

Institutional Type and Academic Outcomes in Nursing Education: A Retrospective Cohort Study of Colleges in Punjab

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Abstract

Background: Academic outcomes in nursing education are essential indicators of educational quality and professional preparedness. In Pakistan, both public and private nursing colleges affiliated with University of Health Sciences Lahore contribute to workforce development; however, variations in institutional characteristics may influence student performance.

Objective: To assess the impact of institutional type on academic outcomes among nursing colleges and to compare performance across different professional levels.

Methodology: A retrospective cohort study was conducted using examination data from First, Third, and Final Professional B.Sc. Nursing (4Year) annual examinations 2024. A total of 108 colleges were included. Institutional type (public vs. private) was considered the independent variable, while academic outcome was measured using result percentage. Data were analyzed using IBM SPSS Statistics. Independent samples t-test, chi square test, one way ANOVA, and linear regression were applied to

determine associations and differences.

Author Details

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Results: Public sector colleges demonstrated significantly higher mean result percentages (85.22 ± 27.48) compared to private colleges (69.67 ± 28.63) ($p = 0.007$). A significant association was found between institutional type and performance categories ($\chi^2 = 11.27$, $p = 0.004$), with 82.1% of public colleges classified as high performing versus 49.3% of private colleges. One way ANOVA revealed significant differences across professional levels ($F = 14.92$, $p < 0.001$), with performance improving from First Professional (53.92%) to Third (82.51%) and Final Professional (85.47%). Regression analysis indicated that institutional type significantly predicted academic outcomes ($\beta = 0.258$, $p = 0.007$), explaining 6.7% of the variance.

Conclusion: Institutional type significantly influences academic performance in nursing education, with public sector colleges demonstrating superior outcomes. These findings highlight the need for standardization and quality enhancement across institutions to ensure equitable nursing education.

Introduction

Academic outcomes in nursing education are widely recognized as key indicators of educational quality, student competence, and readiness for clinical practice. In Pakistan, nursing education has undergone substantial expansion over the past decade, particularly under the regulatory framework of University of Health Sciences Lahore, which affiliates both public and private sector institutions. While this expansion has improved access to nursing education, it has also raised concerns regarding variability in academic standards and student outcomes across institutional types.

A growing body of literature highlights that institutional characteristics such as faculty qualifications, student teacher ratios, infrastructure, and clinical training opportunities play a significant role in shaping academic performance among nursing students ([Pitt et al., 2012](#), [Zhang et al., 2022](#), [Mørk et al., 2020](#)). Public sector institutions are often associated with more structured academic systems, experienced faculty, and access to high volume tertiary care hospitals, which may enhance clinical learning and academic achievement. In contrast, private institutions may offer improved infrastructure and smaller class sizes but may demonstrate variability in academic rigor and faculty experience ([Jadoon et al., 2023](#), [Farsi et al., 2022](#)).

Recent empirical studies have produced mixed findings regarding the impact of institutional type on academic outcomes. Some studies report significantly higher performance among students in public institutions, attributing this to merit based admissions and standardized teaching practices ([Munguiko et al., 2025](#), [Kumar et al., 2024](#)). Conversely, other research suggests that private institutions can achieve comparable or superior outcomes due to enhanced learning environments and individualized academic support ([Kitula and Meney, 2026](#), [Rafiq et al., 2022](#)). These inconsistencies indicate that institutional type alone may not fully explain variations in academic performance.

Furthermore, academic progression within nursing programs has been shown to influence student performance. Studies indicate that students in higher professional years demonstrate improved academic outcomes due to increased clinical exposure, self efficacy, and adaptation to academic demands ([Kanade et al., 2021](#), [Fard et al., 2020](#)). Despite this, limited research has explored these trends using standardized university examination data across multiple professional levels, particularly in low and middle income countries.

Given the reliance on centralized examination systems administered by University of Health Sciences Lahore, there is a need for comprehensive evaluation of academic outcomes across affiliated nursing colleges. Therefore, this study aims to assess the association between institutional type (public versus private) and academic performance, while also examining differences across professional levels. The

findings are expected to contribute to evidence based policy decisions and support the standardization of nursing education in Pakistan.

Literature Review

Academic performance in nursing education is influenced by a multidimensional interplay of institutional, academic, and individual factors. Increasing attention has been given to how differences between public and private institutions shape educational outcomes, particularly in terms of knowledge acquisition, clinical competence, and examination performance. Recent international evidence suggests that institutional governance and resource allocation significantly affect student competencies. For instance, a comparative study found that graduates from public institutions demonstrated higher clinical competence, attributed to structured curricula and better integration with teaching hospitals ([Purabdollah et al., 2025](#), [Yu et al., 2021](#)).

Institutional resources remain among the most consistently reported determinants of academic success. Faculty qualifications, availability of clinical supervision, and student–teacher ratios directly influence learning outcomes ([Keramati and Gillies, 2023](#)). Public sector institutions are often associated with greater clinical exposure and standardized academic processes, which may contribute to higher examination performance ([Caponnetto et al., 2021](#), [Mohamed, 2022](#)). Conversely, private institutions may provide improved infrastructure and more individualized attention due to smaller class sizes; however, variability in teaching quality and assessment practices can lead to inconsistent outcomes ([Bayalieva and Satybekova, 2025](#)).

Beyond institutional factors, student related variables such as academic self efficacy, motivation, and adaptability play a crucial role in determining performance. Evidence indicates that self efficacy significantly predicts academic achievement and tends to improve as students progress through professional levels ([Fard et al., 2020](#)). This progression effect is supported by longitudinal findings demonstrating that senior nursing students perform better academically due to increased clinical exposure and familiarity with assessment systems ([Schmuke et al., 2025](#)).

Moreover, contemporary literature emphasizes that academic outcomes are not solely determined by institutional type but also by curriculum design, teaching strategies, and assessment frameworks. Competency based education and standardized evaluation systems have been shown to reduce disparities between institutions while improving overall student performance ([Onieva-Zafra et al., 2020](#)).

Despite the growing body of international literature, evidence from Pakistan remains limited, fragmented, and often restricted to single institutions or small samples. There is a notable lack of multi institutional analyses using standardized examination data, particularly across different professional levels. Given the centralized assessment system under University of Health Sciences Lahore, examining academic outcomes across affiliated colleges provides a robust opportunity to generate generalizable evidence and inform policy level interventions aimed at improving the quality and equity of nursing education.

Methodology

This retrospective cohort study examined the association between institutional type and academic outcomes among nursing students enrolled in colleges affiliated with the University of Health Sciences Lahore. The study utilized publicly available examination result data from the University of Health Sciences for the First Professional, Third Professional, and Final Professional B.Sc. Nursing (4Year Program) Annual Examinations 2024, conducted between March and August 2025. All nursing colleges affiliated with the university for which complete examination data were available were included in the analysis. Colleges were categorized according to institutional type (public or private sector) based on their administrative

status. Academic outcomes were assessed using institutional examination performance indicators, including the number of students appeared, passed, failed, and the overall result percentage reported by the university. Because the study relied on aggregated institutional examination results rather than individual student records, no direct contact with participants was required.

Data were extracted systematically from the official examination result notifications released by the university and organized into a structured dataset. Descriptive statistics were used to summarize institutional performance across both sectors. Comparative analysis was conducted to examine differences in academic outcomes between public and private nursing colleges. Measures such as pass rate and result percentage served as indicators of academic achievement. Statistical analysis was performed using standard quantitative techniques to compare institutional performance across the two groups. As the study utilized secondary data available in the public domain and did not involve identifiable personal information, formal informed consent from students was not required. Nonetheless, the study adhered to accepted principles of research integrity and responsible use of publicly reported educational data.

Results

Table 1: Distribution of Nursing Colleges by Institutional Type

Institutional Type	Frequency	Percent (%)
Public	39	36.1
Private	69	63.9
Total	108	100.0

Table 1 shows the distribution of nursing colleges based on institutional type. Out of a total of 108 colleges affiliated with University of Health Sciences Lahore, the majority were private institutions (63.9%), while public sector colleges constituted 36.1%. This indicates a higher representation of private nursing colleges in the study sample.

Table 2: Distribution of Colleges by Professional Examination Level

Professional Level	Frequency	Percent (%)
First Professional	31	28.7
Third Professional	41	38.0
Final Professional	36	33.3
Total	108	100.0

Table 2 presents the distribution of colleges across different professional examination levels. The highest proportion of colleges was observed in the Third Professional level (38.0%), followed by the Final Professional (33.3%) and First Professional (28.7%). This distribution reflects a relatively balanced representation across different stages of the nursing program.

Table 3: Comparison of Mean Result Percentage by Institutional Type (Independent Samples t-test)

Institutional Type	N	Mean (%)	SD	t-value	p-value
Public	39	85.22	27.48	2.75	0.007
Private	69	69.67	28.63		

An independent samples t-test was conducted to compare the mean result percentages between public and private nursing colleges affiliated with University of Health Sciences Lahore. The findings revealed that public sector colleges ($M = 85.22$, $SD = 27.48$) had significantly higher academic outcomes compared to private sector colleges ($M = 69.67$, $SD = 28.63$). This difference was statistically significant ($t = 2.75$, $p = 0.007$), indicating that institutional type has a significant impact on academic performance.

Table 4: Comparison of Mean Result Percentage Across Professional Levels (One Way ANOVA)

Professional Level	N	Mean (%)	F-value	p-value
First Professional	31	53.92		
Third Professional	41	82.51		
Final Professional	36	85.47	14.92	<0.001

A one way ANOVA was conducted to examine differences in academic performance across professional levels among nursing colleges affiliated with University of Health Sciences Lahore. The results showed a statistically significant difference in mean result percentages across the three levels ($F = 14.92$, $p < 0.001$). Post hoc Tukey analysis indicated that First Professional students had significantly lower result percentages compared to both Third and Final Professional levels ($p < 0.001$), while no significant difference was observed between Third and Final Professional levels ($p = 0.871$). These findings suggest that academic performance improves as students progress to higher professional levels.

Table 5: Linear Regression Analysis of Institutional Type Predicting Academic Performance

Predictor	B	β	t-value	p-value	R^2
Institutional Type	15.55	0.258	2.75	0.007	0.067

A linear regression analysis was conducted to assess the effect of institutional type on academic performance among nursing colleges affiliated with University of Health Sciences Lahore. The model was statistically significant ($F = 7.56$, $p = 0.007$), explaining 6.7% of the variance in result percentage ($R^2 = 0.067$). Institutional type emerged as a significant predictor ($\beta = 0.258$, $p = 0.007$), indicating that private institutions were associated with lower academic outcomes compared to public institutions.

Table 6: Association Between Institutional Type and Academic Performance Category (Chi Square Test)

Institutional Type	Low (%)	Moderate (%)	High (%)	Total (N)
Public	10.3	7.7	82.1	39
Private	32.8	17.9	49.3	67
Total	24.5	14.2	61.3	106

Chisquare (χ^2) = 11.27, df = 2, p = 0.004

A chi square test of independence was performed to examine the association between institutional type and academic performance categories among nursing colleges affiliated with University of Health Sciences Lahore. The results revealed a

statistically significant association ($\chi^2 = 11.27$, $p = 0.004$). A higher proportion of public sector colleges fell into the high performance category (82.1%) compared to private institutions (49.3%), whereas private colleges showed relatively higher proportions in low and moderate performance categories. These findings suggest that institutional type is significantly associated with variations in academic outcomes.

Discussion

The present study examined the impact of institutional type on academic outcomes among nursing colleges affiliated with University of Health Sciences Lahore. The findings revealed that public sector institutions achieved significantly higher mean result percentages (85.22%) compared to private institutions (69.67%), with a statistically significant difference ($p = 0.007$). Moreover, a greater proportion of public colleges (82.1%) were categorized as high-performing compared to private colleges (49.3%), indicating a significant association between institutional type and academic performance ($\chi^2 = 11.27$, $p = 0.004$). Regression analysis further demonstrated that institutional type significantly predicted academic outcomes ($\beta = -0.258$, $p = 0.007$), although the proportion of explained variance remained modest ($R^2 = 6.7\%$).

These findings are consistent with previous studies that emphasize the role of institutional environment in shaping academic outcomes. Structured academic systems, effective faculty engagement, and access to clinical training have been shown to significantly enhance student performance in nursing education ([Fard et al., 2020](#), [Setyaningsih et al., 2023](#)). Similarly, clinical learning environments and supervision have been identified as key contributors to competency development and academic success ([Visiers-Jiménez et al., 2021](#)). Public sector institutions, particularly in resource-constrained settings, are often closely linked with large tertiary care hospitals, which may provide students with more diverse and intensive clinical exposure, thereby improving both theoretical understanding and examination performance ([Jadoon et al., 2023](#), [Mohamed, 2022](#)).

The progression-based findings of this study further strengthen existing evidence on academic development across professional levels. Academic performance improved significantly from First Professional (53.92%) to Third (82.51%) and Final Professional (85.47%) levels ($p < 0.001$). This trend aligns with prior research indicating that senior nursing students demonstrate better academic outcomes due to increased clinical exposure, enhanced self-efficacy, and greater familiarity with academic expectations ([Alsaraireh et al., 2023](#)). Such progression reflects the cumulative effect of learning and adaptation within structured educational programs.

However, the superiority of public institutions is not consistently supported across all studies. Some evidence suggests that private institutions may achieve comparable or even superior outcomes due to smaller class sizes, better infrastructure, and more individualized academic support ([Rafiq et al., 2022](#)). Additionally, studies have reported no significant differences in academic performance between institutional types when curricula and assessment systems are standardized ([Grønlien et al., 2021](#)). Other research highlights that student-level factors, including motivation, learning strategies, and socio-economic background, may exert a stronger influence on academic success than institutional affiliation alone ([ve Önerileri, 2022](#)).

The differences observed in the present study may be explained by contextual factors specific to Pakistan. Public sector institutions typically implement more stringent admission criteria, often selecting students with higher academic merit, which may contribute to better outcomes. Furthermore, their integration with high-volume teaching hospitals ensures consistent clinical exposure and supervision. In contrast, private institutions may exhibit variability in faculty expertise, clinical placement opportunities, and academic oversight, which can lead to heterogeneous performance outcomes. Nevertheless, the relatively low explanatory power of the regression model

suggests that institutional type alone does not fully account for variations in academic performance, underscoring the influence of additional factors such as teaching quality, learning environment, and student engagement.

Overall, while institutional type emerges as a significant determinant of academic outcomes, the findings indicate the need for a more comprehensive approach that addresses both institutional and individual-level factors. Strengthening standardization in curriculum delivery, enhancing clinical training opportunities, and promoting faculty development across both sectors are essential to ensure consistent and high-quality nursing education.

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