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Clinical Study of Effect of Body Mass Index on Pregnancy Outcome

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ABSTRACT: BMI i.e BODY MASS INDEX (kg / height cm^2), is a good statistical tool for diagnosis of weight related problems. It is a measurement of a person's leanness or corpulence based on their height and weight, and is intended to quantify tissue mass. BMI categorises women into 4 groupsi.e underweight, normal, overweight and obese. Early pregnancy BMI (<14weeks) helps to identify women at risk of developing antenatal, intrapartum and postpartum complications.
This study included 150 pregnant women who presented to the department of Obstetrics and Gynecology, KIMS hospital Bangalore, fulfilling the inclusion criteria and whose BMI was recorded at first antenatal visit <14 weeks of gestational age. The patients were followed up till delivery to assess maternal and fetal outcome. Objectives of the study :
To assess the pregnancy outcome based on Body Mass index.
To compare the neonatal outcome based on maternal BMI.
KEYWORDS: Body Mass Index, maternal and fetal outcome

I. INTRODUCTION

Pregnancy and child birth are the most important milestones in a woman's life.Pregnancy is considered as a rebirth of a woman ."A pregnancy is defined as high risk, when the probability of an adverse outcome for the mother or child is increased over the base line risk of that outcome among the general population by the presence of one or more ascertainable risk factors"[1]. Obesity and underweight are considered as high risk factors and both are associated with adverse pregnancy outcome.

WHO describes obesity as "one of the most blatantly visible, yet most neglected, public health problems that threaten to overwhelm both well and less developed countries". In 2016, according to WHO study, 1.9 billion adults were overweight or obese, while 462 million were underweight[2]. Out of which 40% women were overweight and 15% of women were obese.

In the past decade, the number of obese people doubled in India . According to NFHS 4 (2015 -2016), 23.3% of women(15 – 49years) belong to the over weight and obese category in Karnataka[3].

Though routine weight recording of pregnant women is being carried out in many centres, not much importance is being given to the weight of the pregnant women.

A prospective multicenter study of more than 16,000 pregnant women showed that obese women were 2.5 times and 1.6 times more likely to develop gestational hypertension and preeclampsia, respectively[4].

The combination of people living in poverty and the recent economic growth of India has led to the co-emergence of two types of malnutrition: undernutrition and overnutrition.

Underweight and overweight are serious health concerns for many individuals and could be associated with low physical fitness level.

Undernutrition during pregnancy restricts fetal growth, contributing to about 800000 neonatal and 400000 infant deaths, and 20% of stunting in the first 2 years of the child's life, as well as 20% of maternal deaths at delivery[5]. Maternal anaemia, as a result of undernutrition, and infections coexists with low BMI, particularly in Indian women of reproductive age. 1 - 3 The Sustainable Development Goals bring explicit attention to nutrition, including the World Health Assembly target to reduce anaemia in women of ages 15–49 years by 50% by 2025[6]. Since India has largest number of neonatal, infant and under age 5 children deaths in the world as well as high rates of stunting and growth faltering, it is particularly timely to understand maternal nutritional status as a risk factor for maternal and childhood adverse outcomes of pregnancy.

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Obesity has been defined as a condition characterised by excessive body fat frequently resulting in impairment of health. Maternal overweight and obesity (BMI >25kg/m2) including gestational hypertension, pre-eclampsia, macrosomia, early induction of labour and need for caesarean deliveries. In rural India, undernutrition predominates and is associated with low birth weight, while in some parts of India obesity is a major problem.

It is important to record BMI of all pregnant women at first antenatal visit regardless of gestational age, this information would help to identify high-risk pregnant women at their first antenatal visit. In the 2015 National Family and Health Survey (NFHS), 23% of Indian women had a BMI less than 18.5kg/m2 and 53% were anaemic (haemoglobin (Hb).[7]

Obesity is a major public health concern and its prevalence is increasing in both developed and developing nations due to changes in lifestyle. WHO has declared obesity is a major killer disease, at par with malnutrition. The worldwide prevalence of obesity doubled between 1980 – 2014, more than 1.9 billion adults aged 18years and older were overweight.[8]

The National Family Health survey in India indicated an increase in the overweight or obese from 13% in 2005 - 2006 to 21% in 2015-2016[9]

Obesity is associated with increased risk of developing hypertension, diabetes mellitus, dyslipidemia, obstructive sleep apnea, arthritis,metabolic syndrome, colorectal cancer, endometrial cancer and breast cancer.

Pregnancy complications among overweight women has been studied as early as 1945. Since then, a number of studies have reported a clear association between maternal weight and adverse obstetric and perinatal outcomes. Data from North America has been supported by results from Danish[10] and Ebrahimiet al[11]. In the UK Sebire[12] and similar reports have been published by Ushakiranet al[13] and Scotland et al[14].

As obesity, underweight and its related complications are global concerns, ACOG recommended that body mass index BMI be recorded for all women at the initial prenatal visit[15]. The information concerning the maternal and fetal risks concerning the BMI in pregnancy should be provided.

Overweight and obesity during pregnancy is associated with hypertensive disorders of pregnancy, gestational diabetes mellitus , macrosomia, shoulder dystocia, prolonged labour, operative vaginal delivery , postpartum hemorrhage, increased caesarean sections, post operative wound infection, whereas, underweight is associated with increased incidence of preterm labour, premature rupture of membranes, preterm premature rupture of membranes, low birth weight infant and anemia[16 -19].

Management of weight related problems in pregnancy is three pronged. Primary prevention is aimed at optimizing preconception BMI to the ideal. Secondary interventions target mothers at risk of developing pregnancy related complications as a result of their BMI while tertiary interventions target women experiencing the pregnancy related complication.

Body Mass Index, also known as Quetlet index, is a statistical measure that compares a person's weight for height and does not actually measure body fat.[20]

Weight gain for a pregnant female who has a normal BMI , is 11 – 16 kgs throughout the pregnancy. Majority of the weight is gained in second and third trimester[21]. Many pregnant women do not have their weight and height recorded before conception .Hence BMI of first trimester is considered accurate in assessing the weight gain throughout the pregnancy and its complications .

This research is conducted to evaluate the correlation between BMI at the beginning of pregnancy and maternal and fetal complications.

II. MATERIALS AND METHOD

The study was perfomed in the Department of Obstetric and Gynaecology in KIMS hospital on 150 pregnant women admitted in labour ward after taking written and informed consent for the above said study for 18 MONTHS(JAN 2019 – JUN 2020)

INCLUSION CRITERIA :
Pregnant women
Singleton
Weight and height recorded <14weeks

EXCLUSION CRITERIA
Multifetal gestation
Medical disorders like
Chronic hypertension
Chronic Diabetes
Cardiac disease
Endocrine disorders
Patients not having documented height and weight recordings <14weeks

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Height in metres and weight in kilograms were used to calculate BMI.
Weight was measured with the weighing machine.
Height was measured using the stadiometer. These women were then divided into standard BMI categories according to Asian classification.
Group 1: underweight <18.5 kg/m²
Group 2 : normal 18.5 – 22.9 kg/m²
Group 3 : overweight 23 – 24.9 kg/m²
Group 4 : obese >25 kg/m²

They were followed up till delivery.
Maternal and foetal outcomes were studied in those groups.

III. OBSERVATION AND RESULTS

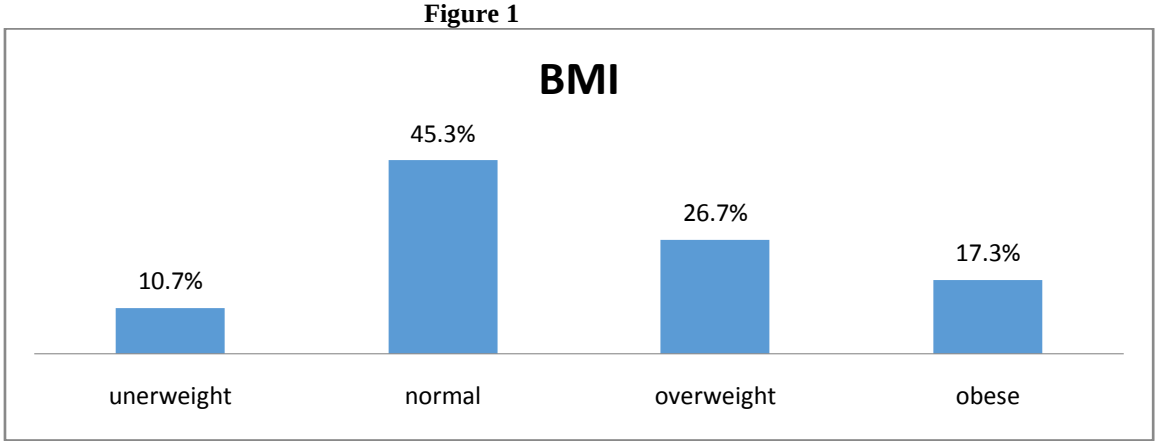
A total of 150 patients were included in the study according to the inclusion criteria.
Patients were divided into 4 groups based on their BMI recorded at 1st visit ,<14weeks of gestation.

Weight category

Table 1

BMI (kg/m²)		Frequency	Percent(%)
	UNDERWEIGHT <18.5	16	10.7
	NORMAL 18.5 – 22.9	68	45.3
	OVERWEIGHT 23 – 24.9	40	26.7
	OBESE >25	26	17.3
	Total	150	100

Figure 1



Out of the 150 cases that were included in the study 45.3% had normal BMI, 26.7% belonged to overweight , 17.3% were obese and 10.7% were underweight. The mean BMI was 22.4kg/m². Primigravida were 106 and 44 patients were multigravida.

Distribution of Age according to BMI

Table 2

Age (yrs)	UNDERWEIGHT - <18.5		NORMAL – 18.5 – 22.9		OVERWEIGHT – 23 -24.9		OBESE - >25		p value
	N	%	N	%	N	%	N	%	
18-20	11	68.8%	11	16.2%	6	15.0%	0	0.0%	<0.001*
21-25	4	25.0%	27	39.7%	13	32.5%	2	7.7%	

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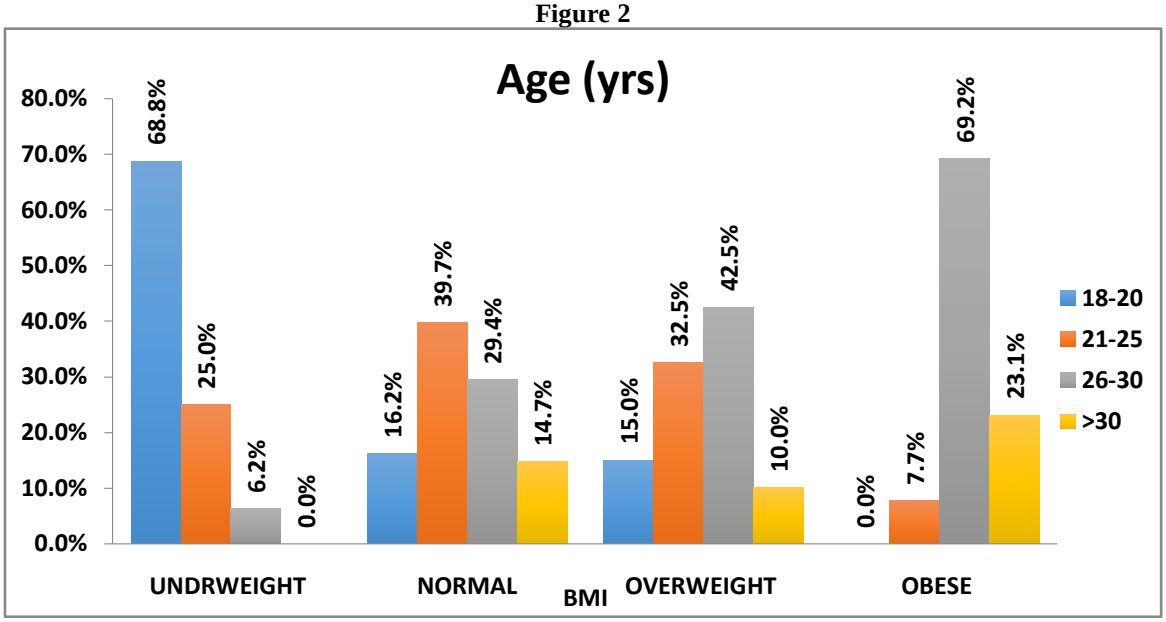
26-30	1	6.2%	20	29.4%	17	42.5%	18	69.2%
>30	0	0.0%	10	14.7%	4	10.0%	6	23.1%
Total	16	100.0%	68	100.0%	40	100.0%	26	100.0%

Note: * significant at 5% level of significance (p<0.05)

Figure 2



Majority of the patients in each category – underweight category 68.8% women belonged to the age group of 18- 20 years, 39.7% belonged to 21 – 25 years in normal BMI category , among overweight 42.5% and obese 69.2% were of the age 26 – 30 years.

Table: Mean Age according to BMI

Table 3

BMI	Age(yrs)		p value
	Mean	SD	
UNDERWEIGHT - <18.5	20.6	2.2	<0.001*
NORMAL – 18.5 – 22.9	25.4	4.4	
OVERWEIGHT – 23 -24.9	25.2	4.0	
OBESE - >25	28.6	2.5	
Total	25.4	4.3	

Note: * significant at 5% level of significance (p<0.05)

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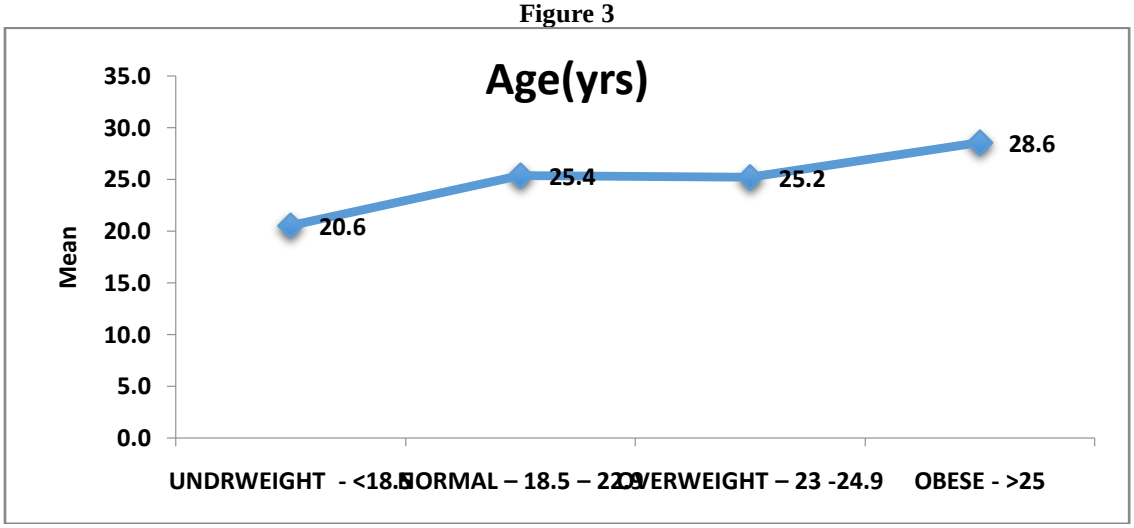
Figure: Mean Age according to BMI

Figure 3



In the study population, the mean age group of underweight category was 20.6 years, normal BMI was 25.4 years, overweight was 25.2 years and obese was 28 .6 years .

SOCIOECONOMIC STATUS

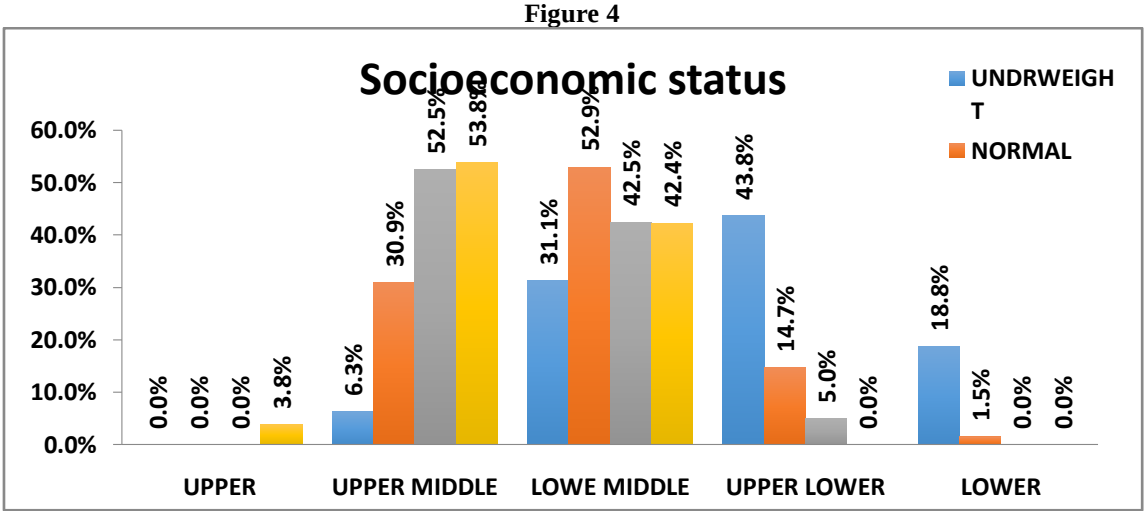
Table: BMI by Socioeconomic status

Table 4

SOCIOECONOMIC STATUS	UNDERWEIGHT		NORMAL		OVERWEIGHT		OBESE		p value
	N	%	N	%	N	%	N	%	
UPPER	0	0.0%	0	0.0%	0	0.0%	1	3.8%	<0.001*
UPPER MIDDLE	1	6.3%	21	30.9%	21	52.5%	14	53.8%	
LOWER MIDDLE	5	31.1%	36	52.9%	17	42.5%	11	42.4%	
UPPER LOWER	7	43.8%	10	14.7%	2	5.0%	0	0.0%	
LOWER	3	18.8%	1	1.5%	0	0.0%	0	0.0%	
Total	16	100.0%	68	100.0%	40	100.0%	26	100.0%	

Note: * significant at 5% level of significance (p<0.05)

Figure 4



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In underweight category majority (43.8%) of them belonged to upper lower class. In normal category majority - 52.9% belonged to lower middle class. In overweight and obese category 52.5% and 53.8% respectively, belonged to upper middle class.

ANTEPARTUM COMPLICATIONS

Table 5: BMI by Antepartum Complications

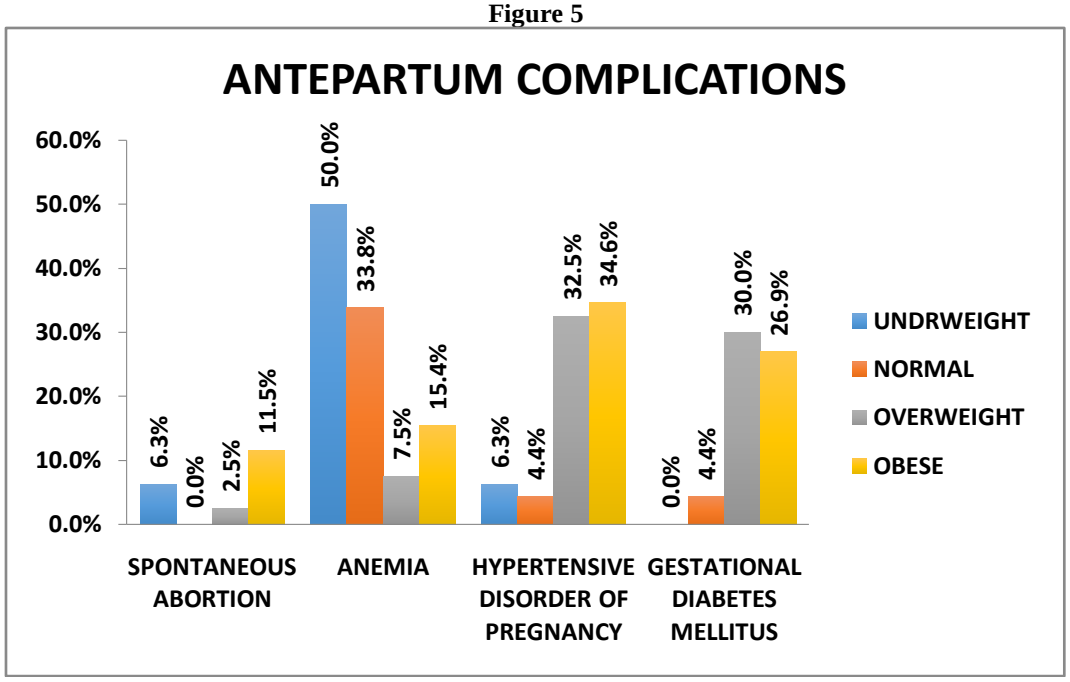
Table 5

COMPLICATIONS	UNDERWEIGHT		NORMAL		OVERWEIGHT		OBESE		p value
	N	%	N	%	N	%	N	%	
SPONTANEOUS ABORTION	1	6.3%	0	0.0%	1	2.5%	3	11.5%	0.023*
ANEMIA	8	50.0%	23	33.8%	3	7.5%	4	15.4%	<0.001*
HYPERTENSIVE DISORDER OF PREGNANCY	1	6.3%	3	4.4%	13	32.5 %	9	34.6%	<0.001*
GESTATIONAL DIABETES MELLITUS	0	0.0%	3	4.4%	12	30.0 %	7	26.9%	<0.001*

Note: * significant at 5% level of significance (p<0.05)

BMI by antepartum complications

Figure 5



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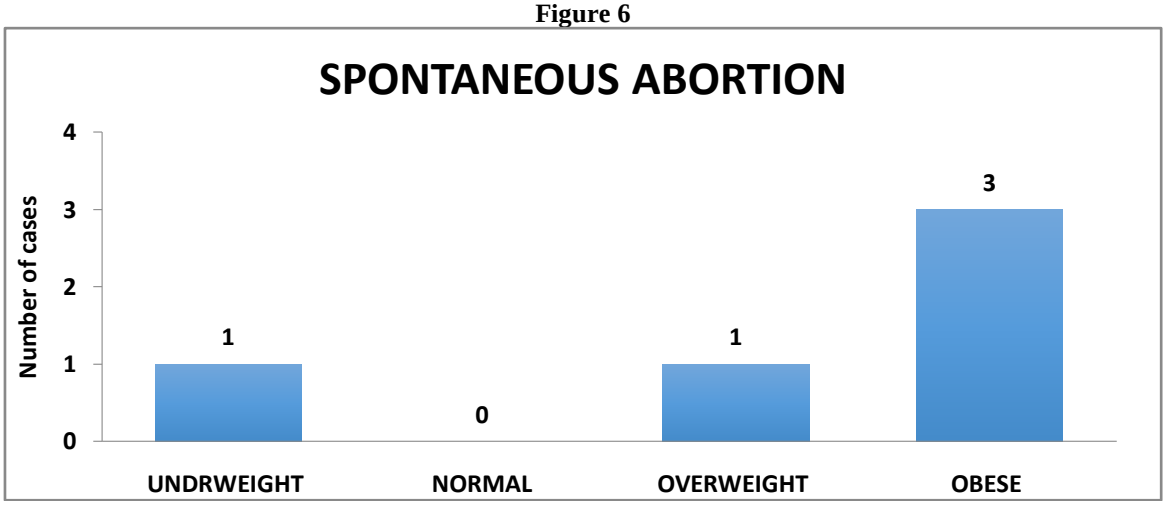
In the study population, 11.5% of patients belonging to obese category had spontaneous abortion. Anemia was the most common complication of underweight category accounting for 50 % of cases. Hypertensive disorder of pregnancy and gestational diabetes mellitus were the most common complications of the overweight and obese categories.

SPONTANEOUS ABORTION

Table 6

			WEIGHT CATEGORY				
			UNDERWEIGHT	NORMAL	OVERWEIGHT	OBESE	TOTAL
SPONTANEOUS ABORTION	NIL	Count	15	68	39	23	145
		% of Total	10.0%	45.3%	26.0%	15.3%	96.7%
	YES	Count	1	0	1	3	5
		% of Total	0.7%	0.0%	0.7%	2%	3.3%
Total		Count	16	68	40	26	150
		% of Total	10.7%	45.3%	26.7%	17.3%	100.0%

Figure 6



5 patients out of 150 patients had spontaneous abortion. Majority 3 (2%) cases were obese. One patient belonging to underweight and overweight category respectively had spontaneous abortion.

ANEMIA

Table 7

ANEMIA	UNDERWEIGHT		NORMAL		OVERWEIGHT		OBESE		p value
	N	%	N	%	N	%	N	%	
Absent	5	31.2%	53	77.9%	36	90.0%	24	92.3%	<0.001*
Present	11	68.8%	15	22.1%	4	10.0%	2	7.7%	
Total	16	100.0%	68	100.0%	40	100.0%	26	100.0%	

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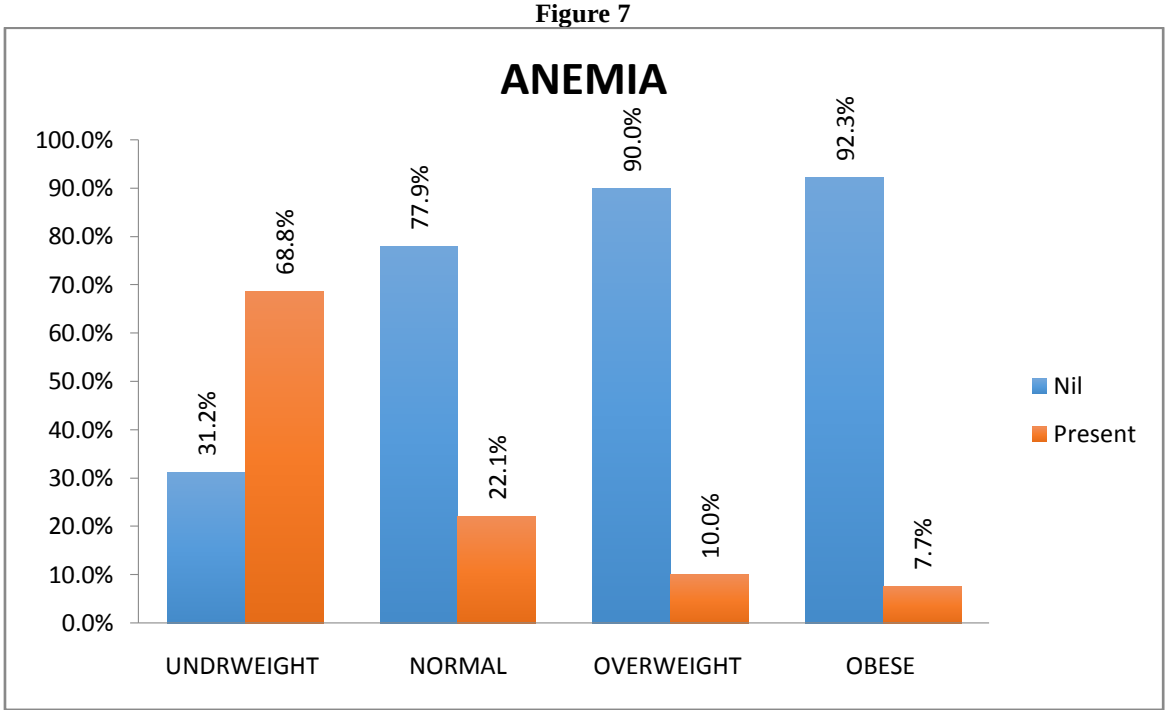
Note: * significant at 5% level of significance (p<0.05)

Figure 7



Out of 150 cases, 32 patients had anemia as per our study. 68.8 % who had anemia belonged to underweight group and 22.1% belonged to normal BMI group. 10% and 7.7 % of overweight and obese group respectively had anemia.

HYPERTENSIVE DISORDER OF PREGANCY

Table: Hypertensive Disorder of Pregnancy and BMI

Table 8

HYPERTENSIVE DISORDER OF PREGNANCY	UNDERWEIGHT		NORMAL		OVERWEIGHT		OBESE		p value
	N	%	N	%	N	%	N	%	
Absent	13	81.2%	61	89.7%	27	67.5%	14	53.8%	<0.001*
Present	3	18.8%	7	10.3%	13	32.5%	12	46.2%	
Total	16	100	68	100	40	100	26	100	

Note: * significant at 5% level of significance (p<0.05)

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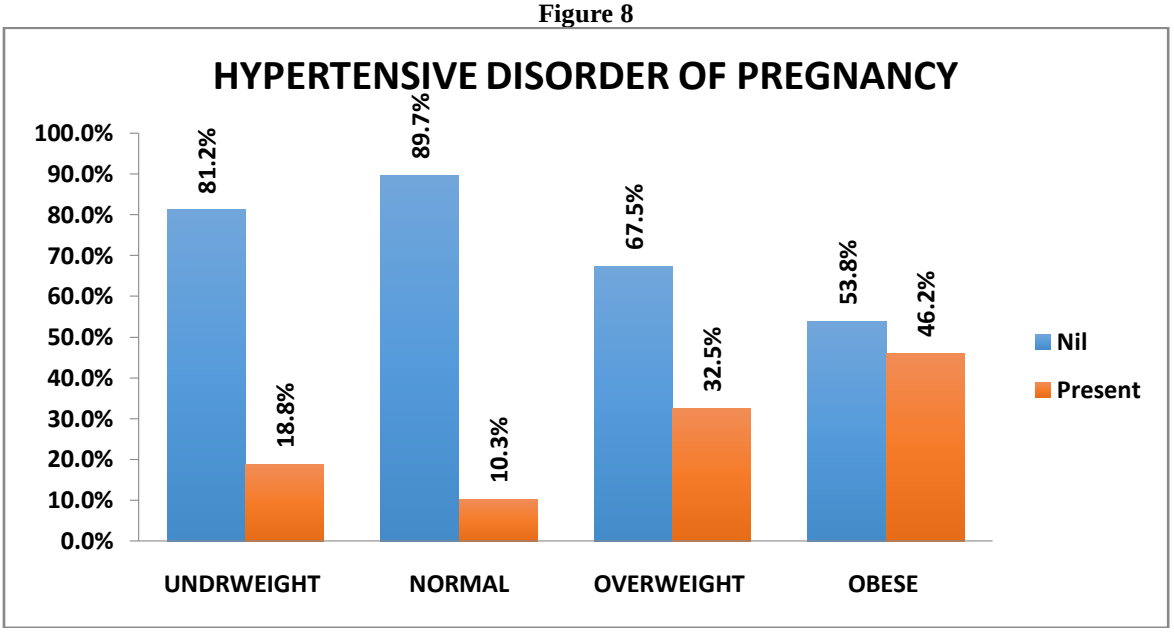
Figure: Hypertensive Disorder of Pregnancy and BMI

Figure 8



Out of 150 cases, 35 women had hypertensive disorder of pregnancy. Majority of them belonged to overweight and obese class i.e 32.5% and 46.2 % respectively.

GESTATIONAL DIABETES MELLITUS

Table: Gestational Diabetes Mellitus and BMI

Table 9

	UNDERWEIGHT		NORMAL		OVERWEIGHT		OBESE		p value
	N	%	N	%	N	%	N	%	
Absent	16	100%	67	98.5%	35	87.5%	20	77%	<0.001*
Present	0	0%	1	1.5%	5	12.5%	6	23%	
Total	16	100.0%	68	100.0%	40	100.0%	26	100.0%	

Note: * significant at 5% level of significance (p<0.05)

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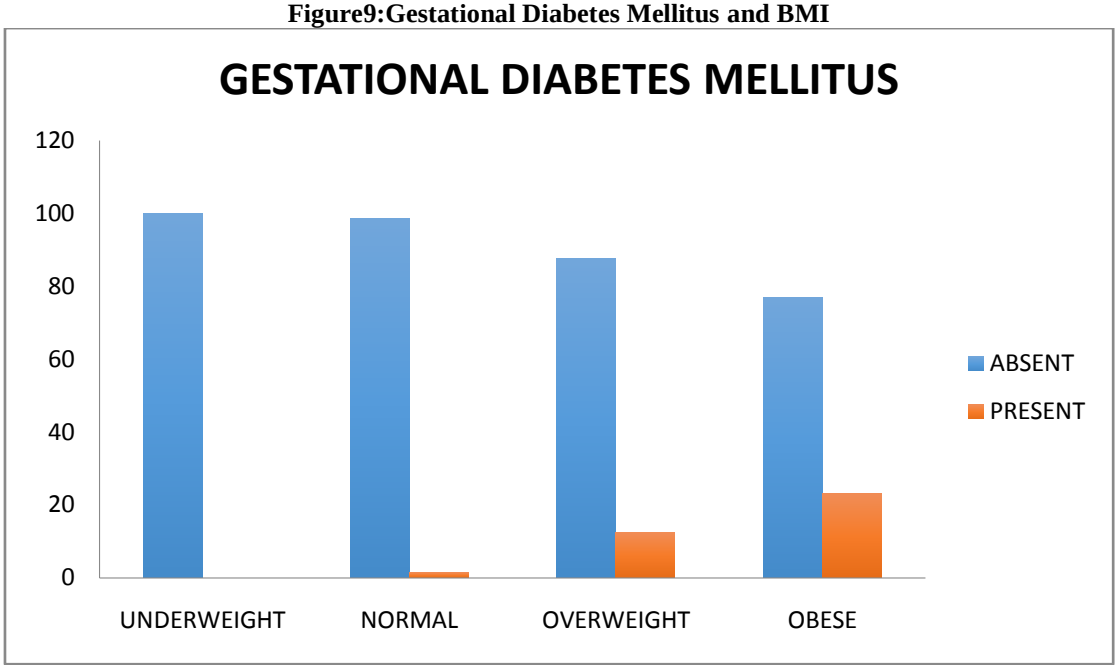
Figure9:Gestational Diabetes Mellitus and BMI



12 patients had gestational diabetes mellitus out of 150 patients. 6 patients out of 26 patients in obese class and 5 patients out of 40 patients in overweight class had gestational diabetes mellitus. 1 patient in normal category had gestational diabetes mellitus.

INDICATION FOR INDUCTION

Table 10

	BMI CATEGORY			
INDICATION	**UNDER WEIGHT**	**NORMAL**	**OVERWEIGHT**	**OBESE**
HTN	0	6	11	5
GDM	0	2	3	2
POST DATE (>40WKS)	2	11	0	0
PROM	2	8	2	0
PPROM	1	2	3	2
OLIGOAMNIOS	0	4	2	1
TOTAL	5	33	21	10

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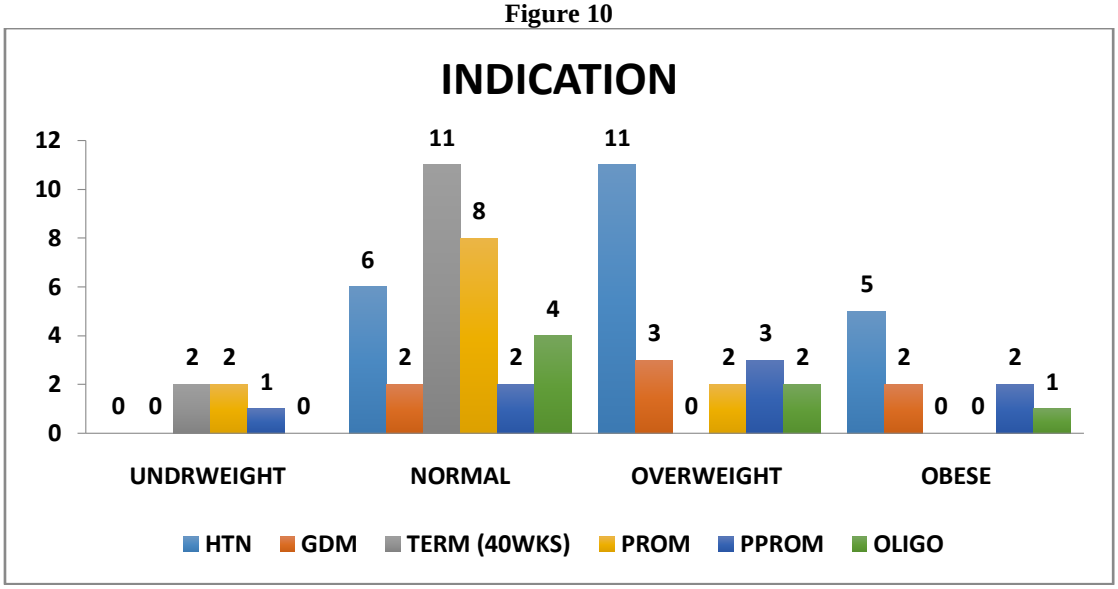
Figure 10



Out of 145 cases, 69 cases were induced. 31 cases delivered vaginally and 38 cases underwent caesarean section.

Premature rupture of membranes and post dated pregnancy (>40 weeks) were the most common indications for induction in underweight category.

Post datism(Term >40 weeks) was the most common indication for induction in normal BMI category.

Hypertensive disorder of pregnancy was the most common indication for induction in overweight and obese categories.

MODE OF DELIVERY

Table 11

MODE	UNDERWEIGHT		NORMAL		OVERWEIGHT		OBESE		p value
	N	%	N	%	N	%	N	%	
VAGINAL DELIVERY	10	62.5%	44	64.7%	11	27.5%	6	23.1%	0.017*
CESAREAN SECTION	5	31.3%	24	35.3%	28	70.0%	17	65.4%	0.001*

Note: * significant at 5% level of significance (p<0.05)

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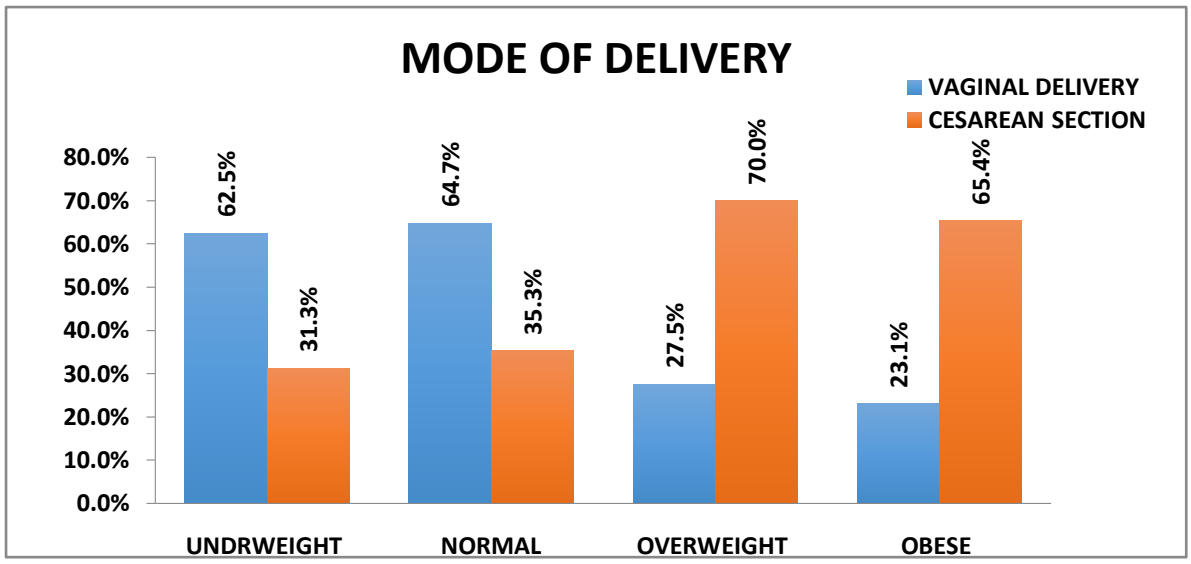
Figure 11



Out of 150 cases, 5 (3.3%) patients had spontaneous abortion, 74 (49.3%) patients underwent caesarean section and 71 (47.4%) patients delivered vaginally.
62.5% and 64.7% patients delivered vaginally in underweight and normal BMI groups respectively, whereas 70% and 65.4% patients underwent LSCS in overweight and obese groups respectively.

GESTATIONAL AGE AT DELIVERY
Table: Gestational Age at Delivery and BMI

Table 12

GESTATIONAL AGE AT DELIVERY	**UNDERWEIGHT**		**NORMAL**		**OVERWEIGHT**		**OBESE**		**p value**
	N	%	N	%	N	%	N	%	
<34 WEEKS	2	13.3%	2	3%	3	7.6%	3	13.1%	0.345
34 – 36 $^{+6}$ WEEKS	3	20%	1	1.5%	6	15.4%	7	30.4%	
37 – 40 WEEKS	9	60%	58	85.2%	30	77%	13	56.5%	
>40 WEEKS	1	6.7%	7	10.3%	0	0%	0	0%	
TOTAL	15	100%	68	100%	39	100%	23	100%	

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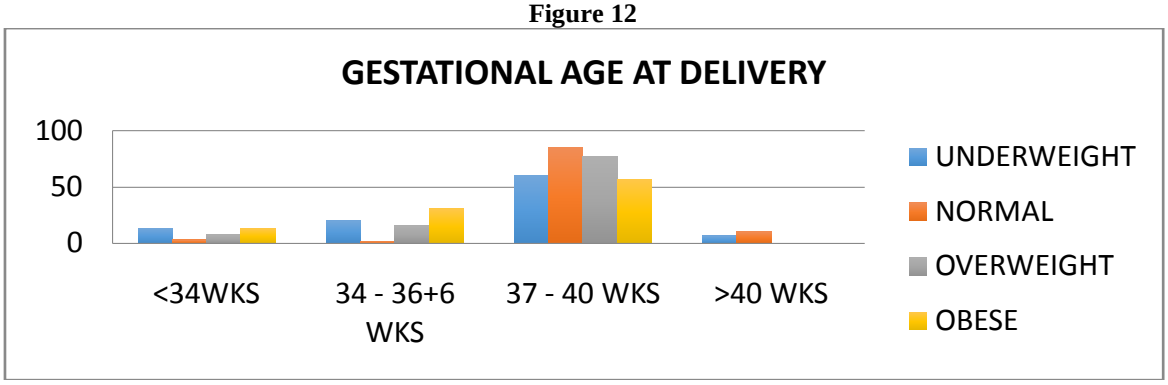
Figure 12

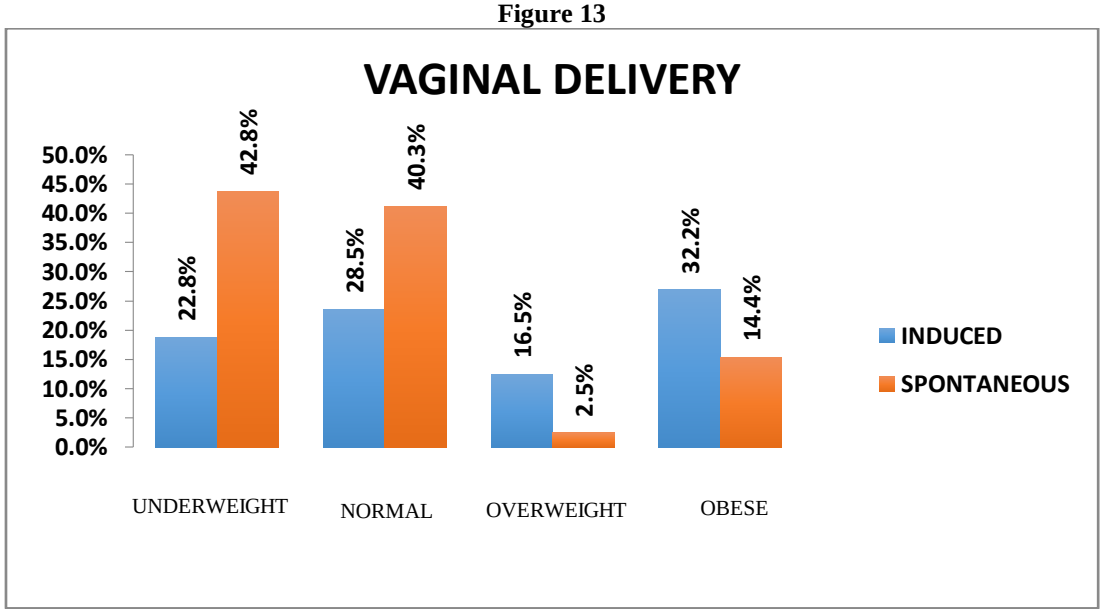


Out of 145 cases, 27 (18.6%) had preterm delivery and 118 (81.4%) delivered after 37 completed weeks. Preterm delivery was more in obese (<34 weeks – 13.1% and 34 – 36+6 weeks 30.4%)and in underweight category (<34weeks – 13.3% and 34 – 36+6 weeks 20 %).

Table 13: Vaginal Delivery and BMI
Table 13

VAGINAL DELIVERY	UNDERWEIGHT		NORMAL		OVERWEGHT		OBESE		TOTAL	p value
	N	%	N	%	N	%	N	%		
INDUCED	3	22.8%	16	28.5%	5	16.5%	7	32.2%	100 %	0.062
SPONTANEOUS	7	42.8%	28	40.3%	1	2.5%	4	14.4%	100 %	

Figure: Vaginal Delivery and BMI
Figure 13



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Out of 71 patients who delivered vaginally, 40 had spontaneous delivery and 31 were induced. Out of the total underweight patients (n – 16), 7 patients delivered spontaneously and 3 were induced. Out of the total normal BMI patients (n – 68), 28 patients delivered spontaneously and 16 cases were induced. Out of the total overweight cases (n -40), 1 delivered spontaneously and 5 cases were induced. Out of the total obese cases (n – 26), 4 cases delivered spontaneously and 7 cases were induced.

INDICATION FOR LSCS

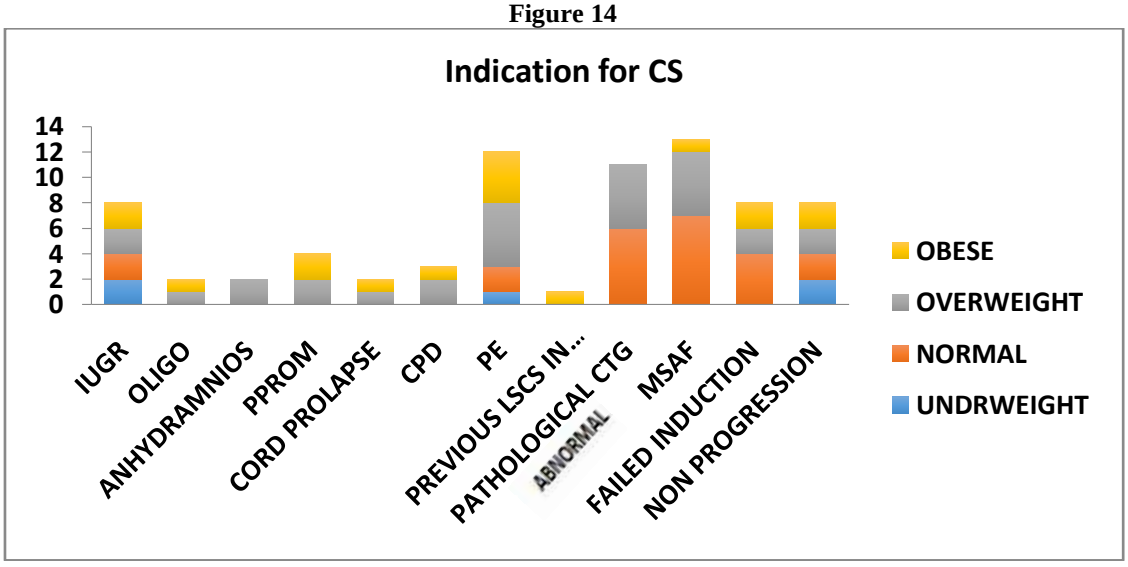
Table: Distribution of Indication for CS according to BMI

Table 14

INDICATION FOR CS	UNDR WEIG HT - <18.5	NORMAL – 18.5 – 22.9	OVERWEIGHT – 23 -24.9	OBESE - >25
	N	N	N	N
FGR	2	2	2	2
OLIGO	0	0	1	1
ANHYDRAMNIOS	0	0	2	0
PPROM	0	0	2	2
CORD PROLAPSE	0	0	1	1
CPD	0	0	2	1
PE	1	2	5	4
PREVIOUS LSCS IN LABOR	0	0	0	1
ABNORMAL CTG	0	6	5	0
MSAF	0	7	5	1
FAILED INDUCTION	0	4	2	2
NON PROGRESSION	2	2	2	2
TOTAL	5	23	29	17

Figure: Distribution of Indication for CS according to BMI

Figure 14



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FGR and non progression of labor were the most common indication of LSCS in underweight category .
Meconium stained amniotic fluid was the most common indication for LSCS among patients belonging to normal BMI.
Pre eclampsia, abnormal CTG and meconium stained liquor were the common indications for LSCS in overweight category.
Pre eclampsia was the most common indication for caesarean section in obese patients.

BIRTH WEIGHT

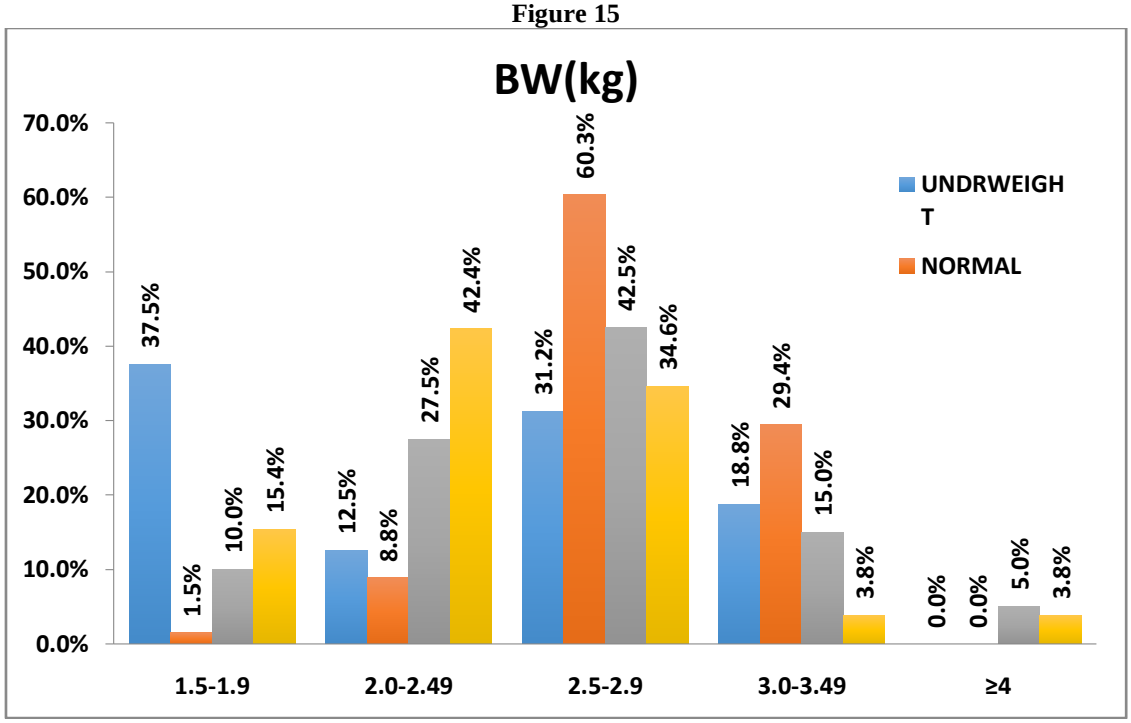
Table: Distribution of BIRTH WEIGHT according to BMI

Table 15

BW(kg)	UNDRWEIGHT - <18.5		NORMAL – 18.5 – 22.9		OVERWEIGHT – 23 -24.9		OBESE - >25		p value
	N	%	N	%	N	%	N	%	
1.5-1.9	6	37.5%	1	1.5%	4	10.0%	4	15.4%	<0.001*
2.0-2.49	2	12.5%	6	8.8%	11	27.5%	11	42.4%	
2.5-2.9	5	31.2%	41	60.3%	17	42.5%	9	34.6%	
3.0-3.49	3	18.8%	20	29.4%	6	15.0%	1	3.8%	
≥4	0	0.0%	0	0.0%	2	5.0%	1	3.8%	
Total	16	100.0%	68	100.0%	40	100.0%	26	100.0%	

Note: * significant at 5% level of significance (p<0.05)

Figure 15



Underweight patients had majority of the babies belonging to low birth weight category (37.5%) i.e 1.5 – 1.9 kg.
Majority of the babies born to the mothers having normal BMI and overweight category was between 2.5 to 3.5 kg.
Majority of the babies born to obese patients had birth weight 2 – 2.49 kg.

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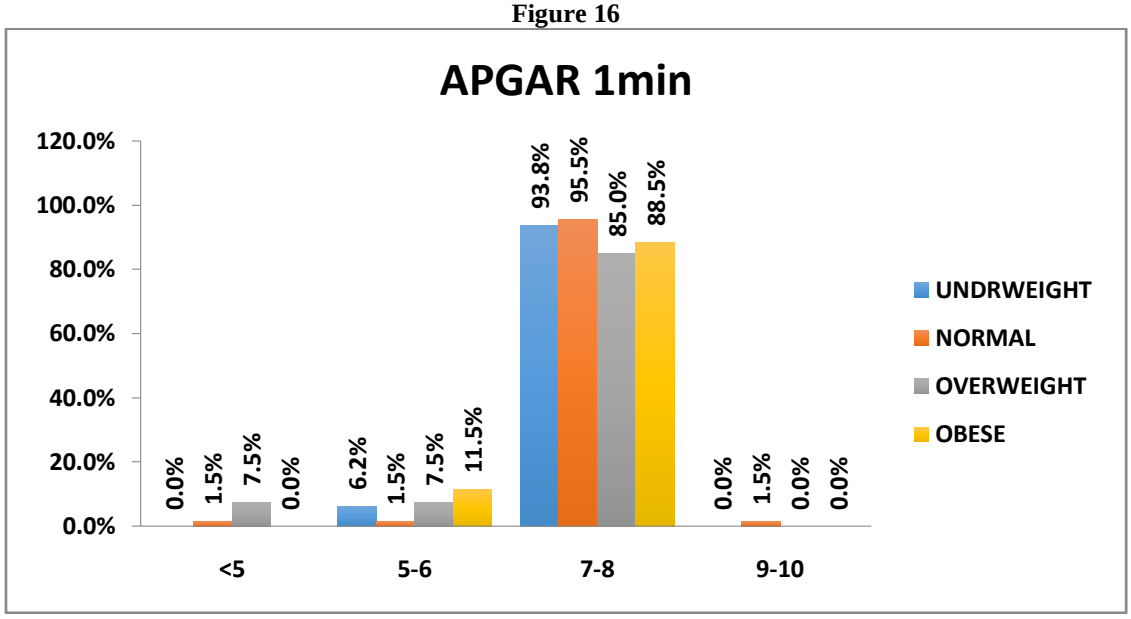
Table: Distribution of APGAR 1min according to BMI

Table 16

APGAR 1min	UNDRWEIGHT - <18.5		NORMAL – 18.5 – 22.9		OVERWEIGHT – 23 -24.9		OBESE - >25		p value
	N	%	N	%	N	%	N	%	
<5	0	0.0%	1	1.5%	3	7.5%	0	0.0%	0.297
5-6	1	6.2%	1	1.5%	3	7.5%	3	11.5%	
7-8	15	93.8%	65	95.5%	34	85.0%	23	88.5%	
9-10	0	0.0%	1	1.5%	0	0.0%	0	0.0%	
Total	16	100.0%	68	100.0%	40	100.0%	26	100.0%	

Figure: Distribution of APGAR 1min according to BMI

Figure 16



Babies born to overweight patients had APGAR at 1 minute <5

Table: Distribution of APGAR 5min according to BMI

Table 17

APGAR 5min	UNDRWEIGHT - <18.5		NORMAL – 18.5 – 22.9		OVERWEIGHT – 23 -24.9		OBESE - >25		p value
	N	%	N	%	N	%	N	%	
5-6	0	0.0%	0	0.0%	3	7.5%	2	7.7%	0.055
7-8	3	18.8%	5	7.4%	7	17.5%	6	23.1%	
9-10	13	81.2%	63	92.6%	30	75.0%	18	69.2%	
Total	16	100.0%	68	100.0%	40	100.0%	26	100.0%	

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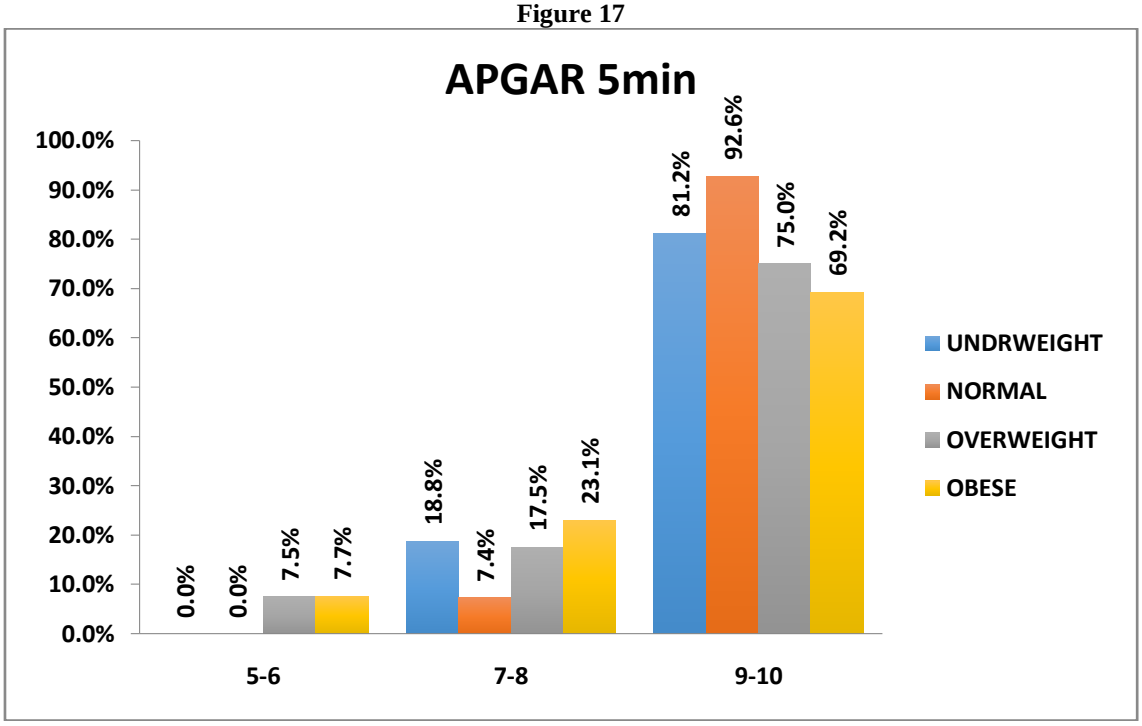
Figure: Distribution of APGAR 5min according to BMI

Figure 17



The APGAR score of babies born to underweight women improved after 5 minutes.
Babies born to normal weight women had normal APGAR.
7.5% and 7.7% of babies born to overweight and obese BMI categories had moderately depressed APGAR score.

Table: Indication for NICU admission according to BMI

Table 18

INDICATION FOR NICU ADMISSION	UNDRWEIGHT - <18.5		NORMAL – 18.5 – 22.9		OVERWEIGHT – 23 -24.9		OBESE - >25	
	N	%	N	%	N	%	N	%
HYPOXIA	1	6.3%	2	2.9%	6	15.0%	4	15.4%
IDM	0	0.0%	0	0.0%	2	5.0%	1	3.8%
IUGR	2	12.5%	1	1.5%	3	7.5%	2	7.7%
MAS	0	0.0%	1	1.5%	1	2.5%	2	7.7%
PRETERM	5	31.3%	1	1.5%	4	10.0%	4	15.4%
TTNB	1	6.3%	2	2.9%	2	5.0%	0	0.0%

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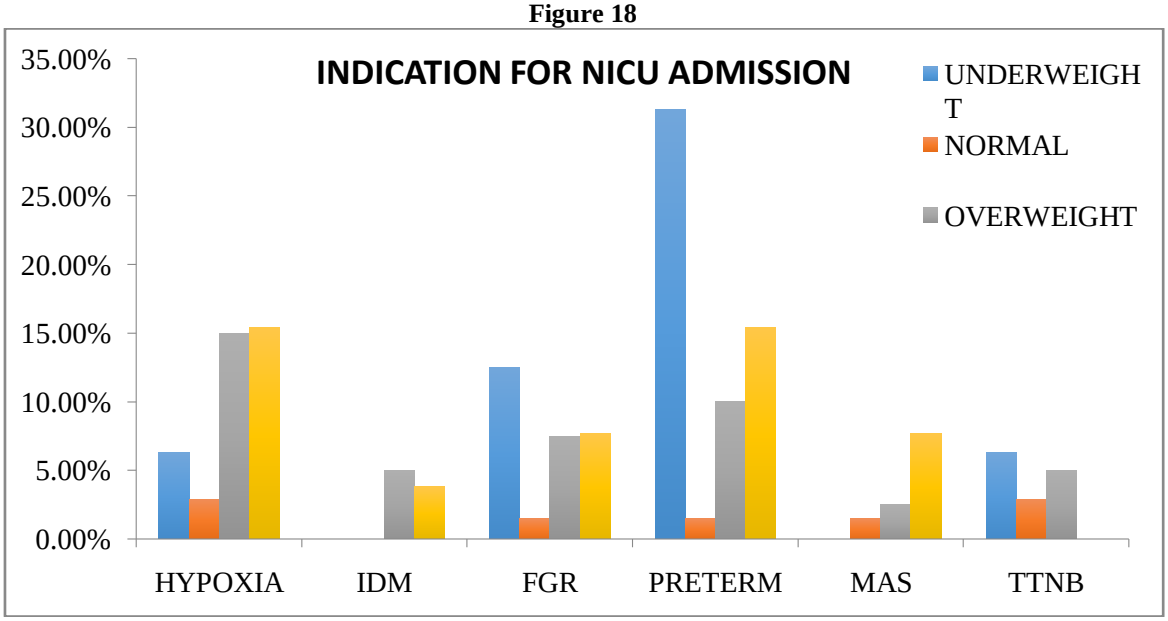
Figure: Indication for NICU admission according to BMI

Figure 18



The most common indication for NICU admission of babies born to underweight women was prematurity, accounting to 31.3%

Transient tachypnea of new born and hypoxia were the most common indications of admission to NICU in babies born to women with normal BMI.

Hypoxia was the commonest indication for NICU admission among babies born to mothers who were overweight.

Preterm and hypoxia were the commonest indications for babies born to obese patients.

POSTPARTUM COMPLICATIONS

Table: PPH and PI according to BMI

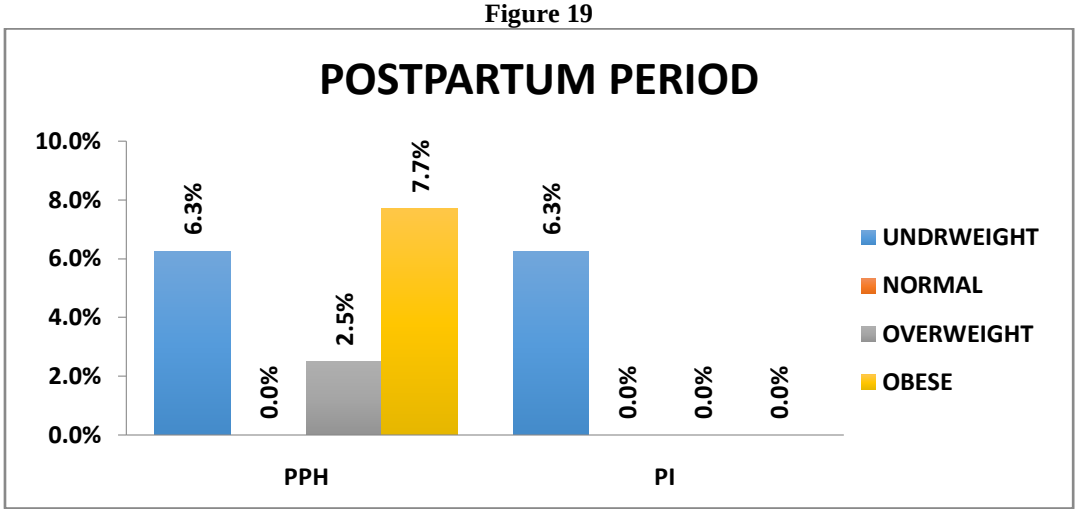
Table 19

POSTPARTUM PERIOD	UNDERWEIGHT - <18.5		NORMAL – 18.5 – 22.9		OVERWEIGHT – 23 -24.9		OBESE - >25		p value
	N	%	N	%	N	%	N	%	
POSTPARTUM HEMORRHAGE	1	6.3%	0	0.0%	1	2.5%	2	7.7%	0.158
PUERPERAL INFECTION	1	6.3%	0	0.0%	0	0.0%	0	0.0%	0.038*

Note: * significant at 5% level of significance ($p<0.05$)

Figure: PPH and PI according to BMI

Figure 19



In our study, it was found that postpartum hemorrhage was more in obese (7.7%) followed by underweight women (6.3%). Puerperal infection was more common(6.3%) in underweight women.

IV. CONCLUSION

To conclude, pregnancy complications related to maternal BMI is a growing problem. Maternal basal BMI has strong association with pregnancy complications and outcome.

Body Mass Index, measured in early pregnancy is a valid and simple method to identify pregnant women at higher risk of developing various maternal and fetal complications. Both underweight and obesity are modifiable risk factors. Early pregnancy BMI provides a simple and practical anthropometric parameter for predicting pregnancy outcome. Preconeption counselling and interventions should be targeted to gain weight in underweight and loose weight in overweight and obese women.

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