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DETERMINANTS OF QUALITY OF ANTENATAL CARE IN A RURAL BLOCK OF HARYANA

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ABSTRACT
Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth. Maternal mortality is higher in women living in rural areas and among poorer communities. The trend of maternal mortality in developing countries has been increasing and various international organizations have reported that an important factor related to maternal and infant mortality has been linked to lack of quality antenatal care. This study was done with an objective to assess the quality of ANC services received by the pregnant women of rural area and factors affecting the quality ANC. A community based longitudinal, descriptive study was carried out during April 2014 to July 2015 among 204 pregnant women registered at randomly selected five sub-centers by lottery method in the rural areas of block Beri, District Jhajjar, Haryana. A pre-tested semi-structured interview schedule was used for interviewing the study subjects. Data so collected were compiled & analyzed using statistical software (SPSS version 20.0). Out of 204 pregnant women, 133 (65.2%) were from general category, 42 (20.6%) schedule caste and 29 (14.2%) other backward class. Majority (96.6%) were Hindus and only 7 (3.4%) were Muslims. Majority (35%) were belong to class-II SES and only 9% were from class V. Mean age of the study subjects was 23.05 ± 2.92 and mean age at marriage was 19.98 ± 1.86. Nearly half (49.5%) were multigravida and (3.9%) were grand multigravida. Majority (86.8%) were anaemic (<11gram %) at the time of registration showing the higher prevalence of anaemia in this area. full antenatal care utilization was directly associated with factors like younger age, upper caste, higher education and SES, primigravida and early registration of the study subjects ($p<0.05$). higher proportion (46.7% and 39.2%) of study subjects who were in the age group <20 years and 20-24 years respectively availed full ANC than (7.9% and 0%) the women of higher age groups (25-29 years and >30 years respectively). Again, more proportion (43.8%) of women who got registered in first trimester availed full ANC as compared to women registered after first trimester (13 to 26 week -21.6% and >26 weeks-0%). Early registration of pregnancy and hence, early detection of high risk pregnancies and timely refer them to higher institutions for management had good effect on maternal and neonatal outcome.

Keywords: Antenatal Care, Quality, Rural Haryana

INTRODUCTION
Mother and children not only constitute a larger group, but they are also vulnerable or special-risk group. The risk is connected with child- bearing in the case of women and growth, development and survival in the case of infants and children (Park's, 2015). Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth. Maternal mortality is higher in women living in rural areas and among poorer communities. Nearly all (99%) maternal death occurs in developing countries. There are large disparities between countries, but also within countries, and between women with high and low income and those women living in rural versus urban areas (WHO Fact sheet: Maternal mortality, 2015). Maternal mortality ratio in India is 167/100000 live births (SRS maternal mortality, 2011-13).
The trend of maternal mortality in developing countries has been increasing and various international organizations have reported that an important factor related to maternal and infant mortality has been linked to lack of quality antenatal care (Paul *et al.,* 2011). Antenatal cares in simple terms refers to the care that is given to an expectant mother from the confirmation of conception to the beginning of labor. Moreover, ANC visits may raise awareness about the need for care during delivery and give women and

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their families a familiarity with the health facilities so that in emergencies they can seek help more efficiently. Antenatal Care (ANC) services have been the Achilles heel of all maternal and child related preventive interventions. Hence, empowering them with adequate knowledge regarding the vital aspects of ANC, danger sign of pregnancy, practical advice on basic essentials of ANC like diet, breast feeding, immunization and family planning are vital. Awareness and accessibility to this information can help to create a sound support system and hence, avert a lot of problems in future. Against this background this study was done with an objective to assess the quality of ANC services received by the pregnant women of rural area and factors affecting the quality ANC to know the realistic scenario in this part of country.

MATERIALS AND METHODS
This was a community based longitudinal, descriptive study design and carried out during April 2014 to July 2015 in the rural areas of block Beri, District Jhajjar, Haryana, which is a field practice area attached to Department of Community Medicine, Pt. B. D. Sharma PGIMS Rohtak. The population of this block was 1, 54,980 as on 1st January, 2014. There is one General Hospital (Beri), two Community Health Centers (Dighal & Dubaldhan) and five Primary Health Centers (Bhambewa, Dighal, D. D. Majra, Dubaldhan and Jahajgarh) and 25 Sub Health Centers (SHCs). In this study one SHC was selected randomly by lottery method from each PHC out of Block Beri. All Antenatal women registered from 1st April 2014 to 30th September 2015 (6 months) in the selected five SHCs residing in the area for more than six months were included in this study. Pregnant women who were not willing to participate, not available on more than three visits and with other co-morbid conditions having neurological, cardiac, hepatic, renal or any such systemic illness were excluded from the study.

The total population of the randomly selected five SHCs was 27088 and as per the birth rate of 15 per 1000 of population and pregnancy wastage rate of 10 percent, the expected antenatal registration was 224 for six month time period. During April 2014 to September 2014 the total antenatal registration was 218. Out of these antenatal cases 14 were lost to follow-up as they left the area, hence, a total of 204 antenatal cases were included in the study. These pregnant women were interviewed by the investigator himself during home visits and the information regarding their socio-demographic profile, previous obstetric history and care received during first visit was collected and then followed-up after each next antenatal visit to know the antenatal care received by them. The subjects who were found to have the disease/ complication at such a stage which cannot be controlled at the peripheral level were referred to G.H. Jhajjar/ PGIMS, Rohtak for further intervention to benefit the subject on ethical grounds, though it was not a part of the study. Ethical clearance was obtained from the ethics committee of Pt. B. D. Sharma University of health sciences Rohtak.

Socioeconomic status of study population was measured using revised B.G.Prasad scale for the month of April-2014 for rural areas (Dudala *et al.,* 2014). Full antenatal care was considered as a proxy of quality antenatal care. Pregnant women who had made four ANC visits, received either 2 doses of T.T. injection one month apart or a single booster dose if the pregnancy interval was less than three years and consumed at least 100 IFA tablets were considered as a case of good quality antenatal care or full antenatal care. Data were collected on pre-designed, pre-tested and semi structured schedule by interview technique by the investigator himself. A written and informed consent was obtained from all the subjects before initiating the interview. The confidentiality of the information was assured. Analysis was carried out using SPSS (Statistical Package for Social Sciences) for Windows version 20.0. Categorical data were presented as percentages (%). Pearson's chi square test was used to evaluate differences between groups for categorized variables. Normally distributed data were presented as means and standard deviation. All tests were performed at a 5% level of significance, thus an association was significant if the p value was less than 0.05.

RESULTS AND DISCUSSION
The present study was undertaken to assess the quality of antenatal care received by the pregnant women of rural areas and factors affecting the quality of antenatal care. A total of 218 pregnant women were

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registered from April 2014 to September 2014 in the selected sub-centers. Out of them 14 were migrated to other places and thus lost to follow-up.

Table 1: Socio-Demographic Profile of the Study Subjects (n=204)

Variable	Number	Percentage
Category		
General	133	65.2
OBC	29	14.2
SC	42	20.6
Religion		
Hindu	197	96.6
Muslim	7	3.4
Type of family		
Nuclear	20	9.8
Joint	184	90.2
Family member		
1-5	99	48.5
>5	105	51.5
Literacy		
Illiterate	19	9.3
Primary	17	8.3
Middle	20	9.8
Secondary	41	20.1
Senior Secondary	55	27.0
Graduate	52	25.5
Occupation		
House Wife	195	95.6
Service (Government & Private)	8(4+4)	3.9
Self Employed	1	0.5

In the present study, out of 204 pregnant women, 133 (65.2%) were from general category, 42 (20.6%) schedule caste and 29 (14.2%) other backward class. Majority (96.6%) were Hindus and only 7 (3.4%) were Muslims. (Table 1) Similar findings were noted by Singh *et al.*, (2007) in rural areas of Chandigarh and Gundbowdi *et al.*, (2015) in the area of a PHC in Karnataka where participants of Hindu religion were 92.8% and 93.7% respectively and of Muslim religion were 4.8% and 7% respectively. It was noted that only 9.8% women belonged to nuclear families means that people still prefer to live in joint families in this area. A study conducted by Singh *et al.*, (2007) in rural areas of Chandigarh revealed a higher proportion (24.8%) of nuclear families.

In this study we found that majority (90.7%) of the study subjects were literate (from primary to graduate level). (Table 1) DLHS-4 data showed (74%) literacy rate among currently married women in Jhajjar district.

Majority (95.6%) of the study subjects were housewives and similar (91.3% and 92.6%) proportion was revealed in studies conducted by Garg *et al.,* (2010) in Verka block of Amritsar district, Punjab and Malik *et al.,* (2013) in rural area of Rohtak respectively. Majority (35%) were belong to class-II SES and only 9% were from class V (Figure 1). It might be due to more number of study subjects belong to general category and were in service and land holders.
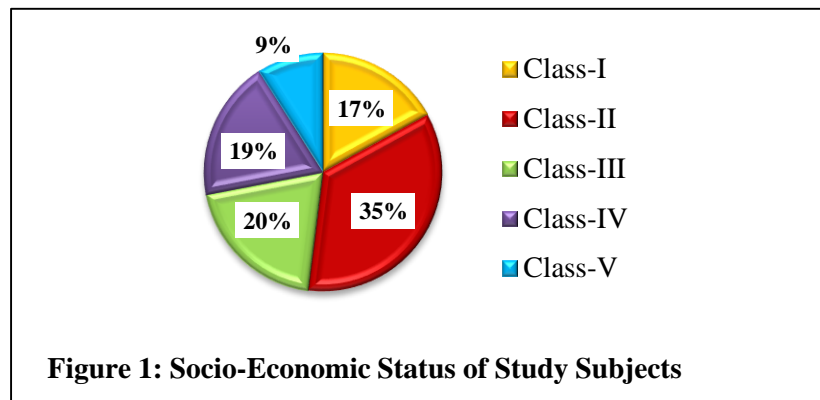
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Figure 1: Socio-Economic Status of Study Subjects

Table 2: Obstetric Characteristics of Study Subjects (n=204)

Variable	Number	Percentage
Present Age (Years)		
<20	15	7.4
20-24	136	66.7
25-29	42	20.6
≥30	11	5.4
Age at Marriage (Years)		
<18	6	2.9
18-20	130	63.7
21-23	57	27.9
24-26	11	5.4
Gravida		
Primigravida (I)	95	46.6
Multigravida (II-IV)	101	49.5
Grand-Multigravida (≥V)	8	3.9

Mean age of the study subjects was 23.05 ± 2.92 and majority (66.7%) were in the age group of 20 to 24 years (Table 2). However, 15 (7.4%) women were in the age group of 15-19 years revealing that in rural part of Haryana, early marriages are still a common scenario which was similar to a study conducted by Baba *et al*., (2013) in Kashmir (7.7%).

Higher proportion (12.7%) of teen age pregnancy was observed in a study conducted by Dutta *et al*., (2012) at West Bengal. Mean age at marriage was 19.98 ± 1.86. Nearly two-third (63.7%) of the study subjects were married at the age of 18 to 20 years. About 2.9% of the study subjects got married at age less than 18 years. Nearly half (49.5%) were multigravida and (3.9%) were grand multigravida. Majority (86.8%) were anaemic (<11gram %) at the time of registration showing the higher prevalence of anaemia in this area.

Present study shows that only 105 (51.5%) of study subjects were registered within 12 weeks of gestation who followed the programme guidelines. (Table 3) The lower proportion of early registration among the women might be due to unawareness regarding its importance and less field visits made by the health workers and ASHA workers to identify the pregnant women among the target couples. A study conducted by Gundbowdi *et al*., (2015) in rural area of Belagavi district revealed similar (53.8%) results. DLHS-4, data showed that only 50.3% women were registered within 12 weeks of gestation in Jhajjar district. Jerath *et al*., (2015) conducted a study among women in urban slum of Delhi found lower proportion (44%) of women registered in first trimester.

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**Table 3: Utilization of Antenatal Care by the Study Subjects (n=204)**

Variable		Number	Percentage
Registration	1st Trimester	105	51.5
	2nd Trimester	90	44.1
	3rd Trimester	9	4.4
ANC Visits	1	10	4.9
	2	67	32.8
	3	40	19.6
	4	87	42.6
IFA Tablet Consumption	Not taken	8	3.9
	1-50	26	12.7
	51-99	82	40.2
	≥100	88	43.2
TT Coverage	TT-1	8	3.9
	TT-2/Booster	196	96.1

We observed that only 87 (42.6%) of study subjects had made four ANC visits. The reason might be due to late antenatal registration made by the study subjects, poor antenatal services provided by the health workers and inadequate availability of logistics at the sub centers. The study conducted by Sachdeva *et al.,* (2012) in rural area of Rohtak found comparable (43.24%) results while Deo *et al*., (2015) in Nepal and Basu *et al*., (2015) in Kolkata revealed higher proportion (69% and 61.8% respectively) of study subjects who availed four ANC visits. The difference might be due to different study area.

Our study revealed that nearly ninety percent (86.8%) of the study subjects were anaemic (Hb<11 gm%) even then only 88 (43.2%) of the pregnant women had consumed ≥100 IFA tablets against the recommendation to consume at least 100 IFA tablets by all the pregnant women irrespective of their haemoglobin status. This might be due to the side effects of IFA like gastritis, unawareness among the women regarding the benefits of IFA and poor counseling done by health workers regarding administration of IFA tablets. Studies conducted by Singh *et al*., (2013) in rural areas of Rohtak and Basu *et al*., (2015) at Kolkata obtained similar results (45% and 43.9% respectively). While DLHS-4 showed that lower proportion (24.1%) of pregnant women in Jhajjar district had consumed ≥100 IFA tablets.

Two doses of TT or a single booster dose was received by 96.1% of study subjects which showed good coverage of TT immunization of pregnant women in the study area (Table 3) Gundbowdi *et al*., (2015) and Basu *et al*., (2015) also found almost cent percent (99.8% and 100% respectively) coverage of TT immunization among the study subjects in their respective areas.

Out of 193 study subjects, full antenatal care (four antenatal checkups, two doses/ booster of TT and consumption of ≥100 IFA tablets/ syrup) was received only by 31.6% of study subjects (Figure 2). Full antenatal care was taken as a proxy indicator for good quality antenatal care.

Figure 2: Utilization of Full ANC Services (n=193)
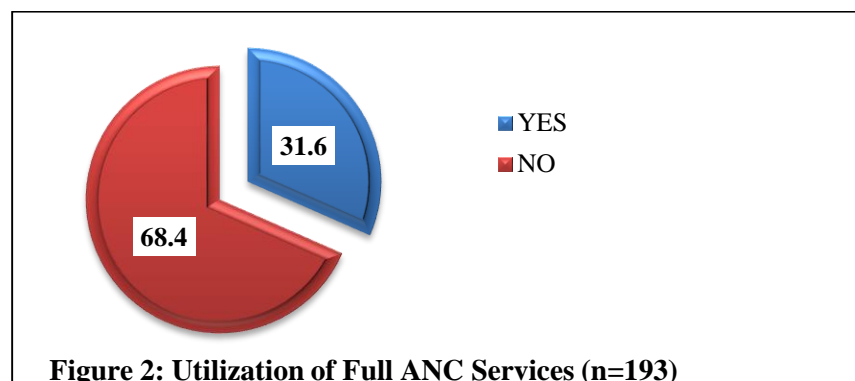
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Table 4: Full ANC and its Association with Profile of the Study Subjects (n=193)

Profile of Study Subjects		Full ANC			Significance χ^2, p value
		YES	NO	TOTAL	
Age (Years)	<20 yrs	7(46.7)	8(53.3)	15(100.0)	$\chi^2=19.575$ p < 0.001
	20-24	51(39.2)	79(60.8)	130(100.0)	
	25-29	3(7.9)	35(92.1)	38(100.0)	
	≥30	0(0.0)	10(100.0)	10(100.0)	
Category	SC	8(20.0)	32(80.0)	40(100.0)	$\chi^2=7.975$ p = 0.019
	OBC	15(51.7)	14(48.3)	29(100.0)	
	General	38(30.6)	86(69.4)	124(100.0)	
Literacy	Illiterate	0(0.0)	17(100.0)	17(100.0)	$\chi^2=18.188$ p = 0.000
	Upto Primary	3(17.6)	14(82.4)	17(100.0)	
	6th-10th	14(23.7)	45(76.3)	59(100.0)	
	>Matric	44(44.0)	56(56.0)	100(100.0)	
	I	14(41.2)	20(58.8)	34(100.0)	
Socio-Economic Status	II	24(34.8)	45(65.2)	69(100.0)	$\chi^2 = 11.407$ p=0.022
	III	15(41.7)	21(58.3)	36(100.0)	
	IV	7(18.9)	30(81.1)	37(100.0)	
	V	1(5.9)	16(94.1)	17(100.0)	
	1	45(50.0)	45(50.0)	90(100.0)	$\chi^2 = 27.363$ p<0.001
Gravida	2-4	16(16.8)	79(83.2)	95(100.0)	
	≥5	0(0.0)	8(100.0)	8(100.0)	
Early Registration	Upto 12 wks	42(43.8)	54(56.2)	96(100.0)	$\chi^2 = 14.792$ p=0.001
	13 -26 wks	19(21.6)	69(78.4)	88(100.0)	
	>26 wks	0(0.0)	9(100.0)	9(100.0)	

(Values in parenthesis show percentages)

In the present study we found that full antenatal care utilization was directly associated with factors like younger age, upper caste, higher education and SES, primigravida and early registration of the study subjects (p<0.05) (Table 4). It was evident from this study that higher proportion (46.7% and 39.2%) of study subjects who were in the age group <20 years and 20-24 years respectively availed full ANC than (7.9% and 0%) the women of higher age groups (25-29 years and >30 years respectively). Again, more proportion (43.8%) of women who got registered in first trimester availed full ANC as compared to women registered after first trimester (13 to 26 week -21.6% and >26 weeks-0%).

A study conducted by Khatib *et al*., (2009) in rural area of Deoli, Wardha, revealed that women with lower age group (<20 years) had almost three times (OR-2.88; CI-1.20-12.26) more probability of getting full antenatal care as compared to women with older age group (>31 years). Similarly, women who were registered in first trimester had 22 times more chance of availing full antenatal care as compared to women registered in third trimester. We found that more proportion (51.7% and 30.6%) of women belong to other backward classes and general category availed full ANC as compared to women belong to schedule caste (20%). Similarly, it was observed that full ANC was significantly associated with increasing literacy level, higher socio-economic status and lower birth order of the study subjects (p<0.05).

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Limitations

In this study due to time constraint and feasibility the sample size was restricted to 204 study subjects only. Inclusion of a relatively large sample size would have increased the validity of the study. Further, Fourteen study subjects were lost to follow up and could not be included in the study.

Conclusion

This study concluded that full ANC coverage was (31.6%) in our study which was much lower than the desired level as per programme guidelines. Early registration of pregnancy and hence, early detection of high risk pregnancies and timely refer them to higher institutions for management had good effect on maternal and neonatal outcome. Women who availed full ANC services (four ANC visits, ≥100 IFA tablets and full T.T. immunization) had relatively better outcome than those who did not avail full ANC. Though institutional deliveries were found high (98.4%) in our study but still steps should be taken to achieve 100% institutional deliveries.

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