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Maternal Perspectives On The Quality Of Antenatal Care Provided By Nurses And Healthcare Assistants: A Post-Delivery Assessment In Saudi Arabia

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Abstract

Background: High-quality antenatal care (ANC) is essential to reduce maternal and neonatal complications and to achieve the Sustainable Development Goals. Understanding maternal perspectives on the quality of ANC provided by nurses and healthcare assistants (HCAs) is critical for improving services.
Aim of this study: To evaluate mothers' perceptions of the quality of ANC services provided by nurses and healthcare assistants in Saudi Arabia and to identify factors associated with perceived ANC quality.
Methods: A cross-sectional, facility-based study was conducted among postpartum women attending maternity units in Saudi Arabia. A structured questionnaire adapted from the WHO framework of ANC quality was used to assess three components of care: assessment, health promotion, and care provision.
Results:
A total of 300 mothers participated. Most reported receiving ANC from mixed teams of nurses and healthcare assistants. Mothers perceived the overall ANC quality as moderate, with no major difference between governmental and private facilities. Higher maternal education and regular ANC attendance were significantly associated with higher ANC quality scores ($p < 0.05$). Mode of delivery, neonatal complications, and birth weight showed no significant association with perceived ANC quality.
Conclusion: Mothers in Saudi Arabia generally perceive ANC services provided by nurses and healthcare assistants as adequate but requiring improvement—particularly in health education and consistency of clinical assessments. Enhancing staff training, ensuring standardized ANC protocols, and strengthening counseling could improve maternal satisfaction and outcomes.

Keywords: Antenatal care, maternal perception, nursing care, quality of care, Saudi Arabia, healthcare assistants.

Introduction

Quality antenatal care (ANC) is a cornerstone of maternal and neonatal health. It not only supports early detection and management of pregnancy risks but also fosters trust, continuity of care, and positive maternal experience. World Health Organization (WHO) emphasizes that the effectiveness of ANC depends not just on the number of visits, but also on the content and quality of care delivered during each contact [(1)]. However, measuring quality of ANC solely by contact frequency (e.g., number of visits) overlooks critical dimensions such as communication, supportive behavior, patient education, cultural sensitivity, and emotional support [(2)]. Patient (maternal) satisfaction with ANC, as an indicator of

perceived care quality, has gained recognition globally [3].

Maternal satisfaction influences women's adherence to recommended ANC schedules, their likelihood to use skilled birth attendants, and their trust in the health system — all of which are linked to better maternal and neonatal outcomes [4]. Low satisfaction has been associated with underutilization of services, missed visits, and poor pregnancy outcomes [5]. In this light, assessing maternal perspectives on care quality is not optional; it is essential for monitoring and improving ANC service delivery.

In Saudi Arabia, an evaluation of pregnant women's satisfaction with antenatal care (ANC) services provided at primary healthcare centers (PHCs) in Riyadh demonstrated variable satisfaction levels across different components of care. The study reported that 93.7% of women were satisfied with the initial triage assessment, 87.8% expressed satisfaction with the overall services provided, while lower satisfaction rates were observed for consultations (71.8%) and clinical examinations (53.9%). These findings highlight notable disparities in the quality and consistency of ANC services delivered across PHCs, suggesting the need for strengthened clinical assessment practices and improved patient–provider interactions during consultations [6].

Another survey in the Qassim region found that while a majority of women were satisfied overall, gaps persisted in aspects of physician communication and health education (e.g., explaining danger signs, privacy, waiting times) [7]. These findings illustrate that while the structural implementation of ANC may be satisfactory, process-related dimensions, notably communication, respect, education, and interpersonal care, remain vulnerable. In particular, studies emphasize negative staff attitudes, poor communication, and inadequate patient education as barriers to ANC attendance and satisfaction [8, 9].

In addition, international literature shows that satisfaction with ANC is influenced by multiple factors beyond clinical care: perceived empathy, respectful maternity care, provider behavior, waiting time, privacy, and quality of information [10]. Maternal satisfaction with antenatal care (ANC) is influenced by multiple dimensions of healthcare quality. These dimensions include structural factors, such as the physical environment and availability of human resources, essential medicines, and supplies; process-related factors, including interpersonal communication, privacy, promptness of care, cognitive support, perceived provider competency, and emotional support; and outcome-related factors, such as the health status of both mother and newborn [11].

Globally, the magnitude of women's satisfaction with ANC services varies substantially. In the United States, approximately 31% of women reported dissatisfaction with ANC services [12]. In Nepal, dissatisfaction was considerably higher, affecting about 62% of women [13]. In contrast, studies from several Asian countries indicate higher levels of maternal satisfaction, typically ranging from 80% to 90% [14-16]. Evidence from African countries shows comparatively lower satisfaction levels, with only 42.94% of women reporting satisfaction with the ANC services they received [17-19].

Maternal satisfaction with antenatal care in Saudi Arabia is strongly influenced by communication quality, cultural sensitivity, and respectful interactions—factors that are especially important given the multicultural healthcare workforce. However, research in the country has largely focused on structural aspects of ANC, such as wait times and service availability, with limited attention to mothers' interpersonal and educational experiences, particularly in relation to care provided by nurses and healthcare assistants (HCAs).

Considering the documented gaps in communication and maternal experience, and the central role of nurses and HCAs in ANC delivery, a post-delivery assessment of maternal perspectives is needed. Such an approach can identify strengths and weaknesses in current ANC practices and guide improvements in training, communication skills, patient education, and culturally sensitive care. Therefore, the present study aims to address this gap by evaluating maternal satisfaction with ANC provided by nurses and HCAs and examining the demographic and obstetric factors associated with these perceptions.

Methods

Study Design and Setting

This retrospective cross-sectional study was conducted among postpartum women in maternity units across Saudi Arabia between January 2024 and December 2024. The study targeted facilities providing antenatal care (ANC) delivered by nurses and healthcare assistants (HCAs), including governmental hospitals, private hospitals, and primary healthcare centers (PHCs).

Sample Size and Participants
A total of 300 postpartum women were enrolled after providing informed consent. Eligible participants were Saudi or non-Saudi mothers who: Received at least one ANC visit during their most recent pregnancy, obtained ANC services from nurses and/or healthcare assistants, and delivered in one of the participating Saudi healthcare facilities. Women with severe postpartum complications that prevented participation were excluded.

Ethical Considerations
All participants were informed about the purpose, procedures, and potential risks or benefits of the study. Written consent was obtained before data collection. Confidentiality was ensured by assigning each participant a unique identification code; no personal identifiers were recorded in the dataset. All data were securely stored and accessible only to the research team. The study adhered to ethical principles outlined by the Saudi Ministry of Health and complied with the Declaration of Helsinki.

Data Collection Procedures
Participants completed a structured questionnaire administered by trained data collectors in Arabic or English, based on participant preference. The questionnaire was adapted from the World Health Organization (WHO) framework for ANC quality and included three main components:
1. Structure – physical environment, availability of staff, equipment, and supplies.
2. Process – interpersonal communication, privacy, timeliness, provider competency, emotional support, and educational counseling.
3. Outcomes – maternal satisfaction and perceived health outcomes for mother and newborn.

Women were asked to reflect on the care they received during pregnancy, and data were collected post-delivery to ensure a comprehensive assessment.

Study Outcomes

Primary outcome: To assess the overall quality of ANC services provided by nurses and healthcare assistants from the perspective of postpartum mothers in Saudi Arabia.

Secondary outcomes: To identify demographic and obstetric factors associated with higher or lower maternal satisfaction scores. To compare perceived ANC quality across different healthcare settings (governmental, private, and PHCs).

Statistical Analysis
Data were analyzed using SPSS version 25. Descriptive statistics (means, standard deviations, frequencies, and percentages) were used to summarize demographic characteristics and ANC quality measures.
For inferential analysis:
- Independent samples t-tests and one-way ANOVA were applied to compare continuous variables.
- Chi-square tests were used for categorical variables.
- Three ANC quality scores—structure, process, and outcome—were generated based on WHO criteria.
- A total ANC quality score was calculated by summing the three component scores.
- Multiple linear regression was performed to identify predictors of total ANC quality.

A p-value < 0.05 was considered statistically significant.

Results:
Table (1) Sociodemographic Characteristics of the Participants shows that Mothers who received ANC in private or other governmental facilities had significantly higher education levels, indicating better educational access in these settings. No significant difference appeared in family income, meaning socioeconomic status was similar across groups.

Table 1. Sociodemographic Characteristics of the Participants (N = 300)

Variable	Government Facilities (n=120)	Private/Other Government Facilities (n=180)	p-value
Age (years) (mean ± SD)	28.9 ± 4.8	29.3 ± 5.1	0.42
Education Level			
– Primary	32 (26.7%)	20 (11.1%)	**<0.05***
– Secondary	58 (48.3%)	70 (38.9%)	
– University or higher	30 (25.0%)	90 (50.0%)	
Family Income			
– Low	48 (40.0%)	62 (34.4%)	0.31
– Middle	60 (50.0%)	93 (51.7%)	
– High	12 (10.0%)	25 (13.9%)	

Table (2) Obstetric History of the Participants shows that: No significant differences were found between groups regarding parity, abortion history, normal delivery, or number of children. This shows that both groups had similar reproductive backgrounds, meaning patient characteristics did not bias ANC outcome comparisons.

Table 2. Obstetric History of the Participants (N = 300)

Variable	Government Facilities (n=120)	Private/Other Government Facilities (n=180)	p-value
Number of Previous Pregnancies (mean ± SD)	2.4 ± 1.2	2.3 ± 1.1	0.58
Previous Abortions			0.67
– None	76 (63.3%)	120 (66.7%)	
– One or more	44 (36.7%)	60 (33.3%)	
History of Normal Labor			0.73
– Yes	78 (65.0%)	120 (66.7%)	
– No	42 (35.0%)	60 (33.3%)	
Number of Living Children (mean ± SD)	2.1 ± 1.0	2.0 ± 0.9	0.48

Table (3) Characteristics of Last Pregnancy shows that: Both groups had identical pregnancy order distribution, indicating balanced cohorts. No significant differences existed in birth spacing or prior pregnancies.

Table 3. Characteristics of Last Pregnancy (N = 300)

Variable	Government Facilities (n=120)	Private/Other Government Facilities (n=180)	p-value
Time Since Last Pregnancy (years) (mean ± SD)	3.2 ± 1.4	3.1 ± 1.3	0.59
Order of Last Pregnancy			0.90
– First	34 (28.3%)	52 (28.9%)	
– Second	42 (35.0%)	62 (34.4%)	
– Third or more	44 (36.7%)	66 (36.7%)	

Table (4) Maternal Delivery Outcomes, shows that the cesarean section rate was significantly higher in governmental tertiary facilities, likely due to referral of high-risk cases. No significant differences in preterm or post-term deliveries indicate similar obstetric risk profiles between groups.

Table 4. Maternal Delivery Outcomes (N = 300)

Outcome	Government Facilities (n=120)	Private/Other Government Facilities (n=180)	p-value
Mode of Delivery			
– Normal vaginal delivery	54 (45.0%)	108 (60.0%)	**<0.05***
– Cesarean section	66 (55.0%)	72 (40.0%)	
Preterm Delivery	18 (15.0%)	27 (15.0%)	0.99
Post-term Delivery	6 (5.0%)	8 (4.4%)	0.81

Table 5. Neonatal Outcomes show that: Neonatal outcomes—including birth weight, NICU admission, and feeding method—showed no significant differences across facilities. This suggests that neonatal care quality was generally comparable. Neonatal mortality was extremely low in both groups.

Table 5. Neonatal Outcomes (N = 300)

Outcome	Government Facilities (n=120)	Private/Other Government Facilities (n=180)	p-value
Birth Weight (grams) (mean ± SD)	3050 ± 410	3070 ± 390	.54
Neonatal Deaths	2 (1.7%)	1 (0.6%)	.42
NICU Admission	14 (11.7%)	16 (8.9%)	.41
Feeding Method			
– Exclusive breastfeeding	66 (55.0%)	96 (53.3%)	.68
– Mixed feeding	40 (33.3%)	62 (34.4%)	
– Formula only	14 (11.7%)	22 (12.2%)	

Table (6) Maternal Postpartum Complications shows that: Maternal complications were low and similar across groups, indicating that differences in facility type did not affect maternal immediate postpartum health.

Table 6. Maternal Postpartum Complications (N = 300)

Complication	Government Facilities (n=120)	Private/Other Government Facilities (n=180)	p-value
Postpartum Hemorrhage	4 (3.3%)	6 (3.3%)	0.99
Infection	2 (1.7%)	3 (1.7%)	0.99
Hypertensive complications	3 (2.5%)	4 (2.2%)	0.88

Table (7) Neonatal Characteristics show that: No differences in Apgar scores or neonatal gender distribution were found. Neonatal well-being was consistent across healthcare settings.

Table 7. Neonatal Characteristics (N = 300)

Variable	Government Facilities (n=120)	Private/Other Government Facilities (n=180)	p-value
Apgar Score at 5 Minutes (mean ± SD)	8.8 ± 0.7	8.9 ± 0.6	0.33
Gender			
– Male	62 (51.7%)	90 (50.0%)	0.77
– Female	58 (48.3%)	90 (50.0%)	

Table (8) Overall Interpretation of ANC Outcomes, shows that: Education level differed significantly between groups, but obstetric and neonatal outcomes did not, showing comparable healthcare quality overall. The only major difference was the higher cesarean rate in governmental tertiary hospitals, likely

due to referral of high-risk pregnancies.

Table 8. Overall Interpretation of ANC Outcomes

Summary Indicator	Government Facilities	Private/Other Government Facilities	Significant?
Education level	Lower	Higher	**Yes**
ANC outcomes (pre/post-term, complications, NICU)	Similar	Similar	No
Cesarean section rate	Higher	Lower	**Yes**

Discussion:

This study evaluated maternal perspectives on the quality of antenatal care (ANC) delivered by nurses and healthcare assistants across different healthcare settings in Saudi Arabia. The findings indicate that, although sociodemographic differences existed—particularly in maternal education levels—most obstetric, neonatal, and postpartum outcomes were comparable across facilities. These results provide important insights into the consistency and equity of ANC service delivery in the Saudi healthcare system.

Sociodemographic Profile and ANC Utilization revealed that the finding was the significantly higher education level among women attending private or other governmental healthcare settings, whereas family income and other demographic variables were similar between groups. Education is widely recognized as a major determinant of ANC utilization and perceived quality. Multiple studies have demonstrated that women with higher education are more likely to seek ANC early, attend more visits, and proactively engage in pregnancy-related health decisions [20, 21]. Higher educational attainment also correlates with better understanding of counselling, higher expectations for care, and improved maternal self-advocacy [22]. The lack of difference in income between groups suggests that facility choice may be influenced more by knowledge and preferences rather than purely economic capacity, a pattern documented in other middle-income countries [23].

In the present study, Reproductive histories—including parity, abortion history, prior normal delivery, and number of living children—were similar between groups, indicating balanced cohorts. This strengthens the validity of comparisons in later outcomes, as differences cannot be attributed to obstetric risk variation. The two groups also showed comparable birth spacing and pregnancy order. Such consistency reduces confounding effects and supports the interpretation that differences, where present, may relate to service delivery rather than clinical risk profiles.

The only significant difference in maternal delivery outcomes was the higher cesarean section (CS) rate in governmental tertiary facilities. This finding aligns with international evidence showing that Regarding CS trends, in 2018, the global CS rate was 21.1%, with an average of 8.2% in developing countries, 24.2% in less developed countries, and 27.2% in developed countries [24]. At the two extremes of CS rates are Sub-Saharan African countries with the lowest rate (5%) and the countries of Latin America and the Caribbean with the highest rate (42.8%). The five countries with the highest cesarean section (CS) rates globally were the Dominican Republic (58.1%), Brazil (55.7%), Cyprus (55.3%), Egypt (51.8%), and Turkey (50.8%), which also recorded the highest rates in the Americas, Asia, and Africa [24].

In Europe, Romania had the highest CS rate at 46.9%. On the other hand, the lowest CS rates in the world were observed in Africa, with Chad (1.4%), Niger (1.4%), Ethiopia (1.9%), Madagascar (2%), and Cameroon (2.4%). In other regions, the lowest rates were recorded in Timor-Leste (3.5%) in Asia, Papua New Guinea (3.0%) in Oceania, the Netherlands (14.9%) in Europe, and Haiti (5.4%) in Latin America [24]. Regarding Greece, official CS rates have not been recorded; however, research indicates very high rates, reaching up to 58% [25].

Neonatal Outcomes and Characteristics revealed that birth weight, neonatal mortality, NICU admission, Apgar scores, gender distribution, and feeding methods showed no significant differences between facility types. These findings are encouraging, as they indicate consistent neonatal care quality and comparable early neonatal well-being across healthcare settings. Studies from Saudi Arabia and the Gulf region have similarly reported that neonatal outcomes do not significantly differ between public and private facilities when essential perinatal care is standardized [26-28].

Maternal Postpartum Complications revealed that postpartum hemorrhage, infections, and hypertensive complications were rare and similar across groups, suggesting that facility type did not influence immediate maternal postpartum safety. This consistency reflects the robust emergency obstetric care available in Saudi Arabia, supported by national quality-improvement standards and clinical guidelines [29].

Despite differences in maternal education, the overall quality of ANC—as reflected by observable outcomes—was comparable across governmental and private/other governmental settings. This suggests that Saudi Arabia's standardized ANC protocols contribute to relatively uniform care delivery and outcomes. However, the higher educational attainment in the private/other governmental group may explain differences in certain preventive practices reported earlier (e.g., routine assessments, counselling), as highly educated women are more likely to request additional information and expect more comprehensive services.

Implications for Nursing and Healthcare Assistant Practice

Given that nurses and HCAs play a central role in delivering ANC, the consistency of core ANC outcomes across settings suggests that frontline providers are adhering to essential ANC practices. However, the influence of maternal education on perceived care quality indicates a need to enhance: Health counselling strategies, Patient communication skills, Cultural sensitivity, and Individualized education tailored to different literacy levels

Strengths and Limitations

Strengths:

- Inclusion of 300 postpartum mothers allows a comprehensive assessment.
- Comparison across multiple facility types increases generalizability.
- The use of standardized ANC indicators strengthens reliability.

Limitations:

- Self-reported data may be subject to recall bias.
- The study did not include direct facility audits or provider competency assessments.
- Cross-sectional design limits causal inference.

Conclusion

The study reveals that while maternal education differed significantly by facility type, obstetric and neonatal outcomes were consistently similar across all healthcare settings, reflecting equitable and standardized ANC practices in Saudi Arabia. The higher CS rate in tertiary facilities is likely due to referral of high-risk pregnancies rather than variations in ANC quality. Strengthening communication and individualized counselling by nurses and HCAs, particularly for less educated mothers, may further improve maternal perceptions of ANC quality. Continued investment in patient-centered ANC practices will support better maternal experiences and enhance adherence to recommended ANC schedules.

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