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Impact of Paid and Unpaid Tuition on Students' Academic Performance

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ABSTRACT

The rising cost of education has created a significant financial burden on students and families in Pakistan. The dichotomy between students who can secure tuition fees and those facing unpaid balances presents a critical yet under-researched determinant of academic achievement. This study empirically investigates the impact of paid and unpaid tuition on the academic performance of higher secondary school students in Dera Ismail Khan, Khyber Pakhtunkhwa, Pakistan. Employing a quantitative, cross-sectional descriptive design, data were collected from a stratified random sample of 1,186 students (635 male, 551 female) drawn from public and private higher secondary institutions. A validated survey instrument measured tuition payment status (paid/unpaid) and academic performance (self-reported grades converted to a 5-point GPA scale). Data were analyzed using descriptive statistics, independent samples t-test, one-sample t-tests, chi-square test, and Cohen's d effect size. The sample comprised 682 students (57.5%) with paid tuition and 504 students (42.5%) with unpaid tuition. Students with paid tuition demonstrated significantly above-average performance ($M=4.12$, $SD=0.48$) compared to the benchmark of 3.50, $t(681)=34.21$, $p<0.001$. Students with unpaid tuition scored significantly lower than paid-tuition peers ($M=3.72$, $SD=0.53$), $t(1184)=13.64$, $p<0.001$, $d=0.79$ (medium-large effect). A significant association existed between gender and payment status, $\chi^2(1)=30.42$, $p<0.001$, with male students (64.9%) more likely to have paid tuition than female students (49.0%).Tuition payment status is a significant determinant of academic performance. Paid tuition enables academic success; unpaid tuition constitutes a substantial barrier operating through psychosocial stress, cognitive load depletion, institutional sanctions, and competing time demands. The medium-large effect size underscores meaningful real-world impact. Targeted scholarship programs, emergency grant aid, flexible payment plans, reform of punitive institutional policies, and targeted support for female students are urgently needed.

Keywords: *Paid Tuition, Unpaid Tuition, Academic Performance, Financial Stress, Higher Secondary Education, Educational Equity, Gender Disparity, Pakistan*

1. INTRODUCTION

1.1 Background

The pursuit of higher secondary education (grades 11-12) represents a critical juncture in Pakistan's educational landscape, serving as both a culmination of foundational learning and a gateway to tertiary education and socioeconomic mobility. However, rising educational costs have placed unprecedented financial burdens on students and families. Pakistan's public expenditure on education remains among the lowest in South Asia at approximately 2.4% of GDP, substantially below the UNESCO-recommended benchmark of 4% (UNESCO, 2022). This funding gap has been increasingly shifted onto households through private institution proliferation and various fees in public institutions.

Within this pressurized environment, a stark dichotomy has emerged between students whose tuition fees are paid through family resources, scholarships, or savings—and those facing persistent unpaid tuition balances. This latter group experiences a constellation of interrelated difficulties: accumulating debt, institutional administrative holds, restricted access to examinations, psychological distress, and frequently, the necessity for substantial paid employment to generate required funds (Broton & Goldrick-Rab, 2018).

The district of Dera Ismail Khan, located in southern Khyber Pakhtunkhwa province, presents a compelling context for investigation. Characterized by an agrarian economy, limited industrial development, and significant socioeconomic heterogeneity, the district exhibits pronounced disparities in household income and educational investment capacity (Government of Khyber Pakhtunkhwa, 2023).

1.2 Statement of the Problem

Despite widespread anecdotal recognition that students with outstanding tuition balances face significant academic challenges, systematic quantitative investigation of this phenomenon remains conspicuously absent from Pakistani educational research. Three critical knowledge gaps persist: (1) the applicability of international findings on financial stress and academic outcomes to Pakistan's distinctive context remains uncertain; (2) existing Pakistani research has focused on macro-level determinants of achievement (infrastructure, teacher qualifications) with little attention to household-level financial constraints operating through tuition payment; and (3) the intersection of tuition payment status with gender has not been adequately explored despite well-documented gender disparities in Pakistani education. This knowledge deficit carries practical consequences: policymakers lack empirical guidance for evidence-based financial aid policies; administrators cannot advocate effectively for resources; and students experiencing financial precarity navigate their education without institutional interventions informed by rigorous research.

1.3 Theoretical Framework

This study integrates three complementary theoretical perspectives:

Human Capital Theory (Becker, 1964): Education represents an investment in productive capabilities. When tuition becomes unaffordable, liquidity constraints prevent even highly motivated students from realizing their educational potential. Tuition payment status reflects the outcome of these investment decisions with measurable consequences for achievement.

Scarcity Theory (Mullainathan & Shafir, 2013): Scarcity captures attention, consumes cognitive bandwidth, and reduces mental capacity available for other tasks. Unpaid tuition represents a specific, salient scarcity experience that continuously consumes students' cognitive resources, impairing learning capacity.

Transactional Model of Stress and Coping (Lazarus & Folkman, 1984): Students appraise unpaid tuition as threat, generating psychological distress. Problem-focused coping (seeking employment) and emotion-focused coping (managing anxiety) both consume time and psychological energy otherwise directed toward academic engagement.

1.4 Research Objectives

1. To determine the proportion of students experiencing paid versus unpaid tuition status.
2. To investigate whether students with paid tuition demonstrate significantly above-average academic performance.
3. To investigate whether students with unpaid tuition demonstrate significantly below-average academic performance.
4. To compare mean academic performance between paid and unpaid tuition groups.
5. To quantify the magnitude of any observed difference through effect size estimation.
6. To examine the association between gender and tuition payment status.

1.5 Research Hypotheses

H_1: Students with paid tuition demonstrate mean academic performance significantly higher than the benchmark of 3.50.

H_2: Students with unpaid tuition demonstrate mean academic performance significantly lower than the benchmark of 3.50.

H_3: There is a statistically significant difference in mean academic performance between paid and unpaid tuition groups, with the paid group scoring higher.

H_4: There is a statistically significant association between gender and tuition payment status, with male students more likely to have paid tuition.

1.6 Significance of the Study

This research contributes theoretically by extending Scarcity Theory to Pakistani adolescent learners; empirically by providing robust evidence from a large, representative sample in an under-researched context; methodologically by demonstrating rigorous approaches for investigating tuition-related disparities; practically by informing institutional support programs; and policy-wise by providing evidence for financial aid advocacy. The documented gender disparity specifically informs policies promoting girls' education.

1.7 Delimitations

The study was geographically confined to higher secondary schools in Dera Ismail Khan district; focused exclusively on grades 11-12; employed cross-sectional design capturing data at a single point; examined tuition payment status as the primary independent variable and academic performance as the dependent variable; sampled enrolled, attending students; and utilized quantitative survey methodology.

2. LITERATURE REVIEW

2.1 Conceptualizing Tuition Payment Status

Tuition payment status whether educational fees are currently settled or outstanding represents a distinct construct requiring separation from broader socioeconomic indicators. While correlated with socioeconomic status (SES), tuition payment status possesses unique characteristics: it may fluctuate independently of underlying SES due to temporal factors; it represents a visible institutional marker triggering specific organizational responses (registration holds, examination restrictions); and the psychological experience of unpaid tuition differs qualitatively from general financial strain, carrying implications for institutional belonging and identity (Hamilton, 2023).

2.2 Financial Stress and Academic Performance

A substantial body of research establishes that financial worry is not an isolated concern but permeates students' entire academic experience. Joo, Durband, and Grable (2008) found that students reporting high financial stress demonstrated significantly lower GPAs and greater academic dissatisfaction. The constant anxiety over covering tuition consumes cognitive resources otherwise directed toward learning, directly impairing academic performance.

2.3 Institutional Barriers and Administrative Holds

Beyond psychological impact, unpaid tuition creates direct institutional barriers. Universities and schools implement policies penalizing students with outstanding balances: blocked course registration, denied access to online learning portals, and exclusion from final examinations. Soria and Stebleton (2012) documented how these "administrative holds" create cascade effects, effectively halting academic progress regardless of intellectual capabilities.

2.4 Student Employment and Time Allocation

The necessity to secure funds for unpaid tuition frequently pushes students into extensive paid employment. Darolia (2014) demonstrated that students working more than 15-20 hours weekly, particularly in roles unrelated to their field of study, show marked academic decline. Time and energy devoted to work directly compete with attending lectures, completing assignments, and studying.

2.5 Gender Disparities in Educational Financing

In Pakistan, significant gender disparities persist in educational access and attainment. Qureshi and Rarieya (2021) documented that cultural norms, early marriage practices, and preferential allocation of household educational resources toward sons systematically disadvantage female students. However, the specific mechanism of differential tuition payment by gender has received limited empirical attention.

2.6 The Pakistani Educational Context

Pakistan's higher secondary sector operates as a dual system. Public institutions charge nominal subsidized fees but frequently impose additional charges under various categorizations. Private institutions operate on full cost-recovery models with substantial fee structures. The absence of robust national financial aid infrastructure for secondary education means families primarily rely on current income, creating vulnerability to payment disruption (Khan, 2021).

2.7 Research Gap

While international literature establishes associations between financial stress and academic outcomes, applicability to Pakistan's distinctive socioeconomic, cultural, and institutional context remains uncertain. No published study has systematically examined tuition payment status as a specific determinant of academic performance among Pakistani higher secondary students. The intersection of tuition payment with gender in this context remains unexplored. This study addresses these gaps.

3. RESEARCH METHODOLOGY

3.1 Research Design

This study employed a quantitative, cross-sectional descriptive survey design. This design was appropriate for examining contemporary events, collecting information from a sizable sample using a standardized instrument, and statistically evaluating information to derive conclusions about population parameters.

3.2 Population

The target population comprised all male and female students enrolled in higher secondary schools (grades 11-12) in Dera Ismail Khan district, Khyber Pakhtunkhwa, Pakistan.

Table 1: Population Distribution

School Type	Male Students	Female Students	Total
Public	2,554	1,109	3,663
Private	1,300	755	2,055
Total	**3,854**	**1,864**	**5,718**

Source: Concerned education departments, Dera Ismail Khan

3.3 Sample and Sampling Technique

Using Yamane's (1967) formula at 95% confidence level and ±3% margin of error, the required sample size was calculated as 1,186 students. Stratified random sampling was employed to ensure

representativeness. The population was divided into primary strata (gender) and secondary strata (institution type), with proportional allocation.

Table 2: Sample Distribution

School Type	Male Students	Female Students	Total
Public	335	290	625
Private	300	261	561
Total	**635**	**551**	**1,186**

3.4 Instrumentation

A structured, self-administered questionnaire was developed comprising three sections:

Section A: Demographic information (gender, age, institution type, grade level)

Section B: Tuition payment status measured through direct question: "Is your tuition fee for the current academic term fully paid?" (Yes/No). Follow-up items assessed duration of unpaid status and institutional sanctions experienced.

Section C: Academic performance measured through self-reported most recent examination percentages, converted to a standardized 5-point scale:

- 5 = 80-100% (A grade)
- 4 = 70-79% (B grade)
- 3 = 60-69% (C grade)
- 2 = 50-59% (D grade)
- 1 = Below 50% (F grade)

3.5 Validity and Reliability

Content validity was established through review by a panel of five experts: two educational researchers, two measurement specialists, and one higher secondary school administrator. Items were modified based on expert feedback to ensure cultural appropriateness and clarity.

The instrument was pilot-tested with 120 students (60 male, 60 female) from four schools not included in the main sample. Cronbach's alpha coefficient for the academic performance items was 0.82, indicating good internal consistency. Test-retest reliability with a two-week interval on 50 pilot participants yielded r = 0.79.

3.6 Data Collection Procedures

Official permission was obtained from the District Education Officer and principals of selected institutions. Trained research assistants visited schools, explained study purposes, assured confidentiality, and distributed questionnaires during regular class periods. Completed questionnaires were collected immediately. Data collection spanned four weeks from February 15 to March 15, 2024. All 1,186 distributed questionnaires were returned (100% response rate).

3.7 Ethical Considerations

Ethical approval was obtained from [Institution Name] Ethical Review Board. Written informed consent was secured from all participants and parents/guardians of minor students. Anonymity was guaranteed through code numbers rather than names. Participants were informed of their right to withdraw without penalty. Data were stored securely with access limited to the research team.

3.8 Variables and Operationalization

Independent Variable: Tuition payment status (paid = 1, unpaid = 0)

Dependent Variable: Academic performance (continuous, 1-5 scale)

Categorical Variables: Gender (male/female), institution type (public/private)

Benchmark Criterion: Institutional standard of 3.50, representing satisfactory academic standing (approximately 65%).

3.9 Statistical Data Analysis Plan

Data were analyzed using SPSS version 26. Analysis proceeded in four stages:

Stage 1 - Descriptive Analysis: Frequencies, percentages, means, and standard deviations summarized sample characteristics and variable distributions.

Stage 2 - Assumption Testing: Normality (Shapiro-Wilk test, skewness/kurtosis), homogeneity of variance (Levene's test), and independence of observations were assessed.

Stage 3 - Hypothesis Testing:

- H_1 & H_2: One-sample t-tests comparing group means to benchmark of 3.50
- H_3: Independent samples t-test comparing paid and unpaid groups
- H_4: Chi-square test of independence for gender and payment status

Stage 4 - Effect Size Estimation: Cohen's d was calculated for significant group differences, interpreted as: d = 0.20 (small), d = 0.50 (medium), d = 0.80 (large).

Statistical significance was set at $\alpha = 0.05$ throughout.

4. RESULTS

4.1 Descriptive Analysis of Sample Characteristics

Table 3: Demographic Characteristics of Sample (N = 1,186)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	635	53.5
	Female	551	46.5
Institution Type	Public	625	52.7
	Private	561	47.3
Grade Level	11th Grade	612	51.6
	12th Grade	574	48.4

4.2 Tuition Payment Status

Table 4: Distribution by Tuition Payment Status

Payment Status	Frequency (n)	Percentage (%)
Paid Tuition	682	57.5
Unpaid Tuition	504	42.5
Total	**1,186**	**100**

More than two-fifths (42.5%) of students reported outstanding tuition balances, indicating that unpaid tuition is a widespread phenomenon affecting a substantial proportion of higher secondary students in the district.

4.3 Descriptive Statistics of Academic Performance

Table 5: Academic Performance by Tuition Payment Status

Group	n	Mean Score	Standard Deviation
Paid Tuition	682	4.12	0.48
Unpaid Tuition	504	3.72	0.53
Total	**1,186**	**3.95**	**0.52**

Students with paid tuition achieved a mean score of 4.12 (equivalent to approximately 77%), while students with unpaid tuition achieved a mean score of 3.72 (equivalent to approximately 69%). The 0.40-point difference represents nearly one-half grade category on the 5-point scale.

4.4 Assumption Testing

The Shapiro-Wilk test for normality was significant ($p < 0.05$) due to large sample size; however, examination of skewness (-0.41) and kurtosis (-0.28) values within ±1 range indicated approximate normality. Levene's test for equality of variances was not significant ($F = 1.89$, $p = 0.17$), confirming homogeneity of variance between groups. Observations were independent. Parametric tests were therefore appropriate.

4.5 Hypothesis Testing

H_1: Paid Tuition and Above-Average Performance

A one-sample t-test was conducted to determine whether students with paid tuition (n = 682, M = 4.12, SD = 0.48) performed significantly above the institutional benchmark of 3.50. Results showed a statistically significant difference, $t(681) = 34.21$, $p < 0.001$. The mean score of 4.12 was significantly higher than 3.50 (mean difference = 0.62, 95% CI [0.58, 0.66]). **H_1 was supported.**

H_2: Unpaid Tuition and Below-Average Performance

A one-sample t-test was conducted to determine whether students with unpaid tuition (n = 504, M = 3.72, SD = 0.53) performed significantly below the benchmark of 3.50. Results showed a statistically significant difference, $t(503) = 9.31$, $p < 0.001$. However, the mean score of 3.72 was significantly **above**, not below, the benchmark (mean difference = 0.22, 95% CI [0.17, 0.27]). **H_2 was not supported.** Students with unpaid tuition, while scoring lower than their paid-tuition peers, still performed above the minimum satisfactory standard.

H_3: Comparison of Paid vs. Unpaid Tuition Groups

An independent samples t-test was conducted to compare mean academic performance between paid and unpaid tuition groups.

Table 6: Independent Samples t-test Results

Group	n	Mean	SD	t	df	p	Mean Difference
Paid Tuition	682	4.12	0.48	13.64	1184	< 0.001	0.40
Unpaid Tuition	504	3.72	0.53				

The analysis revealed a statistically significant difference, $t(1184) = 13.64$, $p < 0.001$. Students with paid tuition demonstrated significantly higher academic performance compared to students with unpaid tuition. The mean difference of 0.40 points (95% CI [0.34, 0.46]) represents a substantial gap. **H_3 was supported.**

Effect Size: Cohen's d was calculated as 0.79 (95% CI [0.68, 0.90]), indicating a **medium-to-large effect size** according to Cohen's (1988) conventions. This signifies that tuition payment status has substantial practical significance, not merely statistical significance.

H_4: Gender and Tuition Payment Status

Table 7: Gender by Tuition Payment Status Cross-tabulation

Gender	Paid Tuition n (%)	Unpaid Tuition n (%)	Total
Male	412 (64.9%)	223 (35.1%)	635
Female	270 (49.0%)	281 (51.0%)	551
Total	**682 (57.5%)**	**504 (42.5%)**	**1,186**

A chi-square test of independence revealed a significant association between gender and tuition payment status, $\chi^2(1) = 30.42$, $p < 0.001$, $\phi = 0.16$ (small-to-medium effect). Male students (64.9%) were significantly more likely to have paid tuition compared to female students (49.0%). Female students constituted the majority (55.8%) of the unpaid tuition group despite being the numerical minority (46.5%) of the total sample. **H_4 was supported.**

4.6 Summary of Findings

Table 8: Summary of Hypothesis Testing

Hypothesis	Statement	Result	Evidence
H_1	Paid tuition → Above benchmark	Supported	t=34.21, p<0.001
H_2	Unpaid tuition → Below benchmark	Not Supported	t=9.31, p<0.001 (above)
H_3	Paid > Unpaid	Supported	t=13.64, p<0.001, d=0.79
H_4	Gender × Payment status association	Supported	χ^2=30.42, p<0.001

Key Findings:

1. **Prevalence:** 42.5% of higher secondary students in Dera Ismail Khan experience unpaid tuition.

2. **Paid Tuition Advantage:** Students with paid tuition demonstrate significantly above-average academic performance.
3. **Performance Gap:** A significant 0.40-point difference exists between paid and unpaid tuition groups on a 5-point scale.
4. **Practical Significance:** The medium-to-large effect size (d = 0.79) confirms tuition payment status has meaningful real-world impact.
5. **Gender Disparity:** Female students are significantly less likely to have paid tuition than male students, with 51% of female students reporting unpaid balances compared to 35.1% of male students.

5. DISCUSSION

5.1 Interpretation of Findings

This study provides robust empirical evidence that tuition payment status is a significant determinant of academic performance among higher secondary students in Dera Ismail Khan. The finding that 42.5% of students experience unpaid tuition reveals that financial precarity is not a marginal phenomenon but a widespread condition affecting a substantial proportion of the student population.

Students with paid tuition demonstrated mean scores (4.12, approximately 77%) significantly above the institutional benchmark, suggesting that financial security enables students to focus fully on academic pursuits without the distraction of monetary concerns. This finding aligns with Human Capital Theory (Becker, 1964): when the educational investment is secured, students can realize their academic potential.

The non-support of H_2 students with unpaid tuition performed above, not below, the benchmark requires careful interpretation. While unpaid tuition creates significant disadvantage relative to peers, it does not typically reduce performance below minimum satisfactory standards. This may reflect several dynamics: (a) students with unpaid tuition may be academically capable individuals who continue to perform adequately despite obstacles; (b) the benchmark of 3.50 may be set at a level that many students, regardless of circumstances, can achieve; and (c) students facing the threat of academic exclusion due to unpaid fees may increase effort to maintain passing grades. However, the substantial performance gap between groups indicates that while unpaid tuition students meet minimum standards, they are achieving significantly below their potential.

The medium-to-large effect size (d = 0.79) is particularly noteworthy. This magnitude exceeds many effect sizes reported for educational interventions. For context, Hattie's (2009) synthesis of over 800 meta-analyses identified average effect sizes of d = 0.40 for many common educational interventions. The d = 0.79 difference between paid and unpaid tuition groups suggests that addressing tuition payment disparities could yield substantial academic improvements.

The gender disparity in tuition payment status constitutes a significant and troubling finding. That female students are significantly less likely to have paid tuition than male students, despite comprising less than half the sample but more than half of the unpaid group, indicates systemic gender-based inequity in household educational investment. This finding aligns with Qureshi and Rarieya's (2021) documentation of preferential allocation of educational resources toward sons in Pakistani households, particularly when families face financial constraints. When resources are limited, daughters' education is often deprioritized.

5.2 Mechanisms Linking Unpaid Tuition to Academic Underperformance

Drawing on the theoretical framework and empirical findings, four interconnected pathways explain how unpaid tuition translates into academic disadvantage:

Cognitive Pathway: Consistent with Scarcity Theory (Mullainathan & Shafir, 2013), unpaid tuition creates persistent financial worry that consumes cognitive bandwidth. Students preoccupied with how to generate fee payments, avoid institutional sanctions, and manage shame have reduced mental capacity available for learning, comprehension, and academic tasks.

Affective Pathway: Unpaid tuition generates psychological distress—anxiety, embarrassment, hopelessness that undermines academic motivation and engagement. Students may withdraw from classroom participation, avoid faculty contact, and experience diminished academic self-concept.

Behavioral Pathway: The necessity to generate funds for unpaid tuition pushes many students into paid employment. Time spent working directly competes with attendance, study time, and assignment completion, leading to fatigue and reduced academic engagement.

Institutional Pathway: Unpaid tuition triggers administrative sanctions: blocked registration, withheld examination admit cards, restricted access to learning resources. These institutional barriers directly impede academic progress regardless of student effort or capability.

These pathways operate simultaneously and may compound over time, with initial academic difficulties exacerbating financial stress and vice versa.

6. CONCLUSION

6.1 Summary of the Study

This study empirically investigated the impact of paid and unpaid tuition on the academic performance of 1,186 higher secondary students in Dera Ismail Khan, Khyber Pakhtunkhwa, Pakistan. The findings demonstrate that tuition payment status is a significant determinant of academic achievement, with students who have paid tuition (57.5% of the sample) scoring significantly higher (M = 4.12) than students with unpaid tuition (42.5% of the sample; M = 3.72). The mean difference of 0.40 points on a 5-point scale represents a medium-to-large effect (d = 0.79), indicating substantial practical significance. Additionally, a significant gender disparity was documented, with female students (51.0% unpaid) significantly less likely to have paid tuition than male students (35.1% unpaid).

6.2 Recommendations for Future Research

1. **Longitudinal Studies:** Future research should employ longitudinal designs tracking students over time to establish causal direction and examine how tuition payment status fluctuates and affects academic trajectories.
2. **Qualitative Investigations:** In-depth qualitative studies exploring the lived experiences of students with unpaid tuition are urgently needed to understand the psychological, social, and emotional dimensions of financial precarity that quantitative methods cannot capture.
3. **Intervention Research:** Rigorous evaluation of financial aid interventions scholarship programs, emergency grant schemes, payment plan policies is needed to establish evidence-based approaches for mitigating tuition-related academic disparities.
4. **Mediation Analysis:** Future studies should measure potential mediators (employment hours, psychological distress, study time, institutional sanctions) to empirically test the pathways proposed in the conceptual model.
5. **Comparative Research:** Multi-district and cross-provincial studies would establish the generalizability of findings and identify contextual factors that moderate the relationship between tuition payment and academic performance.

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