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Awareness and Utilization of Maternal Health Services among Women in Rural Areas of South Punjab, Pakistan

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ABSTRACT

In less developed countries like Pakistan, where a large portion of the population lives in rural areas, this provides strong evidence that maternal health is strongly correlated with population health. In the study, there was an identification of the awareness and use of the maternal health services of 400 rural South Punjabi women with respect to the antenatal care (ANC) and skilled birth attendance (SBA) and postnatal care (PNC). The data were collected in structured questionnaires, with interpretation of the data done through descriptive statistics, binary logistic regression and Pearson correlation analysis. It was found that 70 percent of the women were familiar with ANC services, 60 with SBA and 50 with PNC services. The rates of penetration were also low, as 65 percent used ANC, 57.5 percent used SBA and 45 percent used PNC. Those factors that were identified as significant predictors of service utilization were education (OR = 3.06, p = 0.001), household income (OR = 2.34, p = 0.002), occupation (OR = 2.12, p = 0.027), and proximity to health facilities (OR = 2.74, p = 0.001). The largest of them were financial constraints (Mean = 4.25 ± 0.82), cultural norms (Mean = 4.00 ± 0.87) and structural constraints in the form of long distances to health facilities (Mean = 4.20 ± 0.85). Pearson correlation analysis showed that there was a positive and strong correlation between awareness and utilization ($r = 0.62$, $p < 0.001$). Such findings highlight the importance of specific awareness interventions, funding, gender empowerment, and increased access to healthcare services in improving maternal health in rural South Punjab.

***Keywords*:** Maternal health, Awareness, Utilization, Rural women, Antenatal care, Skilled birth attendance, Postnatal care, Barriers.

INTRODUCTION

Maternal health belongs to the area of public health and is one of the leading indicators of the health and development of a certain country. The health outcomes of mothers not only decrease maternal and neonatal mortality but also lead to wellbeing of families and communities, hence creating socio-economic development. It is remarkable in the world that maternal health has achieved massive success in the field of healthcare delivery, awareness creation and application of special programs. Different initiatives, including the Sustainable Development Goals (SDGs) and SDG 3.1 in particular, will see the maternal mortality rate decrease to less than 70 deaths per 100,000 live births by 2030 (World Health Organization, 2023; GoP, 2024). Nevertheless, even with the fact that the world is becoming better, maternal mortality is one of the acute issues of low-income and middle-income nations (LMICs), such as Pakistan.

The problem of high maternal mortality burden continues in Pakistan. According to the Pakistan Demographic and Health Survey (PDHS, 2022), the national MMR rates are 154 deaths per 100,000 live births and are strongly varied both in urban and rural areas. The rural setting, provinces such as Punjab, are more neglected because of the lack of infrastructure, lack of a transportation, poverty, and entrenched socio-cultural ethics that govern the action of seeking healthcare. TBA (dais) remains even more popular in most rural areas and institutional delivery is not considered necessary and only in emergency cases (Ali et al., 2020; Hanif et al., 2021).

The South Punjab area is one of the least served areas in the country. The issues encountered by the women in these rural regions when trying to access the services of maternal health are geographical isolation, financial constraints, ignorance, and restriction of decision making because of the patriarchal nature of the family (Habib et al., 2021). Healthcare system is also prone to the challenge of staff shortage, supply shortage and culturally insensitive services. This has led to the inaccessibility of maternal health services that are vital, such as antenatal care (ANC), skilled birth attendance (SBA), and postnatal care (PNC), which are also contributing to the preventable maternal and neonatal deaths (Wahab et al., 2023).

The awareness is critical in influencing maternal health care use. With the knowledge of risks in pregnancy and symptoms of the threat and awareness of the benefits of medical help in the institution, women have more chances to seek the medical help as early as possible (Brusniak et al., 2020). On the contrary, poor awareness and socio-economic factors are the right evidence of the existence of traditional practices. The education level, family income, cultural beliefs, family support, and exposure to health information have been confirmed to play a significant role in the behavior change of seeking maternal healthcare (McClure et al., 2020; Sharma et al., 2020). These dynamics are at the core of the evidence-based interventions realization that would help to deal with the demand-side and supply-side problems (i.e., the lack of awareness and financial constraints and insufficient services, respectively).

Although, there are several government and non-government programs which are oriented on the popularization of the maternal health services, there are deficiencies in the empirical research which were specifically targeted on the behavioral awareness and utilization of the rural women in South Punjab. This is a highly serious gap that ought to be filled in order to formulate some measures that are geared towards improving maternal health outcomes and preventable deaths. A major objective of the study is to identify the level of awareness and the usage of maternal health services among women residing in rural South Punjab Pakistan. The specific objectives are:

To create awareness among women regarding key maternal health services, which include antenatal services, skilled birth attendance, and postnatal care.

- To establish the extent of the maternal health services the women of the rural South Punjab utilize.
- To create socio-economic, cultural and structural constraints to maternal access to and use of health services.
- To determine the relationship between the maternal health service use and the maternal health services awareness.

MATERIALS AND METHODS

The research design used in this study was a quantitative research design since it entailed a methodological examination of maternal health service awareness and usage among the women residing in the South Punjab rural region in Pakistan. The quantitative methodology had been chosen because it was possible to objectively measure the variables, perform the statistical calculations and make generalizations based on the results. The cross-sectional type of survey was adopted because it was possible to collect data at one time and present the present picture of awareness, use, practice and barriers to utilizing maternal healthcare. The research was done in the chosen rural villages of South Punjab that lack proper healthcare systems, maternal mortality rate, and social-cultural interference to healthcare seeking. The sample population included women of of childbearing age (15-49 years) with a recent birth (within 2 years), hence, were able to recall their experience with any of the maternal health services (ANC, SBA, PNC).

Multi stage sampling method was used. Three rural districts were randomly chosen in the first step. The second phase concerned the application of the lottery process so as to determine the villages within each district. The third phase consisted in the selection of the households based on systematic random sampling and lastly, one of the eligible women within a household was interviewed. The cross-sectional study was used with a level of confidence 95 and marginal error of 5 to find out the size of the sample by Cochran formula. This left 400 respondents and a 10% no-response was included.

The structured questionnaire of data collection was created based on the analysis of the appropriate literature and the past research (Ali et al., 2020; Yadav et al., 2021; PDHS, 2022; Uwimana et al., 2023). The questionnaire was divided into five parts as follows: demographic characteristics, awareness of the maternal health services, service utilization, barriers to access, and service quality impression. The questions were mostly closed ended and the Likert scale (1 = strongly disagree to 5 = strongly agree) to measure the attitude and perceptions and binary (Yes/No) to describe the indicators of service utilization. The questionnaire was pretested on 30 women of such population to determine the questionnaire clarity, questionnaire validity and reliability. Transformations were carried out on a pilot basis. The last question was highly internally consistent and had Cronbach alpha of 0.82.

To provide the participants with a sense of comfort and to derive genuine responses, the data collection exercise was conducted by use of face-to-face interviews with the help of the trained female enumerators. The interviews were carried out in the local language (Saraiki/Punjabi) to enhance comprehension and every meeting took about 30-40 minutes. The questionnaire administration, issue of ethics, and informed consent were oriented to the enumerators prior to the data collection process. The study ethics were informed by the institutional review board, which provided consent for the study.The acquired data were coded and processed with the help of version 26.0 of Statistical Package of the Social Sciences (SPSS). There were frequencies, means, standard deviations, percentages that were used as descriptive statistics to summarize the demographics, awareness and rate of utilization of the maternal health services. The inferential statistics have been used to calculate the relationship between variables. The binary logistic regression helped in determining the significant predictors of maternal consumption of health services.

$\text{Log}\left(\frac{P}{1-P}\right)=\beta0+\beta1X1+\beta2X2+\beta3X3+\cdots+\beta kXk$

Where:

- P = probability of utilizing maternal health services
- 1−P = probability of not utilizing services
- $\text{Log}\left(\frac{P}{1-P}\right)$ = log odds of utilization
- β0 = intercept
- β1, β2 ..., βk = regression coefficients for predictors X1, X2..., Xk (e.g., education, income, age, occupation, distance to facility)

Pearson correlation analysis assessed the relationship between awareness and utilization of services. All statistical tests were conducted at a 95% confidence level, with p-values < 0.05 considered statistically significant.

$$r = \frac{\sum(X_i - \bar{x})(Y_i - \bar{Y})}{\sqrt{\sum(X_i - \bar{x})^2 \sum(Y_i - \bar{Y})^2}}$$

Where:

- X_i = individual score of awareness
- Yi = individual score of utilization
- $\bar{x}$ = mean of awareness scores
- $\bar{Y}$ = mean of utilization scores
- $\sum$ = summation across all participants (n = 400)

This assisted in offering a general manner of the awareness of the knowledge regarding the utilization of maternal health services among women in addition to the socio-economic, cultural and structural issues that affect the health care practices within the rural South Punjab. The research will contain valuable results, which will lead policy makers and healthcare providers to take certain measures which should lead to the goal of improving maternal health outcomes.

RESULTS AND DISCUSSION

This second section include the findings of the research followed by the discussion of the research topic which will be the awareness of the maternal health services and the use of the maternal health services among the rural women of South Punjab in Pakistan. They are classified according to the objective of the research and they start by setting the level of awareness of the women on basic maternal health care services, which encompass the antenatal care (ANC), skilled birth attendance (SBA) and postnatal care (PNC). Then it talks about the consumption rate of such services and socio-economic, cultural and structural barriers between access and consumption. In addition to that, the importance of the correlation between awareness and the utilization is also discussed with references to demographic variables (education, income, distance to healthcare facilities) as well.

Awareness of key maternal health services

Table 1 and Figure 1 narrates the awareness of women in relation to the primary maternal health services, such as antenatal care (ANC), skilled birth attendance (SBA) and postnatal care (PNC) of 400 women. It is important to know the availability of such services, which is directly related to the use of the same and the eventual impact of the same on the maternal and neonatal health. The table gives a clearer view of the percentage of both the informed and uninformed women on every one of the services that are informative of the potential knowledge gaps that may affect the ability to have the necessary healthcare in a timely and formative manner.

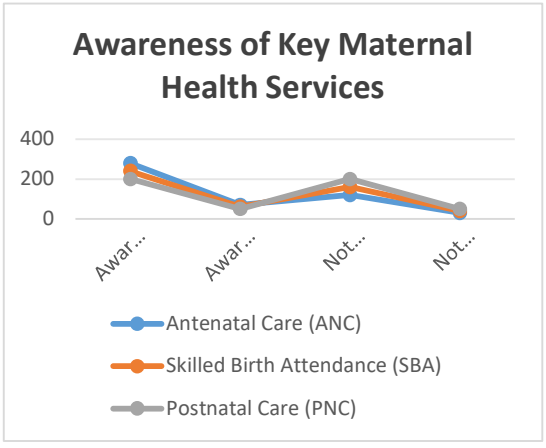

Figure--1Awareness of respondents of key maternal health services

The results prove that most women (70 percent) were not unaware of ANC services, and this implies that they had a rather good understanding of the need to have regular check-ups when pregnant. SBAs awareness was also low with the women more aware of the service, as 60 percent said they knew about the service therefore the analysis that many women are still using unskilled birth attendants was possible. The lowest oriented awareness was noticed regarding the postnatal care, as half of the women were aware of PNC, which reveals the presence of the critical knowledge gaps in the domain of the maternal care after the birth, and such a scenario indicates that the lack of awareness can lead to the lack of understanding of the necessity to use the types of the health services that are required (Habib et al., 2021).

Table 1: Awareness of Key Maternal Health Services among Women (n = 400)

Maternal Health Service	Frequency	Percentage	Frequency	Percentage
	Aware		Not Aware	
Antenatal Care (ANC)	280	70	120	30
Skilled Birth Attendance (SBA)	240	60	160	40
Postnatal Care (PNC)	200	50	200	50

Utilization of maternal health services

The use of most valuable maternal health services (including ANC, SBA, and PNC) was examined on 400 South Punjabi rural women in the sample (Table 2 and Figure 2). It is an essential component in the scrutiny of the shortcomings in access to maternal healthcare in the determination of the utilization of these services, and in the education of the interventions to seal the gaps in the promotion of maternal and neonatal outcomes**.**

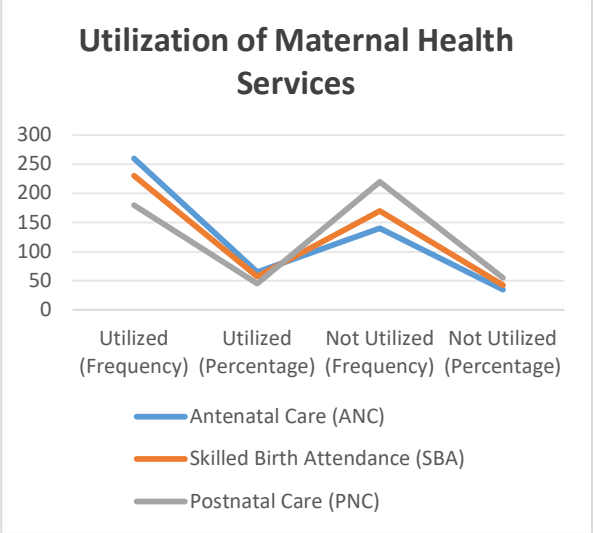

Figure-2Utilization of maternal health services by respondents

Findings also indicate that ANC was the service that was most utilized with 65 per cent of the women indicating that they used the service with a meaning of moderate use of routine pregnancy care. The SBA use had a slightly smaller margin of 57.5 percent of the women availing themselves of skilled attendance during delivery, which means that possibly, cultural tendencies, financial challenges, or proximity to health care make this happen. The lowest level of use was in PNC, with 45 percent of the sample presenting a high disparity in the postnatal follow-up care, which is critical in monitoring the maternal and neonatal health of the mother and the baby after childbirth. This is consistent with rural Pakistan literature, where ANC was usually far more widespread than SBA and PNC and socioeconomic, educational, and geographic factors have a strong influence on the utilization of the service (Afaya et al., 2020; Teshale et al., 2020; Wahab et al., 2023).

Table 2: Utilization of Maternal Health Services among Women in Rural South Punjab (n = 400)

	Utilized		Not Utilized	
Maternal Health Service	Frequency	Percentage	Frequency	Percentage
Antenatal Care (ANC)	260	65	140	35
Skilled Birth Attendance (SBA)	230	57.5	170	42.5
Postnatal Care (PNC)	180	45	220	55

Factors influence the utilization of maternal health services

Table 3 contains the results of a binary logistic regression model, which was run to identify the primary predictors of maternal health services use among rural South Punjab women (n = 400). The influence of multiple social-demographic and accessibility variables in combination and taking into account other variables enable the use of the logistic regression and determining the strongest predictors of uptakes of the services.

Table 3: Binary Logistic Regression Analysis of Predictors of Maternal Health Service Utilization (n = 400)

Predictor Variable	B (Coefficient)	S.E.	Wald χ^2	df	p-value	Odds Ratio (Exp(B))	95% CI for Exp(B)
Education (Higher vs. Lower)	1.12	0.32	12.25	1	<0.001**	3.06	1.63–5.75
Monthly Household Income	0.85	0.28	9.21	1	0.002**	2.34	1.35–4.05
Age (≥30 vs <30 years)	0.42	0.27	2.44	1	0.118	1.52	0.90–2.56
Occupation (Employed vs. Homemaker)	0.75	0.34	4.87	1	0.027*	2.12	1.09–4.11
Distance to Health Facility (<5 km vs ≥5 km)	1.01	0.30	11.34	1	0.001**	2.74	1.50–5.02

Note: *p < 0.05, **p < 0.01, statistically significant

The analysis findings indicate that education is a strong predictor of the utilization of maternity health services. The better educated females were at an advantage of three times greater than the less educated females in seeking maternal health services (OR = 3.06, 95% CI: 1.635.75, p < 0.001) and this proved to be the case, thus allowing the role played by competence and awareness in the behavior change seeking healthcare services. The other important

parameter was the monthly household income, in which women with high household incomes were estimated to be more than twice likely to utilize maternal healthcare services (OR =2.34, 95% CI: 1.354.05, p =0.002), which was used to indicate the importance of the financial ability in the affordability of healthcare. Another risk factor of interest was occupation since working women were more likely to get maternal health services than the homemakers (OR = 2.12, 95% CI: 1.094.11 p = 0.027). Perhaps this was attributed to the high autonomy, health and financial independence information. Moreover, the services highly relied on the proximity to nearest health facility: women within the area with the proximity to geographic facility of health facility within a distance of 5 km were almost thrice more likely to use the services compared with women living far away (OR = 2.74, 95% CI: 1.50 5.02, p = 0.001) showing the role of the geographic access. Although, age did not predict well in this group (OR = 1.52, 95% CI: 0.902.56, p = 0.118), it could have been assumed that the age of the mother is not a decisive factor in the situation regarding the decision to seek care in the specified rural setting.

The results are in line with the previous studies that occurred in Pakistan and other developing and emerging economies, which have continually established that maternal education, household income, the level of employment, accessibility to health facilities, are the most influential determinants of maternal health services (Wahab et al., 2023; Omer et al., 2021; Zhou et al., 2020).

Barriers

Table 4 provides the perceived socio-economic, cultural and structural barriers that prevent access to and use of maternal health services among women in rural South Punjab (n = 400). The rating of the barriers has been done on 5-point Likert scale, the means, standard deviations and ranks have helped in the comparison of the perceived importance of the barriers by the respondents.

Table 4: Socio-economic, Cultural, and Structural Barriers to Maternal Health Service Utilization (n = 400)

Barrier Type	Barrier Description	Mean ± SD	Rank
Socio-economic	Lack of household income	4.25 ± 0.82	1
	High cost of services	4.10 ± 0.88	2
	Lack of female decision-making power	3.85 ± 0.91	3
	Low maternal education	3.70 ± 0.95	4
	Unemployment of spouse/household head	3.55 ± 0.97	5
Cultural	Preference for traditional birth attendants	4.00 ± 0.87	1
	Gender norms restricting mobility	3.90 ± 0.89	2
	Religious beliefs affecting care-seeking	3.60 ± 0.92	3
	Family resistance to modern care	3.50 ± 0.95	4
	Early marriage and childbearing norms	3.35 ± 0.98	5
Structural	Long distance to health facility	4.20 ± 0.85	1
	Poor transportation availability	4.05 ± 0.88	2
	Lack of female healthcare providers	3.80 ± 0.90	3
	Poor facility infrastructure	3.65 ± 0.93	4
	Irregular service hours	3.50 ± 0.95	5

The highest socio-economic limiting factor was the household income (Mean = 4.25 ± 0.82, Rank 1), which was then followed by the high cost of services (Mean = 4.10 ± 0.88, Rank 2) indicating that women are constrained by financial limitations to access the services of antenatal care, skilled birth and postnatal care. Others, such as the power of females in decision-making and poor status of maternal education were also important as they were also a reflection of the general socio-economic empowerment on the maternal utilization of health services. As far as cultural barriers are concerned, the most critical barrier appears to be the preferential utilization of the traditional birth assistants (Mean = 4.00 ± 0.87, Rank 1), followed by the constraining gender norms (Mean = 3.90 ± 0.89, Rank 2). Religious beliefs and family disapproval of modern care also led to underutilization, and this fact highlights the power of cultural practices that are so ingrained in people and discourage women against using formal services of maternal care. The maximum of 4.20 +0.85 (Rank 1) was observed in long distance to health facilities then poor transportation availability, with the mean of 4.05 +0.88 (Rank 2) and finally the lack of female healthcare providers, with a mean of 3.80 +0.90 (Rank 3). These studies shed light on the role of geographic and infrastructural barriers in restricting maternal health services uptake, with rural areas being particularly challenging with regard to access to health facilities.

In general, these findings suggest that the greatest barriers to the utilization of maternal health services in rural South Punjab are financial constraints, cultural norms, and structural access issues. The results are consistent with those of previous studies on the same subject in Pakistan and other low- and middle-income countries, which have established that the utilization of maternal health services is significantly reduced by such aspects as socio-economic deprivation, cultural beliefs, and lack of access to healthcare (Ramadan et al., 2023; UNSD, 2022; Arroyave et al., 2021; Girmaye et al., 2021; Khan et al., 2020). To address these challenges, I would implement the complex interventions with special consideration given to financial aid, community education, gender empowerment, and upgrades of healthcare facilities to enhance the outcomes of maternal health.

Relationship among awareness and utilization

Table 5 presents the Pearson correlation analysis of the relationship between the awareness of women on the maternal health services and their use in the rural South Punjab. Such relationship can be assessed to find out whether the heightened enlightenment of the necessity of antenatal care, skilled birth attendance and postnatal care can be translated into the heightened utilization of the services which are very crucial. Such analysis, which measures the level and the direction of such association, has provided information on the role of knowledge and information on health seeking behavior of women in this rural environment.

Table 5: Pearson Correlation between Awareness and Utilization of Maternal Health Services (n = 400)

Variables	Awareness (Mean ± SD)	Utilization (Mean ± SD)	r	p-value
Awareness of Maternal Health Services	3.80 ± 0.75			
Utilization of Maternal Health Services	3.55 ± 0.82		0.62**	<0.001

Note: **p < 0.01, statistically significant

Table 5 presents results of a Pearson correlation to determine the existence of the relation between women awareness regarding the services of maternal health and their utilization in rural South Punjab (n = 400). It was established that the level of correlation between awareness and utilization of the above is significant (r = 0.62, p = 0.001), such that those women with higher awareness of the above (antenatal care (ANC) and skilled birth attendance (SBA) and postnatal care (PNC) have a high probability of using these services. This observation means that the knowledge and awareness of the maternal health services are significant elements influencing health-seeking behaviors. The significant association is the same as it was previously found in Pakistan and other countries with low and middle income that emphasize the fact that the rate of uptake of maternal health services can be directly increased by improving the awareness of women (through health education and community outreach interventions) (Ansu-Mensah et al., 2020; Sarwar, 2021; Muthelo et al., 2023; Nwabueze et al., 2023). The results of these investigations prove the importance of certain awareness programs and education interventions as one of the methods to improve the outcome in maternal and neonatal health by using the required services timely and appropriately.

Conclusion

The article provides an in-depth analysis of the knowledge and utilization of maternal health services by rural South Pakistani women. The findings indicate that the awareness of antenatal care (ANC) was quite high (70%), and the awareness of skilled birth attendance (SBA) and postnatal care (PNC) were lower, which confirms the presence of gaps in the knowledge that are likely to reduce access to the services in question. The utilization habits were also demonstrated in the extent of awareness, where ANC was the most utilized followed by SBA and PNC, which is indicative of the chronic underutilization, particularly after childbirth. Binary logistic regression established that education, household income, occupation and distance to health facilities were substantive predictors of maternal health services utilization, and socio-economic empowerment and accessibility were involved in the determination of health-seeking behavior. The barrier analysis revealed that the financial barriers, cultural norms, and structural barriers such as the distance to facilities, and the lack of female healthcare providers, are the key barriers to service uptake. Besides, Pearson correlation analysis indicated that the correlation between awareness and utilization was strong and positive, which is essential in the role of knowledge in enabling maternal healthcare engagement. All in all, these findings indicate that multifaceted interventions, including community-based awareness, financial assistance mechanisms, gender empowerment, and healthcare availability, can be applied to enhance the health outcomes of rural South Punjab mothers.

Declarations

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Conflicts of Interest

The authors do not have any conflicts of interest.

Data Availability

The data shall be available to the relevant author at a time when requested.

Ethics Statement

This was an investigation that concerned human data and ethical approval was taken from the Institute of Agricultural Extension, Education, and Rural Development, The University of Agriculture, Faisalabad, Pakistan.

Authors Contribution

Shahbaz Shaukat; Conceptualization, Writing, Data Curation, Faisal Nadeem; Methodology, Original draft Writing, Formal Data Analysis, Maria Hanif; Writing, Review and Editing, Data Analysis and Data Collection

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