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BLOOD PRESSURE VALUES AMONG PRIMI AND MULTIGRAVIDA WOMEN IN A RURAL POPULATION OF KARNATAKA STATE

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ABSTRACT: BACKGROUND: Pregnancy is usually a serene time of unparalleled joy and expectation in a women's life. However, sometimes it can be complicated by illnesses or medical conditions. Although only 10-30% of the mothers seen in antenatal period can be classified as high risk they account for 70-80% of perinatal mortality and morbidity. **OBJECTIVES:** To determine casual blood pressure recordings among primi and multigravida women in a rural block of Karnataka state. **MATERIALS AND METHODS:** The present cross-sectional study was carried out in all the sub-centers under Primary Health Centre (PHC), the rural field practice area of Bangarpet taluk of Kolar district during April 2013 to September 2013. Blood pressure was recorded with sphygmomanometer by auscultatory method in 200 registered pregnant women attending the particular sub-center at that point of time. Data was analyzed for statistical significance. **RESULTS AND CONCLUSION:** The following conclusions were drawn after statistical analysis. 1. There was statistically significant increase in systolic blood pressure as age advanced among the pregnant women. 2. There was statistically significant increase in diastolic blood pressure among primigravida as compared to multigravida. But nonetheless no cases of pregnancy induced hypertension was detected in our study group.
KEYWORD: Blood pressure, pregnancy, rural population, Karnataka state.

INTRODUCTION: Studies estimate that high blood pressure causes complications in 6 to 8 percent of all pregnancies.[1] Pregnancy-induced hypertension is a sign of preeclampsia, which can cause kidney, liver, and brain problems in the mother and low birth weight, premature birth, or stillbirth in the infant.[2] Therefore, monitoring blood pressure is crucial to prenatal care.

Despite recent advances in modern obstetrics and neonatal care, India is still facing a high perinatal mortality rate (33/1000) (Registrar General India, 2012). Perinatal outcome can be changed significantly by early detection followed by special intensive care of high risk pregnancies. Age, parity, social class and past obstetric history and medical history are only some of the factors that should be taken into account while assessing the risk for any pregnant woman.[3] Identifying a pregnancy as high risk helps ensure that it receives extra attention and proper care, thereby significantly decreasing maternal and neonatal morbidity and mortality rates. All pregnancies should therefore be evaluated to know whether there are or will be risk factors. Therefore the objective of this study was to determine casual blood pressure recordings among primi and multigravida women in a rural block of Karnataka state.

MATERIALS AND METHODS: A cross-sectional study was carried out amongst pregnant women attending all the subcentres of PHC in Bangarpet taluk of Kolar district during the period of April 2013 to September 2013. A total of 200 pregnant women aged between 18-35 years during study

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period were included in the study after approval of the protocol by institute's ethics committee. The exclusion criteria for the study were the participants with complicated pregnancy like twin gestation, preeclampsia, gestational diabetes, placenta previa, bad obstetric history, chronic hypertension, chronic renal disease, diabetes mellitus, cardiopulmonary diseases, endocrine disorders and chronic respiratory illness and on medications like antihypertensives. A written consent was obtained. Physical parameters noted in each participant were age in years and weight in Kgs. Blood pressure was recorded with sphygmomanometer by auscultatory method.

RESULTS AND ANALYSIS:
Study Design: An observational correlation study.

Age in years	No. of patients	%
18-20 yrs	95	47.5
21-25 yrs	77	38.5
26-30 yrs	26	13.0
31-35 yrs	2	1.0
Total	**200**	**100.0**
Table 1: Age distribution of subjects studied		

Parity	No. of patients	%
Primi gravida	98	49.0
Multi gravida	102	51.0
Total	**200**	**100.0**
Table 2: Parity distribution		

	Age in years				Total (n=200)	P value
	18-20 yrs (n=95)	21-25 yrs (n=77)	26-30 yrs (n=26)	31-35 yrs (n=2)		
SBP (mm Hg)						
• <120	61(64.2%)	44(57.1%)	19(73.1%)	0(0%)	124(62%)	
• 120-140	34(35.8%)	33(42.9%)	7(26.9%)	2(100%)	76(38%)	0.139
• >140	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
DBP (mm Hg)						
• <80	54(56.8%)	43(55.8%)	18(69.2%)	0(0%)	115(57.5%)	
• 80-100	41(43.2%)	34(44.2%)	8(30.8%)	2(100%)	85(42.5%)	0.256
• >100	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
Table 3: frequency distribution of SBP and DBP according to age						

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	Parity		Total	P value
	Primi gravida	Multi gravida		
SBP (mm Hg)				
• <120	56(58.9%)	68(88.3%)	124(476.9%)	
• 120-140	42(44.2%)	34(44.2%)	76(292.3%)	0.165
• >140	0(0%)	0(0%)	0(0%)	
DBP (mm Hg)				
• <80	48(50.5%)	67(87%)	115(442.3%)	
• 80-100	50(52.6%)	35(45.5%)	85(326.9%)	0.017*s
• >100	0(0%)	0(0%)	0(0%)	
Table 4: frequency distribution of SBP and DBP according to parity distribution				

	Age in years				Total	P value
	18-20 yrs	21-25 yrs	26-30 yrs	31-35 yrs		
SBP (mm Hg)	109.88±10.36	112.13±9.59	108.69±10.57	130.00±0.00	110.80±10.25	0.016*
DBP (mm Hg)	72.15±8.70	72.39±8.13	70.54±7.85	80.00±0.00	72.11±8.35	0.427
Table 5: Comparison of mean values of SBP/DBP according to age						

	Parity		Total	P value
	Primi gravida	Multi gravida		
SBP (mm Hg)	111.76±10.24	109.87±10.23	110.80±10.25	0.195
DBP (mm Hg)	73.47±8.68	70.80±7.84	72.11±8.35	0.024*
Table 6: Comparison of mean values of SBP/DBP according to parity				

STATISTICAL METHODS: Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean ± SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5 % level of significance.

Analysis of variance (ANOVA) has been used to find the significance of study parameters between three or more groups of patients, Student t test (two tailed, independent) has been used to find the significance of study parameters on continuous scale between two groups (Inter group analysis) on metric parameters.

Chi-square/ Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups.

DISCUSSION: In a cohort study on >6500 women, Christianson[4] showed that both maternal age and parity have highly significant effects on casual BP measurements during pregnancy. Although other studies based on office BP determinations have also provided similar conclusions,[5,6] results are still controversial because of the lack of correlation between parity and BP shown in several other trials.[7,8,9]

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The controversy could come from, among other factors, the inclusion in some studies of both healthy and complicated pregnancies and from the shortcomings of casual BP values. Therefore, healthy and complicated pregnancies should be studied separately when investigating other possible factors influencing BP during gestation. Accordingly, we studied the possible influence of parity and maternal age on BP in clinically healthy normotensive pregnant women.

Not all previous studies have shown, however, a significant relation between parity and casual BP measurements. Moutquin et al[8] conducted a prospective study on 366 pregnant women whose BP was measured at each antenatal visit, using an automatic random-zero sphygmomanometer. They found no difference in BP during pregnancy between nulliparous and multiparous women who remained normotensive. Lee Feldstein et al[7] analyzed the BP values measures in 755 females in relation to parity, race, and residential stress; none of the regression relationships between BP and parity was found to be significant in the race-stress groups included in their study.

In a more recent trial, Okonofua et al[9] monitored the BP of 189 women from early pregnancy up to term, during labor, and 24 hours after delivery. They also found no significant correlation of BP with parity, but there was a significant positive correlation with maternal age. These results also agreed with those from Margulies et al[10] from a prospective study that included follow-up throughout gestation of 249 normal pregnant women (129 nulliparous and 120 multiparous) with a weekly BP control under the same experimental conditions. The results of this trial demonstrated that there was only a low correlation between maternal age and DBP, but no correlation was found with SBP.
Along these lines, the results of our study revealed the following:

1. There was statistically significant increase in systolic blood pressure as age advanced among the pregnant women
2. There was statistically significant increase in diastolic blood pressure among primigravida as compared to multigravida.

CONCLUSION: This study on 200 primi and multigravida women systematically sampled for casual blood pressure recordings confirms the predictable pregnancy-associated variability in BP, shows significantly moderate influence of parity on BP and also significant increase in SBP with advancement of maternal age.

The small, although significant, increase in systolic blood pressure with age may have little influence in the proper identification of women with gestational hypertension. Reference thresholds for blood pressure to be used in the early identification of hypertensive complications in pregnancy could thus be developed as a function of rest-activity cycle and gestational age, independent of parity or maternal age.

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