

Tehseen Zamir Ali,\*  
Saeed Ahmad,\*\*  
Rubeena Zakar,\*\*\*

**Exploring the Determinants of Utilization of Antenatal Healthcare Services among Pregnant Women in District Lahore, Pakistan**

**Abstract**

*The primary objective of the study was to explore the patterns of utilization of antenatal healthcare services. . In addition it examined the association of socio-demographical variables in utilization of antenatal healthcare services among women of reproductive age in District Lahore of Punjab province. The data were collected from 330 women in the age of reproduction (15-49 years) in second trimester (4 to 6 months) of pregnancy, as a part of a longitudinal study in Lahore through multistage sampling technique. The study was conducted between February 2019 to August 2019. The study found that around 58 percent of women attended the minimum of four antenatal visits. Maternal antenatal healthcare utilization was higher among urban women, women with lower age at first birth, women with higher educational status, women with employed husband and where distance was not a big problem ( $p < .05$ ). Overall, residential background, women age, women age at first birth, women's educational status, wealth, parity of pregnancy, exposure to mass media, women's employment status has an association with utilization of maternal antenatal healthcare. Targeted interventions are needed to improve antenatal care utilization among mothers from lower socioeconomic status, having low literacy and living in semi-rural areas or slum urban areas.*

**Keywords:** socio-demographics, healthcare, antenatal, pregnant women, gynecology.

**INTRODUCTION**

Globally, each year 303,000 women die from preventable causes related to pregnancy and childbirth. Nearly 2.6 million newborns die under the age of one month. About 16,000 children die every minute (UNICEF, 2015) Approximately, 80 percent of maternal deaths and two thirds of neonatal deaths could have been avoided if effective health measures were adopted at birth and first week of life. Reproductive and maternal health services are having low coverage globally despite their demonstrated health benefits. Around 99 percent maternal deaths occur in developing countries with sub-Saharan Africa alone constituting of roughly 66 percent maternal mortality followed by South Asia (UNICEF, 2015).

In Pakistan, in the last two decades, there has been a considerable increase in the coverage of antenatal care, women making at least one antenatal care visit during pregnancy have increased from 26 percent in 1990-91 to 78 percent in 2012-13. However, data highlighted that among women who received antenatal care, 17% (in 2006–07) and 28% (in 2012-13) received six elements of care that should be provided during antenatal care visit (NIPS, 2013). It indicated that differences were found in in quality care in monitoring service for provision of antenatal care coverage, as quality of care might have remained poor while there were large increases in coverage. These statistics, in Pakistan, are concordant with analyses from other low- and middle-income countries which suggest that there are significant gaps between antenatal care coverage levels and the receipt of world Health Organization (WHO) recommended content of care (Hodgins & D'Agostino, 2014; Conrad, Schmid, Tientrebeogo, Moses, Kirenga, Neuhann et al, 2012).

Antenatal care refers to pregnancy-related health care check-ups (at least four visits or more) that a pregnant woman had either at a health facility or at home. Antenatal care offers the medical personnel an opportunity to detect and treat symptomless ailments (such as high blood pressure, and pregnancy-induced diabetes, etc.) and facilitates informed decision-making by the pregnant woman such as seeking skilled attendance at delivery in health care facility. All these services received by a pregnant woman during Antenatal care are impending to improve the chance of her the survival and to ensure good health to her newborn (Adjwanou & LeGrand, 2013). In addition, a protracted benefit of antenatal care is that women who utilized Antenatal care are more likely to utilize institutional/skilled delivery (Pervin et al, 2012). Maternal health remain a major priority therefore is imperative to explore the determinants of maternal antenatal healthcare utilization. To this connection, the current study explored

---

\* Tehseen Zamir Al, Doctor, Health Centre University of the Punjab, Lahore

\*\* Saeed Ahmad, Institute of Sociology, University of the Punjab Lahore

\*\*\* Rubeena Zakar, Director Institute of Sociology, University of the Punjab Lahore

the patterns of utilization of antenatal healthcare services among pregnant women. In addition, it examined the association of socio-demographical variables (such as age, age at first birth, education, occupation, wealth, etc.) with antenatal healthcare services utilization among pregnant women in District Lahore of Punjab province.

## **Literature Review**

Research in Guinea highlighted that higher education, aged 15-24, partners' secondary/higher level of education, richest wealth quintile, planned pregnancies, taking healthcare decisions alone, listening to radio less than once a week were the predictors of maternal antenatal care uptake (Ahinkorah, Seidu, Agbaglo, et al., 2021). Similarly, In Jordan use of maternal antenatal care facilities is influenced by various determinants such as information and education received during visits, opportunities for dialogue and health talks, follow-up appointments, woman's education level, desire for the pregnancy, and living in an area served by the maternal antenatal care clinic (Hijazi, Alyahya, Sindiani, Saqan, & Okour, 2018). In addition, in Ghana, the empirical findings of the study revealed that women's utilization of maternal antenatal healthcare services is influenced by many socio-cultural factors such as women age, women education, and marital status (Dapaah & Nachinaab, 2019). Furthermore, evidence from 36 countries using Demographic and Health Surveys revealed that residencia background, literacy level, maternal education and employment status, level of husband education, women autonomy related to health-seeking, family wealth index, media exposure, accessing health care, wanted pregnancy, and birth order were the major determinants of antenatal healthcare utilization (Tessema, Teshale, Tesema, & Tamirat, 2021).

The empirical findings from India revealed a significant difference in the utilization of selected maternal health care services by maternal age, residential background, level of education, birth order, racial background, exposure to mass media and wealth quintile of the family (Singh, Singh, & Singh, 2021). Similarly, In Bangladesh high socio-economic status, low parity, living in urban areas, planned pregnancies, higher mass media exposure, visiting skilled providers for antenatal healthcare services are associated with frequent antenatal healthcare visits and receiving higher number of items of antenatal healthcare contents (Islam & Masud, 2018).

In Pakistan, differences exist between urban and rural localities, education, health literacy and socio-economic status of women were strong predictors of utilization of maternal antenatal healthcare (Sahito & Fatmi, 2018). There were certain variances as women's education had no influence on utilization of maternal antenatal healthcare in Khyber Pakhtunkhwa and Baluchistan provinces while husband's education was significantly associated with ANC utilization in Khyber Pakhtunkhwa only (Sahito & Fatmi, 2018). In addition, another research revealed that around 36.6% of women had made four or more antenatal healthcare visits, 59% had received assistance from skilled health providers during delivery, 55.3% had given birth in a health-care facility and number of antenatal care visits, delivery assistance by a skilled health provider, and delivery in a health-care facility were positively associated with education and wealth, and negatively associated with birth order and women's autonomy in Pakistan (Zakar, Zakar, Aqil, Chaudhry, & Nasrullah, 2017).

## **Materials and Methods**

The data were collected from 330 women in the age of reproduction (15-49 years) who were pregnant and in second trimester (4 to 6 months of pregnancy) as a part of a longitudinal study for assessment of continuum of care model in maternal health care utilization in Lahore through multistage sampling technique. Second trimester of pregnancy was chosen because there is relatively increased risk of drop of cases in first trimester because mothers usually skip the appointments in the first trimester or there is chance of loss of pregnancy due to chromosomal abnormalities (Lathi et al, 2011). Lahore district was divided in 9 administrative towns from 9 towns 3 towns were selected randomly by lottery method. Then from 3 towns 9 union councils were selected randomly by lottery method. Then from union council, list of neighborhoods obtained, and lady health workers were contacted to get details of mothers in their second trimester. In each union council, 40 mothers were selected through random assignment.

The study was a longitudinal study, as the data was collected in two phases. At first phase, the baseline measurements were taken from the females who were in second trimester (4 to 6 months) of pregnancy. Then, in second phase, after delivery, the same respondents were contacted to collect end-line data to measure the continuum of care. In this paper only the data related to antenatal care is presented. Nature of data collected was quantitative and obtained from pregnant females between 15 - 49 years of age in their second trimester and after delivery. The study was conducted between February 2019 to August 2019.

The tool of data collection (transcribed into Urdu) consisted of two section, first section had questions related to socio-demographic characteristics (such as locality, women age, women age at first birth, women educational status, women employment status, husband educational status, husband employment status, and wealth quintile, etc.), while the second section

**Exploring the Determinants of Utilization of Antenatal Healthcare Services among Pregnant Women in District Lahore, Pakistan: JRSP, Vol. 58, No. 1 (Jan-March 2021)**

had questions related to utilization of maternal Antenatal care such as intake of iron and folic acid tablets, getting Tetanus Toxoid (TT) injections, monitoring of blood pressure and weight, etc. Maternal antenatal care was measured by taking iron supplements, measuring blood pressure, checking weight and urine samples, checking blood sample, going through ultrasound, and taking Tetanus injection. Women autonomy in decision making and exposure to media were measured in No and Yes. While distance from health facility and transport arrangement for medical care were categorized into a big problem and not a big problem. The permission to conduct the study was obtained from the Institutional Ethical Review committee (ERC). With the help of the local health worker, the eligible mothers were identified. Informed and written consent were obtained from the participants and confidentiality was guaranteed to each participant. For data analysis, Statistical Package for Social Sciences (SPSS) version-22 was used. Descriptive statistics were used to interpret frequencies and percentages while Chi-square test was applied to find out the association between variables.

**Results**

Table 1 below highlighted that demographic statistics of the respondents. In residential background, 69.70 percent of the women were living in urban areas while 30.30 percent of women were from slums or semi-rural area. In age, 33 percent of women were in the age group of 25-29 years, 27.30 percent of women were from age bracket of 30-34 years, 23.30 percent of women had 20-24 years of age and 6.40 percent of women were from age group of 35 years and above. The most (50.3 percent) of women gave birth to their first child at the age of 20-29 years. In education, 34.5 percent of women had secondary education, 15.80 percent of women had higher education. Similarly, the figure illustrates that there was a slight difference between women who had primary education and women with no education as 26.10 percent women had primary and 23.10 percent women had had no education. Similarly, 59.4 percent women were unemployed. Moreover, 97.3 percent of respondent’s husbands were employed and among those 36.7 percent had higher education. Most of the women (49.10 percent) were from the middle-wealth quintile family.

**Table 1: Demographic statistics of Respondents (N=330)**

<b>Demographics</b>	<b>Frequency</b>	<b>%</b>
Locale		
Semi-rural	100	30.3%
Urban	230	69.7%
Women Age		
20-24 years	77	23.3%
25-29 years	109	33.0%
30-34 years	90	27.3%
35 year & above	54	16.4%
Women age at first birth		
Less than 20 years	151	45.8%
20-29 years	166	50.3%
30 years and above	13	3.9%
Women Educational Status		
No education	52	15.8%
Primary	78	23.6%
Secondary	86	26.1%
Higher	114	34.5%
Women Employment Status		
Unemployed	196	59.4%
Employed	134	40.6%
Husband Educational Status		
No education	49	14.8%
Primary	75	22.7%
Secondary	85	25.8%
Higher	121	36.7%
Husband employment status		
Unemployed	9	2.70%
Employed	321	97.3%
Wealth quintile		
Low	115	34.8%

Middle	162	49.1%
High	53	16.1%
Parity		
First pregnancy	50	15.2%
1	90	27.3%
2	75	22.7%
3-4	97	29.4%
5 +	18	5.5%

Correspondingly, 34.80 percent of women were from low-wealth quintile family and the rest of women were from high-class wealth quintile families. In parity, 29.40 percent of women had 3 to 4 times parity, 22.70 percent of women had 2 times parity and 27.30 percent of women had one-time parity. Similarly, 15.20 percent of the women were first time pregnant and 5.50 percent of the women had 5+ times parity.

**Table 2: Frequency Distribution of Other Characteristics of Respondents (N=330)**

<i>Characteristics</i>	<i>Frequency</i>	<i>%</i>
Respondent's Autonomy to Healthcare Decision-making		
No	193	58.5%
Yes	137	41.5%
Exposure to mass media		
No	109	33.0%
Yes	221	67.0%
Distance from health facility for medical care		
Big problem	191	57.9%
Not a big problem	139	42.1%
Transport arrangement for medical care		
Big problem	173	52.4%
Not a big problem	157	47.6%

Table 2 displayed the frequency distribution of other characteristics of respondents that influence the maternal antenatal health care utilization among women of reproductive age. In autonomy to healthcare decision-making, 58.5 percent of women had no autonomy for deciding on healthcare. In exposure to mass media, 67 percent of the women had exposure to mass media (which refers to the frequency of reading a newspaper, watching TV or listening to the radio to access relevant information). Moreover, in distance from health facility for medical care, 57.9 percent of the women reported that they had a problem of distance from health facilities for medical care. In transport arrangement for medical care, 52.4 percent of the women had a problem of transport arrangements for medical care.

Table 3 below highlighted utilization of antenatal care services according to socio-demographic characteristics. With respect to area of residence, urban women more likely to receive the different components of services during antenatal care such as urban women utilized iron supplements (75%); blood pressure (93%) and measuring weight (91.7%). Urine sample (67.8%), blood sample (77.4%), and ultrasound examination (79.1%) and tetanus injection (71.7%) more than semi-rural women. In women age, use of iron supplements and weight checking declined with rise in women age while blood pressure measurement (72.7% to 81.5%) and the use of tetanus injections (57.1% to 64.4%) increased as the women's age increased. Antenatal care visits of

**Exploring the Determinants of Utilization of Antenatal Healthcare Services among Pregnant Women in District Lahore, Pakistan: JRSP, Vol. 58, No. 1 (Jan-March 2021)**

women decreased as their age increases at first birth while women with a higher degree were more concerned with antenatal care utilization as compared to less education women with higher education affirmed used iron supplements (84.3%), blood pressure (90.4%), measurement of weight (and 88.5%), urine sample (67.3%), blood sample (82.7%), ultrasound examination (82.7%), and tetanus injection (75.3%). There is almost similar utilization of antenatal care among employed and unemployed women while husband education status had almost negligible effects on uptake of antenatal care. Women with autonomy in decision making received almost equivalent antenatal care as compared to women with not autonomy i.e. blood pressure measurement (65.6% to 71.3%), weight measurement (64.1% to 69.1%), urine sample (51.1% to 65.6%), blood test (56.4% to 54.7%), ultrasound examination (54.7% to 66.0%), and tetanus injections (53.2% to 59.4%).

Women with high family wealth status used antenatal care services such as iron supplements (71.7%), blood pressure (84.9%), checking weight (79.2%), urine sample (80.4%), blood sample (71.7%), ultrasound examinations (74.8%) and tetanus injection (78.5%) as compared to low and middle-wealth status family background. Blood pressure measurement (80% to 66.6%), weight measurement (83% to 61.1%), blood test (82% to 66.7%), and use of tetanus injections (70% to 52.2%) were decreased as parity increased while use of iron supplements increased (61.1% to 83.3%) with increase in parity. More exposure to media resulted in increase in antenatal care services such as use of iron supplements (62.6% to 81.4%); blood pressure measurement (67.8% to 72.1%); weight measurement (66.1% to 69.8%); urine sample (54.8% to 62.8%); blood test (53.0% to 62.8%), ultrasound examination (55.8% to 63.5%); and tetanus injections (51.2% to 57.4%). There was decline in women uptake of antenatal care such as use of iron supplements (67.8% to 67.7%); blood pressure measurement (71.7% to 64.4%); weight measurement (69.7% to 62.7%); urine sample (61.6% to 49.2%); blood test (57.6% to 54.5%), ultrasound examination (63.6% to 57.6%); and tetanus injections (61.6% to 45.8%) as the distance from health care facility increased.

**Table 3: Utilization of antenatal care services according to Socio-Demographics**

Categories	Iron supplements	Blood pressure	Weight	Urine sample	Blood sample	Ultrasound	Tetanus injection
<b>Locale</b>							
Semi-rural	60.0%	43.0%	36.0%	54.0%	31.0%	48.0%	54.0%
Urban	75.0%	93.0%	91.7%	67.8%	77.4%	79.1%	71.7%
<b>Women Age</b>							
20-24 years	64.9%	72.7%	85.2%	66.2%	71.4%	80.5%	57.1%
25-29 years	69.7%	78.0%	75.2%	58.7%	58.7%	67.0%	56.0%
30-34 years	68.9%	80.0%	73.3%	65.6%	54.4%	61.1%	64.4%
35 year & above	59.3%	81.5%	68.8%	66.7%	75.9%	74.1%	61.1%
<b>Women age at first birth</b>							
Less than 20 years	62.0%	59.5%	56.0%	56.0%	45.2%	54.8%	33.3%
20-29 years	66.7%	66.7%	78.9%	56.3%	66.2%	67.6%	54.9%
30 years and above	72.6%	80.3%	100.0%	100.0%	100.0%	100.0%	57.1%
<b>Women Educational Status</b>							
No education	59.1%	61.5%	60.3%	61.5%	52.6%	70.5%	48.1%
Primary	68.6%	77.9%	72.1%	62.8%	67.4%	66.3%	66.3%
Secondary	66.7%	83.3%	80.7%	64.0%	58.8%	65.8%	68.8%
Higher	84.3%	90.4%	88.5%	67.3%	82.7%	82.7%	75.3%
<b>Women Employment Status</b>							
Unemployed	64.6%	67.7%	65.6%	45.2%	50.0%	56.5%	55.2%
Employed	72.6%	71.0%	69.4%	64.6%	59.4%	64.6%	56.5%
<b>Husband Educational Status</b>							
No education	60.0%	60.0%	54.3%	54.3%	42.9%	68.6%	48.6%
Primary	71.1%	68.9%	71.1%	64.4%	60.0%	51.1%	64.4%
Secondary	75.8%	71.0%	67.7%	53.2%	58.1%	62.9%	54.8%
Higher	43.8%	81.3%	81.3%	56.3%	62.5%	68.8%	50.0%
<b>Husband employment status</b>							
Unemployed	57.1%	67.5%	66.2%	42.9%	55.0%	57.1%	55.0%
Employed	68.2%	100.0%	85.7%	57.6%	71.4%	61.6%	71.4%
<b>Autonomy to Healthcare Decision-making</b>							
No	64.9%	65.6%	64.1%	51.1%	56.4%	54.7%	53.2%
Yes	71.9%	71.3%	69.1%	65.6%	54.7%	66.0%	59.4%

**Exploring the Determinants of Utilization of Antenatal Healthcare Services among Pregnant Women in District Lahore, Pakistan: JRSP, Vol. 58, No. 1 (Jan-March 2021)**

Wealth quintile							
Low	63.6%	72.2%	70.2%	60.4%	61.7%	66.0%	46.5%
Middle	68.0%	79.6%	75.3%	69.9%	65.7%	69.8%	61.7%
High	71.7%	84.9%	79.2%	80.4%	71.7%	74.8%	78.5%
Parity							
First pregnancy	68.0%	80.0%	83.0%	76.0%	82.0%	80.0%	62.0%
1	61.1%	75.6%	72.2%	54.4%	57.8%	65.6%	70.0%
2	72.0%	81.3%	73.3%	61.3%	57.3%	69.3%	63.3%
3-4	63.9%	78.4%	78.4%	63.9%	62.9%	70.1%	64.9%
5 +	83.3%	66.7%	61.1%	83.3%	66.7%	61.1%	52.2%
Exposure to mass media							
No	62.6%	67.8%	66.1%	54.8%	53.0%	55.8%	51.2%
Yes	81.4%	72.1%	69.8%	62.8%	62.8%	63.5%	57.4%
Distance from health facility for medical care							
Big problem	67.7%	64.4%	62.7%	49.2%	54.5%	57.6%	45.8%
Not a big problem	67.8%	71.7%	69.7%	61.6%	57.6%	63.6%	61.6%
Transport arrangement for medical care							
Big problem	68.5%	69.6%	75.3%	69.7%	55.1%	67.4%	55.1%
Not a big problem	66.7%	68.5%	56.5%	40.6%	56.5%	53.6%	56.2%

According to table the women said that the use of iron supplements (68.5% to 66.7%); blood pressure measurement 69.6% to 68.5%; weight measurement (75.3% to 56.5%); urine sample (69.7% to 40.6%); blood test (55.1% to 56.5%); ultrasound examination (67.4% to 53.6%); and tetanus injections (55.1% to 56.2) % remains almost unchanged as the transport arrangements for medical care becomes a big problem.

**Table 4: Association of socio-demographics and antenatal healthcare utilization (N=330)**

Socio-demographics	No	Yes	P	Socio-demographics	No	Yes	P
<b>Residential background</b>				<b>Autonomy to Healthcare Decision-making</b>			
Semi-rural	58.3%	41.7%	0.001	No	53.3%	46.7%	0.721
Urban	38.0%	62.0%	P<.001	Yes	51.3%	48.7%	
<b>Women Age</b>				<b>Wealth quintile</b>			
20-24 years	64.9%	35.1%	0.035	Low	53.9%	46.1%	0.041
25-29 years	53.2%	46.8%	P<.05	Middle	48.8%	51.2%	p<.05
30-34 years	45.6%	54.4%		High	58.5%	41.5%	
35 year & above	42.6%	57.4%		<b>Parity of pregnancy</b>			
<b>Women age at first birth</b>				First pregnancy	96.0%	4.0%	
Less than 20 years	44.4%	60.0%	40.0%	1	60.0%	40.0%	0.000
20-29 years	57.2%	44.0%	56.0%	2	44.0%	56.0%	p<.001
30 years & above	76.9%	34.0%	66.0%	3-4	34.0%	66.0%	
<b>Women's Educational Status</b>				5 +	22.2%	77.8%	
No education	47.4%	52.6%		<b>Exposure to mass media</b>			
Primary	44.2%	55.8%	0.023	No	60.6%	39.4%	0.035
Secondary	55.3%	44.7%	P<.05	Yes	48.0%	52.0%	p<.05
Higher	65.4%	34.6%		<b>Distance from health facility</b>			
<b>Women's Employment Status</b>				Big problem	57.6%	42.4%	0.009
Unemployed	49.0%	48.2%	51.8%	Not big problem	48.2%	51.8%	p<.01
Employed	46.3%	53.7%		<b>Husbands' employment status</b>			
<b>Husbands' Educational Status</b>				Unemployed	53.0%	47.0%	0.009
No education	46.7%	22.2%	77.8%	Employed	22.2%	77.8%	p<.01
Primary	52.9%	47.1%	0.111	<b>Transport arrangement for medical care</b>			
Secondary	51.2%	48.8%		Big problem	56.1%	43.9%	0.187
Higher	32.7%	67.3%		Not a big problem	48.6%	51.4%	

Table 4 highlighted that maternal antenatal healthcare utilization was higher among urban women ( $p<.01$ ), 62.0% women used maternal antenatal healthcare services in comparison to 41.7% in semi-rural locality. Similarly, women age has association with maternal antenatal healthcare utilization. Women age at first birth had association with maternal antenatal healthcare utilization.

Women with lower age at first birth used more antenatal healthcare services ( $p < .05$ ). Women's Educational Status ( $p < .05$ ) had association with maternal antenatal healthcare utilization. Utilization of maternal antenatal healthcare services was higher among women with higher educational status. Husbands' employment status ( $p < .01$ ) was associated with maternal antenatal healthcare utilization where maternal antenatal healthcare utilization was higher among employed husband (77.8%) in comparison to unemployed husband (47%). Wealth quintile has a relationship ( $p < .05$ ) with maternal antenatal healthcare utilization where higher wealth was associated with more maternal antenatal healthcare utilization. Parity of pregnancy ( $p < .001$ ) exposure to mass media ( $p < .05$ ) and distance from health facility for medical care ( $p < .01$ ) were associated with maternal antenatal healthcare utilization. Maternal antenatal healthcare utilization was higher with where distance was not a big problem (51.8%) as compared to where distance was a problem (42.4%). Contrarily, autonomy to healthcare decision-making, women's employment status, husbands' educational status, and transport arrangement for medical care had no association with maternal antenatal healthcare utilization among pregnant women.

## **DISCUSSION**

The utilization of antenatal care is significantly important to reduce maternal mortality and improve the health of mother and newborn (Maken et al, 2018). In the current study most (58.20%) of the women used antenatal care four times or more which shows that number of visits is still low as around 42% women did not use antenatal care or visited less than four times. Usually, four or more antenatal care visits are required during antenatal care to identify the pregnancy complications and their timely management (UNICEF, 2015). Our findings corroborated with the nationally representative data from Pakistan Demographic Health Survey (PDHS) 2017-18, where around 50 percent mothers had four or more antenatal care visits (NIPS, 2017). This figure is relatively high in other south Asian countries such as in India (50-74%), Bangladesh (20-49%) and Nepal (50-74%) (UNICEF, 2018). Our study found that living in urban locality, women age, women age at first birth, and women's educational status, family wealth, exposure to mass media, women's and husbands' employment status, distance from health facility for medical care were determinants of utilization of maternal antenatal care.

Our findings confirmed the findings of the previous studies that attainment of higher education had been a strong determinant of maternal antenatal healthcare utilization (Adu, Tenkorang, Banchani, Allison, & Mulay, 2018; Nyongesa et al., 2018). This is because education plays a positive role in health literacy that ultimately plays its part in making appropriate health decisions (Kindig, Panzer, & Nielsen-Bohlman, 2004). In addition, the findings of the previous studies that residence in urban areas had been a strong determinant of maternal antenatal healthcare utilization (Islam & Masud, 2018; Sahito & Fatmi, 2018; Singh, Singh, & Singh, 2021). This is because of provision of more maternal antenatal healthcare facilities and other socio-economic indicators such as higher education and wealth quintile that led to utilization of maternal antenatal healthcare services. Usually, in rural areas maternal antenatal healthcare facilities are at far flung areas and with lack transportation facilities it becomes less likely to access maternal antenatal healthcare services. Similarly, previous studies highlighted that richest wealth quintile is a strong predictor of utilization of maternal antenatal care among married women (Ahinkorah, Seidu, Agbaglo, et al., 2021; Tessema, Teshale, Tesema, & Tamirat, 2021). Wealth places an important role in giving access to health facilities, therefore it is under stable that wealth quintile has an association with utilization of maternal antenatal care.

Overall, the evidence from current study also corroborated with the findings of the previous studies. In India, utilization of ANC was predicted by socioeconomic status and mother's education (Jat, Ng & San Sebastian, 2011). Similarly, in Ethiopia, women education, income, and place of residence were associated with ANC utilization (Tura, 2009). In Bangladesh, level of education and distance of health facility are factors determining health service usage (Islam & Odland, 2011). In Nigeria, socioeconomic status of the family and education of the individual were the major conjecturers of service utilization (Babalola & Fatusi, 2009). Similarly, wealth level, husband's education and employment status had a significant effect on maternal health care utilization (Dahiru & Oche, 2015). Our findings on autonomy could not find any association as compared to the findings of previous study (Tarekegn, Lieberman, & Giedraitis, 2014). As both (women with and without autonomy) received almost equivalent antenatal care for the current study that is why there was no association.

## **CONCLUSIONS**

Socio-demographical variables such as urban residence, age of pregnant wome and level of education were detriments of use of maternal antenatal care among pregnant women. In addition, autonomy to healthcare decision-making, women's employment status, husbands' level of education, and transport arrangement for medical care had no effects on maternal antenatal care among pregnant women. The study supported the targeting of less educated and socio-economically disadvantaged women for participation in antenatal care as a short-term measure to improve the outcomes. However, for longer term progresses in women's access to quality antenatal care, girl education, gender equity and the empowerment of women are required. Health promotion sessions among women to enhance current pregnancy care, individual birth plans and contraception are prerequisite. In addition,

comprehensive training of health care providers to ensure uniformity of care to all women who come for antenatal care, keeping in view that she might not visit again in this pregnancy.

#### **POLICY CONSIDERATIONS**

The current study provides empirical evidence that it is critical for health authorities to put substantial efforts into enhancing the quality of antenatal care through provision of proper counseling and information among pregnant women. Many other indicators such as low women education, lack of access to health services, lower female autonomy related to health-seeking, low family wealth quintile, lower exposure to mass media, women's and husbands' unemployment status, higher distance from health facility, etc. should also be taken into consideration while implementing decisions by the policy makers.

#### **Acknowledgments**

This paper is a part of a PhD dissertation project of first author.

## References and Bibliography

---

- <sup>1</sup>Adjiwanou, V., & LeGrand, T. (2013). Does antenatal care matter in the use of skilled birth attendance in rural Africa: a multi-country analysis. *Social science & medicine*, 86, 26-34. <https://doi.org/10.1155/2019/6716938>
- <sup>2</sup>Adu, J., Tenkorang, E., Banchani, E., Allison, J., & Mulay, S. (2018). The effects of individual and community-level factors on maternal health outcomes in Ghana. *PloS one*, 13(11), e0207942. <https://doi.org/10.1371/journal.pone.0207942>
- <sup>3</sup>Ahinkorah, B. O., Seidu, A. A., Agbaglo, E., Adu, C., Budu, E., Hagan, J. E., ... & Yaya, S. (2021). Determinants of antenatal care and skilled birth attendance services utilization among childbearing women in Guinea: evidence from the 2018 Guinea Demographic and Health Survey data. *BMC Pregnancy and Childbirth*, 21(1), 1-11. <https://doi.org/10.1186/s12884-020-03489-4>
- <sup>4</sup>Babalola, S., & Fatusi, A. (2009). Determinants of use of maternal health services in Nigeria-looking beyond individual and household factors. *BMC pregnancy and childbirth*, 9(1), 43. <https://doi.org/10.1186/1471-2393-9-43>
- <sup>5</sup>Conrad, P., Schmid, G., Tientrebeogo, J., Moses, A., Kirenga, S., Neuhann, F., ... & Sarker, M. (2012). Compliance with focused antenatal care services: do health workers in rural Burkina Faso, Uganda and Tanzania perform all ANC procedures?. *Tropical Medicine & International Health*, 17(3), 300-307. <https://doi.org/10.1111/j.1365-3156.2011.02923.x>
- <sup>6</sup>Dahiru, T., & Oche, O. M. (2015). Determinants of antenatal care, institutional delivery and postnatal care services utilization in Nigeria. *Pan African Medical Journal*, 22(1), 1-17. DOI:10.11604/pamj.2015.21.321.6527
- <sup>7</sup>Dapaah, J. M., & Nachinaab, J. O. (2019). Sociocultural determinants of the utilization of maternal health Care Services in the Tallensi District in the upper east region of Ghana. *Advances in Public Health*. <https://doi.org/10.1155/2019/5487293>
- <sup>8</sup>Hijazi, H. H., Alyahya, M. S., Sindiani, A. M., Saqan, R. S., & Okour, A. M. (2018). Determinants of antenatal care attendance among women residing in highly disadvantaged communities in northern Jordan: a cross-sectional study. *Reproductive health*, 15(1), 1-18. <https://doi.org/10.1186/s12978-018-0542-3>
- <sup>9</sup>Hodgins, S., & D'Agostino, A. (2014). The quality–coverage gap in antenatal care: toward better measurement of effective coverage. *Global Health: Science and Practice*, 2(2), 173-181. DOI: 10.9745/GHSP-D-13-00176.
- <sup>10</sup>Islam, M. M., & Masud, M. S. (2018). Determinants of frequency and contents of antenatal care visits in Bangladesh: Assessing the extent of compliance with the WHO recommendations. *PloS one*, 13(9), e0204752. <https://doi.org/10.1371/journal.pone.0204752>
- <sup>11</sup>Islam, M. R., & Odland, J. O. (2011). Determinants of antenatal and postnatal care visits among Indigenous people in Bangladesh: a study of the Mru community. *Rural and Remote Health*, 11, 1672. PMID: 21714582
- <sup>12</sup>Jat, T. R., Ng, N., & San Sebastian, M. (2011). Factors affecting the use of maternal health services in Madhya Pradesh state of India: a multilevel analysis. *International journal for equity in health*, 10(1), 59. <https://doi.org/10.1186/1475-9276-10-59>
- <sup>13</sup>Kindig, D. A., Panzer, A. M., & Nielsen-Bohlman, L. (Eds.). (2004). Health literacy: a prescription to end confusion. *National Academies Press*
- <sup>14</sup>Lathi, R. B., Hazard, F. K. G., Heerema-McKenney, A., Taylor, J., & Chueh, J. T. (2011, November). First trimester miscarriage evaluation. In *Seminars in reproductive medicine* (Vol. 29, No. 06, pp. 463-469). © Thieme Medical Publishers.
- <sup>14</sup>Maken, Z. H., Nasir Idrees, I., Zahid, A., Zulfiqar, A., Munib, A., Hassan, F., & Mahmood, R. (2018). Factors influencing father's antenatal and perinatal involvement in maternal health care. *The Journal of Maternal-Fetal & Neonatal Medicine*, 31(19), 2569-2575. DOI: 10.1080/14767058.2017.1347920
- <sup>15</sup>National Institute of Population Studies (NIPS), Pakistan Demographic and Health Survey 2012–13. Islamabad, Pakistan and Calverton, Maryland, USA: NIPS and ICF International; *ICF International*. 2013.

- <sup>16</sup>NIPS: Pakistan Demographic and Health Survey Islamabad: *National Institute of Population Studies Islamabad*. [Cited on 24 August 2017]. Available on [http://www.nips.org.pk/abstract\\_files/PDHS%20-%202017-18%20Key%20](http://www.nips.org.pk/abstract_files/PDHS%20-%202017-18%20Key%20)
- <sup>17</sup>Nyongesa, C., Xu, X., Hall, J. J., Macharia, W. M., Yego, F., & Hall, B. (2018). Factors influencing choice of skilled birth attendance at ANC: evidence from the Kenya demographic health survey. *BMC pregnancy and childbirth*, 18(1), 88. <https://doi.org/10.1186/s12884-018-1727-z>
- <sup>18</sup>Pervin, J., Moran, A., Rahman, M., Razzaque, A., Sibley, L., Streatfield, P. K., ... & Rahman, A. (2012). Association of antenatal care with facility delivery and perinatal survival—a population-based study in Bangladesh. *BMC pregnancy and childbirth*, 12(1), 111. <https://doi.org/10.1186/1471-2393-12-111>
- <sup>19</sup>Sahito, A., & Fatmi, Z. (2018). Inequities in antenatal care, and individual and environmental determinants of utilization at national and sub-national level in Pakistan: a multilevel analysis. *International journal of health policy and management*, 7(8), 699-710. DOI: 10.15171/IJHPM.2017.148
- <sup>20</sup>Singh, P., Singh, K. K., & Singh, P. (2021). Maternal health care service utilization among young married women in India, 1992–2016: trends and determinants. *BMC Pregnancy and Childbirth*, 21(1), 1-13. <https://doi.org/10.1186/s12884-021-03607-w>
- <sup>21</sup>Tarekgn, S. M., Lieberman, L. S., & Giedraitis, V. (2014). Determinants of maternal health service utilization in Ethiopia: analysis of the 2011 Ethiopian Demographic and Health Survey. *BMC pregnancy and childbirth*, 14(1), 161. <https://doi.org/10.1186/1471-2393-14-161>
- <sup>22</sup>Tessema, Z. T., Teshale, A. B., Tesema, G. A., & Tamirat, K. S. (2021). Determinants of completing recommended antenatal care utilization in sub-Saharan from 2006 to 2018: evidence from 36 countries using Demographic and Health Surveys. *BMC Pregnancy and Childbirth*, 21(1), 1-12. <https://doi.org/10.1186/s12884-021-03669-w>
- <sup>23</sup>Tura, G. (2009). Antenatal care service utilization and associated factors in Metekel Zone, Northwest Ethiopia. *Ethiopian Journal of Health Sciences*, 19(2).111-119. DOI: 10.4314/ejhs.v19i2.69415
- <sup>24</sup>UNICEF (2015). Antenatal Care <https://data.unicef.org/topic/maternalhealth/antenatal-care/> [ACSESSED on 2 October 2018]
- <sup>25</sup>United Nations Inter-Agency Group for Child Mortality Estimation. *Levels and Trends in Child Mortality: Report 2015*. New York, NY: UNICEF
- <sup>26</sup>Zakar, R., Zakar, M. Z., Aqil, N., Chaudhry, A., & Nasrullah, M. (2017). Determinants of maternal health care services utilization in Pakistan: evidence from Pakistan demographic and health survey, 2012–13. *Journal of Obstetrics and Gynaecology*, 37(3), 330-337. <https://doi.org/10.1080/01443615.2016.1250728>