



PRIMARY FACTORS INFLUENCING THE PREVALENCE OF CAESAREAN DELIVERIES IN UTTAR PRADESH, INDIA

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ABSTRACT Study aims to identify the primary factors influencing the prevalence of cesarean deliveries in Uttar Pradesh, India which utilizes data from the National Family Health Surveys (NFHS)-5, conducted between 2019 and 2021. Age of women at marriage 15-24 years (AOR = 0.736; 95% CI: 0.614, 0.882) and 25-34 years (AOR = 0.857; 95% CI: 0.735, 0.998). Women's age at birth \leq 19 years (AOR = 0.617; 95% CI: 0.478, 0.798) and 20-24 years (AOR = 0.701; 95% CI: 0.555, 0.885). Our primary findings indicate a significantly higher likelihood of cesarean section deliveries among women residing in urban areas and those delivering in private healthcare facilities, considering other clinical and social factors in Uttar Pradesh.

KEYWORDS : Caesarean section deliveries, Binary logistic regression, National family health survey-5

INTRODUCTION

Giving birth is a perfectly normal physiological process, not a disease that should be performed in natural course. Lately, there has been increased in practice of obstetrical interventions on a global scale (1). Caesarean Section is an operative procedure whereby the foetuses after the end of 28 weeks are delivered through an incision on the abdominal and uterine walls (2). It can be performed as Elective and Emergency Procedure. Commonly indications for primary caesarean delivery include labor dystocia, abnormal fetal heart rate tracing, malpresentation, multiple gestations, and suspected fetal macrosomia (3). According to new research from the World Health Organization (WHO), caesarean section use continues to rise globally, now accounting for more than 1 in 5 (21%) of all childbirths. This number is set to continue increasing over the coming decade, with nearly a third (29%) of all births likely to take place by caesarean section by 2030, the research finds (4) As per NFHS-5, 21.5 % of live births were C-Section deliveries out of which 47.4% C-sections were done in private health facility and 14.3% in public health facilities (5). World health Organization has recommended the ideal rate for caesarean sections to be between 10% and 15% in any nation. Although cesarean delivery can be lifesaving but the rapid increase in its rate without evidence of significant decrease in maternal or neonatal morbidity or mortality raises concern that it is being overused. (6)

Finding out the major factors influencing prevalence of caesarean section will help in developing a rational plan and using appropriate interventions as needed we can improve and safeguard the maternal health care.

Objective

To identify the factors influencing the prevalence of caesarean deliveries in Uttar Pradesh, India

Methodology

This record-based study utilizes data from the National Family Health Surveys (NFHS)-5, conducted between 2019 and 2021(7). It is a large-scale nationally representative sample survey covering all 28 states and 8 union territories and also provided information on all 707 districts in India.

The NFHS-5 provided information on 35,766 deliveries in Uttar Pradesh, following the same sampling design and data collection procedure outlined in the NFHS-5 national report. The study used multivariate logistic regression resulting the Adjusted Odds Ratio (AOR) with a 95% Confidence Interval (CI) to estimate the determinants of caesarean deliveries in Uttar Pradesh.

Variable Description

Outcome Variable:

Caesarean section delivery was the outcome variable binary in nature.

Explanatory Variable:

Mothers age at marriage, Religion, Caste, Wealth index, Mothers highest education, Place of residence, caste, Mothers age at first birth,

BMI, Birth order, Size of child, ANC visit

The analyses were done after removing list wise cases of missing, flagged and no information from the NFHS 5 data. All Statistical analyses were performed using STATA version 13.0 (Stata Corp LP, Texas USA)

RESULTS

Multivariate logistic regression from Table 1 shows that the likelihood of caesarean delivery in the women with Underweight BMI (AOR = 0.510; 95% CI: 0.446, 0.582) and Normal BMI (AOR = 0.613; 95% CI: 0.564, 0.666) were significantly less likely to deliver by caesarean section as compared to women with underweight BMI. Birth order was negatively associated with caesarean delivery, indicating women with first order (OR = 2.504; 95% CI: 2.217, 2.829), two order (OR = 1.877; 95% CI: 1.68, 2.097) had a higher likelihood of caesarean delivery as compared to those who had three or more birth. Size of the child comes out to be insignificant variable. NC visits of women acted as an enabling factor of caesarean section delivery in which women who received no ANC visits were 0.533 times (OR = 0.533; 95% CI: 0.476, 0.597) less likely to have caesarean section delivery as compared to those who receive more than four times ANC service.

Women who had delivered in the private health institution were associated increased odds of caesarean section delivery (OR = 8.228; 95% CI: 7.602, 8.904) than those who delivered in the public sector. Religion-wise, Hindu women were 1.126 times more likely to have caesarean section delivery (OR = 1.126; 95% CI: 1.015, 1.249) as compared to non-Hindus.

DISCUSSION

Findings of the present study show that Mother's age, Mother's age at first marriage, Mother's BMI, Birth order of the child, place of delivery, ANC visit, caste, Religion, wealth index Mother's education and Place of residence are significant predictors of caesarean section delivery in Uttar Pradesh. The findings are similar with numerous prior researches conducted in India and worldwide(8). National average rate of caesarean section delivery with high contribution of private health facility crossed the upper limit of WHO-recommended population-based caesarean section delivery threshold (5-15%) for developing countries. Even though the private sector had a high amount of caesarean delivery than the public sector, the exponential increase of caesarean delivery in the private sector could be attributed to sufficient modern medical equipment, specialized treatment, ample medical staff and carers, and the preference of partners. (9,10)

Table 1: - Presents The Results Of The Multivariate Logistic Regression Models Assessing The Factors Associated With Caesarean Section Delivery For Uttar Pradesh

Variable	Particulars	Frequency (%) of Caesarean Delivery	AOR	95% C.I. for AOR		p value
				Lower	Upper	

Mother's age at marriage	15-24	1192(27.08)	0.736	0.614	0.882	0.001
	25-34	2822(64.11)	0.857	0.735	0.998	0.047
	35-49®	388(8.81)				
Mother's Age at first birth	≤ 19	760(17.26)	0.617	0.478	0.798	0.000
	20-29	3448(78.33)	0.701	0.555	0.885	0.003
	≥ 30®	194(4.41)				
BMI b	Under-weight	397(9.02)	0.51	0.446	0.582	0.000
	Normal	2324(52.79)	0.613	0.564	0.666	0.000
	Over-weight/Obese®	1656(37.62)				
Birth Order	1	2117(48.09)	2.504	2.217	2.829	0.000
	2	1466(33.30)	1.877	1.68	2.097	0.000
	≥ 3®	819(18.61)				
Size of the Child c	Average	3101(70.45)	0.95	0.845	1.069	0.395
	Large	761(17.29)	1.076	0.935	1.237	0.307
	Small®	507(11.52)				
ANC Visit	No visit	933 (21.19)	0.533	0.476	0.597	0.000
	4-5	2443 (55.50)	0.924	0.84	1.016	0.102
	>5®	1026(23.31)				
Place of delivery	Private	3248(73.78)	8.228	7.602	8.904	0.000
	Public®	1154(26.22)				
Religion	Hindu	3610(82.01)	1.126	1.015	1.249	0.025
	Non-Hindu®	792(17.99)				
Caste	SC/ST	893(20.29)	0.768	0.684	0.862	0.000
	OBC	2320(52.70)	0.817	0.745	0.897	0.000
	Other castes®	1189(27.01)				
Wealth indexd	Poorest	488(11.09)	0.749	0.644	0.87	0.000
	Poorer	847(19.24)	0.878	0.771	0.999	0.048
	Middle	757(17.20)	0.887	0.783	1.006	0.062
	Richer	984(22.35)	1.122	1.001	1.259	0.051
	Richest®	1326(30.12)				
Mother's Highest educational level	No education	622 (14.13)	0.71	0.622	0.81	0.000
	Primary	376(8.54)	0.783	0.676	0.908	0.001
	Secondary	1931(43.87)	0.901	0.82	0.991	0.032
	Higher®	1473(33.46)				
Type of place of residence	Urban	1241(28.19)	1.199	1.087	1.323	0.000
	Rural®	3161(71.81)				
Constantf			0.159			0.000

Conflict of Interest: none

Ethical Approval: not required

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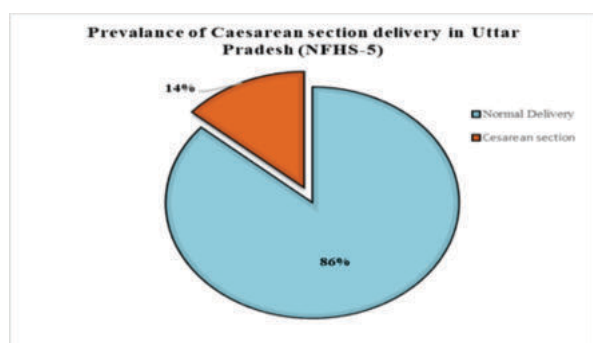


Figure 1: - Prevalence Of Caesarean Section Delivery In Uttar Pradesh(NFHS-5)

CONCLUSION

Our primary findings indicate a significantly higher likelihood of caesarean section deliveries among women residing in urban areas and those delivering in private healthcare facilities, considering other clinical and social factors in Uttar Pradesh. Government health policymakers should prioritize efforts to reduce caesarean section deliveries by enhancing maternal health literacy and raising awareness among women and the community, thereby mitigating potential future consequences.

DECLARATIONS

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