International Journal of Trend in Scientific Research and Development (IJTSRD)
Volume 7 Issue 4, July-August 2023 Available Online: www.ijtsrd.com e-ISSN: 2456 – 6470

A Comparison between C-Section Delivery Rates in Rural and Urban Areas Women in Ahmedabad, Gujarat

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ABSTRACT

The cesarean delivery rates in India are raising day by day. The aim of the study is to estimate the any association between institutional health center (it may be public or private) with caesarian delivery rates in Ahmedabad district. This cross-sectional study used institutional delivery data from the health sectors of Ahmedabad district and National Family Health Survey (NFHS). Data were analyzed from October 2021 to December 2021. The cesarean section rate was significantly lower among rural compared to urban women. Age of the mother, parity, previous cesarean and distance from the hospital were some of the important variables of cesarean section rates. According to the study we found higher cesarean rates in urban area compared to rural area and there is association between institutional deliveries with cesarean delivery rates.

KEYWORDS: *cesarean section, delivery rate, statistical data analysis, chi-square test, NFHS*

How to cite this paper: Ila Vishnubhai Patel | Prof. (Dr.) Chirag J. Trivedi "A Comparison between C-Section Delivery Rates in Rural and Urban Areas Women in Ahmedabad, Gujarat" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-7 | Issue-4, August 2023, pp.600-605, URL: www.ijtsrd.com/papers/ijtsrd59748.pdf

IJTSRD59748

INTRODUCTION

Cesarean delivery (C-section) is a surgical procedure used to deliver a baby through incisions in the abdomen and uterus. Cesarean delivery is a surgical procedure performed when a vaginal delivery is not possible or safe, or when the health of the mother or the baby is at risk. Some women request C-sections with their first babies to avoid labor or the possible complications of vaginal birth or to take advantage of the convenience of a planned delivery. Decisions made during a cesarean section can affect women and their families for the rest of their lives.

There has been a dramatic increase in cesarean delivery rates worldwide in the past few years, and this increase is occurring regionally [1]. These cesarean delivery rates have increased at a slow motion in countries within Africa [2], they are increasing at a substantial rate in many other countries. In US the cesarean delivery rate was around 30% in 2006 [3]. In some European countries, the cesarean delivery rates was also very high according to some research study. Australia's cesarean delivery rate increased from less than 20% in 1998 to approximately 30% in 2008 [4].In Asia, an increase in cesarean delivery rates has been observed in a number of countries, including India, Nepal, China, and Bangladesh [5].

A cesarean section can be a life-saving operation for a pregnant woman, but this procedure must be done for medical reasons. This is because complications that negatively affect mortality and morbidity in both mothers and neonates are well documented in the literature [7-14].

Some of the negative health issues in babies born via cesarean delivery include childhood obesity,

respiratory diseases, diabetes, impaired cognitive development, advanced rates of autism, and an increased risk of neurodevelopmental disease [13,15-21].

In India cesarean delivery rates are also more than doubled in India as a whole, from 8% to 17% in 2005-2006 to 2015-2016 [2]. The world health organization also recommends that the percentage of cesarean delivery rates should not exceed 10% to 15% in any nation.

According to the NFHS-5 data at private health facilities, 52.5 % births were in C-section in 2019-2020 as against 40.3% in 2015-2016. Some survey findings also show that it is the private sector hospitals that are largely responsible for the high rate of C-section in India, as a result of which average Indians pays more for childbirth than they would have otherwise. Kerala has registered 99.8% institutional births and in areas too, there has been a slight jump in the number of deliveries through C-section. According some research at least nine of every 10 pregnant women now deliver a baby in a hospital and thereby avail better health care facilities. But nearly every third women who delivers a child in a hospital undergoes a cesarean surgery, which is a rate twice of what the international health care community considers idea, and almost the same it is in US. Four rounds of the nationally-representative National Family Health Survey have also rising C-section rates over time – from 9.5% of all hospital births in 1992-1993 to 22.8% in 2015-2016.

According to the health, institutional delivery is better than home delivery because in institute there are professionals regarding the pregnancy that is gynecologist and specialist and some health workers also. As health workers are very supportive to the patients and even in institute there are some machines/equipment also. Therefore delivery of child became easier. In institute there are some hygienic facilities are also therefore getting infected from some bacteria and virus in patients is rarely. Even some more benefits are in institutes (hospitals /nursing home, clinics) the institutes maintains prospective registry for all admissions that is maintained by trained staff.

The present study assessed a comparison between C-section delivery rates and intuitional delivery rate in rural and urban area of pregnant women in Ahmedabad.

Materials & Methods:

The present study calculated the patterns in cesarean delivery rates in India by type of facility and assessed the association of participant's demographic, economic, and health characteristics and their place of delivery with the likelihood of having a cesarean delivery.

The locations of institutional deliveries were classified into public and private sectors. The location was considered public if the delivery occurred in a government hospital, urban health center, and urban family welfare clinic, community health center or primary health center. The location was considered private if the delivery occurred at a private hospital or private clinic. Here some non-governmental organization that is semi-government or trust hospital were also included in private sector category.

Women who delivered child in October 2021 to December 2021 were included in study. Around 190 rural pregnant women and 190 urban pregnant women data were collected from institutes/ Asha workers / Anganwadi workers/ Health workers / some pregnant women through offline and online data collection through a pre-designed questionnaire and convenient sampling.

The deliveries were categorized as cesarean section and normal deliveries and are the primary dependent variable. Microsoft excel 2013 was used to compile the data and SPSS 20.0 was used for statistical analysis.

Results:

Table 1: Socioeconomic and clinical characteristics of rural and urban area of Ahmedabad

Characteristic		Rural (N=190)	Urban (N=190)	Total (380)	Chi square value	p-value	Cramer's V
Age	Below 25	100	77	177	5.5946	0.018016	0.121
	25 and above	90	113	203			
Education	Literate	110	139	249	9.7974	0.001748	0.161
	Illiterate	80	51	131			
Occupation	Working	89	113	196	6.0874	0.013615	0.127
	Not working	101	77	184			
No of child before pregnancy	0-2	108	144	252	15.2679	0.000093	0.2
	3 or more	82	42	128			
Type of family	Nuclear	84	112	196	8.2609	0.004051	0.147
	Joint	106	78	184			

Hemoglobin level	<7	70	51	121	6.749	0.034235	0.133
	7-11	103	109	212			
	>11	17	30	47			
Previous Delivery	Normal	99	37	136	44.343	<0.00001	0.342
	C-section	57	90	147			
	Not yet	34	63	97			
No. of ANC visits	0-3	74	41	115	13.579	0.000229	0.189
	4 & above	116	149	204			
Hospital type	Government	126	63	189	76.5563	<0.00001	0.449
	Private	36	119	155			
	Trust	28	8	36			

Cramer's V is a statistic used to measure the strength of association between two nominal variables, and it take values from 0 to 1. Values close to 0 indicate a weak association between the variables and values close to 1 indicate a strong association between the variables.

The Cramer's V statistic is a symmetric measure, in the sense that it does not matter what variable is placed in the rows and what variable is placed in the columns.

Based on the information it is found that the chi square statistics is $X^2 = 5.595$ and the corresponding Cramer's V is equal to V= 0.121, which indicates that we have a small effect that we have a small effect size. Null hypothesis is rejected and here p-value is 0.018016.

According to the table -1 information it is found that educations of the rural and urban pregnant women chi square statistic is $X^2 = 9.797$ and the corresponding Cramer's V is equal to V= 0.161 which indicates that we have a small effect size. Here null hypothesis is rejected and p value is 0.001748.

According to that table -1 information it is found that occupation of the rural and urban areas of pregnant women's chi-square statistic is $X^2 = 6.0874$ and the corresponding Cramer's V is equal to V= 0.127 which indicates that we have a small effect size. Here null hypothesis is rejected and p-value is 0.013615.

According to the table -1 association between number of children before pregnancy and types of area of pregnant women chi-square statistic is $X^2 = 15.2679$ and Cramer's Vis equal to V=0.2, here p-value is 0.000093. Therefore null hypothesis is rejected.

Based on the table – 1 information to found the association between type of family and types of areas of pregnant women here chi square statistic is $X^2 = 8.261$ and the corresponding Cramer's V is equal to V=0.147, p-value is 8.2609 and null hypothesis is rejected.

According to the table to found association between hemoglobin level and types of area of pregnant women .chi square statistic is $X^2 = 6.749$ and the corresponding Cramer's V is equal to V= 0.133 and p-value is 0.034235. Here null hypothesis is rejected.

Association between previous delivery and types of areas of pregnant women chi square statistic is $X^2 = 44.343$ and Cramer's V value is 0.342. Here null hypothesis is rejected and p-value is <0.00001.

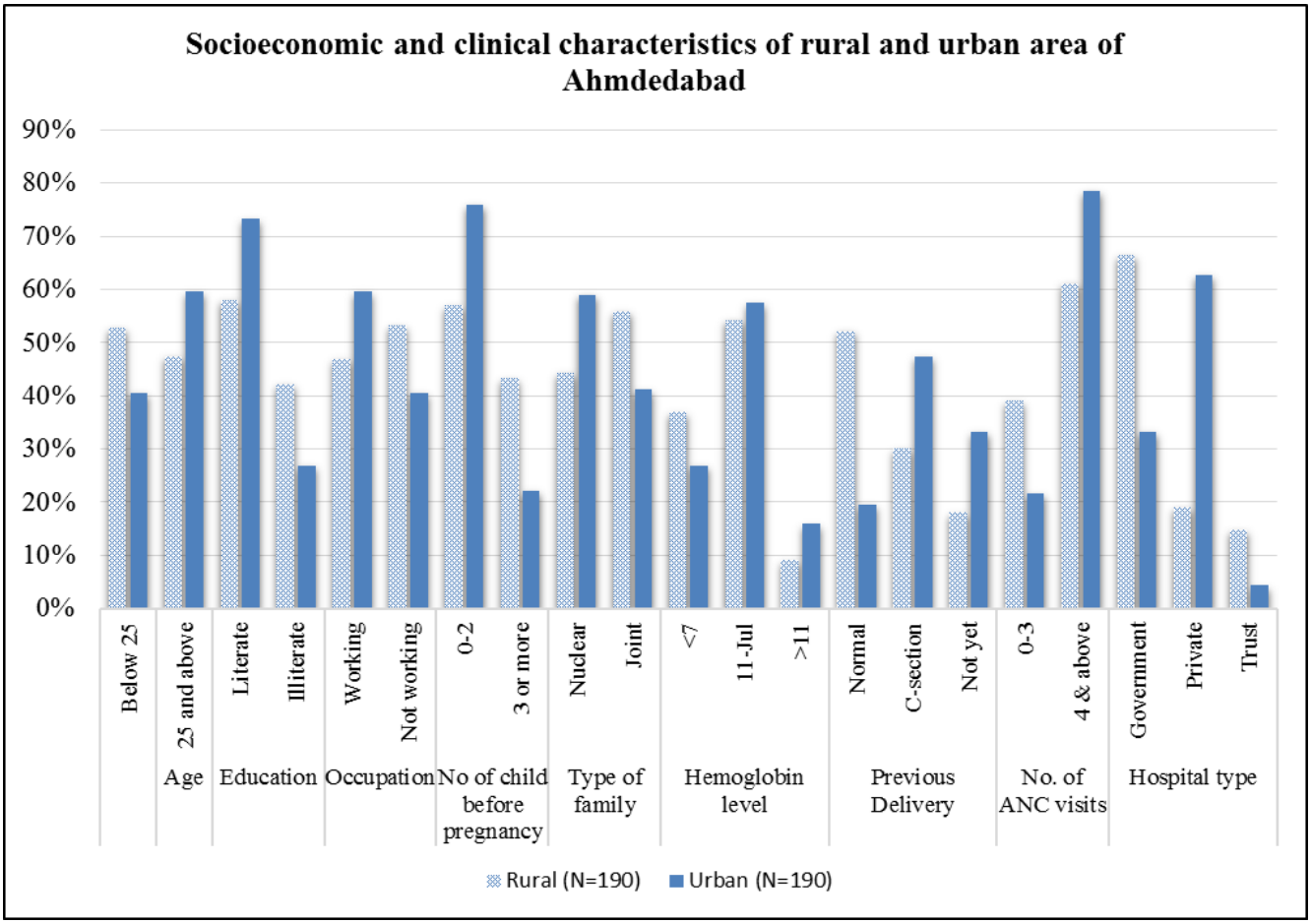
According to the table 1 number of ANC visit and types of area of pregnant women chi square statistic is $X^2 = 13.579$. Cramer's V value is 0.189 and p-value is 0.000229. Here alterative hypothesis is accepted.

To find the association between hospital type and the types of areas of pregnant women chi –square statistic is $X^2 = 76.556$. Here p -value indicated is <0.00001 and Cramer's V is equal to V= 0.449. Null hypothesis is rejected.

Table 2: Percentage of Socioeconomic and clinical characteristics of rural and urban area of Ahmedabad

Characteristic		Rural (N=190, %)	Urban (N=190, %)	Total (380)
Age	Below 25	100, 52.63%	77, 40.52%	177
	25 and above	90, 47.36%	113, 59.47%	203
Education	Literate	110, 57.89%	139, 73.15%	249
	Illiterate	80, 42.10%	51, 26.84%	131

Occupation	Working	89, 46.84%	113, 59.47%	196
	Not working	101, 53.15%	77, 40.52%	184
No of child before pregnancy	0-2	108, 56.84%	144, 75.78%	252
	3 or more	82, 43.15%	42, 22.10%	128
Type of family	Nuclear	84, 44.21%	112, 58.94%	196
	Joint	106, 55.78%	78, 41.05%	184
Hemoglobin level	<7	70, 36.84%	51, 26.84%	121
	7-11	103, 54.21%	109, 57.38%	212
	>11	17, 8.94%	30, 15.78%	47
Previous Delivery	Normal	99, 52.10%	37, 19.47%	136
	C-section	57, 30%	90, 47.36%	147
	Not yet	34, 17.89%	63, 33.15%	97
No. of ANC visits	0-3	74, 38.94%	41, 21.57%	115
	4 & above	116, 61.05%	149, 78.42%	204
Hospital type	Government	126, 66.31%	63, 33.15%	189
	Private	36, 18.94%	119, 62.63%	155
	Trust	28, 14.73%	8, 4.21%	36



According to the table – 2 research shows that around 36.84% pregnant women who lives in a rural area have less than 7.hemoglobin level at that time around 26.84%. Pregnant women who lives in urban area have less than 7 hemoglobin level.

According to the data shows around 52.10% rural pregnant women had normal deliveries and around 19.47% urban pregnant women had normal delivery even 30% rural pregnant women face C-section and around 47.36% urban pregnant women had C-section delivery according to the data. 17.84% rural women have 1st pregnancy or maybe they face miscarriage and all other different circumstances and in urban area around 33.15% have 1st pregnancy or maybe they face miscarriage and all other different circumstances and in urban area around 33.15% have 1st pregnancy or maybe they face miscarriage and all other different circumstances.

According to the table 2 data shows that around 38.94% rural pregnant women is going for the 0-3 ANC visit and around 21.57% urban pregnant women is going for the 0-3 times ANC visits. Around 61.05% were rural

pregnant women going for the 4 and above ANC visits and 78.42% were urban pregnant women going for the 4 and more times ANC visit.

According to the table – 2 data shows that around 66.31% rural pregnant women were going for the government hospital and 18.94% pregnant women going for the private hospital around 14.73% rural pregnant women were going in a hospital which is organized by any charitable trust or semi-government. And in urban area around 33.15% pregnant women going for the government hospital.62.63% were going in a private hospital and around 4.21% urban pregnant women going in a hospital which is organized by charitable trust or semi government.

Conclusion:

This cross-sectional study indicates that there is a substantial discrepancy in cesarean delivery rates between the public and private sector in India. And that private sector health care facilities are associated with increase in cesarean delivery rates. In urban area there is more cesarean delivery rate than rural area.

Suggestion:

In developed countries professional guidelines and recommendations for prevention of primary cesarean deliveries are imparted in advance. On the other hand un-developed/under-developed nations, lack for the same. Awareness and knowledge programs regarding C-section, delivery rate, maternal mortality rate must be started in full fledge from the government/non-government organizations for the betterment of the women health.

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