



# A Cross-Sectional Study On Menarche, Operative Delivery, And Prevalence Of Pregnancy-Induced Hypertension In Women Among Kalita, A Caste Population, And Deori, A Scheduled Tribe Population Of Assam, North East India

Trinayani Bordoloi\*

\*HKBM Physiotherapy and Rehabilitation Centre, Tezpur, Assam, India.

E. Mail ID: trinumail@gmail.com

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## ARTICLE INFO ABSTRACT

Women's reproductive health profile is not only a biomedical construct but one which is influenced by social, cultural, psychological, economic and political factors of the people concerned. Menarche is one of the most significant milestones in a women's life. Throughout the developed and developing world rates of caesarean section (C-Section) have risen over recent years. This rise has multiple significant impacts on health status of women. In the present study both qualitative and quantitative approaches have been used to conduct the study among the women of Deori and Kalita, a scheduled tribe and caste population of Assam respectively. Aims of the study have to understand the relationship of age at menarche (AAM) and the risk of operative delivery and hypertension in pregnancy. A total of 814 (Deori- 430; Kalita- 384) subjects were studied and their mean age was 33.34±7.6 years. In this study higher percentage of C- section delivery and hypertension during pregnancy is found among the women who have experienced early menarche. Women with early menarche have found greater odds ratios for increasing C- section delivery and hypertension during pregnancy among Deori and Kalita women.

**Keywords:** Age at menarche, operative delivery, hypertension.

## Introduction

Menarche, an important milestone of sexual development and the beginning of reproductive life in females (Chavarro et al., 2004 and Lakshman et al., 2009). Both early and delayed menarche have been associated with increased cardiovascular disease (CVD) risk factors among adult women which may further cause of operative delivery and hypertension during pregnancy (Abetew et al, 2011; Petry et al, 2019; Chong et al, 2019; and Smith 2009). Over recent years throughout the developed and developing world rates of caesarean section (CS) have risen. (Ecker et al, 2007; Betrán et al, 2007). One of the most crucial reasons for this growing rate of CS is the increase of institutional births and other attributable factors like unregulated health facilities, mainly private institutions and an increasing trend of women opting for it, increases in the average age at first childbirth etc (Belizán et al, 2007; Villar et al, 2006; Parrish et al., 1994; Joseph et al, 2003; Smith et al., 2008). These factors are regarded as non-clinical factors which need to be explored more to understand the increasing rates of caesarean deliveries (WHO, 2019). However, hypertension in pregnancy is a major challenge in antenatal practice due to its impact on obstetric and foetal outcomes. Hypertension plays a significant role in up to 15% of complications over the course of pregnancy and the postpartum period. Therefore, the aim of the present study was to determine whether age at menarche was associated with the risk of operative delivery, and hypertension during pregnancy.

## Materials and Methods

In the present study two population groups have been studied viz. Kalita, a caste population and Deori, a scheduled tribe population of Assam, North East India inhabiting similar ecological region. Both qualitative and quantitative approaches have been used to conduct the study. Personal interview has been involved by using

well structured schedules which containing both close and open-ended questions. A door-to-door, cross sectional survey was conducted among Kalita and Deori women. In determining the age at menarche the retrospective method was used. A total of 814 (Deori-430; Kalita- 384) premenopausal married women were studied and their mean age was  $33.34 \pm 7.6$  years. Present study was conducted in accordance with the ethical standards. Each consented individual were explained the purpose and techniques of the present study.

### Results and Discussion

Table 1 depicted that in both the population percentage of normal delivery has been higher as compared to caesarean delivery. But it has been seen that caesarean delivery is higher among the women who have experienced early menarche. Similar investigations have been conducted by Smith (2009) and Chong et al. (2019).

**Table 1: Prevalence of mode of delivery (Normal & Caesarean) according to the age at menarche**

Name of the Population	Age at Menarche	Mode of Delivery		$\chi^2$
		Normal N (%)	Caesarean N (%)	
Deori	Early Menarche	164 (91.6)	15 (8.4)	8.074 (0.428)
	Late Menarche	235 (93.6)	16 (6.4)	
Kalita	Early Menarche	224 (75.9)	71 (24.1)	0.628 (0.004)
	Late Menarche	80 (89.9)	9 (10.1)	

Table 2 shows that limited percentage of women experienced hypertension during the time of pregnancy in both the population. It should be noted that a higher incidence of hypertension was observed in women with early menarche compared to those with late menarche. The latest study suggests that early menarche is linked to an elevated risk of pregnancy-related hypertension, encompassing gestational hypertension and preeclampsia. Diverse studies have investigated the relationship between age at menarche and the risk of hypertension during pregnancy (Vatten et al., 2003; Lahiri et al., 2014; Petry et al., 2019).

**Table 2: Prevalence of Hypertension/High BP according to the age at menarche**

Name of the Population	Age at Menarche	Hypertension/High BP			$\chi^2$
		Yes N (%)	No N (%)	Don't Know N (%)	
Deori	Early Menarche	37 (20.7)	133 (74.3)	9 (5.0)	4.705 (0.095)
	Late Menarche	49 (19.5)	186 (74.1)	16 (6.4)	
Kalita	Early Menarche	83 (28.1)	192 (65.1)	20 (6.8)	0.395 (0.821)
	Late Menarche	15 (16.9)	66 (74.2)	8 (9.0)	

Table 3 shows the risk (odds ratio) of having caesarean delivery from age at menarche. Research has shown that women experiencing early menarche in both populations were more prone to cesarean delivery compared to those in the reference category. Specifically, the findings suggest that early menarche Kalita women have 2.817 times higher odds of having a cesarean delivery, and this association is statistically significant. Earlier research by various scholars yielded similar findings.

**Table 3: Early Menarche as risk factor for caesarean delivery among Deori and Kalita Women of Assam**

Name of the Population	Age at Menarche	Caesarean Delivery		
		Exp(B)	95% Confidence Interval for Exp(B)	
			Lower Bound	Upper Bound
Kalita	Early Menarche	2.817 (0.006)	1.346	5.899
	Late Menarche ®	0	0	0
Deori	Early Menarche	1.343 (0.429)	0.646	2.793
	Late Menarche ®	0	0	0

Table 4 shows the risk (odds ratio) of having hypertension from age at menarche. It has been found that among both of the population women who were found early menarche were more prone to becoming hypertensive as compared to reference category. The early menarche Kalita women have 1.902 times more chance to becoming hypertensive and it is found to be statistically significant. Comparable outcomes were observed in previous studies conducted by other researchers.

**Table 4: Early Menarche as risk factor for Hypertension/High BP among Deori and Kalita Women of Assam**

Name of the Population	Age at Menarche	Hypertension/High BP		
		Exp(B)	95% Confidence Interval for Exp(B)	
			Lower Bound	Upper Bound
Kalita	Early Menarche	1.902 (0.041)	1.026	3.525
	Late Menarche ®	0	0	0
Deori	Early Menarche	1.056 (0.824)	0.653	1.709
	Late Menarche ®	0	0	0

### Conclusion

In this study higher percentage of C- section delivery and hypertension during pregnancy is found among the women who have experienced early menarche. Women with early menarche have found greater odds ratios for increasing C- section delivery and hypertension during pregnancy among Deori and Kalita women. More study is needed to explore the factors for increasing rates of caesarean deliveries and hypertension during pregnancy.

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