Quality of Antenatal Care in a Tertiary Care Hospital of Odisha: A Cross-sectional Study

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ABSTRACT

Introduction: Antenatal Care (ANC) is the starting point of continuum of care in pregnancy, labour and puerperium. Increased coverage and quality ANC averts 71% of neonatal death, 33% still birth and 54% of maternal death.

Aim: To assess the quality of ANC service delivery in terms of examination, screening, counselling and treatment including the adequacy in number.

Materials and Methods: The cross-sectional study was conducted in an urban setting at SCB Medical College, Cuttack, Odisha, India, from January 2020 to June 2021 to assess the quality of ANC service provided to women visiting the tertiary healthcare facility. Data was collected from the sample of 200 pregnant women who were recruited in the third trimester through non probability sampling. Quantity is actually sufficiency in number. However, all the services provided during ANC to screen for high risks factors from history, examinations, routine care like investigations, nutritional supplementation, counselling and health education were assessed under quality services by a questionnaire. Data were entered in Statistical Package for the Social Sciences (SPSS) version 24.0. Continuous variables were expressed in mean and Standard Deviation (SD). Categorical variables were expressed in proportion.

Results: Total 72.5% of women made four or more visits to antenatal clinics. The mean age of participants were 26.1±4.0 years. The majority of participants were primigravida (47.5%). Total of 60% of the participants were of middle socio-economic status and maximum were having education upto primary level (46.5%). Total 78.5% of the women had done their first ANC check-up within the first trimester. Haemoglobin level, blood grouping and blood sugar were estimated among 96.5%, 93.5% and 96.0% of the women, respectively. Counselling about danger signs of pregnancy was done in 15.5% cases and birth preparedness and emergency readiness was done in only 7.0% of women.

Conclusion: The study revealed that the health facility is providing better coverage of ANC services by the tertiary level service providers. Most of the routine investigations, vaccinations and necessary supplementation were in accordance with World Health Organisation (WHO) focussed ANC model.

Keywords: Danger signs, Health facility, Pregnancy, Service providers

INTRODUCTION

Every pregnancy carries a risk of complications and some are emergent. Antenatal Care (ANC) is the vital and starting point of continuum of care during pregnancy, labour and puerperium. It has been estimated that increased coverage and quality ANC could avert 71% of neonatal deaths, 33% of still births, 54% of maternal deaths in low and middle income countries [1].

In 2002, World Health Organisation (WHO) advocated for implementation of Focussed Antenatal Care (FNAC) which consists of atleast four ANC visits in place of traditional model of ANC. The focus was on quality of ANC to screen out those pregnant population in need of more specialised care. In 2016, the FNAC model was updated by WHO. The four visits of FNAC were increased to 8 contacts, one contact in first trimester, 2 contacts in second trimester and five contacts in third trimester [2]. The term visit is denominated by contact to explain active connection between the pregnant woman and healthcare provider. Study shows eight or more contacts for ANC can reduce perinatal deaths by 8 per 1000 births when compared to 4 visits, thus producing a positive pregnancy experience in the woman [3].

The WHO FNAC model of 2002 is still adopted in India. Though the ANC utilisation rate shows an increasing trend it is not so impressive. Globally, 62% of pregnant women received the WHO recommended FNAC and in India, it is increased from 37% to 51.2% during 2006-2016 [4]. Rate of institutional delivery doubled from 38.7% to 79% during the same period [5-7]. To increase ANC utilisation rate and

to make it effective the quality of ANC services should be optimum. There is no validated method to measure the quality of ANC but a qualitative ANC should provide the contents of care recommended by WHO, should have the ability to detect potential problems at the earliest, should provide tailor-made care in terms of frequency and content as per the individual need and create a positive pregnancy experience in the woman [8].

This study was conducted with the aim to assess the quality of ANC service delivery in terms of examination, screening, treatment and counselling along with adequacy in number.

MATERIALS AND METHODS

A cross-sectional study was conducted from January 2020 to June 2021 in an urban setting, at SCB Medical College, Cuttack, Odisha, India, after obtaining approval from Ethical Review Committee (IEC:573) of the Institution. Informed consent was obtained after explaining aim and objectives of the study to the participants.

Sample size calculation: Sample size was calculated by the formula: $n=z^2pq/d^2$ taking d as 5 units, p as 90% from our own pilot study and q as 10%, z as 1.9. Data was collected from a sample of 200 pregnant women through convenient sampling technique (non probability sampling).

Inclusion criteria: All antenatal women with low risk attending Outpatient Department (OPD) and labour room in the third trimester were included in the study.

Exclusion criteria: High risk cases who were seriously ill were excluded from the study.

Quality of service delivery has been assessed by observing and asking close ended questions regarding standard guidelines and recommended standard practices related to ANC services. Demographic information of patients was recorded and each selected woman was asked to share information concerning ANC in that particular facility. Socio-economic status was assessed as per modified kuppuswamy scale [9]. For convenience authors placed the women in lower class with a score of 1-10, in middle class with a score of 11 to 25 and in upper class with a score of 26-29. Direct observation was made according to areas defined in data collection tool and participants were interviewed regarding provider's behaviour (close ended questionnaire for rudeness, verbal abuse, physical abuse, poor communication) [10], information for danger signs and counselling in different areas of concern like nutrition and self-care, family planning, emergency and birth preparedness, importance of breast feeding and postnatal care. Information regarding history, clinical examination, immunisation and nutritional supplementation were collected from outpatient subjects wherever found necessary **[Annexure 1]**.

For the qualitative aspect of the ANC check-ups, the participants were assessed with various dimensions i.e., a) Skilled healthcare personnel (ANC provided by doctors, auxiliary nurse midwives, nurses, midwives or lady health visitors); b) Timeliness (first ANC visit); c) Sufficiency (atleast four ANC visits completed during the pregnancy); d) Appropriateness in content (an indicator summarising the procedures and processes of care provided during antenatal check-up). The indicator for appropriateness of content included the following: (1) weight measurement; (2) blood pressure measurement; (3) urine testing; (4) blood sample taken to test for possible morbidities such as anaemia, parasite infestations or infectious diseases; (5) atleast two tetanus toxoid vaccinations; (6) iron, calcium and folic acid tablets consumption for atleast 100 days; (7) abdominal examination; and (8) whether counselling was given regarding specific symptoms of pregnancy complications and information about the place to approach if any complications arise; (9) deworming after 1st trimester; (10) behaviour of the provider [11].

STATISTICAL ANALYSIS

Data were entered and analysed in Statistical Package for the Social Sciences (SPSS) software version 24.0. All continuous variables were expressed in mean and standard deviation and categorical variables were expressed in proportion. The proportion to which the pregnant women received essential ANC services was measured.

RESULTS

The mean age of the participants was 26.1±4.02 years. Regarding socio-demographic profile of the participants nearly half of the participants were having education upto primary level (46.5%) followed by secondary level (38.0%). Total 60% were from middle socio-economic status [Table/Fig-1]. In present study, majority of women were between 20 to 29 years of age, and constituted the largest number of recipients of ANC i.e., 119 (59.5%) of patients. Eight (4%) participants belonged to less than 19 years of age and 73 (36.5%) were in the age range of 30 to 49 years.

By close ended questions for rudeness, verbal abuse, physical abuse and poor communication by the provider behaviour was assesed. If any one is present authors took it as bad behaviour of the provider [Table/Fig-2].

The mean time for the 1st ANC among the participants was 4.46±1.65 months. Total 78.5% of the women had done their 1st ANC check-ups within first trimester and 21.5% had done their first ANC check-ups during 2nd trimester. The basic history taking and all examination steps are complete in 100% of patients [Table/Fig-2].

Haemoglobin (Hb) level, blood grouping and blood sugar were estimated in 96.5%, 93.5% and 96.0% of the women, respectively. The Human

Demographic profile	Proportion n (%)
Mean age of the study participants	26.1±4.02 (years)
Gravida	
Primigravida	95 (47.5%)
Gravida II	67 (33.5%)
Multigravida	38 (19.0%)
Parity	
Nulliparous (P0)	95 (47.5%)
P1	52 (26.0%)
P2	46 (23.0%)
P3 and more	7 (3.5%)
Abortion	
A1	15 (7.5%)
A2	6 (3.0%)
A3 and more	2 (1.0%)
Education	
Primary	93 (46.5%)
Secondary	76 (38.0%)
Tertiary	11 (5.5%)
Intermediate	20 (10.0%)
Socio-economic status	
Middle class	120 (60.0%)
Lower class	80 (40.0%)

[Table/Fig-1]: Socio-demographic characteristics of the study participants (N=200).

Antenatal Care (ANC) check-ups	Proportion n (%)
Mean time of 1st ANC Check-ups (in months)	4.46±1.65
Time of 1st ANC check-ups	
1st Trimester	157 (78.5%)
2nd and 3rd Trimester	43 (21.5%)
Behaviour of the healthcare professional	
Good	193 (96.5%)
Bad	7 (3.5%)
ANC check-ups by healthcare professional	200 (100%)

[Table/Fig-2]: Timeliness of ANC check-ups by study participants (N=200).

Immunodeficiency Virus (HIV) status was assessed among 98.5% of the participants. Counselling about their nutritional status and intake of Iron and Folic Acid (IFA) and calcium and various prophylaxis measures revealed that 86.5% were taking adequate nutrition during the pregnancy, 90.5% of the women had taken IFA tablets for more than 100 days and 97.5% of the women had taken calcium as prescribed (500 mg per day). Regarding prophylaxis, two doses of Tetanus Toxoid (TT) vaccination were given to 98.5% and albendazole prophylaxis was given to 43.5% of the participants and malaria prophylaxis was not a content of care at the facility [Table/Fig-3].

Investigation during ANC check-ups	Proportion n (%)
Haemoglobin	193 (96.5%)
Blood grouping	187 (93.5%)
Blood sugar (75 g GCT)	192 (96.0%)
Urine examination (Routine and Microscopy)	142 (71.0%)
Human Immunodeficiency Virus (HIV) screening	197 (98.5%)
Tetanus Toxoid (TT) vaccination (2 doses)	197 (98.5%)
Deworming (Albendazole Prophylaxis)	87 (43.5%)
Malaria prophylaxis	0
Iron and Folic Acid (IFA) tablets	181 (90.5%)
Calcium tablets	195 (97.5%)

[Table/Fig-3]: Biochemical investigations and Prophylaxis evaluation during ANC check-ups among the study participants (N=200).

Counselling about danger signs of pregnancy was done in 15.5% cases and birth preparedness and emergency readiness was done in only 7.0% of women [Table/Fig-4].

Counselling areas	Proportion n (%)
Danger signs during pregnancy	31 (15.5%)
Birth preparedness and emergency readiness	14 (7.0%)
Breast feeding	176 (88.0%)
Family planning adaptation	144 (72.0%)
Postnatal care	179 (89.5%)

[Table/Fig-4]: Counselling and health education during ANC.

All participants were provided ANC check-ups by specialist healthcare practitioner. The timeliness among the pregnant women was seen for 78.5% of the participants where as 72.5% participants had sufficiency (>4 times ANC visits) [Table/Fig-5].

Quality parameters	Yes n (%)	No n (%)
Examination by skilled health workers	200 (100%)	-
Timeliness (1st ANC visit within first TM)	157 (78.5%)	43 (21.5%)
Sufficiency (>4 ANC visits)	145 (72.5%)	55 (27.5%)
Appropriateness	36 (18.0%)	164 (82.0%)

[Table/Fig-5]: Quality assessment of ANC Check-ups.

DISCUSSION

In present study, majority of women were between 20 to 29 years of age, and constituted the largest number of recipients of ANC i.e., 59.5% of patients. Eight (4%) belonged to less than 19 years of age and rest 36.5% were in the age range of 30 to 49 years. Women belonging to the adolescent age group were less likely to use adequate ANC services, which is further supported by findings from similar studies [12,13]. Literate women stood a better chance of availing adequate care than their counterparts and this is seconded by a study that documented how increased knowledge about ANC was strongly associated with better education status of mothers [14].

In the present study, however antenatal mothers with primary education (93 subjects) attended antenatal OPD, probably the more literate being well-established preferred private consultation. Results showed that as parity increased, the odds of receiving ANC services decreased. This could preferably be accounted by the complacent attitude of pregnant mothers who are more guided by the orthodox views of society. The majority of women who did not receive ANC belonged to the poorest wealth quintile, whereas women from the richest quintile were five times more likely to have received any ANC and twice as likely to have received adequate ANC services compared with the poorest women [11]. Mumbare SS and Rege R, and Dasgupta U et al., also showed a positive association between the socio-economic class and utilisation of ANC services [15,16]. For instance, a recent study noted that women from a poor economic background considered regular visits to healthcare settings an impediment to their daily activities [17].

Study findings revealed that women were recommended more than four visits for ANC and it reflects their care seeking behaviour and delivery practices. Literature supported the fact that women having four or more ANC visits, are more likely to deliver at healthcare facilities and leads towards reduction in maternal and neonatal mortality along with morbidity [18-23]. ANC services were being provided in that particular facility by healthcare providers with different clinical qualification and designations.

Counselling regarding danger signs during pregnancy, birth preparedness, emergency readiness and family planning adaptation is the least covered area. This is due to work load of the providers during OPD hours. Most of the routine investigation services provided in our facility were in accordance with recommended standards. Vaccination and necessary supplementation were also being provided to participants according to recommended schedule for vaccination and condition of patient.

Limitation(s)

The limitations of the study were that the data was collected through non probability sampling. It does not have the benefits of randomisation. Like any observational studies observer bias could not be avoided because the observer is a human with their own bias.

CONCLUSION(S)

The present study revealed that all the women were educated and all of them had registered themselves. Further, majority of them made four or more visits to antenatal clinics which are also the current recommendations of our National Reproductive and Child Health (RCH-2) program. A significant number of them had also undergone routine investigations and received tetanus toxoid and Iron and folic acid therapy. A little more emphasis needs to be given in areas of counselling which probably could better be handled by counsellors.

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ANNEXURE 1

1. Age	
2. Pregnancy	
a) Gravida	
b) Parity	
c) Abortion	
3. (A) Educational status	
Primary	Upto 7th class
Secondary	8th-10th
Intermediate	10th-12th
Tertiary	Above 12th
(B) Socio-economic status (monthly per capita income)	
3504 and 7007	Upper middle class
2102 and 3503	Middle class
1051 and 2101	Upper lower class
Below 1050	Lower class
4. Time of 1st Antenatal check-up (in weeks)	
5. ANC service provider:	
6. How was the provider attitude and behaviour?	
Rude behaviour	
Verbal abuse	
Physical abuse	
Poor communication	

7. Detailed history	
Obstetrics	
Personal	
Past	
8. List of investigations carried out by patients	
Hb	
ABORh	
Routine urine exam	
Blood Sugar- @hr OGTT 75 G glucose	
9. Education and counselling:	
Alarming signs- Fever, persistent vomiting, bleeding PV, watery discharge, generalised swelling, severe headache, blurred vision, decrease foetal movements, abdominal pain	
Birth preparedness-identify place of delivery, save money, identify skilled provider, essential items for clean and safe delivery	
Emergency readiness- aware of danger signs, identify source of support, transport, EMOC provider recognition, Blood and Donor at bay	
Nutrition	
Postnatal care- breast feeding, contraceptive use	
10. Treatment given to patients during ANC?	
Iron-folic acid	
Calcium	
Malaria prophylaxis after 1st trimester	
Tetanus toxoid	
Albandazole after 1st trimester	