Research Article

Frequency and Factors Associated with Delay in Antenatal Care Services at Public Health Care Facility in Lahore, Pakistan: A Cross-Sectional Study

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Abstract

Background: Antenatal care is critical for the health of pregnant women and their newborns. However, many underdeveloped nations do not adhere to the World Health Organization's recommended schedule of trimester visits.

Objective: To determine the frequency and factors associated with delay in antenatal care services at public health care institution in Lahore, Pakistan.

Methods: A cross-sectional study comprising 232 adult pregnant women aged 18-45 from a tertiary care hospital in Lahore was done using non-probability convenience sampling. A structured questionnaire was used to gather data, which was then analyzed with SPSS version 25. Descriptive statistics and Chi-square test were used, and a p-value less than 0.05 were considered statistically significant.

Results: The patients' average age was 29.38±6.57 years. The study showed that 133(57.3%) of respondents arrived late for their initial antenatal care appointment, with characteristics such as age, education level, work status, area of residence, and monthly income strongly associated with the delay in prenatal care (p-value <0.001).

Conclusion: The study showed a significant frequency of prenatal care delays, which was associated to respondents' age, education, occupation, residence, and income. It encourages coordination between health facilities, the Minister of Health, and other stakeholders to begin follow-up within the required timeframe.

Received: 01-06-2024 | **Revision:** 04-11-2024 | **Accepted:** 19-12-2024

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Keywords | Frequency, Factors, Delay, Antenatal Care Services, Public Health Care Facility, Lahore, Pakistan

Introduction

Antenatal care (ANC) is an essential maternal care for pregnant women that improve the health of both the mother and her unborn child. The World Health Organization advises at least eight ANC visits, with the first taking place during the first trimester. Regular checkups reduce risk and ensure a healthier pregnancy and delivery.[1] Pregnancy-related complications affect around 1500 women daily, with Sub-Saharan Africa responsible for half of all maternal deaths. The Ethiopian Demographic and Health Survey reported a maternal mortality rate of 412 per 100,000 live births.[2] According to WHO standards, four goal-oriented antenatal care visits are recommended to ensure critical interventions.

Production and Hosting by KEMU

https://doi.org/10.21649/akemu.v30i4.5760

However, increasing visits to more than four has not improved health outcomes in uncomplicated pregnancies, and attending fewer than four appointments increases the risk of prenatal mortality, particularly stillbirth.[3]

Delays in prenatal care visits are a significant concern in South Asia, with only 14% of pregnant women in Bangladesh receiving their first care within the first trimester.[4] High rates of delayed antenatal treatment are also observed in Malawi (75.6%),[5] South Asian regions (46.64%)[6] and Nigeria (65%).[7] In sub-Saharan Africa, the pooled prevalence of using recommended prenatal care was 58.53%.[8] In Ethiopia, 71.2% of women receive care after their due date, a risk factor for maternal mortality.[9] Delays in initiating prenatal care visits significantly increase maternal mortality risk, as women who delay treatment may experience pregnancy-related health issues, long-term health issues, and pregnancy-related complications.[7,9] Studies showed that prenatal care visit timing is influenced by factors like education, occupation, and health services availability, number of children, household income, women's employment status, media exposure, age, marital status, parity, and prior health service experience.[10-12]

Maternal healthcare services in Pakistan provide antenatal care (ANC) through Maternal and child health (MCH) services, with low attendance rates of 37% for four or more visits, and 42% for initial visits in the first trimester, showing a need for improved prenatal care.[13] Maternal death in Pakistan is primarily caused by postpartum hemorrhage, sepsis, pre-eclampsia, eclampsia, and delivery complications. Cultural barriers, poverty, and lack of understanding hinder access to evidence-based therapies like antenatal care.[11,14] Despite preventable maternal deaths, timely and effective prenatal care can help reduce maternal mortality. Understanding the timing and factors influencing the first antenatal visit (ANC) for pregnant women is crucial for reducing infant and maternal mortality. Therefore, the research aimed to determine the frequency of late antenatal care visits and the factors associated with them in pregnant women receiving antenatal care at a public health care center in Lahore, Pakistan. The findings promotes collaboration among healthcare professionals, governments, and communities to improve prenatal care, aiming to bridge knowledge gaps and ensure timely care for all expecting women.

Methods

The analytical cross-sectional study was carried out from January 2020 to January, 2021, at Jinnah Hospital Lahore's obstetrics and gynecology outpatient department. In this study, 232 pregnant women between the ages of 18 and 45 who planned their first visit to an outpatient department (OPD) or antenatal care clinic (ANC) were included. The research did not include pregnant patients who were admitted from labor rooms or indoor settings owing to pregnancy-related issues, or those who were referred from primary and secondary healthcare facilities. A sample size of 232 was calculated, with an expected late ANC care prevalence of 81.5%, a margin of error of 5%, and a confidence level of 95% by using a single population proportion formula.[15] In the study, a non-probability convenience sampling technique was applied.

The Institutional Review Board (IRB) for Biomedical Research at Allama Iqbal Medical College/Jinnah Hospital, Lahore (Letter No. IRB-45th /12/18/AIMC) approved this study, which followed the guiding principles of the Declaration of Helsinki. A total of 232 patients who met the study's inclusion criteria were documented. Participants provided their verbal informed consent and confidentiality assured. Late ANC was evaluated in women who arrived for their first prenatal visit to the gynecology outpatient department. The structured questionnaire inquired about the respondents' demographics, the number of prenatal visits, and socioeconomic factors influencing the decision to begin ANC, such as early age, educational attainment of the respondents and their husbands, parity, type of family, socioeconomic status, and employment status.[9,10,15] A mother arriving for antenatal care at or after 16 weeks gestation for the first time during her pregnancy is considered to have a late booking visit and receive late prenatal care.[15]

The data was analyzed using SPSS version 25. For Quantitative variables the mean and standard deviation were given, whereas frequencies and percentages were calculated for categorical variables. The Chi-square test was used to determine the significant contributing factors of late ANC visits in pregnant women. A p-value of less than 0.05 was regarded as statistically significant.

Results

The study observed 232 pregnant women, with an

average age of 29.38±6.57 years. Out of 232, 47.8% were between 29 and 38, and 12.1% were between 39 and 45. The gestational age was 36.31±2.05 weeks, with a total of 6.02±3.15 visits. Of the 232 pregnant women, 89(38.3%) had completed elementary school, while 85 (36.64%) had never had any formal education (Table 1).

The study revealed that 114 (49.1%) and 60 (25.8%) lived in rural and peri-urban settings, respectively. 180 (77.59%) were housewives, with 103 (44.40%) of husbands having completed high school, and 51(21.98%) having no formal education. Only 18 (7.8%) of respondents earned more than 35,000 rupees per month and a joint family structure was the norm for 124 (53.45%) of the sample (Table 1).

133 (57.3%) respondents arrived late for their first prenatal checkup. A chi-square analysis revealed that delayed ANC visits were substantially associated with age, respondent education, working position, residence, monthly income, parity, and family type (p-value < 0.005) (Table 2).

Table 1: *Socio-demography characteristics of study participants (n=232)*

Age groups	Frequency	Percent
18-28 years	93	40.1
29-38 years	111	47.8
39-45 years	28	12.1
Total	232	100.0
Parity		
Primiparous	60	25.9
Multiparous	172	74.1
Total	232	100.0
Education of respondent		
Illiterate	85	36.6
Primary	89	38.4
High school	51	21.9
Tertiary	7	3.1
Total	232	100.0
Residence		
Rural	114	49.1
Peri-urban	60	25.9
Urban	58	25.0
Total	232	100.0
Working status		
Housewife	180	77.6
Employed	52	22.4
Total	232	100.0
Husband's education		
Illiterate	51	21.9
Primary	30	12.9
High school	103	44.4
Tertiary	48	20.8
Total	232	100.0
Monthly income		
Upto 35,000 rupees	214	92.2
More than 35,000 rupees	18	7.8
Total	232	100.0
Type of family		
Nuclear	108	46.5
Joint	124	53.5
Total	232	100.0

Table 2: *Factors associated with delayed Ante-natal care services in Lahore, Pakistan (n=232)*

Variables		Delayed ANC		p-value
		Yes	No	
Age groups	18-28 years	63(67.7%)	30(32.3%)	0.001
	29-38 years	46(41.4%)	65(58.6%)	
	39-45 years	5(17.8%)	23(82.2%)	
Respondent's education	Illiterate	59(69.4%)	26(30.6%)	0.001
	Primary	69(77.5%)	20(22.5%)	
	High school	5(9.8%)	46(90.2%)	
	Tertiary	0(0.0%)	7(100.0%)	
Working status	Housewife	75(41.7%)	105(58.3%)	0.002
	Employed	10(19.2%)	42(80.8%)	
Residence	Rural	91(79.8%)	23(20.2%)	0.001
	Peri-urban	34(56.7%)	26(43.3%)	
	Urban	8(13.8%)	50(86.2%)	
Monthly income	≤35, 000 rupees	133(62.1%)	81(37.9%)	0.003
	>35,000 rupees	0(0.0%)	18(100.0%)	
Parity	Primiparous	20(33.3%)	40(66.7%)	0.001
	Multiparous	113(65.6%)	59(34.4%)	
Type of family	Nuclear	81(75.0%)	27(25.0%)	0.001
	Joint	52(41.9%)	72(58.1%)	

Discussion

The World Health Organization advises pregnant women to start prenatal care in the first trimester, but in many impoverished countries contravene this advice, starting care later than expected. According to recent research, 57.3% of pregnant mothers begin receiving prenatal care later than anticipated. This pattern is similar to other African countries where pregnant mothers receive late antenatal care, such as southern Ethiopia (47.5%)[16] and eastern Ethiopia (59.5%).[17] However, the prevalence result is lower in southwestern Ethiopia (70%)[18] and higher than another Ethiopian study (31%).[19] The study suggests that disparities in antenatal care

(ANC) services among pregnant women may be influenced by factors such as infrastructure, perceived timing discrepancies, research time differences, socio-demographic characteristics, facilities, and pregnancy classification.

The study found that 42.6 % of expectant mothers began antenatal care on schedule. Age also affects pregnancy care preferences, with the very young aged 18-28 63(67.7%) often postponing appointments. However, the present research findings are contradictory with those of previous research that show older women utilize ANC more than younger women.[20] Delays in prenatal treatment scheduling are linked to increased parity, which boosts women's confidence in pregnancy handling.[21] A study found that 65.6% of multiparous women received late prenatal care, consistent with research in Tanzania.[22] Past painless and medically assisted pregnancies can influence multiparous women's decision to seek prenatal care, potentially influenced by health education.[16]

The study found a significant association between respondents' education and the delay in attending antenatal visits. An Ethiopian study based on the finding that education was significantly associated with delayed attendance supports this finding.[19] The study suggests that awareness of these benefits, particularly among pregnant women, could increase attendance.[16] Household income was one of the factors significantly associated with late antenatal care entry in this study. Previous studies in Ethiopia, Uganda, and have shown a correlation between low monthly income and underutilization of antennal care services for expectant mothers.[16,17] This could be due to the difficulty of paying for expenses like healthcare and transportation, and the decreased likelihood of mothers attending more follow-up appointments due to early ANC booking.[21,22]

The study found that housewives were more likely to delay prenatal appointments than government officials due to their financial dependence on their husbands, as they did not have their own income source to attend appointments. A Tanzanian study reveals that working women are more likely to start prenatal care early, potentially due to financial independence, which can reduce late attendance at care by eliminating the need for others to attend.[19,23] The study found that rural women are more likely to delay antenatal care (ANC) than urban women due to access challenges, lack of awareness of health issues, and cultural barriers. Rural women in the Africa faced more obstacles over time to receiving early ANC than urban women.[11] The study suggests that governments can reduce the gap between urban and rural areas by increasing rural women's access to early ANC. This study has a few limitations, including the fact that it is a cross-sectional, facility-based study that excludes pregnant individuals who received prenatal treatment in private medical institutions. The study's design renders it prone to selection and measurement bias, making it difficult to establish temporal connections. More study on the barriers to equal access to prenatal care for women from various ethnic groups would be useful.

Conclusion

In this study, more than half of the women had their initial prenatal care visit late. Prenatal delays are associated with mother age, education, and work position, place of residence, parity income and family type. It is suggested that women be educated on the importance of attending initial ANC visits and that women's health development armies be strengthened within communities.

Ethical Approval: The Ethical Review Board, Allama Iqbal Medical College/ Jinnah Hospital, Lahore approved this study vide letter No. Ref No: 45th/12/18/ERB.

Conflict of Interest: The authors declare no conflict of interest.

Funding Source: None

Authors' Contribution:

SMM: Conception & design, acquisition of data, drafting of article
KJ: Drafting of article, critical revision for important intellectual content, final approval
FI: Conception & design, analysis & interpretation of data
MTIB: Acquisition of data, analysis & interpretation of data
SSA: Drafting the article, critical revision for important intellectual content
SI: Conception & design, analysis & interpretation of data

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