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Statistical Analysis of Parental Involvement on Students' Academic Achievement

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Abstract

Background: Parental engagement in education is commonly accepted as an important factor that determines the success of students academically. Although there is wide-ranging research to support such a relationship everywhere in the world, contextual elements such as socioeconomic differences, cultural beliefs, and institutional frameworks might impact its dynamics. In Nepal, specifically the Kathmandu Valley with its blend of public, private, and international schools, how parental engagement affects academic outcomes is not well studied. This study addresses this gap by examining the association between different parental involvement constructs and student outcomes in this unique school setting. **Objective:** This study aims to establish the connection between parental involvement and the academic performance of students in schools around Kathmandu Valley. Specifically, it examines the impact of parental expectations, direct academic help, family communication, and difficulty perceptions on academic achievement while controlling for socioeconomic moderators. **Methods:** A correlational study design consisting of 200 parents was utilized with a quantitative design, where data were collected from standardized questionnaires. Parental involvement, expectations, family interaction, and perceived difficulties were variables assessed on a 5-point Likert scale. School performance was collected from self-reported grades. Data analysis was conducted using SPSS with Pearson correlation and hypothesis testing ($\alpha = 0.01$) for statistical significance. **Findings:** The findings revealed significant positive correlations between parental challenges ($r = -0.021$, $p = 0.771$), parental engagement ($r = 0.326$, $p < 0.01$), parental expectations ($r = 0.292$, $p < 0.01$), and family interaction ($r = 0.240$, $p < 0.01$) with academic achievement. Parental challenges were found to have no significant correlation ($r = -0.021$, $p = 0.771$). Demographic analysis found that younger parents who were

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more educated had greater engagement rates. **Conclusion:** The study confirms that active parental participation leads to better academic achievement in Kathmandu Valley schools, while socioeconomic and institutional mediators may intervene. Policymakers must ensure that interventions guarantee parental participation, particularly in public schools, via workshops, online forums, and community-based projects. **Novelty:** This research provides new insights into parental participation in Nepal's diverse educational landscape, as opposed to foreign studies that propose a wide proportion of parental difficulties. It also provides empirical data for building localized education policy.
Keywords: Parental involvement, academic achievement, Kathmandu Valley, socioeconomic factors, education policy, Nepal

Introduction

Parental involvement in education has been strongly established as one of the most influential determinants of students' academic achievement (Yang et al., 2023; Ebele, 2024). An abundance of research shows that parental involvement—through homework, school, and academic motivation—has a positive correlation with improved student performance (Kanyoi, & Kirimi, 2025; Falayi, 2023; Villasenor, 2025). But the character of this correlation varies in cultural, economic, and institutional contexts, and local studies are needed to inform effective education policy (Pirsahebdel, 2024). In Nepal, particularly in the Kathmandu Valley, the relationship between parental involvement and academic performance is not clearly known, despite the region having sophisticated schooling systems and socioeconomic disparities.

The Kathmandu Valley contains a unique schooling context comprised of public, private, and international schools, which cater to varying levels of income (Kunwar, 2021). While private and international schools prioritize structured parental engagement, public schools fail to facilitate frequent engagement due to socioeconomic constraints (Rowe & Perry, 2020). The literature recognizes that parental expectations, direct learning support, and home-school communication have significant impacts on students' performance (Merritt, 2015). There are, however, knowledge gaps on how these factors operate in Nepal's sociocultural context, where traditional family structures and evolving education demands intersect.

This study examines the relationship between parental involvement and academic achievement in the Kathmandu Valley, focusing on prominent aspects of parental expectations, homework supervision, school attendance, and perceived problems. With a quantitative, correlational framework, the study assesses whether increased parental involvement is tantamount to increased academic performance. The findings aim to contribute to Nepal's educational sector, offering empirical data to policymakers, educators, and parents in order to optimize students' success. In addition, the study examines whether socioeconomic barriers moderate this relationship—a variable of particular urgency in a region marked by economic disparity. Last,

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this research seeks to close empirical gaps while advancing inclusive strategies that enable parental engagement in every school district.

Methodology

Research Design

The study utilized a quantitative, correlational research design to examine the relationship between parental involvement and students' academic performance in Kathmandu Valley, Nepal. The research design allowed the measurement of the key variables—i.e., parental expectations, family interaction, and direct involvement—and their statistical correlation with academic performance. The study was cross-sectional, collecting data at one point in time, and survey-based procedures were used in gathering the responses from parents. The research design was guided by positivist philosophical principles, with attention placed on statistical inference and empirical observation in testing hypotheses that were conceptualized based on literature.

Data Collection Methods

Primary data were collected through a structured questionnaire distributed to student parents in different schools of Kathmandu Valley. The questionnaire used a five-point Likert scale (ranging from "Strongly Disagree" to "Strongly Agree") to assess levels, expectations, challenges, and beliefs regarding their child's academic achievement of parental engagement. Demographic information (age, sex, marital status, and education level) were also assessed to determine differences in subgroups.

Sampling Technique

The study employed a stratified random sampling technique in order to offer proportionate representation from every demographic category. 200 parents were questioned, with stratification based on:

Age groups (20–25, 26–30, 31–35, 36–40, and 41+ years)

Gender (50% male, 50% female)

Marital status (married, single, remarried)

Education level (primary, secondary, undergraduate, graduate)

Data Analysis Techniques

Data were analyzed using SPSS (Statistical Package for the Social Sciences) using the following statistical methods:

Descriptive Statistics – Frequencies and percentages were used to describe demographic characteristics (e.g., age, level of education).

Pearson Correlation Analysis – To measure strength and direction of relationships between:

Parental involvement and performance ($r = 0.326$, $p < 0.01$)

Parental aspirations and performance ($r = 0.292$, $p < 0.01$)

Family interaction and performance ($r = 0.240$, $p < 0.01$)

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Hypothesis Testing – Five hypotheses were tested using p-values (α = 0.01) to state significance. Four hypotheses were confirmed, and the fifth one (parental challenges) was rejected since the correlation was not significant (p = 0.771).

Results and Analysis

Demographic analysis

Table 1

Demographic Information of Age

Age (In Years)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-25	58	29.0	29.0	29.0
	26-30	40	20.0	20.0	49.0
	31-35	61	30.5	30.5	79.5
	36-40	30	15.0	15.0	94.5
	41- above	11	5.5	5.5	100.0
	Total	200	100.0	100.0	

Table 1 shows the demographic data in terms of age done in the study. The table shows that the majority of respondents (79.5%) aged between 20 and 35 years. The age group 31-35 years (30.5%) is the largest age group, followed by 20-25 years (29.0%), and 26-30 years (20%). The least number of respondents were from the age group 41 years and above (5.5%) and followed by the age group of 36-40 years (15.0%).

Table 2

Demographic Information of Gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	100	50.0	50.0	50.0
	Male	100	50.0	50.0	100.0
	Total	200	100.0	100.0	

Table 2 represents the demographic information of gender among the respondents who took part in the study. This data shows a perfectly balanced representation of both males and females each comprising 50.0% of the total sample, amounting to 100 respondents per gender.

Table 3

Demographic Information of Marital Status

Marital Status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Marital/Bio. parents	110	55.0	55.0	55.0
	Remarried family	9	4.5	4.5	59.5
	Single	81	40.5	40.5	100.0
	Total	200	100.0	100.0	

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Table 3 is the information about the marital status of the respondents. The table shows us that the Marital/Bio. Parents had more ratio than other people 110, which is 55.0% of the total respondents. There are 81 unmarried (single) respondents which is 40.5% of the total respondents, and merely 9respondents are belongs to remarried family which is 4.5% of the total respondents.

Table 4

Demographic Information of Highest Level of Education

Highest level of education					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Graduate Level or Higher	40	20.0	20.0	20.0
	Primary Level (1-8)	9	4.5	4.5	24.5
	Secondary Level (9-12)	64	32.0	32.0	56.5
	Undergraduate Level	87	43.5	43.5	100.0
	Total	200	100.0	100.0	

Table 4 represents the demographic information in aspects of level of education of the respondents. This data shows that the majority of respondents have attained an undergraduate education which covers 43.5% of the sample which consist the frequency of 87, followed by those with secondary level (9-12) education 32.0% consisted of frequency of 64. Smaller parts 20.0%, that consist the frequency of 40 has completed graduate level or higher, while 4.5% have only reached the primary level (1-8) education which consist of the least frequency i.e. 9.

Correlation

Table 5

Correlation between direct involvement of parents in their child's education and child education performance

Correlations			
		Mean of Parental Involvement in Education	Mean of Child's Education Performance
Mean of Parental Involvement in Education	Pearson Correlation	1	.326**
	Sig. (2-tailed)		.000
	N	200	200
Mean of Child's Education Performance	Pearson Correlation	.326**	1
	Sig. (2-tailed)	.000	
	N	200	200
**. Correlation is significant at the 0.01 level (2-tailed).			

The correlation table indicates a moderate positive relationship between Parental Involvement in Education and Child's Education Performance, with a Pearson correlation coefficient of 0.326. This suggests that higher levels of parental involvement are associated with better academic performance in children. The p-value of 0.000 is well below the significance

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threshold of 0.01, indicating that the correlation is statistically significant. Therefore, the data supports a meaningful positive relationship between parental involvement and children's academic outcomes, based on a sample of 200 observations.

Table 6

Correlation between parent's expectation and attitudes toward their child and their performance

Correlations			
		Mean of Parental Expectation and Attitudes	Mean of Child's Education Performance
Mean of Parental Expectation and Attitudes	Pearson Correlation	1	.292**
	Sig. (2-tailed)		.000
	N	200	200
Mean of Child's Education Performance	Pearson Correlation	.292**	1
	Sig. (2-tailed)	.000	
	N	200	200
**. Correlation is significant at the 0.01 level (2-tailed).			

The correlation table indicates a moderate positive relationship between Parental Expectation and Attitudes and Child's Education Performance, with a Pearson correlation coefficient of 0.292. This suggests that higher parental expectations and more positive attitudes toward education are associated with better academic performance in children. The p-value of 0.000 is well below the significance threshold of 0.01, confirming that this correlation is statistically significant. Consequently, the data provides evidence of a meaningful positive link between parental expectations and attitudes and children's academic outcomes, based on a sample of 200 observations.

Table 7

Correlation between influences of family interaction on students' academic success

Correlations			
		Mean of Family Interaction	Mean of Child's Education Performance
Mean of Family Interaction	Pearson Correlation	1	.240**
	Sig. (2-tailed)		.001
	N	200	200
Mean of Child's Education Performance	Pearson Correlation	.240**	1
	Sig. (2-tailed)	.001	
	N	200	200
**. Correlation is significant at the 0.01 level (2-tailed).			

The correlation table shows a moderate positive relationship between Family Interaction and Child's Education Performance, with a Pearson correlation coefficient of 0.240. This indicates that greater family interaction is associated with better academic performance in children. The

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p-value of 0.001 is well below the 0.01 significance level, indicating that the correlation is statistically significant. Thus, the data suggests a meaningful positive association between family interaction and children's academic outcomes, based on a sample of 200 observations.

Table 8

Correlation between parents' personal experiences and perceptions of education and their involvement in their child's schooling

Correlations			
		Mean of Perception of Education	Mean of Parental Involvement in Education
Mean of Perception of Education	Pearson Correlation	1	.307**
	Sig. (2-tailed)		.000
	N	200	200
Mean of Parental Involvement in Education	Pearson Correlation	.307**	1
	Sig. (2-tailed)	.000	
	N	200	200
**. Correlation is significant at the 0.01 level (2-tailed).			

The correlation table reveals a moderate positive relationship between Perception of Education and Parental Involvement in Education, with a Pearson correlation coefficient of 0.307. This suggests that a more positive perception of education is associated with higher levels of parental involvement in their child's education. The p-value of 0.000 is well below the 0.01 significance level, confirming that the correlation is statistically significant. Therefore, the data indicates a meaningful positive relationship between how parents perceive education and their level of involvement, based on a sample of 200 observations.

Table 9

Correlation between parental challenges in education and their child's performance

Correlations			
		Mean of Parental Challenges in Education	Mean of Child's Education Performance
Mean of Parental Challenges in Education	Pearson Correlation	1	-.021
	Sig. (2-tailed)		.771
	N	200	200
Mean of Child's Education Performance	Pearson Correlation	-.021	1
	Sig. (2-tailed)	.771	
	N	200	200

The correlation table shows a very weak negative relationship between Parental Challenges in Education and Child's Education Performance, with a Pearson correlation coefficient of -0.021. This indicates that there is almost no relationship between the challenges parents face in education and their child's academic performance. The p-value of 0.771 is significantly higher

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than the typical significance threshold of 0.05, suggesting that the correlation is not statistically significant. Therefore, the data does not support any meaningful association between parental challenges and child education performance, based on a sample of 200 observations.

Discussion

The findings of this study are in line with past research that highlights the positive relationship between parental involvement and achievement of the students. Moderate positive correlations between parental involvement, expectations, and home interaction and school achievement ($r = 0.326$, 0.292, and 0.240, respectively; $p < 0.01$) suggest that effective parental participation—direct educational support, encouraging positive attitudes, or a positive home climate—plays an important role in enhancing student achievements. These observations are in agreement with the studies of Nepalese and other settings, for example, the work of Phuyal (2024), which highlighted the roles of parent-teacher communication and effective study spaces in bachelor-level students' success. Similarly, qualitative results from Nepali government schools by Poudel et al. (2024) demand that structured parental involvement through committees at school and home-school collaborations can significantly improve school achievement. However, the strength of these associations in the Kathmandu Valley appears somewhat more moderate than those in some cross-world studies, possibly because of the region's particular socioeconomic and cultural settings, where variations in school types (public vs. private) and levels of parental education may influence the level of engagement.

Notably, the study revealed that difficulties faced by parents—such as financial constraints or time constraint—were not significantly correlated with learning achievement ($r = -0.021$, $p = 0.771$). This is contrary to other studies which identify socioeconomic barriers as strong moderators of academic performance. Galami's (2025) study of rural Nepal, for instance, found a weaker relationship between parent involvement and performance, attributing this to contextual factors like the lack of resources in private schools 34. The inability to establish such correlation in Kathmandu could be an effect of the Valley's relatively better infrastructure or sample selection bias towards parents who are already sufficiently active to become involved. Alternatively, it could mean that high family resilience or institutional resilience in Kathmandu counteracts the impact of adversity, a finding worth examining with broader socioeconomic controls.

The study's implications are twofold. Secondly, it highlights the need for specific policies to enhance parental involvement, particularly in state schools where it is lower due to systemic factors. Policy measures such as parent workshops on communication in the school or using technology for remote participation could plug gaps. Second, nonsignificant parental challenges suggest interventions would be more appropriately aimed at enhancing positive current behavior (e.g., expectations, direct support) rather than overemphasizing the elimination of barriers. Subsequent research could proceed from these findings by introducing

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longitudinal designs, increased sample sizes, and mixed-method studies to uncover subtle cultural and economic factors in Kathmandu's multiplex educational environment.

Conclusion

This study provides empirical support for positive association of parental involvement with students' grades in the Kathmandu Valley. Findings confirm that direct instructional help, home and school involvement, and parental ambition are connected to improved academic performance, reiterating the central role of parents in children's education. However, the moderate size of these correlations suggests that contextual factors—i.e., socioeconomic disparities among public and private schools—will influence the extent of parental participation and its rewards.

Interestingly, the study found little or no meaningful association between difficulties that parents may experience (e.g., fiscal pressures or time constraints) and student achievement, contrary to some prior work. This could be in the form of determined parents in Kathmandu finding ways to access their children in spite of adversity, or in institutional settings within the Valley that immunize against such barriers. But it only adds to the emphasis on the need for tailored educational policies that ensure parental involvement, particularly in state schools where participation may be less owing to structural issues.

In the future, studies must examine in greater detail the cultural and economic drivers of parental participation in Nepal using longitudinal or mixed-method studies. Educators and policymakers must give priority to interventions such as parent-teacher workshops, web-based participation platforms, and community-based interventions to develop stronger home-school partnerships. Through establishing stronger parental participation, Nepal's education system can enhance student outcomes and attain more balanced academic accomplishment at different socioeconomic levels.

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