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### Individual and Healthcare System Factors Affecting Antenatal Care Utilization in Pakistan

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#### ABSTRACT

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Antenatal care is a primary aspect in maternal and infant health and is critical in the prevention of pregnancy-related complications and reduction of maternal and infant mortality. Nevertheless, despite the availability of ANC services in Pakistan, their utilization is suboptimal, particularly among poor, rural, and marginalized populations. The aim of this study was to explore individual and healthcare system factors in relation to utilization of antenatal care services in Pakistan. The descriptive cross-sectional study design was employed for data collection. The participants in this study were pregnant women who utilized antenatal care services in a tertiary care hospital. Data collection tools included a structured questionnaire to gather data on socio-demographic factors, maternal health literacy, individual factors, and healthcare system factors. Descriptive statistics, reliability analysis, and regression analysis were employed to analyze data. The findings revealed that individual factors such as education level, health literacy, parity, and perceptions of pregnancy played a significant role in the utilization of ANC services. The factors of the healthcare system, including accessibility, the behavior of healthcare providers, communication, and waiting time, were found to have a pivotal role in influencing ANC utilization. Women with high levels of awareness and healthcare experiences were found to have attended the recommended ANC visits and avoided missing appointments. The study concludes that improving maternal health literacy and strengthening healthcare system responsiveness are essential to enhance ANC utilization in Pakistan. Targeted interventions addressing both individual and system-level barriers are necessary to improve maternal and neonatal health outcomes and achieve Sustainable Development Goal 3.

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## INTRODUCTION

Reproductive and neonatal health is a significant public health issue worldwide, especially in developing countries.<sup>1</sup> Antenatal care (ANC) is identified as one of the most successful strategies for ensuring safe pregnancy outcomes, the early identification of complications, and the reduction of maternal and neonatal mortality. The World Health Organization (WHO) recommends a minimum of four focused ANC visits, with new guidelines recommending eight visits to enhance pregnancy outcomes.<sup>2</sup> Nevertheless, in many developing nations, including Pakistan, the use of ANC services is not satisfactory.<sup>3</sup>

Pakistan remains one of the countries with a high rate of maternal and neonatal mortality compared to the international average.<sup>3</sup> It is estimated that the maternal mortality ratio is alarmingly high, and the rate of neonatal deaths is a major contributor to the rate of under-five mortality. Although there has been an increase in the percentage of women who have had at least one ANC visit, the percentage of women who have had the recommended number of visits is lower. This indicates that there are barriers that prevent the use of ANC services.<sup>4</sup>

It has been observed that the use of ANC services is affected by a number of individual, socio-cultural, economic, and health system factors. Individual factors like maternal education, health knowledge, income, parity, and pregnancy beliefs are important in determining health-seeking behavior. Women with low education and poor knowledge about pregnancy risks are less likely to recognize the need for frequent ANC visits. Cultural practices and limited decision-making power limit women's autonomy to seek health care.<sup>5</sup>

Apart from the individual-level factors, factors related to the healthcare system also play an important role in influencing the use of ANC services. These factors include the accessibility of the facilities, the availability of skilled personnel, the quality of services, the attitude of the providers, communication, and waiting time. Women are discouraged from accessing follow-up care if their experiences at the healthcare facilities are negative. In Pakistan, public healthcare facilities are often faced with challenges such as overcrowding and a lack of resources, which affect the quality of maternal healthcare services.<sup>6,7</sup>

Despite the presence of existing literature on maternal health in Pakistan, there still exists a gap for research that can explore both individual and healthcare system factors together. It is important to comprehend the interplay of these factors to design effective strategies to enhance the utilization of antenatal care. This research will attempt to evaluate the effect of individual and healthcare system factors on antenatal care utilization in Pakistan.

## **METHODOLOGY**

### **Study Design and Setting**

The study used a cross-sectional study design that is descriptive in nature to evaluate the factors that affect the use of antenatal care. The study was carried out in a tertiary care hospital that offers maternal health care to both the urban and rural populations. The choice of the setting was based on the need to have a diverse group of participants.

### **Study Population and Sample Size**

The target population for the study was pregnant women attending antenatal clinics during the time of data collection. Women who were 18 years old and above, and in their second or third trimester of pregnancy, were eligible to participate in the study. Women with severe medical conditions that required specialized attention were not eligible to participate in the study. The sample size for the study was estimated to be about 240 participants.

### **Data Collection Tool**

The data was obtained using a structured questionnaire. The questionnaire was comprised of four sections: socio-demographic characteristics, maternal health literacy, personal barriers to the use of ANC, and factors related to the healthcare system.

### **Variables**

The number of prenatal care appointments attended, missed, or postponed, as well as the intention to attend future visits, served as the dependent variable. The independent variables included healthcare system elements including accessibility, provider behaviour, communication, waiting time, and facility environment, as well as individual aspects like education, income, parity, health literacy, and beliefs.

## **Data Analysis**

Statistical software was used to analyse the data. Demographic variables were described using descriptive statistics. To ascertain the scales' internal consistency, reliability analysis was conducted. The predictors of ANC service utilisation were identified by regression analysis. Statistical significance was defined as a p-value of less than 0.05.

## **RESULTS**

The research sample comprised approximately 243 pregnant women, the majority of whom were unemployed and had low educational levels. Additionally, a majority of the women were from rural areas, which could be a pointer towards potential access barriers. The majority of the women had attended at least one ANC session, although fewer had attended the required number of sessions.

The scales for both person and healthcare system characteristics have strong internal consistency, according to the reliability analysis, making the instruments appropriate for usage. Maternal health literacy was a significant predictor of ANC usage, according to the regression study. There was a significant decrease in the likelihood of women missing or being late for appointments when they were more informed of the hazards associated with pregnancy and the advantages of ANC.

Factors in the healthcare system were also found to be significantly associated with ANC service use. Positive provider practices, communication, and waiting time were found to be positively associated with attending and intending to continue attending ANC services. Overcrowding and perceived poor quality of services were also found to be associated with ANC services.

The variables of parity and gestational age were found to influence ANC services, with multigravidae being less consistent in attending services than primigravidae. The socioeconomic status was found to influence the difficulties faced by women in accessing ANC services, with lower socioeconomic groups facing difficulties.

## **DISCUSSION**

The outcome of this research has brought to the fore the complexity of the utilization of antenatal care services in Pakistan. The individual factors, i.e., the health knowledge and education of the mothers, have been found to be important determinants of the utilization of ANC services. Mothers who were aware of the importance of regular visits and the risks of pregnancy were more proactive in the utilization of ANC services. This outcome is similar to the previous studies that have been conducted in Pakistan and other developing countries.<sup>8</sup>

Factors related to the healthcare system were equally important. The interaction and communication of the service providers were found to improve the experiences of the women and motivate them to use the ANC services. The poor experiences of the women with the service providers and facilities were found to act as a deterrent.

This lower rate of ANC utilization among multiparas may imply that past experiences of pregnancy may reduce the perceived need for ANC. This is another reason why the need to counsel women to recognize that each pregnancy is equally at risk of complications cannot be overstated. The problems were also worsened for those living in the rural areas and those of lower socioeconomic status.<sup>10</sup>

In conclusion, the results point to the need to adopt a holistic approach to addressing ANC utilization. The approach must address both the empowerment of individuals and the healthcare system. Improvements to education programs and healthcare facility responsiveness are key to addressing the issues of maternal and infant mortality.

## **CONCLUSION**

The factors that influence the utilization of antenatal care services in Pakistan can be both individual and health system factors. The health literacy of the mother and her attitudes towards pregnancy are very important factors that influence the

utilization of antenatal care services. The characteristics of the health system also have a great influence on the utilization of antenatal care services. To overcome these challenges and to improve the utilization of antenatal care services in Pakistan, there is a need for collective efforts to improve the education of women and the health system. The improvement of ANC utilization is vital to achieve national and international health goals, such as the achievement of the Sustainable Development Goal 3.

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