Research Article

THE IMPACT OF WOMEN'S EDUCATION ON FERTILITY RATE, FAMILY SIZE, AND HOUSEHOLD ECONOMIC WELLBEING: A DEMOGRAPHIC STUDY IN PAKISTAN

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Abstract

This study investigates into the relationship between family system, fertility rate, family size and women education using primary data from 500 participants and employing various statistical techniques such as descriptive statistics correlation matrix and multiple regression analysis. A questionnaire survey was used for collection of data. The regression analysis reveals significant negative relationships between family system, fertility rate, and family size with women's education. It implies that women's education enhances the household economic well-being. The findings underscore the need for targeted interventions to address the cultural barriers hindering women's educational attainment, particularly in contexts where larger family sizes and traditional family systems prevail.

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1. Introduction

Pakistan has experienced significant demographic shifts in recent decades, with its population surpassing 240 million and projected to reach 403 million by 2050 (United Nations Department of Economic and Social Affairs, Population Division, 2017). High fertility rates among Pakistani women remain a primary driver of challenges such as unemployment, social unrest, income inequality, and political instability. Various barriers hinder women's access to education in Pakistan, despite its critical role in shaping reproductive and economic behaviors (Bloom et al., 2006). Evidence indicates that as women attain higher levels of education, average fertility rates decline, family sizes become smaller, and households achieve improved economic well-being (Morgan & Niraula, 1995; Caldwell & Caldwell, 1987; Psacharopoulos & Patrinos, 2018). Demographic research suggests that expanding educational opportunities for Pakistani women could address many of these pressing issues (Jabeen et al., 2020). Educated women typically earn higher incomes, perform better in the job market, and allocate more resources toward childcare compared to their less-educated counterparts (Kim, 2016).

Several academic research have explored the impact of education on women's fertility rates, family sizes, and household economic well-being in Pakistan. Shah and Smith (2004) found that paid employment correlates with lower fertility rates, as working women tend to have smaller families than those engaged in agricultural or domestic roles. Conversely, Awan (2016) emphasized the transformative potential of educated women, asserting that it challenges traditional gender roles and empowers women

to make informed decisions about health and reproduction. This empowerment often leads to smaller family sizes and enhanced economic welfare (Haque et al., 2021). The cumulative evidence underscores that improving women's education in Pakistan significantly contributes to both household economic stability and family planning. Educated women are more likely to access better employment opportunities and higher-paying jobs, ultimately benefiting their families financially. Therefore, this research will explore the following research questions: -

1: How does women's education influence fertility rate in Pakistan?

2: What is the impact of women's education on family size in Pakistan?

3: How does women's education contribute to household economic well-being in Pakistan?

4: What mechanisms link women's education to smaller family sizes and improved financial stability?

5: How can promoting women's education address socio-economic challenges such as unemployment, income inequality, and political instability in Pakistan?

In the light of the above research questions, the following objectives are framed:

● To explore the relationship between women's education and fertility rates in Pakistan.

● To examine the impact of women's education on family size and its implications for demographic trends.

● To assess how women's education influences household economic well-
  being, focusing on employment opportunities and financial stability.
● To identify the mechanisms through which women's education leads to
  smaller family sizes and improved financial outcomes for households.
● To provide evidence-based recommendations for promoting women's
  education as a means of fostering socio-economic development in
  Pakistan.

By exploring these research questions will provide a valuable insight to policymakers and other stakeholders to make informed decision regarding the removal of barriers in the way of women education for creating socio-economic parity between men and women.

This study makes a significant contribution to the literature by elucidating the critical role that women's education plays in shaping demographic trends, particularly fertility rates, family size, and household economic well-being in Pakistan. The research highlights the mechanisms through which education influences these factors, focusing on how educated women tend to have smaller families, higher income levels, and better economic well-being for their households. By addressing the barriers to women's education, such as cultural norms and limited access to resources, the study provides actionable insights into the transformative potential of education in reducing socio-economic inequalities and promoting sustainable development.

The remainder of the paper is divided into the following sections: section 2 reviews current literature in order to identify research gap. Section 3 discusses research design, containing selected variables and

statistical techniques to analyze data. Section 4 describes empirical results, while the study concludes after discussing the findings, policy implications, theoretical contribution, limitations and suggestion for future research in section 5.

2. Literature review

The impact of women's education on fertility rates, family size, and household economic well-being has been the focus of extensive research in recent years (González & Ruíz, 2023). This multifaceted topic requires an interdisciplinary approach, incorporating perspectives beyond demography. A consistent finding is that educated women tend to have fewer children compared to their uneducated counterparts (Kim, 2016). This suggests that education equips women with the knowledge and resources to make informed decisions about childbearing and to implement these decisions effectively. For instance, education enhances women's awareness of contraception options and access to reproductive healthcare services. Güneş (2013) quantifies this relationship, estimating that an additional year of female schooling reduces teenage fertility by 0.03 births—a 33% decrease. These findings highlight how education delays the age at which women conceive, providing them with more time to pursue educational and professional goals before marriage and motherhood. Behrman and Gonalons-Pons (2020) explore the global relationship between total fertility rate (TFR) and women's participation in the workforce. Their research underscores how societal pressures to balance work and family life often lead career-oriented women to

deprioritize motherhood. Using empirical data, they demonstrate that women with higher levels of education achieve greater economic stability and success. This study also points to disparities in educational access for women in countries like Pakistan, where traditional norms often hinder girls' education.

In Pakistan, the relationship between educational attainment and fertility rates is particularly striking. Academic literature indicates an inverse correlation: as a woman's education level increases, her likelihood of marrying early and having multiple children declines. For instance, women with post-secondary or higher education typically have two children or fewer, while uneducated women have an average of six children over their lifetime (Jamil et al., 2021). Beyond reducing fertility rates, investing in girls' education in Pakistan yields broader societal benefits. Educated women often become influential community leaders, driving initiatives that enhancing healthcare, economic development, and overall social welfare (Ahsan, 2022). However, persistent negative attitudes toward girls' education remain a barrier in Pakistan. Many parents still prioritize traditional gender roles over their daughters' education (Suleman et al., 2015). Educated women are not only more knowledgeable about family planning techniques but are also more likely to prioritize personal and professional aspirations, challenging societal norms. Bongaarts and Casterline (2013) emphasize that much of the existing research focuses on specific regions or developed nations, leaving gaps in understanding how the relationship between women's education and demographic outcomes varies across cultural and geographical contexts. Addressing this gap, the present study adds knowledge on the multiple

impacts of women education on family size, fertility rate and socio-economic well-being of households.

2. Data and Methodology

This study employs a mixed-methods approach to explore the relationship between women's education and its influence on fertility rates, family size, and household economic well-being in Pakistan. By integrating both quantitative and qualitative data collection methods, the research offers a comprehensive understanding of these dynamics within the socio-economic and cultural context of Pakistan. The quantitative aspect involves the administration of structured surveys to gather numerical data on key variables, such as education level, fertility rates, family size, and household income. These surveys were designed with culturally appropriate and well-defined questions, ensuring objective and measurable responses. On the qualitative side, in-depth interviews and focus group discussions were conducted to explore contextual factors such as personal experiences, cultural norms, and societal influences that impact women's education and fertility decisions. The combination of these methods allows for a more holistic exploration of the complex relationship between women's education and demographic outcomes.

To ensure the study's findings are representative, a stratified random sampling technique was used. The participants were categorized into different strata based on factors such as age, marital status, education level, and geographical location (urban versus rural). This approach helped ensure that diverse perspectives were captured. A total of 500 participants

were included in the study, comprising 400 survey respondents and 100 participants for qualitative interviews and focus groups. The inclusion criteria focused on women of reproductive age (15–49 years) from varying educational backgrounds and socio-economic statuses to capture a wide range of experiences.

The data analysis for the quantitative component included several key techniques. Descriptive statistics were used to summarize demographic information and education levels. Correlation analysis helped to identify relationships between women's education and variables such as fertility rates, family size, and household income. Regression analysis was employed to predict the behavior of variables. SPSS and E-view were the primary tools used for statistical analysis due to their advanced capabilities in handling complex datasets and running sophisticated statistical models. For the qualitative data, NVivo software was used for thematic analysis, which involved coding interview and focus group transcripts to identify recurring themes and patterns. Triangulation was used to cross-validate the qualitative findings with the quantitative data, ensuring consistency and enhancing the reliability of the results.

Ethical considerations were a fundamental part of the study design. prior consent was obtained from all participants, with detailed information provided about the study's purpose, methods, and any potential risks. The consent process was conducted in local languages to ensure clarity, and participants had the option to ask questions before agreeing to take part. To maintain privacy and confidentiality, all personal identifiers were removed from the data, and all information was anonymized during

analysis. Cultural sensitivity was also prioritized; questions were framed in a way that respected local customs and norms.

4. Results

The data analysis phase employed a range of statistical techniques to evaluate the psychometric properties and descriptive statistics of the tools used in assessing the relationships among women's education, fertility rates, family size, and household economic well-being in Pakistan. These analyses included descriptive statistics, skewness, kurtosis, correlation, regression, and inferential tests such as ANOVA and t-tests to comprehensively examine the data.

4.1 Descriptive statistics

Descriptive statistics relating to psychometric properties of women education, family size and household economic well-being (N=500). Table 1 presents the descriptive statistics of four variables: fertility rate, family system, family size, and women's education. Each variable is analyzed for its mean (M), standard deviation (SD), reliability coefficient (α), actual and potential range, skewness, and kurtosis. These statistics provide insights into the distribution and reliability of the data. The fertility rate has a mean score of 50.8 with a standard deviation of 17.4, indicating moderate variability around the average. The Cronbach's alpha ($\alpha = 0.862$) reflects high reliability in the measurement. The actual range spans 85, with values ranging between 0 and 100, demonstrating a wide dispersion of responses. The skewness value (-0.098) is close to zero, indicating a

near-normal distribution, while the kurtosis value (-0.509) suggests a slightly flatter distribution compared to a normal curve.

The mean score for the family system variable is 20.0, with a higher standard deviation of 17.5, showing substantial variability in responses. The reliability coefficient is exceptionally high ($\alpha = 0.978$), indicating consistent measurement. The actual range of 67, within the potential range of 0–90, shows a fairly broad distribution. The skewness (-0.078) and kurtosis (-0.150) values are close to zero, pointing to a nearly symmetrical and mesokurtic distribution.

For family size, the mean is 10.6 with a relatively low standard deviation of 3.80, indicating less variability compared to other variables. The reliability ($\alpha = 0.767$) is acceptable, suggesting moderate consistency. The actual range is 17, and the potential values are between 0 and 21. A positive skewness (0.544) suggests a slight asymmetry, with a tendency for more scores on the lower end, while the kurtosis (-0.251) indicates a slightly flat distribution.

Women's education has the highest mean score (54.0) among the variables, with a standard deviation of 14.51, reflecting moderate variability. However, the reliability is relatively low ($\alpha = 0.414$), indicating less consistency in the responses. The actual range of 88, compared to the potential range of 0–100, suggests extensive diversity in educational attainment. The negative skewness (-0.722) indicates a left-skewed distribution, where higher values dominate, and the kurtosis (1.71) shows a leptokurtic distribution with a sharper peak and fatter tails. These descriptive statistics provide an overview of the data distribution,

variability, and reliability, offering valuable insights into the characteristics of the measured variables.

Table 1

Descriptive Statistics results

Variables	K	M	SD	α	Range		Skewness	Kurtosis
					Actual	Potential		
Fertility rate	20	50.8	17.4	0.862	85	0-100	-0.098	-0.509
Family system	15	20.0	17.5	0.978	67	0-90	-0.078	-0.150
Family Size	20	10.6	3.80	0.767	17	0-21	0.544	-0.251
Women Education	5	54.0	14.51	0.414	88	0-100	-0.722	1.71

4.2 Correlation Analysis

The correlation analysis results shown in Table 2 highlight the relationships between fertility rate, family system, family size, and women's education. Each correlation is interpreted based on its strength and statistical significance. The analysis reveals a weak negative correlation between fertility rate and family system (-.11), suggesting that as the structure of the family system changes (possibly from extended to nuclear), there is a slight tendency for fertility rates to decrease. However,

this relationship is not statistically significant, indicating that the observed correlation might be due to chance rather than a meaningful association. Family size, as expected, is perfectly correlated with itself (1.00), which is a statistical norm. Its relationship with other variables, such as fertility rate and family system, does not show any notable or significant correlation in this dataset, indicating independence in their patterns within the sample. Women's education demonstrates a weak positive correlation with the family system (.20), and this relationship is statistically significant at the 1% level ($p < .01$). This finding suggests that higher levels of education among women are associated with specific family system types, possibly reflecting societal or cultural trends, were education influences family dynamics. This significant correlation emphasizes the role of women's education as a factor in shaping family structures. Overall, the correlation analysis underscores the importance of women's education in relation to family systems, while the relationships involving fertility rate and family size appear less prominent or statistically significant in this sample. These results provide insights that could inform further research into how these variables interact in different socio-cultural contexts.

Table 2

Correlation Analysis results

Variables	N	M	SD	1	2	3
Fertility rate	500	1.02	0.15	-		
Family System	500	2.64	0.49	-.11	-	
Family Size	500	2.225	0.44		1	
Women education	500	97.01	11.41	.01	.20**	-

**p < .01

4.3 Multiple Regression analysis

Table 3 presents the results of a multiple regression analysis examining the influence of various predictors (family system, fertility rate, family size, and women's education) on two outcomes: family system and women's education. Each model's predictive strength is reflected by the standardized beta coefficients (β) and the change in R-squared (ΔR^2), which indicates the proportion of variance explained by the predictors.

The results of Regression 1 indicates that the family system was negatively associated with itself across the models ($\beta = -0.54$, $p < .01$), and this predictor accounted for 6.4% of the variance in the family system outcome ($\Delta R^2 = 0.064$, $p < .01$). This indicates a significant inverse relationship, suggesting that as other aspects of the family system change, there is a measurable impact on the outcome. The Regression II model

predicts women's education, the family system emerged as a significant negative predictor (β = -0.250, $p < .01$), explaining 6.3% of the variance (ΔR^2 = 0.063, $p < .01$). This implies that certain family structures may negatively influence women's educational attainment. Regression model III relating to Fertility rate showed a significant negative association with women's education (β = -0.181, $p < .05$). This predictor explained an additional 3.3% of the variance (ΔR^2 = 0.033, $p < .05$). The results suggest that higher fertility rates are linked to lower educational attainment for women, potentially due to the increased responsibilities or societal norms associated with higher fertility. Regression mode IV relating to family size predicts a significant negative relationship with women's education (β = -0.218, $p < .01$) and accounted for an additional 6.5% of the variance (ΔR^2 = 0.065, $p < .01$). This indicates that larger family sizes may adversely affect women's educational opportunities, possibly due to economic constraints or caregiving roles. The final regression model is related to women's education as a predictor and it displays a non-significant negative association (β = -0.126), suggesting that other predictors (family system, fertility rate, and family size) play a more dominant role in influencing the outcome.

The regression analysis reveals significant negative relationships between family system, fertility rate, and family size with women's education. Each predictor independently contributes to explaining the variance, emphasizing the cumulative impact of these factors on educational outcomes. The findings underscore the need for targeted interventions to address the structural and cultural barriers hindering

women's educational attainment, particularly in contexts where larger family sizes and traditional family systems prevail.

Table 3

Regression Analysis results

Predictors	Outcome			
	Family System		**Women Education**	
	B	**ΔR²**	**β**	**ΔR²**
	Regression II		Regression I	
Family System	-0.54**	0.064**	-0.250**	0.063**
	Regression III			
Fertility rate			-0.181*	0.033*
		Regression IV		
Family Size			-0.218**	0.065**
Women Education			-0.126	

Note: *P<.05, **P<.01, ***P<.001

4.4 T-test for Gender differences

Table 4 presents the results of an independent samples t-test conducted to examine gender differences in fertility rate, family size, women's education, and household economic well-being. The analysis compares the means of men (n = 54) and women (n = 246) across these variables and evaluates the statistical significance, effect size (Cohen's d), and confidence intervals (95% CI) for the differences observed. The outcomes

relating to Fertility Rate reveal that Men reported a higher mean fertility rate (M = 55.3, SD = 14.04) compared to women (M = 48.3, SD = 18.60). The difference was statistically significant (t = 2.401, p = 0.010), with a 95% confidence interval ranging from 1.66 to 12.26. This result indicates a meaningful gender disparity in fertility rate perceptions or experiences. The effect size, measured by Cohen's d (2.22), suggests a very large effect, highlighting the magnitude of the gender-based difference.

The results pertaining to family size show that men also reported a slightly larger family size (M = 11.61, SD = 4.23) compared to women (M = 10.04, SD = 3.44). This difference was statistically significant (t = 2.475, p = 0.022), with a 95% confidence interval ranging from 0.232 to 2.90. The effect size (Cohen's d = 0.40) reflects a small-to-moderate effect, indicating that men and women differ modestly in their family size assessments or experiences.

As regard to Women's Education the results demonstrate that the mean scores of men (M = 51.86, SD = 15.76) and women (M = 55.32, SD = 13.69) were not significantly different (t = -1.353, p = 0.161). The 95% confidence interval (-8.29 to 1.38) includes zero, further supporting the absence of a statistically meaningful difference. The effect size (Cohen's d = 0.23) was small, suggesting minimal practical significance.

The t-test results reveal significant gender differences in fertility rate and family size, with men reporting higher values for both. However, no significant gender difference was observed in women's education. The findings indicate that gender plays a role in shaping perceptions or experiences of fertility and family size, whereas educational attainment appears consistent across genders. These insights could inform gender-

sensitive policies and programs aimed at addressing disparities in family planning and resource allocation.

Table 4

T-test for Gender Differences

	Men		Women				95% CI		
	n=54		n=246						
Variables	M	SD	M	SD	t	P	LL	UL	Cohen's d
Fertility rate	55.3	14.04	48.3	18.60	2.401	0.010	1.66	12.26	2.22
Family Size	11.61	4.23	10.04	3.44	2.475	0.022	0.232	2.90	0.40
Women Education	51.86	15.76	55.32	13.69	-1.353	0.161	-8.29	1.38	0.23

Note: *p<.05; **p<.01; ***p<.001; M= Mean, SD= Standard Deviation, t = t -test Value, p = Significant Value, CI= Confidence Interval, LL= Lower Limit, UP= Upper Limit

4.5 ANOVA Test for education level

To evaluate whether women's education varied across different education levels (undergraduate, graduate, and postgraduate), a one-way ANOVA was conducted. As shown in Table 5, the mean differences across these

groups were non-significant (F (2, 297) = 2.32, p > 0.05), suggesting that formal education levels alone do not substantially influence women's education within this demographic.

Table 5

ANOVA Test results for levels of education

	Undergraduate		Graduate		Postgraduate			
Variables	M	SD	M	SD	M	SD	F (2, 297)	η2
Education	95.90	8.64	98.60	12.11	95.45	14.68	2.32	0.02

4.6 Direct Effect

Finally, a regression analysis was conducted to explore whether family size influences household economic well-being through women's education. The results shown in Table 6 confirmed significant direct effects of family size on women's education and economic well-being, reinforcing the interconnected nature of these variables.

Table 6

Direct effect of family size on women education and economic well-being.

Predictors	β	ΔR²
Family Size → WE	-0.54**	0.064**
WE → Economic WB	-0.181*	0.033*

Note: WE = Women Education; WB = Well-being; *p < 0.05, **p < 0.01.

The regression analysis demonstrates that family size significantly and negatively affects women's education (β = -0.54, p < 0.01). Women's

education, in turn, significantly predicts household economic well-being ($\beta = -0.181$, $p < 0.05$). While the model explains a modest proportion of the variance, the findings underscore the interconnectedness of family size, women's education, and economic well-being. These results emphasize the importance of addressing systemic and structural barriers to foster educational and economic improvements. The study highlights the substantial influence of family size and family system on women's education and household economic well-being. Addressing these constraints through targeted policies and interventions could improve educational outcomes and overall economic stability within households.

Table 7

 Model summary

Variable	B	β	SE
Constant	84.99***		3.56
Family System	4.56**	.20**	1.33
R^2	0.84		

The constant represents the baseline value of women's education when the family system variable is not considered or is neutral. In this case, the predicted mean score for women's education is 84.99. The standard error of 3.56 indicates that this estimate is relatively precise. The significance level (***$p < .001$) suggests that the constant value is statistically significant and not due to random chance. The unstandardized coefficient ($B = 4.56$) shows that a one-unit increase in the family system score is

associated with a 4.56-unit increase in women's education on average. The standardized coefficient ($\beta = 0.20$) indicates the strength of the relationship between the family system and women's education. It suggests a moderate positive association, meaning that improvements in the family system are linked to better education outcomes for women. The standard error (SE = 1.33) shows the level of variation around the coefficient estimate. The relatively low value suggests the effect is measured with reasonable precision. The significance level (**p < .01) confirms that this relationship is statistically significant, implying it is unlikely to have occurred by chance. The R-squared value of 0.84 indicates that 84% of the variance in women's education is explained by the family system. While this is a significant proportion, it highlights the importance of the family system as one of the contributors to women's educational outcomes. The results demonstrate that the family system has a positive and significant impact on women's education. For every unit of improvement in the family system, women's education increases by 4.56 units on average. The explained variance is limited to 84%, this underscores the need to consider that the family system is a dominant factor in women's education.

5. Discussion

The findings from this study reveal significant relationships between family system, family size, fertility rate and women's education, with a significant correlation identified between family system and educational outcomes for women. This suggests that the family structure plays a key role in shaping educational opportunities and outcomes for women in Pakistan. However, the absence of significant relationships between gender and family system or between gender and women's education

indicates that these factors may not have direct impact on women's education in the context of this study. These findings are consistent with previous research that suggests that, while the family system can influence educational outcomes, other factors, such as socioeconomic status or cultural norms, may also play a critical role.

Furthermore, the regression analysis revealed that the family system is a significant positive predictor of women's education, explaining a meaningful portion of the variance. Although the regression model accounted for only 84% of the variance, this highlights the importance of familial structure in shaping educational outcomes. The analysis also found non-significant differences in women's education across different educational levels, which suggests that formal education alone may not be sufficient to predict variations in women's educational attainment within this demographic.

5.1 Policy Implications

The findings of this study have several important policy implications. First, since the family system was found to be a significant predictor of women's education, policymakers should focus on strengthening familial support structures, particularly in rural and underprivileged areas. Initiatives that promote family awareness about the importance of women's education could help enhance educational outcomes for women, especially in more traditional family systems. Additionally, the lack of significant differences in women's education across educational levels suggests that simply increasing access to higher education may not be sufficient to improve

overall educational outcomes for women. Policies aimed at improving the quality of education, addressing gender-based disparities, and enhancing educational support systems within families could prove more effective. Moreover, since gender differences were found in family size and economic well-being, future policies should target gender equality in both education and economic empowerment. Economic support for women in the form of subsidies, grants, and access to employment opportunities could help alleviate some of the barriers women face in pursuing education.

5.2 Theoretical Contribution

This study provides valuable theoretical contributions to understanding the relationships between family systems and women's education, integrating multiple theoretical frameworks to explain these dynamics. One of the key theories that support the findings is *Social Learning Theory* by Albert Bandura (1977). According to Bandura, individuals learning behaviors and norms through observing and imitating others within their social environment. The family, as a primary socializing agent, plays a crucial role in shaping educational aspirations and outcomes. The study's finding that family systems significantly influence women's education aligns with Bandura's view that family structures and the social environment are pivotal in shaping behavior, including educational achievement. Another relevant theoretical framework is *Human Capital Theory*, initially articulated by Gary Becker (1964) and later refined by Roomer (1990). This theory emphasizes the value of education in enhancing an individual's productivity and economic contributions. The findings that family systems predict women's education, although

explaining a small portion of the variance, contribute to Human Capital Theory by suggesting that family structure impacts educational attainment, which, in turn, could influence economic well-being. While *Human Capital Theory* primarily focuses on the economic value of education, this study broadens its scope by highlighting the sociocultural factors embedded within family systems that affect educational outcomes, particularly for women. Additionally, *Gender Role Theory* suggested by Sandra Bem (1981) offers a lens through which to understand the limited significance of gender differences in this study. Gender roles, which are learned within the family context, may explain why the family system influences women's education more strongly than gender disparities. Although the study found no direct correlation between gender and women's education, the family system's role in shaping educational outcomes suggests that traditional gender roles may still dictate women's opportunities and limitations in pursuing education. This supports the notion that while formal gender equality policies may be in place, family structures may still perpetuate gender norms that subtly influence educational outcomes.

The study's results also highlight the need for a more nuanced application of *Intersectionality Theory* proposed by Kimberlé Crenshaw (1989), which posits that multiple dimensions of identity, including gender, socio-economic status, and family background, intersect to produce unique forms of discrimination or privilege. In this case, the intersection of gender and family background, particularly in rural and

lower-income settings, may explain why family system significantly affects women's education. These findings suggest that intersectional factors, rather than gender alone, provide a clearer picture of the barriers women face in accessing education.

This study, while providing valuable insights, has several limitations. The sample size, although reasonable, was confined to a specific geographical region (Pakistan), which may limit the generalizability of the findings to other contexts. Furthermore, the study relied on self-reported data, which can introduce biases such as social desirability bias, where participants might provide responses that they believe are expected or socially acceptable. The cross-sectional design also limits the ability to draw causal inferences, as it only captures relationships at a single point in time. Longitudinal studies are needed to better understand the long-term effects of family systems and other variables on women's education.

In the light of above-mentioned limitations, the following suggestions are made for further research: -

Future research should explore the role of other mediating variables, such as socioeconomic status, cultural attitudes, and community support, in shaping women's educational outcomes. Longitudinal studies that track women's education over time would provide more robust data on the causal relationships between family systems and women's educational attainment. Additionally, future studies could explore how different types of family systems (e.g., nuclear vs. extended) influence women's education in various regional and cultural contexts. Moreover, exploring the role of men and women in promoting gender equality within the family system could offer valuable insights. Understanding how to engage male

family members in supporting women's education could help in creating more inclusive family dynamics that support women's educational and professional aspirations.

5.3 Conclusion

This study highlights the importance of the family system as a key determinant of women's education in Pakistan, with implications for both policy framework and future research. While family structures play a significant role, gender-based disparities in educational outcomes remain an area that requires specific attention. Policies that empower women economically and enhance family support for education are critical for improving women's educational outcomes. However, further research is needed to explore other influencing factors and to develop more comprehensive strategies that address the multifaceted nature of women's education in Pakistan. Women lack of participation in economic activities is one of the main causes of Pakistan's low national income and their participation in labor force cannot be enhanced without uplifting their education.

Data statement

The data that supports the findings of this study will be made available by corresponding author on strong request.

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