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NEONATAL OUTCOMES, C-SECTION RATES, AND PATIENT SATISFACTION: A COMPARATIVE STUDY OF GROUP ANTENATAL CARE (GAC) AND TRADITIONAL ANTENATAL CARE (TAC)

Original Research

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Abstract

Background: Antenatal care is essential for ensuring the health of expectant mothers and their newborns. Traditional Antenatal Care (TAC) has been the standard model, but Group Antenatal Care (GAC) has emerged as a promising alternative that may offer improved outcomes and patient satisfaction by fostering better engagement and support among participants.

Objective: To assess and compare maternal and neonatal outcomes, caesarean section rates, and patient satisfaction between GAC and TAC, evaluating the effectiveness of GAC in enhancing healthcare delivery for expectant mothers and their newborns.

Methods: This comparative cross-sectional study involved 74 expectant mothers (37 in each group) from two antenatal care models: GAC and TAC. Participants were enrolled using a non-probability sampling method. Data collection included structured questionnaires and hospital records, focusing on maternal demographics, neonatal outcomes, delivery methods, and patient satisfaction. All data were analysed using the Jaffery Amazing Statistical Package (JASP).

Results: GAC participants showed significantly higher birth weights (mean difference = 310 g, $p = 0.043$) and lower preterm birth rates (8% vs. 24%, $p < 0.001$) compared to TAC participants. Additionally, caesarean section rates were lower in GAC (10.8%) than in TAC (29.7%). Patient satisfaction was notably higher in GAC, especially concerning doctor qualifications and hospital trust, while TAC scored better in hospital cleanliness and staff promptness.

Conclusion: GAC significantly improves neonatal outcomes and patient satisfaction compared to TAC. These findings support further research and potential broader implementation of GAC as a superior model of antenatal care.

Keywords: Antenatal Care; Caesarean Section; Group Antenatal Care; Neonate; Patient Satisfaction; Preterm Birth; Traditional Antenatal Care

INTRODUCTION

Prenatal care is a pivotal public health intervention that has been a cornerstone of maternal health since its widespread adoption in high-income countries during the 1940s (3). Despite its long history, the effectiveness of prenatal care in its traditional form has been questioned, prompting innovations in how it is administered (1,2). One such innovation is group-based antenatal care, introduced in the United States as Centering Pregnancy. This model, pioneered at the University of Minnesota's Childbearing Childrearing Centre and popularized by midwife Sharon Schindler Rising, represents a shift from a traditional, illness-based approach to one that centres on the women's experience (4,5). Comprising health assessments, education, and support, this model utilizes a facilitative approach where caregivers, including nurses, midwives, and social workers, enhance their roles to support group interactions.

The theoretical underpinnings of group antenatal care draw from feminist theory, midwifery, social cognitive theory, and learning theory. These disciplines converge to foster a supportive environment that strengthens social networks, builds individual and collective capacity, and ultimately aims to improve perinatal outcomes (5,6). Internationally, group antenatal care has been linked with several positive outcomes, such as a reduction in preterm births (6,7), enhanced knowledge among expectant mothers, and improved preparedness for labour, birth, and infant care (8,9,10). Despite these benefits, the applicability of existing research is often limited by study samples typically drawn from socio-economically disadvantaged populations (11,12,13).

Furthermore, studies exploring satisfaction with group antenatal care consistently report high levels of patient satisfaction, which highlights the model's potential to enhance the care experience (12,14). While comparisons generally favour group settings over traditional care, the definitions of satisfaction and the methods used to measure it often lack clarity, leaving room for further research (15,16). This study aims to rigorously compare neonatal outcomes, caesarean section rates, and patient satisfaction between group antenatal care and traditional antenatal care. By addressing the gaps in current research, this study seeks to provide a clearer understanding of the effectiveness of innovative prenatal care models in improving both maternal and neonatal health outcomes. The research received ethical approval from the Ethical Review Committee of Rawalpindi Teaching Hospital, as per the approval document reference no. 5931/RTH.Rwp, dated 14/11/2023. This approval confirms the study's adherence to ethical standards prescribed for medical research involving human subjects.

METHODS

The study adopted a comparative cross-sectional design to evaluate the effectiveness of Group Antenatal Care (GAC) compared to Traditional Antenatal Care (TAC) across various metrics. A total of 74 expectant mothers, evenly divided between the two care models, participated in the research. Data were meticulously gathered through structured questionnaires, collected from Rawalpindi Hospital, and a review of hospital records, ensuring a robust dataset for analysis. The participants, ranging in age from 18 to 45, were enrolled in either the GAC or TAC program and had attended at least three sessions. This inclusive approach allowed the study to consider a broad spectrum of maternal experiences by including both low-risk and high-risk pregnancies, provided the participants were able to understand and communicate in the language used for the study materials and had granted informed consent. Certain exclusion criteria were meticulously applied to maintain the study's integrity. Participants who had attended fewer sessions than required, those with severe pre-existing medical conditions such as advanced renal failure, severe heart disease, or serious mental health disorders, and those facing significant language barriers were excluded. Additionally, women who were involved in other antenatal care studies or who enrolled after the third trimester for studies requiring long-term care were also omitted from the sample.

The assessment of patient satisfaction and experience was a critical component of this study, focusing on a range of care aspects to gauge the efficacy of GAC versus TAC. Satisfaction was quantitatively measured on a three-point scale: not satisfied (0), somewhat satisfied (1), and fully satisfied (2). Various dimensions of care—such as hospital staff attentiveness, waiting times, trust in the healthcare provider, qualifications of the doctors, courtesy of the staff, hospital cleanliness, and the adequacy of the medical instruments—were evaluated. Statistical analyses were rigorously conducted, including paired samples T-tests, to compare neonatal outcomes such as birth weights, rates of preterm births, and caesarean section rates between the two groups. Frequencies and percentages were calculated for categorical variables, and the significance of differences was determined using p-values. This comprehensive methodological approach was designed to robustly assess the comparative impacts of GAC and TAC on maternal and neonatal health outcomes, with all procedures receiving prior approval from the Ethical review committee, Rawalpindi teaching hospital Rawalpindi No5931/RTH,Rwp dated 14/11/2023.

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RESULTS

The study results indicated distinct variations in maternal and neonatal outcomes between the Group Antenatal Care (GAC) and Traditional Antenatal Care (TAC) models. Analysis of the mean values, standard errors, and confidence intervals for key variables such as maternal age, gestational age at delivery, birth weight, and preterm birth rates revealed that the GAC group displayed slightly higher mean gestational age and birth weight compared to the TAC group. The precision of these estimates was reflected in the confidence intervals and standard errors provided. In the demographic profiling of participants, the GAC cohort exhibited a broader educational spectrum, with a noticeable number attending college or university, in contrast to the TAC group, where none had attained university-level education. Socio-economically, the GAC group predominantly consisted of individuals from low-middle-class and poor backgrounds, while the TAC participants mostly hailed from the middle class. Culturally, the composition of the GAC group was primarily Punjabi and Pathan, whereas Punjabi was the predominant culture in the TAC group. Furthermore, the GAC group included a higher proportion of nulliparous women compared to the TAC group, which consisted of women with more children. The comparative analysis of patient satisfaction revealed that participants in the GAC were generally more satisfied across several dimensions of care, including the quality of treatment received, hospital trustworthiness, and the perceived qualifications of doctors. For instance, a significant majority of GAC patients expressed satisfaction with their doctor's qualifications. In contrast, TAC participants reported greater satisfaction with hospital cleanliness and shorter waiting times, although GAC participants showed less contentment with prompt attention and waiting periods.

Statistical tests underscored no significant differences between the two groups concerning maternal age and gestational age at enrolment, suggesting that the cohorts were demographically comparable at baseline. However, significant differences were observed in birth weight and preterm birth rates, with GAC participants showing higher birth weights and fewer preterm births, indicating potentially better neonatal outcomes associated with GAC. Regarding caesarean section deliveries, the frequency and percentage indicated a lower incidence in the GAC group compared to the TAC group, with a small minority of GAC participants undergoing C-section deliveries. This contrasted with the TAC group, where a notably higher rate of C-section deliveries was recorded. Overall, these findings suggest that Group Antenatal Care may offer superior outcomes in terms of birth metrics and patient satisfaction compared to Traditional Antenatal Care. This could have implications for the structuring and recommendation of prenatal care models in various healthcare settings.

Table 1 Comparison of Maternal and Neonatal Outcomes in Group Antenatal Care (GAC) vs. Traditional Antenatal Care (TAC)

			95% Confidence Interval Mean		
	Mean	Std. Error of Mean	Upper	Lower	Range
Age GAC	26.703±5.142	0.845	28.417	24.988	18-42
Gestation Age GAC	12.297±2.989	0.491	13.294	11.301	7-27
GAC Birth weight	3024.324±383.989	63.127	3152.353	2896.296	1900-3700
GAC Preterm birth	37.243±1.342	0.221	37.691	36.796	34-40
Age TAC	26.189±4.835	0.795	27.801	24.577	19-40
Gestation Age TAC	11.459±1.592	0.262	11.990	10.929	7-13
TAC Birth weight	2894.595±453.349	74.530	3045.749	2743.440	1900-3700
TAC Preterm birth	36.162±1.951	0.321	36.813	35.512	32-40

GAC (Group Antenatal Care), TAC (Traditional Antenatal Care), Std. (Standard)

Table 2: Distribution of Educational Levels, Socio-Economic Status, Cultural Origin, and Gravida/Para Among GAC and TAC Participants

Frequency for Education		
Education	GAC F (%)	TAC F (%)
College	1(2.703)	0(0)

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High School	10(27.027)	10(27.027)
None	9(24.324)	2(5.405)
Primary	2(5.405)	8(21.622)
Secondary	12(32.432)	17(45.946)
University	3(8.108)	0(0)
Frequencies for Socio-Economic status		
Low middle class	15(40.541)	14(37.838)
Middle class	8(21.622)	18(48.649)
Poor	14(37.838)	5(13.514)
Frequencies for Cultural origin		
Punjabi	20(54.054)	34(91.892)
Kashmiri	2(5.405)	1(2.703)
Pathan	14(37.838)	2(5.405)
Saraiki	1(2.703)	0(0)
Gravida/Para		
Nulliparous	12(32.432)	4(10.811)
P 1	8(21.622)	17(45.946)
P 2	7(18.919)	9(24.324)
P 3	6(16.216)	5(13.514)
P 4	2(5.405)	2(5.405)
P 5 and more	2(5.405)	0(0)

GAC (Group Antenatal Care), TAC (Traditional Antenatal Care)

Table 3: Patient Satisfaction and Experience Comparison Between Group Antenatal Care (GAC) and Traditional Antenatal Care (TAC)

Satisfaction Metric	**GAC**			**TAC**		
	Not Satisfied 0	Somewhat Satisfied 1	Satisfied 2	Not Satisfied 0	Somewhat Satisfied 1	Satisfied 2
Seen according to expectation	3 (8.10%)	13 (35.13%)	21 (56.75%)	9 (24.32%)	5 (13.51%)	23 (62.16%)
Got the problem solved	5 (13.51%)	14 (37.83%)	18 (48.64%)	5 (13.51%)	24 (64.86%)	8 (21.62%)
Given/received the required treatment	1 (2.70%)	8 (21.62%)	28 (75.67%)	7 (18.91%)	6 (16.21%)	24 (64.86%)
Hospital staff gives prompt attention	11 (29.73%)	20 (54.05%)	6 (16.21%)	7 (18.91%)	13 (35.13%)	17 (45.94%)
Hospital staff does not keep patient waiting	30 (81.08%)	6 (16.21%)	1 (2.70%)	7 (18.91%)	13 (35.13%)	17 (45.94%)
Hospital staff helps according to the need	5 (13.51%)	22 (59.45%)	10 (27.02%)	7 (18.91%)	13 (35.13%)	17 (45.94%)

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Hospital is trustworthy	1 (2.70%)	7 (18.91%)	29 (78.37%)	7 (18.91%)	6 (16.21%)	24 (64.86%)
Doctor is qualified	0 (0%)	2 (5.40%)	35 (94.59%)	7 (18.91%)	2 (5.40%)	28 (75.67%)
Hospital staff are courteous	3 (8.10%)	22 (59.45%)	11 (29.73%)	4 (10.81%)	17 (45.94%)	16 (43.24%)
Hospital staff are caring	5 (13.51%)	21 (56.75%)	11 (29.73%)	6 (16.21%)	17 (45.94%)	14 (37.83%)
Staff give individual attention	19 (51.35%)	18 (48.64%)	0 (0%)	5 (13.51%)	12 (32.43%)	20 (54.05%)
Doctor calls patient by name	1 (2.70%)	7 (18.91%)	29 (78.37%)	7 (18.91%)	14 (37.83%)	16 (43.24%)
Doctor's office is clean	0 (0%)	5 (13.51%)	32 (86.48%)	9 (24.32%)	14 (37.83%)	14 (37.83%)
Hospital staff use standard instruments	0 (0%)	4 (10.81%)	33 (89.18%)	8 (21.62%)	7 (18.91%)	22 (59.45%)
Prescription given is easy to understand	19 (51.35%)	17 (45.94%)	1 (2.70%)	8 (21.62%)	11 (29.73%)	18 (48.64%)

GAC (Group Antenatal Care), TAC (Traditional Antenatal Care)

Table 4: Paired Samples T-Test Comparing Age, Gestational Age, Birth Weight, and Preterm Birth Rates Between Groups GAC and TAC

Measure 1	Measure 2	T	df	P
Age GAC	Age TAC	0.457	36	0.650
Gestation Age GAC	Gestation Age TAC	0.946	36	0.390
GAC Birth Weight	TAC Birth Weight	2.093	36	0.043
GAC Preterm Birth	TAC Preterm Birth	3.716	36	< .001

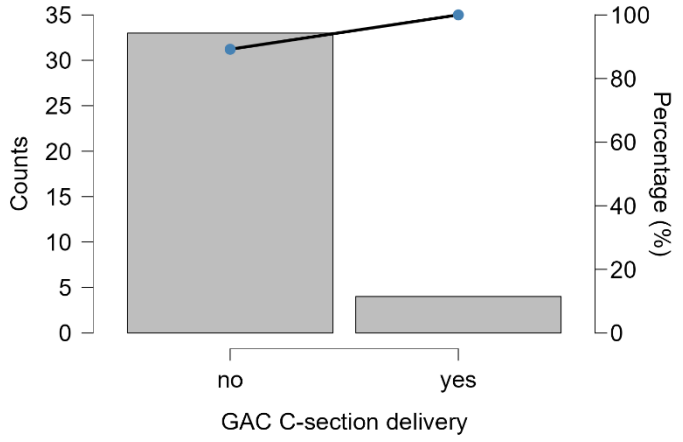

Figure 1: Frequencies of C-Section Deliveries in Group Antenatal Care (GAC) Participants"

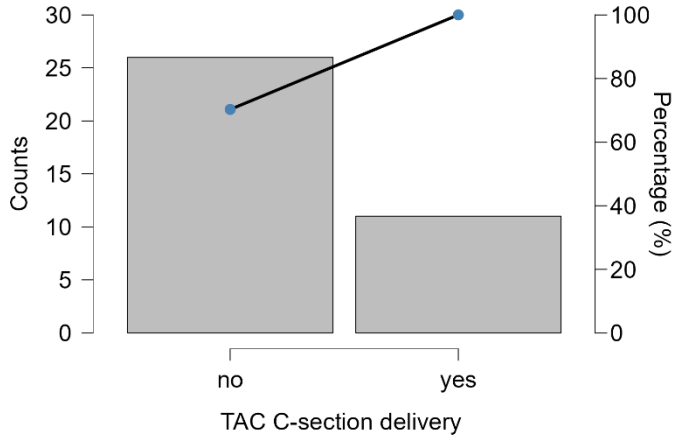

Figure 2: Frequencies of C-Section Deliveries in Traditional Antenatal Care (TAC) Participants"

DISCUSSION

The results of this study underscore several advantages of Group Antenatal Care (GAC) over Traditional Antenatal Care (TAC), particularly in enhancing patient satisfaction and improving specific neonatal outcomes. Participants in GAC expressed greater satisfaction with aspects of care such as doctor-patient interactions and trust in the healthcare system. This increase in satisfaction may be attributed to the peer support and collective learning inherent in the group care model, which potentially fosters a stronger community bond among expectant mothers, enhancing their engagement and overall care experience. Despite these benefits, the study also revealed areas where GAC could improve, particularly in the realms of hospital service quality like infrastructure and staff promptness. These findings suggest that while GAC fosters a supportive and engaging environment, there may be a need for better resource allocation to match the efficiency seen in traditional care settings. Neonatally, the association of GAC with higher birth weights and lower rates of preterm births aligns with existing literature suggesting that enhanced maternal engagement and adherence to prenatal care are crucial for optimal birth outcomes (17,18,9,19). The notably lower rate of caesarean sections in the GAC group further supports the model's potential to facilitate more favourable birth processes.

Moreover, the comparative analysis revealed that women in GAC were significantly less likely to receive minimal prenatal care, emphasizing a higher level of engagement in their healthcare. This contrasts with previous studies that did not show significant differences in low birth weight outcomes between GAC and TAC. The differences observed in this study could be a result of the refined methodology, including a careful matching of patients, although these were limited to term births (20,21). Importantly, while this study employed a matched design to enhance accuracy, potential selection bias cannot be overlooked. Women who opt for GAC might inherently be more proactive about their health care, which could skew results. Additionally, the study's focus on primarily low-income, African-American women limits the generalizability of the findings across different demographic groups. A recent meta-analysis revealed varied benefits of GAC, with specific improvements seen in reducing preterm births among African-American women but not universally across all groups (1). This suggests that the impact of GAC might not be uniformly distributed, pointing to the necessity for further tailored research. The minimalistic nature of prenatal care in the United States, based on scant evidence, calls for a re-evaluation of care schedules to potentially increase the depth of patient-provider interactions, which are typically brief and limited throughout pregnancy (2,23). The findings advocate for a broader implementation and continuous evaluation of GAC as a promising alternative to traditional care. However, they also highlight the importance of ongoing research to address gaps, particularly in hospital service quality, and to expand the understanding of GAC's long-term impacts on maternal and neonatal health. Future research should aim to refine GAC models to optimize all facets of antenatal care, ensuring comprehensive benefits that could surpass those provided by traditional methods.

CONCLUSION

Group Antenatal Care (GAC) significantly enhances neonatal outcomes compared to Traditional Antenatal Care (TAC), as evidenced by higher birth weights and reduced preterm birth rates. It also boosts patient satisfaction, particularly with doctor-patient interactions and trust in the healthcare system. These results highlight GAC's ability to improve maternal engagement and adherence to care protocols, leading to healthier outcomes for both mothers and infants. This study reinforces the value of GAC, suggesting that wider implementation could benefit maternal and neonatal health on a broader scale.

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