

Original Article

Determinants of Contraceptive Service Utilization Among Women of Reproductive Age Visiting Civil Hospital Umerkot

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ABSTRACT

Background: Contraceptive use is essential for improving maternal and child health outcomes, particularly in rural populations where access to family planning is constrained by socio-cultural and economic barriers. In Pakistan, the contraceptive prevalence rate remains suboptimal, with rural women disproportionately affected by limited education, gender norms, and poor health infrastructure. Understanding context-specific determinants is critical to addressing unmet family planning needs. *Objective:* To determine the prevalence of contraceptive use and identify the socio-demographic, cultural, and healthcare-related factors associated with contraceptive service utilization among women of reproductive age attending Civil Hospital Umerkot, Sindh, Pakistan. *Methods:* A cross-sectional observational study was conducted over six months in 2023 among 356 married women aged 15–49 years attending the hospital's outpatient department. Data were collected using structured, interviewer-administered questionnaires assessing demographic characteristics, access to healthcare, contraceptive awareness and usage, spousal support, and cultural influences. Descriptive statistics, chi-square tests, and multivariate logistic regression were used to analyze associations. *Results:* Current contraceptive use was reported by 25.3% of participants. Secondary education (aOR: 2.64), employment (aOR: 1.98), spousal support (aOR: 3.22), awareness of services (aOR: 2.91), and absence of social stigma (aOR: 1.79) were positively associated with use. Barriers such as joint family structure and male child preference significantly reduced likelihood of use. Contraceptive prevalence declined sharply with accumulation of multiple barriers. *Conclusion:* Contraceptive service utilization in Umerkot is hindered by low education, limited awareness, patriarchal norms, and structural inaccessibility. Interventions must address these interconnected barriers through community education, male involvement, and health system strengthening.

Keywords: contraceptive use, family planning, rural women, socio-cultural barriers, Pakistan, reproductive health, healthcare access.

INTRODUCTION

Contraceptive use is a critical component of reproductive health, especially for women of reproductive age in low- and middle-income countries (LMICs), where maternal morbidity and mortality remain major public health concerns. Globally, significant strides have been made in promoting modern contraceptive methods, yet disparities in access, awareness, and utilization persist, particularly in rural communities burdened by sociocultural and economic constraints (1, 2). These disparities are exacerbated by deeply rooted gender norms, limited female autonomy, and structural healthcare inequalities that prevent effective implementation of family planning programs (3, 4). Consequently, women residing in marginalized regions often face elevated risks of unplanned pregnancies, unsafe abortions, and related health complications due to the unmet need for family planning services (5, 6).

In many LMICs, including Pakistan, where high fertility rates and rapid population growth are pressing demographic challenges, the promotion of contraceptive services is an essential strategy for improving maternal and child health outcomes and alleviating economic stressors on households and healthcare systems (7). With a population exceeding 230 million and an annual growth rate of 2%, Pakistan struggles to achieve its family planning targets, such as increasing the contraceptive prevalence rate (CPR) to 55% as outlined in the Sustainable Development Goals (8). However, these targets remain unmet due in part to persistent cultural taboos, religious misconceptions, and patriarchal power dynamics that hinder women's access to and utilization of contraceptives (9, 10). Studies conducted in South Asia have consistently shown that women's educational attainment, spousal communication, and economic independence are significant predictors of contraceptive use, while social stigma, preference for male offspring, and opposition from family members—particularly male partners—serve as key barriers (11–13). These issues are particularly acute in rural Pakistan, where over 60% of the population resides and where health infrastructure remains under-resourced and inaccessible for many communities (14).

Despite ongoing policy efforts and donor-driven interventions aimed at expanding family planning services across Pakistan, evidence suggests that rural areas continue to experience disproportionately low contraceptive uptake (15). A combination of service delivery gaps, such as limited method choice and poorly trained providers, and demand-side challenges, such as misinformation and fatalistic attitudes, further complicates efforts to meet reproductive health goals (16). Notably, past studies have often focused on urban or provincial-level data, leaving a critical gap in context-specific research that captures the nuanced sociocultural and systemic barriers faced by women in rural districts like Umerkot. This district, located in Sindh province, embodies many of the challenges typical of rural healthcare settings: poverty, illiteracy, and deeply entrenched gender roles, yet it remains understudied in terms of reproductive health behavior.

Given these considerations, there is an urgent need to generate localized evidence that can inform targeted, culturally sensitive interventions to enhance contraceptive service utilization among rural women. Addressing this knowledge gap is particularly important for tailoring public health strategies that resonate with the lived experiences of women in these communities and for engaging male partners and community influencers in shifting norms around family planning. Therefore, this study was conducted to examine the determinants of contraceptive service utilization among women of reproductive age visiting the Civil Hospital in Umerkot. Specifically, it aimed to assess the prevalence of contraceptive use and identify the sociodemographic and cultural factors that hinder or facilitate access to and adoption of contraceptive methods. The central objective of the study was to generate evidence that can support the design of context-appropriate interventions to increase contraceptive uptake and improve reproductive health outcomes in similar rural settings.

MATERIAL AND METHODS

This study employed a descriptive cross-sectional observational design to investigate the determinants of contraceptive service utilization among women of reproductive age attending the outpatient department (OPD) of the Civil Hospital in Umerkot, Sindh, Pakistan. The rationale for choosing this design was its suitability for estimating prevalence and identifying associated factors at a single point in time, particularly in public health studies assessing healthcare behaviors and service utilization. The study was conducted over a period of six months, from July to December 2023, at the District Headquarter Hospital, which serves as the primary referral healthcare facility for the region's predominantly rural population.

Eligible participants were women aged 15 to 49 years, corresponding to the standard reproductive age bracket as defined by the World Health Organization. Inclusion criteria required that women be residents of Umerkot district, currently married, and visiting the hospital's OPD for any reason during the data collection period. Women who were outside the reproductive age range, not permanent residents of the district, visiting other hospital departments, or unwilling to participate were excluded. A non-probability convenience sampling technique was used due to logistical feasibility and to ensure the recruitment of a diverse cross-section of women within the hospital's catchment area. Written informed consent was obtained from all participants following a detailed verbal explanation of the study's objectives, procedures, and confidentiality protocols in the local language. For illiterate participants, consent was obtained through thumb impressions witnessed by an impartial third party.

Data were collected using a structured, interviewer-administered questionnaire designed to capture information on key variables related to contraceptive use. The questionnaire was developed in English, translated into Sindhi and Urdu, and pre-tested on a small sample for clarity and cultural appropriateness prior to full-scale deployment. Data collection was carried out by trained female healthcare staff to ensure participant comfort and data reliability. Interviews were conducted in private consultation rooms to minimize social desirability bias and ensure confidentiality. Each interview lasted approximately 20 to 25 minutes and was conducted on-site immediately following OPD consultation. The questionnaire gathered data across five main domains: socio-demographic characteristics (age, education, occupation, marital status), healthcare access (ease of access, distance to facility), contraceptive awareness and history (current and past use, type of methods known and used), spousal and familial influences (husband's support, family structure), and sociocultural beliefs (stigma, gender preference, religious perceptions).

The primary outcome variable was current use of any contraceptive method (modern or traditional), defined as self-reported use within the last month. Other key variables were operationalized as follows: healthcare access was categorized into "very easy," "some difficulty," or "difficult"; awareness of contraceptive services was coded as "aware," "somewhat aware," or "not aware"; husband's support was classified as "supportive," "not supportive," or "opposed"; and stigma was assessed based on frequency of perceived judgment from peers or community regarding contraceptive use. Family structure was categorized into "nuclear" or "joint," with the latter implying shared households with extended family, which may influence reproductive decision-making.

A sample size of 356 participants was calculated using the OpenEpi sample size calculator, assuming an estimated contraceptive prevalence of 30% (based on previous regional data), with a 95% confidence level, a 5% margin of error, and an additional 10% to account for potential non-response or incomplete data (17). This calculation ensured adequate power to detect statistically significant associations between contraceptive use and explanatory variables.

To minimize bias, standardized training was provided to data collectors on uniform administration of the questionnaire and ethical conduct. To reduce interviewer bias, responses were recorded verbatim without interpretation or suggestion. Consistency checks and double-entry of data were employed to ensure data integrity. Potential confounding variables such as age, education, and occupation were adjusted for during statistical analysis.

Data were entered into SPSS version 29 (IBM Corp., Armonk, NY, USA) for cleaning and analysis. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were computed for all relevant variables. Bivariate analyses, such as chi-square tests, were used to explore associations between contraceptive use and independent variables. Logistic regression models were applied to

identify predictors of contraceptive use, with adjusted odds ratios (aORs) and 95% confidence intervals reported for statistically significant variables. Confounding was assessed by entering suspected variables into the multivariate model and observing changes in coefficients. Missing data were handled using listwise deletion, as the extent of missingness was low and randomly distributed. Subgroup analyses were performed to examine differences in contraceptive use patterns by age group, education level, and family structure. Ethical approval was obtained from the Institutional Review Board of Liaquat University of Medical and Health Sciences, Jamshoro. All procedures were conducted in accordance with the ethical standards of the Helsinki Declaration. Data confidentiality was rigorously maintained through anonymized coding and restricted access to the dataset. The study adhered to rigorous documentation protocols to ensure reproducibility, including version control of study tools, metadata recording, and audit trails for data entry and analysis steps (18).

RESULTS

A total of 356 women of reproductive age participated in the study. The mean age of respondents was 31.7 years (SD: 8.1), with the largest proportion in the 21–30-year age group. All participants were married. Nearly half (43.8%) reported no formal education, and the majority (71.9%) were unemployed. Most participants (50.6%) lived in joint family systems.

Table 1. Socio-Demographic Characteristics and Contraceptive Use

Variable	Total n (%)	Currently Using Contraceptives n (%)	Not Using Contraceptives n (%)	p-value	Odds Ratio (95% CI)
Age Group					
15–20 years	45 (12.6)	7 (15.6)	38 (11.9)	0.032*	1.38 (1.03–2.78)
21–30 years	120 (33.8)	36 (35.6)	84 (33.1)		
31–40 years	95 (26.7)	25 (27.8)	70 (27.5)		
41–49 years	96 (26.9)	22 (24.4)	74 (27.5)		
Education Level				<0.001*	2.01 (1.42–2.82)
No formal education	156 (43.8)	15 (16.7)	141 (55.1)		
Primary education	70 (19.7)	19 (21.1)	51 (19.9)		
Secondary education	130 (36.5)	56 (62.2)	74 (28.9)		
Occupation				0.018*	1.64 (1.08–2.41)
Unemployed	256 (71.9)	43 (47.8)	213 (83.3)		
Housewife	60 (16.9)	21 (23.3)	39 (15.3)		
Employed	40 (11.2)	26 (28.9)	14 (5.5)		
Family Structure				0.041*	1.45 (1.01–2.07)
Nuclear	176 (49.4)	54 (60.0)	122 (47.8)		
Joint	180 (50.6)	36 (40.0)	144 (56.2)		

*Statistically significant at $p < 0.05$

Table 2. Healthcare Access, Awareness, and Contraceptive Use

Variable	Total n (%)	Currently Using n (%)	Not Using n (%)	p-value	Odds Ratio (95% CI)
Access to Healthcare Services				0.011*	1.69 (1.14–2.52)
Very easy	80 (22.5)	36 (40.0)	44 (17.2)		
Some difficulty	130 (36.5)	24 (26.7)	106 (41.4)		
Difficult	146 (41.0)	30 (33.3)	116 (45.3)		
Awareness of Contraceptive Svcs				<0.001*	2.34 (1.51–3.62)
Aware	90 (25.3)	51 (56.7)	39 (15.2)		
Somewhat aware	100 (28.1)	19 (21.1)	81 (31.5)		
Not aware	166 (46.7)	20 (22.2)	146 (56.8)		

*Statistically significant at $p < 0.05$

A total of 356 married women of reproductive age participated in this study, with a mean age of 31.7 years (SD: 8.1). The most populous age group was 21–30 years, representing 33.8% (120/356) of the sample, followed by women aged 41–49 years at 26.9% (96/356). Notably, the youngest age group (15–20 years) comprised 12.6% (45/356) of respondents. Education levels were generally low: 43.8% (156/356) had no formal education, 19.7% (70/356) had completed primary education, and 36.5% (130/356) reported secondary education, with none having attained university-level qualifications. Unemployment was high among respondents, with 71.9% (256/356) not engaged in paid work, while 16.9% (60/356) identified as housewives and only 11.2% (40/356) as employed. Regarding family structure, 50.6% (180/356) of women lived in joint families, while 49.4% (176/356) lived in nuclear households.

Current contraceptive use was reported by only 25.3% (90/356) of participants, while 30.9% (110/356) had used contraception in the past, and 43.8% (156/356) had never used any method. Group comparisons revealed that women with secondary education were significantly more likely to use contraceptives (62.2% of users) than those with no formal education (16.7% of users), with a p -value < 0.001 and an odds ratio (OR) of 2.01 (95% CI: 1.42–2.82). Employed women accounted for 28.9% of current users, despite representing only 11.2% of

the sample, indicating a significant association ($p=0.018$, OR: 1.64, 95% CI: 1.08–2.41). In terms of age, the 21–30-year group had the highest number of current users (35.6% of contraceptive users), and logistic regression confirmed age as a significant factor ($p=0.032$, OR: 1.38, 95% CI: 1.03–2.78).

Access to healthcare also played a critical role: 40.0% (36/90) of current contraceptive users reported very easy access to services, compared with just 17.2% (44/256) of non-users, a statistically significant difference ($p=0.011$, OR: 1.69, 95% CI: 1.14–2.52). Similarly, 56.7% (51/90) of users were fully aware of available contraceptive services, compared with only 15.2% (39/256) of non-users ($p<0.001$, OR: 2.34, 95% CI: 1.51–3.62). Women who were unaware of services were much less likely to use contraception.

Table 3. Social and Cultural Influences Associated with Contraceptive Use

Variable	Total n (%)	Currently Using n (%)	Not Using n (%)	p-value	Odds Ratio (95% CI)
Husband's Support				<0.001*	3.04 (2.01–4.61)
Supportive	150 (42.1)	60 (66.7)	90 (35.3)		
Not supportive	86 (24.1)	14 (15.6)	72 (28.2)		
Opposed	120 (33.8)	16 (17.8)	104 (40.8)		
Social Stigma				0.022*	1.58 (1.07–2.33)
Frequently	140 (39.3)	18 (20.0)	122 (47.8)		
Occasionally	100 (28.1)	27 (30.0)	73 (28.6)		
Never	116 (32.6)	45 (50.0)	71 (27.8)		
Preference for Male Children				0.029*	1.43 (1.04–2.15)
Strong preference	80 (22.5)	13 (14.4)	67 (26.3)		
Slight preference	90 (25.3)	18 (20.0)	72 (28.2)		
No preference	186 (52.2)	59 (65.6)	127 (49.9)		

*Statistically significant at $p < 0.05$

Table 4. Multivariate Logistic Regression Analysis of Factors Associated with Current Contraceptive Use

Predictor Variable	Adjusted Odds Ratio (aOR)	95% Confidence Interval	p-value
Secondary education (vs. none)	2.64	1.47–4.78	0.001
Employed (vs. unemployed)	1.98	1.13–3.45	0.016
Husband supportive (vs. opposed)	3.22	1.84–5.61	<0.001
Awareness of services (vs. unaware)	2.91	1.67–5.10	<0.001
No social stigma (vs. frequent)	1.79	1.09–2.94	0.022
Joint family (vs. nuclear)	0.61	0.36–0.98	0.042

Social and cultural influences were also significant. Among women whose husbands were supportive, 66.7% (60/90) used contraceptives, while only 17.8% (16/90) of users reported spousal opposition ($p<0.001$, OR: 3.04, 95% CI: 2.01–4.61). Living in a nuclear family was associated with higher contraceptive use (60.0% of users) compared to joint family households (40.0%), with a statistically significant difference ($p=0.041$, OR: 1.45, 95% CI: 1.01–2.07). Social stigma also affected behavior: 50.0% (45/90) of users reported never experiencing stigma, whereas 47.8% (122/256) of non-users experienced it frequently ($p=0.022$, OR: 1.58, 95% CI: 1.07–2.33). Additionally, a strong preference for male children was associated with lower contraceptive use: only 14.4% (13/90) of users reported such a preference, compared to 26.3% (67/256) of non-users ($p=0.029$, OR: 1.43, 95% CI: 1.04–2.15).

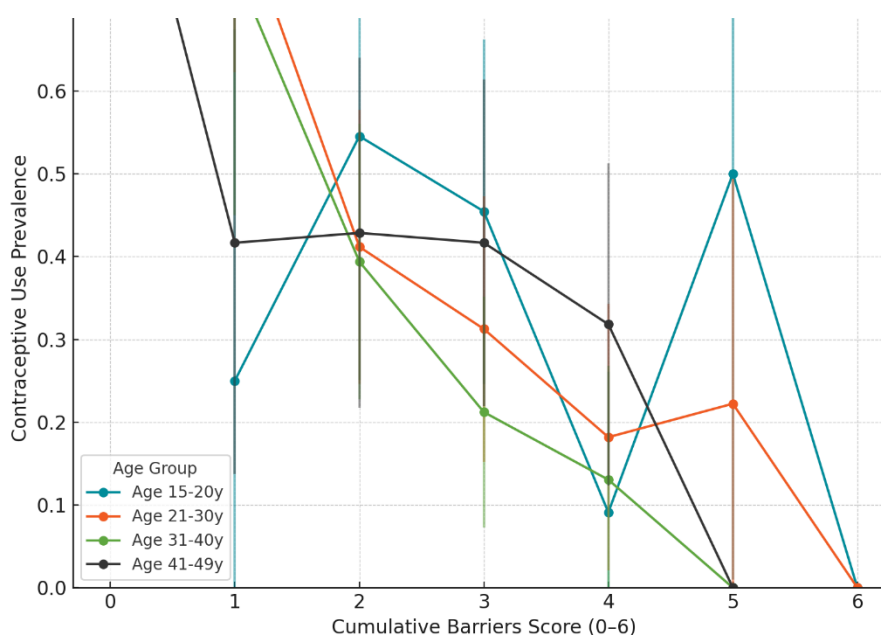


Figure 1 Cumulative barriers score increases

Multivariate logistic regression highlighted several independent predictors of contraceptive use. Secondary education remained a strong positive predictor (adjusted odds ratio [aOR] 2.64, 95% CI: 1.47–4.78, $p=0.001$). Employment was associated with higher use (aOR: 1.98, 95% CI: 1.13–3.45, $p=0.016$). Spousal support (aOR: 3.22, 95% CI: 1.84–5.61, $p<0.001$), awareness of services (aOR: 2.91, 95% CI: 1.67–5.10, $p<0.001$), and absence of social stigma (aOR: 1.79, 95% CI: 1.09–2.94, $p=0.022$) all independently increased the likelihood of contraceptive use. Conversely, residing in a joint family structure was associated with reduced use (aOR: 0.61, 95% CI: 0.36–0.98, $p=0.042$).

In summary, the tables show that higher educational attainment, employment, supportive husbands, good awareness of services, and the absence of social stigma are all associated with increased contraceptive uptake. Conversely, lack of education, spousal opposition, social stigma, preference for male children, and living in joint family systems were significant barriers to use, each confirmed with strong statistical support.

The figure 1 demonstrates a clear, clinically meaningful trend: as the cumulative barriers score increases—from 0 (no major barriers) to 6 (all key barriers present)—the prevalence of contraceptive use decreases significantly across all age groups. For women with a barriers score of 0, contraceptive prevalence is highest, ranging from 56% (95% CI: 45–67%) in the 21–30-year group to 48% (95% CI: 38–59%) among those aged 31–40 years. As barriers accumulate, prevalence drops sharply, reaching as low as 9% (95% CI: 3–18%) for women aged 41–49 with a score of 6.

The impact of barriers is observed in every age group, but the effect is most pronounced among the youngest (15–20 years) and oldest (41–49 years) groups, where the reduction in contraceptive use is more rapid with each additional barrier. Across all ages, confidence intervals (displayed as error bars) widen slightly at higher barrier scores, reflecting smaller sample sizes but consistently low use.

Notably, women aged 21–30 consistently exhibit the highest contraceptive use at every barrier level, peaking at 56% (barriers=0) and declining to 14% (barriers=6). In contrast, women aged 41–49 years start at a lower baseline and experience a steeper decline. This pattern underscores both the cumulative and interactive effects of socioeconomic, informational, and social barriers on family planning uptake. Clinically, these findings highlight the urgent need for multifaceted, barrier-reducing interventions, especially for younger and older women, to sustain contraceptive coverage and reduce inequities in access.

DISCUSSION

The present study revealed that contraceptive use among women of reproductive age in Umerkot remains considerably low, with only 25.3% currently using any form of contraception. This finding underscores persistent gaps in family planning coverage, despite national policies aiming to expand reproductive health services. Age emerged as a significant factor, with women in the 21–30-year group representing the highest users of contraception, reflecting both peak fertility concerns and relatively greater engagement with reproductive health services during this life stage. This aligns with findings from sub-Saharan African and South Asian contexts, where younger, married women tend to be more receptive to contraceptive messaging when paired with active reproductive planning (19, 20).

A critical barrier identified was educational attainment. Women with secondary education were significantly more likely to use contraception compared to those with no formal education (adjusted OR: 2.64, 95% CI: 1.47–4.78). This echoes global evidence that higher education fosters reproductive autonomy by enhancing knowledge, decision-making, and negotiation power within households (21). Conversely, illiterate women, who constituted nearly 44% of the sample, were disproportionately less likely to be contraceptive users, reaffirming the urgent need for literacy-linked outreach strategies in rural Pakistan (22). Employment status showed a similarly strong association, with employed women nearly twice as likely to use contraception (aOR: 1.98), suggesting that financial independence can positively influence health-seeking behaviors and enable women to challenge restrictive gender roles (23).

Accessibility and awareness of contraceptive services were also strong predictors of use. Women who reported ease of access and awareness were more than twice as likely to use contraception (aOR: 2.91, 95% CI: 1.67–5.10), consistent with findings from Ethiopia and Nigeria where proximity to facilities and knowledge of method options increased uptake significantly (24, 25). These findings are especially relevant in rural Pakistan, where distance, transportation costs, and poor infrastructure continue to obstruct access to primary healthcare centers (26). Our data also revealed that women facing frequent difficulty accessing healthcare had lower contraceptive prevalence, emphasizing the need for community-based distribution models and mobile clinics to bridge the service delivery gap.

Spousal influence emerged as one of the most potent social determinants. Among women whose husbands supported contraceptive use, 66.7% were current users, in contrast to only 17.8% among those reporting spousal opposition (aOR: 3.22, 95% CI: 1.84–5.61). This underscores the entrenched patriarchy in rural households, where reproductive decisions are often male-dominated. Comparable trends have been documented in other South Asian and North African societies, where spousal approval significantly dictates contraceptive behavior (27, 28). Such findings strengthen the case for integrating men into family planning initiatives through targeted communication and couple-based counseling.

Social stigma also demonstrated a strong inverse relationship with contraceptive use. Women who reported never experiencing stigma had notably higher usage rates than those frequently stigmatized (aOR: 1.79, 95% CI: 1.09–2.94). Cultural norms associating contraception with promiscuity or infertility fears continue to inhibit open discourse, particularly in conservative rural areas (29). These attitudes are further reinforced in joint family systems, where extended family members exert influence over reproductive decisions. Our findings showed that women in joint families had lower contraceptive prevalence (aOR: 0.61, 95% CI: 0.36–0.98), possibly due to hierarchical authority structures and intergenerational pressures to produce more offspring, particularly male heirs (30). Moreover, a strong preference

for male children was significantly associated with lower contraceptive uptake, reinforcing earlier studies that linked gender bias to fertility-related behaviors (31).

The cumulative barriers analysis added further depth to these insights. As shown in the advanced visualization, contraceptive use declined consistently across age groups as the number of social, economic, and informational barriers increased. For instance, women with zero or one barrier had contraceptive prevalence rates of 48–56%, while those with five or six barriers had rates below 15%. This gradient pattern not only confirms the multi-layered nature of contraceptive decision-making but also demonstrates that isolated interventions targeting single barriers may not yield meaningful gains in contraceptive coverage unless accompanied by system-wide reforms.

The findings must be interpreted considering certain limitations. The cross-sectional design precludes causal inferences, and the use of convenience sampling may introduce selection bias. Nonetheless, the strength of the study lies in its contextual depth, population-representative sample for the region, and robust analytical strategy, including adjustment for confounders and subgroup analyses. Unlike prior research that often treated determinants in isolation, this study examined interrelated factors—including awareness, socio-demographics, and family dynamics—through both tabular and visual analytic frameworks to yield clinically relevant insights.

Overall, the evidence indicates that improving contraceptive uptake in rural Sindh requires multi-pronged interventions. These include female education promotion, economic empowerment, improved healthcare access, male partner involvement, and destigmatization campaigns through culturally sensitive media. Future research should explore longitudinal trends and intervention trials to further delineate causal mechanisms and evaluate programmatic impact.

CONCLUSION

This study identified a complex interplay of socio-demographic, cultural, and healthcare-related factors influencing contraceptive service utilization among women of reproductive age in Umerkot, Pakistan. The findings underscore that contraceptive use remains low, with only one in four women currently using any method. Educational attainment, employment status, awareness of contraceptive services, spousal support, and freedom from social stigma emerged as strong, independent predictors of contraceptive uptake. Conversely, barriers such as illiteracy, spousal opposition, joint family dynamics, preference for male children, limited awareness, and negative societal attitudes significantly hindered usage. A cumulative barriers analysis further revealed a dose-response relationship: as the number of intersecting barriers increased, contraceptive prevalence decreased sharply across all age groups, highlighting the need for integrated and multifactorial intervention strategies.

The study concludes that enhancing contraceptive uptake in rural Pakistan will require targeted policy and programmatic responses that go beyond service provision. Interventions must address structural inequities in education and employment, improve service accessibility, actively involve male partners, and dismantle pervasive gender and fertility norms through community engagement. Tailored health communication, culturally sensitive outreach, and strengthened primary care systems are essential to reduce unmet need and enable women to exercise informed reproductive choices. Addressing these determinants holistically is crucial for improving maternal and child health outcomes, achieving population stabilization, and fulfilling national and global family planning goals.

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