Determinants, Perceptions and Practice of Early Registration among Antenatal Women: A Cross-Sectional Study at a maternity hospital in rural South India

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KEYWORDS	A B S T R A C T
Antenatal women, determinants, early registration	Antenatal care (ANC) is a comprehensive care for pregnant women to enable them to attain and maintain a state of good health throughout pregnancy. This will improve the chance of having safe delivery of healthy infant to a healthy mother at term.1.To estimate the proportion of women who have registered early for antenatal care (< 12 weeks)2.To identify the determinants of early registration of pregnancy in a maternity care hospital in rural south India. This is a cross sectional study among pregnant women attending antenatal clinic at rural maternity hospital in Ramanagara District, from December 2014 to January 2015. Informed consent was taken and 308 antenatal women were included. The mean age of the study population was23 ± 3 years. Out of the 308 antenatal women 175 (56.8%) were primi gravida and 133 (43.2%) were multi gravida. 285 (92.5%) women registered early, of which 245 (95%) were aware of the importance of early registration. As expected, we found a significant association between awareness of early registration and early registration practice among the antenatal women (p=0.001). The proportion of women who have registered early for antenatal care (<12 weeks) was 92.5%, which was much higher than the NFHS-3 (43%). Awareness regarding the importance of early registration of pregnancy was found to be vital in ensuring the actual practice of early registration.

Introduction

Antenatal care (ANC) is a specialized pattern of care organized for pregnant women to enable them attain and maintain a state of good health throughout pregnancy and to improve the chances of having safe delivery of healthy infants to a healthy mother at term (Omigbodum AO *et al.,* 2002).Good antenatal care is the hallmark of preventive medicine (Ekwempu C.C. 1988,

Lewis G. 2004).Early antenatal registration is associated with many benefits and these include accurate dating of the pregnancy, early detection of medical disorders that could threaten the pregnancy and its outcome, objective assessment of maternal baselines such as weight, blood pressure, blood investigations to screen for STDs and urinalysis (WHO 2002).

The new World Health Organization ANC model states that every pregnant woman is at risk of complications and recommends an early ANC visit to segregate pregnant women into two groups based on previous history of pregnancy, current pregnancy state and general medical conditions: those eligible to receive routine ANC (basic component) and those who need special care (high risk pregnancies) which would be 25% of all pregnant women (WHO 2002).

Under the National Reproductive and Child Health program in India, early registration of pregnancy, ie within 12 weeks of gestation has been mentioned as a component of essential obstetric care, which is one of the strategies to reduce maternal mortality. The other components are:a minimum of 4 ANC visits, 2 TT injections, a minimum of 100 tablets of Iron and folic acid, screening for high risk and institutional delivery (Govt. of India, Ministry of Health and Family Welfare, 1997 and Nrhm.gov.in, 2016). Early registration of pregnancy and the onset of antenatal care before 12 weeks in India according to National family health survey(NFHS) 3 survey is 43% (NFHS 3, 2007).

To improve the outcome of pregnancy, it is desirable for antenatal care to commence prior to 12 weeks (WHO 2002).To reduce maternal mortality, pregnant women must receive all components of essential obstetric care include early registration of pregnancy.

This study therefore attempts to establish the factors influencing the patient's decision to seek early antenatal care, in the hope of looking into solutions to improve early registration rates at the national level.

Methods

This study was conducted in a rural missionary hospital which is situated about 65kms away from Bangalore city in Southern Karnataka. This hospital mainly provides maternity health care services with nearly 2000 deliveries per year. A cross sectional study was conducted between December 2014 to January 2015. Pregnant women availing antenatal services at this hospital were invited to participate in this study. Written informed consent was first obtained, followed by administration of a pre-tested and validated questionnaire, to record information regarding registration for antenatal care, socio-demographic and obstetric history. The data thus obtained was coded and entered in Microsoft Excel, and analyzed using SPSS 16.0. Socio demographic, obstetric and outcome variables (early registration of pregnancy) were described by frequencies and proportions. Normality of the primary variables was checked using Shapiro-Wilk test. The association of the outcome variable with various socio-demographic and obstetric variables was identified using Chi-Square test. A p value of less than 0.05 was considered as statistically significant.

Results and Discussion

Of the 308 women who were included in this study, 270 (88%) were in the age group of 20 – 29 years, the mean age being 23.4 years (S.D 2.99)Majority (95%) of the study populations were Hindu, Literacy rate was 99.7%, with 142 (46%) having completed their Std X education, 259 (84.1%) of them

were homemakers. Most of the women i.e. 156 (51%) were from joint family.222 (72.1%) belonged to socioeconomic status of Class 3 and below.175(56.8%) were primi gravida, 79 (25.7%) were married before they completed 19years of age,91 (29.5%) pregnancies were planned, 43 (14%) gave history of a previous abortion. 12(4%) were in their first trimester, 78 (25%) in their second trimester and 218 (71%) were in their third trimester. 285 (92.5%) of the women hadearly registration of their pregnancy i.e before 12 completed weeks of gestation and remaining 23 (7.5%) women had registered later than this. The mean gestational age at first registration was 8.1 weeks (SD 2.82, Range = 2-20 weeks). Early registration of pregnancy was higher among women from joint families, higher socioeconomic class, primigravidas and those who did not require anyone's permission to visit a doctor, but these association were not found to be statistically significant. Early registration of pregnancy was also not significantly associated with age of the woman, religion, education, occupation, type of family, socioeconomic status, parity index, age at marriage, planned pregnancy and history of previous abortion.

Early registration was significantly higher among women who were aware of the need for early registration of pregnancy. In the present study, 258 (83.8%) were aware of early registration, of whom 52.7% were told about early registration by their relatives, 22.1% got this information from the ASHA workers, 6% knew about early registration from their own previous pregnancies and the rest came to know from a friend or the ANM.

Of the 23 women who registered late (after 12 weeks), the commonest reasons for late registration were delay in recognizing their pregnancy, being un aware that they should

register early, too long a distance to travel and feeling that there is no benefit in registering early.

Of the 285 women who registered early (before 12 weeks), the commonest reasons were to ensure that a healthy baby is born, to make sure the mother is healthy, to prevent complications and to get medicines and advice.

When asked when is the best time to first register pregnancy, 206 (66.9%) felt that the best time is as soon as periods are missed, 70 (22.7%) said before 12 weeks of pregnancy, and 32(10.4%) said after 12 weeks of pregnancy. When asked in which month of pregnancy do women tend to have more health problems, 40% said the 3rd month was the most problematic, followed by the 2nd month (11%), and then the 7th month (8%).174 (56.5%) of the women required permission to visit a health facility including 99 (57%) from husband and 54 (31%) from in-laws.129 (42%) of the women had been given sex education in school, and 69 (22.4%) were taught to recognize the signs of pregnancy.¬¬32 (10%) of the women were part of community based self-help groups like Stree Shakti, Mahilamandal etc. There was no significant association between early registration and women who had received sex education earlier, those who were taught to recognize the signs of pregnancy and women who were part of community based self-help groups.

Early registration i.e. antenatal registration before12 weeks of gestation plays an important part in reducing maternal and fetal adverse outcomes. Our study showed that 92.5% of the women attending the ANC clinic at a rural maternity hospital had registered before 12 wks. This was found to be higher compared than NFHS 3 which was

43% (NFHS 3, 2007). A hospital based study in rural area of Ahmedabad (Patel, *et al.,* 2013)and a community based study done in rural area of Lucknow (Roy MP *et al.,* 2010) found that 19.6% and 54% of the women registered early (before 12weeks) respectively. Another community based study in Ahmedabad (Jani, *et al.,* 2013) and Wardha district (Khatib, *et al.,* 2009) estimated early registration as 51.6% and

31.4% respectively. A study conducted in Central Ethiopia (Zegeye, *et al.,* 2013) found that only 26.2% of women had been booked early. The high rate of early registration in our study might be due to the current national emphasis given to the antenatal care which includes the trainings of workers at grass root level on the importance of early ANC visit and nearly 100% literacy level of our study population.

Table.1 Association of Socio – Demographic variables with Early Registration of Pregnancy

Socio – Demographic Variables	Total N (%) [a]	Early registration N (%) [b]	P value
Age in completed years			
≤ 19	25 (8.1)	23 (92)	
20-29	270 (87.7)	249 (92.2)	0.771
>30	13 (4.2)	13 (100)	
Religion			
Hindu	292 (94.8)	271 (92.8)	
Muslim	13 (4.2)	12 (92.3)	0.076
Christian	3 (1)	2 (66.7)	
Education			
Std 10 or lower	166 (54)	152 (91.6)	0.485
Above Std 10	142 (46)	133 (93.7)	
Occupation			
Homemaker	257 (83.4)	236 (91.8)	0.541
Gainfully employed	51 (16.6)	49 (96.1)	
Type of family			
Nuclear	68 (22.1)	62 (91.2)	
Joint	240 (77.9)	223 (92.9)	0.629
Socioeconomic status by BG Prasad scale			
Class 1	26 (8.4)	22 (84.6)	
Class 2	60 (19.5)	57 (95)	
Class 3	105 (34.1)	100 (95)	0.190
Class 4	96 (31.2)	88 (91.7)	
Class 5	21 (6.8)	18 (85.7)	

[a] column percentage of individuals in each category compared to the total study subjects(308)
[b] row percentage of individuals in each category

Table.2 Association of Obstetric and Other variables with Early Registration of Pregnancy

Obstetric and other variables	Total N (%) [a]	Early registration N (%) [b]	P value
Gravida			
Primi	175 (56.8)	166 (94.8)	
Multi	133 (43.2)	119 (89.5)	0.081
Age at marriage			
< 19 years	79 (25.6)	74 (93.7)	
19 & above	229 (74.4)	211 (92.1)	0.391
Planned pregnancy			
Yes	91 (29.5)	85 (93)	
No	217 (70.5)	200 (92.2)	0.705
Previous h/o abortion			
Yes	43 (14)	39 (91)	
No	265 (86)	246 (93)	0.753
Awareness regarding need for early registration			
Yes	258 (83.8)	245 (95)	
No	50 (16.2)	40 (80)	0.001*
Required permission to visit the doctor			
Yes	174 (56.5)	158 (90.8)	
No	134 (43.5)	127 (94.8)	0.188
Distance to health facility (in kms)			
≤2	76 (24.7)	69 (90.8)	
>2	232 (75.3)	216 (93.1)	0.588

*significant at 5% significance level
[a] column percentage of individuals in each category compared to the total study subjects(308)
[b] row percentage of individuals in each category

Table.3 Perceptions regarding Benefits of Early Registration of Pregnancy

Perceptions regarding benefits of early registration of pregnancy(N=285)	No. of women
For a healthy baby	168 (59%)
For a healthy mother	135 (47.3%)
To prevent any complications in birth	106 (37.2%)
Screening for high risk	15 (5.3%)
To detect other medical conditions	15 (5.3%)
Was told to do so	36 (12.6%)
To confirm pregnancy	38 (13.3%)
To get medicines and advice	39 (13.7%)
To prevent abortions	11 (3.8%)
Don't know why	51 (18%)

Table.4 Reasons for Late Registration of Pregnancy

Reasons for late registration (N=23)	No. of women (%)
Was not aware that pregnancy should be registered within 3 months.	6 (26%)
Was not aware that she was pregnant	10 (43.5%)
Long distance	4 (17.4%)
Don't think there is any benefit in registering in the first three months	3 (13%)

Our study showed a significant association between early registration and awareness among pregnant women about the need to register early. This finding was supported by studies done in Central Ethiopia (Zegeye, *et al.,* 2013), Addis Ababa (Tariku A *et al.,* 2011) and in Nigeria (Ndidi, *et al.,* 2011). In our study primigravid women, women with high education, women from joint and 3rd generation families and history of previous abortions/problem registered early but these results were not statistically significant.

The lack of significant association between primigravida and abortions in previous pregnancy with early registration in current pregnancy in our study was in contrast to the findings of other reports where the association was consider to be significant (Okunlola, *et al.,* 2006 and Ndidi, *et al.,* 2010) whereas a study done in Ahmedabad by (Patel P *et al.,* 2013) showed similar findings to our study.

Studies in developed countries showed that women with a higher education registered earlier than those who were illiterate or had received a lower education (LaVeist, *et al.,* 1995 and Navaneetham, *et al.,* 2002) which is similar to our present study, though it is not statistically significant.

In the present study, less than a quarter of the women received information from ASHA or ANM regarding registering early for antenatal care. This indicates that village level workers need to stress on this important aspect of antenatal care while advising women in the reproductive age group.

While a fairly large proportion of the women said there were benefits to registering the pregnancy early, they were not specific as to what these benefits actually were. There was also a sizeable number of women who had said they had no idea to why pregnancy needs to be registered early. This too indicates a need for additional information from village level workers, and may be instrumental in further improving the rates of early registration of pregnancy.

Conclusion

The proportion of women who have registered early for antenatal care (before 12 weeks of gestation) in the present study was 92.5%, which was much higher than the NFHS 2008 (43%). The main determinant which was significantly associated with early registration was awareness. Some other factors which found to be associated, yet not significant were a higher age group, education, higher SES, occupation, higher obstetric score, previous history of abortion, planned pregnancy and joint families. Women perceived that early registration was important but remained unaware of the benefits of early registration of pregnancy.

Recommendation

As awareness was a significant determinant of early registration, efforts must be

focussed on different methods of generating awareness regarding the need and the benefits of early registration of pregnancy, with the help of village level workers, strengtheningadolescent and womens' health programs, through mass media and community based womens' groups.

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