

Antenatal Care Services Utilization among the Antenatal and Postnatal Women in a Rural Area of South India: A Cross-Sectional Study

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Abstract:

Introduction: 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. However, the lack of equitable access to quality ANC is a major challenge in resource-limited settings, particularly in developing countries like India.

Objectives: To assess the utilization rates of antenatal care services among antenatal women and postnatal women and to determine the factors responsible for under or non-utilization of antenatal care services (ANC). **Method:** The present study was conducted for a period of four months among antenatal and postnatal women in a rural area of South India. All antenatal and postnatal women except those who were not willing to participate and those who had MTP/abortion during the present pregnancy were included for the study. A pre tested semi structured questionnaire was used for collecting information regarding ANC utilization. Data was entered in Microsoft Excel and analyzed for descriptive and inferential statistics.

Results: A total of 175 (125 antenatal and 50 postnatal) women were interviewed. Among them, 90.3% (92% antenatal and 86% postnatal) women had completely utilized ANC services. Among the postnatal women, those who had completely utilized ANC services, 11.6% had complications at the time of their delivery and those who had incompletely utilized ANC services, 57.1% had complications. The difference was found to be statistically significant ($p < 0.05$). Only 87.4% women were covered in home visits and 28.6% of them were not given any prenatal advice. IFA tablets were taken adequately only by 57.7% women.


Conclusion: The present study revealed that most of the women were aware about the antenatal services available and had registered their pregnancy early. Td immunization was done at right time. However antenatal home visits were not effectively implemented.

Key words : Facilities and Services Utilization, India, Pregnant Women

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. 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.^[1]The essential components of quality ANC include early registration of pregnancy, a minimum of four antenatal visits

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during each pregnancy interspersed over the three trimesters, tetanus toxoid immunization (Td), and iron/ folic acid supplementation (IFAS). 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 evaluated for the early detection of any abnormalities along with their management and referral, as required. However, the lack of equitable access to quality ANC is a major challenge in resource-limited settings, particularly in developing countries.^[2]In India, the second most populous country with the largest reproductive cohort, results of a large-scale nationwide NFHS-5 survey in 2019-21 revealed that antenatal registration in their first trimester was 67.9% among rural women.^[3]

The health and survival of newborn children is closely linked to that of their mothers. Many reports have shown that both mothers and newborn have a better chance of survival if they got skilled help at birth. Adult pregnant women are more likely to utilize ANC as compared to adolescent pregnant women, and a number of socioeconomic and demographic factors like education, employment, income, and place of residence, geographical variations, birth order, and parity explain the differences in utilization of ANC services among adolescent and adult pregnant women.^[4]Maternal mortality is 97 per 100,000 live births in India according to SRS 2018-20.^[5]They seek to provide universal access to equitable, affordable and quality maternal health care, as well as to bring about an improvement in the health status of the pregnant women belonging to underprivileged sections of the society.^[6]

In this perspective, the present study is conducted to assess the utilization of antenatal care services utilization among the antenatal and postnatal women in a rural area of Thoothukudi, Tamil Nadu.

Method:

The present study was conducted in a rural field practice area of Pudhukottai RHTC (Rural Health and

Training Center) attached to the Department of Community Medicine, Government Thoothukudi Medical College, Thoothukudi, Tamil Nadu. The study was conducted for a period of four months from January to April 2023. The list of antenatal and postnatal women (women who are in their puerperal period of 42 days postpartum) in the rural field practice area was obtained from the Anganwadi centers in the area.

All pregnant women whose pregnancy status has been confirmed by Urine Pregnancy Test/Ultrasound, with gestational age upto 37 weeks staying either in their husband's place / mother's place were included in the study. Similarly, postnatal women who were staying either in their husband's place or mother's place were included in the study. Those women who were not willing to participate in the study and who were with any psychiatric disorders taking drugs during the study period were excluded from the study. Those women who had MTP/ Abortion during present pregnancy and those who had stayed during their entire pregnancy period in any other area which does not come under present study area and had come to the study area only after their delivery were also not included in the study.

House to house visit was done to all antenatal and postnatal women included in the study. A pre-designed, pre-tested semi structured questionnaire which includes information on various components of antenatal care services along with socio-demographic variables was developed specifically for this study. It was pilot tested and the necessary changes were incorporated in it. The Questionnaire consisted of two sections:

- I) General information (personal data, family composition and socio-economic status)
- ii) Specific information regarding the utilization of various components of antenatal care services.

Primary data was obtained from the study subjects using the questionnaire. Ethical Committee approval was taken before conducting the study. Informed oral consent was obtained from the study

subjects before collecting the data after giving adequate information regarding the nature, purpose and explaining the benefits of the study in the local language. Data was entered in Microsoft Excel and analyzed. Results are expressed in percentages and proportions. Association between socio-demographic variables and other variables with utilization of antenatal care services was tested using appropriate test of significance.

Adequate Antenatal visits (ANC Visits):

Once a month in first 7 months, twice a month in next month and every week till 37 weeks of gestation is considered as adequate antenatal visits.^[6] In this study, pregnant women considered having adequate antenatal visits if she had done the above mentioned visits as per her present gestational age at the time of interview. In postnatal women, all the above mentioned visits completed is considered as adequate visits.

Adequate IFA (Iron and Folic Acid) Tablets:

Those pregnant women who were consuming IFA tablets daily (1 tablet per day) in their second and third trimester as per their gestational age were considered as adequate consumption of IFA tablets. In Postnatal women, those who had consumed >180 IFA tablets were taken as adequate.

Results:

A total of 185 (132 pregnant women and 53 postnatal women) had registered in the RHTC field practice area during the study period. Among them, 3 pregnant women were taking anti-psychotic drugs and 6 (4 pregnant women and 3 postnatal women) were not willing to participate in the study. Out of the remaining 175 study participants, 125 (71.4%) were pregnant women in the antenatal period and the remaining 50 (28.6%) were in their puerperal period. Among 125 pregnant women, 36 (28.9%) were in first trimester, 62 (49.6%) in second trimester and 27 (21.6%) in third trimester. The socio-demographic profile of the study participants is shown in Table 1.

Among the total 175 women participated, 55 (31.4%) had high risk pregnancy. Anemia was the most common complication (41.8%) and anemia was also a coexistent complication followed by GDM (10.9%) and previous LSCS (9.1%). Out of the 55 high risk pregnancy study participants, 62% were referred to the tertiary care hospital for further management of the disease and all of them visited the tertiary care hospital regularly. In the study, 142 (81.1%) out of 175 study subjects have registered their pregnancy earlier in first trimester followed by 18.9% registration in their second trimester. All 125 pregnant women had adequate antenatal visits according to their gestational age and all postnatal women had adequate antenatal visits during their antenatal period to the PHC (every Tuesdays) and if necessary to the tertiary care hospital for their routine checkups. Among them, 132 (75.4%) were completely immunized with two doses of Td vaccine and 101 (57.7%) had consumed adequate number of IFA tablets (depending upon their gestational age). Among those women who had not consumed adequate IFA tablets or even a single tablet, the main reason (70.3%) was found to be adverse effects like nausea and vomiting. None reported that they were not issued IFA tablets by the health workers. Majority of the study participants (87.4%) were covered for antenatal home visits during their antenatal period by the health workers of the PHC. Only 125 (71.4%) women received prenatal advice regarding diet and drugs (36%), avoiding heavy work (18.3%), warning signs (9.7%) and birth preparedness (7.4%) (Table 2)

In the present study, 80.32% had completely utilized ANC services i.e. early registration of pregnancy in first trimester, adequate number of ANC visits, complete Td immunization, adequate number of IFA tablets consumption and at least 3 antenatal home visits. (Table 3)

It was observed that among the socio-demographic factors, age and occupation was found to be significantly associated with the utilization of ANC services. (p value < 0.05). (Table 4) Among the

Table 1 : Socio-demographic details of the study participants (N=175)

Characteristic	Category	Frequency	Percentage
Age group of the participants(years)	18-20	19	10.9
	21-23	62	35.5
	24-26	54	30.8
	27-29	27	15.4
	≥30	13	7.4
Religion	Hindu	123	70.3
	Christian	42	24
	Muslim	10	5.7
Education of the participants	Illiterate	3	1.7
	Primary School	14	8
	Middle School	32	18.3
	High School	41	23.4
	Higher Secondary (PUC)	45	25.7
	Graduate	40	22.9
Occupation of the participants	House makers	98	56
	Unskilled	43	24.6
	Semi skilled	20	11.4
	Skilled	14	8
Type of Family	Nuclear	93	53.1
	Joint	63	36
	Three Generation	19	10.9
Socio-economic status (Modified B.G.Prasad socio-economic scale)	Class I	50	28.6
	Class II	41	23.4
	Class III	46	26.3
	Class IV	35	20
	Class V	3	1.7

* PUC – Pre-university College

occupation, majority of the study subjects (24.6%) were coolie workers (unskilled) for daily wages.

Among the illiterates, all women had completely utilized the ANC services. Among the literates, only 5.4% had incompletely utilized ANC services. However, this was found statistically not significant. It was observed that among those who received prenatal advice on various components of antenatal

care, only 11.2% had incompletely utilized ANC services. Among those who had not received prenatal advice 6% women had incompletely utilized ANC services. This was found to be statistically not significant. (Chi square = 1.1, df-1, p=0.29)

The present study showed that among study subjects who had completely utilized ANC services, 11.6% had complications like cord around the neck at

Table 2: Distribution of the study participants according to their utilization of various components of antenatal care services (n=175)

Antenatal care (ANC) services		Antenatal Women (n = 125)	Postnatal Women (n = 50)	Total (n = 175)
		n (%)	n (%)	N (%)
Registration of pregnancy	First Trimester	100(80%)	42(84%)	142(81.1%)
	Second Trimester	25(20%)	8(16%)	33(18.9%)
	Third Trimester	0(0%)	0(0%)	0(0%)
Antenatal Visits	Adequate	125(100%)	50(100%)	175(100%)
	Inadequate	0(0%)	0(0%)	0(0%)
Td Immunization Status	Completely Immunized	92(73.6%)	40(80%)	132(75.4%)
	Incompletely Immunized	33(26.4%)	10(20%)	43(24.6%)
	Not Immunized	0(0%)	0(0%)	0(0%)
Iron and Folic Acid (IFA) tablets consumption	Adequate number of IFA consumed	70(56%)	31(62%)	101(57.7%)
	Inadequate number of IFA consumed	53(42.4%)	15(30%)	68(38.9%)
	Not consumed even a single IFA Tablet	2(1.6%)	4(8%)	6(3.4%)
Reason(s) for inadequate/non consumption of IFA tablets	Adverse effects (nausea and vomiting)	37(67.3%)	15(78.9%)	52(29.7%)
	Does not like the IFA tablets	18(32.7%)	4(21.1%)	22(12.6%)
	Not issued by VHN/MO	0(0%)	0(0%)	0(0%)
Prenatal advice	Not given	33(26.4%)	17(34%)	50(28.6%)
	Given	92 (73.6%)	33 (66%)	125 (71.4%)
Antenatal Home Visit	Yes	110(88%)	43(86%)	153(87.4%)
	No	15(12%)	7(14%)	22(12.6%)

the time of their delivery and among those who had incompletely utilized, 57.1% had complications (PPH, Sepsis). This difference was found to be statistically significant. (Chi square with Yates correction = 5.6, df-1, p=0.17 (Table 5)

Discussion:

In the present study, all the women had registered their pregnancy and 81.1% of them had done early registration. This is higher than NFHS-5 factsheet data where early registration in first

Table 3: Distribution of the study participants based on their overall utilization status of antenatal care services (n=175)

Utilization status of ANC services	Antenatal Women	Postnatal Women	Total
	n (%)	n (%)	n (%)
Complete	115 (92)	43 (86)	158 (90.3)
Incomplete	10 (8)	7 (14)	17 (9.7)
Total	125 (100)	50 (100)	175 (100)

Table 4: Distribution of Utilization status of ANC services based on various socio demographic profiles, prenatal advice and birth order (n=175)

Parameters		ANC services utilization		Total (N=175)	p value
		Complete n(%)	Incomplete n(%)		
Age Groups	18 to 23 years	68 (84)	13 (16)	81	0.028*
	24 to 29 years	78 (96.3)	3 (3.7)	81	
	≥30 years	12 (92.3)	1 (7.7)	13	
Literacy status	Illiterate	3 (100)	0 (0)	3	1.000
	Literate	155 (90.1)	17 (9.9)	172	
Occupation of subjects	House makers	95 (97)	3 (3)	98	0.001*
	Working women	63 (81.8)	14 (18.2)	77	
Type of family	Nuclear	85 (91.4)	8 (8.6)	93	0.207
	Joint	58 (92)	5 (8)	63	
	Three generation	15 (78.9)	4 (21.1)	19	
Socio Economic Status	Upper & middle	125 (91.2)	12 (8.8)	137	0.418
	Lower class	33 (86.8)	5 (13.2)	38	
Prenatal advice	Yes	111 (88.8)	14 (11.2)	125	0.294
	No	47 (94)	3 (6)	50	
Birth Order	Primigravida/ primipara	81 (91)	8 (9)	89	0.742
	Multigravida/ multipara	77 (89.5)	9 (10.5)	86	

* Significant at p value < 0.05

Table 5: Distribution of Complications among post Postnatal women based on utilization status of ANC services

Utilization status of ANC services	Postnatal Women (n=50)			Chi square (p value)
	Complications			
	Yes (%)	No (%)	Total	
Complete	5 (11.6)	38 (88.4)	43	X ² = 5.6, df-1, p=0.017
Incomplete	4 (57.1)	3 (42.9)	7	
Total	9	41	50	

trimester is done only by 67.9% women.^[3] In Mahajan H et al, early registration was found in 8.3% of the study subjects.^[7] Similarly in studies done by Paudel DP et al 94.8%^[8] and Patel K et al 100%^[9] had registered their pregnancy early in first trimester. All the women in the study (100%) had adequate number of antenatal visits (>4 visits) as in the studies done by Ansari AM et al 25.6%^[10] and in Singh P et al 62.0%^[11] had more than recommended minimum four antenatal visits. This is also higher than the NFHS-5 data where minimum antenatal visits were done by only 54.2% women.^[3]

In the present study 90.3% (92% pregnant women and 86% postnatal women) of the study subjects had completely utilized antenatal care services. In the studies done by Chimankar DA et al 20%^[12] and Patel K et al 97.3%^[9] of the rural women had received full ANC. In a study done by Sadiq N et al in a rural area of Pakistan where overall utilization was 84.4%.^[13] Reasons could be due to increasing awareness among the rural women about the availability and utilization of ANC services through mass media and also because of AWWs, ANMs, ASHA worker, as they play an important role not only in creating awareness among them but also motivating them to avail ANC services and other reason could be due to increasing primary health care coverage making easy accessibility of necessary ANC services to the rural women.

Regarding Td immunization among the participants, 75.4% were completely immunized with 2 doses and 24.6% were partially immunized. This finding was lower than the finding of Dabade KJ et al^[14], in which they reported 98.6% coverage and a study conducted in Punjab which showed 98.4%^[15]. Adequate IFA supplementation was received by 57.7% of the women, which was significantly higher than a study done in a tertiary care hospital in Haryana where 21% of women did not consume any IFA tablets.^[16]

In the present study, 56% of the antenatal women had consumed adequate number of IFA tablets (>180 days). This is higher when compared to

NFHS-5 where its only 22.7%^[3] In the studies conducted by Mahajan H et al 34.6%,^[7] Ansari AM et al^[10] and Singh P et al 73.0%^[51] none of them had even consumed at least 100 IFA tablets. Among the postnatal women, 62% of the study subjects had consumed adequate number of IFA. In the other studies done by Chimankar DA et al 21.1%,^[12] Paudel DP et al 66.5%,^[8] Patel K et al 100%,^[9] Dabade KJ et al 17.5%,^[14] Sharma V et al 92.4%,^[17] and Ansari AM et al 7.6%^[10] had consumed 100 or more than 100 tablets. But in the present study, increased awareness regarding the importance of consuming IFA tablets by various means could be an important reason for higher percentage of women consuming IFA tablets. The reasons for not consuming IFA tablets were side effects like nausea, vomiting followed by lack of willingness to consume tablets. In the study conducted by Ansari AM^[10] et al only some of the study subjects had mentioned vomiting, loose motion and bad taste as the reasons and majority were not able to mention the reasons for not consuming the IFA tablets. In the present study overall 28.4% of the study subjects had received prenatal advice on various components of antenatal care services. In a study conducted by Varma GR et al, 73.7% of rural women had received prenatal advice.^[18] In another study done by Sharma V et al 100% had received prenatal advice, 78.9% had received advice on dangerous signs in pregnancy and 21.1% on diet.^[17]

It was observed that ANC services utilization is significantly associated with age group and occupation of the study subjects while no statistically significant association was found with literacy rate, type of family, socio economic status, and prenatal advice and birth order. This was consistent with finding of studies did in different parts of the country. The utilization was more (96.3%) among women aged above 24 to 29 years followed by above 30 years (92.3%). This is similar to studies conducted by Chimankar DA et al^[12] and Roy MP et al,^[16] and a systematic review done in developing countries by Simkhada B et al.^[19] but this finding was not in agreement to the study conducted by Sharma V et al

in Lucknow,^[17] and also study done in rural West Sumatra Indonesia by Agus Y et al^[20] where they found reduction in percentage of women utilizing ANC services with increasing age. Increased utilization among women aged 24 to 29 years could be due to increased awareness. In contrary there may be lesser utilization among women aged above 30 years (particularly if they are multigravida/multipara) as they will be less cautious and less anxious about their pregnancy as they had children before and do not pay heed towards the importance of antenatal care.

The present study revealed more utilization among the 3 illiterates than literates. These findings were in contradictory to other studies conducted by Chimankar DA et al,^[12] Roy MP et al,^[16] Singh P et al^[11] and Jat TR et al,^[21] where better utilization was seen among women with higher education. Also, the utilization rate was higher among housemakers (97%) when compared to the working women (81.8%). This is in accordance with studies conducted by Chimankar DA et al,^[12] Sharma V et al^[17]

Percentage of women completely utilized ANC services was almost same in primigravida (91%) and multigravida (89.5). This was in contrast to studies conducted by Chimankar DA et al,^[12] Sharma V et al^[17] and Jat TR et al.^[21] As primigravida will be more anxious and cautious about their pregnancy, they tend to give more antenatal visits and utilize ANC services completely when compared to multigravida. But this was contradictory to study done by Agus Y et al in Indonesia, where reduced utilization was seen among primigravida than among multigravida.^[20]

Conclusion:

The present study assessed the Antenatal care services utilization among the antenatal and postnatal women in a rural area of Thoothukudi. Results revealed that most of the women were aware about the antenatal services available. Most of the women have registered their pregnancy at first trimester itself and complete Td immunization done in 75.4% women. IFA tablets were taken adequately

only by 57.7% women and 3.4% did not consume any IFA tablets. Further antenatal home visits by health were not effectively implemented.

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