and meta-analysis. *BMC Pediatrics, 24*, 1-11.

130. Aggarawal, N., Suri, V., Singla, R., Chopra, S., Sikka, P., Shah, V. N., & Bhansali, A. (2014). Pregnancy outcome in hyperthyroidism: A case control study. *Gynecologic and Obstetric Investigation, 77*(2), 94-9.

131. .Horgan R ,,Nehme L, Jensen HJ et al.(2024). Neonatal Outcomes among Fetuses with an Abdominal Circumference <3rd percentile and Estimated Fetal Weight 3rd to 9th percentile Compared to Fetuses with an EFW <3rd percentile. *American journal of perinatology, 41*(9), 1120–1125.

132. Salomon L J, Alfirevic, Z, Da Silva Costa, et al. (2019). ISUOG Practice Guidelines: ultrasound assessment of fetal biometry and growth.Ultrasound Obstet Gynecol 2019; 53: 715–723 .

133. The Asia-Pacific perspective: Redefining obesity and its treatment

134. Chen F, Wang P, Wang J, Liao Z, Zong X, Chen Y, et al. Analysis and Comparison of Early Childhood Nutritional Outcomes Among Offspring of Chinese Women Under the Chinese 2021 and US 2009 Gestational Weight Gain Guidelines. JAMA Netw Open. 2022;5(9):e2233250. Epub 20220901. pmid:36149650; PubMed Central PMCID: PMC9508653.

135. Goldstein RF, Abell SK, Ranasinha S, Misso M, Boyle JA, Black MH, et al. Association of Gestational Weight Gain With Maternal and Infant Outcomes: A Systematic Review and Meta-analysis. JAMA. 2017;317(21):2207–25. pmid:28586887; PubMed Central PMCID: PMC5815056.

136. Goldstein RF, Abell SK, Ranasinha S, Misso ML, Boyle JA, Harrison CL, et al. Gestational weight gain across continents and ethnicity: systematic review and meta-analysis of maternal and infant outcomes in more than one million women. BMC Med. 2018;16(1):153. Epub 20180831. pmid:30165842; PubMed Central PMCID: PMC6117916

137. Wie JH, Park IY, Namkung J, Seo HW, Jeong MJ, Kwon JY. Is it appropriate for Korean women to adopt the 2009 Institute of Medicine recommendations for gestational weight gain? PLoS One. 2017;12(7):e0181164. Epub 20170713. pmid:28704550; PubMed Central PMCID: PMC5509309.

138. Guan P, Tang F, Sun G, Ren W. Effect of maternal weight gain according to the Institute of Medicine recommendations on pregnancy outcomes in a Chinese population. J Int Med Res. 2019;47(9):4397–412. Epub 20190725. pmid:31342872; PubMed Central PMCID: PMC6753580.

139. Coffey D. Prepregnancy body mass and weight gain during pregnancy in India and sub-Saharan Africa. Proceedings of the National Academy of Sciences. 2015 Mar 17;112(11):3302-7.

140. . Dangat K, Gupte S, Wagh G, Lalwani S, Randhir K, Madiwale S, Pisal H, Kadam V, Gundu S, Chandhiok N, Kulkarni B, Joshi S, Fall C, Sachdev HS. Gestational weight gain in the REVAMP pregnancy cohort in Western India: Comparison with international and national references. Front Med (Lausanne). 2022 Oct 5;9:1022990.

141. Thiruvengadam, R., Desiraju, B.K., Natchu, U.C.M. *et al.* Gestational weight gain trajectories in GARBH–Ini pregnancy cohort in North India and a comparative analysis with global references. *Eur J Clin Nutr* **76**, 855–862 (2022).

142. Body mass index among Indian women 2019 by weight bracket Published by A. Minhas, Jul 12, 2023

143. Chaudhary M, Sharma P. Abdominal obesity in India: analysis of the National Family Health Survey-5 (2019–2021) data. The Lancet Regional Health-Southeast Asia. 2023 Jul 1;14.

144. Huang, X., Tan, H., Cai, M. *et al.* Gestational weight gain in Chinese women -- results from a retrospective cohort in Changsha, China. *BMC Pregnancy Childbirth* **18**, 185 (2018).

145. Choi SK, Lee G, Kim YH, Park IY, Ko HS, Shin JC. Determining optimal gestational weight gain in the Korean population: a retrospective cohort study. Reprod Biol Endocrinol. 2017 Aug 22;15(1):67

146. Katz J, Lee AC, Kozuki N, et al. Mortality risk in preterm and small-for-gestational-age infants in low-income and middle-income countries: a pooled country analysis. The Lancet 2013; 382:417–25.

147. Dude, A. M., Seely, E. W., & Solomon, C. G. (2020). Weight gain in early, mid, and late pregnancy and hypertensive disorders of pregnancy. *Pregnancy Hypertension*, 20, 65-71

148. Hedderson MM, Gunderson EP, Ferrara A. Gestational weight gain and risk of gestational diabetes mellitus. Obstetrics & Gynecology. 2010 Mar 1;115(3):597-604.

149. Nohr EA, Vaeth M, Baker JL, Sørensen TI, Olsen J, Rasmussen KM. Combined associations of prepregnancy body mass index and gestational weight gain with the outcome of pregnancy. The American journal of clinical nutrition. 2008 Jun 1;87(6):1750-9

150. Wang Y, Wang Z, Sun Y, Yang L, Ma L, Li J, Zhang S, Yang X. Critical Threshold of Average Weekly Weight Gain in Overweight Pregnant Women During the Second and Third Trimesters: A Strategy to Prevent Macrosomia. Diabetes, Metabolic Syndrome and Obesity. 2024 Dec 31:3683-95.

151. Osinga JA, Liu Y, Männistö T, Vafeiadi M, Tao FB, Vaidya B, Vrijkotte TG, Mosso L, Bassols J, López-Bermejo A, Boucai L. Risk factors for thyroid dysfunction in pregnancy: an individual participant data meta-analysis. Thyroid. 2024 May 1;34(5):646-58.

152. Ajmani SN, Aggarwal D, Bhatia P, Sharma M, Sarabhai V, Paul M. Prevalence of overt and subclinical thyroid dysfunction among pregnant women and its effect on maternal and fetal outcome. the Journal of Obstetrics and Gynecology of India. 2014 Apr;64:105-10.

153. Smid MC, Dotters-Katz SK, Vaught AJ, Vladutiu CJ, Boggess KA, Stamilio DM. Maternal super obesity and risk for intensive care unit admission in the

MFMU Cesarean Registry. Acta Obstetricia et Gynecologica Scandinavica. 2017 Aug;96(8):976-83.

154. Ke JF, Liu S, Ge RL, Ma L, Li MF. Associations of maternal pre-pregnancy BMI and gestational weight gain with the risks of adverse pregnancy outcomes in Chinese women with gestational diabetes mellitus. BMC pregnancy and childbirth. 2023 Jun 3;23(1):414.

155. Ehrenberg HM, Dierker L, Milluzzi C, Mercer BM. Low maternal weight, failure to thrive in pregnancy, and adverse pregnancy outcomes. American journal of obstetrics and gynecology. 2003 Dec 1;189(6):1726-30.

156. Drehmer M, Duncan BB, Kac G, Schmidt MI. Association of second and third trimester weight gain in pregnancy with maternal and fetal outcomes. PloS one. 2013 Jan 30;8(1):e54704.

157. Stotland, Naomi E. MD[1]; Cheng, Yvonne W. MD, MPH[1]; Hopkins, Linda M. MD[1]; Caughey, Aaron B. MD, MPP[1,2]. Gestational Weight Gain and Adverse Neonatal Outcome Among Term Infants. Obstetrics & Gynecology 108(3 Part 1):p 635-643, September 2006. | DOI: 10.1097/01.AOG.0000228960.16678.bd

158. Liu P, Xu L, Wang Y, Zhang Y, Du Y, Sun Y, Wang Z. Association between perinatal outcomes and maternal pre-pregnancy body mass index. Obesity Reviews. 2016 Nov;17(11):1091-102.

159. Retnakaran R, Wen SW, Tan H, Zhou S, Ye C, Shen M, Smith GN, Walker MC. Association of timing of weight gain in pregnancy with infant birth weight. JAMA pediatrics. 2018 Feb 1;172(2):136-42.

160. Rahman MM, Abe SK, Kanda M, Narita S, Rahman MS, Bilano V, Ota E, Gilmour S, Shibuya K. Maternal body mass index and risk of birth and maternal health outcomes in low-and middle-income countries: a systematic review and meta-analysis. Obesity reviews. 2015 Sep;16(9):758-70.

161. Zhang CX, Lai JQ, Liu KY, Yang NH, Zeng G, Mao LM, Li ZN, Teng Y, Xia W, Dai N, Wang ZX. Optimal gestational weight gain in Chinese pregnant women by Chinese-specific BMI categories: a multicentre prospective cohort study. Public Health Nutrition. 2021 Aug;24(11):3210-20.

ANNEXURE – I – WAIVER OF CONSENT

K.L.E. ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed – to- be- University)
Accredited 'A+' Grade by NAAC in (3rd Cycle) Placed in Category 'A' by MHRD (GoI)
JNMC INSTITUTIONAL ETHICS COMMITTEE
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
Website: http//www.jnmc.edu
E-Mail : dome@jnmc.edu
Phone: (+ 91-(0)831 Office : 2472550
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref: MDC/DOME/ 363 **Date: 12/09/2023**

To,

PG Student in Obstetrics and Gynecology
J N Medical College,
BELAGAVI.

Guide:

Asso. Prof of Obstetrics and Gynecology
JNMC, Belagavi

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"A ONE YEAR CROSS SECTIONAL STUDY OF GESTATIONAL WEIGHT GAIN IN WOMEN ATTENDING KAHER'S DR. PRABHAKAR KORE CHARITABLE HOSPITAL, BELAGAVI"**, does not involve any ethical issues, as the data required for the samples will be collected from the Labor room and the study does not involve any interaction with cases and no identifiable information will be collected. The waiver of consent has been approved for the proposed research project and has been cleared by the JNMC Institutional Ethics Committee.

(Dr. Smita Sonoli)
Member Secretary
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi.

(Dr. Harsha Hegde)
Chairman,
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi.

ANNEXURE – II – SCREENING FORM

NO:

Date of screening:

Name:

Age : IP no:

Address:

Phone number :

Diagnosis:

1.Availability of weight records </= 14 weeks (or) pre pregnancy: yes / no (if no excluded)

2.Delivered in KAHER'S Dr. Prabhakar Kore Hospital: yes/ no (if no excluded)

ANNEXURE – III – PROFORMA

A ONE YEAR CROSS SECTIONAL STUDY OF GESTATIONAL WEIGHT GAIN IN PREGNANT WOMEN ATTENDING DR. PRABHAKAR KORE HOSPITAL – BELAGAVI

Ip.no:

1. Subject information:

Name:

Age:

Address:

Contact number of the patient:

Date of admission:

2.Current pregnancy:

Gravida:

Para:

Living:

Abortion:

LMP:

EDD:

Corrected EDD (if any):

Period of gestation at delivery:

3.Past obstetric history:	**YES**	**NO**
History of abortion:	**YES**	**NO**
History of medical illness:	**YES**	**NO**
If any, specify: Number:	**YES**	**NO**
If any unlisted:	**YES**	**NO**

Any bad obstetric history: **Still birth:**

Fresh still birth:	**YES**	**NO**
Macerated still birth:	**YES**	**NO**
Preterm delivery:	**YES**	**NO**
Abortion:	**YES**	**NO**
First trimester:	**YES**	**NO**
Second trimester:	**YES**	**NO**
Previous Deliveries:	Cesarean Delivery	Previous deliveries:
	Cesarean delivery:	
	Normal vaginal delivery:	
	Instrumental delivery:	

4.Current Obstetric condition:

Intranatal finding:	**YES**	**NO**
Mode of delivery:	**YES**	**NO**
Spontaneous delivery:	**YES**	**NO**
Induced delivery:	**YES**	**NO**
Elective c-section:	**YES**	**NO**
Emergency c-section:	**YES**	**NO**
If yes, indication:		
Instrumental delivery:	**YES**	**NO**
If yes, indication:		

Duration of labour:

1st stage:

2nd stage:

Complications of labour:	**YES**	**NO**
Prolonged labour:	**YES**	**NO**

Precipitate labour:	**YES**	**NO**
PPH:	**YES**	**NO**
APH:	**YES**	**NO**
CPD:	**YES**	**NO**
Occipito posterior position:	**YES**	**NO**
Other malpresentations:	**YES**	**NO**

If yes, specify:

Post natal findings:	**YES**	**NO**
Eventful :	**YES**	**NO**

If yes, specify:

Infections:	**YES**	**NO**

If any, specify:

ICU admission:

Mother:	**YES**	**NO**

If yes, specify reason:

Baby:	**YES**	**NO**

If yes, specify reason:

5.General examination:

Height:

Weight:

BMI (kg/m2):

Category of BMI based on Asian population BMI:

1. Underweight : < 18.5
2. Normal range: 18.5-22.9
3. Over weight : > 23

3a. At risk : 23-24.9

3b. Obese 1 : 25-29.9

3c. Obese 2 : >/= 30

Pre pregnancy: Weight: BMI: Category of BMI:

First trimester: Weight BMI Category of BMI

</= 6 weeks:

</= 7 weeks:

</= 8 weeks:

</= 9 weeks:

</= 10 weeks:

</= 11 weeks:

</= 12 weeks:

</= 13 weeks

Second trimester: Weight BMI Category of BMI

</= 14 weeks:

</= 15 weeks:

</= 16 weeks:

</= 17 weeks:

</= 18weeks:

</= 19 weeks:

</= 20 weeks:

</= 21 weeks:

</= 22 weeks :

</= 23 weeks:

</= 24 weeks:

</= 25 weeks:

</= 26 weeks:

</= 27 weeks:

</= 28 weeks:

Third trimester: Weight BMI Category of BMI

</= 29 weeks:

</= 30 weeks:

</= 31 weeks:

</= 32 weeks:

</= 33 weeks:

</= 34 weeks:

</= 35 weeks:

</= 36 weeks:

</= 37 weeks:

</= 38 weeks:

</= 39 weeks:

</= 40 weeks:

</= 41 weeks:

</= 42 weeks:

</= 43 weeks:

At the time of delivery: Weight BMI Category of BMI

Based on pre pregnancy weight:

Weight gain in first trimester:

Weight gain in second trimester :

Weight gain in third trimester :

Based on first trimester weight :

Weight gain in First trimester :

Weight gain in Second trimester :

Weight gain in Third trimester :

Total weight gain:

Pallor:	**YES**	**NO**
Oedema:	**YES**	**NO**
Icterus:	**YES**	**NO**

Vitals:

PR:

BP:

Systemic examination:	**YES**	**NO**
CVS: S1 and S2	**YES**	**NO**
Murmers	**YES**	**NO**
RS: B/L Normal vesicular breath sounds:	**YES**	**NO**
Added sounds:	**YES**	**NO**

6.Health services used during pregnancy:

6 a. Number of ANC visits:	**YES**	**NO**
6 b. Folic acid intake status:	**YES**	**NO**
6 c. Hematinic supplementation status:	**YES**	**NO**
6 d. Calcium supplementation intake status:	**YES**	**NO**
7.Information of the baby:	**YES**	**NO**
7 a.) Live birth:	**YES**	**NO**
7 b.) Still birth:	**YES**	**NO**
Fresh still birth:	**YES**	**NO**
Macerated still birth:	**YES**	**NO**
7 c.) Gestational age:	**YES**	**NO**
7 d.) Date of birth:	**YES**	**NO**
7 e.) Time of birth:	**YES**	**NO**

7 f.) Sex: Male **YES** Female **NO**

7 g.) Weight in kgs: **YES** **NO**

7 h). Did the baby cry after birth: **YES** **NO**

7 I) Did the baby require resuscitation: **YES** **NO**

7 j.) Apgar score: 1 minute: 5 minute: **YES** **NO**

7 k.) NICU admission: **YES** **NO**

If any, specify reason:

7 l.) Mortality: **YES** **NO**

If any, specify reason:

8.Obstetric conditions:

1.Singleton: **YES** **NO**

2.Multiple: a. Twin b. Triplets c.quadruple

3.Term gestation **YES** **NO**

4.Preterm gestation: **YES** **NO**

5.Post term gestation: **YES** **NO**

6.Anaemia:

6 a. Mild: **YES** **NO**

6 b. Moderate: **YES** **NO**

6 c. Severe: **YES** **NO**

7.Hypertension:

7 a .Chronic hypertension: **YES** **NO**

7 b .Gestational hypertension: **YES** **NO**

7 c . Pre eclampsia: **YES** **NO**

7 d. Eclampsia: **YES** **NO**

7 e. HELLP: **YES** **NO**

7 f. DIC: **YES** **NO**

8.Diabetes:

8 a. Gestational diabetes mellitus:	**YES**	**NO**
8 b. Overt diabetes mellitus:	**YES**	**NO**

9.Thyroid Disorders:

9 a. Hyper- thyroidism:	**YES**	**NO**
9 b. Hypo- thyroidism:	**YES**	**NO**
10.UTI:	**YES**	**NO**
11.PROM:	**YES**	**NO**
12.PPROM:	**YES**	**NO**
13.FGR:	**YES**	**NO**

14.LBW:

14 a.< 2.5kg	**YES**	**NO**
14 b .</= 2kg	**YES**	**NO**
14 c. </= 1.5 kg	**YES**	**NO**
14 d.</= 1kg	**YES**	**NO**
15.Macrosomia:	**YES**	**NO**
16.Rh negative pregnancy:	**YES**	**NO**
17. Heart disease:	**YES**	**NO**
If any, specify:	**YES**	**NO**

Signature and name of the investigator:

ANNEXURE – IV

MASTER CHART

Sl.no	AGE	obstetric score	Period of gestation	BAD OBSTETRIC HISTORY	PREV DELIVERY	CURRENT OBSTETRIC OUTCOME	INDICATION FOR C-SECTION	DURATION 1ST STAGE OF LABOUR	DURATION 2ND STAGE OF LABOUR	COMPLICATIONS OF LABOUR	NO OF ANTENATAL VISITS	SUPPLEMENTS	BIRTH	BIRTH WEIGHT	CRY AT BIRTH	RESCUCITATION	NICU ADMISSION	MATERNAL ICU ADMISSION	TERM	ANAEMIA	HTN	DIABETES	THYROID	BIRTH WEIGHT CATEGORIES	NIL	OTHER MEDICAL ILLNESS	HEIGHT	MATERNAL WEIGHT AT 1ST VISIT	MATERNAL BMI BASED ON 1ST VISIT WEIGHT	MATERNAL WEIGHT AT DELIVERY	CATEGORY	1st trimester maternal weight gain	2nd trimester maternal weight gain	3rd trimester weight gain	total maternal gestational weight gain	below 20 weeks weight gain	after 20 weeks weight gain
1	26	multi	37+2	NIL	NORMAL	INDUCED	NIL	180 mins	14 mins	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	NIL	2500-3000GM	2.5-3KG	0	152	47	20.3	57	18.5-22.9 (2)	na	8KG	1.8	9.8	1	8.8
2	30	primi	39+5	1ST TRIM ABORT	NIL	EMERGENCY	nonreassuring nst	-	-	NIL	7	TAKEN	LIVE	3500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3100-4000	>3.5-4	0	150	34.3	15.3	54	<18.5 (1)	na	na	na	19.6	6.2	13.4
3	19	primi	35	NIL	NIL	EMERGENCY	FETAL DISTRES	-	-	NIL	8	TAKEN	LIVE	1900	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	1600-2000	NIL	0	148	47.5	21.7	58.2	18.5-22.9 (2)	na	4.5	6.2	10.7	0	10.7
4	25	multi	38+2	NIL	C SECTION	EMERGENCY	previous lscs	120 mins	-	NIL	4	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	MODERATE	NIL	NIL	NIL	2500-3000	2.5-3KG	0	155	46	19.1	60	18.5-22.9 (2)	4	6	4	14	4	10
5	36	primi	38	NIL	NIL	EMERGENCY	CDMR	-	-	NIL	7	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	GDM	NIL	2500-3000	2.5-3KG	0	152	56	24.2	72	23-24.9 (3A)	4	8	2	16	0	16
6	28	primi	37	1ST TRIM ABORT	C SECTION	ELECTIVE	previous lscs	-	-	NIL	5	TAKEN	LIVE	2160	YES	NO	YES	NO	TERM	NIL	CHR HTN	NIL	NIL	2001-2499	NIL	0	152	64	27.7	72	25-29.9 (3B)	-1	2	7	8	1	7
7	24	primi	38+4	1ST TRIM ABORT	NIL	SPONTANEOUS	nil	540 mins	20 mins	NIL	5	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	158	58	23.3	66	23-24.9 (3A)	na	4.4	3.6	8	0	8
8	27	multi	40+1	NIL	NORMAL	SPONTANEOUS	nil	1080 mins	44 mins	NIL	7	TAKEN	LIVE	3400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3100-3500	3.1-3.5	0	157	58	23.5	69	23-24.9 (3A)	na	4	7	11	1	10
9	24	multi	38+1	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	14	150	59.1	26.3	69	25-29.9 (3B)	na	1.5	8.4	9.9	0	9.9
10	23	primi	40+3	NIL	NIL	SPONTANEOUS	nil	585 mins	21mins	NIL	6	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	2500-3000	2.5-3KG	0	145	53	25.2	63	25-29.9 (3B)	-1.8	5.8	6	10	-1.8	11.8
11	19	primi	39+5	NIL	NIL	EMERGENCY	non progress of labour	660 mins	-	NIL	5	NOT TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	9	138	50	26.3	58	25-29.9 (3B)	na	na	na	8	0	8
12	29	multi	39+5	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	8	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	1	156	57.4	23.6	63	23-24.9 (3A)	na	na	2.7	5.6	1.6	4
13	23	multi	38+6	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	4	NOT TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	159	46.5	18.4	52	<18.5 (1)	na	3.6	1.9	5.5	0	5.5
14	30	multi	40	NIL	NORMAL	INDUCED		990mins	20 minute	NIL	5	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	151	66.2	29	70.9	25-29.9 (3B)	na	2.4	2.3	4.7	0	4.7
15	24	multi	37+6	NIL	C SECTION	EMERGENCY	prev lscs	120 mins	-	NIL	6	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	152	47.2	20.4	54.3	18.5-22.9 (2)	na	na	na	7.1	0	7.1
16	25	primi	39	NIL	NIL	EMERGENCY	prolonged prom	1230 mins	-	PROLONGED LABOUR	6	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	4	161	65	25.1	74.5	25-29.9 (3B)	1.6	2.8	5.1	9.5	0	9.5
17	26	primi	38	NIL	NIL	EMERGENCY	breech in labour	60 mins	-	MALPRESENT	4	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	NIL	2500-3000	2.5-3KG	0	155	43.2	18	53	<18.5 (1)	NA	9.2	2.6	11.8	0	11.8
18	25	primi	38+2	NIL	NIL	EMERGENCY	msl	345 mins	-	NIL	5	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	PE	NIL	NIL	2500-3000	2.5-3KG	0	156	57	23.4	67	23-24.9 (3A)	na	6.4	3.6	10	4.2	5.8
19	25	multi	39+3	1ST TRIM ABORT	C SECTION	EMERGENCY	previous lscs	-	-	PROLONGED LABOUR	7	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	7	168	72	25.5	79	25-29.9 (3B)	-0.7	2.5	5.2	7	-0.7	7.7
20	35	multi	38+5	1ST TRIM ABORT	C SECTION	EMERGENCY	previous lscs	120 mins	-	NIL	8	TAKEN	LIVE	3400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	157	64	26	79	25-29.9 (3B)	4.4	4.3	6.3	15	4.4	10.6
21	27	multi	39+4	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	3	NOT TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	GHTN	IGT	NIL	2500-3000	2.5-3KG	5	152	50	21.6	56	18.5-22.9 (2)	2	na	4	6	2	4
22	21	primi	37+2	NIL	NIL	INDUCED	-	360 mins	120 mins	NIL	7	NOT TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	151	69	30.3	82	>/=30 (3C)	1.3	4.7	7	13	1.3	11.7
23	19	primi	37+4	NIL	NIL	INDUCED	-	1560 mins	45 mins	NIL	4	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	52	21.4	58	18.5-22.9 (2)	1.4	2.6	2	6	0	6
24	22	multi	37+5	NIL	C SECTION	EMERGENCY	previous lscs	120 mins	-	NIL	6	TAKEN	LIVE	2400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	152	64	27.7	76	25-29.9 (3B)	na	na	na	12	5	7
25	21	primi	40	NIL	NIL	EMERGENCY	msl	360 mins	-	NIL	8	TAKEN	LIVE	3100	YES	YES	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	148	48	22.4	57	18.5-22.9 (2)	na	4.6	4.2	9	2.5	6.5
26	26	primi	37+5	NIL	NIL	EMERGENCY	oligohydramnios	1260 mins	-	PROLONGED LABOUR	7	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	CHR HTN	NIL	NIL	2500-3000	2.5-3KG	0	168	81	28.7	90	25-29.9 (3B)	1	4.6	3.4	9	-0.2	9.2
27	24	primi	39+3	NIL	NIL	SPONTANEOUS	-	390 mins	12 mins	NIL	4	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	158	45	18	59.5	<18.5 (1)	na	10.3	4.2	14.5	3.1	11.4
28	20	primi	38+5	NIL	NIL	EMERGENCY	fetal distress	300 mins	-	NIL	5	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	152	45	19.5	58	18.5-22.9 (2)	na	2.7	10.3	13	0	13
29	24	multi	37	NIL	NORMAL	SPONTANEOUS	-	720 mins	25 mins	NIL	7	TAKEN	LIVE	2900	YES	NO	YES	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	159	51	20.2	64	18.5-22.9 (2)	na	7	6	13	2	11
30	30	multi	39+2	NIL	C SECTION	EMERGENCY	previous lscs	180 mins	-	NIL	5	TAKEN	LIVE	3500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	146	55	25.8	62	25-29.9 (3B)	-1	0	7	7	-1	8
31	22	primi	39+3	1ST TRIM ABORT	NIL	INSTRUMENT	-	480 mins	2 mins	NIL	5	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	162	44.8	17.1	60	<18.5 (1)	2.2	3	9	14.2	2.2	12
32	23	primi	40+1	NIL	NIL	INDUCED	-	7200 mins	45 mins	NIL	6	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	164	44.6	16.6	55	<18.5 (1)	na	4.4	6	10.4	2	8.4
33	28	multi	38+2	NIL	C SECTION	EMERGENCY	previous lscs	120 mins	-	NIL	5	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	152	50.8	22	60	18.5-22.9 (2)	1.8	2.2	5.2	9.2	1.8	7.4
34	28	primi	40	1ST TRIM ABORT	NIL	EMERGENCY	cpd	720 mins	30 mins	CPD	5	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	2500-3000	2.5-3KG	5	156	52	21.4	61	18.5-22.9 (2)	3.6	2.4	3	9	0	9

Sl.no	AGE	obstetric score	Period of gestation	BAD OBSTETRIC HISTORY	PREV DELIVERY	CURRENT OBSTETRIC OUTCOME	INDICATION FOR C-SECTION	DURATION 1ST STAGE OF LABOUR	DURATION 2ND STAGE OF LABOUR	COMPLICATIONS OF LABOUR	NO OF ANTENATAL VISITS	SUPPLEMENTS	BIRTH	BIRTH WEIGHT	CRY AT BIRTH	RESCUCITATION	NICU ADMISSION	MATERNAL ICU ADMISSION	TERM	ANAEMIA	HTN	DIABETES	THYROID	BIRTH WEIGHT CATEGORIES	NIL	OTHER MEDICAL ILLNESS	HEIGHT	MATERNAL WEIGHT AT 1ST VISIT	MATERNAL BMI BASED ON 1ST VISIT WEIGHT	MATERNAL WEIGHT AT DELIVERY	CATEGORY	1st trimester maternal weight gain	2nd trimester maternal weight gain	3rd trimester weight gain	total maternal gestational weight gain	below 20 weeks weight gain	after 20 weeks weight gain
35	32	multi	40+5	NIL	INSTRUMENT	INDUCED	-	420 mins	90 mins	NIL	4	TAKEN	LIVE	2600	YES	YES	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	1	152	45	19.5	53	18.5-22.9 (2)	1	na	7	8	0	8
36	35	primi	38+2	NIL	NIL	ELECTIVE	cdmr	-	-	NIL	5	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	157	90	36.5	101	>/=30 (3C)	na	4	7	11	0	11
37	29	primi	39	1ST TRIM ABORT	NIL	EMERGENCY	imminent signs	-	-	NIL	4	TAKEN	LIVE	3000	YES	NO	NO	YES	TERM	NIL	IMMINENT SIGNS	NIL	NIL	2500-3000	2.5-3KG	0	143	51.5	25.2	63	25-29.9 (3B)	na	6.8	4.7	11.5	4.1	7.4
38	26	multi	37	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	5	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	GDM	NIL	2500-3000	2.5-3KG	8	152	70	30.3	85	>/=30 (3C)	2	na	13	15	2	13
39	23	primi	40+1	NIL	NIL	EMERGENCY	oligohydrmanios	-	-	NIL	4	NOT TAKEN	LIVE	3600	YES	NO	NO	NO	TERM	MODERATE	NIL	NIL	NIL	3501-4000	>3.5-4	5	164	55	20.4	62.5	18.5-22.9 (2)	1.5	na	8	9.5	-0.5	10
40	23	multi	38+4	NIL	NORMAL	SPONTANEOUS	-	795 mins	11 mins	NIL	5	TAKEN	LIVE	3400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	150	54	24	70	23-24.9 (3A)	na	7	9	16	0	16
41	30	multi	39+5	1ST TRIM ABORT	NORMAL	SPONTANEOUS	-	660 mins	15mins	NIL	6	NOT TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	154	52	21.9	57	18.5-22.9 (2)	2	2	1	5	2	3
42	27	multi	37+6	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	4	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	164	51	19	62	18.5-22.9 (2)	-0.5	na	11.5	11.5	-0.5	12
43	23	primi	37+5	NIL	NIL	SPONTANEOUS	-	1080 mins	40 mins	NIL	5	TAKEN	LIVE	2400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	153	46.8	20	57	18.5-22.9 (2)	1.7	2	7	10.7	1.2	9.5
44	22	primi	38+6	NIL	NIL	EMERGENCY	fetal distress	120 mins	-	NIL	4	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	HYPO	2500-3000	2.5-3KG	0	153	48	20.5	62	18.5-22.9 (2)	1.5	na	12.5	14	1.5	12.5
45	24	multi	38+6	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	4	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	152	63.5	27.5	71.7	25-29.9 (3B)	na	na	8.2	8.2	0	8.2
46	33	primi	40+1	NIL	NIL	EMERGENCY	nonprogress of labour	1320 mins	-	NIL	4	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	158	48	19.2	55	18.5-22.9 (2)	na	na	7	7	0	7
47	27	multi	38+4	NIL	C SECTION	EMERGENCY	previous lscs	240 mins	-	NIL	5	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	MILD	NIL	NIL	NIL	2001-2499	NIL	0	162	57.8	22	68.2	18.5-22.9 (2)	na	4.8	5.6	10.3	0	10.3
48	25	multi	40+2	NIL	NORMAL	INDUCED	-	180 mins	25 mins	NIL	5	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	153	44	18.8	56.2	18.5-22.9 (2)	na	6	6.2	12.2	0	12.2
49	27	primi	36+1	NIL	NIL	EMERGENCY	non progress of labour	-	-	NIL	5	TAKEN	LIVE	3000	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	72.4	29.8	84	25-29.9 (3B)	na	3.6	8	11.6	0	11.6
50	28	multi	37+3	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	5	TAKEN	LIVE	3400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	152	74	32	86	>/=30 (3C)	na	6	6	12	0	12
51	28	primi	37+2	1ST TRIM ABORT	NIL	EMERGENCY	breech in labour	-	-	NIL	4	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	144	38	18.3	46	<18.5 (1)	-1.5	1.9	6.6	8.5	2	6.5
52	31	multi	38+4	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	5	TAKEN	LIVE	3400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	163	68	25.6	74.5	25-29.9 (3B)	na	2.2	4.3	6.5	-0.5	7
53	24	multi	39	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	4	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	1	146	54.8	25.7	66.5	25-29.9 (3B)	na	na	11.7	11.7	0	11.7
54	23	primi	33+3	NIL	NIL	SPONTANEOUS	-	300 mins	10min	NIL	4	TAKEN	LIVE	1700	YES	YES	YES	NO	PRE TERM	NIL	NIL	NIL	NIL	1500-2000	NIL	1	152	49.4	21.4	56.4	18.5-22.9 (2)	na	1.2	5.8	7	0	7
55	19	primi	38+1	NIL	NIL	EMERGENCY	non progress of labour	480 mins	-	NIL	10	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	149	42.5	19.1	55	18.5-22.9 (2)	-1.5	9.3	4.7	14	1.2	12.8
56	21	primi	40+1	NIL	NIL	SPONTANEOUS	-	660 mins	21 mins	NIL	9	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	36	14.8	51	<18.5 (1)	na	9.1	5.9	15	1.8	13.2
57	27	multi	40	NIL	NORMAL	EMERGENCY	cpd	720 mins	-	CPD	7	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	MILD	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	65.3	26.8	71	25-29.9 (3B)	na	2.7	3	5.7	-1.8	7.5
58	26	multi	37+6	NIL	NORMAL	SPONTANEOUS	-	300 mins	8 mins	NIL	4	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	154	58.4	24.6	65	23-24.9 (3A)	na	4.3	2.3	6.6	1.6	5
59	22	multi	40+3	NIL	NORMAL	INDUCED	-	900 mins	32 mins	NIL	7	TAKEN	LIVE	3300	YES	NO	YES	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	16	164	65.6	24.4	73.4	23-24.9 (3A)	0.8	2.3	4.9	7	0.6	6.4
60	21	primi	36+5	NIL	NIL	EMERGENCY	fetal distress	-	-	NIL	3	TAKEN	LIVE	2700	YES	NO	YES	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	5	156	42	17.3	50	<18.5 (1)	na	7	1	8	0	8
61	28	multi	40	NIL	NIL	EMERGENCY	cpd	900 mins	-	NIL	8	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	56	23	68	23-24.9 (3A)	1	2	9	12	1	11
62	24	multi	38+4	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	5	TAKEN	LIVE	3400	YES	NO	YES	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	8	158	57	22.8	72	18.5-22.9 (2)	na	7.5	7.5	15	0	15
63	31	multi	40+2	NIL	NORMAL	INSTRUMENT		360 mins	60 mins	PROLONGED LABOUR	6	TAKEN	LIVE	3600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3501-4000	>3.5-4	0	163	55	20.7	65	18.5-22.9 (2)	-1.2	5.2	6	11.2	1.2	10
64	28	primi	37+4	NIL	NIL	INDUCED	-	420 mins	12 mins	NIL	5	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	165	62	22.8	70	18.5-22.9 (2)	na	6	2	8	0	8
65	32	multi	36+4	FSB	C SECTION	ELECTIVE	previous lscs	-	-	MALPRESENT	4	TAKEN	LIVE	2.4/1.9	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	1500-2000	NIL	14	149	55.3	24.9	68	23-24.9 (3A)	0.5	7.7	4.5	12.7	2.7	10
66	24	primi	31+5	1ST TRIM ABORT	NIL	SPONTANEOUS	-	660 mins	20mins	NIL	4	NOT TAKEN	LIVE	1.2/1.6	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	1001-1499	NIL	3	152	48	20.8	68.5	18.5-22.9 (2)	na	na	20.5	20.5	0	20.5
67	21	primi	38+5	NIL	NIL	INDUCED	-	930 mins	18mins	NIL	5	NOT TAKEN	LIVE	2200	YES	NO	NO	YES	TERM	NIL	PE	NIL	HYPO	2001-2499	NIL	0	149	48	21.6	57	18.5-22.9 (2)	na	4	5	9	1	8
68	31	multi	38+2	NIL	C SECTION	EMERGENCY	previous lscs	180 mins	-	NIL	5	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	NIL	3001-3500	3.1-3.5	4	155	60	25	67	25-29.9 (3B)	na	na	7	7	0	7

Sl.no	AGE	obstetric score	Period of gestation	BAD OBSTETRIC HISTORY	PREV DELIVERY	CURRENT OBSTETRIC OUTCOME	INDICATION FOR C-SECTION	DURATION 1ST STAGE OF LABOUR	DURATION 2ND STAGE OF LABOUR	COMPLICATIONS OF LABOUR	NO OF ANTENATAL VISITS	SUPPLEMENTS	BIRTH	BIRTH WEIGHT	CRY AT BIRTH	RESCUCITATION	NICU ADMISSION	MATERNAL ICU ADMISSION	TERM	ANAEMIA	HTN	DIABETES	THYROID	BIRTH WEIGHT CATEGORIES	NIL	OTHER MEDICAL ILLNESS	HEIGHT	MATERNAL WEIGHT AT 1ST VISIT	MATERNAL BMI BASED ON 1ST VISIT WEIGHT	MATERNAL WEIGHT AT DELIVERY	CATEGORY	1st trimester maternal weight gain	2nd trimester maternal weight gain	3rd trimester weight gain	total maternal gestational weight gain	below 20 weeks weight gain	after 20 weeks weight gain
69	21	primi	38+5	NIL	NIL	INSTRUMENT	-	390 mins	51 mins	NIL	5	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	157	48.5	19.7	58.3	<18.5 (1)	-0.9	5.8	4.9	10.7	1	9.7
70	25	multi	36+6	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	4	TAKEN	LIVE	2400	YES	NO	NO	YES	PRE TERM	NIL	PE	NIL	NIL	2001-2499	NIL	0	161	50	19.3	62.1	18.5-22.9 (2)	na	na	12.1	12.1	0	12.1
71	24	primi	37+4	NIL	NIL	INDUCED	-	240 mins	25 mins	NIL	4	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	4	154	42.6	18	53	<18.5 (1)	na	4	6.4	10.4	0	10.4
72	20	primi	40	NIL	NIL	SPONTANEOUS	-	600 mins	24 mins	NIL	3	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	159	60.5	23.9	68.4	23-24.9 (3A)	na	2.5	5.4	7.9	2.5	5.4
73	28	multi	39+3	NIL	NORMAL	EMERGENCY	facepresentation	480 mins	-	MALPRESENT	4	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	4	152	69.5	30.1	76	>/=30 (3C)	na	na	6.5	6.5	0	6.5
74	21	primi	40+4	NIL	NIL	VENTOUSSE		660 mins	45 mins	NIL	4	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	163	62	23.3	73.2	23-24.9 (3A)	na	6.8	4.4	11.2	0	11.2
75	26	primi	38+4	NIL	NIL	EMERGENCY	non reassuring nst	3 hrs	-	NIL	5	TAKEN	LIVE	2500	YES	NO	NO	YES	TERM	NIL	HELLP	NIL	NIL	2500-3000	2.5-3KG	0	156	74.6	30.7	85.4	>/=30 (3C)	na	na	10.8	10.8	0	10.8
76	23	multi	37+1	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	4	TAKEN	LIVE	2300	YES	NO	YES	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	164	49	18.2	57	<18.5 (1)	na	na	8	8	0.6	7.4
77	26	primi	39+2	NIL	NIL	SPONTANEOUS	-	640 mins	16 mins	NIL	5	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	158	45	18	58.5	<18.5 (1)	2.4	7	4.1	13.5	2.4	11.1
78	27	primi	40+1	NIL	NIL	VENTOUSSE	post mv repair	470 mins	9 mins	NIL	4	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	GDM	NIL	2500-3000	2.5-3KG	7	153	50.5	21.6	59	18.5-22.9 (2)	na	6.5	2.3	8.8	2.2	6.6
79	25	multi		NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	5	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	7	156	56	23	62	23-24.9 (3A)	1.6	2.4	2	6	2.4	3.6
80	30	multi	34+2	NIL	NORMAL	EMERGENCY	twins in labour	120 mins	-	NIL	5	TAKEN	LIVE	2.2/2.2	YES	NO	NO	NO	PRE TERM	NIL	GHTN	NIL	NIL	2001-2499	NIL	3	161	69	26.6	78	25-29.9 (3B)	0.4	2.8	5.8	8	0.4	7.6
81	33	multi	36	MSB	C SECTION	ELECTIVE	previous lscs	-	-	MALPRESENT	6	TAKEN	LIVE	3400	YES	NO	NO	NO	PRE TERM	NIL	GHTN	OVERT	NIL	3001-3500	3.1-3.5	8	154	63	26.6	73.5	25-29.9 (3B)	na	7.8	2.7	10.5	2	8.5
82	23	primi	38+6	NIL	NIL	SPONTANEOUS	-	480 mins	12 mins	NIL	4	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	1	158	56.4	22.6	62	18.5-22.9 (2)	na	3.2	2.4	5.6	0	5.6
83	20	primi	38+6	NIL	NIL	SPONTANEOUS	-	600 mins	10mins	NIL	5	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	1	161	45	17.4	55	<18.5 (1)	0	NA	NA	10	0	10
84	30	primi	38+1	1ST TRIM ABORT	NIL	INDUCED	-	765 mins	9 mins	NIL	4	TAKEN	LIVE	1800	YES	NO	YES	NO	TERM	NIL	NIL	NIL	NIL	1500-2000	NIL	1	150	55	24.4	59	23-24.9 (3A)	0.2	1.3	2.5	4	0.2	3.8
85	24	multi	38+6	1ST TRIM ABORT	NORMAL	SPONTANEOUS	-	-	32 mins	NIL	6	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	152	52	22.9	58.8	18.5-22.9 (2)	0	2	4.8	6.8	0	6.8
86	22	primi	40+2	NIL	NIL	EMERGENCY	failed induction	1800 mins	-	NIL	5	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	NIL	2500-3000	2.5-3KG	9	150	72.8	32.4	91	>/=30 (3C)	na	3.7	14.5	18.2	1.6	16.6
87	23	multi	37+2	NIL	NORMAL	INDUCED	-	360 mins	6 mins	NIL	5	TAKEN	LIVE	2200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	1500-2000	NIL	0	151	52.4	23	61.6	25-29.9 (3B)	na	3.6	5.6	9.2	0	9.2
88	21	primi	36+6	NIL	NIL	EMERGENCY	msl	2100 mins	-	NIL	6	TAKEN	LIVE	1900	YES	NO	YES	NO	PRE TERM	NIL	NIL	NIL	NIL	1500-2000	NIL	0	150	43	19.1	49.5	18.5-22.9 (2)	na	0.8	5.7	6.5	0.6	5.9
89	27	primi	41+1	1ST TRIM ABORT	NIL	SPONTANEOUS	-	930 mins	16 mins	NIL	5	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	155	54	22.5	60	18.5-22.9 (2)	0	3.5	2.5	6	0	6
90	29	multi	40	NIL	NORMAL	EMERGENCY	failed induction	600 mins	-	NIL	4	TAKEN	LIVE	3400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	156	60.4	24.8	68	23-24.9 (3A)	1.5	1.9	4.2	7.6	1.5	6.1
91	29	primi	40	1ST TRIM ABORT	NIL	VENTOUSSE	maternal effort	1020 mins	30 mins	NIL	5	TAKEN	LIVE	3500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	157	59.8	24.3	71	23-24.9 (3A)	2.2	6	3	11.2	2.2	9
92	26	multi	38+3	1ST TRIM ABORT	NORMAL	SPONTANEOUS	-	720 mins	5 mins	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	157	42.9	17.4	55	<18.5 (1)	na	7.3	4.8	12.1	0	12.1
93	25	multi	37+3	NIL	C SECTION	EMERGENCY	twins in labour	210 mins	-	MALPRESENT	5	TAKEN	LIVE	2.8/2.8	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	NIL	4	154	51.2	21.6	64	18.5-22.9 (2)	na	na	na	12.8	3.9	8.9
94	26	primi	37+6	NIL	NIL	EMERGENCY	cpd	480 mins	-	CPD	5	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	NIL	4	158	63	25.2	78	25-29.9 (3B)	na	na	na	15	3	12
95	28	multi	38+1	MSB	C SECTION	EMERGENCY	cpd	690 mins	-	CPD	8	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	NIL	3001-3500	3.1-3.5	0	150	50	22.2	63	18.5-22.9 (2)	na	8.2	4.8	13	2.3	10.7
96	35	multi	37+5	1ST TRIM ABORT	C SECTION	EMERGENCY	previous lscs	-	-	NIL	4	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	NIL	0	153	62	26.5	67	25-29.9 (3B)	na	na	na	5	0.5	4.5
97	21	multi	39	1ST TRIM ABORT	C SECTION	ELECTIVE	previous lscs	-	-	NIL	7	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	150	83.5	37.1	88	>/=30 (3C)	na	na	na	4.5	-0.3	4.8
98	22	primi	39+2	NIL	NIL	EMERGENCY	msl	240 mins	-	NIL	7	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	2500-3000	2.5-3KG	6	161	60	23.1	70	23-24.9 (3A)	na	3.2	6.8	10	2.3	7.7
99	28	primi	33	NIL	NIL	SPONTANEOUS	-	540 mins	26mins	NIL	9	TAKEN	LIVE	1700	YES	YES	YES	NO	PRE TERM	NIL	NIL	NIL	HYPO	1500-2000	NIL	3	156	47.6	19.6	56	18.5-22.9 (2)	na	6.8	3.2	8.4	1.2	7.2
100	32	primi	37+2	1ST TRIM ABORT	NIL	EMERGENCY	precious pregnancy	-	-	NIL	5	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	150	56	24.9	65	23-24.9 (3A)	na	na	4.9	9	1.1	7.9
101	20	primi	38+3	NIL	NIL	VENTOUSSE	poor maternal bearing down	720 mins	-	NIL	6	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	150	40	17.8	47	<18.5 (1)	na	2.5	4.5	7	0.7	6.3
102	26	G2P1L1	39+3	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	5	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	164	49.7	22.2	55.3	18.5-22.9 (2)	na	1.9	3.7	5.6	0.4	5.2
103	32	Primi	39+3	NIL	NIL	EMERGENCY	oligohydrmanios	-	-	MALPRESENT	6	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	3001-3500	3.1-3.5	0	147	51	23.6	57.1	23-24.9 (3A)	na	1.4	4.7	6.1	1	5.1

Sl.no	AGE	obstetric score	Period of gestation	BAD OBSTETRIC HISTORY	PREV DELIVERY	CURRENT OBSTETRIC OUTCOME	INDICATION FOR C-SECTION	DURATION 1ST STAGE OF LABOUR	DURATION 2ND STAGE OF LABOUR	COMPLICATIONS OF LABOUR	NO OF ANTENATAL VISITS	SUPPLEMENTS	BIRTH	BIRTH WEIGHT	CRY AT BIRTH	RESCUCITATION	NICU ADMISSION	MATERNAL ICU ADMISSION	TERM	ANAEMIA	HTN	DIABETES	THYROID	BIRTH WEIGHT CATEGORIES	NIL	OTHER MEDICAL ILLNESS	HEIGHT	MATERNAL WEIGHT AT 1ST VISIT	MATERNAL BMI BASED ON 1ST VISIT WEIGHT	MATERNAL WEIGHT AT DELIVERY	CATEGORY	1st trimester maternal weight gain	2nd trimester maternal weight gain	3rd trimester weight gain	total maternal gestational weight gain	below 20 weeks weight gain	after 20 weeks weight gain
104	38	G2A1	37+6	1ST TRIM ABORT	NIL	EMERGENCY	breech in labour	720 mins	-	MALPRESENT	4	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	158	65	26	68	25-29.9 (3B)	na	1.7	3.3	3	-0.6	3.6
105	29	G4P2L2A1	37+2	1ST TRIM ABORT	C SECTION	EMERGENCY	previous lscs	-	-	NIL	5	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	OVERT	NIL	2500-3000	2.5-3KG	6	153	65	27.8	70	25-29.9 (3B)	na	3	2	5	0.9	4.1
106	24	primi	40+3	NIL	NIL	EMERGENCY	non progress of labour	600 mins	1.5 hrs	OP	6	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	167	49.5	17.7	61.5	<18.5 (1)	na	8.5	2	10.5	0	10.5
107	31	G3P1D1A1	38+3	1ST TRIM ABORT	NORMAL	EMERGENCY	cpd	360 mins	-	CPD	5	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	8	146	54	25.3	64	25-29.9 (3B)	2	na	12	14	2	12
108	20	primi	40+3	NIL	NIL	EMERGENCY	fetal distress	1320 mins	-	NIL	6	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	NIL	0	146	55	25.8	62	25-29.9 (3B)	na	1	6	7	-5	12
109	25	primi	40+2	NIL	NIL	INDUCED	-	1335 mins	6 mins	NIL	5	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	45	18.5	65	18.5-22.9 (2)	na	10.2	10	20.5	5.6	14.9
110	28	G2P1L1	39+1	NIL	NORMAL	SPONTANEOUS	prom	268 mins	1 min	NIL	4	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	162	56	21.3	70	18.5-22.9 (2)	na	7	7	14	4	10
111	26	primi	29+2	NIL	NIL	EMERGENCY	reverse end diastolic flow	-	-	NIL	6	NOT TAKEN	LIVE	680	YES	YES	YES	YES	PRE TERM	NIL	PE	NIL	NIL	501-1000	NIL	0	156	48	19.7	56	18.5-22.9 (2)	1.2	5.4	1.2	7.8	2.6	5.2
112	21	G2P1L0	37+4	FSB	NORMAL	EMERGENCY	failed induction	1680 mins	-	NIL	8	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	144	42	20.3	58	18.5-22.9 (2)	1	4.8	10.2	16	1.8	14.2
113	25	G3P2L2	37	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	6	TAKEN	LIVE	3400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	146	54	25.3	63	25-29.9 (3B)	na	2	7	9	1.4	7.6
114	34	G3P2L1	37	died after birth	C SECTION	ELECTIVE	previous lscs	-	-	NIL	7	TAKEN	LIVE	2900	YES	NO	NO	YES	TERM	NIL	PE	NIL	NIL	2500-3000	2.5-3KG	0	161	68	26.2	82	25-29.9 (3B)	0.6	10.4	5	16	3.5	12.5
115	31	G2P1L1	37+5	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	5	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	152	46.6	20.2	58	18.5-22.9 (2)	na	6.6	4.8	11.4	4	7.4
116	28	primi	37	NIL	C SECTION	EMERGENCY	msl	300 mins	-	NIL	7	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	161	48	18.5	56	18.5-22.9 (2)	1.4	2.6	4	8	2	6
117	26	primi	36+4	NIL	NIL	EMERGENCY	fetal distress	720 mins	-	NIL	5	TAKEN	LIVE	1600	YES	YES	YES	NO	PRE TERM	NIL	NIL	NIL	NIL	1500-2000	NIL	1	159	56.4	22.3	64	18.5-22.9 (2)	3.6	2.4	1.4	7.4	1	6.4
118	34	G3P2L1D1	37+6	died after birth	C SECTION	ELECTIVE	previous lscs	-	-	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	2500-3000	2.5-3KG	0	154	52	21.9	64	18.5-22.9 (2)	1.2	5	5.8	12	2	10
119	30	G3P1L1A1	37+5	1ST TRIM ABORT	C SECTION	ELECTIVE	previous lscs	-	-	NIL	7	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	2500-3000	2.5-3KG	6	149	40	18	54	<18.5 (1)	2.4	5.8	5.8	14	4	10
120	24	G3P2L1D1	38+2	died after birth	NORMAL	SPONTANEOUS	-	210 mins	15 mins	NIL	5	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	2001-2499	NIL	0	150	52	23.1	70	23-24.9 (3A)	3	5	10	18	3	15
121	32	G2A1	37+5	1ST TRIM ABORT	NIL	EMERGENCY	fetal distress	-	-	NIL	4	TAKEN	LIVE	1600	YES	YES	YES	NO	TERM	NIL	NIL	NIL	NIL	1500-2000	NIL	6	146	51	23.9	55	23-24.9 (3A)	1.4	0.6	2	4	0	4
122	25	primi	39+2	NIL	NORMAL	SPONTANEOUS	-	1380 mins	18 mins	NIL	4	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	154	52	21.9	64	18.5-22.9 (2)	0.4	5.6	6	12	0.9	11.1
123	24	G3P1D1L1	24+3	died after birth	C SECTION	INDUCED	pprom	840 mins	25 mins	NIL	2	NOT TAKEN	FSB	680	NO	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	501-1000	NIL	0	154	58.4	24.6	60	23-24.9 (3A)	na	1.6	0	1.6	0.4	1.2
124	28	primi	39+1	NIL	NIL	SPONTANEOUS	-	420 mins	30 mins	NIL	5	TAKEN	LIVE	2100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	156	50.4	20.7	58	18.5-22.9 (2)	na	3.6	4	7.6	1.6	6
125	25	primi	38	NIL	NIL	EMERGENCY	oligohydramnios	960 mins	-	NIL	7	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	1	152	53	22.9	60	18.5-22.9 (2)	0.2	4.8	2.2	7.2	2.4	4.8
126	25	G2P1L1	35	NIL	NORMAL	EMERGENCY	twins in labour	-	-	NIL	5	TAKEN	LIVE	1.9/ Unknown	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	1500-2000	NIL	0	144	48	23.1	55	23-24.9 (3A)	0.8	2.2	5	8	0.8	7.2
127	24	primi	39+4	1ST TRIM ABORT	NIL	VENTOUSSE	-	1920 mins	10mins	PPH	4	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	151	54	23.7	65	23-24.9 (3A)	4	2	5	11	4	7
128	29	primi	37+6	NIL	NIL	EMERGENCY	2nd stage arrest	390 mins	30mins	NIL	4	TAKEN	LIVE	2700	YES	NO	NO	YES	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	160	54	21.1	62	18.5-22.9 (2)	4	2	2	8	4	4
129	26	primi	37+3	NIL	NIL	EMERGENCY	fetal distress	180 mins	-	PPH	6	TAKEN	LIVE	3300	YES	NO	NO	YES	TERM	NIL	NIL	GDM	NIL	3001-3500	3.1-3.5	0	155	40	16.6	61	<18.5 (1)	5	8	8	21	5	16
130	24	G3P1L1A1	38+1	NIL	NIL	EMERGENCY	msl	1200 mins	-	NIL	8	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	NIL	3001-3500	3.1-3.5	0	154	56	23.6	79	23-24.9 (3A)	4	7.6	11.4	23	4	19
131	28	G2P1L1	38+6	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	7	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	7	158	54	21.6	65	18.5-22.9 (2)	0	2.8	5	7.8	0	7.8
132	29	G3P1L1A1	39+2	1ST TRIM ABORT	C SECTION	ELECTIVE	previous lscs	-	-	NIL	8	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	164	64	23.8	74	23-24.9 (3A)	0.5	3.5	6	10	-1	11
133	29	G2P1L1	39	NIL	NORMAL	INDUCED	-	720 mins	11 mins	NIL	6	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	4	156	47	19.3	62.5	18.5-22.9 (2)	0.5	6.5	8.5	15.5	2	13.5
134	25	G3P2L2	37+4	NIL	C SECTION	EMERGENCY	previous lscs	-	-	MALPRESENT	7	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	148	45.4	20.7	51	18.5-22.9 (2)	0.3	3	2.3	5.6	0.6	5
135	25	G2P1L1	40+2	NIL	NORMAL	EMERGENCY	non reassuring nst	480 mins	-	NIL	4	NOT TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	162	64	24.4	75	23-24.9 (3A)	na	na	na	9	4	5
136	19	primi	38+4	NIL	NIL	INDUCED	-	720 mins	22 mins	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	52.6	21.6	63.5	18.5-22.9 (2)	-0.6	8.6	2.9	10.9	2.1	8.8
137	28	primi	40+4	NIL	NIL	EMERGENCY	msl	1080 mins	-	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	6	162	53	20.2	66	18.5-22.9 (2)	0.8	8.2	4	13	0.8	12.2
138	22	primi	38+3	NIL	NIL	INDUCED	-	720 mins	13 mins	NIL	6	TAKEN	LIVE	2000	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	NIL	2001-2499	NIL	1	155	44	18.3	59.5	<18.5 (1)	0	6	9.5	15.5	4	11.5

Sl.no	AGE	obstetric score	Period of gestation	BAD OBSTETRIC HISTORY	PREV DELIVERY	CURRENT OBSTETRIC OUTCOME	INDICATION FOR C-SECTION	DURATION 1ST STAGE OF LABOUR	DURATION 2ND STAGE OF LABOUR	COMPLICATIONS OF LABOUR	NO OF ANTENATAL VISITS	SUPPLEMENTS	BIRTH	BIRTH WEIGHT	CRY AT BIRTH	RESCUCITATION	NICU ADMISSION	MATERNAL ICU ADMISSION	TERM	ANAEMIA	HTN	DIABETES	THYROID	BIRTH WEIGHT CATEGORIES	NIL	OTHER MEDICAL ILLNESS	HEIGHT	MATERNAL WEIGHT AT 1ST VISIT	MATERNAL BMI BASED ON 1ST VISIT WEIGHT	MATERNAL WEIGHT AT DELIVERY	CATEGORY	1st trimester maternal weight gain	2nd trimester maternal weight gain	3rd trimester weight gain	total maternal gestational weight gain	below 20 weeks weight gain	after 20 weeks weight gain
139	24	G3P2L1D1	39+3	died after birth	C SECTION	EMERGENCY	previous lscs	360 mins	-	NIL	4	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	148	58	26.5	66	25-29.9 (3B)	na	2	6	8	0	8
140	26	G2A1	38+5	NIL	NIL	SPONTANEOUS	-	660 mins	12 mins	NIL	6	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	152	40.8	17.7	50	<18.5 (1)	2.4	2.6	4.2	9.2	2.4	6.8
141	27	G3P2L2	41+2	NIL	NORMAL	EMERGENCY	deep transverse arrest	2880 mins	83 mins	PROLONGED LABOUR	5	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	153	36.5	15.6	48	<18.5 (1)	na	5.5	6	11.5	2.5	9
142	26	G3P2L1d1	36+4	NIL	C SECTION	EMERGENCY	previous lscs	-	-	MALPRESENT	5	TAKEN	LIVE	2200	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	153	55.2	23.6	65	23-24.9 (3A)	0.8	6.5	2.5	9.8	0.8	9
143	25	primi	36+6	NIL	NIL	SPONTANEOUS	-	960 mins	5 mins	NIL	8	TAKEN	LIVE	2400	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	150	36	16	49.5	<18.5 (1)	0.6	6.4	6.5	13.5	5.5	8
144	38	G2A1	37+4	1ST TRIM ABORT	NIL	EMERGENCY	precious pregnancy	-	-	NIL	7	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	157	68	27.6	80	25-29.9 (3B)	0.8	1.2	10	12	1.2	10.8
145	31	G2P1L1	39+3	NIL	NORMAL	INDUCED	-	180 mins	15 mins	NIL	5	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	40	16.4	48	<18.5 (1)	2.4	2.2	3.4	8	2.4	5.6
146	24	primi	40+4	NIL	NIL	SPONTANEOUS	-	390 mins	43 mins	NIL	4	NOT TAKEN	MSB	3300	NO	NO	NO	NO	TERM	MODERATE	GHTN	NIL	NIL	3001-3500	3.1-3.5	5	153	42	17.9	50	<18.5 (1)	na	4	4	8	1.4	6.6
147	31	primi	37+2	NIL	NIL	EMERGENCY	non progress of labour	2880 mins	-	PROLONGED LABOUR	7	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	HYPO	2500-3000	2.5-3KG	0	156	68	27.9	85	25-29.9 (3B)	1.4	5.2	10.2	16.8	2.5	14.3
148	27	G3P2L1D1	39	died after birth	C SECTION	ELECTIVE	previous lscs	-	-	NIL	7	TAKEN	LIVE	3700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3501-4000	>3.5-4	0	151	44	19.3	55	18.5-22.9 (2)	2	1.8	7.2	10.2	2	8.2
149	21	primi	38+3	NIL	NIL	INDUCED	-	300 mins	14 mins	NIL	4	NOT TAKEN	LIVE	1800	YES	YES	NO	NO	TERM	NIL	GHTN	NIL	NIL	1500-2000	NIL	2	159	50.6	20	57.8	18.5-22.9 (2)	na	4.2	3	7.2	1.8	5.4
150	37	G4P3L3	40+2	NIL	NORMAL	INDUCED	-	370 mins	16 mins	NIL	5	TAKEN	LIVE	2400	YES	NO	NO	NO	POST DATISM	NIL	GHTN	NIL	NIL	2001-2499	NIL	0	149	36.4	16.4	55	<18.5 (1)	-2.4	10.5	10.5	21	1.6	19.4
151	32	G3P2L2	39	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	12	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	149	48.4	21.8	64.5	18.5-22.9 (2)	2.6	na	na	16.1	2.6	13.5
152	20	primi	37+6	NIL	NORMAL	SPONTANEOUS	-	420 mins	35mins	NIL	8	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	163	56.2	21.2	75	18.5-22.9 (2)	0.3	10	8.5	18.8	3.8	15
153	19	primi		NIL	NIL	EMERGENCY	2nd stage arrest	1920 mins	20 mins	PROLONGED LABOUR	7	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	153	42.6	18.2	50	<18.5 (1)	-0.6	2.5	5.5	7.4	-0.6	8
154	28	G2P1L1	35+6	NIL	C SECTION	EMERGENCY	oligohydramnios	-	-	NIL	5	TAKEN	LIVE	2400	YES	YES	YES	NO	PRE TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	1	149	84	37.8	89	>/=30 (3C)	0.2	1.6	3.2	5	0.2	4.8
155	24	primi	35+3	NIL	NIL	EMERGENCY	fetal distress	210 mins	-	NIL	6	TAKEN	LIVE	2600	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	3	156	54.8	22.5	62	18.5-22.9 (2)	2.8	2.6	3.4	8.8	1.2	7.6
156	21	primi	39+2	NIL	NIL	SPONTANEOUS	-	360 mins	23 mins	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	160	52	20.3	65	18.5-22.9 (2)	na	4.8	7.2	12	1.6	10.4
157	25	primi		NIL	NIL	EMERGENCY	fetal distress	420 mins	-	NIL	12	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	160	65	25.4	77	25-29.9 (3B)	na	na	12	12	0	12
158	26	G2P1L1	37	NIL	C SECTION	EMERGENCY	previous lscs	120 mins	-	NIL	7	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	8	155	51	21.2	72	18.5-22.9 (2)	0.4	10.6	10	21	3	18
159	30	g2p1l1	40+1	NIL	C SECTION	VBAC	-	300 mins	22 mins	NIL	5	TAKEN	MSB	3500	NO	NO	NO	NO	POST DATISM	NIL	NIL	OVERT	NIL	3001-3500	3.1-3.5	0	152	48.6	21	62	18.5-22.9 (2)	3.9	2.5	7	13.4	3.9	9.5
160	21	primi	38+2	NIL	NIL	SPONTANEOUS	-	720 mins	3 mins	NIL	4	NOT TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	149	31.6	14.2	36	<18.5 (1)	na	1.8	2.6	4.4	0	4.4
161	20	primi	38+1	NIL	NIL	VENTOUSSE	fetal distress	600 mins	22 mins	NIL	5	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	149	42.5	19.1	49	18.5-22.9 (2)	na	3.1	3.4	6.5	0	6.5
162	28	primi	39+2	NIL	NIL	INDUCED	-	660 mins	6 mins	NIL	4	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	1	152	38.8	16.8	45	<18.5 (1)	1.2	3.4	1.6	6.2	1.2	5
163	24	primi	38+2	NIL	NIL	VENTOUSSE	-	1320 mins	27 mins	NIL	4	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	157	55	22.3	64.5	18.5-22.9 (2)	na	3	6.5	9.5	0	9.5
164	31	g3p2l2	37+6	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	5	NOT TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	152	46.2	20	57.8	18.5-22.9 (2)	na	na	na	11.6	0	11.6
165	30	primi	38	NIL	NIL	SPONTANEOUS	-	480 mins	10mins	NIL	7	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	160	79	30.9	85	>/=30 (3C)	-0.6	1.6	5	6	-0.6	6.6
166	27	G2P1D1	38+3	died after birth	NORMAL	EMERGENCY	cpd	750 mins	38 mins	NIL	6	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	14	154	64	27	75	25-29.9 (3B)	1.6	2.2	7.2	11	1.6	9.4
167	22	primi	38+3	NIL	NIL	EMERGENCY	2nd degree arrest	510 mins	60 mins	NIL	8	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	152	82.5	35.7	120	>/=30 (3C)	2.1	5.4	30	37.5	2.1	35.4
168	27	G3P2L2	35+3	NIL	NORMAL	EMERGENCY	fetal distress	-	-	NIL	5	NOT TAKEN	LIVE	1200	YES	YES	YES	YES	PRE TERM	NIL	GHTN	NIL	NIL	1500-2499	NIL	1	151	46.8	20.5	60	18.5-22.9 (2)	1.4	1.8	10	13.2	1.4	11.8
169	23	primi	39+3	NIL	NIL	INDUCED	-	1200 mins	25 mins	NIL	5	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	3001-3500	3.1-3.5	1	152	46.7	20.2	56	18.5-22.9 (2)	na	7.3	2	9.3	2.3	7
170	32	G3P2L2	39	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	8	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	149	48.4	21.8	64.5	18.5-22.9 (2)	1.6	2	11.5	15.1	2.6	12.5
171	20	primi	37+6	NIL	NIL	SPONTANEOUS	-	480 mins	35 mins	NIL	9	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	5	163	56.2	21.2	75	18.5-22.9 (2)	3.8	6.5	8.5	18.8	3.8	15

Sl.no	AGE	obstetric score	Period of gestation	BAD OBSTETRIC HISTORY	PREV DELIVERY	CURRENT OBSTETRIC OUTCOME	INDICATION FOR C-SECTION	DURATION 1ST STAGE OF LABOUR	DURATION 2ND STAGE OF LABOUR	COMPLICATIONS OF LABOUR	NO OF ANTENATAL VISITS	SUPPLEMENTS	BIRTH	BIRTH WEIGHT	CRY AT BIRTH	RESCUCITATION	NICU ADMISSION	MATERNAL ICU ADMISSION	TERM	ANAEMIA	HTN	DIABETES	THYROID	BIRTH WEIGHT CATEGORIES	NIL	OTHER MEDICAL ILLNESS	HEIGHT	MATERNAL WEIGHT AT 1ST VISIT	MATERNAL BMI BASED ON 1ST VISIT WEIGHT	MATERNAL WEIGHT AT DELIVERY	CATEGORY	1st trimester maternal weight gain	2nd trimester maternal weight gain	3rd trimester weight gain	total maternal gestational weight gain	below 20 weeks weight gain	after 20 weeks weight gain
172	22	g2p1L1	37+4	NIL	NORMAL	EMERGENCY	fetal distress	-	-	NIL	7	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	MODERATE	NIL	NIL	NIL	2001-2499	NIL	15	144	43	20.7	56.6	18.5-22.9 (2)	na	6.2	7.4	13.6	3.2	10.4
173	38	G4P1L1a2	39+6	1ST TRIM ABORT	NORMAL	SPONTANEOUS	-	740 mins	23mins	NIL	9	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	5	157	56.8	23	70	23-24.9 (3A)	-0.8	6	8	13.2	2.4	10.8
174	28	G3P2L1D1	40+3	died after birth	NIL	INDUCED	-	315 mins	24 mins	NIL	8	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	3.1-3.5	0	162	57.8	22	72	18.5-22.9 (2)	1.2	6.4	6	13.6	0.8	12.8
175	32	G3P1L1A1	37+2	1ST TRIM ABORT	C SECTION	EMERGENCY	previous lscs	-	-	NIL	4	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	149	40.2	18.1	47.5	<18.5 (1)	na	2.6	4.7	7.3	0	7.3
176	24	G2P1L1	36+1	NIL	NORMAL	EMERGENCY	twins in labour	-	-	NIL	8	TAKEN	LIVE	1.7/1.6	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	1500-200	NIL	9	151	36	15.8	53	<18.5 (1)	2.2	5.8	9	17	6.6	10.4
177	29	primi	33+3	NIL	NIL	SPONTANEOUS	-	360 mins	40 mins	NIL	4	TAKEN	LIVE	1800	YES	YES	YES	NO	PRE TERM	NIL	NIL	NIL	NIL	1500-2000	NIL	0	154	56.4	23.8	62	23-24.9 (3A)	1.6	na	na	5.6	1.6	4
178	28	primi	40+1	NIL	NIL	INDUCED	-	1140 mins	19 mins	NIL	8	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	153	51.6	22	65	18.5-22.9 (2)	0.7	5.9	6.8	13.4	2.4	11
179	23	G2P1L1	42	NIL	NORMAL	INDUCED	-	540 mins	5 mins	NIL	8	TAKEN	LIVE	3400	YES	NO	NO	NO	TERM	MODERATE	NIL	NIL	NIL	3001-3500	3.1-3.5	0	145	46.4	22.1	60	18.5-22.9 (2)	0.6	4.8	10	15.4	3.2	12.2
180	31	g3p1l1A1	37+6	1ST TRIM ABORT	NORMAL	INDUCED	-	300 mins	109 mins	PROLONGED LABOUR	8	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	59	24.2	64	23-24.9 (3A)	-3.4	2.8	8.6	8	-3.4	11.4
181	23	primi	40+1	NIL	NIL	EMERGENCY	nonprogress of labour	1200 mins	-	PROLONGED LABOUR	8	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	152	49.8	21.6	62	18.5-22.9 (2)	1.4	3.8	7	12.2	0.4	11.8
182	23	G2P1L1	38	NIL	C SECTION	EMERGENCY	previous lscs	180 mins	-	NIL	8	TAKEN	LIVE	2300	YES	NO	YES	NO	TERM	NIL	GHTN	NIL	NIL	2001-2499	NIL	0	162	55.4	21.1	72	18.5-22.9 (2)	0.2	8.4	8	16.6	3	13.6
183	33	G2P1L1	38+3	NIL	NORMAL	VENTOUSSE	poor maternal bearing down	360 mins	15 mins	NIL	6	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	152	54.4	23.5	69	23-24.9 (3A)	na	4	10.6	14.6	1.6	13
184	21	primi	38+5	NIL	NIL	INDUCED	-	1320 mins	22 mins	PROLONGED LABOUR	7	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	CHR HTN	NIL	NIL	3001-3500	3.1-3.5	0	163	56.4	21.2	70.8	18.5-22.9 (2)	2.2	5.4	6.8	14.4	3.8	10.6
185	21	primi	39+4	NIL	NIL	EMERGENCY	msl	360 mins	-	NIL	7	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	155	42	17.5	60.5	<18.5 (1)	0.8	12.1	5.6	18.5	6	12.5
186	24	primi	37+1	NIL	NIL	INDUCED	-	420 mins	15 mins	NIL	5	TAKEN	LIVE	2400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	153	65	27.8	74	25-29.9 (3B)	na	5.4	3.6	9	2.2	6.8
187	25	G2p1L1	39	NIL	NORMAL	EMERGENCY	2nd stage arrest	510 mins	86 mins	NIL	5	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	148	42.4	19.4	49.5	18.5-22.9 (2)	na	2.8	4.3	7.1	0	7.1
188	28	G4P1L1A2	39+6	1ST TRIM ABORT	NORMAL	EMERGENCY	breech in labour	720 mins	-	NIL	7	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	7	154	52	21.9	66	18.5-22.9 (2)	na	na	na	14	6	8
189	24	G2P1L1	37+3	NIL	C SECTION	EMERGENCY	previous lscs	240 mins	-	NIL	6	TAKEN	LIVE	2200	YES	NO	YES	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	146	44	20.6	54	18.5-22.9 (2)	na	5	5	10	2.2	7.8
190	21	primi	39+4	NIL	NIL	EMERGENCY	msl	360 mins	-	NIL	6	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	155	42	17.5	58.2	<18.5 (1)	0.8	12.1	3.3	16.2	0.8	15.4
191	25	G2P1L1	38+6	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	8	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	3001-3500	3.1-3.5	0	150	58.6	26	72	25-29.9 (3B)	3.4	2.6	7.4	13.4	3.8	9.6
192	23	primi	38+3	NIL	NIL	INDUCED	-	810 mins	18 mins	NIL	9	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	4	158	35	14	49.5	<18.5 (1)	1.8	5.9	6.8	14.5	3.1	11.4
193	24	primi	39+3	NIL	NIL	EMERGENCY	oligohydrmanios	-	-	NIL	4	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	154	51.5	21.7	59	18.5-22.9 (2)	na	3.1	4.4	7.5	0.5	7
194	26	G2P1L1	37	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	5	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	8	155	41.4	17.2	51	<18.5 (1)	0.6	3.4	5.6	9.6	0.6	9
195	22	primi	39+6	NIL	NIL	EMERGENCY	cpd	360 mins	-	CPD	7	TAKEN	LIVE	3500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	153	56	23.9	72.1	23-24.9 (3A)	4.6	3.9	7.6	16.1	4.6	11.5
196	30	G2P1L1	36	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	7	TAKEN	LIVE	3200	YES	NO	NO	NO	PRE TERM	NIL	GHTN	GDM	NIL	3001-3500	3.1-3.5	8	164	86	32	110	>/=30 (3C)	0.8	9.2	14	24	0.8	23.2
197	27	primi	40+3	NIL	NIL	EMERGENCY	non progress of labour	210 mins	-	OP	4	TAKEN	LIVE	3300	YES	NO	NO	NO	POST DATISM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	154	44	18.6	49.2	18.5-22.9 (2)	na	2.4	2.8	5.2	0	5.2
198	27	primi	38+5	NIL	NIL	EMERGENCY	prolonged prom	1140 mins	-	NIL	5	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	1	156	44.6	18.3	52.5	<18.5 (1)	1.4	2.4	4.1	7.9	1.4	6.5
199	28	primi	37	NIL	NIL	EMERGENCY	op position	4.5 hrs	-	OP	5	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	MODERATE	NIL	NIL	NIL	2500-3000	2.5-3KG	4	165	45	16.5	65	<18.5 (1)	3.5	7.9	8.6	20	3.5	16.5
200	24	primi	39+3	NIL	NIL	EMERGENCY	oligohydramnios	270 mins	-	NIL	8	TAKEN	LIVE	1700	YES	YES	YES	NO	TERM	NIL	NIL	NIL	NIL	1500-2499	NIL	0	155	44.6	18.6	58.5	18.5-22.9 (2)	-0.6	6	8.5	13.9	2.2	11.7
201	24	primi	39	NIL	NIL	INDUCED	-	1080 mins	36mins	PPH	7	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	14	157	62	25.2	78	25-29.9 (3B)	2.5	5	8.6	16.1	2.5	13.6
202	33	G3P2L1D1	36	FSB	C SECTION	ELECTIVE	gestational hypertension	-	-	MALPRESENT	8	NOT TAKEN	LIVE	3400	YES	YES	YES	NO	PRE TERM	NIL	GHTN	OVERT	NIL	3001-3500	3.1-3.5	8	144	56	27	64	25-29.9 (3B)	1.5	2.5	4	8	1.5	6.5
203	25	primi	40+3	NIL	NIL	EMERGENCY	2nd stage arrest	2160 mins	60 mins	PROLONGED LABOUR	7	TAKEN	LIVE	3100	YES	NO	NO	NO	POST DATISM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	158	60	24	72	23-24.9 (3A)	1.8	3.2	7	12	1.8	10.2
204	22	G2P1L1	38	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	6	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	1	146	48	22.5	58.4	18.5-22.9 (2)	na	na	na	10.4	0	10.4

Sl.no	AGE	obstetric score	Period of gestation	BAD OBSTETRIC HISTORY	PREV DELIVERY	CURRENT OBSTETRIC OUTCOME	INDICATION FOR C-SECTION	DURATION 1ST STAGE OF LABOUR	DURATION 2ND STAGE OF LABOUR	COMPLICATIONS OF LABOUR	NO OF ANTENATAL VISITS	SUPPLEMENTS	BIRTH	BIRTH WEIGHT	CRY AT BIRTH	RESCUCITATION	NICU ADMISSION	MATERNAL ICU ADMISSION	TERM	ANAEMIA	HTN	DIABETES	THYROID	BIRTH WEIGHT CATEGORIES	NIL	OTHER MEDICAL ILLNESS	HEIGHT	MATERNAL WEIGHT AT 1ST VISIT	MATERNAL BMI BASED ON 1ST VISIT WEIGHT	MATERNAL WEIGHT AT DELIVERY	CATEGORY	1st trimester maternal weight gain	2nd trimester maternal weight gain	3rd trimester weight gain	total maternal gestational weight gain	below 20 weeks weight gain	after 20 weeks weight gain
205	30	G3P2L2	38	NIL	NORMAL	SPONTANEOUS	-	230 mins	19 mins	NIL	8	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	MILD	NIL	GDM	HYPO	2500-3000	2.5-3KG	0	148	48	21.9	59	18.5-22.9 (2)	0.5	3.5	7	11	0.5	10.5
206	25	G3P1L1A1	40	1ST TRIM ABORT	NORMAL	INDUCED	-	735 mins	28 mins	NIL	4	TAKEN	LIVE	3300	YES	NO	NO	NO	POST DATISM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	160	46.5	18.2	55	<18.5 (1)	1.5	2.8	4.2	8.5	1.5	7
207	20	G3A2	38+6	1ST TRIM ABORT	NIL	EMERGENCY	oligohydramnios	2700 mins	-	NIL	8	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	161	66	25.5	80	25-29.9 (3B)	0.8	5.2	8	14	2.4	11.6
208	24	primi	38+6	NIL	NIL	SPONTANEOUS	-	360 mins	30 mins	NIL	10	TAKEN	LIVE	2390	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	154	60.2	25.4	72	25-29.9 (3B)	-1.2	5.5	7.5	11.8	-1.2	13
209	25	G3P1L1A1	38+2	2ND TRIM ABORT	C SECTION	EMERGENCY	previous lscs	-	-	NIL	6	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	144	48.5	23.4	59	23-24.9 (3A)	-0.3	3.8	7	10.8	-0.3	11.1
210	32	G2P1L1	39+1	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	4	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	5	157	42.5	17.2	55	<18.5 (1)	na	6.1	6.4	12.5	0	12.5
211	25	G2P1L1	38+1	NIL	C SECTION	EMERGENCY	previous lscs	60 mins	-	NIL	7	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	152	55.6	24.1	66	23-24.9 (3A)	na	na	na	10.4	1.6	8.8
212	33	G3P2L2	37+4	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	4	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	155	70	29.1	82	25-29.9 (3B)	0.5	na	na	12	0.5	11.5
213	30	G4P1L1A2	38+1	1ST TRIM ABORT	C SECTION	EMERGENCY	previous lscs	180 mins	-	NIL	4	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	51	21	60	18.5-22.9 (2)	na	3	6	9	0.2	8.8
214	20	primi	40	NIL	NIL	EMERGENCY	msl	1600	32 mins	PROLONGED LABOUR	6	TAKEN	LIVE	2700	YES	NO	NO	NO	POST DATISM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	158	63.8	25.6	76	25-29.9 (3B)	-0.8	9.5	3.5	12.2	1.2	11
215	25	primi	37+2	NIL	NIL	SPONTANEOUS	-	390 mins	13 mins	NIL	6	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	146	54.8	25.7	66.5	25-29.9 (3B)	na	na	na	11.7	2.5	9.2
216	24	G3P1L1A1	38+4	1ST TRIM ABORT	C SECTION	ELECTIVE	previous lscs	-	-	NIL	4	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	157	56.5	22.9	68	18.5-22.9 (2)	na	4	8	12	2.3	9.7
217	36	G3P1L1A1	40+1	1ST TRIM ABORT	NORMAL	VENTOUSSE	-	1680 mins	41 mins	NIL	6	TAKEN	LIVE	2700	YES	NO	NO	NO	POST DATISM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	151	78	34.2	93	>/=30 (3C)	na	6.5	8.5	15	1.5	13.5
218	36	G4P2L2A1	38+1	1ST TRIM ABORT	NORMAL	EMERGENCY	CDMR	300 mins	-	NIL	5	TAKEN	LIVE	3350	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	3001-3500	3.1-3.5	0	152	59.5	25.8	66.5	25-29.9 (3B)	na	4	3	7	0.5	6.5
219	28	primi	38	NIL	NORMAL	ELECTIVE	Macrosomia	-	-	NIL	5	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	8	166	55	20	76	18.5-22.9 (2)	na	8	13	21	1.5	19.5
220	23	Primi	40+1	NIL	NIL	INDUCED	-	1680 mins	17 mins	NIL	6	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	154	57.5	24.2	69	23-24.9 (3A)	na	3.7	7.8	11.5	-0.5	12
221	23	G3P1L1A1	40+2	1ST TRIM ABORT	NORMAL	SPONTANEOUS	-	750 mins	18 mins	NIL	5	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	168	62.5	22.1	72	18.5-22.9 (2)	na	5.5	4	9.5	2.5	7
222	23	G2P1L1	37+4	NIL	C SECTION	EMERGENCY	-	180 mins	-	NIL	6	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	4	152	60	26	66	25-29.9 (3B)	na	2.5	3.5	6	0	6
223	23	G3P2L1D1	39	died after birth	C SECTION	EMERGENCY	previous lscs	240 mins	-	MALPRESENT	5	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	4	156	50	20.5	58	18.5-22.9 (2)	na	4	4	8	0.5	7.5
224	24	Primi	39+1	NIL	NIL	SPONTANEOUS	-	150 mins	10 mins	PRECIPITATE	6	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	5	152	46	19.9	63	18.5-22.9 (2)	na	8.5	8.5	17	0	17
225	32	G3P2L2	39+5	NIL	NORMAL	SPONTANEOUS	-	450 mins	16 mins	NIL	6	TAKEN	LIVE	3500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	5	154	46.5	19.6	55	18.5-22.9 (2)	na	1.5	8	9.5	-0.5	10
226	31	Primi	38+2	NIL	NIL	INDUCED	-	540 mins	11 mins	NIL	5	TAKEN	LIVE	2200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	162	50.5	19.2	58	18.5-22.9 (2)	na	2	5.5	7.5	-0.5	8
227	29	G2P1L1	36+2	NIL	C SECTION	EMERGENCY	previous lscs	270 mins	-	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	4	162	59.5	22.7	66	18.5-22.9 (2)	na	3	3.5	6.5	-0.5	7
228	34	Primi	40+2	NIL	NIL	INDUCED	-	510 mins	12 mins	NIL	6	TAKEN	LIVE	3600	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	NIL	3501-4000	>3.5-4	0	162	61.5	23.4	76	23-24.9 (3A)	na	8.5	6	14.5	2.5	12
229	23	G3A2	36+5	1ST TRIM ABORT	NIL	ELECTIVE	CDMR	-	-	NIL	12	TAKEN	LIVE	3600	YES	NO	NO	NO	PRE TERM	NIL	GHTN	OVERT	HYPO	3501-4000	>3.5-4	5	150	86	38.2	108	>/=30 (3C)	na	8	14	22	2	20
230	29	primi	38+2	NIL	NIL	INDUCED	-	1080 mins	12 mins	NIL	6	TAKEN	LIVE	2400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	1	162	56	21.3	65	18.5-22.9 (2)	0.5	3	5.5	9	0.5	8.5
231	28	G2P1L1	39+6	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	7	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	5	158	54	21.6	66	18.5-22.9 (2)	-1	6.5	6.5	12	0	12
232	22	G2A1	39+6	1ST TRIM ABORT	NIL	EMERGENCY	msl	4910 mins	-	PROLONGED LABOUR	6	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	160	54.5	21.3	72	18.5-22.9 (2)	-0.5	1.6	16.4	17.5	-0.5	18
233	23	primi	37+2	NIL	NIL	EMERGENCY	non reassuring nst	420 mins	-	NIL	8	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	2	155	46.5	19.4	52.6	18.5-22.9 (2)	-1.5	4.7	2.9	7.1	-0.5	7.6
234	28	g2p1l1	39+2	NIL	NORMAL	SPONTANEOUS	-	315 mins	5 mins	NIL	6	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	9	156	46.5	19.1	52	18.5-22.9 (2)	0.5	2	3	4.5	0.5	4
235	34	g2p1l1	39	NIL	C SECTION	EMERGENCY	fetal distress	600 mins	-	NIL	6	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	146	53	24.9	64	23-24.9 (3A)	1.5	5	4.5	11.5	1.5	10
236	24	g3p2l2	39	NIL	C SECTION	EMERGENCY	previous lscs	240 mins	-	NIL	8	TAKEN	LIVE	3600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3501-4000	>3.5-4	0	161	58	22.4	70	18.5-22.9 (2)	1	4	7	12	1	11
237	31	G2P1L1	38+6	NIL	C SECTION	EMERGENCY	previous lscs	300 mins	-	NIL	5	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	156	50	20.5	62	18.5-22.9 (2)	0.5	4.5	7	12	2	10

Sl.no	AGE	obstetric score	Period of gestation	BAD OBSTETRIC HISTORY	PREV DELIVERY	CURRENT OBSTETRIC OUTCOME	INDICATION FOR C-SECTION	DURATION 1ST STAGE OF LABOUR	DURATION 2ND STAGE OF LABOUR	COMPLICATIONS OF LABOUR	NO OF ANTENATAL VISITS	SUPPLEMENTS	BIRTH	BIRTH WEIGHT	CRY AT BIRTH	RESCUCITATION	NICU ADMISSION	MATERNAL ICU ADMISSION	TERM	ANAEMIA	HTN	DIABETES	THYROID	BIRTH WEIGHT CATEGORIES	NIL	OTHER MEDICAL ILLNESS	HEIGHT	MATERNAL WEIGHT AT 1ST VISIT	MATERNAL BMI BASED ON 1ST VISIT WEIGHT	MATERNAL WEIGHT AT DELIVERY	CATEGORY	1st trimester maternal weight gain	2nd trimester maternal weight gain	3rd trimester weight gain	total maternal gestational weight gain	below 20 weeks weight gain	after 20 weeks weight gain
238	28	G4P3L3	35+3	NIL	NORMAL	SPONTANEOUS	-	420 mins	9 mins	NIL	7	TAKEN	LIVE	1900	YES	NO	YES	NO	PRE TERM	NIL	NIL	NIL	NIL	1500-2000	NIL	1	153	49	20.9	58	18.5-22.9 (2)	0.2	1.3	7.5	9	0	9
239	20	primi	38+2	NIL	NIL	EMERGENCY	failed induction	1320 mins	-	NIL	6	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	162	55	21	68	18.5-22.9 (2)	0	4	9	13	1	12
240	19	g2a1	36+5	1ST TRIM ABORT	NIL	SPONTANEOUS	-	360 mins	11 mins	NIL	4	TAKEN	LIVE	2100	YES	YES	YES	NO	PRE TERM	NIL	NIL	IGT	HYPO	2001-2499	NIL	16	150	37.5	16.7	43	<18.5 (1)	na	2.5	3	5.5	0	5.5
241	23	G4P1L1A2	39+1	1ST TRIM ABORT	NORMAL	EMERGENCY	fetal distress	-	-	NIL	8	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	152	46.8	20.3	58	18.5-22.9 (2)	1.2	2.5	7.5	11.2	1.2	10
242	24	g3p2l2	40+3	NIL	NORMAL	EMERGENCY	fetal distress	930 mins	-	NIL	6	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	2500-3000	2.5-3KG	0	152	70.5	30.5	86	>/=30 (3C)	na	na	8	15.5	4	11.5
243	27	G3P2L2	38	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	6	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	166	62.5	22.7	73.5	18.5-22.9 (2)	0.5	1.4	7.5	9.4	0.5	8.9
244	22	G2P1L1	37+6	NIL	C SECTION	EMERGENCY	previous lscs	150 mins	-	NIL	5	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	13	152	52.5	22.7	64	18.5-22.9 (2)	-0.5	na	na	11.5	1.5	10
245	22	G2A1	39+6	1ST TRIM ABORT	NIL	EMERGENCY	msl	2760 mins	-	NIL	5	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	154	52.5	22.1	66	18.5-22.9 (2)	na	4	9.5	13.5	0.3	13.2
246	24	primi	40	NIL	NIL	EMERGENCY	fetal distress	-	-	NIL	8	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	12	152	47.5	20.6	60	18.5-22.9 (2)	0.5	2.9	9.1	12.5	0.5	12
247	25	G2P1L1	39+1	NIL	NORMAL	INDUCED	-	390 mins	14 mins	NIL	6	TAKEN	LIVE	3500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	4	164	62.5	23.2	74	23-24.9 (3A)	na	na	9	11.5	0.7	10.8
248	23	G3A2	37+5	1ST TRIM ABORT	NIL	EMERGENCY	Persistent OP	290 mins	-	OP	5	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	5	167	49	17.6	55	<18.5 (1)	na	1.5	4.5	6	2.2	3.8
249	19	primi	38+4	NIL	NIL	EMERGENCY	non reassuring nst	360 mins	-	NIL	4	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	4	163	65	24.5	71	23-24.9 (3A)	na	3	3	6	0	6
250	28	G2P1L1	35+6	NIL	NORMAL	EMERGENCY	twins in labour	240 mins	-	NIL	7	TAKEN	LIVE	1.8 / 2.2	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	156	53	21.8	69	18.5-22.9 (2)	2	4	10	16	3.5	12.5
251	28	G2P1L1	38+3	NIL	NORMAL	SPONTANEOUS	-	660 mins	17 mins	NIL	4	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	143	43	21	52	18.5-22.9 (2)	na	4.5	4.5	9	2	7
252	23	G2P1L1	39+2	NIL	NORMAL	EMERGENCY	Transverse lie	300 mins	-	NIL	8	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	163	60	22.6	66	18.5-22.9 (2)	na	2.5	3.5	6	0	6
253	23	G2P1L1	39+4	NIL	C SECTION	EMERGENCY	previous lscs	270 mins	-	NIL	6	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	170	55	19	64	18.5-22.9 (2)	na	2	7	9	1	8
254	32	G3P2L1D1	38+1	died after birth	C SECTION	EMERGENCY	previous lscs	240 mins	-	NIL	7	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	5	168	60	21.3	73	18.5-22.9 (2)	na	4.5	8.5	13	1.9	11.1
255	23	G3P1L1A1	39+5	1ST TRIM ABORT	NORMAL	SPONTANEOUS	-	615 mins	16 mins	NIL	5	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	9	150	48.5	21.6	56	18.5-22.9 (2)	na	2	5.5	7.5	-0.5	8
256	30	G2P1L1	38+1	NIL	NORMAL	SPONTANEOUS	-	480 mins	16 mins	NIL	7	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	168	54	19.1	65.5	18.5-22.9 (2)	na	7	4.5	11.5	1.4	10.1
257	26	G3P1L1A1	39+2	1ST TRIM ABORT	NORMAL	SPONTANEOUS	-	570 mins	14 mins	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	164	63	23.4	72	23-24.9 (3A)	na	2	7	9	1	8
258	24	G2P1L1	39	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	6	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	153	55	23.5	68.5	23-24.9 (3A)	na	5	8.5	13.5	0.5	13
259	27	G3P1L1A1	39+2	1ST TRIM ABORT	C SECTION	ELECTIVE	previous lscs	-	-	NIL	6	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	162	64	24.4	76	23-24.9 (3A)	0.5	4.5	7	12	0	12
260	22	G3P1L1A1	39+6	1ST TRIM ABORT	C SECTION	SPONTANEOUS	-	630 mins	11 mins	NIL	6	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	160	62.5	24.4	75	23-24.9 (3A)	na	7.5	5	12.5	1.5	11
261	25	G2P1L1	37+4	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	4	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	GDM	NIL	2500-3000	2.5-3KG	0	150	53.5	23.8	64	23-24.9 (3A)	na	5	5.5	10.5	-0.5	11
262	21	primi	37+6	NIL	NIL	EMERGENCY	fetal distress	1080 mins	-	NIL	10	TAKEN	LIVE	2200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	2001-2499	NIL	7	156	56	23	63	23-24.9 (3A)	na	2.5	4.5	7	0.5	6.5
263	26	G2P1L1	38+2	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	9	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	64	26.3	75	25-29.9 (3B)	na	6.5	4.5	11	1.5	9.5
264	25	G2P1L1	38	NIL	C SECTION	EMERGENCY	fetal tachycardia	-	-	NIL	9	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	148	47	21.5	54	18.5-22.9 (2)	na	3.5	3.5	7	0	7
265	25	G2A1	39+6	1ST TRIM ABORT	NIL	ELECTIVE	CDMR	-	-	NIL	7	TAKEN	LIVE	3700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3501-4000	>3.5-4	8	166	62.5	22.7	74	18.5-22.9 (2)	na	7	4.5	11.5	2	9.5
266	22	G2A1	39+1	1ST TRIM ABORT	NIL	INSTRUMENT	-	930 mins	43 mins	NIL	4	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	5	163	52	19.6	60.5	18.5-22.9 (2)	na	5	3.5	8.5	1.5	7
267	20	primi	39+5	NIL	NIL	SPONTANEOUS	-	390 mins	12 mins	NIL	7	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	160	58.5	22.9	66	18.5-22.9 (2)	na	5	2.5	7.5	1.5	6
268	23	primi	37+6	NIL	NIL	EMERGENCY	twins in labour	240 mins	-	NIL	8	TAKEN	LIVE	2.4 / 2.4	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	HYPER	2001-2499	NIL	0	155	43.5	18.1	58	<18.5 (1)	-1.5	2.8	13.2	14.5	-1	15.5
269	23	primi	37+2	NIL	NIL	SPONTANEOUS	-	430 mins	22 mins	NIL	8	TAKEN	LIVE	2300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	168	62.8	22.3	75	18.5-22.9 (2)	na	5.2	7	12.2	-1.8	14
270	22	primi	40+4	NIL	NIL	SPONTANEOUS	-	540 mins	23 mins	NIL	8	TAKEN	LIVE	3000	YES	NO	NO	NO	POST DATISM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	158	54	21.6	63	18.5-22.9 (2)	na	2.8	6.2	9	0	9
271	23	primi	38+1	NIL	NIL	SPONTANEOUS	-	300 mins	16 mins	NIL	6	TAKEN	LIVE	2400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	155	57	23.7	66	23-24.9 (3A)	na	4.6	4.4	9	2.8	6.2
272	29	primi	39+1	NIL	NIL	EMERGENCY	msl	-	-	NIL	5	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	PE	NIL	NIL	2500-3000	2.5-3KG	0	158	55	22	68	18.5-22.9 (2)	na	4	9	13	0	13

Sl.no	AGE	obstetric score	Period of gestation	BAD OBSTETRIC HISTORY	PREV DELIVERY	CURRENT OBSTETRIC OUTCOME	INDICATION FOR C-SECTION	DURATION 1ST STAGE OF LABOUR	DURATION 2ND STAGE OF LABOUR	COMPLICATIONS OF LABOUR	NO OF ANTENATAL VISITS	SUPPLEMENTS	BIRTH	BIRTH WEIGHT	CRY AT BIRTH	RESCUCITATION	NICU ADMISSION	MATERNAL ICU ADMISSION	TERM	ANAEMIA	HTN	DIABETES	THYROID	BIRTH WEIGHT CATEGORIES	NIL	OTHER MEDICAL ILLNESS	HEIGHT	MATERNAL WEIGHT AT 1ST VISIT	MATERNAL BMI BASED ON 1ST VISIT WEIGHT	MATERNAL WEIGHT AT DELIVERY	CATEGORY	1st trimester maternal weight gain	2nd trimester maternal weight gain	3rd trimester weight gain	total maternal gestational weight gain	below 20 weeks weight gain	after 20 weeks weight gain
273	30	G2A1	39	1ST TRIM ABORT	NIL	EMERGENCY	fetal distress	570 mins	-	NIL	6	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	160	69	27	80	25-29.9 (3B)	na	3	8	11	3	8
274	22	G2P1L1	39	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	8	TAKEN	LIVE	3600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3501-4000	>3.5-4	0	155	48	20	61	18.5-22.9 (2)	na	5.9	7.1	13	2.6	10.4
275	25	primi	36	NIL	NIL	EMERGENCY	non progress of labour	510 mins	-	NIL	8	TAKEN	LIVE	2200	YES	NO	NO	NO	PRE TERM	NIL	PE	NIL	NIL	2001-2499	NIL	2	156	55	22.6	72	18.5-22.9 (2)	1	6	10	17	2.5	14.5
276	21	primi	37	NIL	NIL	INDUCED	-	1080 mins	19 mins	NIL	7	TAKEN	LIVE	3500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	2	161	68	26.2	75	25-29.9 (3B)	na	3	4	7	0	7
277	28	G3P2L2	35+5	NIL	C SECTION	EMERGENCY	previous lscs	-	-	PROLONGED LABOUR	6	TAKEN	LIVE	2700	YES	NO	NO	NO	PRE TERM	NIL	GHTN	NIL	NIL	2500-3000	2.5-3KG	0	166	69	25	76	25-29.9 (3B)	na	3	4	7	0	7
278	23	primi	39+2	NIL	NIL	SPONTANEOUS	-	300 mins	16 mins	NIL	6	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	57.5	23.9	65	18.5-22.9 (2)	-0.5	2	6	7.5	-0.5	8
279	34	G5a4	39+3	2ND TRIM ABORT	NIL	EMERGENCY	CDMR	-	-	NIL	5	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	3001-3500	3.1-3.5	0	162	59	22.5	68	18.5-22.9 (2)	na	1	7	8	0.5	7.5
280	27	primi	39+1	NIL	NIL	EMERGENCY	msl	720 mins	-	NIL	6	TAKEN	LIVE	3400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3501-4000	>3.5-4	0	153	49	20.9	58.5	18.5-22.9 (2)	na	1.5	7	8.5	1	7.5
281	21	primi	38	NIL	NIL	EMERGENCY	fetal distress	480 mins	-	NIL	6	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	11	168	52	18.4	60	<18.5 (1)	na	2.5	5.5	8	0.5	7.5
282	30	G4P2L2A1	37+6	1ST TRIM ABORT	C SECTION	EMERGENCY	previous lscs	-	-	NIL	6	TAKEN	LIVE	3400	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	NIL	3001-3500	3.1-3.5	0	166	58	21	74	18.5-22.9 (2)	na	2.5	11	17	2.5	14.5
283	29	primi	36+1	NIL	NIL	EMERGENCY	pre eclampsia	-	-	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	PE	NIL	NIL	2500-3000	2.5-3KG	0	168	58	20.5	76	18.5-22.9 (2)	NA	6	7.5	18	4.5	13.5
284	23	G2P1L1	38	NIL	NORMAL	SPONTANEOUS	-	480 mins	26 mins	NIL	6	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	154	58.6	24.7	69.5	23-24.9 (3A)	-0.6	2.8	8.7	10.9	0.6	10.3
285	26	G2A1	40	1ST TRIM ABORT	NIL	EMERGENCY	fetal distress	390 mins	-	NIL	7	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	5	162	56.2	21.4	65	18.5-22.9 (2)	na	10.4	4.1	14.5	0.8	13.7
286	28	primi	35+1	NIL	NIL	INDUCED	-	600 mins	35 mins	NIL	4	TAKEN	MSB	1500	NO	NO	NO	NO	PRE TERM	NIL	PE	NIL	HYPO	1001-1499	NIL	0	153	52	22.2	68	18.5-22.9 (2)	2.5	na	na	16	2.5	13.5
287	23	primi	37+3	NIL	NIL	SPONTANEOUS	-	240 mins	21 mins	NIL	6	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	4	163	52	19.6	69	18.5-22.9 (2)	1.5	7	8.5	17	1.5	15.5
288	25	primi	39+6	NIL	NIL	INDUCED	-	750 mins	22 mins	NIL	4	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	153	54.8	23.4	66	23-24.9 (3A)	na	3.7	7.5	11.2	0	11.2
289	26	primi	39+4	NIL	NIL	SPONTANEOUS	-	360 mins	16 mins	NIL	4	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	150	56	24.9	67	23-24.9 (3A)	na	na	na	11	2.3	8.7
290	22	G2A1	39+4	NIL	NIL	EMERGENCY	fetal distress	270 mins	-	NIL	7	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	166	46.2	16.8	54.5	<18.5 (1)	na	1.8	6.5	8.3	-0.2	8.5
291	31	G3P2L2	38+4	NIL	C SECTION	EMERGENCY	previous lscs	180 mins	-	NIL	6	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	163	54.6	20.6	66	18.5-22.9 (2)	0.6	4.8	6	11.4	0.6	10.8
292	23	primi	38+2	NIL	NIL	INDUCED	-	480 mins	26 mins	NIL	7	TAKEN	LIVE	2400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2500	NIL	0	152	51.6	22.3	60	18.5-22.9 (2)	0.7	3.3	4.4	8.4	0.4	8
293	24	G2p1L1	38+5	NIL	C SECTION	EMERGENCY	previous lscs	120 mins	-	NIL	6	TAKEN	LIVE	2400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2500	NIL	0	143	45	22	57.5	18.5-22.9 (2)	0.8	na	na	22.5	0.8	21.7
294	23	g2P1L1	37+5	NIL	C SECTION	EMERGENCY	previous lscs	120 mins	-	NIL	6	TAKEN	LIVE	2400	YES	NO	NO	NO	TERM	MILD	NIL	NIL	NIL	2001-2500	NIL	0	139	45	23.3	56.5	23-24.9 (3A)	0	3.6	7.9	11.5	1.2	10.3
295	22	primi	39+4	NIL	NIL	EMERGENCY	msl	120 mins	-	NIL	7	TAKEN	LIVE	3500	YES	NO	NO	NO	TERM	NIL	NIL	GDM	NIL	3001-3500	3.1-3.5	0	155	45	18.7	62	18.5-22.9 (2)	0.4	5.8	9.2	15.4	2	13.4
296	23	G2P1L1	38+6	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	8	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	146	46	21.6	54.5	18.5-22.9 (2)	na	na	na	8.5	-1	9.5
297	19	primi	30+1	NIL	NIL	SPONTANEOUS	-	360 mins	25 mins	NIL	4	TAKEN	FSB	730	NO	NO	NO	NO	PRE TERM	NIL	PE	NIL	NIL	501-1000	NIL	10	152	50	21.6	56	18.5-22.9 (2)	na	na	na	6	0	6
298	25	primi	37+2	NIL	NIL	SPONTANEOUS	-	390 mins	13 mins	NIL	5	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	154	47.6	20.1	59	18.5-22.9 (2)	-0.6	3.2	8.8	11.4	-0.6	12
299	22	G2P1L1	36+6	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	6	TAKEN	LIVE	2400	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2001-2500	NIL	1	145	43.6	20.7	55	18.5-22.9 (2)	na	na	6.2	11.4	1.4	10
300	23	primi	35+4	NIL	NIL	EMERGENCY	breech in labour	480 mins	-	MALPRESENT	5	TAKEN	LIVE	2100	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2001-2500	NIL	3	153	46	19.7	54	18.5-22.9 (2)	na	1	7	8	0	8
301	20	primi	37	NIL	NORMAL	INDUCED	-	540 mins	32 mins	NIL	6	TAKEN	LIVE	2400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2500		5	162	46.2	17.6	58	<18.5 (1)	na	4.8	7	11.8	0.8	11
302	25	G3P2L3	35+4	NIL	NORMAL	EMERGENCY	transverse lie	-	-	NIL	5	TAKEN	LIVE	1700	YES	NO	YES	NO	PRE TERM	NIL	NIL	NIL	NIL	2001-2500	NIL	0	149	37.6	16.9	50	<18.5 (1)	na	8.6	3.8	12.4	2.4	10
303	29	G2P1L1	35+1	NIL	C SECTION	EMERGENCY	previous lscs	300 mins	-	NIL	6	TAKEN	LIVE	2300	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2001-2500	NIL	3	151	53	23.2	60	23-24.9 (3A)	na	na	na	7	0	7
304	26	G2P1L1	39	NIL	C SECTION	EMERGENCY	previous lscs	-	-	NIL	6	TAKEN	LIVE	2800	YES	NO	NO	NO	PRE TERM	NIL	GHTN	NIL	NIL	2500-3000	2.5-3KG	9	152	46	19.9	54	18.5-22.9 (2)	na	5.6	2.4	8	0	8
305	25	Primi	40+5	NIL	NIL	INDUCED	-	930 mins	35 mins	NIL	8	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	144	52	25.1	57.5	25-29.9 (3B)	-0.4	2.9	2.6	5.1	0	5.1
306	25	G2P1L1	39+4	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	154	63	26.6	63	25-29.9 (3B)	na	0.3	-0.3	0	0	0
307	34	G2P1L1	39+3	NIL	NORMAL	SPONTANEOUS	-	495 mins	13 mins	NIL	6	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	HYPO	2500-3000	2.5-3KG	0	152	50	21.6	64	18.5-22.9 (2)	na	2	12	14	0.8	13.2

Sl.no	AGE	obstetric score	Period of gestation	BAD OBSTETRIC HISTORY	PREV DELIVERY	CURRENT OBSTETRIC OUTCOME	INDICATION FOR C-SECTION	DURATION 1ST STAGE OF LABOUR	DURATION 2ND STAGE OF LABOUR	COMPLICATIONS OF LABOUR	NO OF ANTENATAL VISITS	SUPPLEMENTS	BIRTH	BIRTH WEIGHT	CRY AT BIRTH	RESCUCITATION	NICU ADMISSION	MATERNAL ICU ADMISSION	TERM	ANAEMIA	HTN	DIABETES	THYROID	BIRTH WEIGHT CATEGORIES	NIL	OTHER MEDICAL ILLNESS	HEIGHT	MATERNAL WEIGHT AT 1ST VISIT	MATERNAL BMI BASED ON 1ST VISIT WEIGHT	MATERNAL WEIGHT AT DELIVERY	CATEGORY	1st trimester maternal weight gain	2nd trimester maternal weight gain	3rd trimester weight gain	total maternal gestational weight gain	below 20 weeks weight gain	after 20 weeks weight gain
308	23	Primi	37+4	NIL	NIL	INDUCED	-	1170 mins	52 mins	PPH	5	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	157	63	25.6	76	25-29.9 (3B)	na	5.5	7.5	13	1.2	11.8
309	25	G2P1L1	38+1	NIL	C SECTION	EMERGENCY	previous lscs	180 mins	-	NIL	8	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	152	57.5	24.9	66	23-24.9 (3A)	na	3.7	4.8	8.5	0	8.5
310	30	G2P1L1	36+5	NIL	C SECTION	EMERGENCY	previous lscs	180 mins	-	NIL	7	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	GDM	NIL	3001-3500	3.1-3.5	8	162	58.4	22.3	78	18.5-22.9 (2)	na	12.2	7.6	19.8	4.8	15
311	22	G2P1L1	38+4	NIL	NORMAL	SPONTANEOUS	-	270 mins	29 mins	NIL	6	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	152	59.2	25.6	68	25-29.9 (3B)	na	4.6	4.2	8.8	-0.2	9
312	24	Primi	38+1	NIL	NIL	EMERGENCY	msl	-	-	NIL	7	TAKEN	LIVE	2620	YES	NO	NO	NO	TERM	NIL	PE	NIL	NIL	2500-3000	2.5-3KG	0	148	54	24.7	72	23-24.9 (3A)	na	5.2	12.8	18	0	18
313	21	Primi	37+4	NIL	NIL	INDUCED	-	840 mins	29 mins	PRECIPITATE	4	TAKEN	LIVE	2500	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	168	54.5	19.3	62	18.5-22.9 (2)	na	2.3	5.2	7.5	-0.5	8
314	36	G3P1L1A1	36+6	1ST TRIM ABORT	NORMAL	INDUCED	-	900 mins	32 mins	NIL	5	TAKEN	LIVE	2100	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	154	50.6	21.3	58.5	18.5-22.9 (2)	na	na	1.7	7.9	0	7.9
315	24	G4P3L1D2	30+6	FSB	C SECTION	EMERGENCY	PPROM	-	-	NIL	2	TAKEN	LIVE	1600	YES	NO	YES	NO	PRE TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	144	42.6	20.5	50	18.5-22.9 (2)	na	na	na	7.4	0	7.4
316	21	Primi	38+6	NIL	NIL	INSTRUMENT	-	600 mins	46 mins	NIL	7	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	151	54	23.7	64.5	23-24.9 (3A)	na	2.2	8.3	10.5	0	10.5
317	20	primi	34+5	NIL	NIL	EMERGENCY	severe PE	120 mins	-	PPH	6	TAKEN	LIVE	1.7 / 1.4	YES	NO	YES	NO	PRE TERM	NIL	HELLP	NIL	NIL	1501-2000	NIL	0	156	59.5	24.4	66	23-24.9 (3A)	na	3.1	3.4	6.5	1.3	5.2
318	29	G2P1L1	36+2	NIL	C SECTION	EMERGENCY	previous lscs	180 mins	-	NIL	6	TAKEN	LIVE	2690	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	155	58	24.1	60.6	23-24.9 (3A)	na	1.2	1.4	2.6	0	2.6
319	31	Primi	37+1	NIL	NORMAL	EMERGENCY	Oilgohydramnios	150 mins	-	NIL	5	TAKEN	LIVE	2000	YES	NO	NO	NO	TERM	NIL	NIL	GDM	NIL	1501-2000	NIL	3	156	70.2	28.8	78.5	25-29.9 (3B)	na	2.1	6.2	8.3	0	8.3
320	31	G3P2L1D1	38+2	died after birth	C SECTION	ELECTIVE	previous lscs	-	-	NIL	8	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	163	59	22.2	70	18.5-22.9 (2)	na	3.2	7.8	11	0	11
321	37	G3P1L1A1	36+6	1ST TRIM ABORT	NORMAL	SPONTANEOUS	-	870 mins	32 mins	NIL	6	TAKEN	LIVE	2100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2499	NIL	0	152	48.6	21	57.2	18.5-22.9 (2)	na	2	6.6	8.6	-0.6	9.2
322	39	G2P1D1	32+4	died after birth	C SECTION	EMERGENCY	twins in labour	-	-	NIL	18	TAKEN	LIVE	1.3 / 0.89	YES	YES	YES	NO	PRE TERM	NIL	PE	NIL	NIL	1001-1499	NIL	0	158	60	24	67.8	23-24.9 (3A)	na	5.6	2.8	8.4	1.5	6.9
323	28	G3P1L1A1	39+4	1ST TRIM ABORT	NORMAL	SPONTANEOUS	-	690 mins	18 mins	NIL	8	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	155	54	22.5	68	18.5-22.9 (2)	na	6	8	14	1.5	12.5
324	28	G3P2L2	38+5	NIL	NORMAL	SPONTANEOUS	-	390 mins	8 mins	NIL	6	TAKEN	LIVE	3700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3501-4000	>3.5-4	0	154	70	29.5	80	25-29.9 (3B)	na	5	5	10	2	8
325	30	primi	37+4	NIL	NIL	ELECTIVE	-	-	-	NIL	10	TAKEN	LIVE	2000	YES	NO	NO	NO	TERM	NIL	GHTN	NIL	NIL	1501-2000	NIL	0	163	55	20.7	76	18.5-22.9 (2)	na	6	15	21	1.5	19.5
326	26	G6p3l3a2	37+6	1ST TRIM ABORT	NORMAL	INDUCED	-	510 mins	11 mins	NIL	7	TAKEN	LIVE	2800	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	168	74	26.2	82	25-29.9 (3B)	-1	2	7	8	-1	9
327	22	primi	37+1	NIL	NIL	EMERGENCY	oligohydramnios	-	-	NIL	6	TAKEN	LIVE	1700	YES	YES	YES	NO	TERM	NIL	NIL	NIL	NIL	1501-2000	NIL	1	150	54	24	60	23-24.9 (3A)	0	3	3	6	0	6
328	24	G3P1L1A1	38+6	1ST TRIM ABORT	NORMAL	SPONTANEOUS	-	1320 mins	12 mins	NIL	9	TAKEN	LIVE	2400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2500	NIL	0	152	55	23.8	64	23-24.9 (3A)	0	2.9	6.6	9.5	-0.5	10
329	29	primi	40	NIL	NIL	VENTOUSSE	poor maternal bearing down effort	1140 mins	38 mins	NIL	9	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	160	59	23	69	23-24.9 (3A)	-1	4.5	6.5	10	-1	11
330	24	G3P1L1A1	39	1ST TRIM ABORT	NORMAL	SPONTANEOUS	-	900 mins	26 mins	NIL	6	TAKEN	LIVE	3000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	153	54	23.1	62	23-24.9 (3A)	0	2	6	8	0	8
331	24	G3P2L2	37+3	NIL	C SECTION	EMERGENCY	-	-	-	NIL	4	TAKEN	LIVE	2700	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	168	64	22.7	76	18.5-22.9 (2)	na	na	na	12	0	12
332	32	G3P1L1A1	38+6	1ST TRIM ABORT	NORMAL	INDUCED	-	2760 mins	15 mins	NIL	6	TAKEN	LIVE	2400	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2500	NIL	1	160	60	23.4	70	23-24.9 (3A)	0	2	8	10	-1	11
333	37	Primi	38+2	NIL	NIL	EMERGENCY	Right femoral implant with FGR	-	-	NIL	13	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	2500-3000	2.5-3KG	1	152	66	28.6	72	25-29.9 (3B)	1	2	3	6	1.5	4.5
334	24	Primi	37+1	NIL	NIL	EMERGENCY	fetal distress	360 mins	-	NIL	7	TAKEN	LIVE	2200	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2001-2500	NIL	1	164	48	17.8	59.5	<18.5 (1)	-1	1.5	11	11.5	-1.5	13
335	31	G3P2L2	38+1	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	6	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2501-3000	2.5-3KG	0	160	40.5	15.8	52	<18.5 (1)	-1.5	7.5	5.5	11.5	-1.5	13
336	20	Primi	40	NIL	NIL	SPONTANEOUS	-	720 mins	18 mins	NIL	8	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	156	36.5	15	58	<18.5 (1)	0	na	12	21.5	2	19.5
337	24	primi	34+2	NIL	NIL	SPONTANEOUS	-	390 mins	16 mins	NIL	5	TAKEN	LIVE	2700	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2501-3000	2.5-3KG	0	155	56	23.3	64	23-24.9 (3A)	na	na	4	8	0	8
338	23	G2P1L1	36+4	NIL	C SECTION	EMERGENCY	previous lscs	180 mins	-	NIL	10	TAKEN	LIVE	2800	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	HYPER	2500-3000	2.5-3KG	7	154	59	24.9	70	23-24.9 (3A)	0	3	8	11	0	11
339	19	Primi	37+1	NIL	NORMAL	EMERGENCY	Fetal distress	660 mins	-	NIL	7	TAKEN	LIVE	3200	YES	NO	NO	NO	TERM	MODERATE	NIL	NIL	HYPO	3001-3500	3.1-3.5	0	162	56	21.3	68	18.5-22.9 (2)	0.5	5.5	6	12	3.5	8.5
340	26	G2P1L1	39+3	NIL	C SECTION	ELECTIVE	pevious lscs	-	-	NIL	4	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	156	56	23	62	23-24.9 (3A)	na	0.8	5.2	6	-1.5	7.5
341	31	G3P2L2	39+3	NIL	C SECTION	SPONTANEOUS	-	360 mins	11 mins	NIL	6	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	163	49	18.4	58	<18.5 (1)	na	9.5	na	9.5	0	9.5
342	26	Primi	38+6	NIL	NORMAL	EMERGENCY	Fetal distress	-	-	NIL	5	TAKEN	LIVE	2000	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	1501-2000	NIL	0	166	54	19.6	60	18.5-22.9 (2)	na	3.5	2.5	6	0	6

Sl.no	AGE	obstetric score	Period of gestation	BAD OBSTETRIC HISTORY	PREV DELIVERY	CURRENT OBSTETRIC OUTCOME	INDICATION FOR C-SECTION	DURATION 1ST STAGE OF LABOUR	DURATION 2ND STAGE OF LABOUR	COMPLICATIONS OF LABOUR	NO OF ANTENATAL VISITS	SUPPLEMENTS	BIRTH	BIRTH WEIGHT	CRY AT BIRTH	RESCUCITATION	NICU ADMISSION	MATERNAL ICU ADMISSION	TERM	ANAEMIA	HTN	DIABETES	THYROID	BIRTH WEIGHT CATEGORIES	NIL	OTHER MEDICAL ILLNESS	HEIGHT	MATERNAL WEIGHT AT 1ST VISIT	MATERNAL BMI BASED ON 1ST VISIT WEIGHT	MATERNAL WEIGHT AT DELIVERY	CATEGORY	1st trimester maternal weight gain	2nd trimester maternal weight gain	3rd trimester weight gain	total maternal gestational weight gain	below 20 weeks weight gain	after 20 weeks weight gain
343	25	Primi	40+1	NIL	NIL	EMERGENCY	fetal distress	720 mins	-	NIL	7	TAKEN	LIVE	2900	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	151	47.5	20.8	59	18.5-22.9 (2)	na	4	7.5	11.5	0.5	11
344	25	Primi	39 +5	NIL	NIL	EMERGENCY	msl	450 mins	-	NIL	6	TAKEN	LIVE	3300	YES	NO	NO	NO	TERM	NIL	NIL	IGT	NIL	3001-3500	3.1-3.5	0	152	52	22.5	65	18.5-22.9 (2)	na	5.5	7.5	13	0	13
345	26	G2P1L1	37+6	NIL	C SECTION	EMERGENCY	msl	240 mins	-	NIL	6	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2500-3000	2.5-3KG	0	165	54.5	20	62	18.5-22.9 (2)	na	na	na	7.5	-0.5	8
346	25	G2P1L1	38+2	NIL	C SECTION	ELECTIVE	previous lscs	-	-	NIL	6	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	HYPO	3001-3500	3.1-3.5	5	160	60	23.4	68	23-24.9 (3A)	na	2	6	8	-1	9
347	22	Primi	35+5	NIL	NIL	SPONTANEOUS	-	540 mins	11 mins	NIL	7	TAKEN	LIVE	2700	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	NIL	2501-3000	2.5-3KG	0	154	56	23.6	70	23-24.9 (3A)	na	na	14	14	0	14
348	21	Primi	37+3	NIL	NIL	EMERGENCY	CPD	870 mins	-	CPD	9	TAKEN	LIVE	2600	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	2501-3000	2.5-3KG	0	161	60	23.1	76	23-24.9 (3A)	na	10	6	16	0	16
349	23	Primi	30+4	NIL	NIL	SPONTANEOUS	-	300 mins	18 mins	PRECIPITATE	4	TAKEN	LIVE	1700	YES	NO	NO	NO	PRE TERM	NIL	NIL	NIL	HYPO	1501-2000	NIL	3	156	46.5	19.1	52	18.5-22.9 (2)	na	5.5	na	5.5	-0.5	6
350	30	G3P2L1D1	38+1	PREV BOH	C SECTION	ELECTIVE	previous lscs	-	-	NIL	6	TAKEN	LIVE	3100	YES	NO	NO	NO	TERM	NIL	NIL	NIL	NIL	3001-3500	3.1-3.5	0	168	54	19.1	65	18.5-22.9 (2)	0	3	8	12	1.2	10.8