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Original research article

Profile of Pregnant women of 30-34 weeks' gestation attending Antenatal clinic

[1]Dr. Patil Purnima Jaiprakash, [2]Dr. Suchit Reddy, [3]Dr. Sujani BK, , [4]Dr. Mamatha, [5]Dr. Urvasi, [6]Dr. Gayatri

[1]Assistant Professor, Department of OBG, ESIC Medical College, Gulberga, Karnataka, India
[2]Consultant, Department of Pediatrics, Sujani Mother and Child care, Gulberga, Karnataka, India
[3]Professor and Head, Department of OBG, MS Ramaiah Medical College and Hospital, Bangalore, Karnataka, India
[4]Associate Professor, Department of OBG, MS Ramaiah Medical College and Hospital, Bangalore, Karnataka, India
[5, 6]Assistant Professor, Department of OBG, MS Ramaiah Medical College and Hospital, Bangalore, Karnataka, India

Corresponding Author:
Dr. Patil Purnima Jaiprakash

Abstract
Pathophysiological and Clinical Pregnancy is associated with physiologic changes at the level of the uterine vasculature, resulting in a progressive decrease in impedance with advancing gestation. The study group will comprise all pregnant women at 30-34 weeks, who fulfill the inclusion criteria, coming for antenatal screening, to the Obstetrics out-patient department of Hospital after taking written and informed consent. These women were evaluated with ultrasound Doppler study with other routine investigations and CPR were calculated. In the present study, at the time of performing Doppler study, 1.5% had gestational diabetes mellitus, 1.5% had type 2 DM, 1.7% had preeclampsia, 1.22% had gestational hypertension and 0.49% had chronic hypertension. 25% of the patients who had gestational hypertension were associated with Gestational diabetes mellitus and 12% women who developed preeclampsia also were associated with Gestational diabetes mellitus.
Keywords: Pregnant women, Doppler study, Preeclampsia

Introduction

Pathophysiological and Clinical Pregnancy is associated with physiologic changes at the level of the uterine vasculature, resulting in a progressive decrease in impedance with advancing gestation. This maternal adaptation to pregnancy is thought to result from the trophoblastic invasion of the maternal spiral arterioles in the first half of pregnancy [1]. The invaded maternal spiral arterioles are rendered maximally dilated and minimally responsive to the sympathetic and parasympathetic systems. This adaptation is basically intended to ensure a good sustained increase in blood flow to the uterus during pregnancy. The uterine circulation is assessed by Doppler velocimetry of the uterine arteries. Each uterine vessel can be demonstrated by colour Doppler as it crosses over the hypogastric artery and vein just before it enters the uterus at the uterine-cervical junction [2]. Pulsed Doppler velocimetry of the uterine artery should be obtained immediately after the vessel crosses the hypogastric artery and before it divides into the uterine and cervical branches. The presence of a notch in the waveform and an increase in the impedance index after 22 weeks of gestation characterizes an abnormal uterine circulation. A substantial risk of complication is noted in pregnancies that show an abnormal uterine circulation in the late second and third trimesters. Pregnancy complications include FGR, preeclampsia, preterm delivery, and nonreassuring fetal status in labor [3, 4].

Early-onset FGR represents 20–30% of all FGRs. Early FGR presents in association with early PE in up to 50% [5]. Early-onset FGR is associated with severe placental insufficiency and with chronic fetal hypoxia [6]. This explains that UA Doppler is abnormal in a high proportion of cases. If left untreated the fetal condition deteriorates with progression to decompensated hypoxia and acidosis, which is reflected by escalating abnormalities in the UA and increased PIs in the precordial veins, mainly the Ductus Venosus (DV). This latency of severe fetal deterioration may vary in individual cases, but it normally lasts for few weeks and it usually follows a cascade of changes which were reflected in a pattern of Doppler changes that allows monitoring the progression of fetal deterioration and tailoring elective delivery [5]. Early severe FGR is associated with severe injury and/ or fetal death before reaching the term in most babies. The management is highly challenging and aims at achieving the best balance between the risks of leaving the fetus in utero versus the complications associated with prematurity [7, 8].

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Methodology
The study group will comprise all pregnant women at 30-34 weeks, who fulfill the inclusion criteria, coming for antenatal screening, to the Obstetrics out-patient department of Hospital after taking written and informed consent. These women were evaluated with ultrasound Doppler study with other routine investigations and CPR were calculated. Women were categorized into high risk and low risk pregnancies and were followed up till delivery and fetal outcome were noted. Fetal arterial blood PH were noted and correlated with the fetal outcome.

Inclusion criteria
Women aged 18-40 years, with singleton pregnancy and period of gestation between 30 to 34 weeks who were willing to take part in the study.

Exclusion Criteria
Pregnant women with multiple gestation.

Study Design: Prospective Cohort Study.

Sample size
A study carried out on "Umbilical and fetal middle cerebral artery Doppler at 30–34 weeks‟ gestation in the prediction of adverse perinatal outcome" has revealed a significant association between log10 MoM CPR and birth weight Z score r=0.131(*p*<.001). Based on the above findings of the study, with a power of 80%, and α error of 5%, it has been estimated that 351 pregnant women, need to be included in the study.

Results

Table 1: Distribution of age

Age	n	%
≤20	21	5.1%
20 – 24	151	37%
25 – 29	150	37%
30 – 34	73	17%
35 – 39	11	2%
≥ 40	4	.9%
	410	100%

Age of women ranged from 18–45 years. In the present study, the number of women in the age group of 20–24 years were 37%, and 25–29 years were 37%, 30 – 34 years were 17%, <20 years were 5.1%, 35 - 39 years were 2%, >40 years were 0.9%.

Table 2: According to bmi in kg/m2

BMI	N	%
<18	1	.2
18 – 24.9	66	16.1
25- 29.9	182	44
30 – 35	140	34
>35	22	5
	410	100

In the present study, BMI of women ranged from 17.6 to 39.8 kg/m2, BMI of women between 25 – 29.9 was 44%, between 30 – 35 was 34%, between 18 – 24.9 was 16.1%, > 35 was 5%, and <18 was 0.2%.

Table 3: Obstetric score

	N	%
Primigravida	176	42.82
Multi	235	57.18
	410	100

In the present study, 57% of them were multigravida, and 42.82% were primigravida. There is almost equal distribution, among the primigravida and multigravida.

Table 4: Risks associated at 30-34 weeks period of gestation

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	N	%
Chronic hypertension	2	0.49%
Preeclampsia	7	1.7%
Gestational hypertension (PIH)	5	1.22%
Gestational diabetes mellitus(GDM)	6	1.5%
T2 DM	6	1.5%

In the present study, at the time of performing Doppler study, 1.5% had gestational diabetes mellitus, 1.5% had type 2 DM, 1.7% had preeclampsia, 1.22% had gestational hypertension and 0.49% had chronic hypertension.
25% of the patients who had gestational hypertension were associated with Gestational diabetes mellitus and 12% women who developed preeclampsia also were associated with Gestational diabetes mellitus.

Table 5: Risks developed later > 34 weeks

	N	%
Preeclampsia	21	5.1%
Gestational hypertension (PIH)	19	4.6%
Gestational diabetes mellitus (GDM)	12	2.9%

In the present study, women who developed risks later after obtaining the Doppler study during follow up, 5.1% developed preeclampsia, 4.6% developed gestational hypertension, 2.9% developed Gestational diabetes mellitus.

Table 6: Risk profile

	N	%
Preeclampsia	28	6.8%
Gestational hypertension (PIH)	24	5.9%
Gestational diabetes mellitus (GDM)	18	4.4%
Chronic hypertension	2	0.49%
T2 DM	6	1.5%

In present study, women who developed preeclampsia were 6.8%, who developed gestational hypertension were 5.9%, gestational diabetes mellitus were 4.4%, 1.5% of them had T2 DM, and 0.49% had chronic hypertension
Total number of women with Gestational hypertension and preeclampsia were 51 (12.68%)

Discussion
The age distribution in the present study was in the range of 18 to 45 years. There was significant difference among the high risk and low risk group. The mean age was 31.5 years.
A study done by Cl. FLATLEY et all revealed the mean age group of women included in the study cohort was 31.5+/- 5.8 years of age. The age of women included in the reference cohort was 30.3+/- 5.8 years. This was statistically significant.
Another study done by M. PE´REZ-CRUZ et all revealed that age distribution was 32+/- 5 in the study group and 31+/- 6 in the IUGR group, which was not statistically significant.

Table 7: Age distribution

Age distribution	Cl. FLATLEY et al[9]	M. PE´REZ-CRUZ et al [10]	Present study
Low risk / control	31.5+/- 5.8 years	32+/- 5 years	25.6+/-4.31 years
High risk /study group	30.3+/- 5.8 years	31+/- 6 years	27.4+/-4.1 years

In the present study, BMI of women ranged from 17.6 to 39.8 kg/m2. Mean BMI was 28.7 kg/m2.
There is a significant increase in the BMI due to urbanization.
In a study done by Cl. FLATLEY et al BMI of women in the control group was 23.9 kg/m2 (20.8–28.9) and BMI of women in the reference group was 22.7 kg/m2 (20.0– 26.6) and it was statistically significant.

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Table 8: Distribution of bmi

BMI (kg/m2)	Cl. FLATLEY et al [9]	Present study
Low risk	23.9 kg/m2 (20.8–28.9)	28.7+/- 3.5
High risk	22.7 kg/m2 (20.0–26.6)	25.6+/-4kg/m2

In the present study, 57% of them were multiparity, and 42.82% were nulliparity. There is almost equal distribution, among the primigravida and multigravida.
A study done by Cl. FLATLEY et al, 53.4% of women was nulliparous.
Another study done my M. PE´REZ-CRUZ et al, 57% of women was nulliparous in control group, and 67% of women were nulliparous in high risk group.

Table 9: Distribution of parity

Nulliparous	Cl. FLATLEY et al [9]	M. PE´REZ-CRUZ et al [10]	Present study
Low risk/ control group	37.2%	57%	42.82%
High risk/ IUGR group	41.6%	67%	55%

The high risk/ FGR group had more number of nulliparous women compared to low risk/ control group.
In the present study, the commonest risk factors were 12.6% of women had hypertension and 6.9% of women had diabetes.
In a study conducted by Cl. FLATLEY et al, 11.5% of women had hypertension in the study group and 35.8% of women had diabetes.

Conclusion

- 57% of them were multigravida, and 42.82% were primigravida. There is almost equal distribution, among the primigravida and multigravida.
- The age distribution was in the range of 18 to 45 years. There was significant difference among the high risk and low risk group. The mean age was 31.5 years.
- Women who developed preeclampsia were 6.8%, who developed gestational hypertension were 5.9%, gestational diabetes mellitus were 4.4%, 1.5% of them had T2 DM, and 0.49% had chronic hypertension

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