

TIMING OF REGISTRATION FOR ANTENATAL CARE AMONG PREGNANT WOMEN DELIVERING IN A TERTIARY CARE HOSPITAL IN AN URBAN AREAPankaj Salvi¹, Geeta Pardeshi², Sonali Salvi³, Ramesh Bhosale⁴, Ajay Chandanwale⁵**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: INTRODUCTION: Antenatal care (ANC) services has the potential to affect maternal and foetal outcome positively. The ideal gestational age for booking is within the first ten weeks of pregnancy. **METHODOLOGY:** An Institution based cross-sectional study amongst puerperal women was conducted at B.J. Government Medical College and Sassoon General Hospitals, Pune, Maharashtra, India. Variables studied were socio-demographic factors, parity, complications in previous pregnancy etc. Analysis was done with the Fishers exact test. **RESULTS:** Out of the total 370 women, 38% reported late/no ANC registration. The husband and wife's education, husband's alcoholism, history of complication in previous pregnancy were significantly associated with the time of ANC registration. Early registered women revealed a positive impact on the number of ANC visits; number of ferrous sulphate (FS) & Folic acid (FA) consumed and birth weight. Strongest driving force to seek ANC was 'to know the fetal condition'. Women were referred for Ultrasonography without ANC registration and very few had been advised timely anomaly scan. **CONCLUSION:** There is scope to improve early ANC registration if special efforts are taken to enroll the women at risk of late/no registration, focus on the benefits of early registration and tap the missed opportunities.

KEYWORDS: Timing, ANC, Registration, USG, visit.

INTRODUCTION: Antenatal care(ANC) services have the potential to affect maternal and foetal outcome positively and are considered to be the key element in the health care delivery system of a country.^{1,2} Early initiation of ANC aids early documentation of the woman's baseline physiological and laboratory parameters for subsequent comparison, early detection of anomalies with the progress of pregnancy, avoiding teratogens, provides opportunities for preventive health care services such as immunization against neonatal tetanus, prophylaxis and treatment of diseases, diagnosis and treatment of medical disorders. The ideal gestational age for booking is within the first ten weeks of pregnancy.³

Women think that the ANC is curative care and hence in spite of the efforts on the part of the government to educate the people by advertisements and television, they do not give up this belief, even in urban and economically advanced areas of the developing countries.⁴ Utilization of ANC services have been reported to be as poor as 60% in rural India.⁵ Keeping in view the gap between the target and reality, National Rural Health Mission (NRHM) was launched in India in April 2005, to improve the rural health care delivery system and health status of the people. The Government of India has approved the launch of National Urban Health Mission (NUHM) as a Sub-mission of an overarching National Health Mission (NHM), with National Rural Health Mission (NRHM) being the other Sub-mission of National Health Mission 1st May 2013.⁶

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With this background we felt the need to review the profile of the patients delivered in a state Government run & free, tertiary health care centre in an urban area of the country so as to obtain poor patients profile which would aid in planning strategies. Also, very few studies have been conducted in urban areas.

METHODOLOGY: An Institution based cross-sectional study was conducted at B. J. Government Medical College and Sassoon General Hospitals, Pune, Maharashtra, India. The sample included puerperal patients who were admitted to the puerperal ward after their in this hospital. Women with HIV positive status, medico-legal cases and those who had died were excluded from study due to administrative, legal and ethical issues (HIV positive patients were enrolled in other studies).

A structured questionnaire with both open ended and close ended questions was to be answered by puerperal patients during a confidential interview, in Sassoon General Hospitals. As per the protocol, questions were asked by the interviewer, who was an undergraduate student/Intern/Doctor accompanying Obstetrician & Gynaecologist (Principal Investigator). Considering that in 50% of the pregnant women the first contact with health services is within the first trimester i.e. $p=50$, confidence level of 95%, relative precision of 15%, design effect of 2 and response rate of 95% the sample size calculated was 370.

The study period was from October 2013 to December 2013. On an average 2000 deliveries are conducted in a three month period at the study site. Hence it was decided to include every fifth patient admitted to the puerperal ward in the study sample.

Time of ANC registration was checked from the antenatal cards, if the woman possessed the card. If she did not have the antenatal card the history of first visit was noted, based on her verbal report. If the pregnancy was registered in the first trimester it was considered to be 'Early Registration'. Women reporting registration in the second and third trimester and those who reported no visit to health facility were categorized as 'Late/No Registration'.

Mere consultation from a general practitioner on OPD basis was not considered registration. The variables studied were socio-demographic factors (age, residence, education, occupation, occupation, type of family, possession of below poverty line (BPL) status card), parity, complications in previous pregnancy like preeclampsia, anemia, previous caesarean section, bad obstetric history etc. Details of Antenatal condition/care/services were filled from the antenatal registration Card and outcome of pregnancy was filled from the delivery register, by the interviewer, in the pre-printed proforma sheet.

Ethical clearance was obtained from the institutional ethics board (Reference: ND-Dept 0913099-99). Autonomy was assessed based on the woman's role in decision making and whether the woman was required to take permission before leaving the house. Analysis was done by Fishers exact test and calculating odds ratio with 95% confidence interval.

RESULTS: A total of 370 women who had been admitted in the postpartum ward after delivery were included in the sample. A total of 230(62%) women reported the ANC registration in the first trimester while 120(38%) reported the first visit in the second trimester and 15women in the third trimester. A total of five women reported that they had never visited any health facility for antenatal care.

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Variables	Groups	Late/No registration	Early registration	P	OR (95% CI)
		N=140	N=230		
Residence	Rural	35(25)	64(27.8)	0.628	0.86(0.52-1.43)
	Urban	105(75)	166(72.2)		
Wife's age	Upto 20	27 (19.28)	51(22.17)	0.59	0.84(0.48-1.46)
	>20	113 (80.72)	179 (77.83)		
Husband's age	Upto 25	42 (30)	69 (30)	1	1(0.61-1.62)
	>25	98 (70)	161(70)		
Wife's education	Illiterate and upto primary	63 (45)	73 (31.74)	0.01	1.76(1.11-2.78)
	Above primary	77 (55)	157 (68.26)		
Husband's education	Illiterate and upto primary	51 (36.42)	53 (23)	0.006	1.91(1.17-3.116)
	Above primary	89 (63.58)	177 (67)		
Parity	1	49 (35)	105 (45.65)	0.05	0.64(0.40-1.01)
	>1	91 (65)	125 (54.35)		
Husband's alcoholism	Yes	39 (27.85)	42 (18.26)	0.03	1.73(1.02-2.93)
	No	101(72.15)	188 (81.74)		
BPL status	BPL	44(31.42)	53(23.04)	0.08	1.53(0.93-2.52)
	Non-BPL	96(68.58)	177(76.96)		
Type of family	Nuclear	91(68.57)	165(71.74)	0.2	0.73(0.45-1.17)
	Joint/Extended	49(31.43)	65(28.26)		

Table 1: Sociodemographic characteristics and time of ANC registration

(Figures in parenthesis indicate percentages)

The wife's education and husband's education were significantly associated with the time of first contact with health care services. A woman reporting that their husband consumed alcohol was 1.73 times more likely to report a late contact with the health care services when pregnant. Residence, type of family, BPL status, age, parity and duration of marriage were not related to the time of first contact of the pregnant women with health care services (Table 1).

Variables	Groups	Late/No registration N=140	Early registration N=230	P	OR (95%CI)
Permission	Yes	77 (55)	120 (52.17)	0.668	1.12 (0.72-1.75)
	No	63 (45)	110 (47.83)		
Decision making	Wife has a role	60 (42.85)	85 (36.95)	0.274	1.28 (0.82-2.10)
	Wife has no role	80 (47.15)	145 (65.05)		
Advise	Yes	91 (65)	149 (64.78)	1	1.01 (0.635-1.60)
	No	49 (35)	81 (53.22)		

Table 2: Relationship of Autonomy and advice with time of ANC registration

(Figures in parenthesis indicate percentages)

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The role of the women in decision making and need to take permission for going out of the house were not associated significantly with the time of first contact with health care services (Table 2).

Reasons	Early registration N=230	Late registration N=140	P
To get the ANC card	41(17.83)	15(11.54)	0.07
To know about the condition of the baby	86(37.39)	33(25.38)	0.006*
To prevent miscarriage	19(8.26)	3(2.31)	0.02*
To prevent problems	61(26.52)	32(24.62)	0.46
To get treatment for a health problem	67(29.13)	27(20.77)	0.037*
To get services (medicines, tetanus, etc.)	62(26.96)	40(30.77)	0.811
Because you are told to go	7(3.04)	7(5.38)	0.40
Because everyone goes	7(3.04)	2(1.54)	0.492
I don't know	4(1.74)	10(7.69)	0.011*
Others	20 (8.70)	12(9.23)	1

Table 3:Reasons for ANC registration

(Figures in parenthesis indicate percentages)

When the reasons for seeking antenatal care were asked, the common responses were 'to know the baby's condition, treatment for a health problem, get services and prevent problems'. However a significantly more number of women who had registered early in pregnancy reported these reasons compared to women who reported late in pregnancy. A significantly more number of women who reported late or no ANC registration did not know the reasons for seeking antenatal care (Table 3).

A total of 15 women had registered at the health care center in the third trimester and five had never visited a health care center. The reasons for late/no registration-number of women included; 'health centre far from home-1, no help from home-2, did not pay attention-3, husband took me late-1, did not know where to register-1, cannot tell-3, careless attitude-2, no-one was around to help-1, had gone to native village-2, husband was not cooperative-1, fear of hospitalization-1, did not want to continue pregnancy-1.

Variables	Groups	Late/No registration (N=140)	Early registration (N=230)	P	OR (95% CI)
No. of AN visits	<4	43 (30.7)	22 (9.56)	0.00	4.19(2.29-7.70)
	≥4	97 (69.3)	208 (90.44)		
FSFA tablets	<100	56 (40)	63 (27.39)	0.016	1.77(1.10-2.83)
	≥ 100	84 (60)	167 (72.61)		
Tetanus Toxoid	No	8 (5.7)	4(0.87)	0.06	3.42(0.91-13.8)
	Yes	132 (94.3)	226 (99.13)		

Table 4: Components of antenatal care and timing of Registration

(Figures in parenthesis indicate percentages)

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A significantly more number of women who had visited the health facility late reported to have consumed less than 100 tablets of FSFA and had less than four antenatal visits (Table 4).

The proportion of low birth weight babies was significantly more in women who had registered late in their pregnancy [59 out of 140 (42%)] compared to women who reported early ANC registration [66 out of 235 babies including five twin deliveries; (28%)] [p=0.009, OR=1.93(1.142.88)].

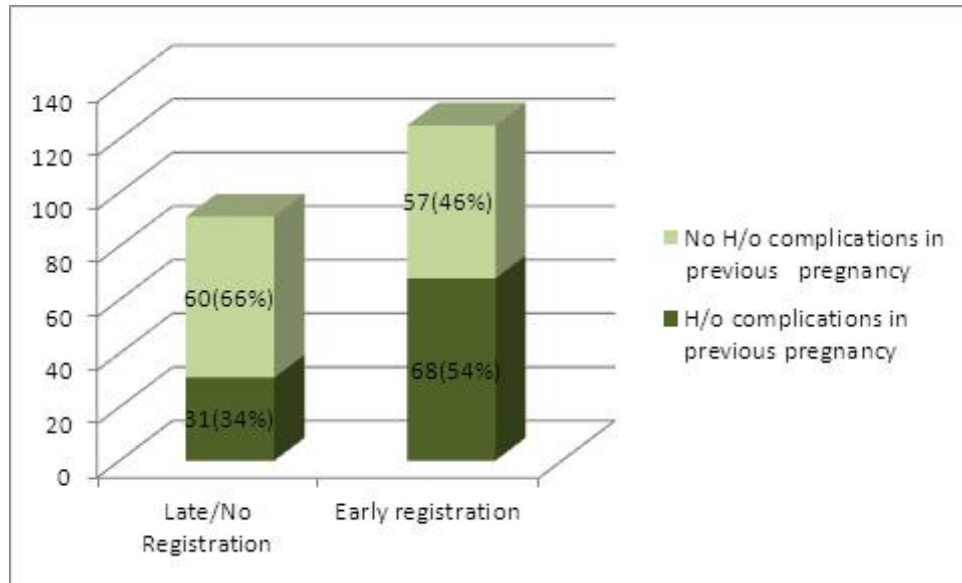


Fig. 1: Time of registration and H/O complications in previous pregnancy

(Figures in parenthesis indicate percentages)

The women who had experienced a complication in the previous pregnancy were 2.3 times more likely to report early to the health facility during current pregnancy compared to women who had no history of complication in previous pregnancy. [p=0.004; OR=2.3(1.27-4.20)] (Figure 1)

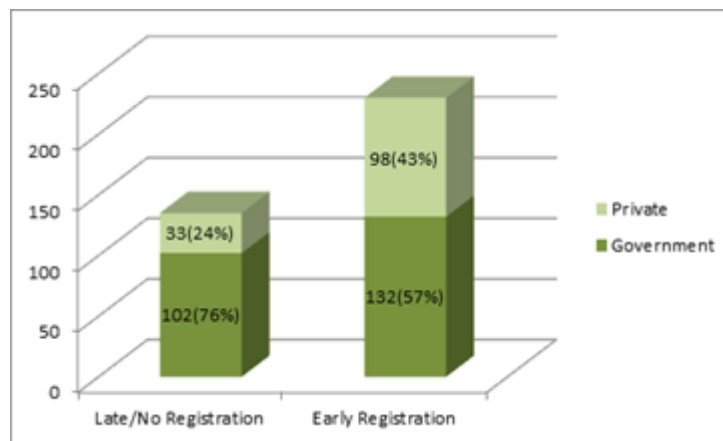


Fig. 2: The timing of registration according to place of registration

(Figures in parenthesis indicate percentages)

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A significantly more number of women reporting early antenatal registration had visited a private health care facility compared to the women reporting late registration. [p=0.00; OR=2.29(1.39-3.78)] (Figure 2)

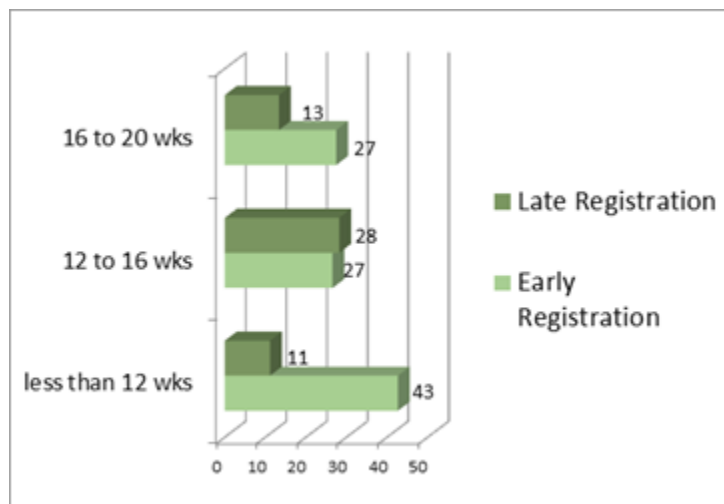


Fig. 3: Timing of ANC registration and ultrasonography

The proportion of respondents reporting USG at various weeks of gestation is shown in Figure 3. A total of 15(11%) women had visited a medical practitioner in the first trimester when a USG was done without formally registering the pregnancy for other components of antenatal care. Only 40 out of 370 women had a USG at 16-20 weeks of gestation when a detailed anomaly scan is usually done (Figure 3).

DISCUSSION: The education status of both, the husband and wife, if higher than primary education, have a positive impact on the early start of the ANC, each having a positive impact separately. A similar finding was reported by WHO about the number of visits and the education level.⁷ We do encourage the up-gradation of the education status of all, but want to specifically mention that the education level of the couple should not be a factor of hindrance on the early start of the ANC by the couple as has been mentioned by WHO regarding the number of visits.⁷ Contrary to the belief, the role of the women in decision making and need to take permission for going out of the house were not associated significantly with the time of first contact with health care services. These findings suggest that though education of the woman is not directly related to decision making for early ANC registration there could be other factors such as education status of husband and other family members and better communication with the family members who take decision for seeking early antenatal care.

In the present study it was found that the pregnant women whose husbands were alcoholics were 1.73 times more likely to register late for ANC, thus further supporting the social movement of alcohol free villages and slums. Other socio- demographic parameters like age, residence area, type of family, BPL, duration of the married life, parity did not have any impact on the timing of the first ANC contact with the health care system. Similar findings have been reported in some rural areas with

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good accessibility or area close to the urban areas or with tertiary care centre.^{8,9} This is in strong contrast to most of the studies from rural areas of different parts of the world including India.^{4,6,10,11}

Our study revealed, 86% women who had registered early (<12 weeks), had primarily registered early to know the condition of the baby making it the strongest driving force to seek ANC. These women show the tendency of the Indian women to neglect their health even during pregnancy.

The women who had a late contact with the health care delivery system primarily wanted to get health care services, proving the false notion of these women that ANC services are primarily curative.⁴

Amongst the late registered women, 15 women had registered in the third trimester and five women had never gone for any ANC. The commonest reason told by these women was that they did not pay attention to the pregnant state. Many women in this category could/did not tell the reason as to why she had registered late or had not sought any ANC at all. These factors directly and indirectly contribute to the high level of Maternal and Infant mortalities in India.

There was a significant association between the timing of ANC registration and number of ANC visits. However, there were twenty two women who had started early for the ANC but had less than four visits in total for the ANC, suggesting a need for further larger operational study for determining the reasons for failure to comply for ANC.

A significant number of women who had registered late had consumed less than 100 tablets of FS & FA. It needs to be highlighted that folic acid requirement is more from peri-conceptional period till late during the breast feeding. Also the demand of the iron in the latter half of the pregnancy is as high as 5 mg per day and considering the absorption rate of 10% from the gastrointestinal tract and the faulty dietary habits combined with low iron in the diet and decreased absorption due to various reasons, will have a significant impact on the maternal and neonatal morbidity and mortality. Such patients' management shall need a foresight and tailoring of the treatment and should be considered as high risk even when the hemoglobin (Hb) levels are in range of mild anemia, as with the increasing demand the supply for the Hb synthesis is limited by the rate of absorption of iron.

There was no significant difference between the two groups for the effect of tetanus toxoid immunization.

The proportion of low birth weight babies was significantly more in women who had registered late in their pregnancy compared to women who reported early ANC registration. Same is the findings by UNICEF in a coverage evaluation survey.⁽¹²⁾ Operational studies for alternative management options need to be found out for tackling this highly important, prevalent, multifaceted problem.

Other important observations found in our study population was that the women who had experienced a complication in the previous pregnancy were 2.3 times more likely to report early to the health facility during current pregnancy compared to women who had no history of complication in previous pregnancy. Needless to be emphasized that all patients with a history of complications in previous pregnancy have an increased chance of complications in the subsequent pregnancies, in spite of incidental normal findings at the time of ANC registration.

Further studies need to be carried out for such patients to determine the best model of ANC for such patients as the WHO four visit model and the RCOG-NICE recommended guidelines of General practitioners and Mid-wife led ANC to normal pregnancies may not be appropriate for such patients, especially, who had a major obstetrical morbidity, near missed maternal mortality and are

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far from the health care facility.^{1,7} Here we feel that a holistic approach to primordial general preventive strategies to bring down the maternal mortality and infant mortality would be to include basic and fundamental informative topic of ANC in Secondary school education syllabus.

A significantly more number of women reporting early antenatal registration had visited a private health care facility (General Practitioners with majority of them visiting the Ayurved practitioners) compared to the women reporting late visits. This needs to be noted during further policy making by the Government authorities especially for the Urban areas.¹³

The women who visited a medical facility and were referred for USG, but were not registered for ANC represent the missed opportunities for early initiation of ANC. Also very few women had an anomaly detection USG at 16-20 weeks of gestation. This so strongly brings into focus that majority of the women is delivering their fetus without an anomaly scan.

This implies that many women have delivered a normal fetus mere by chance and not by positive social eugenics. This requires a timely and firm reconsideration on the part of patient, health care personnel attitude and the society and a country as a whole, because the anomaly scan is an extremely important investigation and one cannot detect anomalies in first trimester. Moreover, termination of pregnancy cannot be done after 20 weeks of gestation as per the Medical Termination of Pregnancy (MTP) Act in India. This is really serious.

CONCLUSION: There is scope to improve early ANC registration and to reach the unreached, if special efforts are taken by all at community level also, to enroll the women at risk of late/no registration, focus on the benefits of early registration and tap the missed opportunities via survey, education, information, health care strategies, increasing awareness, counseling, legislative & legal actions, rewarding & punishing, involvement of husband in ANC and more importantly, impacting & brain storming the importance of holistic & timely ANC in the NUHM; etc.

Some limitations of our study are selective population, no general application of the data to other parts of the country, prior structured questionnaire, relatively small sample size etc.

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