

# Anaesthetic Profile of Women Undergoing Caesarean Section.

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## ABSTRACT

**Background:** The obstetric patient for Caesarean section usually presents more challenges to the anaesthesiologist than other patients. Spinal anaesthesia is perhaps the most accepted approach to these challenges. It offers a fast, profound, definite and higher quality of sensory and motor blockade for Caesarean delivery. Spinal anaesthesia is associated with some complications, the commonest of these being hypotension of a reported incidence of greater than 80% despite fluid preload and lateral uterine displacement. To study the anesthetic profile of women undergoing the cesarean section delivery. **Methods:** The present randomized controlled study was conducted among 100 subjects. **Results:** The age, weight, height and parity are comparable in both the groups. The mean values of maternal baseline heart rate in Group P and E are  $89.52 \pm 11.89$  and  $92.20 \pm 11.56$  respectively. The mean SBP values obtained in Group P and Group E are  $123.52 \pm 7.84$  and  $123.14 \pm 8.98$  respectively. Similarly, diastolic blood pressure values in Group P and Group E are  $80.94 \pm 8.10$  and  $81.18 \pm 9.12$ . Baseline mean arterial pressure in the Group P and Group E are  $95.00 \pm 7.20$  and  $95.00 \pm 8.26$  mm of Hg. **Conclusion:** Apgar score at 1 and 5 minutes is comparable in both Group P and Group E.

**Key words:** Anesthetic profile, Apgar score, Caesarean section

## INTRODUCTION

Pregnancy is generally expected to end with a healthy and happy experience of a mother delivering a healthy infant. However, a variety of either maternal or fetal conditions can change the outcome in certain situations. A high degree of care for the mother and the fetus is essential if desired result is to be achieved.

The obstetric patient for Caesarean section usually presents more challenges to the anaesthesiologist than other patients. Spinal anaesthesia is perhaps the most accepted approach to these challenges. It offers a fast, profound, definite and higher quality of sensory and motor blockade for Caesarean delivery. Spinal anaesthesia is associated with some complications, the commonest of these being hypotension of a reported incidence of greater than 80% despite fluid preload and lateral uterine displacement.<sup>[1]</sup>

Maternal hypotension is associated with distressing symptoms like dizziness, nausea, vomiting and can also cause fetal bradycardia and acidosis.<sup>[2,3]</sup>

It is very important to recognize hypotension timely with appropriate treatment of maternal hypotension. For last few decades left uterine displacement and volume preloading before subarachnoid block has been the cornerstone in prevention of hypotension.

life but infusion of large volume of crystalloids can exacerbate the dilutional anemia and can increase the risk of pulmonary edema in the term parturient. Several other methods have been tried for prevention of hypotension during Caesarean section, which includes left uterine displacement, leg compression and Elevation, prophylactic administration of vasopressors including Ephedrine, Mephenteramine, Phenylephrine.<sup>[4-6]</sup> Prophylactic infusion of Angiotensin II and Atrial Natriuretic peptide have also been tried.<sup>[7,8]</sup>

## MATERIALS AND METHODS

The present randomized controlled study was conducted among 100 subjects. Those with uncomplicated pregnancy, weight not more than 70 kg's, aged between 24 to 30 years, baseline systolic blood pressure between 100 to 140 mm Hg, baseline diastolic blood pressure between 70 to 89 mm Hg and developed hypotension during the surgery were included in the study.

Those who did not consent, patient with medical complications like Diabetes mellitus, cardiovascular diseases, severe anemia, patient with obstetrical complications like Ante Partum Hemorrhage, pregnancy induced hypertension, contraindications to spinal anaesthesia were excluded from the study. Institutional ethics committee permission was obtained. After explaining the anaesthetic procedure, written informed consent for Participation in the study was obtained from the patient. 100 patients were randomly divided into two groups of 50 each, Group P (Phenylephrine group) and Group E (Ephedrine group) using computer generated randomization table. Study drugs were prepared and dispensed in syringes labelled "Study Vasopressor" by an anaesthesiologist not involved

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Rapid administration of crystalloids may restore uterine blood flow immediately but has a short half-

in the study. In the operating room Spo2, ECG, NIBP, HR monitored. The baseline heart rate, systolic, diastolic and mean blood pressures were measured.

Data was analyzed using Student's t test and Mann-Whitney test. 'p' value of less than 0.05 was considered to be statistically significant.

## RESULTS

A total of 100 patients were grouped into two groups, Group P (Phenylephrine group, n=50) and Group E (Ephedrine group, n=50) by a computer generated randomization table.

After collecting data in both the groups the observations and analysis of the data are presented in tabular form. The age, weight, height and parity are comparable in both the groups [Table 1]. The mean values of maternal baseline heart rate in Group P and E are  $89.52 \pm 11.89$  and  $92.20 \pm 11.56$  respectively. The mean SBP values obtained in Group P and Group E are  $123.52 \pm 7.84$  and  $123.14 \pm 8.98$  respectively. Similarly, diastolic blood pressure values in Group P and Group E are  $80.94 \pm 8.10$  and  $81.18 \pm 9.12$ . Baseline mean arterial pressure in the Group P and Group E are  $95.00 \pm 7.20$  and  $95.00 \pm 8.26$  mm of Hg [Table 2].

**Table 1:** Demographic profile of patients in two groups

Demographic characteristics	Group P	Group E
Age (years)	$26.80 \pm 1.68$	$26.88 \pm 1.73$
Weight (kgs)	$55.40 \pm 5.55$	$55.20 \pm 5.33$
Height (cm)	$151.34 \pm 1.72$	$151.24 \pm 1.78$
Parity	$1.60 \pm 0.72$	$1.68 \pm 0.71$

**Table 2:** Anesthetic profile of patients in two groups

Anesthetic profile	Group P	Group E
Heart rate (HR)	$89.52 \pm 11.89$	$92.20 \pm 11.56$
Systolic blood pressure (SBP)	$123.52 \pm 7.84$	$123.14 \pm 8.98$
Diastolic blood pressure (DBP)	$80.94 \pm 8.10$	$81.18 \pm 9.12$
Mean arterial pressure (MAP)	$95.00 \pm 7.20$	$95.00 \pm 8.26$

## DISCUSSION

The most common side effect following spinal anaesthesia is hypotension.<sup>[1]</sup>

Prevention and treatment of hypotension remains a frequent problem with no consensus in the optimal mode of management. Fluid preloading with intravenous crystalloid or colloid solutions is a standard practice for prevention of hypotension but it has been found to be not satisfactory in preventing hypotension if used alone, without concomitant use of vasopressor drugs.

Inadequately treated hypotension occurring during Caesarean section can cause undue effects on both

mother and fetus. There have been several attempts to find the optimal therapy for hypotension occurring during Caesarean section without jeopardizing the physiology of mother and outcome of fetus.

**Table 3:** Age (years) comparison with other studies

Studies	Group P	Group E
Sahu et al <sup>[9]</sup>	$24.5 \pm 3.13$	$24.2 \pm 3.9$
Bhattarai et al <sup>[10]</sup>	$25.23 \pm 3.21$	$24.89 \pm 3.54$
Present study	$26.8 \pm 1.68$	$26.88 \pm 1.73$

The mean value  $\pm$  Standard deviation of age in Sahu et al<sup>[9]</sup> study in Group P is  $24.5 \pm 3.1$  whereas in Group E is  $24.2 \pm 3.9$ . The mean value  $\pm$  Standard deviation of age in Bhattarai et al<sup>[10]</sup> study in Group P is  $25.23 \pm 3.21$  whereas in Group E is  $24.89 \pm 3.54$ . The mean value  $\pm$  Standard deviation of age in present study in Group P is  $26.8 \pm 1.68$  whereas in Group E is  $26.88 \pm 1.73$ . The present study values of age are comparable with above two studies [Table 3].

**Table 4:** Height (cms) comparison with other studies

Studies	Group P	Group E
Sahu et al <sup>[9]</sup>	$166.3 \pm 10.16$	$157.48 \pm 12.19$
Bhattarai et al <sup>[10]</sup>	$148.18 \pm 4.25$	$148.75 \pm 4.22$
Present study	$151.34 \pm 1.72$	$151.24 \pm 1.78$

The mean value of height in cms in Sahu et al<sup>[9]</sup> study in Group P is  $166.37 \pm 10.16$  whereas in Group E is  $157.48 \pm 12.19$ . The mean value of height in Bhattarai et al<sup>[10]</sup> in Group P is  $148.16 \pm 4.25$  whereas in Group E is  $148.75 \pm 4.22$ . The mean value of height in present study in Group P is  $151.34 \pm 1.72$  whereas in Group E is  $151.24 \pm 1.78$  [Table 4]. The values of the present study are comparable with the study of Bhattarai et al.<sup>[10]</sup>

**Table 5:** Weight (Kgs) comparison with other studies

Studies	Group P	Group E
Sahu et al <sup>[9]</sup>	$62.7 \pm 1.7$	$63 \pm 1.26$
Bhattarai et al <sup>[10]</sup>	$56.4 \pm 5.5$	$56.20 \pm 5.25$
Present study	$55.4 \pm 5.55$	$55.2 \pm 5.33$

The mean value of weight in Sahu et al<sup>[9]</sup> in Group P is  $62.7 \pm 1.7$  whereas in Group E is  $63 \pm 1.26$ . The mean value of weight in Bhattarai et al<sup>[10]</sup> in Group P is  $56.4 \pm 5.50$  whereas in Group E is  $56.20 \pm 5.35$  [Table 5]. The mean value of weight in present study is comparable with the study of Bhattarai et al.<sup>[10]</sup>

**Table 6:** Parity comparison with other studies.

Studies	Group P	Group E
Sahu et al <sup>[9]</sup>	-	-
Bhattarai et al <sup>[10]</sup>	$1.56 \pm 0.62$	$1.58 \pm 0.67$
Present study	$1.6 \pm 0.72$	$1.68 \pm 0.71$

The mean value of parity of subjects involved in Bhattarai et al<sup>[10]</sup> study in Group P is  $1.56 \pm 0.62$  whereas in Group E is  $1.58 \pm 0.67$ . The mean value of parity of subjects involved in Present study in

Group P is  $1.6 \pm 0.72$  whereas in Group E is  $1.68 \pm 0.71$  [Table 6]. The values of the present study are comparable with the study of Bhattarai et al.<sup>[10]</sup>

**Table 7: Comparison of Base line Blood pressure & Heart rate with other studies**

Studies	SBP		DBP		HR	
	Group P	Group E	Group P	Group E	Group P	Group E
Sahu et al <sup>[9]</sup>	126.5±6.7	126±11.4	79.5±6.7	77.9±7.0	101.6±17	98.7±19
Bhattarai et al <sup>[10]</sup>	116.53±5.4	116.9±6.6	76.17±4.6	76.38±5.3	89.27±10.6	89.03±10.42
Present study	123.52±7.84	123.14±8.98	80.99±8.10	81.18±9.12	89.52±11.89	92.20±11.56

The mean value of base line systolic blood pressure in Sahu et al<sup>[9]</sup> study in Group P is  $126 \pm 6.7$  whereas in Group E is  $126 \pm 11.4$ . The mean value of base line systolic blood pressure in Bhattarai et al<sup>[10]</sup> study in Group P is  $116.53 \pm 5.4$  whereas in Group E is  $116.9 \pm 6.6$ . The mean value of base line systolic blood pressure in Present study in Group P is  $123.52 \pm 7.84$  whereas in Group E is  $123.14 \pm 8.98$  [Table 7]. The mean value of the Baseline systolic pressure in present study are comparable with the study of Sahu et al.<sup>[9]</sup>

The mean value of base line Diastolic blood pressure in Sahu et al<sup>[9]</sup> study in Group P is  $79.5 \pm 6.7$  whereas in Group E is  $77.9 \pm 7.4$ . The mean value of base line Diastolic blood pressure in Bhattarai et al<sup>[10]</sup> study in Group P is  $76.17 \pm 4.676$  whereas in Group E is  $76.38 \pm 5.328$ . The mean value of base line Diastolic blood pressure in Present study in Group P is  $80.94 \pm 8.10$  whereas in Group E is  $81.18 \pm 9.12$  [Table 7]. The mean value of the Baseline Diastolic pressure in present study are comparable with the study of Sahu et al.<sup>[9]</sup>

The mean value of base line Heart Rate in Sahu et al<sup>[9]</sup> study in Group P is  $101.6 \pm 17$  whereas in Group E is  $98.7 \pm 19$ . The mean value of base line Heart Rate in Bhattarai et al<sup>[10]</sup> study in Group P is  $89.27 \pm 10.6$  whereas in Group E is  $89.03 \pm 10.42$ . The mean value of base line Heart Rate in Present study in Group P is  $89.52 \pm 11.89$  whereas in Group E is  $92.20 \pm 11.56$ . The mean value of the Baseline Heart Rate in present study is comparable with the study of Bhattarai et al.<sup>[10]</sup>

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