Diverse Paths to Phd: Widening Access for First-Generation Scholars

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Abstract

Doctoral education represents the pinnacle of academic training, yet access remains profoundly unequal. First-generation scholars those whose parents lack university degrees face systemic barriers that perpetuate elite reproduction in academia. This article examines the access, retention, and success pathways of first-generation PhD scholars in Khyber Pakhtunkhwa (KPK), Pakistan. Drawing on mixed-methods data from six public universities, surveys of 412 PhD scholars, and 45 in-depth interviews, we identify three critical intervention points: application stage inequities, financial precarity, and social-cultural isolation. Our findings reveal that first-generation PhD scholars in KPK constitute only 23% of doctoral enrollment despite representing 67% of the provincial population. We propose a validated framework for institutional transformation and present policy recommendations contextualized to Pakistan's higher education landscape.

Keywords: *First-generation scholars, doctoral education, access and equity, higher education policy, Khyber Pakhtunkhwa, Pakistan*

1.   Introduction

The doctorate is widely regarded as the gateway to knowledge production and academic leadership (Marginson, 2016). Yet globally, doctoral education remains characterized by what Bourdieu (1988) termed "social reproduction"—the tendency of elite institutions to reproduce existing class structures by admitting students from privileged backgrounds. Nowhere is this tension more acute than in Pakistan, where higher education expansion has outpaced equity mechanisms (HEC, 2023).

Khyber Pakhtunkhwa presents a particularly instructive case. As Pakistan's third-largest province by population, KPK has experienced rapid university expansion since the 18th Constitutional Amendment devolved education to provinces in 2010. Twenty-three public sector universities now operate in the province, up from just seven in 2000 (Government of KPK, 2023). However, doctoral enrollment has not kept pace with undergraduate expansion, and participation gaps by socioeconomic background remain understudied.

First-generation scholars occupy a unique position in higher education discourse. Unlike interventions targeting gender or ethnicity, first-generation status crosses multiple identity categories and reveals structural rather than individual deficits (Tate et al., 2022). In the Pakistani context, where intergenerational educational mobility is limited and tertiary attendance remains below 10% nationally, first-generation PhD scholars represent both success stories and cautionary tales about systemic friction (Rahman, 2021).

This study addresses three research questions:

1. What is the current representation of first-generation PhD scholars in KPK public universities?
2. What barriers do first-generation scholars encounter across the doctoral trajectory?
3. Which institutional interventions demonstrate effectiveness in widening access and supporting success?

2. Literature Review

2.1 Global Perspectives on First-Generation Doctoral Access

International research establishes consistent patterns regarding first-generation doctoral scholars. In the United States, first-generation students comprise approximately 27% of doctoral enrollments but remain concentrated in education and social sciences rather than STEM fields (National Center for Education Statistics, 2023). Australian research demonstrates that first-generation PhD candidates are 1.7 times more likely to consider withdrawal than their continuing-generation peers (Edwards et al., 2022). European studies emphasize the "hidden curriculum" of doctoral education implicit knowledge about supervision, networking, and academic publishing that first-generation scholars acquire later and at greater cost (Schmidt & Hansson, 2021).

2.2 South Asian Context

South Asian scholarship on doctoral education remains nascent but growing. Indian research identifies caste and class intersections in PhD access, with first-generation status strongly correlated with lower-caste identity (Deshpande & John, 2022). Bangladeshi studies highlight the particular challenges faced by first-generation women pursuing doctorates, including family opposition and institutional harassment (Hossain, 2023). Pakistani scholarship has focused primarily on undergraduate access, revealing that first-generation students are underrepresented by approximately 40% in elite institutions (Malik & Naveed, 2021). However, doctoral-level analysis remains absent from Pakistani higher education literature.

2.3 Theoretical Framework

We adopt three complementary theoretical lenses. First, Yosso's (2005) Community Cultural Wealth model reframes first-generation scholars as possessing navigational, aspirational, and familial capital rather than deficits. Second, Tinto's (1993) longitudinal model of institutional departure explains doctoral persistence through academic integration, social integration, and institutional commitment. Third, Khan's (2020) adaptation of Bourdieu for Pakistani higher education illuminates how field-specific capital operates in local contexts where patronage networks influence admission and funding decisions.

3. Methodology

3.1 Research Design

This study employed convergent parallel mixed methods, simultaneously collecting quantitative survey data and qualitative interview data between September 2023 and February 2024. Integration occurred during analysis through joint display techniques.

3.2 Sampling and Participants

We selected six public sector universities in KPK through stratified purposive sampling:

University	Region	PhD Programs	Total PhD Enrollment	Sample Size
University of Peshawar	Central	42	687	112
Abdul Wali Khan University Mardan	South	28	543	89
University of Swat	North	16	234	47
Kohat University of Science & Technology	South	31	456	76
Hazara University Mansehra	East	24	378	62
Khushal Khan Khattak University	South	8	156	26
Total			**2,454**	**412**

Survey participants were recruited through university graduate studies offices. Inclusion criteria: currently enrolled PhD scholar, minimum one semester completed, voluntary participation. Response rate: 67%. First-generation status defined as neither parent having completed any university degree.

Interview participants (n=45) were purposively selected from survey respondents to maximize variation in discipline, gender, region, and enrollment stage. Semi-structured protocols explored educational history, application experiences, funding, supervision relationships, and persistence intentions.

3.3 Instruments and Measures

The survey instrument comprised five sections: demographic background (including parental education and occupation), pre-PhD educational trajectory, admission process experiences, current academic and financial situation, and psychosocial well-being (adapted from the Graduate Student Well-Being Scale; Garcia-Williams et al., 2022). All instruments were translated into Urdu and Pashto with back-translation verification.

3.4 Data Analysis

Quantitative data were analyzed using SPSS version 28. Descriptive statistics established baseline representation. Chi-square tests examined associations between first-generation status and categorical outcomes. Binary logistic regression identified predictors of persistence intention. Qualitative interviews were transcribed verbatim, coded inductively using NVivo 14, and analyzed through thematic analysis following Braun and Clarke's (2021) six-phase framework.

3.5 Ethical Considerations

Ethical approval was obtained from the University of Peshawar Institutional Review Board (Approval #IRB-2023-89). All participants provided written informed consent. Anonymity was protected through pseudonyms and secure data storage. Compensation of PKR 1,000 was provided to interview participants.

4. Findings

4.1 Representation and Demographics

Our survey revealed significant underrepresentation of first-generation scholars in KPK doctoral programs.

Table 1: Demographic Characteristics by First-Generation Status

Characteristic	First-Generation (n=95)	Continuing-Generation (n=317)	Total (N=412)	p-value
Percentage of sample	23.1%	76.9%	100%	
Gender				0.032
Male	61 (64.2%)	182 (57.4%)	243 (59.0%)	
Female	34 (35.8%)	135 (42.6%)	169 (41.0%)	
Discipline				0.008
STEM	42 (44.2%)	189 (59.6%)	231 (56.1%)	
Social Sciences	38 (40.0%)	91 (28.7%)	129 (31.3%)	
Arts & Humanities	15 (15.8%)	37 (11.7%)	52 (12.6%)	
Residence				0.001
Urban	31 (32.6%)	201 (63.4%)	232 (56.3%)	
Rural	64 (67.4%)	116 (36.6%)	180 (43.7%)	
District type				<0.001
Developed district	18 (18.9%)	189 (59.6%)	207 (50.2%)	
Less developed district	77 (81.1%)	128 (40.4%)	205 (49.8%)	

First-generation scholars comprise less than one-quarter of doctoral enrollment despite constituting the majority of KPK's population. They are disproportionately male, concentrated in social sciences rather than STEM, and overwhelmingly from rural areas and less developed districts. The association between first-generation status and rural residence was particularly strong ($\phi = 0.31$, $p < 0.001$).

4.2 Educational Trajectory

Significant differences emerged in educational pathways.

Table 2: Educational Background Characteristics

Variable	First-Generation	Continuing-Generation	p-value
Medium of instruction (school)			<0.001
Urdu-medium	78 (82.1%)	98 (30.9%)	
English-medium	17 (17.9%)	219 (69.1%)	
Institution type (Bachelor's)			<0.001
Public college	71 (74.7%)	98 (30.9%)	
Public university	21 (22.1%)	156 (49.2%)	
Private university	3 (3.2%)	63 (19.9%)	
GAT subject score	54.3 (mean)	61.7 (mean)	0.003
Research publication before PhD	8 (8.4%)	118 (37.2%)	<0.001
Gap between master's and PhD	3.7 years (mean)	1.2 years (mean)	<0.001

First-generation scholars predominantly attended Urdu-medium schools and public colleges for undergraduate education. Their mean GAT (Graduate Assessment Test) score was 7.4 points lower than continuing-generation peers—a statistically significant gap though individual variation was substantial. Only 8.4% had published research prior to PhD enrollment compared to 37.2% of continuing-generation scholars.

Dr. Amjad Khan, a first-generation PhD scholar in Chemistry from Karak district, explained:

"I never saw a research paper until my MPhil. My supervisor had to teach me what Scopus is. Meanwhile, my lab mate—his father is a professor—he already had two publications from his bachelor's project at NUST. We started at different places, but the clock started at the same time." (Interview 12, Male, STEM)

4.3 Barriers to Access and Persistence

Our analysis identified three primary barrier clusters.

Table 3: Barriers by Domain and First-Generation Status

Barrier Domain	First-Generation	Continuing-Generation	Effect Size (Cohen's d)
Application stage (mean, 1-5 scale)			
Difficulty understanding admission requirements	4.21	2.43	1.87
Lack of guidance on supervisor selection	4.34	2.67	1.76
Unaware of scholarship opportunities	4.12	1.98	2.01
Financial barriers (mean, 1-5 scale)			
Insufficient scholarship stipend	4.56	3.21	1.34
Family income loss during PhD	4.43	2.12	1.92
Debt accumulation	3.89	1.76	1.78
Social-academic barriers (mean, 1-5 scale)			
Imposter syndrome	4.34	2.87	1.45
Family of PhD demands	4.21	1.89	1.88
Exclusion from informal academic networks	4.11	2.43	1.56

4.3.1 Application Stage Inequities

First-generation scholars reported navigating admission processes with minimal guidance. Unlike continuing-generation peers who utilized parental professional networks, first-generation applicants relied on public advertisements and peer information.

Maryam Bibi, a first-generation PhD scholar in Education from Swat:

"My father is a farmer. When I told him I want to do PhD, he asked 'Will you become a doctor for patients?' I had to explain that this is different. He supported me financially but couldn't help me understand which university is good or which supervisor has reputation. I chose my supervisor because his office door was open." (Interview 28, Female, Social Sciences)

4.3.2 Financial Precarity

The HEC PhD scholarship provides PKR 50,000 monthly (approximately USD 180). While intended as sufficient stipend, 78% of first-generation respondents reported that this amount was inadequate for their household responsibilities.

Table 4: Financial Obligations by First-Generation Status

Financial Responsibility	First-Generation	Continuing-Generation	p-value
Supporting parents	87 (91.6%)	134 (42.3%)	<0.001
Supporting siblings' education	76 (80.0%)	89 (28.1%)	<0.001
Remittances to village	43 (45.3%)	27 (8.5%)	<0.001
Loan repayment	51 (53.7%)	41 (12.9%)	<0.001
Mean dependents supported	4.7	1.3	<0.001

First-generation PhD scholars are not students in the traditional sense—they are primary income earners. A 91.6% parental support rate fundamentally alters the doctoral experience, requiring concurrent income generation that delays completion.

4.3.3 Social-Cultural Isolation

Qualitative data revealed profound isolation among first-generation scholars, distinct from general graduate student stress. Three subthemes emerged: family incomprehension, departmental exclusion, and identity negotiation.

Zafar Mehmood, first-generation PhD in Physics from Dera Ismail Khan:

"My mother thinks I'm still studying because I failed all these years. She asks relatives to pray for my exams. I've tried to explain that research doesn't have exams, that I'm actually creating knowledge. She smiles and prays anyway. I've stopped explaining." (Interview 34, Male, STEM)

4.4 Institutional Interventions and Their Effectiveness

We assessed existing support mechanisms across participating universities.

Table 5: Institutional Support Availability and Utilization

Support Type	Universities Offering	First-Generation Awareness	First-Generation Utilization	Perceived Helpfulness (1-5)
HEC scholarships	6/6	100%	84%	3.2
University need-based aid	4/6	34%	12%	3.8
Writing support centers	3/6	21%	8%	4.1
Mentoring programs	1/6	12%	4%	4.7
Childcare facilities	0/6	-	-	-
Mental health services	2/6	18%	3%	4.3
First-generation specific programming	0/6	-	-	-

Notably, no university in our sample maintained programming specifically targeting first-generation doctoral scholars. Existing support was generic, under-utilized due to awareness deficits, and inadequately resourced.

4.5 Persistence and Completion Intentions

When asked "How often have you considered withdrawing from your PhD program?"

Table 6: Withdrawal Consideration by First-Generation Status

Frequency	First-Generation	Continuing-Generation
Never	12 (12.6%)	138 (43.5%)
Rarely (once or twice)	23 (24.2%)	94 (29.7%)
Sometimes (monthly)	31 (32.6%)	56 (17.7%)
Often (weekly)	21 (22.1%)	24 (7.6%)
Constantly (daily)	8 (8.4%)	5 (1.6%)

Binary logistic regression identified predictors of frequent withdrawal consideration (often/constant).

Table 7: Logistic Regression Results—Predictors of Frequent Withdrawal Consideration

Predictor	B	S.E.	Wald	Odds Ratio	95% CI	p-value
First-generation status	1.34	0.32	17.56	3.82	[2.04, 7.15]	<0.001
Female gender	0.67	0.29	5.34	1.95	[1.11, 3.45]	0.021
Insufficient funding	1.56	0.41	14.48	4.76	[2.13, 10.62]	<0.001
Poor supervisor relationship	1.87	0.38	24.21	6.49	[3.08, 13.67]	<0.001
Rural residence	0.43	0.31	1.92	1.54	[0.84, 2.82]	0.166
STEM discipline	0.12	0.28	0.18	1.13	[0.65, 1.95]	0.669
Constant	-3.21	0.45	50.89	0.04		<0.001

First-generation status independently predicted withdrawal consideration with odds ratio 3.82, controlling for other factors. Funding insufficiency (OR 4.76) and poor supervisor relationship (OR 6.49) were stronger predictors, suggesting intervention pathways.

5. Discussion

5.1 Interpretation of Findings

Our findings demonstrate that first-generation scholars in KPK doctoral programs face compounded disadvantage across the educational trajectory. The 23% representation figure is particularly striking given that 67% of KPK's population lacks tertiary-educated parents (Pakistan Bureau of Statistics, 2023). This represents an equity gap of 44 percentage points.

Three patterns warrant theoretical attention. First, the concentration of first-generation scholars in social sciences rather than STEM reflects resource stratification at earlier educational stages. STEM doctoral preparation requires laboratory access, research internships, and English-medium instruction—resources systematically unavailable in rural public colleges. This reproduces what Marginson (2016) terms "positional competition," where elite disciplines remain exclusive.

Second, the financialization of doctoral education in Pakistan—reliance on stipends insufficient for family responsibilities—creates particular hardship for first-generation scholars who serve as household income sources. The PhD becomes not only educational pursuit but economic survival strategy. This finding extends Khan's (2020) analysis of higher education as household investment in Pakistan.

Third, the absence of targeted institutional programming represents policy failure. Pakistani universities have adopted first-generation programming for undergraduate students following HEC mandates but have not extended this framework to doctoral level. This omission reflects assumptions that PhD admission constitutes sufficient equity intervention.

5.2 Proposed Framework: KPK Doctoral Equity Model

Based on our findings and international best practices, we propose the KPK Doctoral Equity Model with four interconnected components:

Table 8: KPK Doctoral Equity Model

Component	Intervention	Responsible Party	Timeline	Estimated Cost
Pre-Admission Pipeline	PhD preparatory workshops in public colleges	HEC, Universities	Immediate	PKR 15M
	Research internship program for first-generation master's students	HEC	1-2 years	PKR 25M/year
	Application fee waivers	Universities	Immediate	PKR 2M/year
Admission Reform	Holistic admission review (beyond GAT scores)	Universities	1 year	PKR 1M
	First-generation admission pathway	HEC, Universities	2 years	PKR 5M
	Supervisor training on equity	HEC	1 year	PKR 10M
Financial Support	Need-based stipend supplementation	HEC	1 year	PKR 80M/year
	Emergency assistance fund	Universities	Immediate	PKR 20M
	Family support allowance	HEC	2 years	PKR 60M/year
Retention & Success	First-generation faculty mentoring network	Universities	1 year	PKR 8M/year
	Writing retreats and methodology camps	HEC	Ongoing	PKR 12M/year
	Alumni mentorship program	Universities	2 years	PKR 3M/year
	Mental health services expansion	Universities	1 year	PKR 15M/year

Total estimated annual cost: PKR 256 million (approximately USD 920,000). For context, HEC's 2023-24 PhD scholarship budget was PKR 8.2 billion. The proposed interventions represent 3.1% of existing PhD expenditure.

5.3 Comparative Institutional Analysis

International exemplars offer transferable lessons. The UK's Researcher Development Framework includes specific competencies for equitable supervision (Vitae, 2023). South Africa's National Research Foundation provides targeted doctoral support for first-generation and rural-origin scholars (NRF, 2022). India's National Fellowship for Scheduled Castes provides higher stipend rates for marginalized groups (UGC, 2023).

However, direct transplantation requires contextualization. Pakistani doctoral education operates within distinct constraints: supervisor-student relationships characterized by formality and hierarchy; limited university autonomy from provincial government; and HEC's centralized funding authority. Our model therefore emphasizes incremental, low-cost interventions with demonstrated efficacy in similar contexts.

5.4 Limitations

This study has several limitations. First, our sample excludes private universities, which enroll approximately 15% of KPK doctoral scholars but may present different equity patterns. Second, self-report measures of socioeconomic background are subject to social desirability bias. Third, the cross-sectional design cannot establish causal relationships between barriers and outcomes. Longitudinal research tracking first-generation scholars from admission through completion and beyond is urgently needed.

6. Conclusion and Recommendations

This study provides the first systematic analysis of first-generation doctoral scholars in Khyber Pakhtunkhwa, Pakistan. Our findings document significant underrepresentation, systemic barriers across the doctoral trajectory, and institutional unpreparedness to address these inequities. The KPK Doctoral Equity Model offers evidence-based, costed interventions for universities and policymakers.

We offer five specific recommendations:

To the Higher Education Commission of Pakistan:

1. Mandate first-generation doctoral scholar tracking in all public universities
2. Create a need-based stipend supplementation program
3. Fund targeted PhD preparatory initiatives in less developed districts

To KPK Universities:

4. Establish first-generation doctoral mentoring networks pairing senior faculty with first-generation scholars

5. Implement holistic admission review processes that consider educational context alongside standardized test scores

The diversification of doctoral education is not merely an equity concern—it is an epistemic necessity. Knowledge produced by scholars from farming backgrounds in Karak, from village girls in Swat, from first-generation Pashtun women, will differ from knowledge produced by the urban elite. Pakistan's research enterprise requires both. The question is whether our institutions will wait for first-generation scholars to navigate impossible paths alone, or whether we will build the roads they deserve.

References

Bourdieu, P. (1988). *Homo academicus*. Stanford University Press.

Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. SAGE.

Deshpande, A., & John, K. J. (2022). Caste and doctoral education in India: Evidence from four universities. *Economic and Political Weekly*, 57(14), 45-53.

Edwards, D., Bexley, E., & Richardson, S. (2022). *Regenerating the academic workforce: The careers, intentions and motivations of higher degree research students in Australia*. Australian Council for Educational Research.

Garcia-Williams, A. G., Moffitt, L., & Kaslow, N. J. (2022). Development and validation of the Graduate Student Well-Being Scale. *Journal of College Student Development*, 63(2), 211-226.

Government of Khyber Pakhtunkhwa. (2023). *Higher Education Department annual report 2022-23*. Peshawar: Government Printing Press.

Higher Education Commission of Pakistan. (2023). *Annual report 2022-23*. Islamabad: HEC.

Hossain, M. (2023). First-generation women in Bangladeshi doctoral programs: Negotiating family, faith, and academia. *Gender and Education*, 35(1), 78-94.

Khan, A. (2020). *Bourdieu in Pakistan: Educational capital and social reproduction*. Oxford University Press.

Malik, S., & Naveed, A. (2021). First-generation students in Pakistani higher education: Access, experience, and outcomes. *Pakistan Journal of Education*, 38(2), 1-24.

Marginson, S. (2016). The worldwide trend to high participation higher education: Dynamics of social stratification in inclusive systems. *Higher Education*, 72(4), 413-434.

National Center for Education Statistics. (2023). *Doctorate recipients from U.S. universities 2022*. Washington, DC: NSF.

National Research Foundation South Africa. (2022). *Annual performance plan 2022/23*. Pretoria: NRF.

Pakistan Bureau of Statistics. (2023). *Pakistan social and living standards measurement survey 2022-23*. Islamabad: Government of Pakistan.

Rahman, T. (2021). *Education in Pakistan: A historical and contemporary analysis*. Oxford University Press.

Schmidt, M., & Hansson, K. (2021). The hidden curriculum of doctoral education: A qualitative study of first-generation students in Sweden. *Higher Education Research & Development*, 40(5), 1023-1037.

Tate, K. A., Williams, C. J., & Harden, K. (2022). Intersectionality and first-generation doctoral student identity. *Journal of Diversity in Higher Education*, 15(3), 321-334.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). University of Chicago Press.

University Grants Commission India. (2023). *Annual report 2022-23*. New Delhi: UGC.

Vitae. (2023). *Researcher Development Framework*. Cambridge: Careers Research and Advisory Centre.

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race Ethnicity and Education*, 8(1), 69-91.