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Original Article

CORRELATION BETWEEN BMI AND PREGNANCY OUTCOME AMONG POSTNATAL MOTHERS WITH PREGNANCY INDUCED HYPERTENSION IN SELECTED HOSPITALS BANGALORE

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Abstract :

Title : Correlation between BMI and pregnancy Outcome among postnatal mothers with pregnancy Induced hypertension in selected hospital Bangalore.

Objectives : To identify and correlate BMI and pregnancy Outcome among postnatal mothers with pregnancy Induced hypertension.

Method : A non experimental correlation design was utilized among 80 postnatal mothers who were diagnosed as Pregnancy induced hypertension during their antenatal period selected as samples by using purposive sampling technique. Demographic data were collected by interview method, their BMI was calculated, pregnancy outcomes were identified from records by using an outcome checklist.

Results : Underweight mothers had low birth weight babies and received NICU care. Among normal weight mothers 17.5 % delivered by LSCS, 15% babies were low birth weight babies 12.5 were preterm babies among them 10% received NICU care. In the overweight group 18.75% undergone LSCS, 18.75% were LBW and 1.25% VLBW, 8.75% babies were preterm, 12.5% newborn received NICU care. Among Obese mothers 8.75% delivered by LSCS, 6.25% of LBW babies, 5% were preterm and all of them received NICU care. There is a positive correlation between BMI and diagnosis and type of delivery. Significant at .01 and .05 Level (p value .008 and .019 respectively). Negative correlation between birth weight and diagnosis and gestational age. r = -.499 significant at .01 level (p value .000)

Conclusion : Obesity and under weight is a leading, preventable cause of mortality worldwide. Preeclampsia increases maternal and perinatal morbidity and mortality rates. All women who are in reproductive age group and under risk to develop pregnancy induced hypertension need to be educated about to maintenance of normal weight before pregnancy. Nurses have more responsibility on creating awareness among women how to maintain normal weight to avoid development of complications to the mother and newborn.

Keywords : BMI, Pregnancy outcome, Pregnancy Induced Hypertension, Low birth weight.
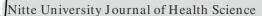
Introduction :

Uncomplicated course of pregnancy, which results in normal growth and development of the foetus, is dependent on many factors, individual one as well as factors associated with one another. In addition to influence of environment and genetic predisposition one of the factors is maternal weight before and during gestation.

Ninety nine % of maternal deaths occur in developing countries. In developing countries a quarter of a million women still die in pregnancy and childbirth each year. The causes of 80 % of all maternal deaths are severe bleeding, infections, and high blood pressure during pregnancy and unsafe abortion. The report trends in maternal mortality show that the maternal mortality ratio for obese pregnant women was 4.6 times higher than underweight mothers. The maternal morbidity ratio reached 41 % in underweight mothers and 70 % in obese mothers. The obesity and underweight were still as a risk factor for maternal and neonatal mortality and morbidity. The annual number of maternal deaths dropped from more than 543,000 to 287,000 a decline of 47 per cent from 1990 to 2010.[1]

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The Institute of Medicine in 1995 demonstrated that low maternal weight gain in the second trimester was associated with decreased birth weights ranging from 48 to 248 grams, depending on the pattern of weight gain in the other trimesters. Similarly, in the year 1996 also demonstrated that low prenatal weight gain particularly involving the second trimester was associated with birth weight. Finally 1998 demonstrated that poor maternal weight gain between weeks resulted in infants born smaller compared to normal normal weight infants.[2]

Improvements of maternal and child health a public health goals. In pregnancy body mass index childbearing age women been shown that women the start of pregnancy a maternal and child health studies reported that pre pr associated with infant birth we who gain weight excessively pregnancy are at increased risks of p health outcomes. Weight gain during recommended range (11 to 40 pounds) during the last 10 years. Several studies ha maternal excessive gestational weight gain (G associated with increased risks of pregnancy-in hypertension, gestational diabetes mellitus (GDM) caesarean delivery and large for gestational age infant, and maternal inadequate GWG was associated with increased risks of low birth weight and small for gestational age infant.[3]

Statement of the Problem

"A study to assess the relationship between body mass index and pregnancy outcome among postnatal mothers with pregnancy Induced Hypertension in postnatal ward at selected Maternity Hospitals, Bangalore."

Objectives of the Study

1. To assess the body mass index among postnatal mothers with Pregnancy Induced hypertension.

2. To assess the pregnancy outcome among postnatal mothers with Pregnancy Induced hypertension

3. To find out the relationship between body mass index and pregnancy outcome among postnatal mothers with Pregnancy Induced hypertension.

4. To find out the association between body mass index and pregnancy outcome with selected background variables among postnatal mothers with Pregnancy Induced Hypertension.

Review of Literature

Impact of body mass index before pregnancy on the risk of hypertension in pregnancy revealed that rate of hypertension higher (55.5 %) compared to normal weight women (33.[4] Frequencies of hypertension with the extent of super obesity (82 %). Foetal macrosomia, pre-eclampsia, gestational diabetes and structural anomalies increased with super obese compared to obese mothers (28 %).[5]

identified obese pregnant women 148 pregnant women of normal the study was cephalopelvic macrosomia, preeclampsia,

Method :

After obtaining administrative permission from the

starting

The present study

and the Non experimental

total of 80 postnatal mothers

pregnancy induced hypertension

period were selected as samples by purpos

Eligibility criteria's were postnatal mothers with diffe

levels of body mass index under the age group of 18-45

years and Postnatal mothers who have booked early that is

before 12 weeks of gestation and having antenatal card.

Postnatal mothers with pre-existing medical conditions

were excluded. Body mass index table: It consist of body

mass index table of National academy of science to assess

the body mass index of selected samples. This include four

categories of body mass index such as underweight,

(<19.8) normal weight (19.8 – 25), over weight (25.1 – 29)

and obese (> 29.1). The body mass index of mother is

assessed by Weight (KG)/ (Height in meter). 2 Part two also

consist of recordings of body mass index

Tools developed by the researchers were validated and

tested for its reliability. The equivalence of this tool was

checked by inter observer method by using the formula

number of agreements/ number of agreements + number

of disagreements. The reliability obtained for maternal

outcome checklist was r1 = 0.95 and for neonatal outcome

checklist was r1 = 0.93 which indicating that the tools were

reliable. Tools used were, Tool 1: demographic variable,

Tool 2: It consist of body mass index table and recordings of

body mass index values during first antenatal visit and

weight at the time of admission for labour. Tool 3:

pregnancy outcome checklist which includes maternal and

foetal outcome.

The study was carried out using interview and analysis of

records. Relevant information (background data) from the

study group was collected for which the investigator

personally interviewed each woman with the help of

background data sheet. The responses were recorded in

in the questionnaire and pregnancy

marked in the checklist by analysing

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Distribution of BM

figure.1 Pregnancy

which includes types

weight and NICU care

were presented in Table 3.

Figure 1 shows that percenta

postn

mothers according to their BMI

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were in normal BMI, overweight sam

about 37.5

%, and underweight samples were 2.5 %.

Table 2 reveals frequency and percentage distribution of

pregnancy outcome based on BMI category. Underweight

mothers had low birth weight babies and received NICU

care. Among normal weight mothers 17.5 % delivered by

LSCS, 15%   babies were low birth weight babies 12.5 were

preterm babies among them 10% received NICU care. In

the overweight group 18.75% undergone LSCS, 18.75%

were LBW and 1.25% VLBW, 8.75 babies were preterm,

12.5% newborn received NICU care. Among Obese

mothers 8.75% delivered by LSCS, 6.25% of LBW babies, 5%

were preterm and all of them received NICU.

Table 3 shows there is a positive correlation between BMI

and diagnosis (as BMI increases severity of disease

condition increases) and type of delivery that is Incidence of LSCS was high among high BMI mothers. Results showed negative correlation between birth weight and diagnosis and gestational age and positive correlation between diagnosis and type of delivery.

Association between pregnancy outcome and selected demographic variables. Study findings revealed that following demographic variables are significantly associated with pregnancy outcome at 0.05 level.

There is a significant association between Occupation and BMI χ^2 = 12.838 p value 0.046 < 0.05, Occupation and Birth weight χ^2 = 1.092 p value .005< 0.05, physical activity and birth weight χ^2 = 10.47 p value .033< 0.05, Diagnosis and type of delivery χ^2 = 17.16 p value .000< 0.05, Diagnosis and birth weight χ^2 = 30.98 p value .000<0.05, Diagnosis and NICU care χ^2 = 14.61 p value .001<0.05

Table: 1 Demographic Variable

	Variables	Under weight		Normal weight		Over weight		Obese	
		N	%	N	%	N	%	N	%
AGE	<20	0	0	2	2.5	2	2.5	1	1.25
	21-25	2	2.5	27	33.75	12	15	5	6.25
	26-30	0	0	7	8.75	14	17.5	2	2.5
	31-35	0	0	2	2.5	2	2.5	1	1.25
	36-40	0	0	1	1.25	0	0	0	0
Education	primary School	0	0	1	1.25	2	2.5	0	0
	Middle school	0	0	0	0	2	2.5	1	1.25
	Sec.education	0	0	15	18.75	8	10	2	2.5
	PUC	1	1.25	15	18.75	11	13.75	2	2.5
	Diploma	0	0	2	2.5	1	1.25	0	0
	Graduate	1	1.25	6	7.5	6	7.5	4	5
Religion	Hindu	2	2.5	30	37.5	23	28.75	7	8.75
	Christian	0	0	1	1.25	2	2.5	1	1.25
	Muslim	0	0	8	10	5	6.25	1	1.25
Income in Rs	<5000	0	0	7	8.75	3	3.75	0	0
	5001-10000	0	0	15	18.75	9	11.25	5	6.25
	10001-15000	2	2.5	13	16.25	13	16.25	2	2.5
	15001-20000	0	0	1	1.25	3	3.75	0	0
	>20001	0	0	3	3.75	2	2.5	2	2.5
Occupation	Home maker	1	1.25	36	45	27	33.75	8	10
	Skilled worker	0	0	2	2.5	2	2.5	1	1.25
	Unskilled worker	1	1.25	1	1.25	1	1.25	0	0
Parity	First pregnancy	2	2.5	19	23.75	13	16.25	5	6.25
	Second pregnancy	0	0	13	16.25	10	12.5	4	5
	Third pregnancy	0	0	4	5	5	6.25	0	0
	Fourth pregnancy	0	0	3	3.75	2	2.5	0	0
Physical activity	Sedentary worker	2	2.5	24	30	14	17.5	5	6.25
	Moderate worker	0	0	13	16.25	14	17.5	3	3.75
	Heavy worker	0	0	2	2.5	2	2.5	1	1.25
Diagnosis	Gestational HT	0	0	28	35	10	12.5	1	1.25
	Mild.PIH	2	2.5	8	10	16	20	5	6.25
	Severe.PIH	0	0	3	3.75	4	5	3	3.75

Table : 2 Percentage distribution of Pregnancy Outcome

	BMI	Underweight		Normal weight		Overweight		Obese	
	Outcome	N	%	N	%	N	%	N	%
Delivery	NVD	1	1.25	25	31.25	15	18.75	2	2.5
	LSCS	1	1.25	14	17.5	15	18.75	7	8.75
Birth weight	Normal	0	0	24	30	14	17.5	4	5
	LBW	2	2.5	12	15	15	18.75	5	6.25
	VLBW	0	0	3	3.75	1	1.25	0	0
Gestational age	Full term	1	1.25	29	36.25	23	28.75	5	6.25
	Preterm	1	1.25	10	12.5	7	8.75	4	5
NICU care	No	0	0	31	38.75	20	25	5	6.25
	Yes	2	2.5	8	10	10	12.5	4	5

Table: 3 BMI and correlation

	BMI		Birth weight		Diagnosis	
	r value	P value	r value	P value	r value	P value
Diagnosis	.293**	.008	-.499**	.000	-	-
Type of delivery	.261*	.019	-	-	.449**	.000
Gestational age	-	-	-.494**	.000		

**. Correlation is significant at the 0.01 level (2-tailed).

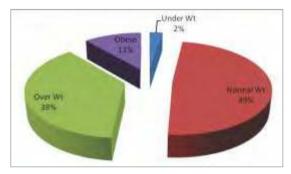*. Correlation is significant at the 0.05 level (2-tailed).

Figure 1 Distribution of postnatal mothers according to their BMI.

Discussion :

The present study indicated that maternal pre pregnancy weight related with greater risks of pregnancy-induced hypertension, caesarean delivery, preterm delivery and prematurity, birth weight at birth. Also reveals that there is a correlation between BMI and pregnancy outcome and association between demographic variable and pregnancy outcome.

A comparative study conducted to investigate the impact of maternal obesity on pregnancy outcomes. Rates of pregnancy complications and neonatal outcomes were collected from perinatal data list and compared between women with normal pre pregnancy body mass index and those with an obese pre pregnancy body mass index. Rates of pregnancy complications and neonatal outcomes were

also evaluated by the level of obesity, severe obesity, and morbid obesity (BMI>30, BMI=35-39.9 and, BMI>40). Rates of gestational diabetes and gestational hypertension were higher for obese 62 % versus normal weight only 10 % in gravid. Women with morbid or severe obesity had a greater incidence of gestational diabetes and gestational hypertension. This is similar to present study.[9]

Another study which was similar to present study prospective population-based cohort study was done to evaluate morbidly obese (BMI>40) women have an increased risk of pregnancy complications and adverse perinatal outcomes. The result of the study was an increased risk of the following outcomes: preeclampsia 20 %, ante partum stillbirth 15%, caesarean delivery 35 %, instrumental delivery 12 %, shoulder dystocia 10 %, meconium aspiration 40 %, foetal distress 30 %, early neonatal death 7 %, and large-for-gestational age 10 % was found women with BMIs between 35.1 and 40 but to a lesser degree compared to BMIs above 40.[33] In this study 8.75 % of obese mother were delivered by LSCS and 6.25 % of newborn babies were LBW.[10]

Conclusion :

Obesity and under weight is a leading, preventable cause of mortality worldwide and authorities view it as one of the

most serious public health problems of the 21st century. In developing countries the obesity and underweight were still as a risk factor for maternal and neonatal mortality and morbidity. Preeclampsia increases maternal and perinatal morbidity and mortality rates. This study revealed that there is a correlation between BMI and pregnancy outcome. Result of this present study and other studies cited in this article are stating that there is association between BMI and Pregnancy outcome which is modifiable.

All women who are in reproductive age group and under risk to develop pregnancy induced hypertension need to be educated about to maintenance of normal weight before pregnancy. Nurses have more responsibility on creating awareness among women how to maintain normal weight to avoid development of complications to the mother and newborn.

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