Original Article

Pakistan Journal of Public Health
www.pjph.org

Understanding Barriers, Prevalence and Socioeconomic Determinants of Modern Contraceptives Use in Pakistan: A Health Belief Model Perspective on Access and Adoption

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Abstract

Background: Adoption of modern contraceptive methods is critical for improving women's health, reducing maternal mortality, and promoting gender empowerment. Beyond reproductive health, modern contraception contributes to broader public health goals, including lowering maternal deaths. The Health Belief Model (HBM) provides a theoretical lens to examine contraceptive behavior, offering insight into how sociodemographic factors shape acceptance and use.

Methodology: This cross-sectional study analyzed data from the Pakistan Demographic and Health Survey (PDHS) 2017–18, using the individual recode file for currently married women aged 15–49 years. The study focused on the use of modern contraceptive methods and assessed variations across sociodemographic profiles.

Results: Significant associations were found between sociodemographic variables and modern contraceptive use. Women aged 20–24 were more than twice as likely to use modern contraception compared to those aged 15–19 (OR = 2.15; 95% CI: 1.451–3.186), with likelihood increasing steadily with age. The highest odds were observed among women aged 40–44 (OR = 6.57; 95% CI: 4.475–9.636). Regional disparities were marked, with substantially lower usage in Baluchistan. Wealth status showed a positive correlation, with the richest women exhibiting the highest likelihood of use.

Conclusion: Age, region, wealth, and education significantly influence modern contraceptive adoption in Pakistan. Targeted strategies addressing regional disparities and socioeconomic barriers may enhance uptake and advance reproductive health outcomes.

Keywords: Modern contraceptives; Health Belief Model; socioeconomic factors; Pakistan

How to cite this article: Mumtaz S, Khan J. Understanding Barriers, Prevalence and Socioeconomic Determinants of Modern Contraceptives Use in Pakistan: A Health Belief Model Perspective on Access and Adoption. Pak J Public Health 2025 Aug. 30;15(Special.FP):91-6.
DOI: https://doi.org/10.32413/pjph.v15iSpecial.FP.1579

Introduction

The adoption of modern contraceptives emerges as a cornerstone for fostering well-being and empowering women. Modern Contraceptives are crucial to improving health outcomes for women, reducing maternal mortality, and addressing broader public health challenges. They are several medicines or procedures to prevent pregnancy and to manage the reproductive health of couples, including injectable, hormonal pills, implants, and male and female condoms and intrauterine devices (IUDs). By enabling women to prevent unintended pregnancies and plan the timing and spacing of births, contraception significantly reduces risks associated with maternal morbidity and mortality (1). Moreover, contraception empowers women to make informed decisions about their reproductive health, which improves their overall health and well-being. Contraception thus emerges as an important factor in reducing these preventable deaths by addressing one of their root causes (2).

Over the past few decades, global efforts to reduce maternal mortality have increasingly emphasized the role of contraception. The Sustainable Development Goals (SDGs), particularly SDG 3, aim to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by 2030 (3). Family planning recognizes and strives to communicate the long-established scientific evidence

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Submitted: 06-12-2024
Accepted: 23-06-2025
Published: 30-08-2025

that contraception helps women survive before and during childbirth, as well as the health of their babies (4).

Despite contraception has proven to be helpful for women's health, with maternal death rates declining, and progress round the globe to improve women's access to modern contraception and reduce mortality rates (5), numerous factors such as; cultural, social, economic, and political continue to influence contraceptive behaviors in South Asian countries like Pakistan. (6). Unmet need for contraception is among the leading causes of unplanned pregnancy, which usually results in abortion and increases the maternal adversities (7).

Existing literature revealed several barriers to modern contraceptive use in Pakistan including cultural socioeconomic and religious taboos, limited access to healthcare services, lack of awareness, gender inequality, and misconceptions about side effects(7, 8).

Contraceptive usage behavior and its relationship with different socio demographic characteristics can be analyzed by using the prominent framework of the health belief model (HBM) that enables one to understand how different factors shape the adoption of modern contraceptive usage. HBM developed in 1950 deals with the person's decisions to engage in preventive behaviors, i.e., usage of modern contraceptive usage to prevent maternal mortality (9).

Perceived Susceptibility*:* the belief that if contraception is not employed, it will result in unintended pregnancy

Perceived Severity: The belief of consequences and side effects if contraceptives are not employed, For example, the risk of maternal morbidity or mortality

***Perceived Benefits*:** Perceived benefits of using contraception are access to education and career and enough space to take care of children without putting women at risk.

***Perceived Barriers*:** Assessment of obstacles that might hinder the adoption of contraceptive use, such as lack of access, cultural opposition, or fear of side effects.

Cues to Action*:* Triggers that motivate individuals to initiate the behavior, such as health campaigns, peer influence, or advice from healthcare providers.

Self-Efficacy: Autonomous enough to carry out the behavior of using contraceptive usage

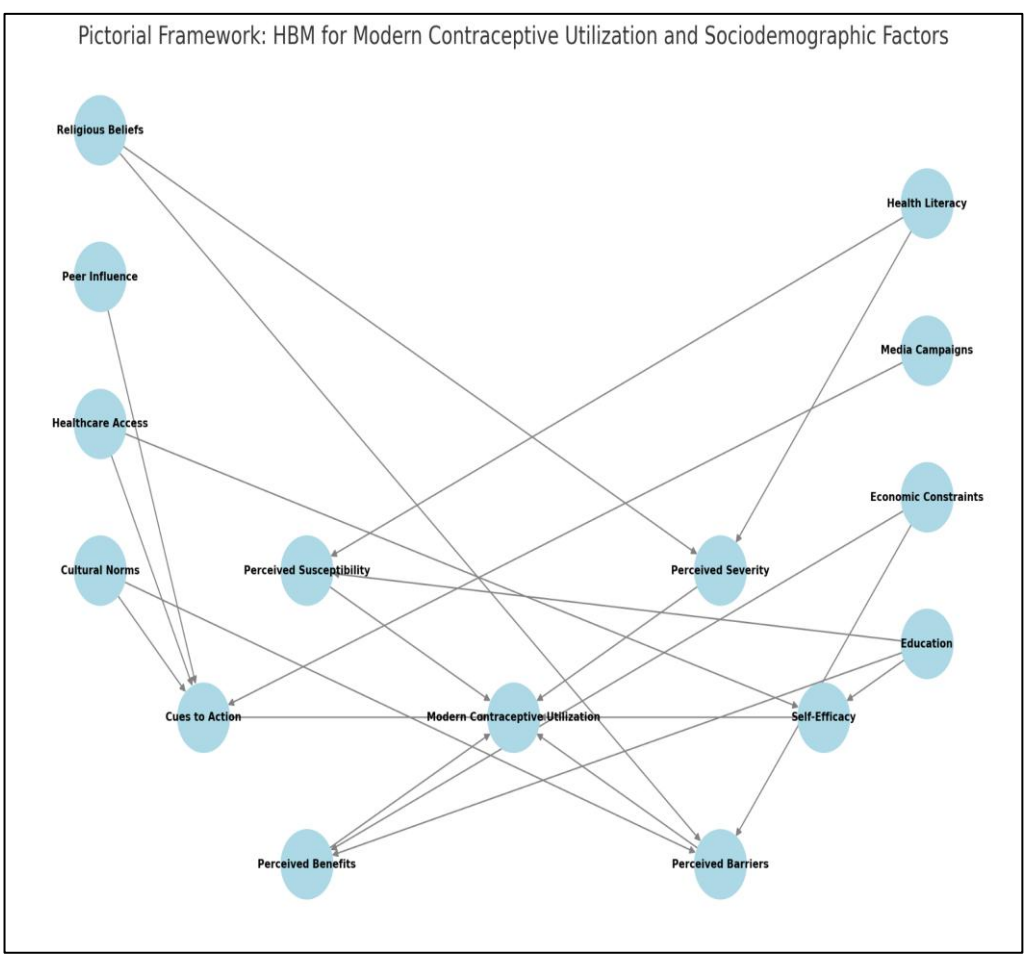

Figure 1: Health Belief Model, Contraceptive Utilization and Socio- demographic Factors.

Contraceptive prevalence remains relatively low despite government efforts to promote family planning in Pakistan, particularly, modern contraceptive use among married women of reproductive age has increased gradually; yet significant gap

remains(10). Pakistan's societal landscape has a huge impact on attitudes about contraception. Religious and cultural attitudes strongly impact family planning decisions, favoring bigger family sizes, especially in rural areas. Furthermore, socio cultural, psycho-personal , generic misconceptions, low women autonomy and literacy rates play a critical role in shaping contraceptive use across (11).

Similarly, societal norms, religious beliefs, and economic constraints heavily influence decisions around family planning. Deeply rooted expectations about fertility, gender roles, and ideal family size create significant barriers to improving access to contraception (12).

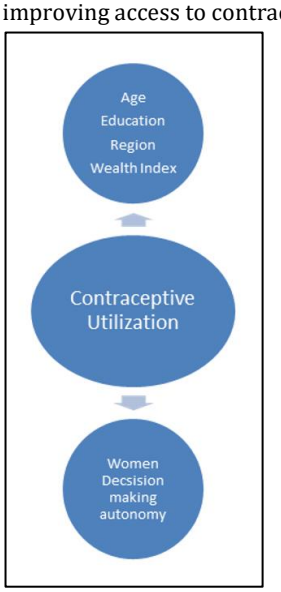

Figure 2: Modern Contraceptive utilization framework

Women often, as a result of social stigma or culture, feel that it is inappropriate to use contraceptives or bring up the issue of using contraceptives (13, 14). The literature reveals a gap in understanding the sociocultural, economic, and systemic barriers that hinder modern contraceptive use in Pakistan. Therefore, this study aims to explore the barriers and socioeconomic determinants to the modern contraceptive use among Pakistani women.

Methodology

This study is cross-sectional in nature. We utilized data from the Demographic Health Survey (DHS), specifically the most recent survey conducted in Pakistan (PDHS 2017-18). The DHS is a nationally representative survey conducted by the National Population Commission and is funded and supported by the United States Agency for International Development. The data was obtained from the DHS website after receiving permission from the DHS team. Data for this study came from the individual recode file, which includes data on women aged 15-49.

Sample Sizes of Women

In the PDHS 2018, around **14,000 women aged 15-49** were interviewed.

Sampling Procedure: The surveys employed a multistage stratified sampling procedure, which is a common approach used in DHS surveys in all countries.

Enumeration Areas (EAs) are typically selected in two stages: (1) from Census files in the first stage; and (2) from an updated list of households in each EA.

Unit of Analysis

The unit of analysis for this study was currently married women.

Study Variables

The study focused on the modern contraception use of women and coded it as 1 if a woman used a modern method and 0 if not using any method or traditional method. This variable was investigated in the DHS surveys through the question, "Are you currently using any contraceptive method?" The study's outcome variable was the use of modern (e.g., pill, intrauterine device, injection, condom, female sterilization, implant) and traditional (e.g., withdrawal and lactation) contraceptive techniques. Respondents' ages were divided into seven categories. The independent variables consisted of the socio-demographic characteristics of women, including their age, educational level, current working status, wealth index, urban or rural residence, and region. Wealth quintiles were calculated based on the characteristics of the home, water and sanitation facilities, and the ownership of household assets. They were classified as the poorest, poorer, middle, richer, or richest group. The variables selected for this study were based on empirical evidence from similar studies.

Statistical Analysis

Descriptive statistics of the dataset from PDHS was used to examine the socio-demographic characteristics of women using contraceptive methods. Bivariate analysis was conducted to calculate the percentage of women using contraception based on demographic characteristics.

Logistic regression analysis was done to assess the association between socioeconomic factors.

Results

Table 1. shows the socio demographic characteristics of the respondent women highlights key demographic factors such as age, education level, region, urbanity, wealth index, intention to use contraception and current use of modern contraceptives.

The age distribution shows that younger women (15-24 years) constitute a significant portion of the population in all three surveys, with the 25-29 age groups having the highest representation. A low educational attainment across the country is observed (50.4%). The wealth index indicates that wealth distribution is relatively even across quintiles with a notable percentage of women falling into the poorest and poorer categories. Only 23.6 of women use modern contraceptive method.

Table 1: Sociodemographic characteristics of women in PDHS 2017-2018

Socio Demographic Characters	Frequency	Percent
Women's age (Years)		
15-19	725	5
20-24	2187	15.1
25-29	3077	21.2
30-34	2774	19.1
35-39	2614	18
40-44	1696	11.7
45-49	1429	9.9
Education Level		
No education	7313	50.4
Primary	2022	13.9
Secondary	3023	20.8
Higher	2144	14.8
Region		
Punjab	3217	22.2
Sindh	2641	18.2
KPK	2312	15.9
Balochistan	1676	11.6
GB	957	6.6
ICT	1072	7.4
AJK	1643	11.3
FATA	984	6.8
Urbanity		
Urban	6972	48.1
Rural	7530	51.9
Wealth Index		
Poorest	2787	19.2
Poorer	3101	21.4
Middle	2857	19.7
Richer	2763	19.1
Richest	2994	20.6
Intention to use Contraception and Types of Methods		
Using modern method	3426	23.6
Using traditional method	1290	8.9
Non-user - intends to use later	3117	21.5
Does not intend to use	6669	46

Table no. 2 and 3 shows the results of cross tabs and logistic regression. The reference group is women aged 15-19. For older age groups (20-24 to 45-49), the odds ratios (OR) indicate varying health risks across the surveys. For instance, in PDHS, women aged 20-24 have an OR of 2.15, suggesting they are more likely to use modern contraceptives compared to the reference group. The odds of modern contraceptive use increased with age. Compared to the reference group (Age 15-19), women in the 20-24 age group had 2.15 times higher odds (OR: 2.15, CI: 1.451-3.186) of using modern contraception. The odds continued to increase with age, with women in the 25-29, 30-34, 35-39, 40-44, and 45-49 age groups having significantly higher odds compared to the reference group. The odds of modern contraceptive use varied by region. Compared to the reference region (Punjab), women from Balochistan had the lowest odds (OR: 0.47, CI: 0.394-0.562). Conversely, women from GB (OR: 1.44, CI: 1.198-1.724) and ICT (OR: 1.14, CI: 0.972-1.342) had higher odds of contraceptive use, although the association for ICT was marginally not statistically significant.

Table 2: Socio demographic Characteristics and Their Association with Modern Contraceptive Use among Women PDHS 2017-2018

Sociodemographic Characteristics	Not Using Modern Contraceptive	Using Modern Contraceptive	P value
Age Group			<0.001
15-19	681 (4.70%)	44 (0.30%)	
20-24	1904 (13.10%)	283 (2.00%)	
25-29	2459 (17.00%)	618 (4.30%)	
30-34	1996 (13.80%)	778 (5.40%)	
35-39	1806 (12.50%)	808 (5.60%)	
40-44	1149 (7.90%)	547 (3.80%)	
45-49	1081 (7.50%)	348 (2.40%)	
Region			<0.001
Punjab	2348 (16.20%)	869 (6.00%)	
Sindh	1982 (13.70%)	659 (4.50%)	
KPK	1750 (12.10%)	562 (3.90%)	
Balochistan	1458 (10.10%)	218 (1.50%)	
GB	664 (4.60%)	293 (2.00%)	
ICT	720 (5.00%)	352 (2.40%)	
AJK	1300 (9.00%)	343 (2.40%)	
FATA	854 (5.90%)	130 (0.90%)	
Wealth Index			<0.001
Poorest	2375 (16.40%)	412 (2.80%)	
Poorer	2455 (16.90%)	646 (4.50%)	
Middle	2127 (14.70%)	730 (5.00%)	
Richer	2024 (14.00%)	739 (5.10%)	
Richest	2095 (14.40%)	899 (6.20%)	
Types of Place Residence			<0.001
Urban	5128(35.4%)	1844(12.7%)	
Rural	5948(41%)	1582(10.9%)	

Urban women had slightly higher odds of modern contraceptive use compared to rural women, although the association was not statistically significant (OR: 1.00, CI: 0.898-1.096). The odds of using modern contraception increased with higher wealth status. Compared to the poorest category (reference group), women in wealthier categories had progressively higher odds. Educational attainment was positively associated with modern contraceptive use. Women with primary education (OR: 1.28, CI: 1.117-1.46) and secondary education (OR: 1.29, CI: 1.135-1.465) had significantly higher odds of using modern contraception compared to women with no education.

Statistical Significance

The P-value across various demographics indicates that there are statistically significant differences ($P < 0.005$) in contraceptive usage.

Table 3: Logistic Regression

Socio demographic characters			
Age in 5 years		**OR**	**CI**
Age 15-19	Ref		
Age 20-24		2.15	1.451-3.186
Age 25-29		3.51	2.401-5.133
Age 30-34		5.38	3.686-7.852
Age 35-39		6.16	4.219-8.981
Age 40-44		6.57	4.475-9.636
Age 45-49		4.47	3.022-6.595
Region			
Punjab	Ref		-
Sindh		1.04	0.916-1.185
Kpk		0.96	0.838-1.103
Balochistan		0.47	0.394-0.562
GB		1.44	1.198-1.724
ICT		1.14	0.972-1.342
AJK		0.66	0.563-0.767
FATA		0.69	0.548-0.868
Urbanity			
Rural			-
Urban	Ref	0.992	0.898-1.096
Poor			-
Poorer		1.541	1.313-1.782
Middle		1.828	1.54-2.128
Richer		1.74	1.453-2.061
Richest		1.819	1.501-2.194
Educational level			
No Education	Ref		-
Primary		1.277	1.117-1.46
Secondary		1.29	1.135-1.465
Higher		1.157	0.996-1.343

Discussion

This study highlights the significant relationship between modern contraceptive usage and social determinants in Pakistan. This study found a favorable correlation between a woman's educational attainment and the usage of contraception. It is mainly because they are more aware and better equipped to tackle the misconceptions about family planning and this phenomenon is endorsed by other studies as well (15-17).

Addressing the social factors that influence contraceptive use is essential for fostering an environment where women can make informed choices about their reproductive health without facing stigma or barriers. (18, 19). Women in rural settings frequently encounter significant barriers to accessing modern contraceptives (20).

This study also exhibits significant disparities in contraceptive use between urban and rural populations in Pakistan. Women in rural settings frequently encounter significant barriers to accessing modern contraceptives. Addressing this urban-rural gap requires infrastructural improvements and community-level initiatives that engage local leaders and influencers to promote contraceptive acceptance. Mobile health units and telemedicine platforms can also be crucial in extending reproductive health services to remote areas (21,22). Another study used focused on the role of education and its contribution to the enhanced use of contraceptives and minimization of the amount of misinformation relating to contraceptive methods in Bangladesh (23). This research confirms that education especially at the secondary and postsecondary levels changed women's status and decision- making powers within the household to a positive extent. Thus, educated women are more likely to be empowered to make informed decisions on their reproductive health, and contraception (24). Disparity in contraception usage between educated and less educated women persists, meaning that there must be increased contraceptive usage outreach among women who have low levels of education in rural areas in particular (25).

Family planning is sometimes viewed with skepticism or as a foreign ideology that threatens traditional family structures. To overcome these barriers, culturally sensitive educational campaigns are essential. This is related to human rights, gender equality, and empowerment (26, 27).

Wealth also serves as a significant determinant influencing women's access to modern contraception. Wealthier women as compared to poorer one has more chances of acquiring health services and also has better health facilities option as they can easily afford expensive medicines and treatments. Understanding the interplay between women's education, autonomy, and employment can reveal effective strategies for empowering women in their reproductive choices.

While this study provides significant insights, it has limitations that must be acknowledged. The cross-sectional nature of the data limits the ability to infer causality between social determinants and contraceptive use.

Conclusion

This study underscores the strong influence of social determinants—particularly education, place of residence, and wealth—on modern contraceptive use in Pakistan. Higher educational attainment empowers women to overcome misconceptions, enhances decision-making autonomy, and facilitates informed reproductive choices. However, significant urban–rural disparities persist, with rural women facing greater structural and cultural barriers to access. Addressing these gaps requires targeted interventions, including culturally sensitive awareness campaigns, infrastructural improvements, and innovative service delivery models such as mobile health units and telemedicine. Wealth-related inequalities further highlight the need for affordable and accessible contraceptive options for lower-income populations. While these findings provide important policy and programmatic insights, the cross-sectional design limits causal interpretation. Future longitudinal research

should explore how education, economic empowerment, and sociocultural engagement interact over time to influence contraceptive uptake and sustain reproductive health improvements.

Ethical Approval:
This study was approved by Ethical Review Committee of Sohail University, Karachi.
Ref. No. NIL Date: 08-04-2024

Data Availability: Data supporting the findings are available upon reasonable request.

Financial support and sponsorship: None

Conflict of interest: None declared

Authors' Contribution:
SM: Conceptualization, Literature review, Review and editing, Supervision
JK: Methodology, Literature review, Original draft preparation

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