Journal of Obstetrics, Gynecology and Cancer Research | ISSN: 2476-5848

The Effect of Structured Antenatal Instruction on Attitudes Toward Antenatal Care Among Primigravida Women

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Article Info

10.24200/jogcr.11.10.944

Received: 2025/12/29
Accepted: 2026/02/20
Published Online: 15 Aug. 2026

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ABSTRACT

Background & Objective: Mothers' attitudes now explicitly refers to attitudes toward antenatal (prenatal) care, including perceptions, beliefs, and willingness to engage in antenatal services. First-time mothers often exhibit negative perceptions or limited engagement with antenatal services. This study was conducted with aim to evaluate the effect of structured antenatal instruction on improving maternal attitudes toward prenatal care among primigravida women.

Materials & Methods: This quasi-experimental pretest-posttest control group study was conducted at Al-Hindiya Teaching Hospital and the Obstetrics and Gynecology Teaching Hospital in Karbala, Iraq. A total of 150 first-time mothers were recruited via purposive sampling and allocated equally to a study group (n=75) receiving structured antenatal instruction and a control group (n=75) receiving routine care. Maternal attitudes were measured before and immediately after the intervention using a validated 15-item Likert-scale questionnaire. Data were analyzed using paired and independent t-tests, repeated measures ANOVA, and effect size calculations. $P<0.05$ was considered statistically significant.

Results: Pre-intervention, the majority of participants in the study and control groups exhibited negative attitudes (76.0% and 77.3%, respectively). Post-intervention, 90.7% of the study group demonstrated positive attitudes (42.85±18.26) compared to only 29.3% in the control group (23.65±12.79), with a highly significant difference ($P<0.001$, $\eta^2 = 0.42$; Cohen's $d=1.10$).

Conclusion: Structured antenatal instruction substantially improves maternal attitudes toward prenatal care. Integration of interactive instructional programs into routine antenatal services is recommended, with follow-up reinforcement to sustain positive attitudes and promote optimal maternal and neonatal outcomes.

Keywords: Antenatal instruction, Maternal attitudes, Prenatal care, Primigravida women, Quasi-experimental study

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1. Introduction

Antenatal care is a cornerstone of maternal and neonatal health, aiming not only to monitor pregnancy but also to prepare women physically and psychologically for childbirth and motherhood. Among the various components of antenatal care, structured antenatal instruction has gained increasing attention, particularly for first-time mothers, as it targets maternal attitudes, preparedness, and overall well-being during pregnancy **(1)**.

Pregnancy represents a major life transition accompanied by profound physiological, psychological, and social changes. For primigravida women, the absence of prior experience often contributes to heightened anxiety, uncertainty, and fear related to pregnancy, labor, and childbirth **(2)**. These emotional challenges may negatively influence maternal attitudes toward antenatal care and childbirth, which in turn can affect health-seeking behaviors and pregnancy outcomes **(3)**.

Structured antenatal instruction programs are designed to address these challenges by providing systematic and evidence-based information about pregnancy physiology, stages of labor, pain management strategies, breastfeeding, and newborn care **(4,5)**. Beyond improving knowledge, such programs play a crucial role in shaping maternal attitudes, enhancing self-confidence, and reducing fear and anxiety associated with childbirth **(6)**. Previous studies have demonstrated that women who participate in structured antenatal instruction report greater

readiness for childbirth, improved confidence in their maternal role, and more positive perceptions of the childbirth experience **(7,8)**.

Maternal attitudes toward antenatal care are recognized as key determinants of engagement in prenatal services and the adoption of healthy behaviors during pregnancy. Positive attitudes have been linked to regular antenatal attendance, adherence to nutritional and health recommendations, and effective birth preparedness, all of which contribute to favorable maternal and neonatal outcomes **(9)**. However, negative attitudes and inadequate preparedness are associated with delayed care-seeking, increased fear of childbirth, and avoidance of health services, thereby increasing the risk of pregnancy and delivery complications **(10)**.

In addition, structured antenatal instruction influences women's participation in decision-making related to pregnancy and childbirth. Evidence suggests that informed women are more likely to effectively communicate with healthcare providers, actively engage in birth planning, and make informed choices regarding delivery options, including a reduction in unnecessary cesarean sections **(11,12)**. Antenatal instruction empowers first-time mothers during a critical period of transition by enhancing knowledge and fostering positive attitudes.

Despite strong evidence supporting its benefits, the implementation and evaluation of structured antenatal instruction programs remain inconsistent across healthcare settings, particularly in low- and middle-income contexts. Moreover, limited research has specifically examined the impact of such programs on maternal attitudes toward antenatal care among primigravida women **(13)**. Therefore, the present study was conducted with aim to evaluate the effect of structured antenatal instruction on improving maternal attitudes toward antenatal care among first-time mothers.

2. Materials and Methods

This quasi-experimental pretest-posttest control group was conducted at the antenatal outpatient clinics of Al-Hindiya Teaching Hospital and the Obstetrics and Gynecology Teaching Hospital in Karbala Governorate, Iraq. The study included an intervention group, which received the structured instructional program, and a control group, which received routine antenatal care. Maternal attitudes were measured at baseline, immediately after the intervention, and at a follow-up four weeks later, allowing assessment of both immediate and retained attitudinal changes.

A total of 150 primigravida women were recruited using purposive sampling and allocated equally into the intervention group (n=75) and control group (n=75). Group assignment was performed using alternating allocation based on clinic attendance days to ensure comparability between the two groups. Eligible participants aged 18-45 years with a gestational age of 16-28 weeks, able to understand Arabic, and willing to provide informed consent. Women with high-risk pregnancies or severe chronic medical conditions were excluded from the study to minimize confounding factors.

Data were collected using a structured questionnaire developed from a comprehensive review of relevant literature. The instrument included two sections: sociodemographic and obstetric characteristics (age, education, occupation, gestational age) and maternal attitudes toward antenatal care and pregnancy practices. The attitudes section contained 15 items on a 3-point Likert scale (agree, neutral, disagree), with higher scores indicating more positive attitudes. Content validity was ensured by a panel of obstetrics and maternal health experts, and a pilot test with 10 primigravida women confirmed clarity and feasibility. The Cronbach's alpha of 0.88 indicated high internal consistency.

The structured antenatal instruction program consisted of four interactive sessions, each lasting 45–60 minutes, conducted in small groups. Session content included pregnancy care, nutrition and healthy lifestyle, recognition of danger signs, and preparation for childbirth. Teaching methods comprised lectures, group discussions, demonstrations, visual aids, and role-playing to actively engage participants and reinforce learning. The control group received routine antenatal care without additional structured instruction.

Data was collected in three stages: pre-test at baseline, immediate post-test after the intervention, and follow-up four weeks later. Each participant completed the questionnaire under supervision, requiring approximately 20-25 minutes, ensuring standardized administration and minimizing response bias.

Data were analyzed using SPSS (version 24). Descriptive statistics (means, standard deviations, frequencies, and percentages) summarized participants' characteristics and attitude scores. Inferential statistics included paired t-tests for within-group comparisons, independent sample t-tests for between-group comparisons, and repeated measures ANOVA to examine time, group, and interaction effects. Effect sizes were calculated using Cohen's d and partial eta squared (η^2), with statistical significance set at $P<0.05$.

3. Results

The study and control groups were comparable in terms of socio-demographic characteristics. The mean age of participants in the study and control groups was similar (23.30±3.2 years vs. 23.81±3.1 years), and there were no significant differences between the two groups in education level, occupation, residence, frequency of antenatal visits, or sources of pregnancy information ($P>0.05$ for all) (Table 1). This result indicates that both groups were well-matched at

baseline, allowing any subsequent differences in outcomes to be attributed to the antenatal care intervention rather than demographic factors.

Table 2 presents the overall pre-test attitudes of primigravida women toward antenatal care in the study and control groups. The results revealed that the majority of participants in both groups had negative attitudes, with 76.0% in the study group and 77.3% in the control group, reflected by mean total scores of 23.1±8.22 and 22.83±8.87, respectively. Only a small proportion of participants demonstrated positive attitudes, with 24.0% in the study group and 22.7% in the control group.

The primigravida women's attitudes toward antenatal care was compared between the study and control groups during the pre-test phase (Table 3). The mean total scores were 23.1±8.22 for the study group and 22.83±8.87 for the control group, indicating similar baseline attitudes in both groups. The t-test value of 0.467 with a significance level of 0.541 demonstrates that there was no statistically significant difference between the two groups at the pre-test. The small effect size (η^2=0.002) further confirms that the variation in attitudes between the study and control groups before the instructional intervention was minimal.

The results of Table 4 present the overall post-test attitudes of primigravida women toward antenatal care in the study and control groups. The findings showed a substantial improvement in the study group, with 90.7% of participants demonstrating positive attitudes, reflected by a mean total score of 42.85±18.26. Only a small proportion (9.3%) exhibited negative attitudes. In contrast, the control group continued to show mostly negative attitudes, with 70.7% of participants scoring in the negative range (23.65±12.79) and only 29.3% demonstrating positive attitudes.

The study group had a significantly higher mean total score (42.85±18.26) compared to the control group (23.65±12.79), with a t-value of 11.892 and a significance level of 0.000, indicating a highly statistically significant difference (Table 5). The effect size (η^2=0.42) reflects a large impact of the instructional intervention on improving attitudes toward antenatal care.

Table 1. Distribution of the Study Samples by their Socio-demographic Variables

Variable	Category	Study Group (n=75)	Control Group (n=75)	Chi-square	P-value
Age (years)	18-22	28(37.3%)	30(40.0%)	0.267	0.875
	23-27	35(46.7%)	32(42.7%)		
	28-32	12(16.0%)	13(17.3%)		
	Mean±SD	23.30±3.2	23.81±3.1		
Level of Instruction	Read and Write	5(6.7%)	6(8.0%)	1.432	0.699
	Primary	12(16.0%)	13(17.3%)		
	Secondary	30(40.0%)	28(37.3%)		
	University	28(37.3%)	28(37.3%)		
Occupation	Housewife	40(53.3%)	42(56.0%)	0.267	0.876
	Employed	25(33.3%)	23(30.7%)		
	Student	10(13.3%)	10(13.3%)		
Residence	Urban	45(60.0%)	43(57.3%)	0.133	0.715
	Rural	30(40.0%)	32(42.7%)		
Frequency of Antenatal Visits so far	None	10(13.3%)	12(16.0%)	1.267	0.533
	1-2 times	20(26.7%)	21(28.0%)		
	3-4 times	25(33.3%)	24(32.0%)		
	>4 times	20(26.7%)	18(24.0%)		
Source of Information on Pregnancy	Family/friends	30(40.0%)	28(37.3%)	2.134	0.545
	Social media	25(33.3%)	27(36.0%)		
	Health professionals	50(66.7%)	48(64.0%)		
	TV/Radio	15(20.0%)	18(24.0%)		
	Books or leaflets	10(13.3%)	12(16.0%)		

No. Number; %= Percentage; M= Mean; SD= Standard Deviation

Table 6 illustrates the within-group changes in attitudes toward antenatal care. The study group demonstrated a significant increase in attitude scores, from a pre-test mean of 23.10±8.22 to a post-test mean of 42.85±18.26, with a paired t-test value of 14.21 (P<0.001) and a large effect size (Cohen's d=1.10). This result indicates a substantial improvement in participants' positive attitudes following the instructional program. Conversely, the control group showed no significant change in attitudes (22.83±8.87 to 23.65±12.79, d=0.07, P=0.432), reinforcing that the intervention effectively influenced attitudinal change.

The significant main effect of time (F=62.45, P<0.001, η^2=0.30) indicates a general improvement in attitudes across all participants. The significant time×group interaction (F=59.20, P<0.001, η^2=0.29) shows that the improvement in attitudes was much greater in the study group compared to the control group (Table 7). These results support the instructional program effectively enhanced positive attitudes toward antenatal care, whereas the control group's attitudes remained largely unchanged.

Table 2. Primigravida Women's Attitudes about Antenatal Care (Pre-test)

Weighted	Study Group			Control Group		
	No.	%	Mean±SD	No.	%	Mean±SD
Negative	57	76.0		58	77.3	
Positive	18	24.0	23.1±8.22	17	22.7	22.83±8.87
Total	75	100		75	100	

M: Mean for total score, SD: Standard Deviation for total score; (Negative ≤30, Positive >30)

Table 3. Statistical Variations in Primigravida Women's Attitudes about Antenatal Care between the Study and Control Groups (Pre-test)

Groups	Mean±SD	t (df=148)	η^2	Sig (p-value)
Study	23.10±8.22	0.467	0.002	0.541
Control	22.83±8.87			

level at 0.05. M: Mean, SD: Standard Deviation, t: t-test, d.f: Degree of Freedom, η2= Eta squared; Sig: Significance level at 0.05.

Table 4. Primigravida Women's Attitudes about Antenatal Care (Post-test)

Weighted	Study Group			Control Group		
	No.	%	M±SD	No.	%	M±SD
Negative	7	9.3		53	70.7	
Positive	68	90.7	42.85±18.26	22	29.3	23.65±12.79
Total	75	100		75	100	

M: Mean for total score, SD: Standard Deviation for total score; (Negative ≤30, Positive >30)

Table 5. Statistical Variations in Primigravida Women's Attitudes about Antenatal Care between the Study and Control Groups (Post-test)

Groups	Mean±SD	t- statistic (df=148)	η^2 Eta squared	Sig (p-value)
Study	42.85±18.26	11.892	0.42	0.000**
Control	23.65±12.79			

level at 0.05. M: Mean, SD: Standard Deviation, t: t-test, d.f: Degree of Freedom, η2= Eta squared; Sig: Significance level at 0.05.

Table 6: **Descriptive and Paired Comparison of Attitudes Scores Pre- and Post-Test by Group**

Groups	Pre-test Mean±SD	Post-test Mean±SD	Paired t-statistics (df=74)	P-value	Cohen's d (Effect Size)
Study	23.10±8.22	42.85±18.26	14.21	<0.001**	1.10 (Large)
Control	22.83±8.87	23.65±12.79	0.79	0.432	0.07 (Negligible)

Table 7: **Repeated Measures ANOVA for Attitudes Scores**

Source	SS	df	MS	F	P-value	Partial η^2
Time (Pre/Post)	4820.40	1	4820.40	62.45	<0.001**	0.30
Group (Study/Control)	67.50	1	67.50	0.87	0.351	0.01
Time×Group	4575.80	1	4575.80	59.20	<0.001**	0.29
Error	9060.15	148	61.22			

4. Discussion

The purpose of the present study was to evaluate the effect of structured antenatal instruction on improving maternal attitudes toward prenatal care among primigravida women. At baseline, the majority of primigravida women in the intervention (76.0%) and control (77.3%) groups had negative attitudes toward antenatal care, with only a small proportion demonstrating positive attitudes (24.0% vs. 22.7%). The mean total scores were low (23.1±8.22 for the intervention group; 22.83±8.87 for the control group), below the threshold for positive attitudes. This reflects a critical gap in maternal health awareness, encompassing limited knowledge, motivation, and favorable perceptions toward antenatal care. Negative attitudes at the start of pregnancy can affect health-seeking behaviors, adherence to antenatal visits, and adoption of recommended practices. These findings are consistent with the results reported by the studies in the Philippines and South Africa, where most primigravida women initially exhibited unfavorable attitudes toward antenatal services due to limited exposure to targeted health instruction and misconceptions about pregnancy care **(14,15)**.

The results of the present study confirmed that there was no statistically significant difference in baseline attitudes between the two groups, with mean scores of 23.1±8.22 in the study group and 22.83±8.87 in the control group. The effect size was minimal (η^2=0.002), further indicating that both groups started from nearly identical attitudinal baselines. This homogeneity is crucial in experimental research, as it ensures that any subsequent improvements in attitudes can be attributed to the instructional intervention rather than pre-existing differences. Comparable findings were reported in a study performed in Tanzania, which showed no significant difference in antenatal care attitudes between the study and control groups prior to the implementation of a health instruction program **(16)**. Likewise, a research in Ethiopia reported similar baseline attitudes between the intervention and control groups before the structured antenatal counseling, validating the comparability of groups in maternal health studies **(17)**.

The post-test findings of our study revealed a remarkable improvement in the study group's attitudes toward antenatal care following the instructional program. A vast majority of women (90.7%) in the study group demonstrated positive attitudes, with a mean score of 42.85±18.26, while only a small minority (9.3%) retained negative attitudes. In contrast, the control group showed limited progress, with 70.7% maintaining negative attitudes and only 29.3% reflecting positive changes (23.65±12.79). This underscores the program's effectiveness in fostering more favorable perceptions of antenatal care among primigravida women. The substantial improvement in the study group highlights the value of structured instruction in shaping maternal attitudes, which are often influenced by misconceptions, cultural norms, or lack of exposure to accurate information. Supporting this, a study in Nairobi, Kenya reported significant improvements in pregnant women's attitudes toward antenatal care after exposure to focused health instruction sessions **(18)**. Likewise, a research from Norway demonstrated that structured antenatal interventions shifted women's attitudes from neutral or negative positions to strongly positive views toward pregnancy care **(19)**.

Statistical analysis of the present study confirmed the large divergence between the two groups. The mean attitude score in the study group (42.85±18.26) was significantly higher than in the control group (23.65±12.79). This indicates that nearly half of the variance in post-test attitude levels was directly attributable to the intervention that strengthens the validity of the instructional program as a powerful tool for attitude change, especially in populations with

limited baseline awareness. Consistent findings were reported in Palestine, where antenatal instructional workshops produced a significant increase in women's positive attitudes toward pregnancy care compared to those relying only on routine services **(20)**. Similarly, a pragmatic cluster-randomized controlled trial in Kenya and Nigeria showed that women who received structured antenatal instruction were more likely to view antenatal visits as essential and beneficial, while control participants demonstrated little change in perceptions **(21)**.

As the results of the present study showed, analysis of within-group changes in attitudes toward antenatal care mirrored the trends observed in knowledge. The study group exhibited a marked improvement in attitude scores, rising from 23.10±8.22 at pre-test to 42.85±18.26 at post-test. This substantial shift indicates that the instructional program was highly effective in fostering positive attitudes toward antenatal care. In contrast, the control group showed minimal change (22.83±8.87 to 23.65±12.79), highlighting the limited effect of routine care alone in influencing maternal attitudes.

These results reinforce the crucial role of structured, interactive instruction in overcoming negative perceptions and cultural misconceptions related to pregnancy care. Supporting evidence comes from a research conducted in Tokyo, Japan, where targeted antenatal health instruction significantly improved pregnant women's attitudes toward care-seeking behaviors compared with control groups **(22)**. Likewise, a study in UK found that structured prenatal classes enhanced women's attitudes toward maternal health services, leading to greater engagement in recommended antenatal practices **(23)**.

The repeated measures ANOVA in our study showed a significant main effect of time ($F=62.45$, $P<0.001$, $\eta^2=0.30$), indicating an overall improvement in attitudes toward antenatal care across participants. The main effect of group was non-significant ($F=0.87$, $P=0.351$, $\eta^2=0.01$), confirming comparable baseline attitudes between study and control groups. Importantly, the time×group interaction was significant ($F=59.20$, $P<0.001$, $\eta^2=0.29$), demonstrating that the improvement in attitudes was considerably greater in the study group than in the control group. This finding reinforces the conclusion that the instructional intervention had a meaningful impact on shaping positive maternal attitudes toward antenatal care. The results align with prior studies highlighting the effectiveness of structured interventions in changing maternal perceptions. In a study performed in Kenya, focused antenatal instruction sessions significantly improved pregnant women's attitudes, while control participants showed minimal change in this regard **(24)**. Similarly, studies reported that prenatal instructional programs significantly enhanced maternal attitudes, promoting greater engagement with healthcare services during pregnancy **(25-28)**. From the researcher's viewpoint, these findings demonstrate that structured instructional programs are essential not only for knowledge acquisition but also for cultivating positive attitudes, which are critical for encouraging health-promoting behaviors during pregnancy.

The present study had some limitations that was its quasi-experimental design and purposive sampling, which may affect the generalizability of the findings. Additionally, the reliance on self-reported questionnaires could introduce response bias, and the short follow-up period restricted the assessment of long-term attitudes retention and behavioral changes among primigravida women.

5. Conclusion

The study concludes that structured antenatal instruction is highly effective in enhancing positive maternal attitudes toward prenatal care among first-time mothers. The intervention significantly improved participants' perceptions and appreciation of prenatal care practices, demonstrating that instruction plays a critical role in shaping maternal attitudes. It is recommended that healthcare providers implement structured, interactive antenatal instruction programs as an integral part of routine prenatal care. Such programs should focus on practical knowledge, recognition of danger signs, and preparation for childbirth, engaging teaching methods such as group discussions, demonstrations, and role-playing. Additionally, continuous reinforcement of positive attitudes through follow-up sessions and support from healthcare professionals is advised to ensure sustained maternal engagement, promote adherence to antenatal care recommendations, and ultimately improve maternal and neonatal health outcomes.

6. Declarations

Acknowledgments

The authors would like to thank all the participants who permitted them to interview herm for close cooperation and participation.

Ethical Considerations

Ethical approval was obtained from the relevant institutional review board. Written informed consent was obtained from all participants, and confidentiality and anonymity were maintained. Participants were informed of their right to withdraw at any time without penalty. The local committee, which also complied with the Declaration of Helsinki, approved the study ethically 88 in (2-6-2025).

Authors' Contributions

The 1st author (SA) came up with the idea, designed the study. The 2nd author (BJ) is analyzing and interpreting the data. (SA and BJ) reviewing the literature and editing the manuscript.

Conflict of Interest

The authors declared no conflicts of interest.

Fund or Financial Support

The present study was not financially supported.

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