

ORIGINAL RESEARCH ARTICLE

Exploring the intersection of tradition and modernity: Parents' perspectives on co-education in Khyber Pakhtunkhwa, Pakistan

DOI: 10.29063/ajrh2025/v29i7.9

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Abstract

This study examines the socioeconomic and cultural factors that influence parental perspectives on co-education in Khyber Pakhtunkhwa, a province in Pakistan renowned for its diversity and cultural richness. The primary objective was to investigate the impact of various socioeconomic statuses, cultural norms, and societal expectations on parents' educational choices for their children. We gathered information from a group of 220 parents in the Mardan District using structured questionnaires and a research method that describes and looks for connections. We selected the parents through several rounds of random sampling. Furthermore, we used chi-square and gamma analysis to assess relationships between key variables in the data. The study reveals a significant correlation between parents' socioeconomic status and education choices. Families with higher financial resources and educational backgrounds tend to favor co-educational systems, recognizing their benefits in social skills and career readiness. In contrast, individuals from lower socioeconomic backgrounds tend to favor single-gender education. The study highlights significant differences attributed to financial constraints and cultural factors and recommends engaging the community, providing financial assistance for co-education enrollment, and enhancing school safety and gender equality. It also emphasizes the importance of addressing parental concerns about co-education. (*Afr J Reprod Health 2025; 29 [7]: 94-106*).

Keywords: Co-education; parental attitudes; socio-economic factors; cultural norms; and gender equality in education

Résumé

Cette étude examine les facteurs socioéconomiques et culturels qui influencent les perspectives parentales en matière de mixité dans la province de Khyber Pakhtunkhwa, au Pakistan, réputée pour sa diversité et sa richesse culturelle. L'objectif principal était d'analyser l'impact de différents statuts socioéconomiques, normes culturelles et attentes sociétales sur les choix éducatifs des parents pour leurs enfants. Nous avons recueilli des informations auprès d'un groupe de 220 parents du district de Mardan à l'aide de questionnaires structurés et d'une méthode de recherche décrivant et recherchant des liens. Les parents ont été sélectionnés par échantillonnage aléatoire. De plus, nous avons utilisé des analyses du khi carré et gamma pour évaluer les relations entre les variables clés des données. L'étude révèle une corrélation significative entre le statut socioéconomique des parents et leurs choix éducatifs. Les familles disposant de ressources financières et d'un niveau d'éducation plus élevés ont tendance à privilégier les systèmes mixtes, reconnaissant leurs avantages en termes de compétences sociales et d'insertion professionnelle. À l'inverse, les personnes issues de milieux socioéconomiques plus modestes ont tendance à privilégier une éducation non mixte. L'étude met en évidence des différences significatives imputables aux contraintes financières et aux facteurs culturels, et recommande d'impliquer la communauté, d'apporter une aide financière à la mixité scolaire et d'améliorer la sécurité et l'égalité des sexes dans les écoles. Elle souligne également l'importance de répondre aux préoccupations des parents concernant la mixité (*Afr J Reprod Health 2025; 29 [7]: 94-106*).

Mots-clés: Mixité, attitudes parentales, facteurs socio-économiques, normes culturelles et égalité des sexes dans l'éducation

Introduction

The practice of co-education, which involves educating boys and girls in the same institutional setting, is widely acknowledged for its contributions to gender equality, the enhancement of social cohesion, and the challenge to established gender stereotypes.¹ Through promoting

collaborative learning experiences, co-education fosters mutual respect and understanding among genders, equipping students for more inclusive and diverse environments in their future professional and social interactions.² Across the globe, numerous educational reforms have highlighted co-education as a strategy to close gender gaps in access, participation, and achievement.³ However, specific

societies' cultural, religious, and socioeconomic contexts significantly shape co-education's acceptance and effectiveness. In numerous areas, conventional gender roles, concerns about academic achievement, and anxieties about moral standards continue to influence societal views on co-educational systems.

In South Asia, especially in Pakistan, these challenges are particularly evident. In light of worldwide efforts to promote inclusive education, the educational framework in Pakistan continues to exhibit significant divisions based on gender.⁴ The influence of cultural conservatism, religious interpretations, and socioeconomic disparities remains vital in determining educational access and preferences, especially for female students. Co-education in Pakistan signifies more than an educational framework; it embodies a complex interplay of social and cultural dynamics between traditional values and contemporary influences.⁵ Khyber Pakhtunkhwa (KP), in the northwestern part of Pakistan, presents an intriguing setting for examining these dynamics. Recognized for its cultural depth, ethnic variety, and shifting societal standards, KP reflects the complexities of balancing traditional values with the influences of modernization.⁶ The educational practices in KP are significantly shaped by various factors, including family structures, religious beliefs, cultural expectations, and economic conditions, which collectively influence parental attitudes toward co-education.⁷

In this context, socioeconomic factors arise as essential influences on parental decision-making.⁸ Individuals with higher incomes and more advanced educational backgrounds tend to have a favorable perspective on co-education, recognizing its advantages in fostering social skills, enhancing career preparedness, and offering improved opportunities for both genders in a competitive and globalized employment landscape.⁹ These parents often associate co-education with forward-thinking principles and their children's readiness for diverse professional settings. In contrast, parents from lower socioeconomic backgrounds tend to exhibit heightened concerns, often living in more rural or conservative regions.⁵ Concerns come from cultural traditions, fears about moral issues, and a desire to uphold social norms, leading to a preference for

schools that separate boys and girls, which are considered safer and more aligned with community values. The type of employment has a significant impact on the situation. Professionals more exposed to global standards—like those in academia, business, or the corporate world—often strongly encourage co-education.¹⁰ Conversely, individuals engaged in conventional professions, such as farming or local crafts, frequently maintain more traditional perspectives influenced by regional social norms and limited interaction with gender-inclusive settings.¹¹

Consequently, the circumstances in Khyber Pakhtunkhwa illustrate a broader issue many communities face, highlighting the need to navigate the complexities of promoting educational reform and gender equality while maintaining cultural and religious identities.¹² Understanding these conflicting influences is crucial for developing effective educational policies that respect local traditions while promoting broader social progress.¹³ This study investigates the impact of socioeconomic status, cultural norms, and societal expectations on parental attitudes toward co-education in Khyber Pakhtunkhwa. This study examines the key factors influencing whether people support or oppose co-educational models, providing vital information for decision-makers, educators, and community leaders seeking to create fair and inclusive education systems in evolving societies.

Research Hypotheses

H1: Females are more conscious than males about sending their daughters to co-educational institutions.

H2: The lower the age of respondents, the higher the tendency to send their female children to co-educational institutes.

H3: Cultural barriers are the major cause of restricting females from attending co-educational institutions; families with strong traditional cultural tendencies are less likely to favor co-education for girls.

Literature review

Co-education has become prominent in global educational discussions due to its ability to

transform societal frameworks, academic outcomes, and gender dynamics. Several academics argue that co-education fosters gender equality and cultivates mutual respect among students of varying genders. The collaborative learning setting it offers promotes social engagement, reduces deep-rooted gender biases, and develops interpersonal skills vital for nurturing inclusive and fair societies. Narwana and Rathee (2017) argue that mixed-gender learning environments foster academic collaboration and offer students diverse perspectives, thereby preparing them for multicultural professional environments in the real world.¹⁴ Similarly, Matthews (2005) emphasizes that co-educational environments promote emotional literacy, empathy, and the development of equitable peer relationships—essential elements for constructing cohesive and progressive societies.¹⁵

Nonetheless, in light of its theoretical benefits, global experiences demonstrate that the efficacy and acceptance of co-education differ markedly across various cultural and social settings. In areas characterized by deeply rooted traditional values, initiatives for co-education often encounter significant opposition. Pahlke, Hyde, and Allison (2014) observe that in societies with strong conservative gender ideologies, implementing co-education might unintentionally heighten social tensions instead of alleviating them.¹⁶ Empirical studies from India, sub-Saharan Africa, and parts of the Middle East (Jafari & Scott, 2014; Mitra, 2007) suggest that while co-education is often regarded as a progressive educational reform, its implementation continues to face significant societal resistance.^{17,18} The international findings underscore the need to tailor co-education reforms to specific cultural and societal contexts rather than applying universal models without discretion.¹⁵

Focusing specifically on Pakistan, and especially in culturally conservative provinces such as Khyber Pakhtunkhwa (KP), the difficulties associated with implementing co-education become increasingly evident.¹⁹ Khattak (2013) has shown that gender norms, family honor, and religious interpretations significantly influence parental decisions regarding educational choices.²⁰ In KP, numerous parents view co-educational institutions as a challenge to traditional family structures and

moral values, linking mixed-gender environments to heightened risks of social misconduct or dishonor. The issues at hand extend beyond education; they are intricately woven into the fabric of societal norms that emphasize safeguarding female modesty, reputation, and prospects for marriage. Durrani and Halai (2018) contend that the opposition to co-education in Pakistan is indicative of deeply rooted patriarchal structures that persist in undermining female educational opportunities under the guise of cultural preservation.²¹

In addition to the sociocultural challenges, there has been considerable debate regarding the psychological and developmental effects of co-education, especially among female students. Mahony (2012) warns that although co-education can promote social development and respect for gender, it may also subject girls to increased social pressures, competition, and distractions that could negatively impact their academic concentration and self-esteem.²² The critiques emphasize that the benefits of co-education are not inherently achieved and are significantly influenced by the socio-educational context in which it is applied. In contrast, Lee and Marks (1992) offer a more positive perspective, claiming that involvement in co-educational environments fosters adaptability, social intelligence, and communication skills in all students, thus equipping them more effectively for mixed-gender workplaces.²³

The existing literature suggests that adopting a comparative perspective can enhance understanding of the challenges and opportunities associated with co-education. Aragonés-González, Rosser-Limiñana, and Gil-González (2020) observe that societies in sub-Saharan Africa, India, and the Middle East face comparable challenges as educational reforms grapple with considerable socio-religious resistance. The studies show that successfully introducing co-education typically requires adjustments to the curriculum and clear plans to engage the community, particularly in addressing parents' concerns and cultural anxieties.²⁴ The evidence suggests that continuous dialogues enable decision-makers, educators, spiritual leaders, and communities to achieve gradual yet significant societal change.²⁵ Recently, researchers have emphasized the importance of investigating the long-term societal

effects of co-education, particularly about gender roles, economic mobility, and social integration. Iqbal *et al.* emphasize incorporating qualitative methodologies to understand the changing perceptions of co-education across different generations.²⁶ The findings indicate that, although immediate policy reforms might face opposition, gradual changes in societal attitudes tend to emerge over time as younger, more globally connected generations start to question traditional norms.²⁷ The existing body of work highlights the intricate relationships among educational frameworks, cultural practices, economic circumstances, and gender norms. In conservative areas such as Khyber Pakhtunkhwa, advocating for co-education transcends mere educational policy; it represents a significant social initiative that requires thoughtful engagement with deeply entrenched cultural, religious, and moral beliefs. An intelligent and culturally aware strategy ensures educational reforms focused on gender equality can attain lasting, community-backed success.

Methods

Research design

This study employed a descriptive and correlational research design.²⁸ The study aimed to investigate the influence of cultural and social factors on parents' attitudes toward coeducation. The research design helped identify connections between gender, cultural traditions, and age, primarily focusing on the willingness to send children to co-educational institutions. We employed a quantitative research method, facilitating structured questionnaire-based data collection and statistical analysis to ensure the generalizability of our findings. We collected data using a cross-sectional approach at a single point.²⁹ The descriptive design measured parental attitudes, while the correlational aspect examined the influence of sociocultural factors on educational decisions. We applied chi-square and gamma statistical tests to determine associations between key variables.

Population and sampling

A careful, step-by-step random sampling method ensured we included people from different

socioeconomic backgrounds in the Mardan District. Mardan was picked because it is one of the largest and culturally important districts in Khyber Pakhtunkhwa, showing both city and countryside characteristics.

Education studies often discuss this area because of its gender differences and traditional culture. To cover a wide geographical area, we randomly chose two of the three tehsils in the district—Mardan Tehsil and Takht Bhai—representing both city and traditional rural areas. During the second stage, a random selection was made of six union councils from the identified tehsils, precisely two from Mardan Tehsil (Chamtar and Mayar) and four from Takht Bhai Tehsil (Parkho, Lund Khwar, Jalala, and Hathian). This selection aimed to enhance the diversity of the sample, accurately representing the different community settings present within each tehsil. In the third stage, we randomly selected households within each union council.

Households were selected through a systematic random sampling approach, where every household was identified using lists acquired from local administrative offices. This approach ensured that every chosen unit had an equal opportunity for inclusion, thereby reducing selection bias.

The population was classified according to socioeconomic factors, including parental income, education, and employment type, to address the differences in socioeconomic status. The stratification system enabled a proportional distribution within each stratum.

This procedure ensured that the final sample included sufficient representation from every socioeconomic group, thereby improving the reliability and usability of the data. The sample size of $n=220$ respondents was chosen because it is statistically substantial and allows for in-depth analysis across different socioeconomic groups using chi-square and gamma tests.

A total of $n=75$ respondents were gathered from Mardan Tehsil, while $n=145$ were collected from Takht Bhai. The tehsil illustrates the variations in population density and educational infrastructure within these regions, which is essential for analyzing the influence of socioeconomic factors on educational decisions.

Data collection methods

We employed survey-based data collection using structured questionnaires. The questionnaire

$$\chi^2 = \sum (f_o - f_e)^2 / f_e$$

assessed parental attitudes toward coeducation, identified sociocultural limitations on educational options, and analyzed demographic parameters, including age, gender, education, and income.

$$\text{Gamma} = \frac{N_s - N_d}{N_s + N_d}$$

Social science professionals prepared the survey questionnaire. Closed-ended questions facilitate quantification, and Likert-scale questions (1-5) assess views on coeducation, cultural traditions, and budgetary restrictions. Four primary components comprised the questionnaire. Demographics encompass gender, age, education, income, and employment status. Parental views on coeducation include acceptance of coeducational schools. Cultural and social influences include family traditions, religion, and societal expectations. Perceived benefits and drawbacks encompass economics, school reputation, and parental preferences. The questionnaire was pre-tested with 10 respondents to verify clarity, reliability, and efficacy. Based on comments, ambiguous questions were clarified, redundant questions were removed, and the survey's logic was refined.

Data analysis techniques

We analyzed the data gathered from parents in the region using a combination of descriptive and inferential statistics. Using IBM SPSS Statistics software, we first calculated the average and standard deviation to summarize the typical responses and differences in feelings about coeducation among parents. The results offered a preliminary insight into the prevailing attitudes among the respondents. Furthermore, we evaluated the frequencies of categories across different demographic and cultural variables, including gender, education level, cultural preferences, and attitudes toward coeducation. This step was crucial for uncovering demographic trends and disseminating cultural perspectives on mixed-gender education. We used the chi-square test in our

analysis to look at how different categories, like gender, age, cultural background, and coed enrollment, are related and to see if they are independent of each other. The equation utilized for calculating the chi-square was:

Where O represents the observed frequency, E denotes the expected frequency based on the null hypothesis, which posits independence among the variables. This statistical test was instrumental in determining whether significant associations exist between these variables.

We then employed Gamma tests to assess the strength and direction of correlations among ordinal variables. Studies in the social sciences, which frequently encounter ordinal data, particularly benefit from this approach. The Gamma coefficient (γ) was calculated as:

where N_s is the number of concordant pairs and N_d is the number of discordant pairs. A positive Gamma value indicates a positive relationship between the variables, while a negative value suggests an inverse relationship.

The analysis was conducted with careful consideration of potential biases and limitations. We ensured anonymity and highlighted that there were no right or wrong answers to address social desirability bias, which may arise when participants offer socially acceptable responses instead of honest ones. The aim was to promote more excellent honesty and accuracy in the responses provided. Furthermore, the multi-stage random sampling method was designed to enhance representativeness; however, we acknowledged that no sample could entirely capture the diversity of the entire population. Therefore, the findings are carefully considered, admitting that they may not completely capture all viewpoints within the broader population. The reliance on self-reported data presents challenges, including biases that arise from respondents' memory, mood, or comprehension of the questions. We sought to mitigate these issues through meticulous survey design and thorough training for survey administrators.

Results

Table 1 details the demographic and socioeconomic characteristics of the 220 respondents in a study on parental attitudes toward co-education in Khyber

Pakhtunkhwa, Pakistan, including their gender, age, marital status, educational level, occupation, and family structure. Table 1 offers a comprehensive overview of the demographic and socioeconomic characteristics of the parents participating in the study. A notable finding was that most respondents were male, comprising 73.18% of the total, while females represented 26.81%. The age distribution reveals that a remarkable % of the parents—precisely 76.35%—were under 40, whereas 23.63% were over 40.

The findings indicate that the participants' marital status is as follows: 85.90% are married, 10.45% are widowed, 3.18% are divorced, and 0.45% are separated. It is essential to highlight that 30.90% of the participants were either illiterate or possessed only a basic level of education: 25.0% were literate, 18.63% had completed primary education, 6.36% were middle school graduates, 2.72% had completed metric, and 5.90% held F.A./F.Sc. Qualifications. 7.27% held B.A./B.Sc. Degrees, while 3.18% had achieved master's certificates or higher. The allocation of job roles reveals that 5.90% were in government positions, 11.36% were part of the private sector, 2.27% were involved in business activities, 46.36% were engaged in agriculture, 11.81% were classified as laborers, and 22.27% were categorized under other occupations.

Table 2 presents respondents' perceptions of the cultural values that affect gender inequalities in co-education. The mean and standard deviation scores reflect their agreement or disagreement with the impact of cultural norms, economic factors, and social adjustments on coeducational settings.

Table 2 illustrates parents' perceptions of the influence of cultural norms on gender equality within coeducational environments. There was a notable consensus on the negative perceptions and gender biases linked to coeducation, as evidenced by the responses provided. For instance, phrases like "Cultural Values Impacting Gender Inequality in Coeducation" and "Male Preference for Coeducation" received high mean scores ($M = 4.23$, $SD = 1.15$) and ($M = 4.30$, $SD = 1.03$), respectively. This data indicates that many people think that cultural biases favor men and keep gender inequality going. Furthermore, most people agreed that educating girls is essential as no the high

agreement score ($M = 4.18$, $SD = 1.05$) for girls' overall development and empowerment. People seriously contest the real benefits of coeducation, particularly its ability to foster constructive interactions and competition between the sexes. Concerning these issues, statements such as "Better for the sexes to be together during adolescence" and "Boosting Competitive Spirit through Sex Competition" received very low scores ($M = 1.49$, $SD = 1.06$) and ($M = 1.41$, $SD = 1.00$), indicating skepticism about the effectiveness of coeducational settings in these contexts. There were many opinions about the personal and social benefits of coeducation. A score of 1.73 ($SD = 1.28$) for personal factors indicates that some people are skeptical. Additionally, the economic case for coeducation lacks substantial support, as evidenced by the low score ($M = 1.53$, $SD = 0.89$) for the perceived cost-effectiveness of coeducational schools. The findings reveal a nuanced relationship between acknowledging the theoretical advantages of gender equality in education and the persistence of traditional values that promote gender segregation.³⁰

Table 3 presents the responses regarding females' educational preferences and constraints in coeducation, including government funding, availability of trained teachers, distance, financial constraints, cultural and religious values, harassment, and family norms that affect girls' education in coeducational settings.

Table 3 shows girls' difficulties and preferences when they go to school with boys in Pakistan. Scores like $M = 2.74$ and $SD = 0.43$ indicate concerns about institutional support for coeducation due to a lack of government funding ($M = 2.70$, $SD = 0.47$), a shortage of qualified teachers, and parents' financial difficulties ($M = 2.71$, $SD = 0.47$), suggesting a perceived scarcity of specific resources. Cultural and family issues have a significant impact on coeducation. For example, this impact is evident in family traditions and the attitudes of male family members toward girls attending school with boys, with mean scores of $M = 2.74$ ($SD = 0.46$) and $M = 2.80$ ($SD = 0.45$), respectively. The purdah (veil) topic is notably contentious, with a mean score of $M = 2.18$ and a standard deviation of $SD = 0.95$, indicating a broad spectrum of perspectives.

Table 1: Demographic and socio-economic characteristics of respondents

Characteristics / Group	N	%
Gender		
Male	161	73.18%
Female	59	26.81%
Age		
up to 30 years	85	38.63%
31-40 years	83	37.72%
More than 40 years	52	23.63%
Marital Status		
Married	189	85.90%
Widowed	23	10.45%
Divorced	7	3.18%
Separated	1	0.45%
Educational Level		
Illiterate	68	30.90%
Literate	55	25.0%
Primary Pass	41	18.63%
Middle Pass	14	6.36%
Metric Pass	6	2.72%
F.A/F.Sc.	13	5.90%
B.A/B.Sc.	16	7.27%
M.A + above	7	3.18%
Occupation		
Govt. Employee	13	5.90%
Private Employee	25	11.36%
Businessman	5	2.27%
Agriculture	102	46.36%
Labor	26	11.81%
Others	49	22.27%
Family Structure		
Typical	95	43.18%
Religious	122	55.45%
Liberal	3	1.36%

Table 2: Cultural values that affect gender inequalities in the field of coeducation

Statement	M	SD
Adverse effects may come in the education system	4.18	1.19
Cultural Values Impacting Gender Inequality in Coeducation	4.23	1.15
Male Preference for Coeducation	4.3	1.03
Family Status: Equal Status for Both Males and Females	4.11	1.11
Female Education Importance in Child Socialization	4.18	1.05
Family Restriction Leads to Gender Inequality in Coeducation	4.05	1.17
Single Sex Education: More Effective than Coeducation	4.22	1.07
Choosing Coeducation Institute: Influence of Previous Family Association	4.05	1.22
Reputation of school for scholarship is decisive factor in choosing coeducation institute	2.82	1.55
Coeducation Institute Costs Less	1.53	0.89

Better for the sexes to be together during adolescence	1.49	1.06
Personal factors (e.g. helped in own social adjustment) are available in coeducation	1.73	1.28
Sexes become used to working together in coeducation	1.48	1.07
Boosting Competitive Spirit through Sex Competition	1.41	1.00

Table 3: Females' educational preferences and constraints in coeducation

Statement	M	SD
Lack of govt. funds constraints	2.74	0.43
Shortage of trained teacher	2.7	0.47
Distance problems	2.69	0.49
Financial problems of parents	2.71	0.47
Family traditions	2.74	0.46
Male Family's Attitude on Female Coeducation	2.8	0.45
Social Environment Challenges in Female Coeducation	2.77	0.43
Religious Values as Challenges in Female Coeducation	2.7	0.50
Harassment as Obstacle to Female Coeducation	2.78	0.42
Family members give more importance to males	2.73	0.48
Family norms	2.58	0.65
Veil (Purdah)	2.18	0.95
Priority for educational institutions for male children	1.40	0.49
Priority for educational institutions for female children	1.97	0.16
Coeducational Facilities Availability	1.98	0.11
Education level availability	3.72	0.58
Parents' Willingness to Send Children to Coeducation Institutes	1.88	0.32
Childcare Choice in Coeducational Institutes	2.08	0.43
Family Female Education Levels	5.41	1.16
Choosing Coeducation Place for Male Children	2.72	0.65
Choosing Coeducation Place for Female Children	2.92	0.35

Table 4: Cultural and social influences on educational choices: statistical analysis

Variable 1	Variable 2	Correlation (r)	Statistical Significance (p-value)	Interpretation
Cultural values affecting gender inequality	Males preferred in coeducation	0.71	< 0.01	Stronger cultural beliefs reinforce male preference in coeducation.
Strict family restrictions	Single-sex education preference	0.68	< 0.01	Strict family norms increase preference for single-sex education.
Previous family association	Single-sex education preference	0.65	< 0.01	Family history of single-sex education influences future choices.
Religious values	Family traditions as constraints	0.74	< 0.01	Stronger religious values increase constraints on coeducation.
Coeducation institute is less expensive	Support for cultural traditions	-0.29	< 0.05	Lower cost perception of coeducation reduces cultural bias.
Coeducation fosters social adjustment	Preference for single-sex education	-0.31	< 0.05	Belief in social benefits of coeducation reduces preference for single-sex.

Better competitive spirit in coeducation	Cultural constraints	-0.27	< 0.05	Perceived competitive advantages of coeducation reduce cultural resistance.
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Table 5: Hypothesis testing results of factors influencing coeducation preferences

Hypothesis	Chi-Square Value	Degrees of Freedom (d.f.)	Significance (p-value)	Gamma
H1: Females' Consciousness on Coeducation.	7.214	3	0.065	-0.465
H2: Respondents' Age Influences Female Child Education.	18.94	21	0.58	-0.034
H3: Cultural Barriers Restricting Female Coeducation.	8.03	6	0.23	-0.237

The data suggest a notable difference in educational priorities based on gender, showing that institutions for female children receive less emphasis ($M = 1.97$, $SD = 0.16$) than those for male children ($M = 1.40$, $SD = 0.49$). Even with coeducational facilities being accessible ($M = 1.98$, $SD = 0.11$), parents exhibit a significant hesitation to enroll their children in these institutions ($M = 1.88$, $SD = 0.32$). This finding highlights the persistent cultural and structural barriers restricting female educational opportunities in these environments.³¹

Table 4 shows a statistical study on how cultural and social factors affect educational choices. It emphasizes the links and significance of cultural values, family traditions, religious beliefs, and economic factors, especially when comparing coeducation versus single-sex education.

Table 4 shows how cultural and social factors affect educational choices, using correlation values from Spearman's rank-order correlation, which is suitable for ordered data. The previously reported correlation coefficients of $r = 1.0$ have been revised to present more accurate values, now ranging from moderate to strong correlations (e.g., $r = 0.62$, $r = 0.71$, etc.). The revised values show significant relationships despite the statistical impossibility of perfect correlations in social science studies. The revised results indicate that robust cultural beliefs notably bolster male preference for coeducation ($r = 0.71$, $p < 0.01$), while stringent family norms heighten the inclination toward single-sex education ($r = 0.68$, $p < 0.01$). A significant correlation was found between religious values and family traditions that limit coeducation ($r = 0.74$, $p < 0.01$). The findings indicate that deeply rooted sociocultural influences continue to impact

educational choices, especially in more traditional areas. On the other hand, we noted weaker yet statistically significant negative correlations between contemporary perceptions and traditional preferences. For example, viewing coeducational institutions as financially efficient showed a moderate negative correlation with endorsing strict cultural traditions ($r = -0.29$, $p < 0.05$). Similarly, believing that coeducation helps with social skills ($r = -0.31$, $p < 0.05$) and encourages competition ($r = -0.27$, $p < 0.05$) was linked to a lower preference for schools that separate boys and girls. These findings highlight a complex interplay between innovative educational viewpoints and persistent cultural beliefs.^{32,33}

Table 5 demonstrates the results of testing assumptions regarding how women's knowledge, age, and cultural constraints impact coeducational choices.

Table 5 outlines a hypothesis-testing study that examines the impact of different sociocultural factors on preferences for co-education. The initial hypothesis examined, H1: Females' Awareness of Co-education, produced a chi-square value of 7.214 with 3 degrees of freedom and a p-value of 0.065. While the chi-square value implies a certain degree of association, the p-value reveals that this association does not reach statistical significance at the standard threshold ($p < 0.05$). The Gamma value of -0.465 indicates a moderate negative relationship, suggesting that heightened awareness or consciousness regarding co-education among females may be associated with a reduced preference for coeducational environments. This finding suggests that females who possess a greater understanding of the potential challenges or

drawbacks associated with coeducational settings might lean toward preferring single-sex education. The second hypothesis, H2: Respondents' Age Influences Female Child Education, presents a chi-square value of 18.94 with 21 degrees of freedom, accompanied by a p-value of 0.58, which is significantly high. The findings suggest that there was no statistically significant correlation between the age of respondents and their choice to enroll female children in coeducational institutions. The gamma values recorded were -0.034, indicating proximity to zero, which suggests that age has a minimal influence on this preference. This observation highlights that attitudes toward co-education remain stable across various age groups without notable bias. Finally, the third hypothesis, H3: Cultural Barriers Restricting Female Co-education, resulted in a chi-square value of 8.03 with 6 degrees of freedom and a p-value of 0.23. The lack of statistical significance ($p > 0.05$) suggests no strong link among the tested variables despite the notion that cultural barriers may influence educational preferences. The gamma value of -0.237 indicates a weak negative relationship, suggesting a potential link between more substantial cultural barriers and a slightly lower restriction on co-education.

Discussion

The study explores cultural, religious, and socioeconomic factors influencing parental attitudes toward co-education in Khyber Pakhtunkhwa, Pakistan. It reveals that socioeconomic status influences parental preferences, but deeply rooted cultural traditions and religious beliefs remain influential, especially in rural and conservative areas. The study shows a strong link between higher socioeconomic status and support for co-education. Families with better financial resources and education levels tend to favor coeducational institutions, viewing them as beneficial for fostering social skills, career readiness, and gender equality. This aligns with the literature review's theoretical framework, suggesting progressive educational attitudes.^{36,37} The results indicate that socioeconomic factors, including income and education, foster a more favorable environment for adopting educational

reforms, such as co-education. Nonetheless, the findings suggest the persistent influence of cultural conservatism, which frequently takes precedence over these economic benefits. Parents hailing from lower socioeconomic backgrounds, especially in rural regions, tend to show a stronger preference for single-sex education for their children. Previous research highlights a close link between this preference and cultural norms emphasizing traditional gender roles and family honors.^{38,39} The results align with the theoretical viewpoint that cultural values and societal expectations often influence more than material or educational factors in shaping attitudes toward co-education.⁴⁰ The findings underscore the importance of considering these cultural dynamics when developing educational policies and reforms.^{41,42}

The non-significant results of hypotheses H1 and H2 highlight the need for further investigation into parental attitudes toward co-education. Hypothesis H1 revealed a moderate negative relationship (Gamma = -0.465), indicating that although females may recognize some challenges of co-education, this awareness does not significantly affect their preferences compared to males. This finding implies that cultural factors may still significantly shape female perceptions of gender equality in education.¹¹ Hypothesis H2, which predicted that younger respondents would favor co-education, also failed to yield significant results. This outcome challenges the assumption that younger generations are inherently more progressive in their approach to educational models. The lack of significance may be attributed to the sample's homogeneity, which is predominantly composed of males from rural backgrounds. The finding suggests entrenched cultural values may still dominate educational choices despite younger individuals' exposure to global perspectives. While the cultural barriers (Hypothesis H3) were also anticipated to play a significant role in restricting female participation in co-education, again, no statistically significant correlation was found. The cultural resistance to co-education, particularly for girls, appears more complex than originally hypothesized. It suggests that cultural barriers are not easily overcome by generational shifts or increased awareness of gender equality in education. This finding aligns

with the broader theoretical perspective on the persistence of patriarchal structures in educational settings, as discussed in the literature review.⁴ The study reveals that parental attitudes toward co-education in Khyber Pakhtunkhwa are influenced by various factors, including socioeconomic status and educational background. However, cultural conservatism and traditional gender roles hinder widespread acceptance. The research suggests that reforming the education system in KP should address these cultural barriers and bridge the gap between traditional values and modern practices.

Conclusion and implications

The findings suggest that various cultural, religious, and socioeconomic factors shape parents' perspectives on co-education in Khyber Pakhtunkhwa. The factors at play are not merely academic choices; they are intricately linked to broader societal issues related to ethics, social status, and traditional values. A notable correlation exists between higher socioeconomic status and increased support for co-education; however, cultural conservatism remains evident even within wealthy families. A comprehensive and culturally aware strategy is essential to advance gender equality in education. Policy reforms should focus on three primary domains: enhancing school infrastructure, engaging community leaders, religious scholars, and local influencers, and implementing transitional models, such as shared campuses with distinct classes. Economic incentives such as scholarships and financial assistance can encourage families to enroll their daughters in co-educational institutions. Public awareness campaigns should emphasize co-education's enduring social and economic benefits, particularly for girls, to promote a more inclusive and equitable educational environment. Comprehending sustainable educational reform requires recognizing it as an integral component of a broader socio-cultural transformation

Data availability

The data is available on reasonable requests.

Authors' contribution

Aman Khan conceptualized the study, methodology, literature review and contributed to the manuscript drafting and revisions. Bai Ren Ding supervised the project and led the data collection and analysis, conducting interviews and synthesizing qualitative data. Muhammad S. Khan provided guidance on interpreting the findings and helped refine the research framework, while Essebe Njoh.H.Épiphanie contributed to manuscript development, ensuring clarity. All authors read and approved of the final manuscript.

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Ethical considerations

The study ensures that ethical standards and the confidentiality of respondents are protected, and participation is non-coerced by obtaining informed consent from all participants.

Funding

Research on Family Strategies and Optimization Paths under the National Social Science Foundation of China's "Double Reduction" Policy in Education (Project Approval Number: 22CSH087).

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