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Original Research

Utilization of Antenatal services and its correlation with pregnancy outcomes in Ujjain district

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ABSTRACT:
Introduction: Timely and quality antenatal care (ANC) is an essential element of universal health coverage and a key determinant for the prevention of poor pregnancy outcomes for both mother and child . Nevertheless, evidence from large-scale health surveys in developing countries highlight a lack of access and utilization of antenatal care especially among socioeconomically disadvantaged populations. **Method:** It was a cross-sectional study that included 2 study centers. As per inclusion/exclusion criteria, this study included 650 post-partum mothers. Using Stratified random sampling study participants were enrolled. Data were collected and analyzed in SPSS 23. Using statistical tests i.e., Chi-square, etc data was analyzed. **Result:** In the study we observed that there was a significant association of registration of pregnancy, ANC visits, time of registration, iron and folic acid intake with stillbirth and low birth weight. **Conclusion:** Lower utilization of ANC services needs to be addressed immediately to avoid poor pregnancy outcomes by proper monitoring, increasing awareness among pregnant mothers and family members.
Keywords: Antenatal care, stillbirth, low birth weight

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INTRODUCTION

Antenatal care (ANC) is the health care provided to women who are pregnant, for confirmation and monitoring of the progress of their pregnancy, and to promote their birth preparedness and complication readiness for ensuring optimal birth outcomes for both the mother and her baby[1]. Timely and quality antenatal care is a crucial determinant towards the prevention of maternal mortality, which is a significant developmental goal for developing countries, which contributes to more than 99% of maternal deaths worldwide[2].

The essential components of quality ANC include early registration of pregnancy, a minimum of four antenatal visits during each pregnancy interspersed over the three trimesters, tetanus toxoid immunization (TTI), and iron/ folic acid supplementation (IFAS)[1]. During antenatal visits, pregnant women should receive appropriate nutrition and health education, undergo clinical and laboratory tests for monitoring maternal and fetal well-being, and be evaluated for the early detection of any abnormalities along with their management and timely referral, whenever as required[2].

In India, most populous country with the largest reproduction rate, results of a large-scale nationwide cross-sectional survey (2015-2016) revealed that full antenatal care was provided to only 21% of reproductive age women during their previous pregnancy[3]. However a significant underutilization of ANC has been observed among women living in poverty, low education, poor awareness, cultural traits, and residence in rural area and underserved area[4].

Despite of sustainable goals and government plans , policies and programmes , full utilisation of ANC services by pregnnat women is still low .

This study will evaluate factors for ANC services and long with pregnancy outcomes.

METHOD

This study was conducted among women who delivered in two hospitals Chandrikaben Rashmikant Gardi Hospital (CRGH) and Charak hospital (District Mother and Child Hospital), Ujjain. MP during the data collection period. Charak hospital is a 450 bedded hospital and about 800-900 deliveries are being conducted in a month and CRGH is 820 bedded tertiary care hospital and about 150-200 deliveries are being conducted in a month.

DEFINITIONS

Comprehensive antenatal care was defined as early registration of pregnancy (within 12 weeks), at least four ANC visits at a health facility, two doses of tetanus toxoid and at least 100 days of IFAS consumption1,3,11. The primary outcome was the proportion of participants who received comprehensive ANC.Study design and study population[5].

The study was conducted using a cross-sectional design. The study population included women who delivered in these two hospitals during the data collection period. Those admitted in ICU or those not present on the bed at the time of visit or with incomplete information were excluded from the study.

SAMPLE SIZE AND SAMPLING TECHNIQUE

A sample of 629 was calculated using the sample size formula for a single proportion. A total of 650 postpartum mothers were enrolled. Stratified random sampling was used for the selection of participants from 2 centres along with simple random sampling.

DATA COLLECTION

Data was collected after getting permission from the institute's ethical committee. The duration of the study was one and a half years. A pre-designed pre-tested questionnaire was used to collect data from postpartum mothers. Written consent was obtained after explaining the need and importance of the study to the participant. Most of the details were obtained by interview, however, some of the details like investigation etc were taken from mother and child protection card (MCP card)/ inpatient file.

STATISTICAL ANALYSIS

Data were analysed using IBM statistical package for the social sciences (SPSS) version 23 for Windows10. For Analysis descriptive statistics were calculated to summarize the sample characteristics. A Chi-square test was applied to see the association with pregnancy outcomes. Logistic regression was applied for predicting poor pregnancy outcomes. A p-value of less than 0.05 was considered to be statistically significant.

ETHICAL CONSIDERATION

Ethical approval was obtained from the institutional ethical committee of R. D. Gardi medical college, Ujjain. Confidentiality and data security were assured. Participation was made voluntary as each participant was at liberty to opt-out at any point in the study.

RESULT

FREQUENCY DISTRIBUTION OF SOCIODEMOGRAPHIC FACTORS OF STUDY PARTICIPANTS

Mothers' age ranges from 17 years to 40 years with a Mean age was 25.38 years. Only 31.2% of post-partum mothers had education more than high school. Only 19.1% of post-partum mothers belong to the socioeconomic class above III (i.e., class I & II of modified BG Prasad). It was observed that 64% of post-partum mothers belong to below poverty line (BPL) families. About 57.3% of post-partum mothers reside in rural areas. Parity distribution of postpartum mothers was 59.8% were multipara. About 70.8% of mothers were married before 20 years of age. It was found that 63.4% of post-partum mothers live in a joint or 3 generations family.

Table 1: Frequency distribution of sociodemographic factors of study participants

FACTORS	CATEGORY	FREQUENCY	PERCENT
Mother's age group	<= 20 Years	66	10.2
	21-30 years	499	76.8
	>30 years	85	13.1
Place of Delivery	Ambulance	13	2.0
	Govt	480	73.8
	Private	157	24.2
Mother's education	Illiterate	119	18.3
	<High school	328	50.5
	>=High school	203	31.2
Socio economic class	Above class III	124	19.1
	Class III	147	22.6
	Below class III	379	58.3
Religion	Christian	4	0.6
	Hindu	422	64.9
	Jain	15	2.3

	Muslim	195	30.0
	Sikh	14	2.2
Caste	General	128	19.7
	OBC	288	44.3
	SC	161	24.8
	ST	65	10.0
	Others	8	1.2
Married at age of	≤20 year	460	70.8
	>20 year	190	29.2
Residence type	Rural	349	53.7
	Urban	301	46.3
Parity	Multipara	389	59.8
	Primipara	261	40.2
Type of Family	Nuclear	238	36.6
	Joint+3 generation	412	63.4

UTILISATION OF ANTENATAL CARE SERVICES

If pregnancy is registered, the mother will have less likelihood of having a poor pregnancy outcome. As shown in table 2 registration of pregnancy is highly significantly associated with stillbirth (χ2-51.827, p-0.000) and normal birth weight (χ2-8.439, p-0.004). It was observed that non-registered pregnancy had 74 times high risk of having new-born born dead (80%) and high percentage of having baby born with low birth weight. Delayed registration of pregnancy is directly proportional to both birth weight and pregnancy end results (born dead). There was highly significant association between delayed registration of pregnancy with birth weight (χ2-10.250, p-0.017) and born dead (χ2-53.197, p-0.000). More the antenatal visit in pregnancy less are the percentage of having baby born with low birth weight (65%) and baby born dead(4%). Without iron and folic acid intake, risk of baby born dead increased by 3.2 times as compared to those mothers who took Iron and folic acid tablets during pregnancy.

Registration of current pregnancy	**Pregnancy end results**		**Birth weight**	
	Born live	**Born dead**	**< 2.5 kg**	**>= 2.5 kg**
Yes	612 (94.9%)	33 (5.1%)	238 (36.9%)	407 (63.1%)
No	1 (20.0%)	4 (80.0%)	5 (100.0%)	0 (0.0%)
	χ2-51.827, p-0.000		χ2-8.439, p-0.004	
	OR-74.182, p-0.000, CI-8.064-682.418		OR-1.155, p-0.265, CI-0.897-1.487	
Time of registration No registration	1 (20.0%)	4 (80.0%)	5 (100.0%)	0 (0.0%)
1st trimester	192 (96.5%)	7 (3.5%)	79 (39.7%)	120 (60.3%)
2nd trimester	355 (94.2%)	22 (5.8%)	131 (34.7%)	246 (65.3%)
3rd trimester	65 (94.2%)	4 (5.8%)	28 (40.6%)	41 (59.4%)
	χ2-53.197, p-0.000		χ2-10.250, p-0.017	
	OR-0.803, p-0.416, CI-0.473-1.362		OR-1.155, p-0.265, CI-0.897-1.487	
No of ANC visits <4	185 (90.7%)	19 (9.3%)	87 (42.6%)	117 (57.4%)
>=4	428 (96.0%)	18 (4.0%)	156 (35.0%)	290 (65.0%)
	χ2-7.263, p-0.007		χ2-3.517, p-0.061	
	OR-0.409, p-.009, CI-0.210-0.798		OR-1.382, p-0.061, CI-0.985-1.940	
Iron and folic acid supplement Taken irregularly	177 (97.3%)	5 (2.7%)	67 (36.8%)	115 (63.2%)
Taken regularly	397 (94.7%)	22 (5.3%)	150 (35.8%)	269 (64.2%)
Not taken	39 (79.6%)	10 (20.4%)	26 (53.1%)	23 (46.9%)

	χ2-22.859, p-0.000	χ2-5.619, p-0.060
	OR-3.281, p-0.000CI-1.766-6.094	OR-0.833, p-0.207, CI-0.626-1.107

χ2: chi square test , OR – odd's ratio, CI – Confidence interval

DISCUSSION

The achievement of universal maternal health coverage is a key public health agenda in the developing world[6]. More than half of the women did not receive the minimum recommended 4 ANC visits, which is a conservative expectation when compared to the recent recommendations of the World Health Organisation (WHO), a minimum of 8 visits. A similar result was observed in a study stating that half of the pregnant women have not received full ANC services[7]. The deficiencies in ANC content were particularly related to inadequate counselling, complication readiness, dietary advice, and physical activity.It was observed that poor utilization of ANC services in form of registration of pregnancy, ANC visits etc had a significant association with pregnancy outcomes. Reasons for poor utilization can be mother's knowledge, husband education, transport facility availability, availability of nearby health care center, who is providing ANC services etc. Registration of pregnancy, utilization of benefits from the government's ICDS program, and having health insurance were associated with higher odds of full ANC utilization. Lower maternal education, lower wealth quintile(s), higher birth order, father not accompanying for the ANC visit, teenage pregnancy and unintended pregnancy were associated with lower odds of full ANC utilization[7-10].

CONCLUSION

Lower utilization of ANC services needs to be addressed immediately to avoid poor pregnancy outcomes by proper monitoring, increasing awareness among pregnant mothers and family members. Factors for lower utilization of services need to be addressed.

LIMITATIONS

This was a cross-sectional hospital-based study. Many of the data on the study variable was collected from hospital records. Due to the interference of family members during interview details of many factors could not be obtained appropriately.

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CONFLICT OF INTEREST

None

ETHICAL APPROVAL

Ethical clearance for the study was taken from the institutional ethical committee of R.D. Gardi Medical College, Ujjain, Madhya Pradesh before starting the study. Ethical clearance number IEC Ref no-136

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