Report on Maternal Weight Gain of Pregnant Women in Sri Lanka who delivered a baby in the Nutrition Month 2024

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Maternal Care Unit

Family Health Bureau

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- All Public Health Nursing Sisters
- All Supervising Public Health Nursing Sisters
- All the Public Health Midwives

Acronyms and Abbreviations

BMI	Body Mass Index
BSS	Blood Sugar Series
COVID-19	Coronavirus disease of 2019
df	Degrees of freedom
eRHMIS	electronic Reproductive Health Management Information System
FBS	Fasting Blood Sugar
FHB	Family Health Bureau
GWG	Gestational Weight Gain
H 512 A	Pregnancy Record used in Sri Lanka
Hb	Haemoglobin
HbA_{1C}	Glycated haemoglobin
INTERGROWTH-21^{st}	Newborn Growth Consortium for the 21st Century
IOM	Institute of Medicine
LGA	Large for Gestational age
M&E	Monitoring and Evaluation
MO.MCH	Medical Officer – Maternal and Child Health
MOH	Medical Officer of Health
OGTT	Oral Glucose Tolerance Test
PDHS	Provincial Director of Health Services
PHM	Public Health Midwife
POA	Period of Amenorrhoea
PPBS	Post Prandial Blood Sugar
RBS	Random Blood Sugar
RDHS	Regional Director of Health Services
RSPHNS	Regional Supervising Public Health Nursing Sisters
SD	Standard Deviation
SGA	Small for Gestational Age
UNICEF	United Nations Children's Fund
χ^2	Chi-square value

1. Introduction

Maintaining optimal nutrition throughout the pregnancy is crucial for the health and well-being of both the mother and the foetus (World Health Organization, 2023). The nutrition of pregnant women during pregnancy influences the growth and development of the foetus and affects the future risks of chronic diseases of the newborn (Family Health Bureau Ministry of Health Sri Lanka, 2023b).

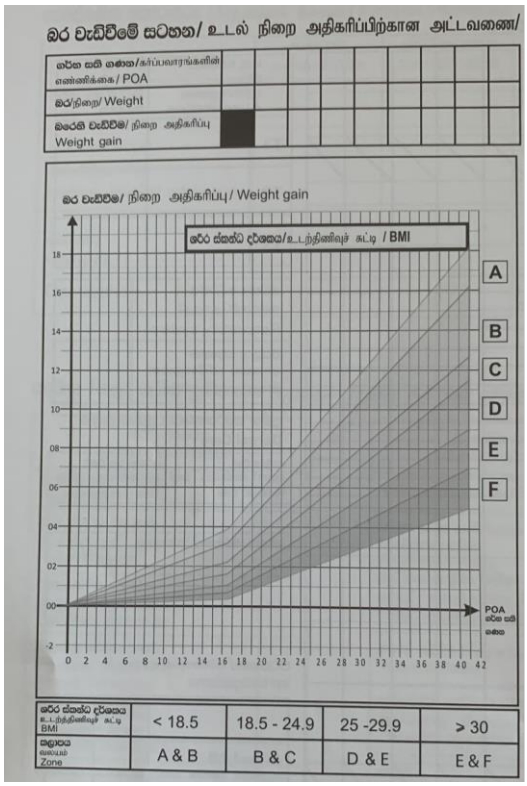
The weight gain of a pregnant woman serves as an indicator of her nutritional status. During pregnancy, various factors contribute to an increase in the weight of pregnant women. These include the products of conception (foetus, placenta, and amniotic fluid), maternal tissues (uterus, mammary glands, maternal blood volume, and extracellular and extravascular fluids), and fat deposition. Of the total weight gain, the products of conception account for 38.8%, the increase in maternal tissues contributes 34.5%, and fat deposition makes up 26.8%. Thus, the approximate increase in the weight of a pregnant woman will be 12.5 kg by 40 weeks of conception (Family Health Bureau Ministry of Health Sri Lanka, 2023b).

The recommended weight gain during pregnancy is described based on the pre-conception Body Mass Index (BMI) of the woman. The expected weight gain for a woman in a singleton pregnancy who was of normal weight (BMI in 18.5 kg/m^2 to 25.0 kg/m^2) in the pre-pregnancy BMI category is expected between 11.5 kg and 16.0 kg. If the woman is underweight (BMI < 18.5 kg/m^2), the expected weight gain in a singleton pregnancy is 12.5 kg to 18.0 kg. If the woman is overweight (BMI between 25.0 kg/m^2 to < 30 kg/m^2) before pregnancy, the expected weight gain during a singleton pregnancy is 7.0 kg to 11.5 kg. For an obese woman (BMI ≥ 30 kg/m^2), the expected weight gain during a singleton pregnancy is 5.0 kg to 9.0 kg. The weight gain during pregnancy needs to be higher in multiple pregnancies (Family Health Bureau Ministry of Health Sri Lanka, 2023b).

The assessment of weight gain throughout pregnancy is carried out through field health services provided in Sri Lanka. Pregnant women are advised to register early at the field heath services (ideally by 8 weeks of period of amenorrhoea). There, the height and weight of the woman are measured, and the BMI is calculated. The weight is measured at all the subsequent antenatal clinic visits, and the weight gain is calculated. The weight gain is plotted against the Period of Amenorrhoea (POA) in a chart (Figure 1.1) in Pregnancy Record Part A (H 512 A). Six zones, marked A to F, are indicated on the chart to identify the zone of weight gain. The interpretation of weight gain against the POA, based on the BMI at the

registration in the 1st trimester, is provided for healthcare workers for easy interpretation and prompt intervention to achieve optimum weight gain, as it is important throughout the pregnancy. Figure 1.1 shows the current weight gain chart of pregnancy record (H 512 A) used in Sri Lanka.

Figure 1.1: Weight gain chart of pregnancy record (H 512 A) of Sri Lanka



Though the weight gain of all the pregnant women in Sri Lanka who have registered for field maternal care services is recorded in the pregnancy records (H 512 A), the routine electronic Reproductive Health Management Information System (eRHMIS) does not capture this data, and it is not readily available for continuous analysis. Therefore, it was expected that these data would be collected from a sample of pregnant women who delivered during the nutrition month (June) of 2024 through a special form that has been prepared.

1.1 Objectives

General objective

To assess the weight gain of women during pregnancy and its associated factors among pregnant women delivered in the nutrition month, 2024

Specific objectives

- To assess the gestational weight gain of pregnant women delivered in the nutrition month, 2024
- To determine the factors associated with gestational weight gain of pregnant women delivered in the nutrition month, 2024

2. Methodology

2.1 Survey design

A descriptive cross-sectional survey was conducted.

2.2 Survey setting

The survey was carried out in all provinces to capture a representative sample from each of the 9 provinces.

2.3 Duration of the survey

Data was collected from June to August 2024.

2.4 Population of the survey

All the pregnant women who delivered a baby after a period of amenorrhea (POA) of 28 weeks during the nutrition month (June) of 2024 were taken as the population of the survey.

Inclusion criteria

Any delivery (live or stillbirth), either single or multiple, that occurred in June 2024 after 28 weeks of POA were included to the survey.

2.5 Sample Size

Sample size was calculated to represent at provincial level based on the average monthly births for the year 2023.

For each of the 9 provinces, sample size was calculated using the following formula and multiplied it with the Design Effect (DE) calculated for each province.

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

N – sample size

Z – z value (1.96)

d – precision 0.05

P – proportion of non- recommended weight gain as per the 2023 study

DE – design effect

Final sample arrived considering a non-response rate of 20%.

	PDHS	**Average monthly live births in 2023**	**Non-recommended weight gain (P)**	**1-P**	**Sample size**	**Design effect**	**Sample size with non-response rate 20%**
1	Central	2310	0.64	0.36	354.89	1.8	799
2	Eastern	2163	0.63	0.37	359.76	2.2	989
3	North Central	1178	0.67	0.33	338.16	1.6	676
4	Northwestern	2249	0.60	0.40	369.09	2.2	1015
5	Northern	1268	0.59	0.41	370.86	1.8	834
6	Sabaragamuwa	1544	0.66	0.34	346.28	1.7	736
7	Southern	2196	0.60	0.40	369.70	1.8	832
8	Uva	1203	0.67	0.33		1.6	680
9	Western	4610	0.64	0.36		1.9	845
	Total						**7406**

2.6 Sampling method

A cluster sampling method with probability proportionate to the sample size was used. PHM area was considered as a cluster.

In each of the provinces, PHM areas were categorized into groups depending on the live births reported in 2023. Then, the proportion of live births for each category was calculated.

The number of PHM areas to be selected from each category was calculated applying the proportion calculated for each category using probability proportionate to the sample size. Then the PHM areas in the province were arranged according to alphabetical order. The required number of PHM areas were selected randomly using SPSS. All eligible participants in the selected PHM areas were included in the survey.

Accordingly, 2,784 Public Health Midwife (PHM) areas were randomly selected for the analysis from all the PHM areas of Sri Lanka, with representation from the provincial level to obtain 7,610 births. The list of selected PHM areas is listed in Annex 01.

2.8 Survey Instruments

One paged questionnaire was developed in all 3 languages to extract data from pregnancy records (H 512A form). The questionnaires are attached in Annex 02. Questionnaire consisted with the following areas.

- Area of residence of the pregnant woman
- Identification details of the pregnant woman
- Age of the pregnant woman at the registration
- Gravidity, parity and children
- Height of the pregnant woman
- POA and weight at all clinic visits
- Hemoglobin level (Hb) of the mother at booking visit and between 24-28 weeks of POA
- Presence of chronic diabetes mellitus (CDM) or gestational diabetes mellitus (GDM)
- Presence of chronic hypertension (HT) or pregnancy-induced hypertension (PIH)

- Multiplicity of pregnancy
- Outcome of pregnancy
- Sex of the baby
- Birth weight of the newborn
- Apgar score of the newborn

One questionnaire was to be filled out for each child born.

2.9 Data Collection Methods

For each birth that occurred after 28 weeks of POA in June 2024 and was reported to selected PHM areas of the survey, the PHM should fill out the questionnaire using the details in the pregnancy record (H 512A) at the postpartum visit and child health and development record (CHDR). If it was a multiple pregnancy, two or more forms were to be filled out according to the number of children born.

2.10 Training of data collectors (PHMM)

At the initiation of the survey, a letter was sent on the data collection and the responsibilities of staff to all the Provincial Directors of Health Services (PDHS) and Regional Directors of Health Services (RDHS) with copies to Medical Officers – Maternal and Child Health (MO.MCH) and Medical Officers of Health (MOH) through the Director (Maternal and Child Health) (Annex 03)

The Maternal Care Unit of the Family Health Bureau (FHB) also conducted a virtual training programme for all the Medical Officers of Health (MOOH) on the survey. There, all the MOOH were trained on data extraction from pregnancy records (H 512 A), child health and development record (CHDR) to the questionnaire. The MOOH trained the relevant PHMM under their purview on data collection. The telephone numbers of the investigators in FHB were also provided for any further clarifications, if any.

2.11 Data entry

Maternal Care Unit and Evaluation Unit of FHB developed an online data entry form using Google Forms. Medical Officers of Health were requested to assign a suitable officer in the MOH office to enter the data of all the questionnaires of the particular MOH office into the data entry form.

The Maternal Care Unit of FHB conducted a virtual training programme for all the MOOH on data entry as well.

2.12 Review the progress of data entry

With the support of the Evaluation Unit of FHB, a dashboard was developed to track the progress of data entry from each MOH area. An update on data entry against the number of births reported for the month of June 2024 through the eRHMIS for each selected PHM area was provided to Medical Officers – Maternal and Child Health (MOO.MCH) and Regional Supervising Public Health Nursing Sisters (RSPHNS) periodically until the end of the survey.

2.13 Data analysis

Data collected via Google Sheets was converted to Excel (.xls) and then converted to .sav format. Data were analyzed using Statistical Package for Social Sciences (SPSS) 23.0 software by descriptive statistics.

The birth weight centiles were analyzed using the Windows desktop application version 1.0.6257.25111 of Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st) (INTERGROWTH-21st, 2009)

3.Results & Discussion

There were 6,823 births reported from selected PHM areas. These belonged to 6,762 pregnancies.

3.2 Pregnant women according to their residence

Table 3.01 shows the distribution of survey sample according to their province of residence.

Table 3.01 Distribution of survey sample according to the province of residence

Province	Frequency	Percent
Central	753	*11.1*
Eastern	1028	*15.2*
North Central	588	*8.7*
North-Western	927	*13.7*
Northern	787	*11.6*
Sabaragamuwa	614	*9.1*
Southern	722	*10.6*
Uva	643	*9.6*
Western	700	*10.4*
Total	**6,762**	***100.0***

Fifteen-point two percent (n=1028) of the sample were from Eastern Province, followed by 13.7% (n=927) from North-Western Province, 11.6% (n=787) from Northern Province and, 11.1% (n=753) from Central Province.

Table 3.02 Distribution of the sample of pregnant women according to the Regional Directorates of Health Services areas

Province	Regional Directorate of Health Services area	Frequency	Percent
Central	Kandy	368	*5.4*
	Matale	145	*2.1*
	Nuwara Eliya	240	*3.5*
Eastern	Ampara	115	*1.7*
	Batticaloa	386	*5.7*
	Kalmunai	305	*4.5*
	Trincomalee	222	*3.3*
North Central	Anuradhapura	405	*6.0*
	Polonnaruwa	183	*2.7*

North-Western	Kurunegala	542	*8.0*
	Puttalam	385	*5.7*
Northern	Jaffna	401	*5.9*
	Kilinochchi	94	*1.4*
	Mannar	99	*1.5*
	Mullaitivu	86	*1.3*
	Vavuniya	107	*1.6*
Sabaragamuwa	Kegalle	288	*4.3*
	Ratnapura	326	*4.8*
Southern	Galle	287	*4.2*
	Hambantota	230	*3.4*
	Matara	205	*3.0*
Uva	Badulla	373	*5.5*
	Monaragala	270	*4.0*
Western	Colombo Municipal Council	69	*1.0*
	Colombo	225	*3.3*
	Gampaha	223	*3.3*
	Kalutara	137	*2.0*
	National Institute of Health Sciences	46	*0.7*
	Total	**6762**	***100.0***

Table 3.03 Table 3.03 Distribution of the sample of pregnant women according to the sector of their residence

Sector	Frequency	Percent
Urban	1008	*14.9*
Rural	5427	*80.3*
Estate	327	*4.8*
Total	**6762**	***100***

The majority (80.3%, n=5,427) were from the rural sector. The estate sector is represented by 4.8% (n =327) of pregnant women in the sample.

3.3 Age of pregnant women at the time of registration of their pregnancy

The mean age of the pregnant women at the registration of their pregnancies was 28 years. As shown in Table 3.04, 4.4% (n=301) of the mothers were teenagers (≤ 19 years) and 11.7% (n=705) were elderly mothers (age ≥ 36 years) at the registration of their pregnancies.

Table 3.04 Distribution of sample of pregnant women according to the age (completed years) at the registration of their pregnancy

Age category	Frequency	Percent
≤14	2	*0.0*
15-19	299	*4.4*
20-25	1669	*24.7*
26-30	2355	*34.8*
31-35	1732	*25.6*
36-40	605	*8.9*
41-45	96	*1.4*
≥46	4	*0.1*
Total	**6762**	***100***

3.4 Gravidity, parity and number of children at the time of registration for the current pregnancy

Table 3.05 shows the distribution of the survey sample according to their gravidity, parity and, number of children at the time of registration for the current pregnancy.

Table 3.05 Distribution of sample of pregnant women according to gravidity, parity and number of children at the time of registration of the current pregnancy

Characteristic	Frequency	Percent
Gravidity		
1	2485	*36.7*
2	2195	*32.5*
3	1327	*19.6*
4	546	*8.1*
≥5	209	*3.1*
Parity		
0	2789	*41.2*
1	2317	*34.3*
2	1242	*18.4*
3	333	*4.9*
≥4	81	*1.2*
Number of children		
0	2875	*42.5*
1	2307	*34.1*
2	1203	*17.8*
3	307	*4.5*
≥4	70	*1.0*
Total	**6762**	***100.0***

Thirty-six point seven (n=2485) women were in their 1st pregnancy. There were 11.2% (n=755) pregnant women who were undergoing their fourth or more pregnancy. Nearly 42.5% (n=2875) of pregnant women did not have any live child at the time they registered for the current pregnancy.

3.5 Period of Amenorrhoea (POA) at booking visit

Table 3.06 shows the POA of pregnant women at the booking visit (first clinic visit after becoming pregnant) for the current pregnancy.

Table 3.06 - Distribution of pregnant women in the sample according to their POA at booking visit

Timing of booking visit	Frequency	Percent
≤8 Weeks POA*	3868	*57.2*
8-12 weeks POA*	2068	*30.6*
2nd Trimester	731	*10.8*
3rd Trimester	73	*1.1*
Total	**6762**	***100***

*POA = Period of Amenorrhea

Fifty-seven-point two percent (n=3,868) of pregnant women have made their booking visit within the first 8 weeks of POA, whereas 87.8% (n=5,936) women have made their booking visit within the 1st trimester. Only 1.1% (n= 73) of women attended their booking visit during the 3rd trimester.

3.6 Height of pregnant women

The mean height of the pregnant women was 154.71 cm (SD=5.71). Table 3.07 shows the height of pregnant women in the sample.

Table 3.07. Distribution of pregnant women in the sample according to their height

Height (cm)	Frequency	Percent
≤145	341	5.0
>145 to 150	1214	18.0
>150 to 155	2241	33.2
>155 to 160	1976	29.3
>160	982	14.5
Total	**6754**	**100**

The height of 5% (n=341) of pregnant women was less than 145 cm.

3.7 Body Mass Index of Pregnant Women

The women who attended their booking visit within the 1st trimester of pregnancy were included in the analysis of Body Mass Index (BMI). The BMI within the 1st trimester was assumed to be the same as their pre-pregnancy BMI. The mean BMI was 23.4 kg/m^2 (SD=4.8).

Table 3.08 - Distribution of pregnant women in the sample who attended their booking antenatal clinic within the 1st trimester of pregnancy, according to their body mass index (BMI)

Body Mass Index category	Frequency	Percent
Underweight	951	16.2
Normal weight	2864	48.9
Overweight	1512	25.8
Obesity	534	9.1
Total	**5861**	**100**

As shown in Table 3.08, 16.2% (n=951) of the pregnant women were underweight, 25.8% (n=1512) were overweight, and 9.1 % (n=534) were obese.

Table 3.09 shows the provincial breakdown of the BMI of mothers who registered within the 1st trimester at their booking visit.

Table 3.09 Distribution of pregnant women who registered within the 1st trimester of pregnancy, according to their body mass index (BMI), by provinces

	Body Mass Index category									
	Underweight		Normal weight		Overweight		Obese		Total	
Province	No.	%	No.	%	No.	%	No.	%	No.	%
Central	107	*16.9%*	317	*50.2 %*	155	*24.5 %*	53	*8.4%*	**632**	***100.0 %***
Eastern	140	*15.7%*	420	*47.0 %*	234	*26.2 %*	100	*11.2 %*	**894**	***100.0 %***
North Central	73	*13.9%*	276	*52.7 %*	125	*23.9 %*	50	*9.5%*	**524**	***100.0 %***
Northwestern	123	*15.7%*	372	*47.4 %*	209	*26.6 %*	81	*10.3 %*	**785**	***100.0 %***
Northern	121	*17.1%*	337	*47.7 %*	177	*25.0 %*	72	*10.2 %*	**707**	***100.0 %***
Sabaragamuwa	108	*20.2%*	258	*48.3 %*	137	*25.7 %*	31	*5.8%*	**534**	***100.0 %***
Southern	112	*18.0%*	303	*48.7 %*	157	*25.2 %*	50	*8.0%*	**622**	***100.0 %***
Uva	89	*15.2%*	310	*53.0 %*	146	*25.0 %*	40	*6.8%*	**585**	***100.0 %***
Western	78	*13.5%*	271	*46.9 %*	172	*29.8 %*	57	*9.9%*	**578**	***100.0 %***

Total	**951**	***16.2%***	**2864**	***48.9 %***	**1512**	***25.8 %***	**53 4**	***9.1%***	**586 1**	***100.0 %***

The percentage of pregnant women who were underweight during the 1st trimester was highest in Sabaragamuwa province (20.2%, n=108), followed by Southern (18.0%, n=112) and Northern (17.1%, n=121) provinces.

Overweight was highest in Western province (29.8%, n=172), followed by Northwestern (26.6%, n=209) and Eastern (26.2%, n=234) provinces.

Obesity was highest in the Eastern province (11.2%, n=100), followed by the Northwestern province (10.3%, n=81) and Northern province (10.2%, n=72).

3.8 Blood sugar category during pregnancy

Table 3.10 demonstrates the distribution of pregnant women, according to their category of blood sugar during the preceding pregnancy.

Table 3.10 - Distribution of pregnant women in the sample according to Blood sugar control during the pregnancy

Category of blood sugar	Frequency	Percent
Chronic DM	343	*5.1*
GDM	467	*6.9*
Normal	5944	*88.0*
Total	**6754**	**100**

The percentage of pregnant women who were diagnosed with chronic diabetes mellitus was 5.1% (n=343). The percentage of pregnant women who were diagnosed with gestational diabetes mellitus was 6.9% (n=467).

3.9 Blood pressure category during pregnancy

Table 3.11 demonstrates the distribution of pregnant women, according to their blood pressure category during the preceding pregnancy.

Table 3.11 -Distribution of pregnant women in the sample according to their blood pressure category during pregnancy

Blood pressure category	Frequency	Percent
Chronic Hypertension	109	1.6
PIH	226	3.4
Normal	6424	95.0
Total	**6759**	**100**

The percentage of pregnant women who were diagnosed with chronic hypertension was 1.6% (n=111). The percentage of pregnant women who were diagnosed with pregnancy-induced hypertension was 3.4 % (n=228).

3.10 Haemoglobin level during the pregnancy

The haemoglobin values were obtained from the reports the pregnant women produced to the field maternal clinics, which the PHMM recorded in the maternal records

Ten percent (n=584) of the pregnant women were found to have anaemia during the first trimester and 26.8 % (n=1724) of pregnant women were anaemic between 24-32 weeks of POA.

Severe anaemia was defined as <7g/dl of haemoglobin at any trimester. Moderate anaemia was defined as haemoglobin levels between 7g/dl to < 10g/dl at any trimester. Mild anaemia was defined as haemoglobin levels between 10g/dl to < 11g/dl in the 1st trimester and haemoglobin levels between 10g/dl to 10.5g/dl in the 2nd and 3rd trimesters (Family Health Bureau, Ministry of Health Sri Lanka, 2023b).

Table 3.13 Distribution of pregnant women according to their haemoglobin level at different stages of pregnancy

Characteristic	Frequency	*Percent*
Haemoglobin level at 1st Trimester		
Severe anaemia	4	*0.1*
Moderate anaemia	143	*2.4*
Mild anaemia	437	*7.5*
Non anaemic	5,267	*90.0*
Total	**5,851**	***100.0***
Haemoglobin level between 24-32 W of POA		
Severe anaemia	1	*0.0*
Moderate anaemia	387	*6.0*
Mild anaemia	1332	*20.7*
Non anaemic	4724	*73.4*
Total	**6,444**	***100.0***

*If a pregnant woman had only one report (either in 1st trimester or 2nd/3rd trimesters) and that only report indicated non-anaemic, the woman was excluded from the analysis for anaemia at any point of pregnancy

As shown in Table 3.13, 90.0% (n=5,267) of pregnant women were non-anaemic in their 1st trimester. Seventy-three point three percent (n=4724) of pregnant women were non-anaemic between 24 – 32 W of POA.

3.11 Adequacy of weight gain during pregnancy

Adequacy of weight gain during pregnancy was calculated only for those women who registered their pregnancy during the 1st trimester. The women with multiple gestations were excluded from the analysis. The weight gain adequacy was calculated according to their weight gain from the first visit to the last visit, according to the POA the last weight measurement was obtained and according to the BMI category during the 1st visit (assumed as pre-pregnancy BMI), using the z-score weight centile charts (Hutcheon et al., 2013), which are adapted to Sri Lanka (shown in Figure 1.1).

Table 3.14 shows the distribution of pregnant women, according to their adequacy of weight gain during pregnancy.

Table 3.14 Distribution of pregnant women, according to their adequacy of weight gain during pregnancy

Adequacy of weight gain during pregnancy	Frequency	Percent
Less than recommended	2,222	38.0
Recommended	2,093	35.8
More than recommended	1533	26.2
Total	**5,848**	**100.0**

As shown in table 3.14, weight gain of 38.0% (n=2,222) pregnant women was less than the recommended. The weight gain during the pregnancy was more than recommended in 26.2% (n=1,533) pregnant women.

Table 3.15 shows the provincial breakdown of weight gain adequacy during pregnancy.

Table 3.15 Distribution of pregnant women, according to their adequacy of weight gain during pregnancy, by provinces

	Adequacy of weight gain during pregnancy							
	Less than recommended		Recommended		More than recommended		Total	
Province	No.	%	No.	%	No.	%	No.	%
Central	230	*36.4%*	245	*38.8%*	157	*24.8%*	632	*100.0%*
Eastern	349	*39.0%*	320	*35.8%*	225	*25.2%*	894	*100.0%*
North Central	185	*35.3%*	196	*37.4%*	143	*27.3%*	524	*100.0%*

North Western	299	*38.2%*	274	*35.0%*	210	*26.8%*	783	*100.0%*
Northern	283	*40.0%*	246	*34.8%*	178	*25.2%*	707	*100.0%*
Sabaragamuwa	186	*35.1%*	192	*36.2%*	152	*28.7%*	530	*100.0%*
Southern	237	*38.2%*	218	*35.2%*	165	*26.6%*	620	*100.0%*
Uva	233	*39.8%*	202	*34.5%*	150	*25.6%*	585	*100.0%*
Western	220	*38.4%*	200	*34.9%*	153	*26.7%*	573	*100.0%*
Total	**2,222**	***38.0%***	**2,093**	***35.8%***	**1,533**	***26.2%***	**5,848**	***100.0%***

Highest percentage of pregnant women who had less than adequate weight gain during pregnancy was reported from Northern province (40.3%, n=280), followed by Uva (39.8%, n=230), Eastern (39.1%, n=345) and Southern (38.7%, n=236) provinces.

Highest percentage of pregnant women who had more than adequate weight gain during pregnancy was reported from Sabaragamuwa province (28.6%, n=159), followed by North Central (27.2%, n=141) and North Western (26.7%, n=207) provinces.

Table 3.16 Associations of weight gain during pregnancy with maternal characteristics

Characteristic	Adequacy of weight gain during pregnancy				Significance
	Less than recommended	Recommended	More than recommended	Total	
Maternal age					
≤ 19 years	107	69	52	228	
	46.9%	*30.3%*	*22.8%*	*100.0%*	
20 to 35 years	1,890	1,841	1,336	5,067	
	37.3%	*36.3%*	*26.4%*	*100.0%*	χ^2=11.0 df=4 p=0.026
≥ 36 years	225	183	145	553	
	40.7%	*33.1%*	*26.2%*	*100.0%*	
Total	**2,222**	**2,093**	**1,533**	**5,848**	
	38.0%	***35.8%***	***26.2%***	***100.0%***	
Gravidity					
1st pregnancy	711	831	644	2,186	
	32.5%	*38.0%*	*29.5%*	*100.0%*	χ^2=46.9 df=4 p<0.0001
2nd or 3rd pregnancy	1,265	1,065	739	3,069	
	41.2%	*34.7%*	*24.1%*	*100.0%*	
4th or higher	246	197	150	593	
	42.5%	*33.2%*	*25.3%*	*100.0%*	
Total	**2,222**	**2,093**	**1,533**	**5,848**	
	38.0%	***35.8%***	***26.2%***	***100.0%***	
Maternal height					
145 cm or less	129	115	47	291	
	44.3%	*39.5%*	*16.2%*	*100.0%*	

Table 3.16 Associations of weight gain during pregnancy with maternal characteristics

Characteristic	Adequacy of weight gain during pregnancy				Significance
	Less than recommended	Recommended	More than recommended	Total	
More than145 cm	2,093	1,978	1,486	5,557	χ^2=16.3
	37.7%	*35.6%*	*26.7%*	*100.0%*	df=2
Total	**2,222**	**2,093**	**1,533**	**5,848**	p<0.0001
	38.0%	***35.8%***	***26.2%***	***100.0%***	
Maternal height					
150 cm or less	556	457	266	1279	χ^2=31.2
	43.5%	*35.7%*	*20.8%*	*100.0%*	df=2
More than150 cm	1,666	1,636	1,267	4,569	p<0.0001
	36.5%	*35.8%*	*27.7%*	*100.0%*	
Total	**2,222**	**2,093**	**1,533**	**5,848**	
	38.0%	***35.8%***	***26.2%***	***100.0%***	
Body Mass Index in 1st trimester					
Underweight	450	390	110	950	
	47.4%	*41.1%*	*11.6%*	*100.0%*	χ^2=557.9
Normal weight	1,280	1,034	542	2,856	df=6
	44.8%	*36.2%*	*19.0%*	*100.0%*	p<0.0001
Overweight	362	535	612	1,509	
	24.0%	*35.5%*	*40.6%*	*100.0%*	
Obese	130	134	269	533	
	24.4%	*25.1%*	*50.5%*	*100.0%*	
Total	**2,222**	**2,093**	**1,533**	**5,848**	
	38.0%	***35.8%***	***26.2%***	***100.0%***	
Maternal blood sugar status throughout pregnancy					
Normal	1,928	1,863	1,343	5,134	χ^2=6.367
	37.6%	*36.3%*	*26.2%*	*100.0%*	df=4
Chronic DM	128	96	75	299	p=0.173
	42.8%	*32.1%*	*25.1%*	*100.0%*	
GDM	166	131	113	410	
	40.5%	*32.0%*	*27.6%*	*100.0%*	
Total	**2,222**	**2,090**	**1,531**	**5,843**	
	38.0%	***35.8%***	***26.2%***	*100.0%*	
Maternal anemia during first trimester					
Anaemic	345	334	234	913	χ^2=0.326

Table 3.16 Associations of weight gain during pregnancy with maternal characteristics

Characteristic	Adequacy of weight gain during pregnancy				Significance
	Less than recommended	Recommended	More than recommended	Total	
	37.8%	*36.6%*	*25.6%*	*100.0%*	df=2 p=0.850
Non anaemic	1,750	1,649	1,218	4,617	
	37.9%	*35.7%*	*26.4%*	*100.0%*	
Total	**2,095**	**1,983**	**1,452**	**5,530**	
	37.9%	***35.9%***	***26.3%***	***100.0%***	
Maternal anaemia between 24-32 weeks of POA					
Anaemic	529	459	296	205	χ^2=10.156 df=2 p=0.006
	41.2%	*35.7%*	*23.1%*	*100.0%*	
Non anaemic	1,592	1,537	1,157	***4,286***	
	37.1%	*35.9%*	*27.0%*	*100.0%*	
Total	**2,121**	**1,996**	**1,453**	**5,570**	
	38.1%	***35.8%***	***26.1%***	***100.0%***	
Maternal anaemia at some point in pregnnacy					
Anaemic	556	480	308	1,344	χ^2=12.289 df=2 p=0.002
	41.4%	*35.7%*	*22.9%*	*100.0%*	
Non anaemic	1,647	1,595	1,209	4,451	
	37.0%	*35.8%*	*27.2%*	*100.0%*	
Total	**2,203**	**2,075**	**1,517**	**5,795**	
	38.0%	***35.8%***	***26.2%***	***100.0%***	
Sex of the foetus (determined after birth)					
Male	1,102	1,113	780	2,995	χ^2=7.195 df=2 p=0.126
	36.8%	*37.2%*	*26.0%*	*100.0%*	
Female	1,119	974	742	2,826	
	39.2%	*34.4%*	*26.4%*	*100.0%*	
Total	**2,221**	**2,093**	**1,533**	**5,775**	
	38.0%	***35.8%***	***26.2%***	***100.0%***	
Birthweight category					
NBW	502	309	147	958	χ^2=138.3 df=4 p<0.0001
	52.4%	*32.3%*	*15.3%*	*100.0%*	
LBW	1,713	1,773	1,361	4,847	
	35.3%	*36.6%*	*28.1%*	*100%*	
HBW	6	11	24	41	
	14.6%	*26.8%*	*58.5%*	*100%*	

Table 3.16 Associations of weight gain during pregnancy with maternal characteristics

Characteristic	Adequacy of weight gain during pregnancy				Significance
	Less than recommended	Recommended	More than recommended	Total	
Total	**2,221**	**2,093**	**1,532**	**5,846**	
	38.0%	***35.8%***	***26.2%***	***100.0%***	

As shown in Table 3.16, with the increasing gravidity, the percentage of pregnant women who had less than recommended weight gain increased. Also, the percentage of pregnant women with more than adequate weight gain was high in 1st pregnancy (23.9%, n=636) and it was low at 4th or higher pregnancies where only 24.6% (n=143) pregnant women had more than adequate weight gain. This association between the gravidity and adequacy of weight gain during pregnancy was statistically significant (χ^2=47.179, df=4, p<0.0001).

Maternal height ≤ 145 cm was associated with having a less than adequate weight gain in pregnancy. The association of pregnancy weight gain and maternal height was statistically significant (χ^2=16.309, df=2, p<0.0001).

Pregnant women who were underweight in their 1st trimester had a higher risk of achieving a less than recommended weight gain during pregnancy and pregnant women who were obese during the 1st trimester had a higher risk of getting a more than recommended weight gain during pregnancy. This association of BMI in 1st trimester with weight gain during pregnancy was statistically significant (χ^2=549.572, df=6, p<0.001).

There were no significant association found for weight gain during pregnancy with the maternal age (χ^2=10.969, df=4, p=0.027), maternal blood sugar status throughout the pregnancy (χ^2=9.299, df=2, p=0.157), maternal anaemia during first trimester (χ^2=0.112, df=2, p=0.946), maternal anaemia between 24 -32 weeks of POA (χ^2=0.314, df=2, p=0.855) and sex of the foetus (χ^2=5.225, df=2, p=0.073).

3.12 Types of pregnancies

Table 3.17 shows the types of pregnancies of the sample of pregnant women who delivered during June 2024 (nutrition month 2024).

Table 3.17 Distribution of pregnant women according to the type of their pregnancy

Type of pregnancy	Frequency	Percent
Singleton	6677	*98.7*
Twin	82	*1.2*
Triplet	3	*0.0*
Total	**6762**	***100.0***

As shown in Table 3.17, there were 82 twin pregnancies and 3 triplet pregnancies.

3.13 Outcome of pregnancy and term of delivery

Table 3.18 shows the outcome of pregnancies and the term of delivery of the newborns, born from above pregnancies in the month of June 2023 (nutrition month 2023).

Table 3.18 Outcome of pregnancies and term of delivery of the newborns

Characteristic	Frequency	*Percent*
Outcome of pregnancies		
Live birth	6785	99.4
Still birth (after 28 weeks of POA*)	38	0.6
Total	**6,823**	**100.0**
Outcome of pregnancies		
27 weeks of POA or less	6	*0.1*
Very preterm (28 to 32 weeks of POA*)	64	*1.0*
Moderate preterm (33 to 34 weeks of POA*)	121	*1.7*
Late preterm (35 to 36 weeks of POA*)	549	*8.1*
Term (37 to 42 weeks of POA*)	6044	*89.1*
Total	**6,784**	***100.0***

*POA= Period of Amenorrhoea

There were 38 (0.6%) still births in the sample. Also, 10.9% (n=740) of the newborns were born preterm (before 37 weeks of POA).

Table 3.19 shows the sex of the livebirths as determined at the birth.

Table 3.19 Distribution of live births according to their sex determined at birth

Birth weight category	Frequency	Percent
Male	3,488	*51.4*
Female	3,297	*48.6*
Total	**6,785**	***100.0***

As shown in Table 3.19, 51.4% (n=3,488) of the babies born alive during the nutrition month who were surveyed were males.

Table 3.20 shows the sex of live births as determined at birth according to the province.

Table 3.20 Distribution of the sample according to the sex of live births as determined at birth

	Male		Female		Total	
Province	**No.**	**%**	**No.**	**%**	**No.**	**%**
Central	394	*52.7%*	354	*47.3%*	748	*100.0%*
Eastern	522	*50.5%*	512	*49.5%*	1034	*100.0%*
North Central	306	*51.7%*	286	*48.3%*	592	*100.0%*
North Western	489	*52.4%*	445	*47.6%*	934	*100.0%*
Northern	411	*52.2%*	377	*47.8%*	788	*100.0%*
Sabaragamuwa	306	*49.6%*	311	*50.4%*	617	*100.0%*
Southern	391	*53.7%*	337	*46.3%*	718	*100.0%*
Uva	331					*100.0%*
Western	338					*100.0%*
Total	**3488**	***51.4%***	**3297**	***48.6%***	**6785**	***100.0%***

Except in Sabaragamuwa province and Western province, in all the other provinces, the majority of the newborns surveyed were males.

3.14 Birth weight of the newborns

The mean birthweight of the livebirths was 2,869.95g (SD=457.45). Table 3.21 shows the categories of live newborns according to their birthweight.

Table 3.21 Distribution of live births according to their birth weight categories

Birth weight category	Frequency	Percent
Extreme Low Birth Weight (<1,000g)	9	0.1
Very Low Birth Weight (1,000g to <1,500g)	43	0.6
Low Birth Weight (1,500g to <2,500g)	1,151	17.0
Normal Birth Weight (2,500g to <4,000g)	5,536	81.6
High Birth Weight (≥4,000g)	46	0.7
Total	**6,785**	**100.0**

As shown in Table 3.21, 17.7% (n=1,203) of the newborns who were born alive had low birth weight (<2,500g). There were 0.7 % (n=46) macrosomic newborns (birth weight ≥4,000g).

Table 3.22 shows the distribution of live newborns according to their birthweight by provinces.

Table 3.22 Distribution of live newborns, according to their birthweight, by provinces

Province	Birthweight category: Low birthweight No.	Low birthweight %	Normal birthweight No.	Normal birthweight %	High birthweight No.	High birthweight %	Total No.	Total %
Central	163	*21.8%*	583	*77.9%*	2	*0.3%*	748	*100.0%*
Eastern	174	*16.8%*	852	*82.4%*	8	*0.8%*	1034	*100.0%*
North Central	99	*16.7%*	490	*82.8%*	3	*0.5%*	592	*100.0%*
North Western	169	*18.1%*	759	*81.3%*	6	*0.6%*	934	*100.0%*
Northern	130	*16.5%*	652	*82.7%*	6	*0.8%*	788	*100.0%*
Sabaragamuwa	116	*18.8%*	495	*80.2%*	6	*1.0%*	617	*100.0%*
Southern	111	*15.2%*	609	*83.7%*	8	*1.1%*	728	*100.0%*
Uva	128	*19.8%*	513	*79.5%*	4	*0.6%*	645	*100.0%*
Western	113	*16.2%*	583	*83.4%*	3	*0.4%*	699	*100.0%*
Total	**1,203**	***17.7%***	**5,536**	***81.6%***	**46**	***0.7%***	**6785**	***100.0%***

As shown in Table 3.22, the highest percentage of low birthweight newborns are reported from Central province (21.8%, n=163), followed by Uva (19.8%, n=128) and Sabaragamuwa (18.8%, n=116) provinces. Out of the total number of 46 macrosomic livebirths, the highest percentage (17.4% , n = 08) was reported from both Eastern province and Southern province.

As shown in Table 3.23, the highest percentage of low birthweight newborns are reported from Ratnapura RDHS area (23.7%, n=14), followed by Nuwara Eliya (23.5%, n=08), Hambanthota (23.4%, n=15) and Matale (23.4%, n=11) RDHS areas.

Birth weights of livebirths were also analyzed according to birth weight centiles. Newborns $\leq 10^{th}$ centile were considered as Small for Gestational Age (SGA) and the newborns $\leq 3^{rd}$ centile were considered as Severe SGA. Newborns $\geq 90^{th}$ centile were considered as Large for Gestational age (LGA). Table 3.23 shows the results.

Table 3.23 Distribution of live births according to their birthweight centile categories

Birthweight centile	Frequency	*Percent*
$\leq 3^{rd}$ Centile	277	*4.8*
3^{rd} to 10^{th} Centile	712	*12.3*
$>10^{th}$ to 90^{th} Centile	4,518	*78.1*
$\geq 90^{th}$ Centile	279	*4.8*
Total	**5,786**	***100.0***

According to the results, 17.1% (n=989) live births were SGA ($\leq 10^{th}$ Centile) and 4.8% (n=279) were LGA ($\geq 90^{th}$ Centile).

There were 4.8 % (n=277) live births who has severe SGA, whereas 12.3% (n=712) live births were between 3rd and 10th centiles. That is, nearly one fifth (17.1%, n=989) of the newborns were SGA. There were 4.8% (n=279) of live newborns who were LGA.

The birth weight centiles of the live newborns after 28 weeks of POA were analyzed using the standards of International Fetal and Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st), using their Windows desktop application version 1.0.6257.25111 (INTERGROWTH-21st, 2009).

Table 3.24 shows the birthweight of the live newborns according to their birth centiles by provinces.

Table 3.24 Distribution of live newborns, according to their birth weight centiles, by provinces

	Birth weight centile category									
	≤3rd Centile		3rd to 10th Centile		10th to 90th Centile		≥90th Centile		Total	
Province	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Central	42	*6.7%*	95	*15.2%*	472	*75.4%*	17	*2.7%*	626	*100.0%*
Eastern	48	*5.4%*	103	*11.7%*	681	*77.2%*	49	*5.6%*	882	*100.0%*
North Central	17	*3.3%*	64	*12.3%*	413	*79.6%*	25	*4.8%*	519	*100.0%*
North Western	40	*5.1%*	80	*10.3%*	615	*79.2%*	42	*5.4%*	777	*100.0%*
Northern	28	*4.6%*	79	*11.4%*	554	*79.7%*	34	*4.9%*	695	*100.0%*
Sabaragamuwa	19	*3.6%*	66	*12.5%*	419	*79.4%*	24	*4.5%*	528	*100.0%*
Southern	28	*4.6%*	59	*9.6%*	491	*79.1%*	34	*5.6%*	612	*100.0%*
Uva	30	*5.2%*	92	*15.9%*	431	*74.4%*	25	*4.3%*	579	*100.0%*
Western	25	*4.4%*	74	*13.0%*	442	*77.4%*	29	*5.1%*	571	*100.0%*
Total	**277**	***4.8%***	**712**	***12.3%***	**4,518**	***78.1%***	**279**	***4.8%***	**5,786**	***100.0%***

As shown in Table 3.24, 21.9% (n=137) livebirths of Central province were equal or less than the 10th birth weight centile. This is followed by Uva (21.1%, n=122) and Western (17.1%, n=99) provinces.

Similar percentage (5.6%) of babies in the Eastern (n=49) & Southern (n=34) provinces have of LGA live newborns followed by Northern Western province (5.4%, n=42) and Western province (5.1%, n=29).

Table 3.25 shows the associations with birth weight of live newborns. The macrosomic babies are removed from the analysis as the number in the sample was 46 (0.7% of all live births).

Table 3.25 Associations for birth weight of newborns with maternal and newborn characteristics

Characteristic	Birth weight category			Significance
	Low birth weight	Normal birth weight	Total	
Maternal age				
≤ 19 years	82	224	306	
	26.8%	*73.2%*	*100.0%*	
20 to 35 years	971	4,754	5,725	χ^2=25.167 df=2 p<0.001
	17.0%	*83.0%*	*100.0%*	
≥ 36 years	150	558	708	
	21.2%	*78.8%*	*100.0%*	
Total	**1,203**	**5,536**	**6,739**	
	17.9%	***82.1%***	***100.0%***	
Gravidity				
1st pregnancy	507	1,977	2484	
	20.4%	*79.6%*	*100.0%*	
2nd or 3rd pregnancy	578	2,927	3,505	χ^2=17.814 df=2 p<0.001
	16.5%	*83.5%*	*100.0%*	
4th or higher	118	632	750	
	17.6%	*84.3%*	*100.0%*	
Total	**1,203**	**5,536**	**6,739**	
	17.9%	***82.1%***	***100.0%***	
Maternal height				
≤ 145 cm	**100**	**233**	**333**	
	30.0%	*70.0%*	*100.0%*	
> 145 cm	**1,102**	**5,296**	**6,398**	χ^2=35.386 df=1 p<0.001
	17.2%	*82.8%*	*100.0%*	
Total	**1,202**	**5,529**	**6,731**	
	17.9%	***82.1%***	***100.0%***	
Maternal Body Mass Index category (considered singleton pregnancies only)				
Underweight	223	724	947	χ^2=49.310 df=3 p<0.001
	23.5%	*76.5%*	*100.0%*	
Normal weight	444	2,380	2,824	
	15.7%	*84.3%*	*100.0%*	
Overweight	205	1,291	1,496	
	13.7%	*86.3%*	*100.0%*	
Obese	67	455	522	
	12.8%	*87.2%*	*100.0%*	
Total	**939**	**4,850**	**5,789**	
	16.2%	***82.5%***	***100.0%***	
Adequacy of weight gain during pregnancy				
Less than recommended	490	1,710	2,200	
	22.3%	77.7%	100.0%	χ^2=111.591 df=2 p<0.0001
Recommended	304	1,768	2072	
	14.7%	85.3%	100.0%	
More than recommended	144	1,539	1,503	

Table 3.25 Associations for birth weight of newborns with maternal and newborn characteristics

Characteristic	Birth weight category			Significance
	Low birth weight	Normal birth weight	Total	
	12.4%	87.6%	100.0%	
Total	**938**	**4,837**	**5,775**	
	16.2%	**83.8%**	**100.0%**	
Maternal blood sugar status throughout pregnancy (considered singleton pregnancies only)				
Normal	898	3,985	4,883	
	18.4%	*81.6%*	*100.0%*	χ^2=5.956 df=2 p=0.051
Chronic DM	33	215	248	
	13.3%	*86.7%*	*100.0%*	
GDM	57	314	371	
	15.4%	*84.6%*	*100%*	
Total	**988**	**4,514**	**5,502**	
	18.0%	***82.0%***	***100.0%***	
Maternal anaemia during first trimester				
Anaemic	138	765	903	
	15.3%	*84.7%*	*100.0%*	
Non anaemic	747	3,832	4,579	
	16.3%	*83.7%*	*100.0%*	χ^2=0.591 df=1 p=0.441
Total	***885***	**4,597**	**5,482**	
	16.1%	***83.7%***	***100.0%***	
Maternal anaemia between 24-32 weeks of POA				
Anaemic	197	1,091	1,288	
	15.3%	*84.7%*	*100.0%*	χ^2=0.647 df=1 p=0.421
Non anaemic	697	3,597	3,919	
	16.2%	*83.8%*	*100.0%*	
Total	**894**	**4,688**	**5,582**	
	16.0%	***84.0%***	***100.0%***	
Sex of the newborn as determined at birth				
Male	427	2,530	2,957	χ^2=13.960 df=1 p < 0.001
	14.4%	*84.1%*	*100.0%*	
Female	512	2,323	2,835	
	18.1%	*81.9%*	*100.0%*	
Total	**939**	**1,730**	**5,792**	
	16.2%	***82.2%***	***100.0%***	

As shown in Table 3.25, both teenage pregnancies (age ≤19 years) and increased maternal age (age ≥36 years) are associated with low birth weight (χ^2=25.167, df=2, p<0.001). First pregnancy (χ^2=17.814, df=2, p<0.001) and maternal height ≤145 cm (χ^2=35.386, df=1, p<0.001) both are associated with low birth weight of the newborn. Maternal underweight is also associated with low birth weight of newborn (χ^2=49.310, df=3, p<0.001). Less than recommended maternal weight gain and more than recommended maternal weight gain were associated with low birth weight (χ^2=111.539, df=2, p<0.001). Female sex of the newborn is also associated with low birth weight (χ^2=13.960, df=1, p<0.001).

As shown in Table 3.25, there were no significant associations found for low birth weight of newborns with maternal blood sugar status throughout pregnancy (χ^2=1.449, df=2, p=0.485) maternal anaemia during first trimester (χ^2=0.592, df=1, p=0.441) and maternal anaemia during between 24-32 weeks of POA (χ^2=0.647, df=1, p=0.421).

Table 3.26 shows the association of maternal and newborn characteristics with birthweight centiles of live newborns. The LGA babies were excluded in this analysis.

Table 3.26 Associations of birth weight centiles (size for gestational age) of newborns with maternal and newborn characteristics

Characteristic	Birth centile category			Significance
	Small for gestational age (≤10th Centile)	Not small for gestational age (>10th centile)*	Total	
Maternal age				
≤ 19 years	68	154	222	
	30.6%	69.4%	100.0%	
21 to 35 years	844	3,932	4,776	χ^2=27.231 df=2 p<0.001
	17.7%	82.3%	100.0%	
≥ 36 years	77	432	509	
	15.1%	84.9%	100.0%	
Total	**989**	**4,518**	**5,507**	
	18.0%	**82.0%**	**100.0%**	
Gravidity				
1st pregnancy	462	1,636	2,098	
	22.0%	78.0%	100.0%	
2nd or 3rd pregnancy	449	2,418	2,867	χ^2=28.453 df=2 p<0.001
	15.7%	84.3%	100.0%	
4th or higher	78	464	542	
	14.4%	85.6%	100.0%	
Total	**989**	**4,518**	**5,507**	
	18.0%	**82.0%**	**100.0%**	
Maternal height				
≤ 145 cm	79	205	284	
	27.8%	72.2%	100.0%	χ^2=19.75 df=1 p<0.001
> 145 cm	910	4,313	5,223	
	17.4%	82.6%	100.0%	

Table 3.26 Associations of birth weight centiles (size for gestational age) of newborns with maternal and newborn characteristics

Characteristic	Birth centile category			Significance
	Small for gestational age (≤10th Centile)	Not small for gestational age (>10th centile)*	Total	
Total	**989**	**4,518**	**5,507**	
	18.0%	**82.0%**	**100.0%**	
Maternal Body Mass Index				
Underweight	266	666	932	
	28.5%	*71.5%*	*100.0%*	
Normal weight	482	2,230	2,712	χ^2=103.755 df=3 p<0.001
	17.8%	*82.2%*	*100.0%*	
Overweight	187	1204	1,391	
	13.4%	*86.6%*	*100.0%*	
Obese	54	418	472	
	11.4%	*88.6%*	*100.0%*	
Total	**989**	**4,518**	**5,507**	
	18.0%	**82.0%**	**100%**	
Adequacy of weight gain during pregnancy				
Less than recommended	532	1,614	2,146	
	24.8%	75.2%	100.0%	
Recommended	325	1,656	1,981	χ^2=135.984 df=2 p<0.0001
	16.4%	83.6%	100.0%	
More than recommended	131	1,235	1,366	
	9.6%	90.4%	100.0%	
Total	**988**	**4,505**	**5,493**	
	18.0%	**82.0%**	**100.0%**	
Maternal blood sugar status throughout pregnancy (considered singleton pregnancies only)				
Normal	898	3,985	4,883	
	18.4%	*81.6%*	*100.0%*	χ^2=5.956 df=2 p=0.051
Chronic DM	33	215	248	
	13.3%	*86.7%*	*100.0%*	
GDM	57	314	371	
	15.4%	*84.6%*	*100%*	
Total	**988**	**4,514**	**5,502**	
	18.0%	***82.0%***	***100.0%***	
Maternal anaemia during first trimester				
Anaemic	160	703	863	
	18.5%	*81.5%*	*100.0%*	
Non anaemic	769	3,585	4,354	χ^2=0.379 df=1 p=0.538
	17.7%	*82.3%*	*100.0%*	
Total	**929**	**4,288**	**5,217**	
	17.8%	***82.2%***	***100.0%***	

Table 3.26 Associations of birth weight centiles (size for gestational age) of newborns with maternal and newborn characteristics

Characteristic	Birth centile category			Significance
	Small for gestational age (≤10th Centile)	Not small for gestational age (>10th centile)*	Total	
Maternal anaemia between 24-32 weeks of POA				
Anaemic	221	1,176	1,397	
	15.8%	*84.2%*	*100.0%*	
Non anaemic	724	3,195	3,919	χ^2=4.965 df=1 p=0.026
	18.5%	*81.5%*	*100.0%*	
Total	**945**	**4,371**	**5,316**	
	17.8%	***82.2%***	***100.0%***	
Sex of the newborn as determined at birth				
Male	489	2,331	2,820	
	17.3%	*82.7%*	*100.0%*	χ^2=1.501 df=1 p=0.221
Female	500	2,187	2,687	
	19.7%	*81.4%*	*100.0%*	
Total	**989**	**4,518**	**5,507**	
	18.0%	***82.0%***	***100.0%***	

*Large for gestational age babies are excluded from the analysis

As shown in Table 3.26, both teenage pregnancies (age ≤19 years) was associated with SGA (χ^2=27.231, df=2, p<0.001). First pregnancy was associated with SGA (χ^2=28.453, df=2, p<0.001). Maternal height ≤145 cm (χ^2=19.75, df=1, p<0.001) was associated with SGA. Maternal underweight, overweight & obesity were also associated with SGA (χ^2=103.755, df=3, p<0.001). Less than recommended maternal weight gain and more than recommended maternal weight gain were associated with SGA (χ^2=135.984, df=2, p<0.0001).

As shown in Table 3.26, there were no significant association found for SGA with Maternal blood sugar status throughout pregnancy (χ^2=5.956, df=1, p=0.051), maternal anaemia during first first trimester (χ^2=0.379, df=1, p=0.538), maternal anemia between 24-34 weeks of POA (χ^2=4.965, df=1, p=0.026), or sex of the newborn (χ^2=1.501, df=1, p=0.026).

3.1 Central Province

3.1 .1 Results & Discussion

There were 756 births reported from selected PHM areas in the Central Province. These belonged to 753 pregnancies.

3.1.2 Age of pregnant women at the time of registration of their pregnancy

The mean age of pregnant women at the time of registration of their index pregnancy was 28.5 years (SD=5.6 years). As shown in Table 3.1.1, thirty-two (4.2%) of the women were teenagers (age 19 years or less), and eighty-nine (11.8%) were elderly women (age 36 years or more) at the time of registration of their pregnancy.

Table 3.1.1 Distribution of the sample of women according to age (completed years) at the time of registration of their pregnancy in Central Province

Age category	Frequency	Percent
15-19	32	*4.2*
20-25	211	*28.0*
26-30	234	*31.1*
31-35	187	*24.8*
36-40	76	*10.1*
41-45	12	*1.6*
≥46	1	*0.1*
Total	**753**	***100***

3.1.3 Sample of women according to their residence

Figure 3.1.1 shows the distribution of the survey sample according to the Regional Directorate of Health Services area in the Central Province.

The majority (69.5%, n=523) were from the rural sector (Figure 3.1.1).

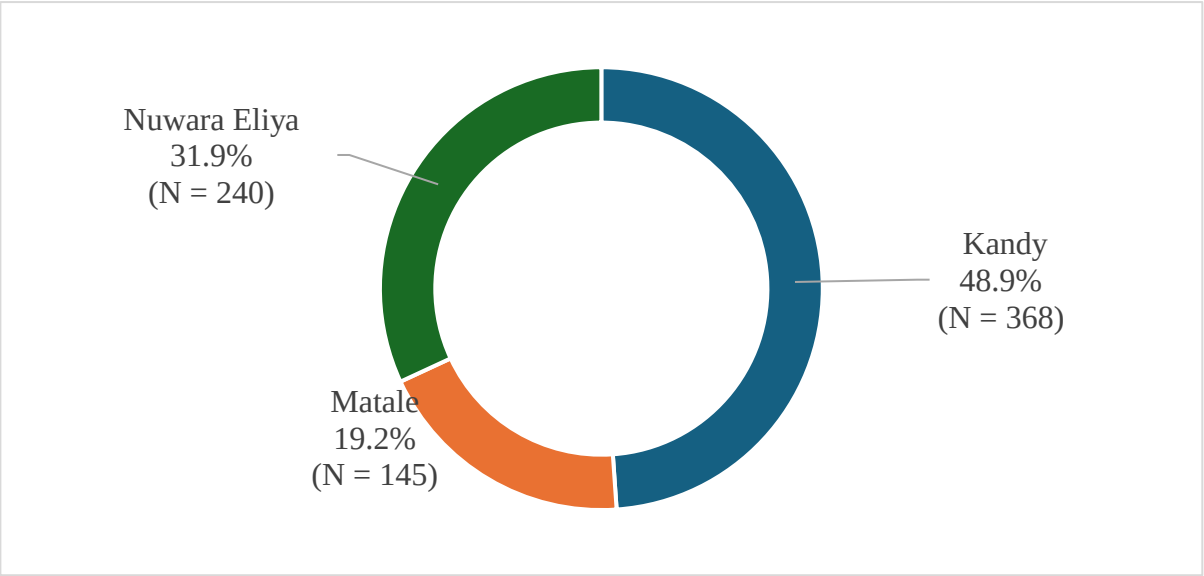


Figure 3.1.1 Distribution of the survey sample of women by the Regional Directorate of Health Services areas in the Central Province

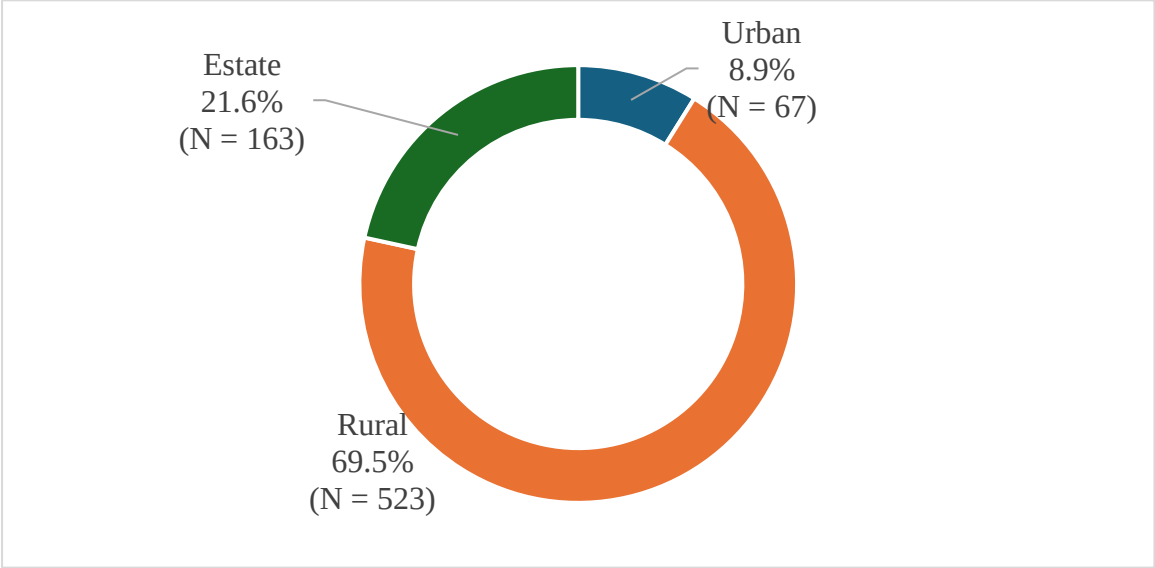


Figure 3.1.2 Distribution of the survey sample of women according to the sector of their residence in the Central Province

3.1.4 Gravidity, parity and number of children at the time of registration of the index pregnancy

Table 3.1.4 shows the Distribution of the survey sample according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Central Province.

Table 3.1.2 Distribution of the sample of women according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Central Province

Characteristic	Frequency	Percent
Gravidity		
1	296	*39.3*
2	230	*30.5*
3	148	*19.7*
4	58	*7.7*
≥5	21	*2.8*
Parity		
0	318	*42.2*
1	253	*33.6*
2	131	*17.4*
3	40	*5.3*
≥4	11	*1.5*
Number of children		
0	337	*44.8*
1	247	*32.8*
2	122	*16.2*
3	39	*5.2*
≥4	8	*1.1*
Total	**753**	***100.0***

Two hundred & ninety-six (39.3%) of women were postpartum after their first pregnancy. Seventy-nine (10.5%) of pregnant women were postpartum after their fourth or higher pregnancy. Three hundred and thirty-seven (44.8%) of women did not have any live children at the time they registered for the index pregnancy.

3.1.5 Period of Amenorrhoea (POA) at booking visit for the index pregnancy

Figure 3.1.3 shows the POA of pregnant women at the booking visit (first clinic visit after becoming pregnant) for the index pregnancy.

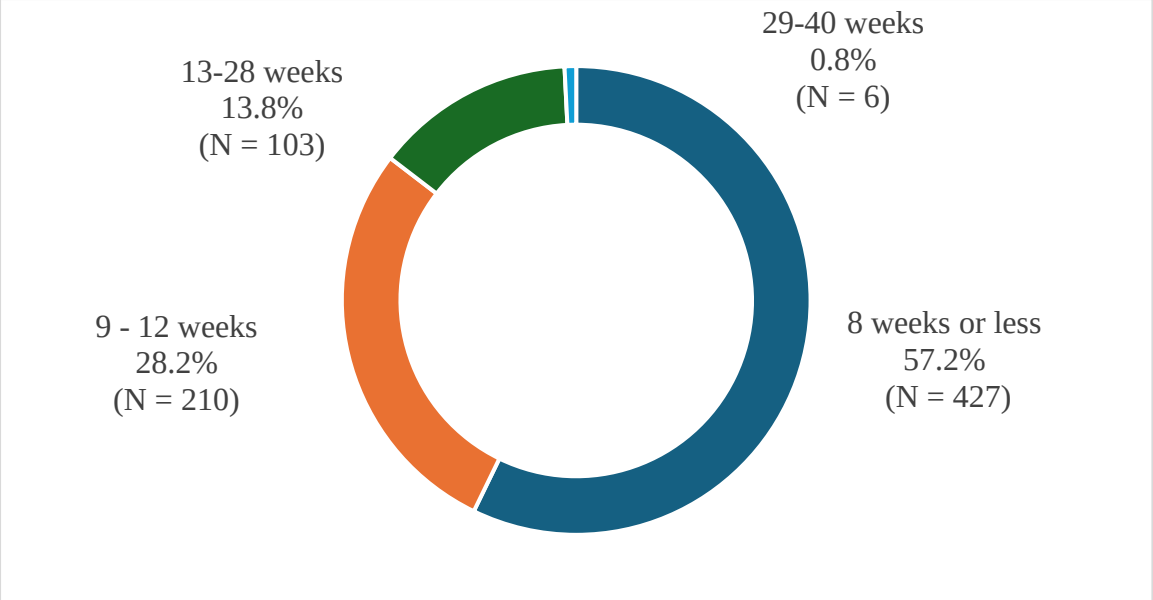


Figure 3.1.3 - Distribution of women in the sample according to their period of amenorrhea (POA) at booking visit for the index pregnancy in Central Province

Four hundred and twenty-seven (57.2%) of women had made their booking visit for the index pregnancy within the first 8 weeks of POA, whereas 85.4 % (n=637) of women had made their booking visit within the first trimester. Only 0.8% (n= 6) of women had made their booking visit during the third trimester.

3.1.6 Types of Pregnancies

Table 3.1.3 shows the types of pregnancies of women in the sample who delivered during June 2024 (Nutrition Month 2024).

Table 3.1.3 Distribution of women according to their type of index pregnancy in Central Province

Type of the index pregnancy	Frequency	Percent
Singleton	749	*98.8*
Twin	4	*1.2*
Total	**753**	***100.0***

As shown in Table 3.1.3, there were 4 twin pregnancies.

3.1.7 Height of women in the sample

The mean height of women was 153.9 cm (SD=5.5 cm). Table 3.1.4 shows the distribution of women in the sample.

Table 3.1.4. Distribution of women in the sample according to height categories in Central Province

Height (cm)	Frequency	Percent
145 or less	45	*6.0*
More than 145 to 150	156	*20.8*
More than 150 to 155	260	*34.6*
More than 155 to 160	205	*27.3*
More than 160	85	*11.3*
Total	**751**	***100***

The height of 6.0% (n=45) of women in the sample was 145 cm or less, and 26.8% (n=201) of them were 150 cm or less.

3.1.8 Body Mass Index of Women in the sample

The women who made their antenatal clinic booking visit for the index pregnancy within the first trimester of pregnancy were included in the analysis of Body Mass Index (BMI). The BMI during the first trimester was assumed to be the same as their pre-pregnancy BMI. The mean BMI was 23.1 kg/m^2 (SD=4.7 kg/m^2).

Table 3.1.5 - Distribution of women in the sample who made their antenatal clinic booking visit within the first trimester of pregnancy by their body mass index (BMI)

Body Mass Index category	Frequency	Percent
Underweight (less than 18.5 kg/m^2),	107	*16.9*
Normal weight (18.5 kg/m^2 to 25.0 kg/m$^{2)}$	307	*48.5*
Overweight (25.0 kg/m^2 to less than 30 kg/m$^{2)}$	153	*24.2*
Obesity (30 kg/m^2 or more)	66	*10.4*
Total	**633**	***100***

As shown in Table 3.1.5, one hundred and seven (16.9%) of the women in the sample were underweight, 24.2% (n=153) were overweight, and 10.4% (n=66) were obese.

3.1.9 Blood sugar levels during pregnancy

Table 3.1.6 demonstrates the distribution of women according to their blood sugar category during the preceding pregnancy.

Table 3.1.6 - Distribution of women in the sample according to blood sugar category during the preceding pregnancy in Central Province

Blood sugar category	Frequency	Percent
Normal	681	*90.4*
Chronic DM	25	*3.3*
GDM	47	*6.2*
Total	**753**	***100***

The percentage of women diagnosed with chronic diabetes mellitus during the preceding pregnancy was 3.3% (n=25), whereas the percentage diagnosed with gestational diabetes mellitus was 6.2% (n=47).

3.1.10 Blood pressure category during pregnancy

Table 3.1.7 demonstrates the distribution of women according to their blood pressure category during the preceding pregnancy.

Table 3.1.7 - Distribution of women in the sample according to their blood pressure category during the preceding pregnancy in the Central Province

Blood pressure category	Frequency	Percent
Normal blood pressure	716	*95.1*
Chronic hypertension	9	*1.2*
Pregnancy-Induced Hypertension (PIH)	28	*3.7*
Total	**588**	***100***

The percentage of women diagnosed with chronic hypertension during the preceding pregnancy was 1.2% (n=9), whereas the percentage diagnosed with pregnancy-induced hypertension was 3.7% (n=28).

3.1.11 Haemoglobin level during the pregnancy

The haemoglobin values were obtained from the hand-held pregnancy records of postpartum women, which record measurements from the blood investigation reports at field maternal clinics.

Severe anaemia is defined as less than 7.0 g/dl of haemoglobin in any trimester. Moderate anaemia is defined as haemoglobin levels between 7.0 g/dl to less than 10.0 g/dl at any trimester. Mild anaemia is defined as haemoglobin levels between 10 g/dl to 10.9 g/dl in the first trimester and haemoglobin levels between 10.0 g/dl to 10.4 g/dl in the second or third trimesters (Family Health Bureau, Ministry of Health, Sri Lanka, 2023b).

Table 3.1.8 demonstrates the distribution of women according to their status of anaemia during the first trimester (on or before POA 12 weeks) and between 24-32 POA of the preceding pregnancy. Ninety-two (15.3%) of the women in the sample were found to have anaemia during the first trimester of their preceding pregnancy, and 18.1% (n = 110) of women were anaemic between 24-32 weeks of POA.

Table 3.1.8 Distribution of women according to their status of anaemia at different stages of the preceding pregnancy in Central Province

	In the first trimester		Between 24-32 W of POA	
Characteristic	**Frequency**	***Percent***	**Frequency**	***Percent***
Non anaemic	507	*84.6*	498	*81.9*
Mild anaemia	59	*9.9*	56	*9.2*
Moderate anaemia	33	*5.5*	54	*8.9*
Severe anaemia	0	*0.0*	0	*0.0*
Total	**599**	***100.0***	**608**	***100.0***

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3.1.12 Adequacy of weight gain during the preceding pregnancy

Adequacy of weight gain during pregnancy was calculated only for women who had registered their pregnancy during the first trimester. The women who had multiple gestations were excluded from this analysis. The gestational weight gain was calculated based on the weight gain from the first clinic visit to the last visit. Adequacy of weight gain was assessed using the z-score weight centile charts (Hutcheon et al., 2013), which are adapted to Sri Lanka (shown in Figure 1.1 in page No:2) considering the POA at the time of the last weight measurement, and the BMI category during the 1st visit (assumed to be pre-pregnancy BMI),

Table 3.1.9 shows the distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy.

Table 3.1.9 Distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy in the Central Province

Adequacy of weight gain during the index pregnancy	Frequency	Percent
Less than recommended	230	36.4
Recommended	245	38.8
More than recommended	157	24.8
Total	**632**	**100.0**

As shown in Table 3.1.9, the gestational weight gain of 36.4 % (n =230) of postpartum women was less than the recommended. The weight gain during pregnancy was more than recommended in 24.8% (n=157) of postpartum women.

3.1.13 Outcome of pregnancies and POA at delivery

There were 748 (98.9%) live births and 8 (0.5%) stillbirths (at or after 28 weeks of POA *) reported in the Central Province during the Nutrition Month in 2024. Table 3.1.10 shows the POA at delivery for the live births reported, which indicates that 11.1% (n = 83) of newborns were born preterm (before 37 weeks of POA).

Table 3.1.10 Period of amenorrhea (POA) at delivery for the live births in the sample in Central Province.

Characteristic	Frequency	*Percent*
Very preterm (28 to 32 weeks of POA *)	16	*2.1*
Moderate preterm (33 to 34 weeks of POA *)	12	*1.6*
Late preterm (35 to 36 weeks of POA *)	55	*7.4*
Term (37 to 42 weeks of POA *)	665	*88.9*
Total	**748**	***100.0***

*POA= Period of Amenorrhoea

Figure 3.1.4 shows the sex of the live births as determined at births resulting from index pregnancies in the sample in Central Province. Three hundred and ninety-four (52.7 %) babies born alive to women in the sample in the Central Province during Nutrition Month were male.

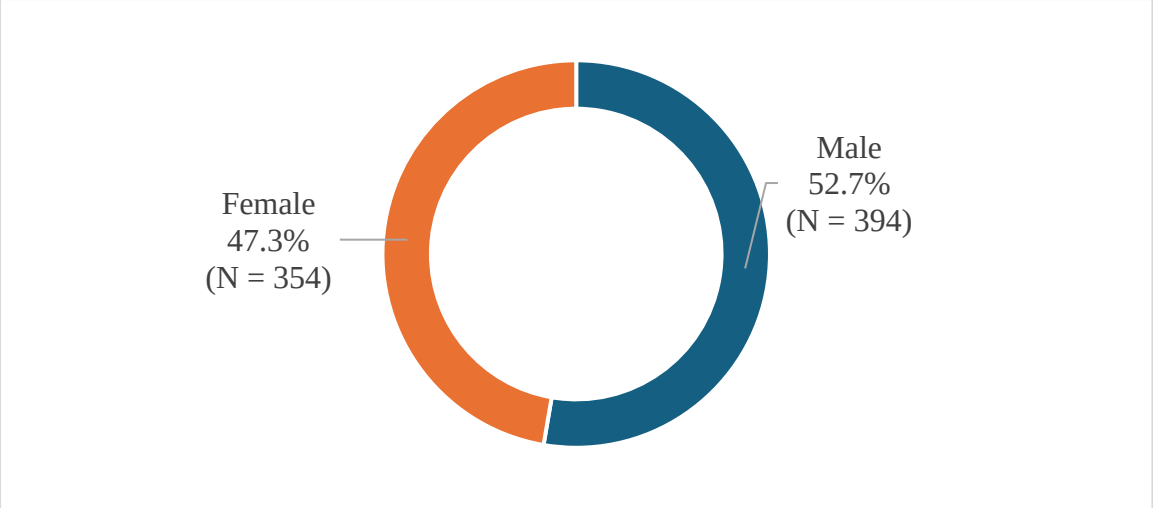

Figure 3.1.4 Distribution of live births resulting from index pregnancies in the sample according to the sex as determined at birth

3.1.14 Birthweight of the newborns of women in the sample

The mean birthweight of the live births resulting from index pregnancies in the sample was 2,797.8 g (SD = 453.7 g). Table 3.1.11 shows the distribution of live newborns to women in the sample according to their birthweight category.

Table 3.1.11 Distribution of live births to women in the sample in Central Province according to birth weight categories

Birth weight category	Frequency	Percent
Extreme Low Birthweight (<1,000 g)	1	*0.1*
Very Low Birthweight (1,000 g to <1,500 g)	7	*0.9*
Low Birthweight (1,500 g to <2,500 g)	155	*20.7*
Normal Birthweight (2,500 g to <4,000 g)	583	*77.9*
High Birthweight (≥4,000 g)	2	*0.3*
Total	**748**	***100.0***

One hundred and sixty-three (21.7 %) newborns born alive had low birth weight (less than 2,500 g). There were three (0.3 %) macrosomic newborns (birth weight 4,000g or more).

Birth weights of live births were also analyzed according to birth weight centiles. Newborns 10^{th} or lower centile were considered Small for Gestational Age (SGA), and newborns 3^{rd} or lower centile were considered severe SGA. Newborns 90^{th} or higher centiles were considered Large for Gestational age (LGA). Table 3.1.12 shows the results.

Table 3.1.12 Distribution of live births to women in the sample in Central Province according to birthweight centile category

Birthweight centile	Frequency	Percent
≤3rd Centile	42	*6.7*
3rd to 10th Centile	95	*15.2*
>10th to 90th Centile	472	*75.4*
≥90th Centile	17	*2.7*
Total	**626**	***100.0***

There were 6.7 % (n = 42) live newborns who had severe SGA (≤3rd Centile), whereas 15.2 % (n = 95) were between the 3rd and 10th centiles. Thus, 21.9 % (n = 137) of the newborns were SGA. There were 2.7% (n = 17) of live newborns who were LGA.

The birth weight centiles of the live newborns after 28 weeks of POA were analyzed using the standards of the International Fetal and Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st), using their Windows desktop application version 1.0.6257.25111 (INTERGROWTH-21st, 2009)

3.2 Eastern Province

3.2 .1 Results & Discussion

There were 1,040 births reported from selected PHM areas in the Eastern Province. These belonged to 1,028 pregnancies.

3.2.2 Age of pregnant women at the time of registration of their pregnancy

The mean age of pregnant women at the time of registration of their index pregnancy was 27.7 years (SD=5.6 years). As shown in Table 3.2.1, seventy-four (7.2%) of the women were teenagers (age 19 years or less), and one hundred and three (10.0%) were elderly women (age 36 years or more) at the time of registration of their pregnancy.

Table 3.2.1 Distribution of the sample of women according to age (completed years) at the time of registration of their pregnancy in Eastern Province

Age category	Frequency	Percent
14 or less	1	*0.1*
15-19	73	*7.1*
20-25	295	*28.7*
26-30	345	*33.6*
31-35	211	*20.5*
36-40	93	*9.0*
41-45	10	*1.0*
46 or more	0	*0.0*
Total	**753**	***100***

3.2.3 Sample of women according to their residence

Figure 3.2.1 shows the distribution of the survey sample according to the Regional Directorate of Health Services area in the Eastern Province.

The majority (74.0%, n=761) were from the rural sector (Figure 3.2.2).

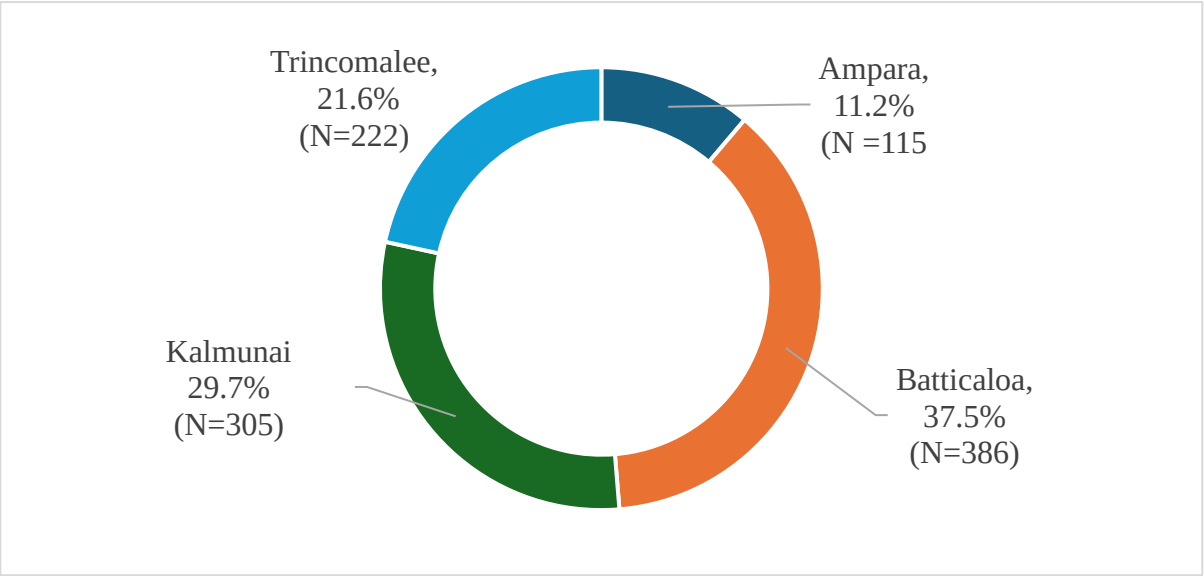

Figure 3.2.1 Distribution of the survey sample of women by the Regional Directorate of Health Services areas in the Eastern Province

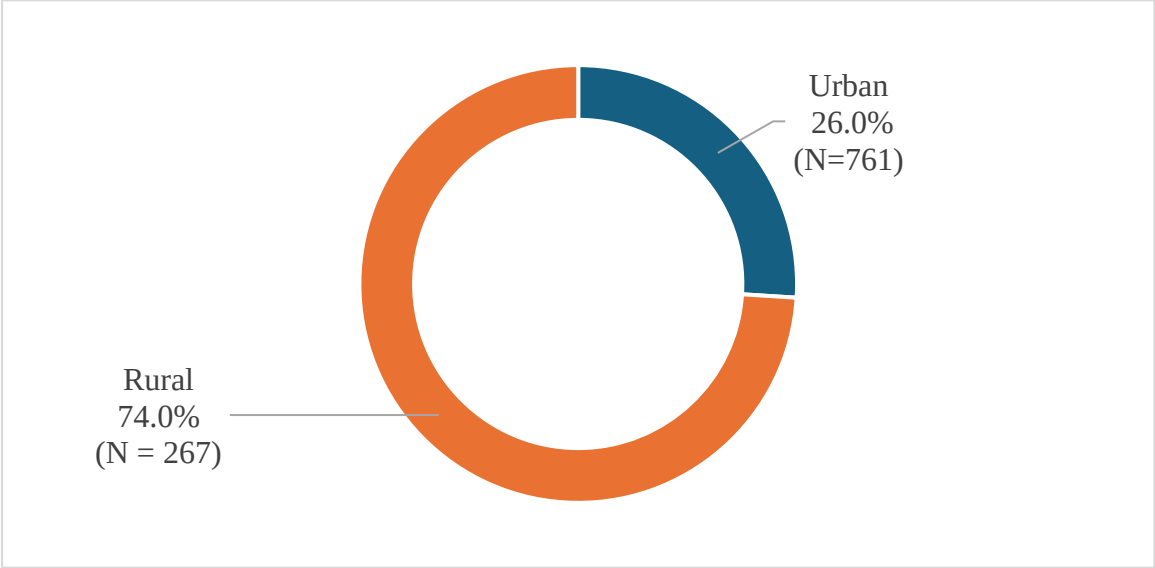

Figure 3.2.2 Distribution of the survey sample of women according to the sector of their residence in the Eastern Province

3.2.4 Gravidity, parity and number of children at the time of registration of the index pregnancy

Table 3.2.2 shows the Distribution of the survey sample according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Eastern Province.

Table 3.2.2 Distribution of the sample of women according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Eastern Province

Characteristic	Frequency	Percent
Gravidity		
1	380	*36.9*
2	325	*31.6*
3	200	*19.5*
4	82	*8.0*
≥5	41	*4.0*
Parity		
0	427	*41.6*
1	328	*31.9*
2	192	*18.7*
3	60	*5.8*
≥4	21	*2.0*
Number of children		
0	434	*42.2*
1	324	*31.5*
2	187	*18.2*
3	63	*6.2*
≥4	20	*1.9*
Total	**1,028**	***100.0***

Three hundred & eighty (36.9%) of women were postpartum after their first pregnancy. One hundred and twenty-three (12.0%) of pregnant women were postpartum after their fourth or higher pregnancy. Four hundred and thirty-four (42.2%) of women did not have any live children at the time they registered for the index pregnancy.

3.2.5 Period of Amenorrhoea (POA) at booking visit for the index pregnancy

Figure 3.2.3 shows the POA of pregnant women at the booking visit (first clinic visit after becoming pregnant) for the index pregnancy.

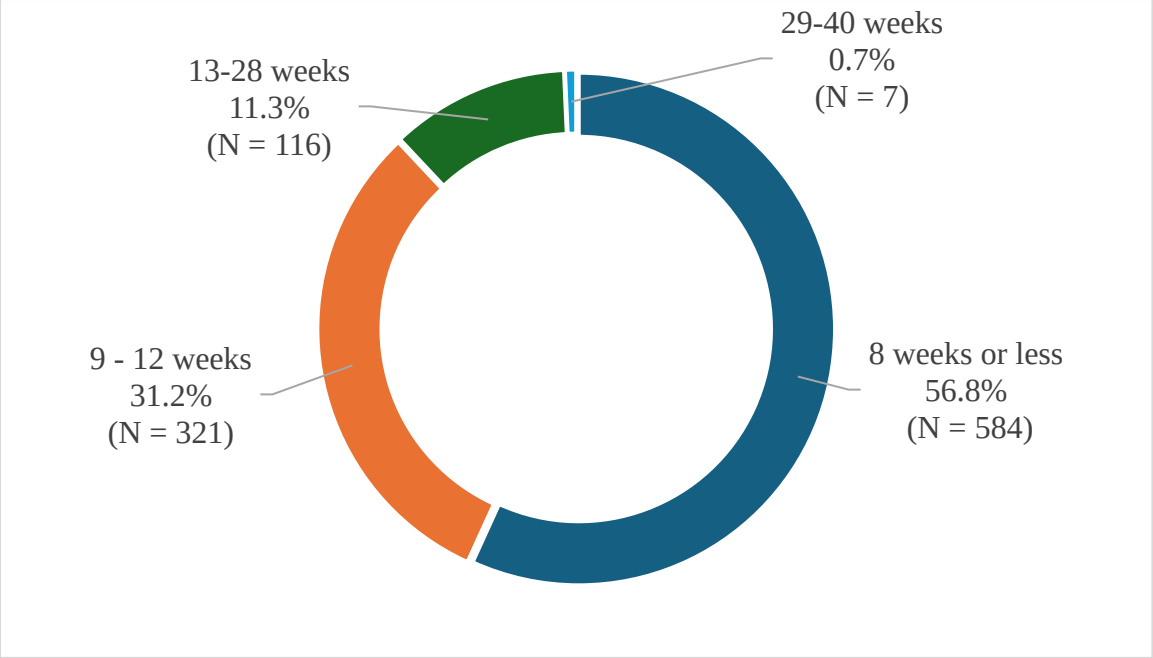

Figure 3.2.3 - Distribution of women in the sample according to their period of amenorrhea (POA) at booking visit for the index pregnancy in Eastern Province

Five hundred and eighty-four (56.8%) of women had made their booking visit for the index pregnancy within the first 8 weeks of POA, whereas 88.0 % (n=905) of women had made their booking visit within the first trimester. Only 0.7% (n= 7) of women had made their booking visit during the third trimester.

3.2.6 Types of Pregnancies

Table 3.2.3 shows the types of pregnancies of women in the sample who delivered during June 2024 (Nutrition Month 2024).

Table 3.2.3 Distribution of women according to their type of index pregnancy in Eastern Province

Type of the index pregnancy	Frequency	Percent
Singleton	1,014	*98.6*
Twin	13	*1.3*
Triplet	1	*0.1*
Total	**1,028**	***100.0***

As shown in Table 3.2.3, there were 13 twin pregnancies and one triplet pregnancy.

3.2.7 Height of women in the sample

The mean height of women was 154.8 cm (SD=5.8 cm). Table 3.2.4 shows the distribution of women in the sample.

Table 3.2.4. Distribution of women in the sample according to height categories in Eastern Province

Height (cm)	Frequency	Percent
145 or less	57	5.5
More than 145 to 150	185	18.0
More than 150 to 155	343	33.4
More than 155 to 160	271	26.4
More than 160	172	16.7
Total	**1,028**	**100**

The height of 5.5% (n=57) of women in the sample was 145 cm or less, and 23.5% (n=242) of them were 150 cm or less.

3.2.8 Body Mass Index of Women in the sample

The women who made their antenatal clinic booking visit for the index pregnancy within the first trimester of pregnancy were included in the analysis of Body Mass Index (BMI). The BMI during the first trimester was assumed to be the same as their pre-pregnancy BMI. The mean BMI was 23.7 kg/m^2 (SD=5.1 kg/m^2).

Table 3.2.5 - Distribution of women in the sample who made their antenatal clinic booking visit within the first trimester of pregnancy by their body mass index (BMI)

Body Mass Index category	Frequency	Percent
Underweight (less than 18.5 kg/m^2),	141	15.8
Normal weight (18.5 kg/m^2 to 25.0 kg/m$^{2)}$	387	43.2
Overweight (25.0 kg/m^2 to less than 30 kg/m$^{2)}$	251	28.0
Obesity (30 kg/m^2 or more)	116	13.0
Total	**895**	**100**

As shown in Table 3.2.5, one hundred and forty-one (15.8%) of the women in the sample were underweight, 28.0% (n=251) were overweight, and 13.0% (n=116) were obese.

3.2.9 Blood sugar levels during pregnancy

Table 3.2.6 demonstrates the distribution of women according to their blood sugar category during the preceding pregnancy.

Table 3.2.6 - Distribution of women in the sample according to blood sugar category during the preceding pregnancy in Eastern Province

Blood sugar category	Frequency	Percent
Normal	911	*88.6*
Chronic DM	53	*5.2*
GDM	64	*6.2*
Total	**1,028**	***100***

The percentage of women diagnosed with chronic diabetes mellitus during the preceding pregnancy was 5.2% (n=53), whereas the percentage diagnosed with gestational diabetes mellitus was 6.2% (n=64).

3.2.10 Blood pressure category during pregnancy

Table 3.2.7 demonstrates the distribution of women according to their blood pressure category during the preceding pregnancy.

Table 3.2.7 - Distribution of women in the sample according to their blood pressure category during the preceding pregnancy in the Eastern Province

Blood pressure category	Frequency	Percent
Normal blood pressure	983	*95.7*
Chronic hypertension	15	*1.5*
Pregnancy-Induced Hypertension (PIH)	29	*2.8*
Total	**1,027**	***100***

The percentage of women diagnosed with chronic hypertension during the preceding pregnancy was 1.5% (n=15), whereas the percentage diagnosed with pregnancy-induced hypertension was 2.8% (n=29).

3.2.11 Haemoglobin level during the pregnancy

The haemoglobin values were obtained from the hand-held pregnancy records of postpartum women, which record measurements from the blood investigation reports at field maternal clinics.

Severe anaemia is defined as less than 7.0 g/dl of haemoglobin in any trimester. Moderate anaemia is defined as haemoglobin levels between 7.0 g/dl to less than 10.0 g/dl at any trimester. Mild anaemia is defined as haemoglobin levels between 10 g/dl to 10.9 g/dl in the first trimester and haemoglobin levels between 10.0 g/dl to 10.4 g/dl in the second or third trimesters (Family Health Bureau, Ministry of Health Sri Lanka, 2023b).

Table 3.2.8 demonstrates the distribution of women according to their status of anaemia during the first trimester (on or before POA 12 weeks) and between 24-32 POA of the preceding pregnancy. One hundred and twenty-six (14.6%) of the women in the sample were found to have anaemia during the first trimester of their preceding pregnancy, and 23.8% (n = 209) of women were anaemic between 24-32 weeks of POA.

Table 3.2.8 Distribution of women according to their status of anaemia at different stages of the preceding pregnancy in Eastern Province

	In the first trimester		Between 24-32 W of POA	
Characteristic	**Frequency**	***Percent***	**Frequency**	***Percent***
Non anaemic	734	*85.4*	670	*76.2*
Mild anaemia	87	*10.1*	89	*10.1*
Moderate anaemia	39	*4.5*	120	*13.7*
Severe anaemia	0	*0.0*	0	*0.0*
Total	**860**	***100.0***	**879**	***100.0***

3.2.12 Adequacy of weight gain during the preceding pregnancy

Adequacy of weight gain during pregnancy was calculated only for women who had registered their pregnancy during the first trimester. The women who had multiple gestations were excluded from this analysis. The gestational weight gain was calculated based on the weight gain from the first clinic visit to the last visit. Adequacy of weight gain was assessed using the z-score weight centile charts (Hutcheon et al., 2013), which are adapted to Sri Lanka (shown in Figure 1.1 in page No:2) considering the POA at the time of the last weight measurement, and the BMI category during the 1st visit (assumed to be pre-pregnancy BMI),

Table 3.2.9 shows the distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy.

Table 3.2.9 Distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy in the Eastern Province

Adequacy of weight gain during the index pregnancy	Frequency	Percent
Less than recommended	349	*39.0*
Recommended	320	*35.8*
More than recommended	225	*25.2*
Total	**894**	***100.0***

As shown in Table 3.2.9, the gestational weight gain of 39.0 % (n =349) of postpartum women was less than the recommended. The weight gain during pregnancy was more than recommended in 25.2% (n=225) of postpartum women.

3.2.13 Outcome of pregnancies and POA at delivery

There were 1034 (99.4%) live births and 6 (0.6%) stillbirths (at or after 28 weeks of POA *) reported in the Eastern Province during the Nutrition Month in 2024. Table 3.2.10 shows the POA at delivery for the live births reported, which indicates that 9.8% (n = 101) of newborns were born preterm (before 37 weeks of POA).

Table 3.2.10 Period of amenorrhea (POA) at delivery for the live births in the sample in Eastern Province.

Characteristic	Frequency	*Percent*
27 weeks of POA or less	2	*0.2*
Very preterm (28 to 32 weeks of POA *)	12	*1.2*
Moderate preterm (33 to 34 weeks of POA *)	19	*1.8*
Late preterm (35 to 36 weeks of POA *)	68	*6.6*
Term (37 to 42 weeks of POA *)	933	*90.2*
Total	**1,034**	***100.0***

*POA= Period of Amenorrhoea

Figure 3.2.4 shows the sex of the live births as determined at births resulting from index pregnancies in the sample in Eastern Province. Five hundred and twenty-two (50.5 %) babies born alive to women in the sample in the Eastern Province during Nutrition Month were male.

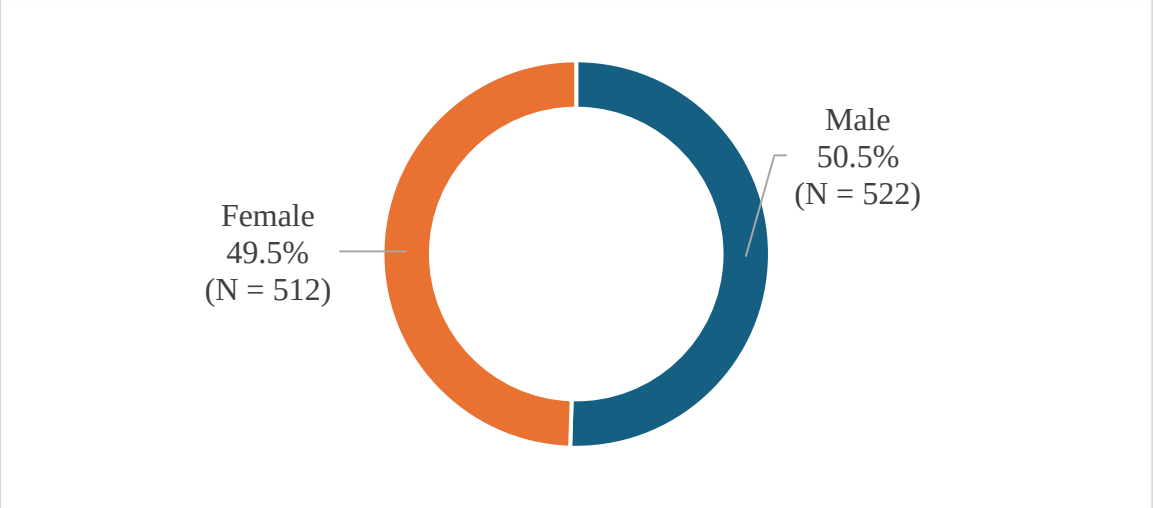

Figure 3.2.4 Distribution of live births resulting from index pregnancies in the sample according to the sex as determined at birth

3.2.14 Birthweight of the newborns of women in the sample

The mean birthweight of the live births resulting from index pregnancies in the sample was 2,883.8 g (SD = 451.9 g). Table 3.2.11 shows the distribution of live newborns to women in the sample according to their birthweight category.

Table 3.2.11 Distribution of live births to women in the sample in Eastern Province according to birth weight categories

Birth weight category	Frequency	Percent
Extreme Low Birthweight (<1,000 g)	3	*0.3*
Very Low Birthweight (1,000 g to <1,500 g)	6	*0.6*
Low Birthweight (1,500 g to <2,500 g)	165	*16.0*
Normal Birthweight (2,500 g to <4,000 g)	852	*82.4*
High Birthweight (≥4,000 g)	8	*0.7*
Total	**1,034**	***100.0***

One hundred and seventy-four (16.9 %) newborns born alive had low birth weight (less than 2,500 g). There were eight (0.7 %) macrosomic newborns (birth weight 4,000g or more).

Birth weights of live births were also analyzed according to birth weight centiles. Newborns 10th or lower centile were considered Small for Gestational Age (SGA), and newborns 3rd or lower centile were considered severe SGA. Newborns 90th or higher centiles were considered Large for Gestational age (LGA). Table 3.2.12 shows the results.

Table 3.2.12 Distribution of live births to women in the sample in Eastern Province according to birthweight centile category

Birthweight centile	Frequency	Percent
≤3rd Centile	48	*5.4*
3rd to 10th Centile	103	*11.7*
>10th to 90th Centile	681	*77.3*
≥90th Centile	49	*5.6*
Total	**881**	***100.0***

There were 5.4 % (n = 48) live newborns who had severe SGA (≤3rd Centile), whereas 11.7 % (n = 103) were between the 3rd and 10th centiles. Thus, 17.1 % (n = 151) of the newborns were SGA. There were 5.6% (n = 49) of live newborns who were LGA.

The birth weight centiles of the live newborns after 28 weeks of POA were analyzed using the standards of the International Fetal and Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st), using their Windows desktop application version 1.0.6257.25111 (INTERGROWTH-21st, 2009)

3.3 North Central Province

3.3 .1Results & Discussion

There were 595 births reported from selected PHM areas in the North Central Province. These belonged to 588 pregnancies.

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3.3.2 Age of pregnant women at the time of registration of their pregnancy

The mean age of pregnant women at the time of registration of their index pregnancy was 28.4 years (SD=5.4 years). As shown in Table 3.3.1, twenty-eight (4.8%) of the women were teenagers (age 19 years or less), and fifty-seven (9.7%) were elderly women (age 36 years or more) at the time of registration of their pregnancy.

Table 3.3.1 Distribution of the sample of women according to age (completed years) at the time of registration of their pregnancy in North Central Province

Age category	Frequency	Percent
15-19	28	*4.8*
20-25	155	*26.4*
26-30	201	*34.2*
31-35	147	*25.0*
36-40	51	*8.7*
41-45	6	*1.0*
Total	**588**	***100***

3.3.3 Sample of women according to their residence

Figure 3.3.1 shows the distribution of the survey sample according to their Regional Directorate of Health Services area in the North Central Province.

The majority (92.5%, n=544) were from the rural sector (Figure 3.3.2).

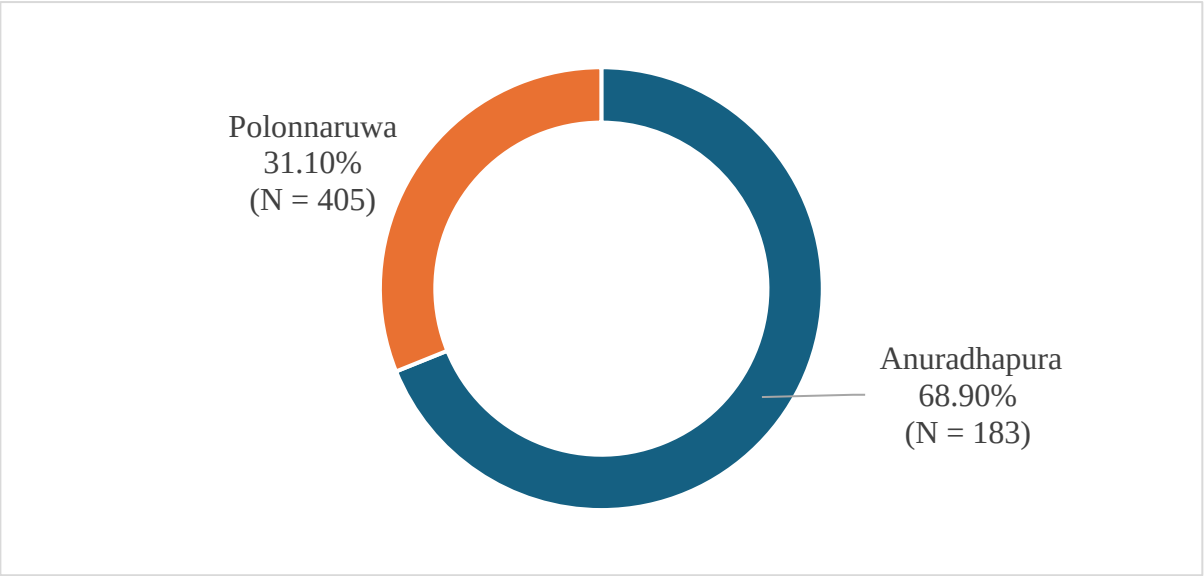

Figure 3.3.1 Distribution of the survey sample of women by the Regional Directorate of Health Services areas in the North Central Province

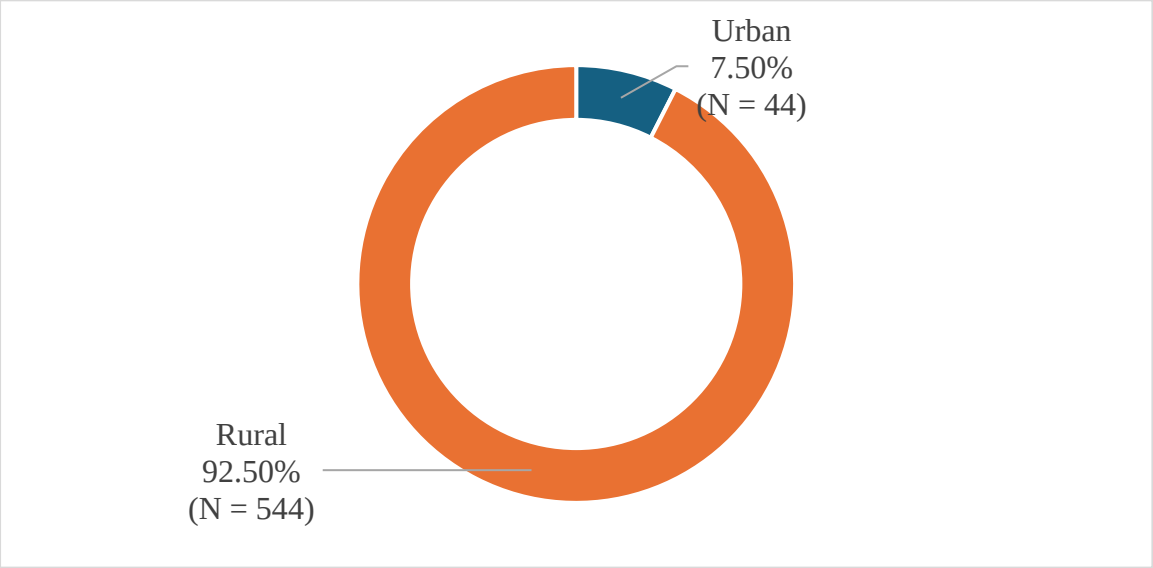

Figure 3.3.2 Distribution of the survey sample of women according to the sector of their residence in the North Central Province

3.3.4 Gravidity, parity and number of children at the time of registration of the index pregnancy

Table 3.3.4 shows the Distribution of the survey sample according to gravidity, parity, and number of children at the time of registration of the index pregnancy in North Central Province.

Table 3.3.2 Distribution of the sample of women according to gravidity, parity, and number of children at the time of registration of the index pregnancy in North Central Province

Characteristic	Frequency	Percent
Gravidity		
1	196	*33.3*
2	196	*33.3*
3	113	*19.2*
4	56	*9.6*
≥5	27	*4.6*
Parity		
0	219	*37.2*
1	210	*35.7*
2	116	*19.7*
3	35	*6.0*
≥4	8	*1.4*
Number of children		
0	229	*38.9*
1	210	*35.7*
2	115	*19.6*
3	28	*4.8*
≥4	6	*1.0*
Total	**588**	***100.0***

One hundred & ninety-six (33.3%) of women were postpartum after their first pregnancy. Eighty-four (14.1%) of pregnant women were postpartum after their fourth or higher pregnancy. Two hundred and twenty-nine (33.3%) of women did not have any live children at the time they registered for the index pregnancy.

3.3.5 Period of Amenorrhoea (POA) at booking visit for the index pregnancy

Table 3.3.3 shows the POA of pregnant women at the booking visit (first clinic visit after becoming pregnant) for the index pregnancy.

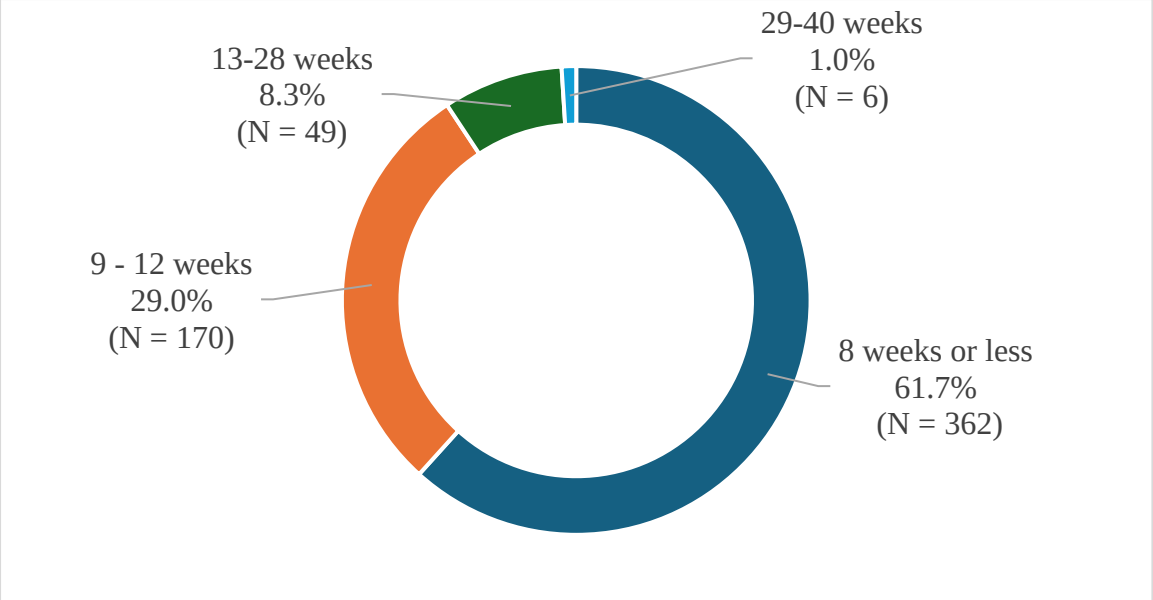

Figure 3.3.3 - Distribution of women in the sample according to their period of amenorrhea (POA) at booking visit for the index pregnancy in North Central Province

Three hundred and sixty-two (61.7%) of women had made their booking visit for the index pregnancy within the first 8 weeks of POA, whereas 90.7 % (n=532) of women had made their booking visit within the first trimester. Only 1.0% (n= 6) of women had made their booking visit during the third trimester.

3.3.6 Types of Pregnancies

Table 3.3.3 shows the types of pregnancies of women in the sample who delivered during June 2024 (Nutrition Month 2024).

Table 3.3.3 Distribution of women according to their type of index pregnancy in North Central Province

Type of the index pregnancy	Frequency	Percent
Singleton	581	*98.8*
Twin	7	*1.2*
Total	**588**	***100.0***

As shown in Table 3.3.3, there were 7 twin pregnancies.

3.3.7 Height of women in the sample

The mean height of women was 155.3 cm (SD=5.8 cm). Table 3.3.4 shows the distribution of women in the sample.

Table 3.3.4. Distribution of women in the sample according to height categories in North Central Province

Height (cm)	Frequency	Percent
145 or less	28	*4.8*
More than 145 to 150	97	*16.5*
More than 150 to 155	175	*29.8*
More than 155 to 160	194	*33.1*
More than 160	93	*15.8*
Total	**587**	***100***

The height of 4.8% (n=28) of women in the sample was 145 cm or less, and 21.3% (n=125) of them were 150 cm or less.

3.3.8 Body Mass Index of Women in the sample

The women who made their antenatal clinic booking visit for the index pregnancy within the first trimester of pregnancy were included in the analysis of Body Mass Index (BMI). The BMI during the first trimester was assumed to be the same as their pre-pregnancy BMI. The mean BMI was 23.6 kg/m^2 (SD=4.7 kg/m^2).

Table 3.3.5 - Distribution of women in the sample who made their antenatal clinic booking visit within the first trimester of pregnancy by their body mass index (BMI)

Body Mass Index category	Frequency	Percent
Underweight (less than 18.5 kg/m^2),	73	*13.9*
Normal weight (18.5 kg/m^2 to 25.0 kg/m$^{2)}$	251	*47.9*
Overweight (25.0 kg/m^2 to less than 30 kg/m$^{2)}$	141	*26.9*
Obesity (30 kg/m^2 or more)	59	*11.3*
Total	**524**	***100***

As shown in Table 3.3.5, seventy-three (13.9%) of women in the sample were underweight, 26.9% (n=141) were overweight, and 11.3% (n=59) were obese.

3.3.9 Blood sugar levels during pregnancy

Table 3.3.6 demonstrates the distribution of women according to their blood sugar category during the preceding pregnancy.

Table 3.3.6 - Distribution of women in the sample according to blood sugar category during the preceding pregnancy in North Central Province

Blood sugar category	Frequency	Percent
Normal	542	*92.3*
Chronic DM	23	*3.9*
GDM	22	*3.7*
Total	**587**	**100**

The percentage of women diagnosed with chronic diabetes mellitus during the preceding pregnancy was 3.9% (n=23), whereas the percentage diagnosed with gestational diabetes mellitus was 3.7 % (n=22).

3.3.10 Blood pressure category during pregnancy

Table 3.3.7 demonstrates the distribution of women according to their blood pressure category during the preceding pregnancy.

Table 3.3.7 - Distribution of women in the sample according to their blood pressure category during the preceding pregnancy in the North Central Province

Blood pressure category	Frequency	Percent
Normal blood pressure	562	*95.6*
Chronic hypertension	10	*1.7*
Pregnancy-Induced Hypertension (PIH)	16	*2.7*
Total	**588**	***100***

The percentage of women diagnosed with chronic hypertension during the preceding pregnancy was 1.7% (n=10), whereas the percentage diagnosed with pregnancy-induced hypertension was 2.7% (n=16).

3.3.11 Haemoglobin level during the pregnancy

The haemoglobin values were obtained from the hand-held pregnancy records of postpartum women, which record measurements from the blood investigation reports at field maternal clinics.

Severe anaemia is defined as less than 7.0 g/dl of haemoglobin in any trimester. Moderate anaemia is defined as haemoglobin levels between 7.0 g/dl to less than 10.0 g/dl at any trimester. Mild anaemia is defined as haemoglobin levels between 10 g/dl to 10.9 g/dl in the first trimester and haemoglobin levels between 10.0 g/dl to 10.4 g/dl in the second or third trimesters (Family Health Bureau, Ministry of Health Sri Lanka, 2023b).

Table 3.3.8 demonstrates the distribution of women according to their status of anaemia during the first trimester (on or before POA 12 weeks) and between 24-32 POA of the preceding pregnancy. Eighty-four (16.9%) of the women in the sample were found to have anaemia during the first trimester of their preceding pregnancy, and 22.3% (n = 117) of women were anaemic between 24-32 weeks of POA.

Table 3.3.8 Distribution of women according to their status of anaemia at different stages of the preceding pregnancy in North Central Province

	In the first trimester		Between 24-32 W of POA	
Characteristic	**Frequency**	***Percent***	**Frequency**	***Percent***
Non anaemic	414	*83.1*	399	*77.7*
Mild anaemia	62	*12.5*	52	*10.3*
Moderate anaemia	22	*4.4*	65	*12.0*
Severe anaemia	0	*0.0*	0	*0.0*
Total	**498**	***100.0***	**516**	***100.0***

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3.3.12 Adequacy of weight gain during the preceding pregnancy

Adequacy of weight gain during pregnancy was calculated only for women who had registered their pregnancy during the first trimester. The women who had multiple gestations were excluded from this analysis. The gestational weight gain was calculated based on the weight gain from the first clinic visit to the last visit. Adequacy of weight gain was assessed using the z-score weight centile charts (Hutcheon et al., 2013), which are adapted to Sri Lanka (shown in Figure 1.1 in page No:2) considering the POA at the time of the last weight measurement, and the BMI category during the 1st visit (assumed to be pre-pregnancy BMI),

Table 3.3.9 shows the distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy.

Table 3.3.9 Distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy in the North Central Province

Adequacy of weight gain during the index pregnancy	Frequency	Percent
Less than recommended	185	35.3
Recommended	196	37.4
More than recommended	143	27.3
Total	**524**	**100.0**

As shown in Table 3.3.9, the gestational weight gain of 35.3 % (n =185) of postpartum women was less than the recommended. The weight gain during pregnancy was more than recommended in 27.3% (n=143) of postpartum women.

3.3.13 Outcome of pregnancies and POA at delivery

There were 592 (99.5%) live births and 3 (0.5%) stillbirths (at or after 28 weeks of POA *) reported in the North Central Province during the Nutrition Month in 2024. Table 3.3.10 shows the POA at delivery for the live births reported, which indicates that 11.1% (n = 66) of newborns were born preterm (before 37 weeks of POA).

Table 3.3.10 Period of amenorrhea (POA) at delivery for the live births in the sample in North Central Province.

Characteristic	Frequency	*Percent*
Very preterm (28 to 32 weeks of POA *)	8	*1.3*
Moderate preterm (33 to 34 weeks of POA *)	6	*1.0*
Late preterm (35 to 36 weeks of POA *)	52	*8.8*
Term (37 to 42 weeks of POA *)	526	*88.9*
Total	**592**	***100.0***

*POA= Period of Amenorrhoea

Figure 3.3.4 shows the sex of the live births as determined at births resulting from index pregnancies in the sample in North Central Province. Three hundred and six (51.7 %) (n = babies born alive to women in the sample in the North Central Province during Nutrition Month were male.

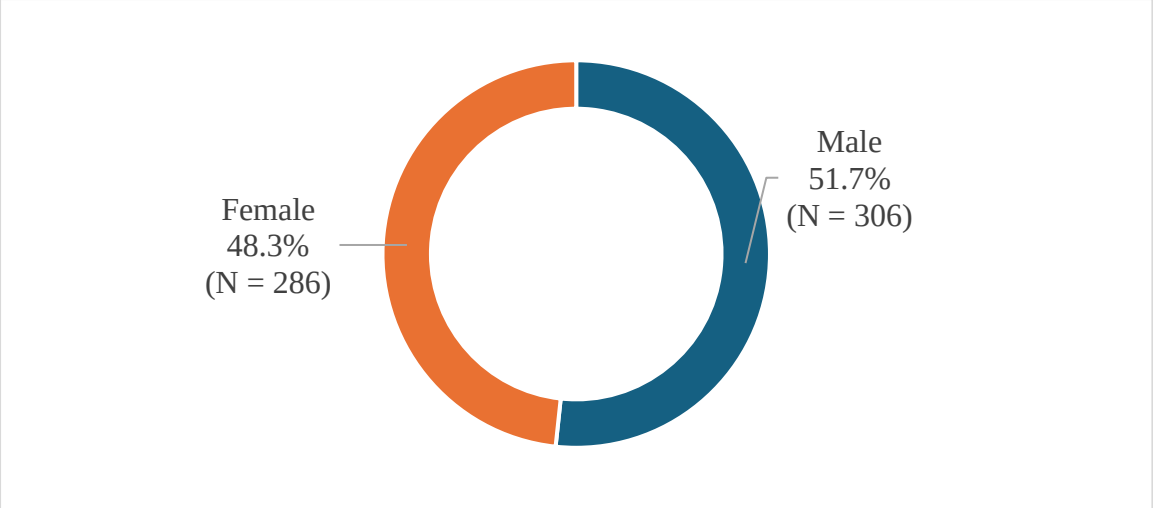

Figure 3.3.4 Distribution of live births resulting from index pregnancies in the sample according to the sex as determined at birth

3.3.14 Birthweight of the newborns of women in the sample

The mean birthweight of the live births resulting from index pregnancies in the sample was 2,870.4 g (SD = 451.5g). Table 3.3.11 shows the distribution of live newborns to women in the sample according to their birthweight category.

Table 3.3.11 Distribution of live births to women in the sample in North Central Province according to birth weight categories

Birth weight category	Frequency	Percent
Extreme Low Birthweight (<1,000 g)	0	*0.0*
Very Low Birthweight (1,000 g to <1,500 g)	4	*0.7*
Low Birthweight (1,500 g to <2,500 g)	95	*16.0*
Normal Birthweight (2,500 g to <4,000 g)	490	*82.8*
High Birthweight (≥4,000 g)	3	*0.5*
Total	**592**	***100.0***

Ninety-nine (16.0 %) newborns born alive had low birth weight (less than 2,500 g). There were three (0.5 %) macrosomic newborns (birth weight 4,000g or more).

Birth weights of live births were also analyzed according to birth weight centiles. Newborns 10th or lower centile were considered Small for Gestational Age (SGA), and newborns 3rd or lower centile were considered severe SGA. Newborns 90th or higher centile were considered Large for Gestational age (LGA). Table 3.3.12 shows the results.

Table 3.3.12 Distribution of live births to women in the sample in North Central Province according to birthweight centile category

Birthweight centile	Frequency	Percent
≤3rd Centile	17	*3.3*
3rd to 10th Centile	64	*12.3*
>10th to 90th Centile	413	*79.6*
≥90th Centile	25	*4.8*
Total	**519**	***100.0***

There were 3.3 % (n = 17) live newborns who had severe SGA (≤3rd Centile), whereas 12.3 % (n = 64) were between the 3rd and 10th centiles. Thus, 15.6 % (n = 81) of the newborns were SGA. There were 4.8% (n = 25) of live newborns who were LGA.

The birth weight centiles of the live newborns after 28 weeks of POA were analyzed using the standards of the International Fetal and Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st), using their Windows desktop application version 1.0.6257.25111 (INTERGROWTH-21st, 2009)

3.4 North Western Province

3.4 .1 Results & Discussion

There were 937 births reported from selected PHM areas in the North Western Province. These belonged to 927 pregnancies.

3.4.2 Age of pregnant women at the time of registration of their pregnancy

The mean age of pregnant women at the time of registration of their index pregnancy was 28.4 years (SD=5.3 years). As shown in Table 3.4.1, thirty-four (3.7%) of the women were teenagers (age 19 years or less), and ninety-nine (10.7%) were elderly women (age 36 years or more) at the time of registration of their pregnancy.

Table 3.4.1 Distribution of the sample of women according to age (completed years) at the time of registration of their pregnancy in North Western Province

Age category	Frequency	Percent
15-19	34	*3.7*
20-25	237	*25.6*
26-30	347	*37.4*
31-35	210	*22.7*
36-40	86	*9.3*
41-45	12	*1.3*
≥46	1	*0.1*
Total	**927**	***100***

3.4.3 Sample of women according to their residence

Figure 3.4.1 shows the distribution of the survey sample according to the Regional Directorate of Health Services area in the North Western Province.

The majority (90.5%, n=839) were from the rural sector (Figure 3.4.1).

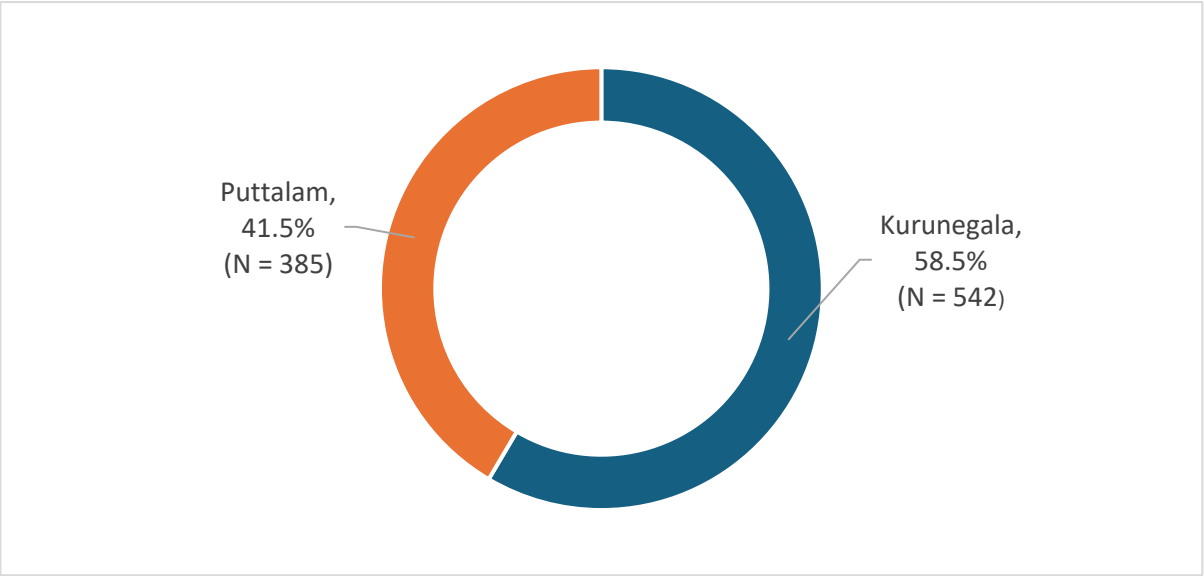

Figure 3.4.1 Distribution of the survey sample of women by the Regional Directorate of Health Services areas in the North Western Province

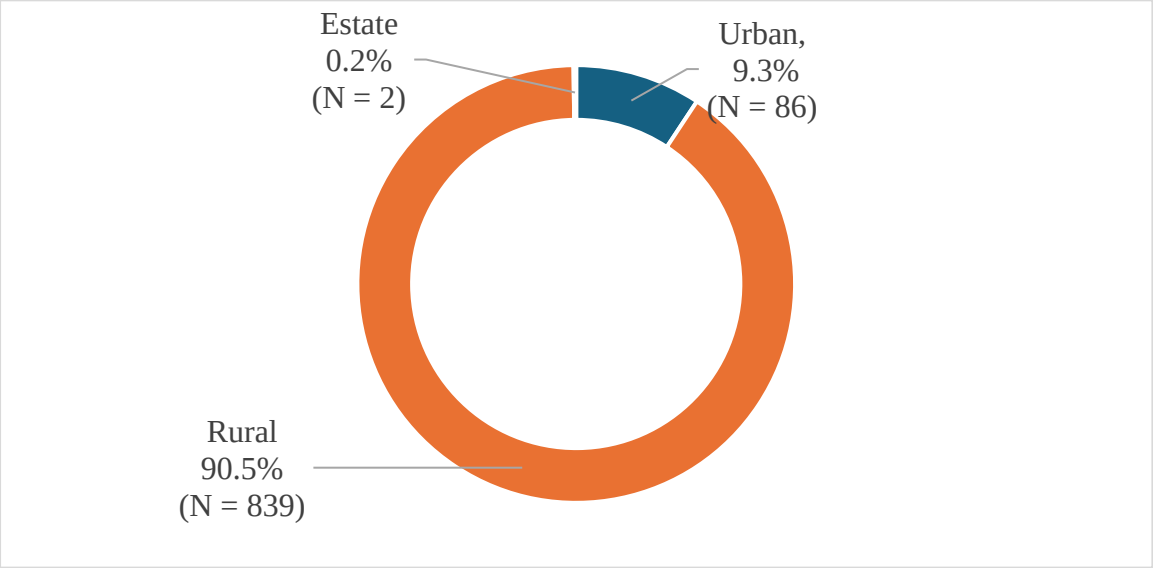

Figure 3.4.2 Distribution of the survey sample of women according to the sector of their residence in the North Western Province

3.4.4 Gravidity, parity and number of children at the time of registration of the index pregnancy

Table 3.4.4 shows the Distribution of the survey sample according to gravidity, parity, and number of children at the time of registration of the index pregnancy in North Western Province.

Table 3.4.2 Distribution of the sample of women according to gravidity, parity, and number of children at the time of registration of the index pregnancy in North Western Province

Characteristic	Frequency	Percent
Gravidity		
1	337	*36.3*
2	287	*31.0*
3	194	*20.9*
4	87	*9.4*
≥5	22	*2.4*
Parity		
0	379	*40.9*
1	311	*33.5*
2	182	*19.6*
3	48	*5.2*
≥4	7	*0.8*
Number of children		
0	391	*42.2*
1	311	*33.5*
2	171	*18.5*
3	48	*5.2*
≥4	6	*0.6*
Total	**927**	***100.0***

Three hundred & thirty-seven (36.3%) of women were postpartum after their first pregnancy. Hundred and nine (11.8%) of pregnant women were postpartum after their fourth or higher pregnancy. Three hundred and ninety-one (42.2%) of women did not have any live children at the time they registered for the index pregnancy.

3.4.5 Period of Amenorrhoea (POA) at booking visit for the index pregnancy

Figure 3.4.3 shows the POA of pregnant women at the booking visit (first clinic visit after becoming pregnant) for the index pregnancy.

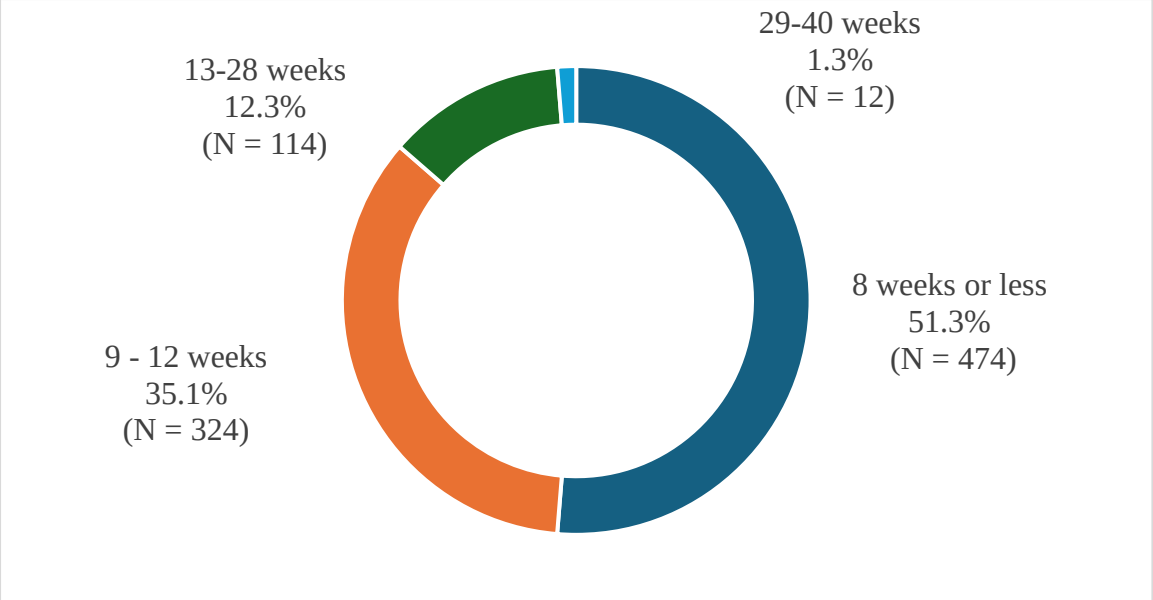

Figure 3.4.3 - Distribution of women in the sample according to their period of amenorrhea (POA) at booking visit for the index pregnancy in North Western Province

Four hundred and seventy-four (51.3%) of women had made their booking visit for the index pregnancy within the first 8 weeks of POA, whereas 86.4 % (n=798) of women had made their booking visit within the first trimester. Only 1.3% (n= 12) of women had made their booking visit during the third trimester.

3.4.6 Types of Pregnancies

Table 3.4.3 shows the types of pregnancies of women in the sample who delivered during June 2024 (Nutrition Month 2024).

Table 3.4.3 Distribution of women according to their type of index pregnancy in North Western Province

Type of the index pregnancy	Frequency	Percent
Singleton	913	*98.5*
Twin	14	*1.5*
Total	**927**	***100.0***

As shown in Table 3.4.3, there were 14 twin pregnancies.

3.4.7 Height of women in the sample

The mean height of women was 154.8 cm (SD=5.6 cm). Table 3.4.4 shows the distribution of women in the sample.

Table 3.4.4. Distribution of women in the sample according to height categories in North Western Province

Height (cm)	Frequency	Percent
145 or less	43	*4.6*
More than 145 to 150	162	*17.5*
More than 150 to 155	323	*34.9*
More than 155 to 160	264	*28.5*
More than 160	134	*14.5*
Total	**926**	***100***

The height of 4.6% (n=43) of women in the sample was 145 cm or less, and 22.1% (n=205) of them were 150 cm or less.

3.4.8 Body Mass Index of Women in the sample

The women who made their antenatal clinic booking visit for the index pregnancy within the first trimester of pregnancy were included in the analysis of Body Mass Index (BMI). The BMI during the first trimester was assumed to be the same as their pre-pregnancy BMI. The mean BMI was 23.6 kg/m^2 (SD=4.9 kg/m^2).

Table 3.4.5 - Distribution of women in the sample who made their antenatal clinic booking visit within the first trimester of pregnancy by their body mass index (BMI)

Body Mass Index category	Frequency	Percent
Underweight (less than 18.5 kg/m^2),	123	*15.7*
Normal weight (18.5 kg/m^2 to 25.0 kg/m$^{2)}$	350	*44.6*
Overweight (25.0 kg/m^2 to less than 30 kg/m$^{2)}$	223	*28.4*
Obesity (30 kg/m^2 or more)	89	*11.3*
Total	**785**	***100***

As shown in Table 3.4.5, one hundred and twenty-three (15.7%) of the women in the sample were underweight, 28.4% (n=223) were overweight, and 11.3% (n=89) were obese.

3.4.9 Blood sugar levels during pregnancy

Table 3.4.6 demonstrates the distribution of women according to their blood sugar category during the preceding pregnancy.

Table 3.4.6 - Distribution of women in the sample according to blood sugar category during the preceding pregnancy in North Western Province

Blood sugar category	Frequency	Percent
Normal	815	*88.0*
Chronic DM	32	*3.5*
GDM	79	*8.5*
Total	**926**	**100**

The percentage of women diagnosed with chronic diabetes mellitus during the preceding pregnancy was 3.5% (n=32), whereas the percentage diagnosed with gestational diabetes mellitus was 8.5% (n=79).

3.4.10 Blood pressure category during pregnancy

Table 3.4.7 demonstrates the distribution of women according to their blood pressure category during the preceding pregnancy.

Table 3.4.7 - Distribution of women in the sample according to their blood pressure category during the preceding pregnancy in the North Western Province

Blood pressure category	Frequency	Percent
Normal blood pressure	874	*94.3*
Chronic hypertension	13	*1.4*
Pregnancy-Induced Hypertension (PIH)	40	*4.3*
Total	**927**	***100***

The percentage of women diagnosed with chronic hypertension during the preceding pregnancy was 1.4% (n=13), whereas the percentage diagnosed with pregnancy-induced hypertension was 4.3% (n=40).

3.4.11 Haemoglobin level during the pregnancy

The haemoglobin values were obtained from the hand-held pregnancy records of postpartum women, which record measurements from the blood investigation reports at field maternal clinics.

Severe anaemia is defined as less than 7.0 g/dl of haemoglobin in any trimester. Moderate anaemia is defined as haemoglobin levels between 7.0 g/dl to less than 10.0 g/dl at any trimester. Mild anaemia is defined as haemoglobin levels between 10 g/dl to 10.9 g/dl in the first trimester and haemoglobin levels between 10.0 g/dl to 10.4 g/dl in the second or third trimesters (Family Health Bureau, Ministry of Health Sri Lanka, 2023b).

Table 3.4.8 demonstrates the distribution of women according to their status of anaemia during the first trimester (on or before POA 12 weeks) and between 24-32 POA of the preceding pregnancy. One hundred and thirty-five (18.0%) of the women in the sample were found to have anaemia during the first trimester of their preceding pgnancy, and 25.2% (n = 193) of women were anaemic between 24-32 weeks of POA.

Table 3.4.8 Distribution of women according to their status of anaemia at different stages of the preceding pregnancy in North Western Province

	In the first trimester		Between 24-32 W of POA	
Characteristic	**Frequency**	***Percent***	**Frequency**	***Percent***
Non anaemic	613	*82.0*	574	*74.8*
Mild anaemia	98	*13.1*	110	*14.3*
Moderate anaemia	37	*4.9*	81	*10.6*
Severe anaemia	0	*0.0*	2	*0.3*
Total	**748**	***100.0***	**767**	***100.0***

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3.4.12 Adequacy of weight gain during the preceding pregnancy

Adequacy of weight gain during pregnancy was calculated only for women who had registered their pregnancy during the first trimester. The women who had multiple gestations were excluded from this analysis. The gestational weight gain was calculated based on the weight gain from the first clinic visit to the last visit. Adequacy of weight gain was assessed using the z-score weight centile charts (Hutcheon et al., 2013), which are adapted to Sri Lanka (shown in Figure 1.1 in page No:2) considering the POA at the time of the last weight measurement, and the BMI category during the 1st visit (assumed to be pre-pregnancy BMI),

Table 3.4.9 shows the distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy.

Table 3.4.9 Distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy in the North Western Province

Adequacy of weight gain during the index pregnancy	Frequency	Percent
Less than recommended	299	38.2
Recommended	274	35.0
More than recommended	210	26.8
Total	**783**	**100.0**

As shown in Table 3.4.9, the gestational weight gain of 38.2% (n =299) of postpartum women was less than the recommended. The weight gain during pregnancy was more than recommended in 26.8% (n=210) of postpartum women.

3.4.13 Outcome of pregnancies and POA at delivery

There were 934 (99.7%) live births and 3 (0.5%) stillbirths (at or after 28 weeks of POA *) reported in the North Western Province during the Nutrition Month in 2024. Table 3.4.10 shows the POA at delivery for the live births reported, which indicates that 13.0% (n = 121) of newborns were born preterm (before 37 weeks of POA).

Table 3.4.10 Period of amenorrhea (POA) at delivery for the live births in the sample in North Western Province.

Characteristic	Frequency	*Percent*
Very preterm (28 to 32 weeks of POA *)	7	*0.8*
Moderate preterm (33 to 34 weeks of POA *)	27	*2.9*
Late preterm (35 to 36 weeks of POA *)	87	*9.3*
Term (37 to 42 weeks of POA *)	813	*87.0*
Total	**934**	***100.0***

*POA= Period of Amenorrhoea

Figure 3.4.4 shows the sex of the live births as determined at births resulting from index pregnancies in the sample in North Western Province. Four hundred and eighty-nine (52.4 %) babies born alive to women in the sample in the North Western Province during Nutrition Month were male.

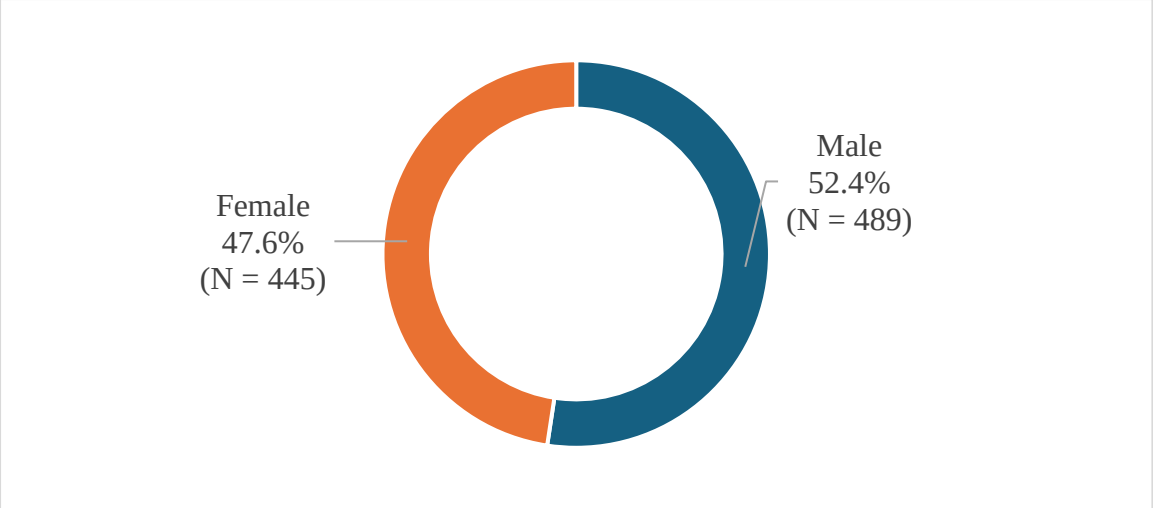

Figure 3.4.4 Distribution of live births resulting from index pregnancies in the sample according to the sex as determined at birth

3.4.14 Birthweight of the newborns of women in the sample

The mean birthweight of the live births resulting from index pregnancies in the sample was 2,871.9g (SD = 450.8 g). Table 3.4.11 shows the distribution of live newborns to women in the sample according to their birthweight category.

Table 3.4.11 Distribution of live births to women in the sample in North Western Province according to birth weight categories

Birth weight category	Frequency	Percent
Extreme Low Birthweight (<1,000 g)	1	*0.1*
Very Low Birthweight (1,000 g to <1,500 g)	4	*0.4*
Low Birthweight (1,500 g to <2,500 g)	164	*17.6*
Normal Birthweight (2,500 g to <4,000 g)	759	*81.3*
High Birthweight (≥4,000 g)	6	*0.6*
Total	**934**	***100.0***

One hundred and sixty-nine (18.1%) newborns born alive had low birth weight (less than 2,500 g). There were six (0.6 %) macrosomic newborns (birth weight 4,000g or more).

Birth weights of live births were also analyzed according to birth weight centiles. Newborns 10th or lower centile were considered Small for Gestational Age (SGA), and newborns 3rd or lower centile were considered severe SGA. Newborns 90th or higher centiles were considered Large for Gestational age (LGA). Table 3.4.12 shows the results.

Table 3.4.12 Distribution of live births to women in the sample in North Western Province according to birthweight centile category

Birthweight centile	Frequency	Percent
≤3rd Centile	40	*5.1*
3rd to 10th Centile	80	*10.3*
>10th to 90th Centile	615	*79.2*
≥90th Centile	42	*5.4*
Total	**777**	***100.0***

There were 5.1 % (n = 40) live newborns who had severe SGA (≤3rd Centile), whereas 10.3 % (n = 80) were between the 3rd and 10th centiles. Thus, 15.4 % (n = 120) of the newborns were SGA. There were 5.4% (n = 42) of live newborns who were LGA.

The birth weight centiles of the live newborns after 28 weeks of POA were analyzed using the standards of the International Fetal and Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st), using their Windows desktop application version 1.0.6257.25111 (INTERGROWTH-21st, 2009)

3.5 Northern Province

3.5 .1Results & Discussion

There were 794 births reported from selected PHM areas in the Northern Province. These belonged to 787 pregnancies.

3.5.2 Age of pregnant women at the time of registration of their pregnancy

The mean age of pregnant women at the time of registration of their index pregnancy was 28.4 years (SD=5.3 years). As shown in Table 3.5.1, thirty-six (4.6%) of the women were teenagers (age 19 years or less), and sixty-eight (8.6%) were elderly women (age 36 years or more) at the time of registration of their pregnancy.

Table 3.5.1 Distribution of the sample of women according to age (completed years) at the time of registration of their pregnancy in Northern Province

Age category	Frequency	Percent
15-19	36	*4.6*
20-25	184	*23.4*
26-30	293	*37.2*
31-35	206	*26.2*
36-40	60	*7.6*
41-45	8	*1.0*
≥46	0	*0.0*
Total	**787**	***100***

3.5.3 Sample of women according to their residence

Figure 3.5.1 shows the distribution of the survey sample according to the Regional Directorate of Health Services area in the Northern Province.

The majority (86.5%, n=681) were from the rural sector (Figure 3.5.1).

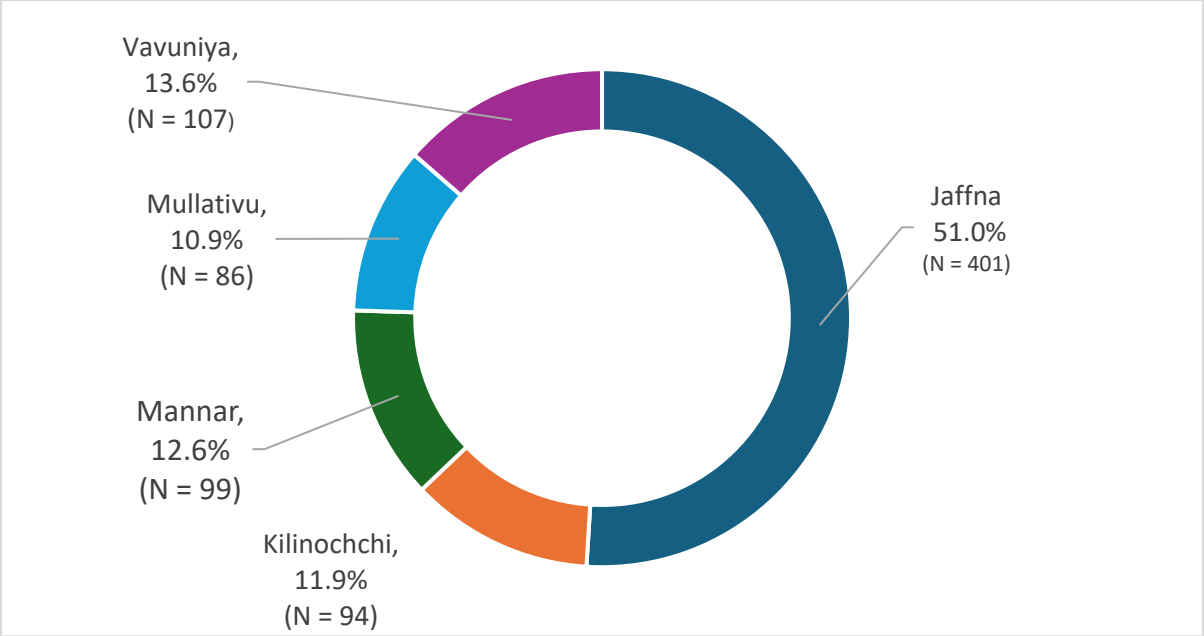

Figure 3.5.1 Distribution of the survey sample of women by the Regional Directorate of Health Services areas in the Northern Province

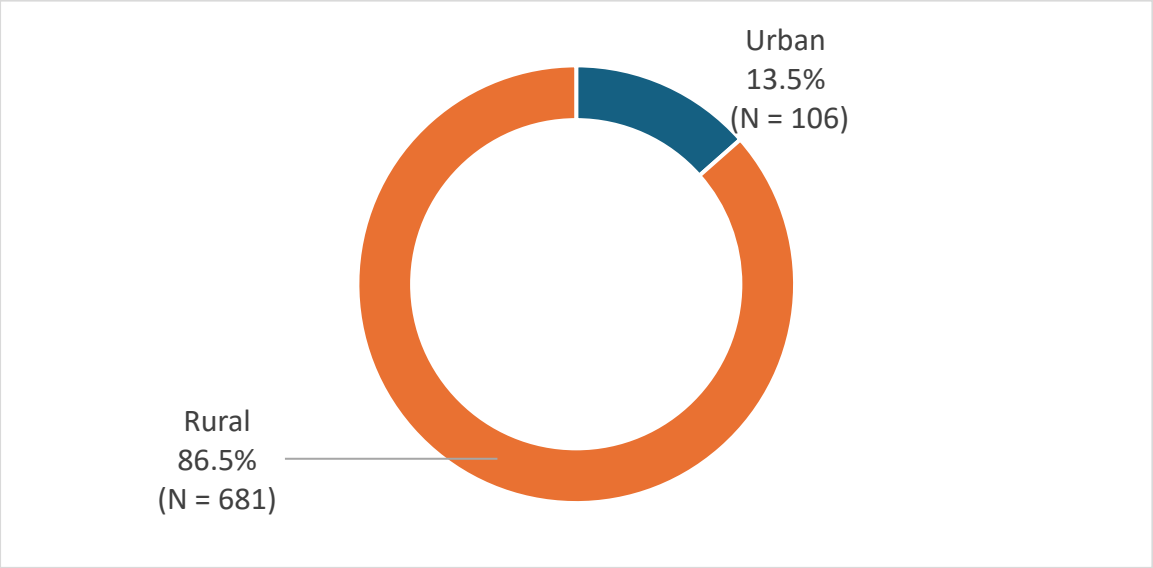

Figure 3.5.2 Distribution of the survey sample of women according to the sector of their residence in the Northern Province

3.5.4 Gravidity, parity and number of children at the time of registration of the index pregnancy

Table 3.5.4 shows the Distribution of the survey sample according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Northern Province.

Table 3.5.2 Distribution of the sample of women according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Northern Province

Characteristic	Frequency	Percent
Gravidity		
1	304	*38.6*
2	263	*33.4*
3	139	*17.7*
4	56	*7.1*
≥5	25	*3.2*
Parity		
0	321	*40.8*
1	275	*34.9*
2	142	*18.1*
3	41	*5.2*
≥4	8	*1.0*
Number of children		
0	326	*41.4*
1	280	*35.6*
2	139	*17.7*
3	34	*4.3*
≥4	8	*1.0*
Total	**787**	***100.0***

Three hundred & four (38.6%) of women were postpartum after their first pregnancy. Eighty-one (10.3%) of pregnant women were postpartum after their fourth or higher pregnancy. Three hundred and twenty-six (41.4%) of women did not have any live children at the time they registered for the index pregnancy.

3.5.5 Period of Amenorrhoea (POA) at booking visit for the index pregnancy

Figure 3.5.3 shows the POA of pregnant women at the booking visit (first clinic visit after becoming pregnant) for the index pregnancy.

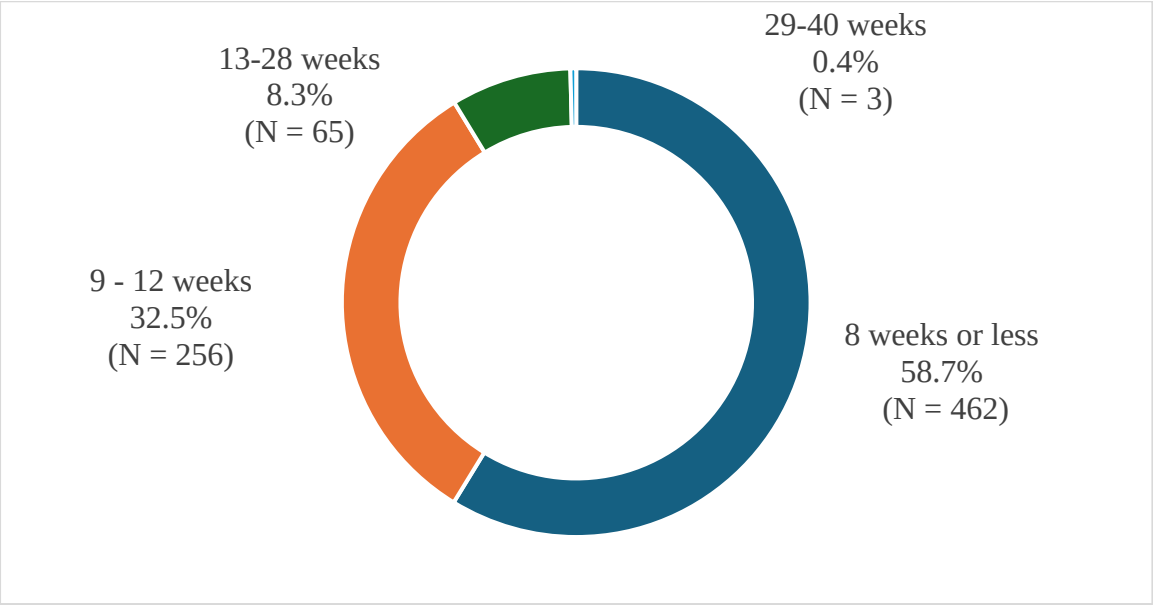

Figure 3.5.3 - Distribution of women in the sample according to their period of amenorrhea (POA) at booking visit for the index pregnancy in Northern Province

Four hundred and sixty-two (58.7%) of women had made their booking visit for the index pregnancy within the first 8 weeks of POA, whereas 91.2 % (n=718) of women had made their booking visit within the first trimester. Only 0.4% (n=4) of women had made their booking visit during the third trimester.

3.5.6 Types of Pregnancies

Table 3.5.3 shows the types of pregnancies of women in the sample who delivered during June 2024 (Nutrition Month 2024).

Table 3.5.3 Distribution of women according to their type of index pregnancy in Northern Province

Type of the index pregnancy	Frequency	Percent
Singleton	773	*98.2*
Twin	13	*1.7*
Triplet	1	*0.1*
Total	**787**	***100.0***

As shown in Table 3.5.3, there were 13 twin pregnancies and one triplet.

3.5.7 Height of women in the sample

The mean height of women was 155.2 cm (SD=5.6 cm). Table 3.5.4 shows the distribution of women in the sample.

Table 3.5.4. Distribution of women in the sample according to height categories in Northern Province

Height (cm)	Frequency	Percent
145 or less	33	*4.2*
More than 145 to 150	118	*15.0*
More than 150 to 155	263	*33.5.*
More than 155 to 160	237	*30.2*
More than 160	135	*17.2*
Total	**786**	***100***

The height of 4.2% (n=33) of women in the sample was 145 cm or less, and 19.2% (n=151) of them were 150 cm or less.

3.58 Body Mass Index of Women in the sample

The women who made their antenatal clinic booking visit for the index pregnancy within the first trimester of pregnancy were included in the analysis of Body Mass Index (BMI). The BMI during the first trimester was assumed to be the same as their pre-pregnancy BMI. The mean BMI was 23.1 kg/m^2 (SD=4.7 kg/m^2).

Table 3.5..5 - Distribution of women in the sample who made their antenatal clinic booking visit within the first trimester of pregnancy by their body mass index (BMI)

Body Mass Index category	Frequency	Percent
Underweight (less than 18.5 kg/m^2),	121	*17.1*
Normal weight (18.5 kg/m^2 to 25.0 kg/m$^{2)}$	301	*42.6*
Overweight (25.0 kg/m^2 to less than 30 kg/m$^{2)}$	205	*29.0*
Obesity (30 kg/m^2 or more)	80	*11.3*
Total	**707**	***100***

As shown in Table 3.5.5, one hundred and twenty-one (17.1%) of the women in the sample were underweight, 29.0% (n=205) were overweight, and 11.3% (n=80) were obese.

3.5.9 Blood sugar levels during pregnancy

Table 3.5.6 demonstrates the distribution of women according to their blood sugar category during the preceding pregnancy.

Table 3.5.6 - Distribution of women in the sample according to blood sugar category during the preceding pregnancy in Northern Province

Blood sugar category	Frequency	Percent
Normal	610	*77.6*
Chronic DM	99	*12.6*
GDM	77	*9.8*
Total	**786**	**100**

The percentage of women diagnosed with chronic diabetes mellitus during the preceding pregnancy was 12.6% (n=99), whereas the percentage diagnosed with gestational diabetes mellitus was 9.8% (n=77).

3.5.10 Blood pressure category during pregnancy

Table 3.5.7 demonstrates the distribution of women according to their blood pressure category during the preceding pregnancy.

Table 3.5.7 - Distribution of women in the sample according to their blood pressure category during the preceding pregnancy in the Northern Province

Blood pressure category	Frequency	Percent
Normal blood pressure	748	*95.0*
Chronic hypertension	25	*3.2*
Pregnancy-Induced Hypertension (PIH)	14	*1.8*
Total	**787**	***100***

The percentage of women diagnosed with chronic hypertension during the preceding pregnancy was 3.2% (n=25), whereas the percentage diagnosed with pregnancy-induced hypertension was 1.8% (n=14).

3.5.11 Haemoglobin level during the pregnancy

The haemoglobin values were obtained from the hand-held pregnancy records of postpartum women, which record measurements from the blood investigation reports at field maternal clinics.

Severe anaemia is defined as less than 7.0 g/dl of haemoglobin in any trimester. Moderate anaemia is defined as haemoglobin levels between 7.0 g/dl to less than 10.0 g/dl at any trimester. Mild anaemia is defined as haemoglobin levels between 10 g/dl to 10.9 g/dl in the first trimester and haemoglobin levels between 10.0 g/dl to 10.4 g/dl in the second or third trimesters (Family Health Bureau, Ministry of Health Sri Lanka, 2023b).

Table 3.5.8 demonstrates the distribution of women according to their status of anaemia during the first trimester (on or before POA 12 weeks) and between 24-32 POA of the preceding pregnancy. Hundred and eleven (16.8%) of the women in the sample were found to have anaemia during the first trimester of their preceding pregnancy, and 24.6% (n = 163) of women were anaemic between 24-32 weeks of POA.

Table 3.5.8 Distribution of women according to their status of anaemia at different stages of the preceding pregnancy in Northern Province

	In the first trimester		Between 24-32 W of POA	
Characteristic	**Frequency**	***Percent***	**Frequency**	***Percent***
Non anaemic	552	*83.2*	500	*75.4*
Mild anaemia	69	*10.4*	76	*11.5*
Moderate anaemia	41	*6.2*	87	*13.1*
Severe anaemia	1	*0.2*	0	*0.0*
Total	**663**	***100.0***	**663**	***100.0***

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3.5.12 Adequacy of weight gain during the preceding pregnancy

Adequacy of weight gain during pregnancy was calculated only for women who had registered their pregnancy during the first trimester. The women who had multiple gestations were excluded from this analysis. The gestational weight gain was calculated based on the weight gain from the first clinic visit to the last visit. Adequacy of weight gain was assessed using the z-score weight centile charts (Hutcheon et al., 2013), which are adapted to Sri Lanka (shown in Figure 1.1 in page No:2) considering the POA at the time of the last weight measurement, and the BMI category during the 1st visit (assumed to be pre-pregnancy BMI),

Table 3.5.9 shows the distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy.

Table 3.5.9 Distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy in the Northern Province

Adequacy of weight gain during the index pregnancy	Frequency	Percent
Less than recommended	283	40.0
Recommended	246	34.8
More than recommended	178	25.2
Total	**707**	**100.0**

As shown in Table 3.5.9, the gestational weight gain of 40.0 % (n =283) of postpartum women was less than the recommended. The weight gain during pregnancy was more than recommended in 25.2% (n=178) of postpartum women.

3.5.13 Outcome of pregnancies and POA at delivery

There were 788 (99.2%) live births and 6 (0.8%) stillbirths (at or after 28 weeks of POA *) reported in the Northern Province during the Nutrition Month in 2024. Table 3.5.10 shows the POA at delivery for the live births reported, which indicates that 11.6% (n = 91) of newborns were born preterm (before 37 weeks of POA).

Table 3.5.10 Period of amenorrhea (POA) at delivery for the live births in the sample in Northern Province.

Characteristic	Frequency	*Percent*
27 weeks of POA or less	2	*0.3*
Very preterm (28 to 32 weeks of POA *)	3	*0.4*
Moderate preterm (33 to 34 weeks of POA *)	11	*1.4*
Late preterm (35 to 36 weeks of POA *)	75	*9.5*
Term (37 to 42 weeks of POA *)	697	*88.4*
Total	**788**	***100.0***

*POA= Period of Amenorrhoea

Figure 3.5.4 shows the sex of the live births as determined at births resulting from index pregnancies in the sample in Northern Province. Four hundred and eleven (52.2 %) babies born alive to women in the sample in the Northern Province during Nutrition Month were male.

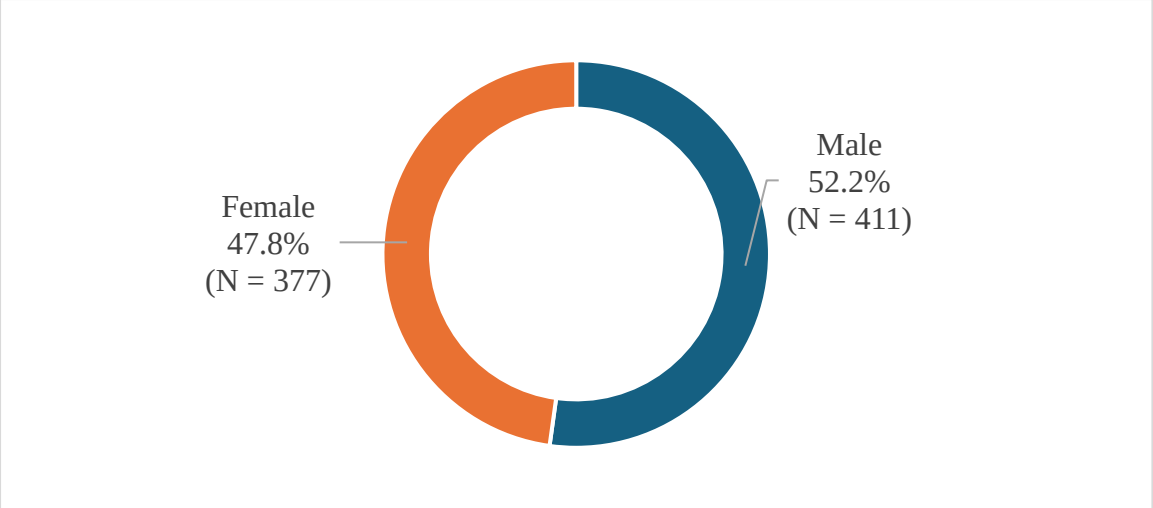

Figure 3.5.4 Distribution of live births resulting from index pregnancies in the sample according to the sex as determined at birth

3.5.14 Birthweight of the newborns of women in the sample

The mean birthweight of the live births resulting from index pregnancies in the sample was 2,890.4 g (SD = 442.5 g). Table 3.5.11 shows the distribution of live newborns to women in the sample according to their birthweight category.

Table 3.5.11 Distribution of live births to women in the sample in Northern Province according to birth weight categories

Birth weight category	Frequency	Percent
Extreme Low Birthweight (<1,000 g)	1	*0.1*
Very Low Birthweight (1,000 g to <1,500 g)	4	*0.5*
Low Birthweight (1,500 g to <2,500 g)	125	*15.9*
Normal Birthweight (2,500 g to <4,000 g)	652	*82.7*
High Birthweight (≥4,000 g)	6	*0.8*
Total	**788**	***100.0***

One hundred and thirty (16.9 %) newborns born alive had low birth weight (less than 2,500 g). There were six (0.8 %) macrosomic newborns (birth weight 4,000g or more).

Birth weights of live births were also analyzed according to birth weight centiles. Newborns 10th or lower centile were considered Small for Gestational Age (SGA), and newborns 3rd or lower centile were considered severe SGA. Newborns 90th or higher centiles were considered Large for Gestational age (LGA). Table 3.5.12 shows the results.

Table 3.5.12 Distribution of live births to women in the sample in Northern Province according to birthweight centile category

Birthweight centile	Frequency	Percent
≤3rd Centile	28	*4.0*
3rd to 10th Centile	79	*11.4*
>10th to 90th Centile	554	*79.7*
≥90th Centile	34	*4.9*
Total	**695**	***100.0***

There were 4.0 % (n = 28) live newborns who had severe SGA (≤3rd Centile), whereas 11.4 % (n = 79) were between the 3rd and 10th centiles. Thus, 15.4 % (n = 107) of the newborns were SGA. There were 4.9% (n = 34) of live newborns who were LGA.

The birth weight centiles of the live newborns after 28 weeks of POA were analyzed using the standards of the International Fetal and Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st), using their Windows desktop application version 1.0.6257.25111 (INTERGROWTH-21st, 2009)

3.6 Sabaragamuwa Province

3.6 .1 Results & Discussion

There were 620 births reported from selected PHM areas in the Sabaragamuwa Province. These belonged to 614 pregnancies.

3.6.2 Age of pregnant women at the time of registration of their pregnancy

The mean age of pregnant women at the time of registration of their index pregnancy was 29.1 years (SD=5.3 years). As shown in Table 3.6.1, thirty-six (3.8%) of the women were teenagers (age 19 years or less), and sixty-seven (10.9%) were elderly women (age 36 years or more) at the time of registration of their pregnancy.

Table 3.6.1 Distribution of the sample of women according to age (completed years) at the time of registration of their pregnancy in Sabaragamuwa Province

Age category	Frequency	Percent
14 or less	1	*0.2*
15-19	22	*3.6*
20-25	126	*20.5*
26-30	216	*35.2*
31-35	182	*29.6*
36-40	58	*9.4*
41-45	9	*1.5*
≥46	0	*0.0*
Total	**614**	***100***

3.6.3 Sample of women according to their residence

Figure 3.6.1 shows the distribution of the survey sample according to the Regional Directorate of Health Services area in the Sabaragamuwa Province.

The majority (81.3%, n=499) were from the rural sector (Figure 3.6.1).

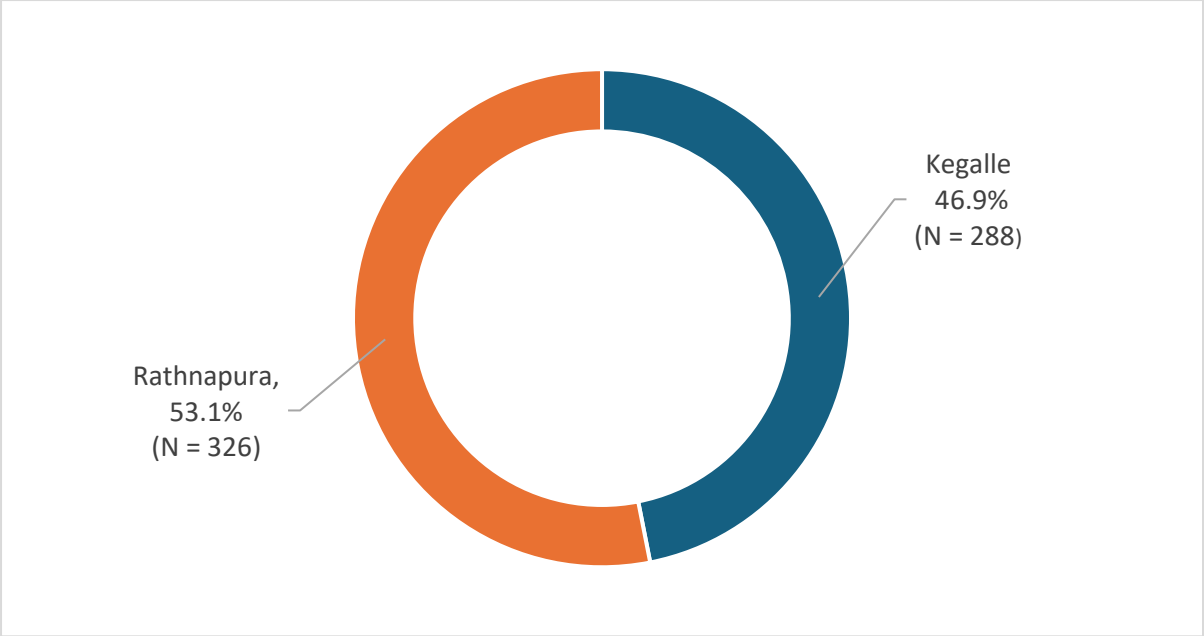

Figure 3.6.1 Distribution of the survey sample of women by the Regional Directorate of Health Services areas in the Sabaragamuwa Province

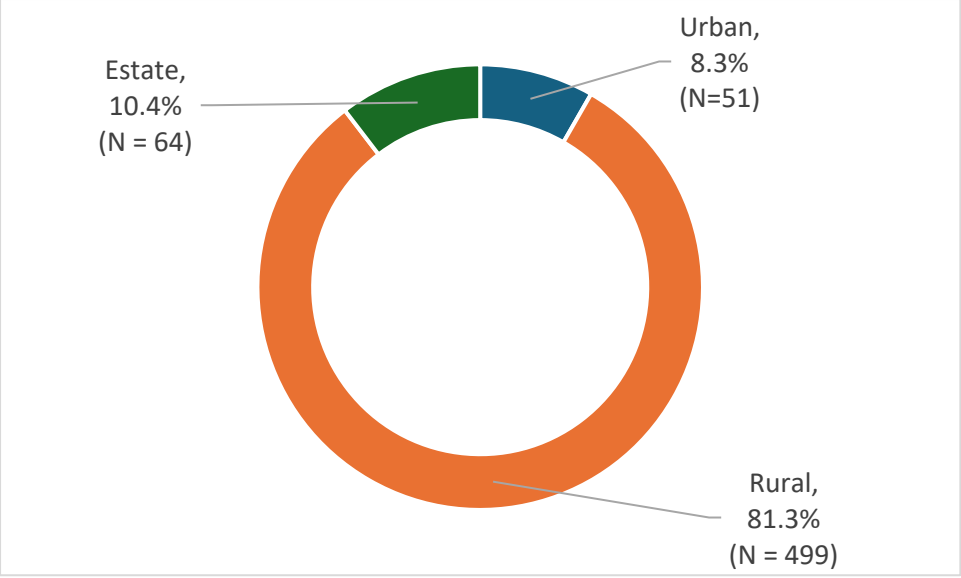

Figure 3.6.2 Distribution of the survey sample of women according to the sector of their residence in the Sabaragamuwa Province

3.6.4 Gravidity, parity and number of children at the time of registration of the index pregnancy

Table 3.6.4 shows the Distribution of the survey sample according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Sabaragamuwa Province.

Table 3.6.2 Distribution of the sample of women according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Sabaragamuwa Province

Characteristic	Frequency	Percent
Gravidity		
1	228	*37.1*
2	219	*35.7*
3	102	*16.6*
4	46	*7.5*
≥5	19	*3.1*
Parity		
0	259	*42.2*
1	225	*36.6*
2	100	*16.3*
3	24	*3.9*
≥4	6	*1.0*
Number of children		
0	273	*44.5*
1	219	*35.7*
2	94	*15.3*
3	22	*3.5*
≥4	6	*1.0*
Total	**614**	***100.0***

Two hundred & twenty-eight (37.1%) of women were postpartum after their first pregnancy. Sixty-five (10.6%) of pregnant women were postpartum after their fourth or higher pregnancy. Two hundred and seventy-three (44.5%) of women did not have any live children at the time they registered for the index pregnancy.

3.6.5 Period of Amenorrhoea (POA) at booking visit for the index pregnancy

Figure 3.6.3 shows the POA of pregnant women at the booking visit (first clinic visit after becoming pregnant) for the index pregnancy.

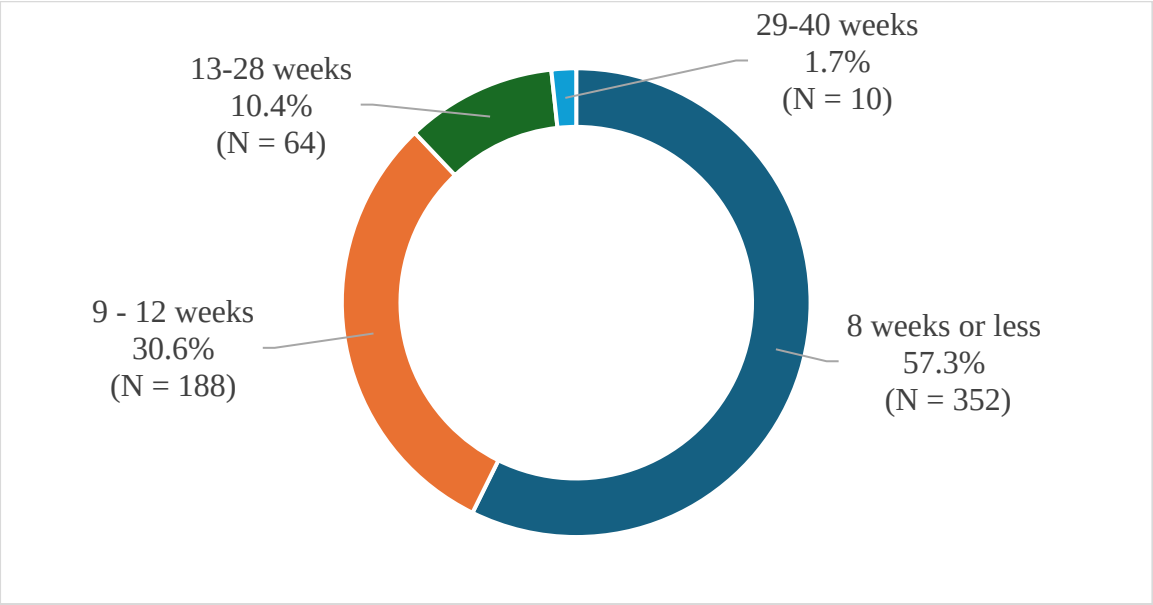

Figure 3.6.3 - Distribution of women in the sample according to their period of amenorrhea (POA) at booking visit for the index pregnancy in Sabaragamuwa Province

Three hundred and fifty-two (57.3%) of women had made their booking visit for the index pregnancy within the first 8 weeks of POA, whereas 87.9 % (n=540) of women had made their booking visit within the first trimester. Only 1.7% (n=10) of women had made their booking visit during the third trimester.

3.6.6 Types of Pregnancies

Table 3.6.3 shows the types of pregnancies of women in the sample who delivered during June 2024 (Nutrition Month 2024).

Table 3.6.3 Distribution of women according to their type of index pregnancy in Sabaragamuwa Province

Type of the index pregnancy	Frequency	Percent
Singleton	606	*98.7*
Twin	8	*1.3*
Total	**614**	***100.0***

As shown in Table 3.6.3, there were 8 twin pregnancies.

3.6.7 Height of women in the sample

The mean height of women was 153.9 cm (SD=5.7 cm). Table 3.6.4 shows the distribution of women in the sample.

Table 3.6.4. Distribution of women in the sample according to height categories in Sabaragamuwa Province

Height (cm)	Frequency	Percent
145 or less	39	*6.3*
More than 145 to 150	133	*21.7*
More than 150 to 155	200	*32.6*
More than 155 to 160	164	*26.7*
More than 160	78	*12.7*
Total	**614**	***100***

The height of 6.3% (n=39) of women in the sample was 145 cm or less, and 28.0% (n=172) of them were 150 cm or less.

3.6.8 Body Mass Index of Women in the sample

The women who made their antenatal clinic booking visit for the index pregnancy within the first trimester of pregnancy were included in the analysis of Body Mass Index (BMI). The BMI during the first trimester was assumed to be the same as their pre-pregnancy BMI. The mean BMI was 23.0 kg/m^2 (SD=4.9 kg/m^2).

Table 3.6.5 - Distribution of women in the sample who made their antenatal clinic booking visit within the first trimester of pregnancy by their body mass index (BMI)

Body Mass Index category	Frequency	Percent
Underweight (less than 18.5 kg/m^2),	108	20.2
Normal weight (18.5 kg/m^2 to 25.0 kg/m$^{2)}$	229	42.9
Overweight (25.0 kg/m^2 to less than 30 kg/m$^{2)}$	152	28.5
Obesity (30 kg/m^2 or more)	45	8.4
Total	**534**	**100**

As shown in Table 3.6.5, one hundred and eight (20.2%) of the women in the sample were underweight, 28.5% (n=152) were overweight, and 8.4% (n=45) were obese.

3.6.9 Blood sugar levels during pregnancy

Table 3.6.6 demonstrates the distribution of women according to their blood sugar category during the preceding pregnancy.

Table 3.6.6 - Distribution of women in the sample according to blood sugar category during the preceding pregnancy in Sabaragamuwa Province

Blood sugar category	Frequency	Percent
Normal	563	*91.7*
Chronic DM	17	*2.8*
GDM	34	*5.5*
Total	**614**	***100***

The percentage of women diagnosed with chronic diabetes mellitus during the preceding pregnancy was 2.8% (n=17), whereas the percentage diagnosed with gestational diabetes mellitus was 5.5% (n=34).

3.6.10 Blood pressure category during pregnancy

Table 3.6.7 demonstrates the distribution of women according to their blood pressure category during the preceding pregnancy.

Table 3.6.7 - Distribution of women in the sample according to their blood pressure category during the preceding pregnancy in the Sabaragamuwa Province

Blood pressure category	Frequency	Percent
Normal blood pressure	588	*95.8*
Chronic hypertension	11	*1.8*
Pregnancy-Induced Hypertension (PIH)	15	*2.4*
Total	**614**	***100***

The percentage of women diagnosed with chronic hypertension during the preceding pregnancy was 1.8% (n=11), whereas the percentage diagnosed with pregnancy-induced hypertension was 2.4% (n=15).

3.6.11 Haemoglobin level during the pregnancy

The haemoglobin values were obtained from the hand-held pregnancy records of postpartum women, which record measurements from the blood investigation reports at field maternal clinics.

Severe anaemia is defined as less than 7.0 g/dl of haemoglobin in any trimester. Moderate anaemia is defined as haemoglobin levels between 7.0 g/dl to less than 10.0 g/dl at any trimester. Mild anaemia is defined as haemoglobin levels between 10 g/dl to 10.9 g/dl in the first trimester and haemoglobin levels between 10.0 g/dl to 10.4 g/dl in the second or third trimesters (Family Health Bureau, Ministry of Health Sri Lanka, 2023b).

Table 3.6.8 demonstrates the distribution of women according to their status of anaemia during the first trimester (on or before POA 12 weeks) and between 24-32 POA of the preceding pregnancy. Ninety-five(16.9%) of the women in the sample were found to have anaemia during the first trimester of their preceding pregnancy, and 27.9% (n = 118) of women were anaemic between 24-32 weeks of POA.

Table 3.6.8 Distribution of women according to their status of anaemia at different stages of the preceding pregnancy in Sabaragamuwa Province

	In the first trimester		Between 24-32 W of POA	
Characteristic	**Frequency**	***Percent***	**Frequency**	***Percent***
Non anaemic	418	*83.1*	406	*77.5*
Mild anaemia	63	*12.5*	61	*11.6*
Moderate anaemia	22	*4.4*	57	*10.9*
Severe anaemia	0	*0.0*	0	*0.0*
Total	**503**	***100.0***	**524**	***100.0***

The woman was considered anaemic at some point of pregnancy, if any of the reports (either in first trimester or second/third trimesters) indicated ‘anaemic. Therefore, 27.1% (n=171) women in the sample were anaemic at some point of pregnancy in Sabaragamuwa Province.

3.6.12 Adequacy of weight gain during the preceding pregnancy

Adequacy of weight gain during pregnancy was calculated only for women who had registered their pregnancy during the first trimester. The women who had multiple gestations were excluded from this analysis. The gestational weight gain was calculated based on the weight gain from the first clinic visit to the last visit. Adequacy of weight gain was assessed

using the z-score weight centile charts (Hutcheon et al., 2013), which are adapted to Sri Lanka (shown in Figure 1.1 in page No:2) considering the POA at the time of the last weight measurement, and the BMI category during the 1st visit (assumed to be pre-pregnancy BMI),

Table 3.6.9 shows the distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy.

Table 3.6.9 Distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy in the Sabaragamuwa Province

Adequacy of weight gain during the index pregnancy	Frequency	Percent
Less than recommended	186	35.1
Recommended	192	36.2
More than recommended	152	28.7
Total	**530**	**100.0**

As shown in Table 3.6.12, the gestational weight gain of 35.1 % (n =186) of postpartum women was less than the recommended. The weight gain during pregnancy was more than recommended in 28.7% (n=152) of postpartum women.

3.6.13 Outcome of pregnancies and POA at delivery

There were 617 (99.5%) live births and 3 (0.5%) stillbirths (at or after 28 weeks of POA *) reported in the Sabaragamuwa Province during the Nutrition Month in 2024. Table 3.6.10 shows the POA at delivery for the live births reported, which indicates that 11.6% (n = 72) of newborns were born preterm (before 37 weeks of POA).

Table 3.6.10 Period of amenorrhea (POA) at delivery for the live births in the sample in Sabaragamuwa Province.

Characteristic	Frequency	*Percent*
Very preterm (28 to 32 weeks of POA *)	4	*0.6*
Moderate preterm (33 to 34 weeks of POA *)	12	*1.9*
Late preterm (35 to 36 weeks of POA *)	56	*9.1*
Term (37 to 42 weeks of POA *)	545	*88.4*
Total	**617**	***100.0***

*POA= Period of Amenorrhoea

Figure 3.6.4 shows the sex of the live births as determined at births resulting from index pregnancies in the sample in Sabaragamuwa Province. Three hundred and six (49.6%) babies born alive to women in the sample in the Sabaragamuwa Province during Nutrition Month were male.

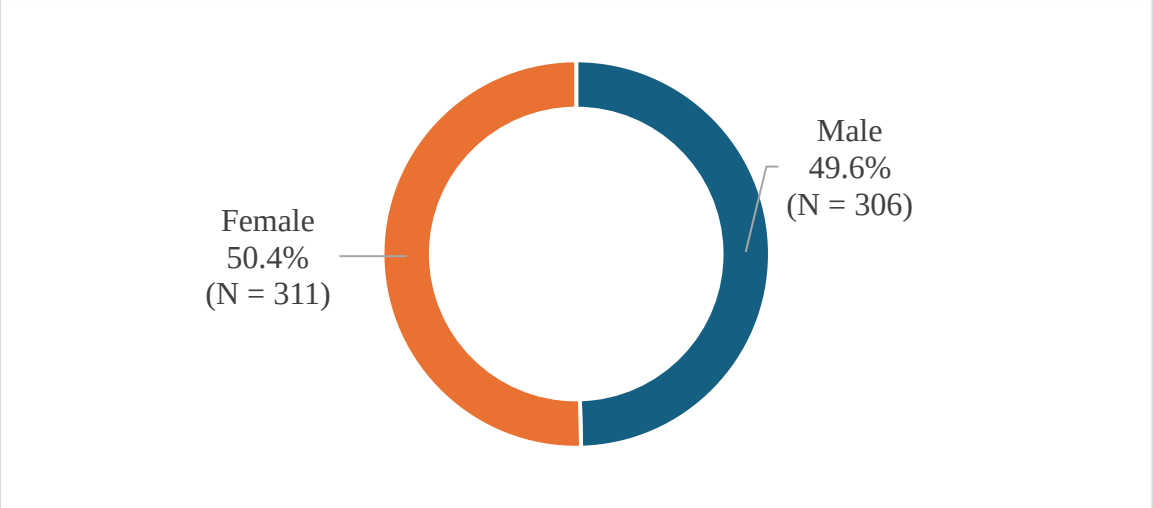

Figure 3.6.4 Distribution of live births resulting from index pregnancies in the sample according to the sex as determined at birth

3.6.14 Birthweight of the newborns of women in the sample

The mean birthweight of the live births resulting from index pregnancies in the sample was 2,862.2 g (SD = 457.9 g). Table 3.6.11 shows the distribution of live newborns to women in the sample according to their birthweight category.

Table 3.6.11 Distribution of live births to women in the sample in Sabaragamuwa Province according to birth weight categories

Birth weight category	Frequency	Percent
Extreme Low Birthweight (<1,000 g)	0	*0.0*
Very Low Birthweight (1,000 g to <1,500 g)	5	*0.8*
Low Birthweight (1,500 g to <2,500 g)	111	*18.0*
Normal Birthweight (2,500 g to <4,000 g)	495	*80.2*
High Birthweight (≥4,000 g)	6	*1.0*
Total	**617**	***100.0***

One hundred and sixteen (18.8 %) newborns born alive had low birth weight (less than 2,500 g). There were two (1.0 %) macrosomic newborns (birth weight 4,000g or more).

Birth weights of live births were also analyzed according to birth weight centiles. Newborns 10th or lower centile were considered Small for Gestational Age (SGA), and newborns 3rd or lower centile were considered severe SGA. Newborns 90th or higher centiles were considered Large for Gestational age (LGA). Table 3.6.12 shows the results.

Table 3.6.12 Distribution of live births to women in the sample in Sabaragamuwa Province according to birthweight centile category

Birthweight centile	Frequency	Percent
≤3rd Centile	19	*3.6*
3rd to 10th Centile	66	*12.5*
>10th to 90th Centile	419	*79.4*
≥90th Centile	24	*4.5*
Total	**528**	***100.0***

There were 3.6 % (n = 19) live newborns who had severe SGA (≤3rd Centile), whereas 12.5 % (n = 66) were between the 3rd and 10th centiles. Thus, 16.1 % (n = 85) of the newborns were SGA. There were 4.5% (n = 24) of live newborns who were LGA.

The birth weight centiles of the live newborns after 28 weeks of POA were analyzed using the standards of the International Fetal and Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st), using their Windows desktop application version 1.0.6257.25111 (INTERGROWTH-21st, 2009)

3.7. Southern Province

3.7 .1 Results & Discussion

There were 730 births reported from selected PHM areas in the Southern Province. These belonged to 722 pregnancies.

3.7.2 Age of pregnant women at the time of registration of their pregnancy

The mean age of pregnant women at the time of registration of their index pregnancy was 29.7 years (SD=5.3 years). As shown in Table 3.7.1, twenty-two (3.0%) of the women were teenagers (age 19 years or less), and ninety-five (13.1%) were elderly women (age 36 years or more) at the time of registration of their pregnancy.

Table 3.7.1 Distribution of the sample of women according to age (completed years) at the time of registration of their pregnancy in Southern Province

Age category	Frequency	Percent
15-19	22	*3.0*
20-25	129	*17.9*
26-30	238	*33.0*
31-35	238	*33.0*
36-40	80	*11.1*
41-45	14	*1.9*
≥46	1	*0.1*
Total	**614**	***100***

3.7.3 Sample of women according to their residence

Figure 3.7.1 shows the distribution of the survey sample according to the Regional Directorate of Health Services area in the Southern Province.

The majority (88.1%, n=636) were from the rural sector (Figure 3.7.1).

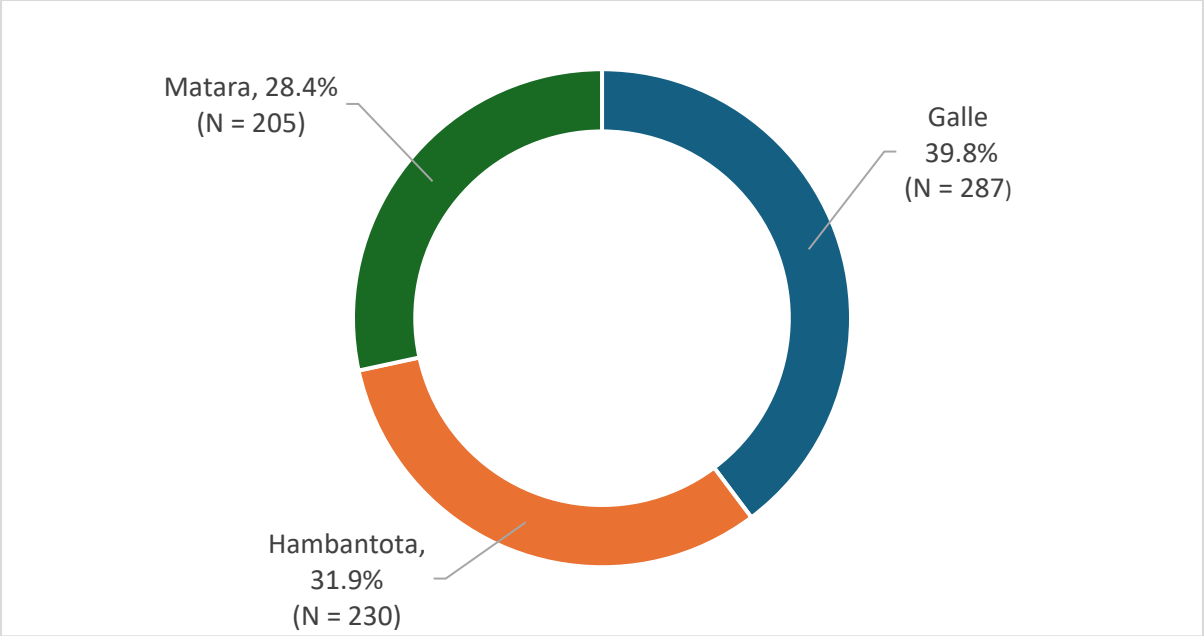

Figure 3.7.1 Distribution of the survey sample of women by the Regional Directorate of Health Services areas in the Southern Province

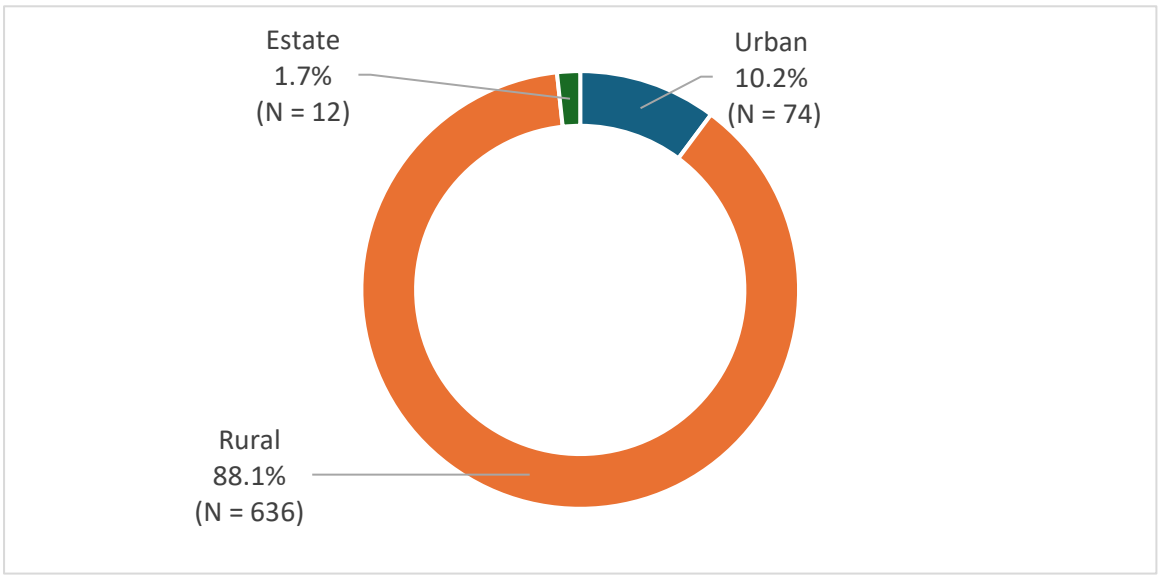

Figure 3.7.2 Distribution of the survey sample of women according to the sector of their residence in the Southern Province

3.7.4 Gravidity, parity and number of children at the time of registration of the index pregnancy

Table 3.7.4 shows the Distribution of the survey sample according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Southern Province.

Table 3.7.2 Distribution of the sample of women according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Southern Province

Characteristic	Frequency	Percent
Gravidity		
1	224	*31.0*
2	244	*33.8*
3	163	*22.6*
4	65	*9.0*
≥5	26	*3.6*
Parity		
0	273	*37.8*
1	260	*36.0*
2	148	*20.5*
3	31	*4.3*
≥4	10	*1.4*
Number of children		
0	281	*38.9*
1	254	*35.2*
2	149	*20.6*
3	29	*4.0*
≥4	9	*1.3*
Total	**722**	***100.0***

Two hundred & twenty-four (31.0%) of women were postpartum after their first pregnancy. Ninety-one (12.6%) of pregnant women were postpartum after their fourth or higher pregnancy. Two hundred and eighty-one (38.9%) of women did not have any live children at the time they registered for the index pregnancy.

.7.5 Period of Amenorrhoea (POA) at booking visit for the index pregnancy

Figure 3.7.3 shows the POA of pregnant women at the booking visit (first clinic visit after becoming pregnant) for the index pregnancy.

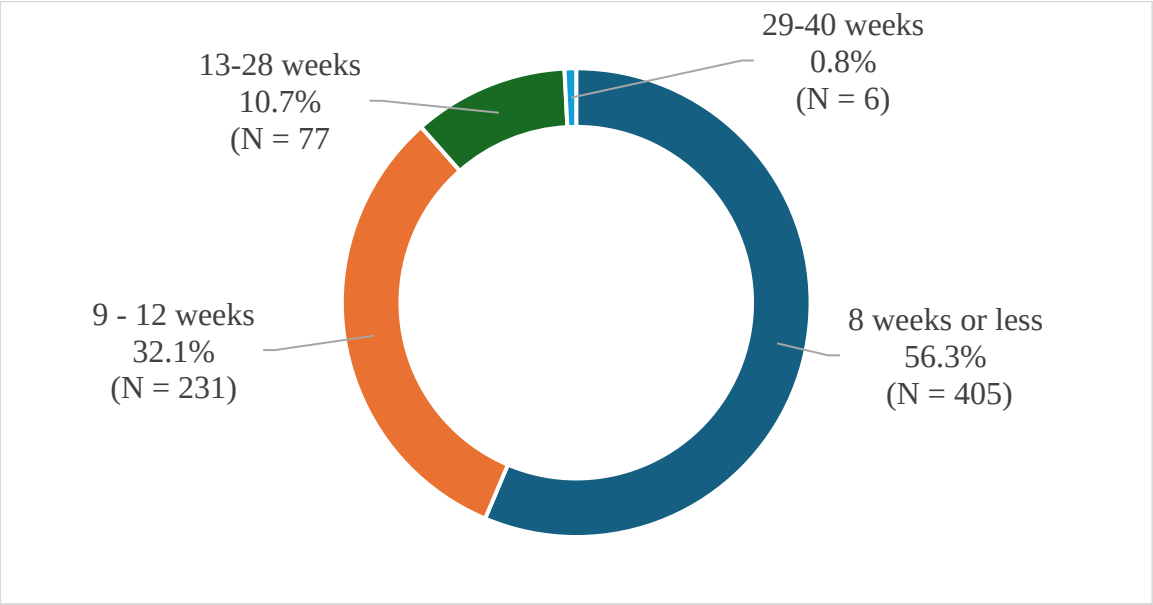

Figure 3.7.3 - Distribution of women in the sample according to their period of amenorrhea (POA) at booking visit for the index pregnancy in Southern Province

Four hundred and five (56.1%) of women had made their booking visit for the index pregnancy within the first 8 weeks of POA, whereas 88.4 % (n=636) of women had made their booking visit within the first trimester. Only 0.8% (n=6) of women had made their booking visit during the third trimester.

3.7.6 Types of Pregnancies

Table 3.7.3 shows the types of pregnancies of women in the sample who delivered during June 2024 (Nutrition Month 2024).

Table 3.7.3 Distribution of women according to their type of index pregnancy in Southern Province

Type of the index pregnancy	Frequency	Percent
Singleton	709	*98.2*
Twin	13	*1.8*
Total	**722**	***100.0***

As shown in Table 3.7.3, there were 13 twin pregnancies.

3.7.7 Height of women in the sample

The mean height of women was 154.6 cm (SD=5.6 cm). Table 3.7.4 shows the distribution of women in the sample.

Table 3.7.4. Distribution of women in the sample according to height categories in Southern Province

Height (cm)	Frequency	Percent
145 or less	34	*4.7*
More than 145 to 150	138	*19.2*
More than 150 to 155	240	*33.3*
More than 155 to 160	219	*30.4*
More than 160	89	*12.4*
Total	**720**	***100***

The height of 4.7% (n=34) of women in the sample was 145 cm or less, and 23.9% (n=172) of them were 150 cm or less.

3.7.8 Body Mass Index of Women in the sample

The women who made their antenatal clinic booking visit for the index pregnancy within the first trimester of pregnancy were included in the analysis of Body Mass Index (BMI). The BMI during the first trimester was assumed to be the same as their pre-pregnancy BMI. The mean BMI was 23.1 kg/m^2 (SD=4.7 kg/m^2).

Table 3.7.5 - Distribution of women in the sample who made their antenatal clinic booking visit within the first trimester of pregnancy by their body mass index (BMI)

Body Mass Index category	Frequency	Percent
Underweight (less than 18.5 kg/m^2),	113	*18.1*
Normal weight (18.5 kg/m^2 to 25.0 kg/m$^{2)}$	278	*44.6*
Overweight (25.0 kg/m^2 to less than 30 kg/m$^{2)}$	178	*28.6*
Obesity (30 kg/m^2 or more)	54	*8.7*
Total	**623**	***100***

As shown in Table 3.7.5, one hundred and thirteen (18.1%) of the women in the sample were underweight, 28.6% (n=178) were overweight, and 8.7% (n=54) were obese.

3.7.9 Blood sugar levels during pregnancy

Table 3.7.6 demonstrates the distribution of women according to their blood sugar category during the preceding pregnancy.

Table 3.7.6 - Distribution of women in the sample according to blood sugar category during the preceding pregnancy in Southern Province

Blood sugar category	Frequency	Percent
Normal	654	*91.0*
Chronic DM	38	*5.3*
GDM	27	*3.7*
Total	**719**	***100***

The percentage of women diagnosed with chronic diabetes mellitus during the preceding pregnancy was 5.3% (n=38), whereas the percentage diagnosed with gestational diabetes mellitus was 3.7% (n=27).

3.7.10 Blood pressure category during pregnancy

Table 3.7.7 demonstrates the distribution of women according to their blood pressure category during the preceding pregnancy.

Table 3.7.7 - Distribution of women in the sample according to their blood pressure category during the preceding pregnancy in the Southern Province

Blood pressure category	Frequency	Percent
Normal blood pressure	682	*94.7*
Chronic hypertension	11	*1.5*
Pregnancy-Induced Hypertension (PIH)	27	*3.8*
Total	**720**	***100***

The percentage of women diagnosed with chronic hypertension during the preceding pregnancy was 1.5% (n=11), whereas the percentage diagnosed with pregnancy-induced hypertension was 3.8% (n=27).

3.7.11 Haemoglobin level during the pregnancy

The haemoglobin values were obtained from the hand-held pregnancy records of postpartum women, which record measurements from the blood investigation reports at field maternal clinics.

Severe anaemia is defined as less than 7.0 g/dl of haemoglobin in any trimester. Moderate anaemia is defined as haemoglobin levels between 7.0 g/dl to less than 10.0 g/dl at any trimester. Mild anaemia is defined as haemoglobin levels between 10 g/dl to 10.9 g/dl in the first trimester and haemoglobin levels between 10.0 g/dl to 10.4 g/dl in the second or third trimesters (Family Health Bureau, Ministry of Health Sri Lanka, 2023b).

Table 3.7.8 demonstrates the distribution of women according to their status of anaemia during the first trimester (on or before POA 12 weeks) and between 24-32 POA of the preceding pregnancy. One hundred and five (17.7%) of the women in the sample were found to have anaemia during the first trimester of their preceding pregnancy, and 24.3% (n = 149) of women were anaemic between 24-32 weeks of POA.

Table 3.7.8 Distribution of women according to their status of anaemia at different stages of the preceding pregnancy in Southern Province

	In the first trimester		Between 24-32 W of POA	
Characteristic	**Frequency**	***Percent***	**Frequency**	***Percent***
Non anaemic	487	*82.3*	464	*75.7*
Mild anaemia	80	*13.5*	84	*13.7*
Moderate anaemia	25	*4.2*	65	*10.6*
Severe anaemia	0	*0.0*	0	*0.0*
Total	**592**	***100.0***	**613**	***100.0***

3.7.12 Adequacy of weight gain during the preceding pregnancy

Adequacy of weight gain during pregnancy was calculated only for women who had registered their pregnancy during the first trimester. The women who had multiple gestations were excluded from this analysis. The gestational weight gain was calculated based on the weight gain from the first clinic visit to the last visit. Adequacy of weight gain was assessed using the z-score weight centile charts (Hutcheon et al., 2013), which are adapted to Sri Lanka (shown in Figure 1.1 in page No:2) considering the POA at the time of the last weight measurement, and the BMI category during the 1st visit (assumed to be pre-pregnancy BMI),

Table 3.7.9 shows the distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy.

Table 3.7.9 Distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy in the Southern Province

Adequacy of weight gain during the index pregnancy	Frequency	Percent
Less than recommended	237	38.2
Recommended	218	35.2
More than recommended	165	26.6
Total	**620**	**100.0**

As shown in Table 3.7.9, the gestational weight gain of 38.2% (n =237) of postpartum women was less than the recommended. The weight gain during pregnancy was more than recommended in 26.6% (n=165) of postpartum women.

3.7.13 Outcome of pregnancies and POA at delivery

There were 728 (99.7%) live births and 2 (0.3%) stillbirths (at or after 28 weeks of POA *) reported in the Southern Province during the Nutrition Month in 2024. Table 3.7.10 shows the POA at delivery for the live births reported, which indicates that 8.9% (n = 65) of newborns were born preterm (before 37 weeks of POA).

Table 3.7.10 Period of amenorrhea (POA) at delivery for the live births in the sample in Southern Province.

Characteristic	Frequency	*Percent*
Very preterm (28 to 32 weeks of POA *)	3	*0.4*
Moderate preterm (33 to 34 weeks of POA *)	9	*1.2*
Late preterm (35 to 36 weeks of POA *)	53	*7.3*
Term (37 to 42 weeks of POA *)	663	*91.1*
Total	**728**	***100.0***

*POA= Period of Amenorrhoea

Figure 3.7.4 shows the sex of the live births as determined at births resulting from index pregnancies in the sample in Southern Province. Three hundred and ninety-one (53.7 %) babies born alive to women in the sample in the Southern Province during Nutrition Month were male.

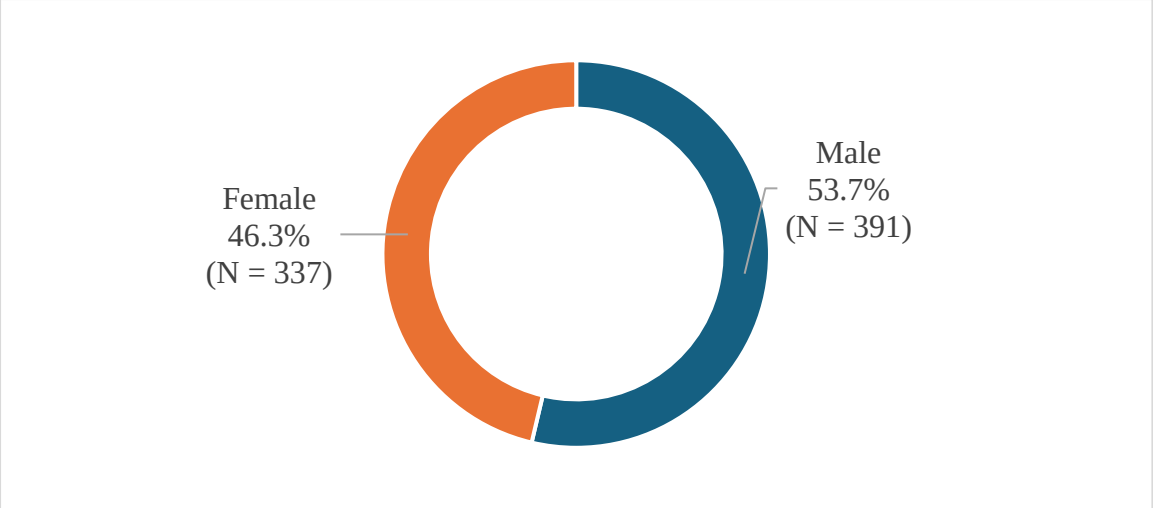

Figure 3.7.4 Distribution of live births resulting from index pregnancies in the sample according to the sex as determined at birth

3.7.14 Birthweight of the newborns of women in the sample

The mean birthweight of the live births resulting from index pregnancies in the sample was 2,905.5 g (SD = 470.0 g). Table 3.7.11 shows the distribution of live newborns to women in the sample according to their birthweight category.

Table 3.7.11 Distribution of live births to women in the sample in Southern Province according to birth weight categories

Birth weight category	Frequency	Percent
Extreme Low Birthweight (<1,000 g)	1	*0.1*
Very Low Birthweight (1,000 g to <1,500 g)	2	*0.3*
Low Birthweight (1,500 g to <2,500 g)	108	*14.8*
Normal Birthweight (2,500 g to <4,000 g)	609	*83.7*
High Birthweight (≥4,000 g)	8	*1.1*
Total	**728**	***100.0***

One hundred and eleven (15.2 %) newborns born alive had low birth weight (less than 2,500 g). There were eight (1.1 %) macrosomic newborns (birth weight 4,000g or more).

Birth weights of live births were also analyzed according to birth weight centiles. Newborns 10th or lower centile were considered Small for Gestational Age (SGA), and newborns 3rd or lower centile were considered severe SGA. Newborns 90th or higher centiles were considered Large for Gestational age (LGA). Table 3.7.12 shows the results.

Table 3.7.12 Distribution of live births to women in the sample in Southern Province according to birthweight centile category

Birthweight centile	Frequency	Percent
≤3rd Centile	28	*4.6*
3rd to 10th Centile	59	*9.6*
>10th to 90th Centile	491	*80.2*
≥90th Centile	34	*5.6*
Total	**612**	***100.0***

There were 4.6 % (n = 28) live newborns who had severe SGA (≤3rd Centile), whereas 9.6 % (n = 59) were between the 3rd and 10th centiles. Thus, 14.2 % (n = 87) of the newborns were SGA. There were 5.6% (n = 34) of live newborns who were LGA.

The birth weight centiles of the live newborns after 28 weeks of POA were analyzed using the standards of the International Fetal and Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st), using their Windows desktop application version 1.0.6257.25111 (INTERGROWTH-21st, 2009)

3.8 Uva Province

3.8 .1 Results & Discussion

There were 648 births reported from selected PHM areas in the Uva Province. These belonged to 643 pregnancies.

3.8.2 Age of pregnant women at the time of registration of their pregnancy

The mean age of pregnant women at the time of registration of their index pregnancy was 28.3 years (SD=5.3 years). As shown in Table 3.8.1, twenty-seven (4.2%) of the women were teenagers (age 19 years or less), and fifty-eight (9.0%) were elderly women (age 36 years or more) at the time of registration of their pregnancy.

Table 3.8.1 Distribution of the sample of women according to age (completed years) at the time of registration of their pregnancy in Uva Province

Age category	Frequency	Percent
15-19	27	*4.2*
20-25	170	*26.4*
26-30	230	*35.8*
31-35	158	*24.6*
36-40	47	*7.3*
41-45	11	*1.7*
≥46	0	*0.0*
Total	**643**	***100***

3.8.3 Sample of women according to their residence

Figure 3.8.1 shows the distribution of the survey sample according to the Regional Directorate of Health Services area in the Uva Province.

The majority (82.6%, n=531) were from the rural sector (Figure 3.8.1).

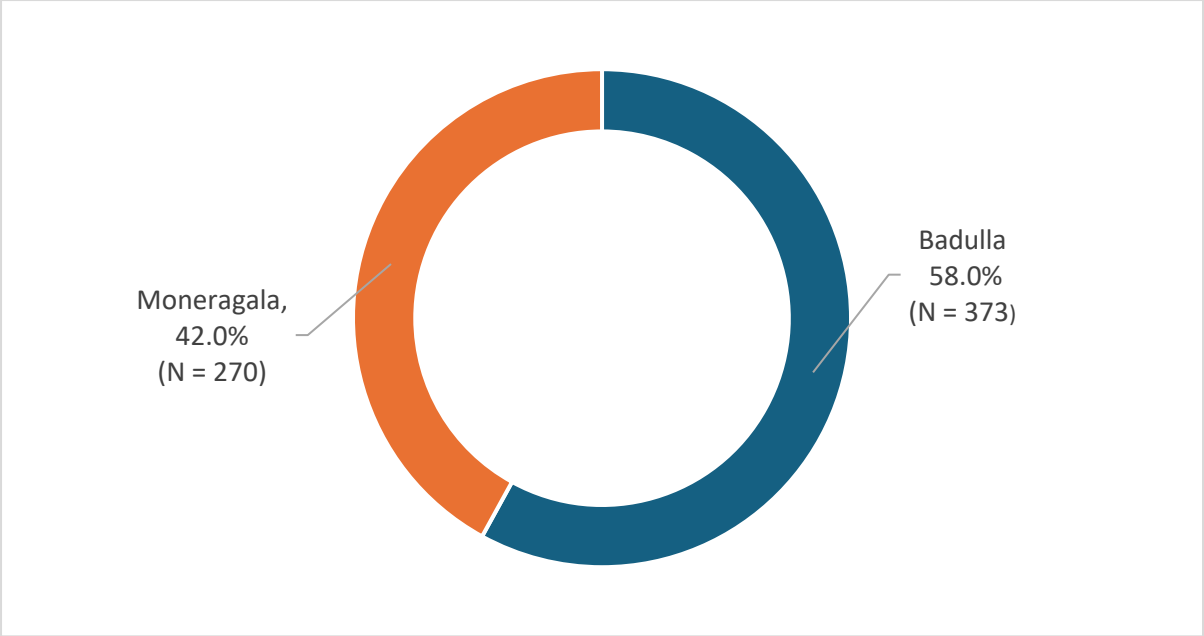

Figure 3.8.1 Distribution of the survey sample of women by the Regional Directorate of Health Services areas in the Uva Province

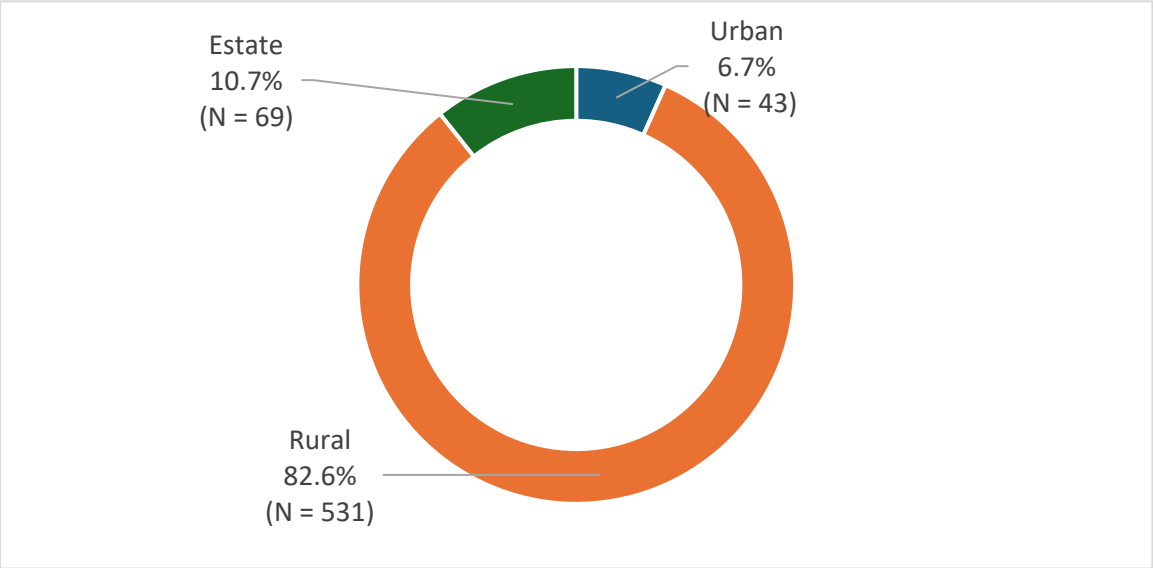

Figure 3.8.2 Distribution of the survey sample of women according to the sector of their residence in the Uva Province

3.8.4 Gravidity, parity and number of children at the time of registration of the index pregnancy

Table 3.8.4 shows the Distribution of the survey sample according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Uva Province.

Table 3.8.2 Distribution of the sample of women according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Uva Province

Characteristic	Frequency	Percent
Gravidity		
1	217	*33.7*
2	221	*34.4*
3	139	*21.6*
4	51	*7.9*
≥5	15	*2.3*
Parity		
0	244	*38.0*
1	243	*37.8*
2	119	*18.5*
3	31	*4.8*
≥4	6	*0.9*
Number of children		
0	249	*38.7*
1	245	*38.1*
2	118	*18.4*
3	26	*4.0*
≥4	5	*0.8*
Total	**643**	***100.0***

Two hundred & seventeen (33.7%) of women were postpartum after their first pregnancy. Sixty-six (10.2%) of pregnant women were postpartum after their fourth or higher pregnancy. Two hundred and forty-nine (38.7%) of women did not have any live children at the time they registered for the index pregnancy.

3.8.5 Period of Amenorrhoea (POA) at booking visit for the index pregnancy

Figure 3.8.3 shows the POA of pregnant women at the booking visit (first clinic visit after becoming pregnant) for the index pregnancy.

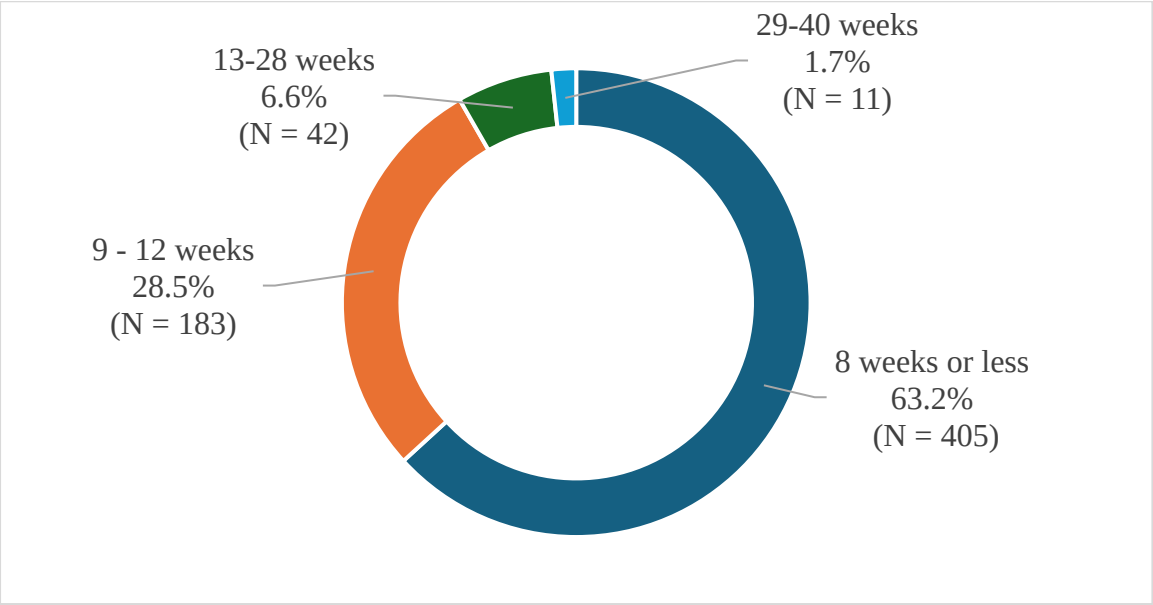

Figure 3.8.3 - Distribution of women in the sample according to their period of amenorrhea (POA) at booking visit for the index pregnancy in Uva Province

Four hundred and five (63.2%) of women had made their booking visit for the index pregnancy within the first 8 weeks of POA, whereas 91.7 % (n=588) of women had made their booking visit within the first trimester. Only 1.7% (n= 11) of women had made their booking visit during the third trimester.

3.8.6 Types of Pregnancies

Table 3.8.3 shows the types of pregnancies of women in the sample who delivered during June 2024 (Nutrition Month 2024).

Table 3.8.3 Distribution of women according to their type of index pregnancy in Uva Province

Type of the index pregnancy	Frequency	Percent
Singleton	639	*99.3*
Twin	3	*0.5*
Triplet	1	*0.2*
Total	**643**	***100.0***

As shown in Table 3.8.3, there were 3 twin pregnancies and 1 triplet.

3.8.7 Height of women in the sample

The mean height of women was 154.3 cm (SD=5.6 cm). Table 3.8.4 shows the distribution of women in the sample.

Table 3.8.4. Distribution of women in the sample according to height categories in Uva Province

Height (cm)	Frequency	Percent
145 or less	27	*4.2*
More than 145 to 150	122	*19.0*
More than 150 to 155	231	*35.9*
More than 155 to 160	184	*28.6*
More than 160	79	*12.3*
Total	**643**	***100***

The height of 4.2% (n=27) of women in the sample was 145 cm or less, and 23.2% (n=149) of them were 150 cm or less.

3.8.8 Body Mass Index of Women in the sample

The women who made their antenatal clinic booking visit for the index pregnancy within the first trimester of pregnancy were included in the analysis of Body Mass Index (BMI). The BMI during the first trimester was assumed to be the same as their pre-pregnancy BMI. The mean BMI was 23.1 kg/m^2 (SD=4.6 kg/m^2).

Table 3.8.5 - Distribution of women in the sample who made their antenatal clinic booking visit within the first trimester of pregnancy by their body mass index (BMI)

Body Mass Index category	Frequency	Percent
Underweight (less than 18.5 kg/m^2),	89	*15.2*
Normal weight (18.5 kg/m^2 to 25.0 kg/m$^{2)}$	280	*47.9*
Overweight (25.0 kg/m^2 to less than 30 kg/m$^{2)}$	166	*28.4*
Obesity (30 kg/m^2 or more)	50	*8.5*
Total	**585**	***100***

As shown in Table 3.8.5, eighty-nine (15.2%) of the women in the sample were underweight, 28.4% (n=166) were overweight, and 8.5% (n=50) were obese.

3.8.9 Blood sugar levels during pregnancy

Table 3.8.6 demonstrates the distribution of women according to their blood sugar category during the preceding pregnancy.

Table 3.8.6 - Distribution of women in the sample according to blood sugar category during the preceding pregnancy in Uva Province

Blood sugar category	Frequency	Percent
Normal	582	*90.5*
Chronic DM	18	*2.8*
GDM	43	*6.7*
Total	**643**	***100***

The percentage of women diagnosed with chronic diabetes mellitus during the preceding pregnancy was 2.8% (n=18), whereas the percentage diagnosed with gestational diabetes mellitus was 6.7% (n=43).

3.8.10 Blood pressure category during pregnancy

Table 3.8.7 demonstrates the distribution of women according to their blood pressure category during the preceding pregnancy.

Table 3.8.7 - Distribution of women in the sample according to their blood pressure category during the preceding pregnancy in the Uva Province

Blood pressure category	Frequency	Percent
Normal blood pressure	607	*94.4*
Chronic hypertension	12	*1.9*
Pregnancy-Induced Hypertension (PIH)	24	*3.7*
Total	**643**	***100***

The percentage of women diagnosed with chronic hypertension during the preceding pregnancy was 1.9% (n=12), whereas the percentage diagnosed with pregnancy-induced hypertension was 3.7% (n=24).

3.8.11 Haemoglobin level during the pregnancy

The haemoglobin values were obtained from the hand-held pregnancy records of postpartum women, which record measurements from the blood investigation reports at field maternal clinics.

Severe anaemia is defined as less than 7.0 g/dl of haemoglobin in any trimester. Moderate anaemia is defined as haemoglobin levels between 7.0 g/dl to less than 10.0 g/dl at any trimester. Mild anaemia is defined as haemoglobin levels between 10 g/dl to 10.9 g/dl in the first trimester and haemoglobin levels between 10.0 g/dl to 10.4 g/dl in the second or third trimesters (Family Health Bureau, Ministry of Health Sri Lanka, 2023b).

Table 3.8.8 demonstrates the distribution of women according to their status of anaemia during the first trimester (on or before POA 12 weeks) and between 24-32 POA of the preceding pregnancy. One hundred and one (17.5%) of the women in the sample were found to have anaemia during the first trimester of their preceding pregnancy, and 23.2% (n = 134) of women were anaemic between 24-32 weeks of POA.

Table 3.8.8 Distribution of women according to their status of anaemia at different stages of the preceding pregnancy in Uva Province

	In the first trimester		Between 24-32 W of POA	
Characteristic	**Frequency**	***Percent***	**Frequency**	***Percent***
Non anaemic	477	*82.5*	443	*76.8*
Mild anaemia	74	*12.8*	62	*10.7*
Moderate anaemia	26	*4.5*	72	*12.5*
Severe anaemia	1	*0.2*	0	*0.0*
Total	**578**	***100.0***	**577**	***100.0***

3.8.12 Adequacy of weight gain during the preceding pregnancy

Adequacy of weight gain during pregnancy was calculated only for women who had registered their pregnancy during the first trimester. The women who had multiple gestations were excluded from this analysis. The gestational weight gain was calculated based on the weight gain from the first clinic visit to the last visit. Adequacy of weight gain was assessed using the z-score weight centile charts (Hutcheon et al., 2013), which are adapted to Sri Lanka (shown in Figure 1.1 in page No:2) considering the POA at the time of the last weight measurement, and the BMI category during the 1st visit (assumed to be pre-pregnancy BMI),

Table 3.8.9 shows the distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy.

Table 3.8.9 Distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy in the Uva Province

Adequacy of weight gain during the index pregnancy	Frequency	Percent
Less than recommended	233	39.8
Recommended	202	34.5
More than recommended	150	25.7
Total	**585**	**100.0**

As shown in Table 3.8.9, the gestational weight gain of 39.8 % (n =233) of postpartum women was less than the recommended. The weight gain during pregnancy was more than recommended in 25.7% (n=150) of postpartum women.

3.8.13 Outcome of pregnancies and POA at delivery

There were 645 (99.5%) live births and 3 (0.5%) stillbirths (at or after 28 weeks of POA *) reported in the Uva Province during the Nutrition Month in 2024. Table 3.8.10 shows the POA at delivery for the live births reported, which indicates that 10.9% (n = 70) of newborns were born preterm (before 37 weeks of POA).

Table 3.8.10 Period of amenorrhea (POA) at delivery for the live births in the sample in Uva Province.

Characteristic	Frequency	*Percent*
27 weeks of POA or less	1	*0.2*
Very preterm (28 to 32 weeks of POA *)	7	*1.1*
Moderate preterm (33 to 34 weeks of POA *)	15	*2.3*
Late preterm (35 to 36 weeks of POA *)	47	*7.3*
Term (37 to 42 weeks of POA *)	574	*89.1*
Total	**644**	***100.0***

*POA= Period of Amenorrhoea

Figure 3.8.4 shows the sex of the live births as determined at births resulting from index pregnancies in the sample in Uva Province. Three hundred and thirty-one (51.3 %) babies born alive to women in the sample in the Uva Province during Nutrition Month were male.

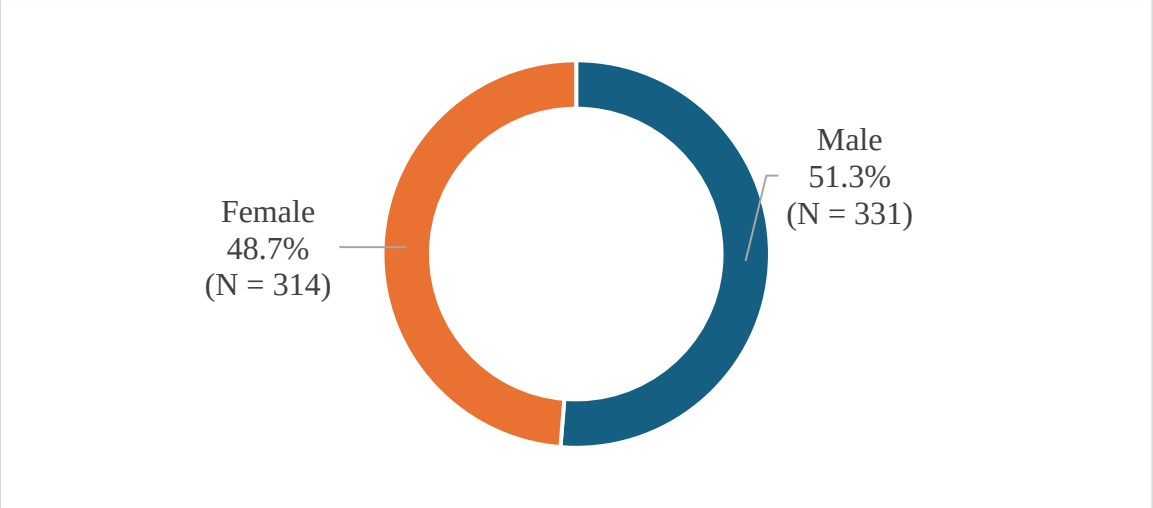

Figure 3.8.4 Distribution of live births resulting from index pregnancies in the sample according to the sex as determined at birth

3.8.14 Birthweight of the newborns of women in the sample

The mean birthweight of the live births resulting from index pregnancies in the sample was 2,827.9 g (SD = 475.0 g). Table 3.8.11 shows the distribution of live newborns to women in the sample according to their birthweight category.

Table 3.8.11 Distribution of live births to women in the sample in Uva Province according to birth weight categories

Birth weight category	Frequency	Percent
Extreme Low Birthweight (<1,000 g)	0	*0.0*
Very Low Birthweight (1,000 g to <1,500 g)	7	*1.1*
Low Birthweight (1,500 g to <2,500 g)	121	*18.8*
Normal Birthweight (2,500 g to <4,000 g)	513	*79.5*
High Birthweight (≥4,000 g)	4	*0.6*
Total	**645**	***100.0***

One hundred and twenty-eight (19.9 %) newborns born alive had low birth weight (less than 2,500 g). There were four (0.6 %) macrosomic newborns (birth weight 4,000g or more).

Birth weights of live births were also analyzed according to birth weight centiles. Newborns 10th or lower centile were considered Small for Gestational Age (SGA), and newborns 3rd or lower centile were considered severe SGA. Newborns 90th or higher centiles were considered Large for Gestational age (LGA). Table 3.8.12 shows the results.

Table 3.8.12 Distribution of live births to women in the sample in Uva Province according to birthweight centile category

Birthweight centile	Frequency	Percent
≤3rd Centile	30	*5.2*
3rd to 10th Centile	92	*15.9*
>10th to 90th Centile	431	*74.6*
≥90th Centile	25	*4.3*
Total	**578**	***100.0***

There were 5.2 % (n = 30) live newborns who had severe SGA (≤3rd Centile), whereas 15.9 % (n = 92) were between the 3rd and 10th centiles. Thus, 21.1 % (n = 122) of the newborns were SGA. There were 4.3% (n = 25) of live newborns who were LGA.

The birth weight centiles of the live newborns after 28 weeks of POA were analyzed using the standards of the International Fetal and Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st), using their Windows desktop application version 1.0.6257.25111 (INTERGROWTH-21st, 2009)

3.9 Western Province

3.9 .1 Results & Discussion

There were 703 births reported from selected PHM areas in the Western Province. These belonged to 700 pregnancies.

3.9.2 Age of pregnant women at the time of registration of their pregnancy

The mean age of pregnant women at the time of registration of their index pregnancy was 28.8 years (SD=5.3 years). As shown in Table 3.9.1, twenty-seven (4.2%) of the women were teenagers (age 19 years or less), and fifty-eight (9.0%) were elderly women (age 36 years or more) at the time of registration of their pregnancy.

Table 3.9.1 Distribution of the sample of women according to age (completed years) at the time of registration of their pregnancy in Western Province

Age category	Frequency	Percent
15-19	25	*3.6*
20-25	162	*23.1*
26-30	251	*35.9*
31-35	193	*27.6*
36-40	54	*7.7*
41-45	14	*2.0*
≥46	1	*0.1*
Total	**700**	***100***

3.9.3 Sample of women according to their residence

Figure 3.9.1 shows the distribution of the survey sample according to the Regional Directorate of Health Services area in the Western Province.

The majority (59.0%, n=413) were from the rural sector (Figure 3.9.1).

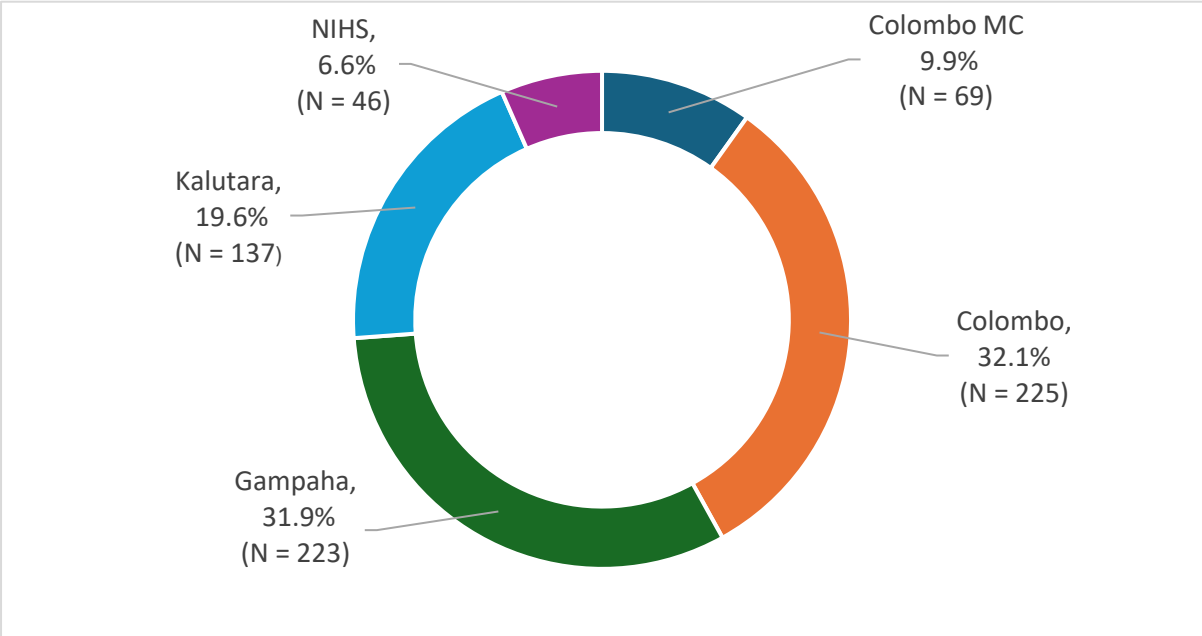

Figure 3.9.1 Distribution of the survey sample of women by the Regional Directorate of Health Services areas in the Western Province

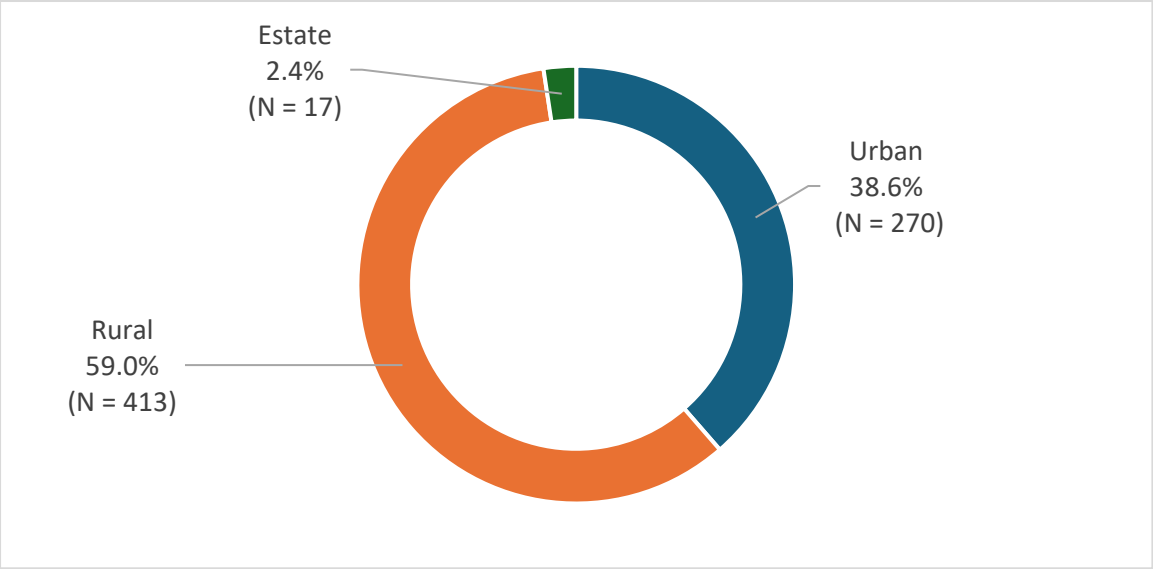

Figure 3.9.2 Distribution of the survey sample of women according to the sector of their residence in the Western Province

3.9.4 Gravidity, parity and number of children at the time of registration of the index pregnancy

Table 3.9.4 shows the Distribution of the survey sample according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Western Province.

Table 3.9.2 Distribution of the sample of women according to gravidity, parity, and number of children at the time of registration of the index pregnancy in Western Province

Characteristic	Frequency	Percent
Gravidity		
1	303	*43.3*
2	210	*30.0*
3	129	*18.4*
4	45	*6.4*
≥5	13	*1.9*
Parity		
0	349	*49.8*
1	212	*30.3*
2	112	*16.0*
3	23	*3.3*
≥4	4	*0.6*

Number of children		
0	355	*50.7*
1	217	*31.0*
2	108	*15.4*
3	18	*2.6*
≥4	2	*0.3*
Total	**700**	***100.0***

Three hundred & three (43.3%) of women were postpartum after their first pregnancy. Fifty-eight (8.3%) of pregnant women were postpartum after their fourth or higher pregnancy. Three hundred and fifty-five (50.7%) of women did not have any live children at the time they registered for the index pregnancy.

3.9.5 Period of Amenorrhoea (POA) at booking visit for the index pregnancy

Figure 3.9.3 shows the POA of pregnant women at the booking visit (first clinic visit after becoming pregnant) for the index pregnancy.

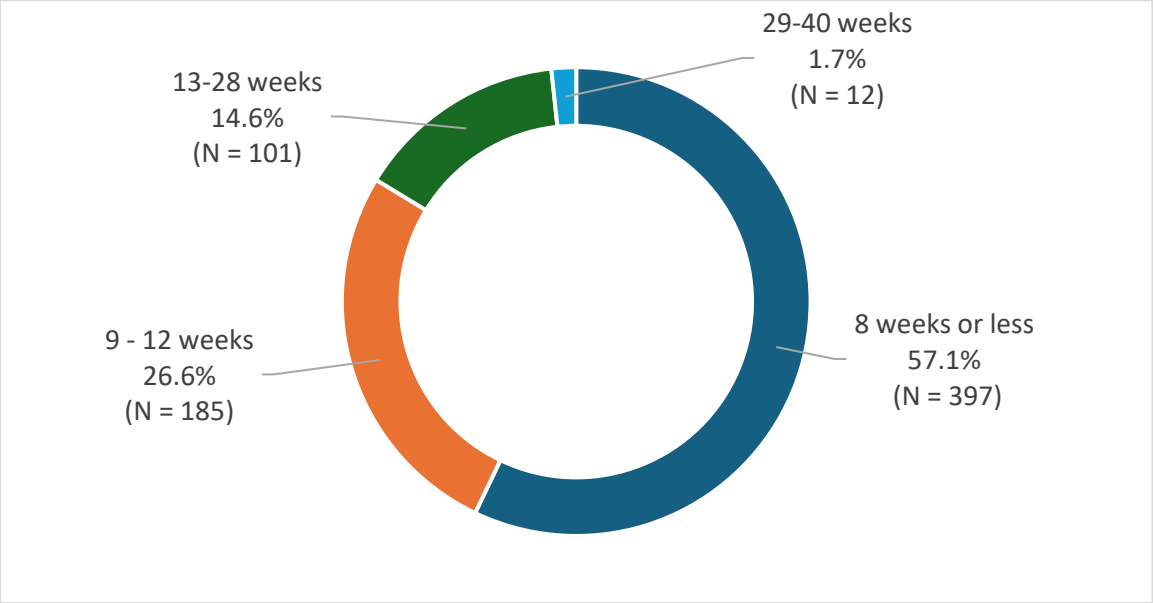

Figure 3.9.3 - Distribution of women in the sample according to their period of amenorrhea (POA) at booking visit for the index pregnancy in Western Province

Three hundred and ninety-seven (57.1%) of women had made their booking visit for the index pregnancy within the first 8 weeks of POA, whereas 83.7 % (n=582) of women had made their booking visit within the first trimester. Only 1.7% (n= 12) of women had made their booking visit during the third trimester.

3.9.6 Types of Pregnancies

Table 3.9.3 shows the types of pregnancies of women in the sample who delivered during June 2024 (Nutrition Month 2024).

Table 3.9.3 Distribution of women according to their type of index pregnancy in Western Province

Type of the index pregnancy	Frequency	Percent
Singleton	693	*99.0*
Twin	7	*1.0*
Total	**700**	***100.0***

As shown in Table 3.9.3, there were 7 twin pregnancies.

3.9.7 Height of women in the sample

The mean height of women was 155.4 cm (SD=5.8 cm). Table 3.9.4 shows the distribution of women in the sample.

Table 3.9.4. Distribution of women in the sample according to height categories in Western Province

Height (cm)	Frequency	Percent
145 or less	35	5.0
More than 145 to 150	103	14.7
More than 150 to 155	206	29.5
More than 155 to 160	238	34.1
More than 160	117	16.7
Total	**699**	**100**

The height of 5.0% (n=35) of women in the sample was 145 cm or less, and 19.7% (n=138) of them were 150 cm or less.

3.9.8 Body Mass Index of Women in the sample

The women who made their antenatal clinic booking visit for the index pregnancy within the first trimester of pregnancy were included in the analysis of Body Mass Index (BMI). The BMI during the first trimester was assumed to be the same as their pre-pregnancy BMI. The mean BMI was 23.9 kg/m^2 (SD=4.6 kg/m^2).

Table 3.9.5 - Distribution of women in the sample who made their antenatal clinic booking visit within the first trimester of pregnancy by their body mass index (BMI)

Body Mass Index category	Frequency	Percent
Underweight (less than 18.5 kg/m^2),	78	*13.5*
Normal weight (18.5 kg/m^2 to 25.0 kg/m$^{2)}$	246	*42.6*
Overweight (25.0 kg/m^2 to less than 30 kg/m$^{2)}$	188	*32.5*
Obesity (30 kg/m^2 or more)	66	*11.4*
Total	**578**	***100***

As shown in Table 3.9.5, seventy-eight (13.5%) of the women in the sample were underweight, 32.5% (n=188) were overweight, and 11.4% (n=66) were obese.

3.9.9 Blood sugar levels during pregnancy

Table 3.9.6 demonstrates the distribution of women according to their blood sugar category during the preceding pregnancy.

Table 3.9.6 - Distribution of women in the sample according to blood sugar category during the preceding pregnancy in Western Province

Blood sugar category	Frequency	Percent
Normal	586	*84.0*
Chronic DM	38	*5.4*
GDM	74	*10.6*
Total	**698**	***100***

The percentage of women diagnosed with chronic diabetes mellitus during the preceding pregnancy was 5.4% (n=38), whereas the percentage diagnosed with gestational diabetes mellitus was 10.6% (n=74).

3.9.10 Blood pressure category during pregnancy

Table 3.9.7 demonstrates the distribution of women according to their blood pressure category during the preceding pregnancy.

Table 3.9.7 - Distribution of women in the sample according to their blood pressure category during the preceding pregnancy in the Western Province

Blood pressure category	Frequency	Percent
Normal blood pressure	664	*94.9*
Chronic hypertension	3	*0.4*
Pregnancy-Induced Hypertension (PIH)	33	*4.7*
Total	**700**	***100***

The percentage of women diagnosed with chronic hypertension during the preceding pregnancy was 0.4% (n=3), whereas the percentage diagnosed with pregnancy-induced hypertension was 4.7% (n=33).

3.9.11 Haemoglobin level during the pregnancy

The haemoglobin values were obtained from the hand-held pregnancy records of postpartum women, which record measurements from the blood investigation reports at field maternal clinics.

Severe anaemia is defined as less than 7.0 g/dl of haemoglobin in any trimester. Moderate anaemia is defined as haemoglobin levels between 7.0 g/dl to less than 10.0 g/dl at any trimester. Mild anaemia is defined as haemoglobin levels between 10 g/dl to 10.9 g/dl in the first trimester and haemoglobin levels between 10.0 g/dl to 10.4 g/dl in the second or third trimesters (Family Health Bureau, Ministry of Health Sri Lanka, 2023b).

Table 3.9.8 demonstrates the distribution of women according to their status of anaemia during the first trimester (on or before POA 12 weeks) and between 24-32 POA of the preceding pregnancy. eighty-two (15.2%) of the women in the sample were found to have anaemia during the first trimester of their preceding pregnancy, and 23.0% (n = 124) of women were anaemic between 24-32 weeks of POA.

Table 3.9.8 Distribution of women according to their status of anaemia at different stages of the preceding pregnancy in Western Province

	In the first trimester		Between 24-32 W of POA	
Characteristic	**Frequency**	***Percent***	**Frequency**	***Percent***
Non anaemic	459	*84.8*	414	*77.0*
Mild anaemia	63	*11.7*	63	*11.7*
Moderate anaemia	17	*3.1*	61	*11.3*
Severe anaemia	2	*0.4*	0	*0.0*
Total	**541**	***100.0***	**538**	***100.0***

3.9.12 Adequacy of weight gain during the preceding pregnancy

Adequacy of weight gain during pregnancy was calculated only for women who had registered their pregnancy during the first trimester. The women who had multiple gestations were excluded from this analysis. The gestational weight gain was calculated based on the weight gain from the first clinic visit to the last visit. Adequacy of weight gain was assessed using the z-score weight centile charts (Hutcheon et al., 2013), which are adapted to Sri Lanka (shown in Figure 1.1 in page No:2) considering the POA at the time of the last weight measurement, and the BMI category during the 1st visit (assumed to be pre-pregnancy BMI),

Table 3.9.9 shows the distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy.

Table 3.9.9 Distribution of women in the sample according to the adequacy of their weight gain during the index pregnancy in the Western Province

Adequacy of weight gain during the index pregnancy	**Frequency**	**Percent**
Less than recommended	220	38.4
Recommended	200	34.9
More than recommended	153	26.7
Total	**573**	**100.0**

As shown in Table 3.9.9, the gestational weight gain of 38.4% (n =220) of postpartum women was less than the recommended. The weight gain during pregnancy was more than recommended in 26.7% (n=153) of postpartum women.

3.9.13 Outcome of pregnancies and POA at delivery

There were 699 (99.4%) live births and 4 (0.6%) stillbirths (at or after 28 weeks of POA *) reported in the Western Province during the Nutrition Month in 2024. Table 3.9.10 shows the

POA at delivery for the live births reported, which indicates that 10.2% (n = 71) of newborns were born preterm (before 37 weeks of POA).

Table 3.9.10 Period of amenorrhea (POA) at delivery for the live births in the sample in Western Province.

Characteristic	Frequency	*Percent*
27 weeks of POA or less	1	*0.2*
Very preterm (28 to 32 weeks of POA *)	4	*0.6*
Moderate preterm (33 to 34 weeks of POA *)	10	*1.4*
Late preterm (35 to 36 weeks of POA *)	56	*8.0*
Term (37 to 42 weeks of POA *)	628	*89.8*
Total	**699**	***100.0***

*POA= Period of Amenorrhoea

Figure 3.9.4 shows the sex of the live births as determined at births resulting from index pregnancies in the sample in Western Province. Three hundred and thirty-eight (48.4 %) babies born alive to women in the sample in the Western Province during Nutrition Month were male.

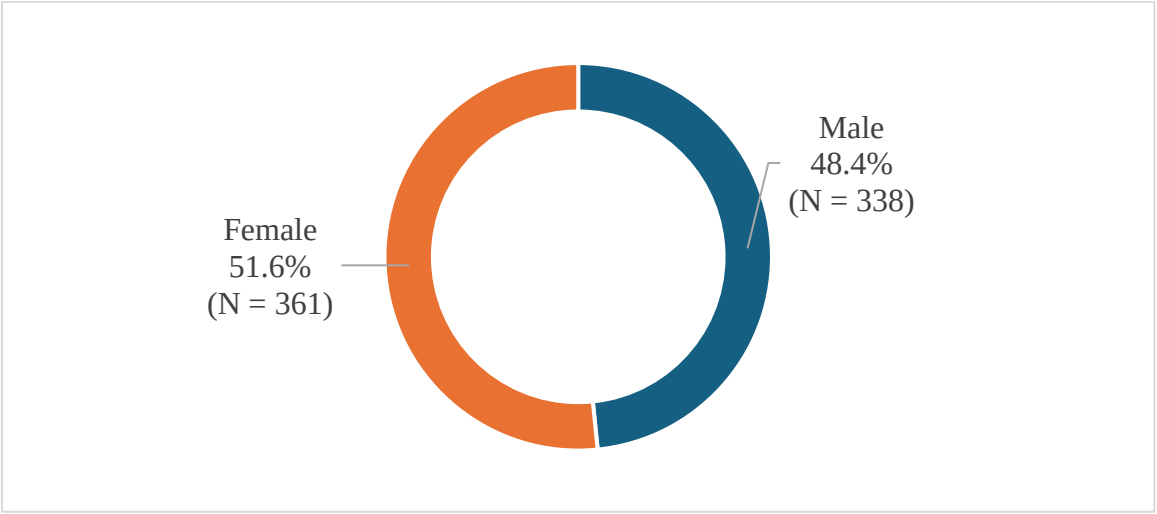

Figure 3.9.4 Distribution of live births resulting from index pregnancies in the sample according to the sex as determined at birth

3.9.14 Birthweight of the newborns of women in the sample

The mean birthweight of the live births resulting from index pregnancies in the sample was 2,908.9g (SD = 460.3 g). Table 3.9.11 shows the distribution of live newborns to women in the sample according to their birthweight category.

Table 3.9.11 Distribution of live births to women in the sample in Western Province according to birth weight categories

Birth weight category	Frequency	Percent
Extreme Low Birthweight (<1,000 g)	2	*0.3*
Very Low Birthweight (1,000 g to <1,500 g)	4	*0.6*
Low Birthweight (1,500 g to <2,500 g)	107	*15.3*
Normal Birthweight (2,500 g to <4,000 g)	583	*83.4*
High Birthweight (≥4,000 g)	3	*0.4*
Total	**699**	***100.0***

One hundred and thirteen (16.2%) newborns born alive had low birth weight (less than 2,500 g). There were three (0.4 %) macrosomic newborns (birth weight 4,000g or more).

Birth weights of live births were also analyzed according to birth weight centiles. Newborns 10th or lower centile were considered Small for Gestational Age (SGA), and newborns 3rd or lower centile were considered severe SGA. Newborns 90th or higher centiles were considered Large for Gestational age (LGA). Table 3.9.12 shows the results.

Table 3.9.12 Distribution of live births to women in the sample in Western Province according to birthweight centile category

Birthweight centile	Frequency	Percent
≤3rd Centile	25	*4.4*
3rd to 10th Centile	74	*13.0*
>10th to 90th Centile	442	*77.5*
≥90th Centile	29	*5.1*
Total	**570**	***100.0***

There were 4.4 % (n = 25) live newborns who had severe SGA (≤3rd Centile), whereas 13.0 % (n = 74) were between the 3rd and 10th centiles. Thus, 17.4 % (n = 99) of the newborns were SGA. There were 5.1% (n = 29) of live newborns who were LGA.

The birth weight centiles of the live newborns after 28 weeks of POA were analyzed using the standards of the International Fetal and Newborn Growth Consortium for the 21st Century (INTERGROWTH-21st), using their Windows desktop application version 1.0.6257.25111 (INTERGROWTH-21st, 2009)

4..**Recommendations**

1. More emphasis should be given in measuring, recording and plotting maternal weight gain in each antenatal clinic visit of all the pregnant women and interpretation of the weight gain according to the BMI at the booking visit and the area of the graph. The appropriate nutritional advice should be provided to each pregnant woman according to their weight gain in pregnancy at each antenatal clinic visit.

2. Body mass index of all the women should be optimized before they become pregnant through nutrition counselling for all the women irrespective of the parity. Pre-conceptional clinics and inter pregnancy care sessions needs to be optimally utilized for this.

3. Nutrition of the female children should be improved from their early childhood to prevent them being stunted. Which will be beneficial for the next generations to gain a higher maternal height.

4. A campaign to be developed and implemented to advocate females on appropriate ages to conceive. Access for contraception for teenage women and elderly women should be increased. Timely intervention for subfertility should be made accessible to prevent elderly pre