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ANALYZING THE EFFECT OF WOMANLY EDUCATION ON CONTRACEPTIVE PRACTICES IN PAKISTAN: A LOGISTIC REGRESSION APPROACH

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ABSTRACT

The research looks into the major factors that determine the use of contraceptives amongst women in Pakistan based on data obtained through a national-level demographic survey. A binary logistic regression model was used to determine the socio-demographic and economic variable that related with the adoption of contraceptives. The use or non-use of contraceptives was the dependent variable; the predictors were the region, place of residence, education, age at first birth, age at first marriage, knowledge of contraceptives, media exposure, wealth index, education of husband, and age. The findings demonstrate that region, education, wealth, age and media exposure have significant impacts on the use of contraceptives. Women in Punjab, KPK, Gilgit Baltistan, and ICT are more likely to be using contraceptives whereas those in Balochistan are less likely. Strong positive predictors are urban residence, higher education, media exposure and economic stability. The paper finds that education, media awareness creation and improved access to family planning services have the potential to raise the number of Pakistanis using contraceptives.

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Keywords: Contraceptive Use, Logistic Regression, Socio-Economic Factors, Education, Pakistan, Family Planning

Introduction

Family planning is regarded as one of the most relevant interventions in the field of maternal and child health. The use of contraceptives assists women to have control over their reproductive system, organize their families and engage well in their social and economic lives. In the developing nations like Pakistan, the prevalence of contraceptives is relatively low despite years of policy efforts. Women still make decisions concerning family planning based on cultural, religious and socio economic factors. Recent demographic information suggests that the fertility rate in Pakistan is still high in comparison with the rest of the region. The high rate of contraceptives leads to high rate of population growth, unwanted pregnancies, and exposed mothers and children to health hazards. The identification of the factors that determine the use of contraceptives is, then, critical in the development of evidence-based population policies. The current research determines the effect of regional, demographic, and socio-economic factors on contraceptive use among Pakistani women. Through binary logistic regression, it can establish the factors that have a significant influence in predicting the probability of contraceptive use. The study is a addition to the increasing amount of literature on reproductive health because it offers a statistical explanation of behavioral pattern surrounding contraceptive use.

Literature review

Contraceptive use simply means the utilization of practices that aid in couples regulating the frequency and size of their children. It is a critical constituent of women empowerment and reproductive health. With family planning, women are able to maintain their health, receive an education, and develop economies (World Health Organization [WHO], 2023). Researchers globally emphasize that social, cultural, and economic aspects of the population are significant in influencing the usage of contraceptives among women (United Nations Population Fund [UNFPA], 2022).

The use of contraceptives in South Asia, and especially in Pakistan is relatively low. The Pakistan Demographic and Health Survey (201718) found that approximately 34 percent of married women had used a method of contraception (National Institute of Population Studies [NIPS] & ICF, 2019). Such a figure is an improvement over past decades yet it indicates severe disparities among the urban and rural communities. Poor access to health service and cultural constraints are some of the barriers that women in rural settings usually encounter (Shah et al., 2021).

One of the most predictive factors to the use of contraceptives is education. Women who are educated are more likely to be aware of reproductive health and family planning benefits (Ali and Rizwan, 2021). They are also more assured in their health-related decision making and negotiating with their husbands on the size of a family. Women education enhances the communication between the husband and wife and the chance of utilizing modern birth control techniques (Farooq, 2023). It is found out that women who have secondary or higher education use contraceptives twice as often as women who have no formal education (Yasmin et al., 2022).

Women are strongly influenced by the culture and religion in their reproductive

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behavior. The utilization of contraceptives is considered a weakness of cultural or religious values in most communities of Pakistan that are conservative (Khan and Hashmi, 2020). Other religious leaders discourage family planning citing it with moral or ethical issues. There is a tendency to urge women to give birth again, particularly the male babies, by the husbands or in-laws (Mahmood, 2019). Moreover, the discussion of family planning is a social taboo in a lot of regions. This complicates the access of information by women and the attendance of family planning clinics (Shah et al., 2021). Motherhood is also highly cultural; most women have a feeling that a good wife should give birth to at least a few kids, making it less willing to use birth control (Farooq, 2023).

The question of economic status is also very critical in the usage of contraceptives. The women with better socio-economic backgrounds are more apt to use modern contraceptives due to their financial stability (having access to independent health care as well as transportation) (Riaz & Qureshi, 2021). On the contrary, the poor women rely on the government-owned clinics, which can be insufficient in supplies or be poorly trained (Hameed & Zaidi, 2020). Another important factor is the geographic location. The women in the cities are more exposed to the health campaigns, education and mass media that enlighten on the use of contraceptives. On the contrary, women in rural areas tend to use traditional techniques or none whatsoever (NIPS & ICF, 2019). This disparity shows the existence of a gap that requires specific policies which are oriented towards delivering health services to the rural population.

Media is significant in terms of influencing reproductive attitudes. Open women to TV, radio, or newspapers have more chances of being aware of contraceptive measures and their advantages (Hameed and Zaidi, 2020). Media messages that address health issues have the potential of refuting myths and dispelling misinformation about side effects (Yasmin et al., 2022). The availability of these sources to all women is however not equal especially in rural or less developed regions. In case husbands are educated, they become more supportive of family planning (Mahmood, 2019). A better-educated couple is more likely to become aware of the economic advantages of smaller families. the long-term benefits of increasing the use of contraceptives with improved literacy levels are directly proportional (Khan & Hashmi, 2020).

Methodology

Data Source

This paper will use a national-level population and health survey (PDHS 201718) to get this data. The sample size covers women in their reproductive age (15-49 years) in all the provinces and territories of Pakistan.

Dependent Variable

Contraceptive Use was the dependent variable coded as a binary variable:
1 = Is using any type of contraceptive.
0 = No method of contraception is used.

Independent Variables

The independent variables were:

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Region (Punjab, Sindh, KPK, Balochistan, GB, ICT, AJK)
Type of Residence (Urban/Rural)
Education (No education, Primary, Secondary, Higher)
Age at First Birth
Age first cohabitation (Marriage)
Knowledge of Contraceptive (KOC)
Media Exposure
Wealth Index Poor - Middle - Rich (Index 0-4)
Husband/Partner's Education
The Age Group of the Respondent at the present (1519, 2029, 3039, 4049)

Statistical Technique

The estimation of the relationship between contraceptive use (dependent variable) and the predictors chosen was done using a Binary Logistic Regression model. The statistical significance was set as $p < 0.05$. The Omnibus test, Cox & Snell R 2, Nagelkerke R 2 and Classification Table were used to determine the model fit.

Statistical data Analysis

Statistics have been applied in this section to test the correlation between cultural standards, educative attainment and contraceptive use by the Pakistani women. Multi collinearity was also checked before the binary logistic regression was run to make sure that there were no high levels of correlation between independent variables. The use of binary logistic regression was made due to the dichotomous nature of the dependent variable (contraceptive use) as it can be used or not. Several statistical tables have been used as a part of the analysis like frequency distributions, descriptive statistics, cross- tabulations, and regression results. These tables are used to define the characteristics of the sample, define patterns of variables, and present the strength and direction of relations between the variables.

Table 1 Collinearity Statistics

	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics	
Model	**B**	**Std. Error**	**Beta**	**t**	**Tolerance**	**VIF**
(Constant)	.143	.030		4.845		
Region	-.007	.002	-.034	-3.818	.951	1.052
Type of place of residence	-.017	.010	-.017	-1.729	.746	1.341
Highest educational level	.046	.005	.107	9.067	.523	1.911
Age of respondent at 1st birth	-.089	.010	-.101	-8.927	.571	1.752
Age at first cohabitation (Marriage)	-.006	.008	-.008	-.675	.547	1.828

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KOC	.008	.005	.015	1.694	.978	1.023
Media Exposure	.078	.010	.079	7.851	.724	1.381
Wealth Index Combined	.051	.007	.094	7.738	.499	2.006
Husband/Partner's Education	.003	.004	.007	.702	.673	1.487
Respondent's Current Age	.080	.005	.133	14.874	.917	1.091

The findings of collinearity diagnostics of the independent variables that were used in the model The values of Variance Inflation Factor (VIF) are between 1.02 and 2.01, all of which is much lower than the acceptable level of 10. This means that the predictor variables are not facing a serious issue of multi collinearity. On the same note, the tolerance values are all greater than 0.1, which further supports the view that the independent variables do not have a very high correlation with one another. Thus, the data satisfy the condition of the absence of multi collinearity, and the analysis operation of the Binary Logistic Regression is justified.

Table:2 Omnibus Tests of Model Coefficients

	Chi-square	df	Sig.
Step	1297.281	26	.000
Block	1297.281	26	.000
Model	1297.281	26	.000

The Chi-square value is 1297.281 and p =.001 indicated that the model is statistically significant, as represented by the Omnibus Test of Model Coefficients. This in simple terms means that the independent variables that are included in the model are significant predictors of contraceptive use in women. The test proves the fact that the logistic regression model fits well the data and is able to give meaningful predictions.

Table:3 Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	15357.248[a]	.098	.133

Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

The model summary shows the -2 Log Likelihood (15357.248) and two pseudo R-squares: Cox & Snell $R^2 = 0.098$, Nagelkerke $R^2 = 0.133$. This implies that the variables included in the model can explain 9.8 to 13.3 percent of the variation in the use of contraceptives. Even though this is not a very high percentage, it does indicate that the predictors (including region, education, wealth, age, etc.) play a significant role in explaining contraceptives behavior among women.

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Table:4 Classification Table

Observed			Predicted Contraceptive Use		
			No	Yes	Percentage Correct
Step 1	Contraceptive Use	No	6612	1306	83.5
		Yes	2998	1698	36.2
	Overall Percentage				65.9

The table of classification reveals the good predictability of the contraception use by the model. The model was accurate in 83.5 percent of women who do not use contraceptives, and 36.2 percent of women who are using contraceptives. The model has a total accuracy of 65.9%. This implies that the model is relatively correct at the categorization of women based on their status of contraceptive use. It does not do as well in predicting users compared to non-users which is typical of health-related logistic regression models.

Table:5 Binary Logistic Regression

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Region			204.196	7	.000	
Punjab	.340	.096	12.573	1	.000	1.404
Sindh	.061	.096	.406	1	.524	1.063
KPK	.254	.096	7.029	1	.008	1.289
Balochistan	-.554	.107	26.782	1	.000	.574
GB	.618	.111	31.246	1	.000	1.855
ICT	.358	.112	10.264	1	.001	1.431
AJK	-.110	.105	1.098	1	.295	.896
Urban	.156	.046	11.705	1	.001	1.169
Highest educational level			52.595	3	.000	
No education	-.489	.077	40.609	1	.000	.613
Primary	-.216	.080	7.308	1	.007	.806
Secondary	-.123	.069	3.159	1	.076	.885
Age of respondent at 1st birth			95.813	2	.000	
Early Motherhood	1.185	.132	80.092	1	.000	3.269
Adulthood Motherhood	.802	.122	43.259	1	.000	2.231
Age at first cohabitation			4.785	2	.091	
Very Eary Marriage	.118	.084	1.985	1	.159	1.125
Normal Age Marriage	.167	.077	4.665	1	.031	1.182

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KOC			7.080	2	.029	
No KOC	-.124	.047	7.057	1	.008	.883
Correct KOC	-.042	.069	.364	1	.546	.959
Media Exposure(1)	-.307	.049	40.107	1	.000	.735
Wealth Index Combined			57.118	2	.000	
Poor	-.439	.064	47.058	1	.000	.644
Middle	-.050	.057	.779	1	.377	.951
Husband/Partner's Education			5.879	3	.118	
No Education	-.059	.067	.780	1	.377	.943
Primary	.067	.072	.863	1	.353	1.070
Secondary	-.069	.055	1.548	1	.213	.934
Respondent's Current Age			294.088	3	.000	
20-29	-1.251	.156	63.961	1	.000	.286
30-39	-.667	.055	148.343	1	.000	.513
40-49	.047	.050	.888	1	.346	1.048

Women in Punjab (Exp(B)=1.404), KPK (Exp(B)=1.289), Gilgit-Baltistan (Exp(B)=1.855), and ICT (Exp(B)=1.431) will be more likely to use contraceptives than the reference region.In Balochistan, women (Exp(B) =0.574) have less likelihood of using contraceptives. The contraceptive use is highly influenced by the regional and cultural differences. There is a significant difference between urban and rural women (Exp(B)=1.169, p=.001) with regard to the use of contraception. The availability of healthcare facilities and awareness is more in urban regions. More educated women are more likely to use contraceptives as compared to uneducated women. The educated women are more aware and have power in the decision making with regards to family planning. Early motherhood (Exp(B) = 3.269) and adult motherhood (Exp(B) = 2.231) are both greater than the odds in very early births. Women who wait before they get their first child are more likely to embrace the use of birth control. Females who get married at an average or later age (Exp(B) =1.182) have higher propensities of using contraceptives. Early marriage denies awareness and family planning decisions. Women who possess the right information regarding contraceptives tend to use them. Reproductive education and awareness programs are important. Media exposure is a significant impact (p <.001, Exp(B) =0.735). Women who are not exposed to the media tend to be less inclined to use contraceptives. Media campaigns enhance awareness and increase the use of contraceptives. The poor (Exp(B) =0.644) are less likely to use birth control than the rich. Access to healthcare and contraceptive is influenced by economic status. However, there is a slight increased probability of using contraceptives among partners who are highly educated. The education of the husband facilitates the family planning. Women between the age groups of 20-29 (Exp (B) =0.286) and 30-39 (Exp (B) =0.513) are more likely to use contraceptives than the young age group. The use of contraceptives also increases with age as women get more enlightened and worried with family size.

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Discussion

The results of this research enable to confirm that the use of contraceptives by Pakistani women is predetermined by socio-economic, demographic, and cultural factors. The inequality in health services provision and disparity in cultural acceptance of family planning are examples of regional inequalities. Contemporary women living in the urban areas are more educated and can access the media which makes them more aware of modern contraceptive methods. Education comes out as one of the strongest determinants. Educated women are less likely to hurry to get married and have children, their decision-making is more independent, and they are more likely to obtain information about healthcare. Equally, the rich women have the ability to provide personal care and advanced birth controls whereas poorer women have to depend on few available community services. The media exposure is critical in influencing the reproductive behavior. Minority awareness campaigns broadcasted in the television and radio have been effective in modifying the family planning perceptions. The importance of the age of women also suggests that the higher the age of women the more they are likely to use contraception techniques as they transition into adulthood and family stability. The results are consistent with the previous literature obtained in South Asia that found education, economic status, and the level of development in the region as the most reliable predictors of contraceptive use. Nonetheless, the fact that low usage is still present in rural and underdeveloped areas speaks of the necessity of localized interventions.

Conclusion

This study has been able to conclude that the use of contraceptives in Pakistan is greatly dependent on the region, residence, education, economic status, media exposure, and age. Women in the developed regions, urban and the higher socio-economic statuses tend to use contraceptives. Media awareness and education are important in enhancing the prevalence of contraceptives.

To promote the use of contraceptives, policy makers ought to emphasize on:

Increasing women access to education

Increasing awareness among people by conducting specific media campaigns

Enhancing access to family-planning services, particularly in rural and poor areas

Promoting the involvement of males via partner education

Combined initiatives on health communication and community-based programs can not only induce long-term behavioral change but also aid the objective of the sustainable population growth of Pakistan.

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