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Original Research Article

Evaluation of Antenatal Care Services Provided by Family Physicians in a Tertiary Care Setting

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Abstract:

Background: Antenatal care (ANC) plays a vital role in improving maternal and fetal outcomes by enabling early detection and management of pregnancy-related complications. Family physicians serve as the first point of contact for many pregnant women and are important providers of comprehensive antenatal care services. The present study was conducted to evaluate the antenatal care services provided by family physicians in a tertiary care setting.

Material and Methods: A hospital-based cross-sectional study was conducted among 150 pregnant women attending the antenatal clinic of the Department of Family Medicine in a tertiary care hospital. Participants were selected using consecutive sampling. Data were collected using a pre-designed and pre-tested structured questionnaire along with review of antenatal records. Information regarding socio-demographic characteristics, obstetric history, antenatal visits, and services received during antenatal care was recorded. Data were analyzed using descriptive statistics and chi-square test to assess associations, with $p < 0.05$ considered statistically significant.

Results: Among the 150 participants, the majority were aged 20–24 years (34.7%) and were homemakers (74.7%), while 52.7% belonged to the middle socioeconomic class. Multigravida women constituted 57.3% of the study population. Nearly half of the participants (48.0%) initiated their first antenatal visit during the second trimester. Blood pressure monitoring was performed for all participants (100%), while weight monitoring and abdominal examination were conducted in 97.3% and 92.0% respectively. Iron and folic acid supplementation was provided to 94.7% of women and tetanus toxoid vaccination to 90.7%. Nutritional counselling and education regarding danger signs of pregnancy were provided to 85.3% and 73.3% respectively. Adequate antenatal care services were observed in 69.3% of participants. Adequacy of antenatal care showed significant association with maternal education ($p = 0.001$), gravidity ($p = 0.042$), trimester at first visit ($p = 0.015$), and number of antenatal visits ($p < 0.001$).

Conclusion: Family physicians provide essential antenatal care services to the majority of pregnant women in a tertiary care setting. Early registration, regular antenatal visits, and improved maternal education may enhance the adequacy of antenatal care services and contribute to better maternal health outcomes.

Keywords: Antenatal care, Family physicians, Maternal health, Pregnancy care, Tertiary care hospital.

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Introduction

Maternal health remains a major public health priority worldwide, particularly in low- and middle-income countries where maternal and neonatal morbidity and mortality continue to be significant concerns. Antenatal care (ANC) is widely recognized as a fundamental component of maternal healthcare that contributes to improved pregnancy outcomes by enabling early identification, prevention, and management of complications during pregnancy [1]. Regular antenatal visits provide opportunities for monitoring maternal and fetal wellbeing, delivering preventive interventions, and offering health education that supports safe motherhood practices [2].

Adequate antenatal care has been shown to play an important role in reducing maternal and neonatal mortality. Studies have demonstrated that optimal

utilization of antenatal and delivery care services can significantly decrease morbidity and mortality among mothers and infants by ensuring timely diagnosis and management of pregnancy-related complications [3]. Furthermore, antenatal care also facilitates screening for conditions such as anemia, hypertensive disorders of pregnancy, infections, and gestational diabetes, while simultaneously promoting nutritional counselling, immunization, and birth preparedness [4].

The quality and adequacy of antenatal care are equally important as the number of visits. Evidence suggests that comprehensive ANC services that include clinical examination, laboratory investigations, counselling, and preventive interventions are essential to achieve meaningful improvements in maternal and neonatal health outcomes [5]. However, despite increasing coverage of antenatal services in many countries, gaps remain in the quality and completeness of care provided during pregnancy [6].

Family physicians play a critical role in the provision of antenatal care, particularly in settings where they often serve as the first point of contact for pregnant women within the healthcare system. Through continuous and comprehensive care, family physicians can monitor pregnancy progress, identify high-risk conditions, and ensure timely referral when specialized obstetric care is required. Evaluating the antenatal services delivered by family physicians is therefore essential to understand the adequacy and effectiveness of care provided at the primary level [7].

In this context, the present study was conducted to evaluate the antenatal care services provided by family physicians in a tertiary care setting and to assess factors associated with the adequacy of antenatal care among pregnant women attending the antenatal clinic.

Material and Methods

Study design and setting: A hospital-based cross-sectional observational study was conducted at a tertiary care teaching hospital. The study aimed to evaluate the ANC services delivered by family physicians to pregnant women attending the outpatient department.

Study population: The study population comprised pregnant women attending the antenatal clinic during the study period. Women who visited the outpatient department for routine antenatal check-ups were approached for participation.

Sample size: The sample size was calculated using the single proportion formula based on the assumption that approximately 70% of pregnant women receive adequate antenatal care services in tertiary care settings as reported in previous studies. With a 95% confidence level and an allowable error of 8%, the minimum required sample size was calculated to be approximately 126 participants. Considering possible incomplete responses and non-participation, the final sample size was rounded to 150 pregnant women**.**

Sampling technique: A consecutive sampling technique was used. All eligible pregnant women attending the antenatal clinic during the study period were approached, and those who consented to participate were included until the desired sample size was achieved.

Inclusion criteria

- Pregnant women attending the antenatal clinic in the Department of Family Medicine.
- Women who were willing to participate and provided informed consent.
- Women at any gestational age receiving antenatal care from family physicians.

Exclusion criteria

- Pregnant women who were critically ill at the time of visit.
- Women who refused to participate in the study.
- Women with incomplete information in the data collection form.

Data collection procedure: Data were collected using a pre-designed and pre-tested structured questionnaire. The questionnaire included information regarding sociodemographic characteristics, obstetric history, gestational age, number of antenatal visits, and services received during antenatal care. Information regarding clinical examination, laboratory investigations, nutritional counselling, immunization, iron and folic acid supplementation, and health education provided by family physicians was also recorded. In addition to interviews, relevant clinical information was obtained from antenatal records and hospital case sheets where available. Each participant was interviewed after obtaining written informed consent, and confidentiality of the information was maintained.

Study variables: The primary outcome of interest was the adequacy and components of antenatal care services provided by family physicians. Variables assessed included number of antenatal visits, monitoring of maternal weight and blood pressure, abdominal examination, laboratory investigations, tetanus immunization, iron and folic acid supplementation, and counselling on nutrition and pregnancy-related health practices.

Statistical analysis: The collected data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) software version 25.0. Descriptive statistics such as frequencies, percentages, means, and standard

deviations were used to summarize the data. Associations between selected variables were assessed using appropriate statistical tests such as the chi-square test. A p-value of less than 0.05 was considered statistically significant.

Results

The socio-demographic characteristics of the study participants are presented in Table 1. The majority of participants belonged to the age group of 20–24 years (34.7%), followed by 25–29 years (32.0%). Women aged ≥30 years constituted 21.3%, while 12.0% were younger than 20 years. Regarding educational status, 38.7% of the participants had completed secondary education, 28.0% were graduates, 24.0% had primary education, and 9.3% had postgraduate education. Most of the participants were homemakers (74.7%), whereas 25.3% were employed. With respect to socioeconomic status, 52.7% belonged to the middle socioeconomic class, followed by the lower class (27.3%) and upper class (20.0%) (Table 1).

The obstetric characteristics of the participants are summarized in Table 2. Multigravida women constituted 57.3% of the study population, while 42.7% were primigravida. Nearly half of the women (48.0%) had their first antenatal visit during the second trimester, whereas 37.3% reported in the first trimester and 14.7% in the third trimester. A previous history of obstetric complications was reported by 18.7% of participants, while the majority (81.3%) had no such history (Table 2).

The antenatal care services provided by family physicians are shown in Table 3. Blood pressure monitoring was performed for all participants (100%). Weight monitoring was conducted for 97.3% of women, and abdominal examination was performed in 92.0% of cases. Hemoglobin estimation and urine examination were carried out in 88.0% and 82.7% of participants, respectively. Blood grouping and Rh typing were documented in 78.7% of women. Tetanus toxoid vaccination was received by 90.7% of the participants, and iron and folic acid supplementation was provided to 94.7%. Nutritional counselling was given to 85.3% of the women, while education regarding danger signs of pregnancy was provided to 73.3% (Table 3).

The distribution of the number of antenatal visits among the participants is presented in Table 4. More than half of the women (52.0%) had attended 4–7 antenatal visits during pregnancy. A total of 26.7% had attended eight or more visits, while 21.3% had fewer than four visits (Table 4).

Overall adequacy of antenatal care services is depicted in Table 5. Adequate antenatal care services were observed in 69.3% of participants, whereas 30.7% received inadequate antenatal care (Table 5).

The association between selected maternal characteristics and adequacy of antenatal care services is shown in Table 6. Adequate antenatal care was more frequently observed among women aged ≥25 years (73.2%) compared to those aged <25 years (64.7%), although this difference was not statistically significant ($p = 0.182$). Educational status demonstrated a significant association with adequacy of antenatal care, with women having graduate or higher education showing a higher proportion of adequate care (89.3%) compared to those with secondary education or less (57.4%) ($p = 0.001$). Gravidity was also significantly associated with adequacy of antenatal care, with primigravida women demonstrating a higher proportion of adequate care (78.1%) compared to multigravida women (62.8%) ($p = 0.042$). Women who initiated antenatal visits during the first trimester had significantly higher adequacy of care (82.1%) compared to those who presented in the second or third trimester (61.7%) ($p = 0.015$). A strong association was observed between the number of antenatal visits and adequacy of care, with 78.0% of women having four or more visits receiving adequate care compared to only 37.5% among those with fewer than four visits ($p < 0.001$). Occupation of the participants did not show a statistically significant association with adequacy of antenatal care services ($p = 0.241$) (Table 6).

Table 1: Socio-demographic characteristics of study participants (n = 150)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	<20	18	12.0
	20–24	52	34.7
	25–29	48	32.0
	≥30	32	21.3
Education	Primary	36	24.0
	Secondary	58	38.7
	Graduate	42	28.0
	Postgraduate	14	9.3
Occupation	Homemaker	112	74.7
	Employed	38	25.3
Socioeconomic status	Lower	41	27.3

	Middle	79	52.7
	Upper	30	20.0

Table 2: Obstetric characteristics of study participants (n = 150)

Variable	Category	Frequency (n)	Percentage (%)
Gravidity	Primigravida	64	42.7
	Multigravida	86	57.3
Trimester at first visit	First trimester	56	37.3
	Second trimester	72	48.0
	Third trimester	22	14.7
Previous obstetric complications	Yes	28	18.7
	No	122	81.3

Table 3: Antenatal care services provided by family physicians (n = 150)

Antenatal service	Received (n)	Percentage (%)
Blood pressure monitoring	150	100
Weight monitoring	146	97.3
Abdominal examination	138	92.0
Hemoglobin estimation	132	88.0
Urine examination	124	82.7
Blood grouping and Rh typing	118	78.7
Tetanus toxoid vaccination	136	90.7
Iron and folic acid supplementation	142	94.7
Nutritional counselling	128	85.3
Health education regarding danger signs	110	73.3

Table 4: Number of antenatal visits among study participants (n = 150)

Number of ANC visits	Frequency (n)	Percentage (%)
<4 visits	32	21.3
4–7 visits	78	52.0
≥8 visits	40	26.7

Table 5: Overall adequacy of antenatal care services (n = 150)

Adequacy of ANC services	Frequency (n)	Percentage (%)
Adequate	104	69.3
Inadequate	46	30.7

Table 6: Association between selected maternal characteristics and adequacy of antenatal care services (n = 150)

Variable	Category	Adequate ANC n (%)	Inadequate ANC n (%)	Total (n)	p-value
Age (years)	<25	44 (64.7)	24 (35.3)	68	0.182
	≥25	60 (73.2)	22 (26.8)	82	
Education	≤Secondary	54 (57.4)	40 (42.6)	94	**0.001**
	≥Graduate	50 (89.3)	6 (10.7)	56	
Occupation	Homemaker	74 (66.1)	38 (33.9)	112	0.241
	Employed	30 (78.9)	8 (21.1)	38	
Gravidity	Primigravida	50 (78.1)	14 (21.9)	64	**0.042**
	Multigravida	54 (62.8)	32 (37.2)	86	
Trimester at first visit	First trimester	46 (82.1)	10 (17.9)	56	**0.015**
	Second/Third trimester	58 (61.7)	36 (38.3)	94	
Number of ANC visits	<4 visits	12 (37.5)	20 (62.5)	32	**<0.001**
	≥4 visits	92 (78.0)	26 (22.0)	118	

Discussion

The present study evaluated antenatal care services provided by family physicians in a tertiary care setting and assessed factors associated with the adequacy of antenatal care among pregnant women. The findings indicate that the majority of women received essential antenatal services, and nearly two-thirds of the participants received adequate antenatal care. These findings highlight the important role of family physicians in delivering comprehensive maternal healthcare services.

In the present study, most participants were in the age group of 20–29 years and were predominantly homemakers. Similar demographic patterns have been reported in other maternal health studies conducted in developing countries, where the majority of pregnant women accessing antenatal services fall within the reproductive age group of 20–30 years [8]. Maternal age has been identified as an important determinant of antenatal care utilization, with younger mothers often demonstrating lower utilization compared with older women due to limited awareness or access to healthcare services [9].

The study observed that a higher proportion of women were multigravida, which is consistent with findings from several community-based studies evaluating antenatal service utilization in low- and middle-income settings. Parity has been shown to influence antenatal care utilization, with multiparous women sometimes demonstrating reduced use of services due to previous pregnancy experience or perceived familiarity with pregnancy-related care [10]. However, in the present study, primigravida women were more likely to receive adequate antenatal care compared to multigravida women, which may be attributed to greater concern and health-seeking behaviour during the first pregnancy.

A large proportion of participants initiated antenatal care during the second trimester, while only about one-third registered in the first trimester. Early initiation of antenatal care is a key indicator of quality maternal healthcare because it allows timely screening, counselling, and preventive interventions during pregnancy. Previous studies have demonstrated that women who begin antenatal care early in pregnancy are more likely to receive the recommended components of antenatal services and complete the required number of visits [11]. Consistent with these observations, the present study also found that early initiation of antenatal care was significantly associated with adequacy of services.

The present study showed high coverage of several essential antenatal care components, including blood pressure monitoring, weight assessment, iron and folic acid supplementation, and tetanus immunization. These services represent fundamental elements of standard antenatal care packages recommended for monitoring maternal and fetal wellbeing. Similar findings have been reported in other studies where routine clinical examinations and preventive interventions constituted the core components of antenatal care services delivered in healthcare facilities [12].

Education of the mother emerged as a significant determinant of adequate antenatal care in the present study. Women with higher educational attainment were more likely to receive adequate antenatal services compared with those having lower educational levels. This observation is consistent with previous studies that have demonstrated a strong association between maternal education and utilization of maternal healthcare services. Higher educational status improves health awareness, decision-making ability, and health-seeking behaviour among women, thereby increasing the likelihood of receiving adequate antenatal care [13].

Another important finding of the present study was the significant association between the number of antenatal visits and adequacy of care. Women who attended four or more antenatal visits were significantly more likely to receive adequate antenatal care services compared to those with fewer visits. This observation is supported by previous research demonstrating that increased contact with healthcare providers during pregnancy enhances the opportunity for monitoring maternal health, conducting investigations, and delivering counselling and preventive interventions [14]..

Conclusion

The present study demonstrated that family physicians play a significant role in delivering antenatal care services in a tertiary care setting. Most pregnant women received essential components of antenatal care, including blood pressure monitoring, weight assessment, iron and folic acid supplementation, and tetanus immunization. Overall, adequate antenatal care services were observed in the majority of participants. Factors such as higher educational status, primigravidity, early initiation of antenatal visits, and a greater number of antenatal consultations were significantly associated with better adequacy of care. These findings highlight the importance of strengthening antenatal care delivery at the primary contact level through family physicians and promoting early and regular antenatal visits to improve maternal health outcomes.

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