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UNVEILING THE DETERMINANTS OF ACADEMIC PERFORMANCE AMONG UNDERGRADUATE NURSING STUDENTS IN SINDH

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Abstract

Background: *Academic performance among undergraduate nursing students is influenced by multiple educational, personal, and social factors. Identifying these factors is essential for improving nursing education and developing supportive strategies for student success. This study aimed to assess student-related, school-related, home-related, and teacher-related factors associated with academic performance among undergraduate nursing students in Sindh.*

Methods: *A quantitative cross-sectional study was conducted among undergraduate BSN students from selected public and private nursing institutions of Sindh from July to September 2026. A total of 385 students were recruited, and data from 380 participants with complete responses were included in the final analysis. Participants were selected using a non-probability convenience sampling technique. Data were collected using an adopted and validated structured questionnaire consisting of demographic characteristics and four domains related to academic performance: student-related factors, school-related factors, home-related factors, and teacher-related factors. Responses were measured using a five-point Likert scale. Data were analyzed using SPSS version 27 using descriptive statistics, including frequency, percentage, mean, and standard deviation.*

Results: *Among the 380 participants, most were aged 18–24 years (87.9%), male (58.2%), unmarried (88.7%), and enrolled in the first year of BSN (35.5%). Teacher-related factors showed the highest mean score (3.88 ± 0.74), followed by student-related factors (3.85 ± 0.68), school-related factors (3.56 ± 0.91), and home-related factors (3.29 ± 0.57). These findings indicate that students perceived teacher characteristics and individual learning behaviours as important factors related to their academic performance.*

Conclusion: *Academic performance among undergraduate nursing students is associated with a combination of personal, educational, and social factors. Teacher-related and student-related factors were the most prominent domains identified in this study. Strengthening supportive teaching practices, improving*

learning environments, and promoting effective study behaviours may help enhance nursing students' academic experiences.

INTRODUCTION

Academic performance among undergraduate nursing students is an important indicator of successful learning, professional competency development, and readiness for clinical practice. Nursing education requires students to acquire theoretical knowledge, clinical skills, critical thinking abilities, and professional behaviours necessary for safe patient care. Unlike many other academic disciplines, nursing students must achieve competency in both classroom learning and clinical environments. Therefore, poor academic performance among nursing students may affect their progression in education, confidence, clinical competence, and future professional responsibilities. Understanding the factors that influence academic performance is essential for nursing institutions to develop effective academic support strategies and improve educational outcomes. Academic performance is a complex and multidimensional outcome influenced by various personal, educational, social, and environmental factors. Previous studies have demonstrated that students' academic achievement is not determined only by intellectual ability but also by factors related to students themselves, their educational institutions, family environment, and teachers. A systematic review among undergraduate nursing students identified previous academic achievement, learning approaches, motivation, and educational support as important factors associated with academic success [1]. Similarly, evidence suggests that academic outcomes among nursing students are influenced by interactions between individual characteristics, learning behaviours, institutional resources, and teaching quality [2].

Student-related factors play a significant role in determining academic performance among undergraduate nursing students. Students' interest in nursing, motivation, engagement in learning activities, time management, and study habits directly influence their academic achievement. Students who actively participate in learning activities and adopt effective study strategies are more likely to achieve better academic outcomes. Learning approaches have also been associated with academic performance, as students who use deep learning approaches demonstrate better understanding and knowledge retention compared with students relying mainly on surface learning approaches [3]. Furthermore, academic self-efficacy, which reflects students' confidence in their ability to successfully complete academic tasks, has been identified as an important predictor of academic success among nursing students [4]. Therefore, assessing student-related factors provides valuable information regarding personal characteristics and behaviours that may facilitate or hinder academic achievement. School-related factors represent another important dimension affecting students' academic performance. The educational environment, availability of learning resources, access to laboratories, libraries, clinical facilities, and supportive academic systems contribute significantly to students' learning experiences. A positive learning environment enhances students' motivation, satisfaction, and academic engagement, whereas inadequate educational facilities may create barriers to effective learning. Studies have reported that students' perceptions of their educational environment are associated with academic performance, professional development, and learning satisfaction [5]. In nursing education, access to adequate clinical learning opportunities and educational resources is particularly important because students require both theoretical and practical experiences to achieve competency. The role of the home environment is also important in shaping students' academic outcomes. Family support, availability of study resources, financial stability, and household responsibilities can influence students' ability to concentrate on their education. Supportive families may provide

emotional encouragement, motivation, and resources that facilitate academic success, whereas family-related challenges and financial difficulties may negatively affect students' educational progress. Previous research among university and nursing students has shown that socioeconomic conditions, family support, and living circumstances are associated with academic achievement and educational persistence [6]. In contexts where students experience economic challenges or limited educational resources, home-related factors may become significant contributors to academic performance. Teacher-related factors are also considered essential determinants of nursing students' academic achievement. Teachers influence students' learning experiences through their teaching methods, communication skills, professional behaviour, motivation, feedback, and ability to create supportive learning environments. Effective teaching practices, approachable behaviour, and constructive feedback can enhance students' engagement and understanding. Conversely, ineffective teaching strategies, limited interaction, or lack of academic support may negatively influence students' learning experiences. Research has indicated that faculty support and teacher characteristics are associated with nursing students' satisfaction, motivation, and academic outcomes [7]. Therefore, evaluating teacher-related factors is necessary to understand how educators contribute to students' academic success.

In Pakistan, undergraduate nursing education has expanded significantly; however, nursing students continue to face multiple academic and educational challenges. Factors such as limited learning resources, variations in institutional environments, financial constraints, academic stress, and differences in teaching practices may influence students' academic outcomes. A study conducted among nursing students in Pakistan reported that academic stress, workload, and educational challenges were associated with students' academic experiences and performance [8]. Similarly, studies conducted in Sindh have highlighted the influence of institutional, teacher-related, socioeconomic, and student-related factors on nursing students' academic outcomes. A recent study among undergraduate nursing students in Karachi identified teacher-related factors, socioeconomic characteristics, and demographic variables as important factors associated with academic performance [9]. Another study conducted in Sindh reported that previous academic background and educational characteristics influenced nursing students' academic performance [10].

Although previous studies have explored individual factors affecting nursing students' academic performance, limited evidence is available regarding the combined influence of student-related, school-related, home-related, and teacher-related factors among undergraduate nursing students in Sindh. Most existing studies have focused on specific factors such as academic stress, learning approaches, or institutional characteristics rather than examining multiple domains together. A comprehensive assessment of these factors may provide a broader understanding of the challenges faced by nursing students and help educational institutions design targeted interventions. Therefore, this study aims to assess student-related, school-related, home-related, and teacher-related factors relevant to academic performance among undergraduate nursing students in Sindh. Understanding these factors will provide evidence for nursing educators, administrators, and policymakers to develop supportive learning environments, strengthen teaching practices, and implement strategies that improve academic performance and educational outcomes among nursing students.

Methodology

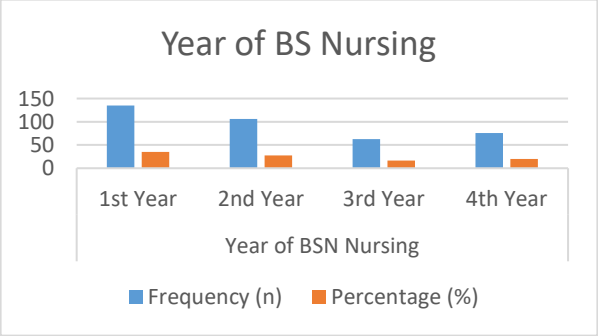
A quantitative cross-sectional study was conducted to assess student-related, school-related, home-related, and teacher-related factors affecting academic performance among undergraduate nursing students in Sindh. The study was conducted over a period of three months, from July 2026 to September 2026, in selected public and private nursing institutions of

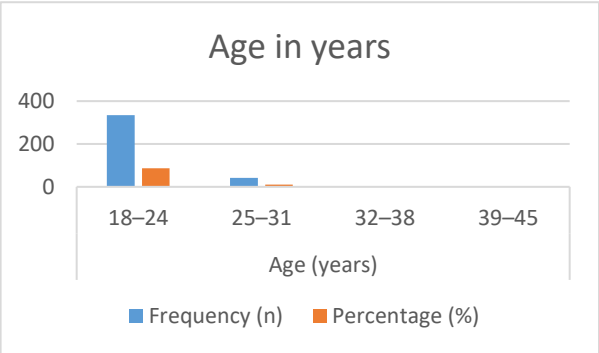
Sindh, Pakistan. The study population comprised undergraduate Bachelor of Science in Nursing (BSN) students of both genders aged 18 years and above. A non-probability convenience sampling technique was used for participant recruitment. The sample size was calculated using Cochran's formula, and a total of 380 undergraduate nursing students were included in the study. Permission to conduct the study was obtained from the concerned department of Liaquat University of Medical and Health Sciences (LUMHS), Jamshoro, before data collection and written informed consent was obtained from all participants before data collection. Data were collected using an adopted and validated structured questionnaire. The questionnaire consisted of two sections: the first section included demographic characteristics, while the second section assessed factors affecting academic performance, including student-related factors (interest, engagement, and study habits), school-related factors (learning environment and availability of learning facilities), home-related factors (parental support, learning resources, and family challenges), and teacher-related factors (personality traits and teaching practices). Each item was measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Data were analyzed using Statistical Package for Social Sciences (SPSS) version 27. Descriptive statistics including frequency, percentage, mean, and standard deviation were used to summarize variables, while differences among factor scores according to demographic characteristics were assessed using appropriate statistical tests with significance determined by p-value.

Results

Table. 1. Among the 385 undergraduate nursing students initially recruited, demographic information was complete for 380 participants, while data for 5 participants were missing; therefore, the demographic analysis was based on 380 valid responses, the majority of participants were aged **18–24 years (86.8%)**, followed by **25–31 years (10.9%)**, while few participants were aged **32–38 years (0.8%)** and **39–45 years (0.3%)**. Regarding gender, **male students represented 57.4%** of participants, whereas **female students accounted for 41.3%**. Most participants were **unmarried (87.5%)**, while **11.2% were married**. Regarding academic year, the highest proportion of students were from **1st year BSN (35.1%)**, followed by **2nd year (27.5%)**, **4th year (19.7%)**, and **3rd year (16.4%)**. Overall, the findings indicate that the study population mainly consisted of young, unmarried, and male undergraduate nursing students, with greater representation from first-year students.

Table 1: Demographic characteristics of participants (n=380)





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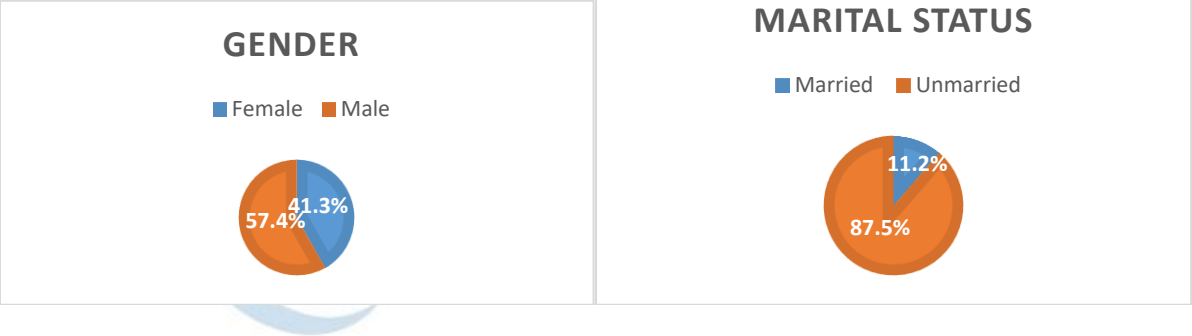


Table 2: Descriptive Analysis of Student, Teacher, School, and Home Factors (n = 380)

	N	Minimum	Maximum	Mean	Std. Deviation
teacher_Factors	380	1.00	5.00	3.8826	.74211
student_Factors	380	1.00	4.93	3.8539	.68452
School_Factors	380	1.00	5.00	3.5626	.90753
Home_Factors	380	1.30	4.80	3.2929	.57193
Valid N (listwise)	380				

Table 2: Descriptive analysis showed that teacher-related factors had the highest mean score (Mean = 3.88 ± 0.74), followed by student-related factors (3.85 ± 0.68), school-related factors (3.56 ± 0.91), and home-related factors (3.29 ± 0.57) among undergraduate nursing students (N=380).

Table 3: Normality Assessment of Teacher, Student, School, and Home Factors

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
teacher_Factors	.162	380	<.001	.903	380	<.001
student_Factors	.124	380	<.001	.910	380	<.001
School_Factors	.177	380	<.001	.928	380	<.001
Home_Factors	.104	380	<.001	.979	380	<.001

Table.3 The normality test showed that all study variables (teacher, student, school, and home-related factors) were not normally distributed, as indicated by significant Kolmogorov–Smirnov and Shapiro–Wilk tests ($p < 0.001$). Therefore, non-parametric statistical tests were considered for further analysis.

Table 4: Detailed Summary Statistics for Influencing Factors

			Statistic	Std. Error
teacher_Factors	Mean		3.8826	.03807
	95% Confidence Interval for Mean	Lower Bound	3.8078	
		Upper Bound	3.9575	
	5% Trimmed Mean		3.9374	
	Median		4.0000	
	Variance		.551	
	Std. Deviation		.74211	

	Minimum		1.00	
	Maximum		5.00	
	Range		4.00	
	Interquartile Range		.80	
	Skewness		-1.272	.125
	Kurtosis		2.915	.250
student_Factors	Mean		3.8539	.03512
	95% Confidence Interval for Mean	Lower Bound	3.7848	
		Upper Bound	3.9229	
	5% Trimmed Mean		3.9053	
	Median		3.9333	
	Variance		.469	
	Std. Deviation		.68452	
	Minimum		1.00	
	Maximum		4.93	
	Range		3.93	
	Interquartile Range		.67	
	Skewness		-1.301	.125
	Kurtosis		3.036	.250
School_Factors	Mean		3.5626	.04656
	95% Confidence Interval for Mean	Lower Bound	3.4711	
		Upper Bound	3.6542	
	5% Trimmed Mean		3.6117	
	Median		3.8000	
	Variance		.824	
	Std. Deviation		.90753	
	Minimum		1.00	
	Maximum		5.00	
	Range		4.00	
	Interquartile Range		1.00	
	Skewness		-.833	.125
	Kurtosis		.488	.250
Home_Factors	Mean		3.2929	.02934
	95% Confidence Interval for Mean	Lower Bound	3.2352	
		Upper Bound	3.3506	
	5% Trimmed Mean		3.2956	
	Median		3.2000	
	Variance		.327	
	Std. Deviation		.57193	
	Minimum		1.30	
	Maximum		4.80	
	Range		3.50	
	Interquartile Range		.60	
	Skewness		.064	.125
	Kurtosis		.412	.250

Table.4. Descriptive statistics showed that teacher-related factors had the highest mean score (Mean = 3.88, SD = 0.74), followed by student-related factors (Mean = 3.85, SD = 0.68) and school-related factors (Mean = 3.56, SD = 0.91). Home-related factors showed the lowest mean score (Mean = 3.29, SD = 0.57) among undergraduate nursing students.

Overall, teacher and student-related factors were perceived as the most influential factors affecting academic performance.

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Table 5. One-Way ANOVA of Factors Influencing Students' Academic Performance

		Sum of Squares	df	Mean Square	F	Sig.
teacher_Factors	Between Groups	6.911	3	2.304	4.292	.005
	Within Groups	201.815	376	.537		
	Total	208.725	379			
student_Factors	Between Groups	9.147	3	3.049	6.806	<.001
	Within Groups	168.440	376	.448		
	Total	177.587	379			
School_Factors	Between Groups	9.447	3	3.149	3.911	.009
	Within Groups	302.703	376	.805		
	Total	312.149	379			
Home_Factors	Between Groups	.822	3	.274	.836	.475
	Within Groups	123.149	376	.328		
	Total	123.971	379			

Table.5. One-way ANOVA showed significant differences in teacher-related factors ($F(3,376)=4.292$, $p=.005$), student-related factors ($F(3,376)=6.806$, $p<.001$), **and** school-related factors ($F(3,376)=3.911$, $p=.009$) among groups. However, home-related factors showed no significant difference ($F(3,376)=0.836$, $p=.475$). Thus, group differences were observed for teacher, student, and school factors but not for home factors.

Table 6. Comparison of Mean Scores of Factors Influencing Students' Academic Performance Between the Two Groups Using an Independent-Samples *t*-Test

Factor	Variance Assumption	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
teacher_Factors	Equal variances assumed	2.032	.155	-.116	378	.908	-.01377	.11913	-.24802	.22047

	Equal variances not assumed			-.102	51.402	.919	-.01377	.13532	-.28539	.25785
student_Factors	Equal variances assumed	2.161	.142	-2.333	378	.020	-.25455	.10911	-.46908	-.04001
	Equal variances not assumed			-2.002	50.836	.051	-.25455	.12715	-.50983	.00074
School_Factors	Equal variances assumed	6.020	.015	.114	378	.910	.01656	.14569	-.26990	.30302
	Equal variances not assumed			.097	50.632	.923	.01656	.17143	-.32766	.36078
Home_Factors	Equal variances assumed	.347	.556	-1.796	378	.073	-.16418	.09143	-.34394	.01559
	Equal variances not assumed			-1.892	56.699	.064	-.16418	.08678	-.33797	.00961

Table.6. An independent samples t-test was conducted to compare the mean scores of teacher-related factors, student-related factors, school-related factors, and home-related factors between two groups. Levene's test indicated that equal variances were assumed for teacher-related factors (p=.155), student-related factors (p=.142), and home-related factors (p=.556), while school-related factors showed unequal variances (p=.015).

The results showed a significant difference only in student-related factors ($t(378) = -2.333$, p=.020). However, no significant differences were observed for teacher-related factors (p=.908), school-related factors (p=.910), and home-related factors (p=.073).

Discussion

The present study assessed student-related, school-related, home-related, and teacher-related factors relevant to academic performance among undergraduate nursing students in public and private nursing institutions of Sindh. Among the 380 valid responses, teacher-related factors demonstrated the highest mean score (3.88 ± 0.74), followed by student-related factors (3.85 ± 0.68), school-related factors (3.56 ± 0.91), and home-related factors (3.29 ± 0.57). These findings indicate that students perceived teachers' characteristics and their own learning behaviours as the most important factors associated with academic performance. Similar to previous evidence, academic performance among nursing students is recognized as a multidimensional outcome influenced by personal characteristics, learning approaches, educational environment, and social support rather than a single factor alone [1,2]. Since this study used a cross-sectional design, the findings represent students' perceptions and associations between factors and

academic performance rather than causal relationships.

The present study found that teacher-related factors had the highest mean score (3.88 ± 0.74), suggesting that students considered teachers' personality traits, teaching skills, communication, and supportive practices highly relevant to their academic performance. This finding is consistent with previous studies indicating that faculty characteristics and teaching effectiveness are important components of nursing students' educational experiences. A systematic review reported that academic success among nursing students is associated with educational support, teacher guidance, and effective learning environments [1]. Similarly, research among Pakistani nursing students demonstrated that students' perceptions of teachers and the educational environment significantly influence their learning experiences and satisfaction [7]. In contrast to some studies where institutional resources were considered dominant factors, the higher score of teacher-related factors in the present study may reflect the importance of direct interaction between students and faculty members within nursing education settings. Supportive teacher–student relationships, constructive feedback, and effective teaching approaches may enhance students' engagement and confidence.

Student-related factors were the second-highest rated domain in the present study (3.85 ± 0.68), indicating the importance of students' interest, engagement, motivation, and study habits. These findings are comparable with previous research showing that individual learning behaviours strongly influence academic outcomes among nursing students. A systematic review and meta-analysis found that students using deeper learning approaches demonstrated better academic achievement compared with those using surface learning approaches [3]. Furthermore, academic self-efficacy has been identified as an important factor associated with nursing students' academic success, as students with greater confidence in their learning abilities are more likely to actively engage in educational activities [4]. The findings of the present study support the importance of promoting self-directed learning, effective study strategies, and academic motivation among undergraduate nursing students.

The current study identified school-related factors as the third highest domain (3.56 ± 0.91), indicating that students considered the learning environment and availability of educational facilities relevant to academic performance. Nursing education requires adequate classrooms, skill laboratories, clinical learning opportunities, libraries, and academic support systems. These findings are consistent with previous research demonstrating that the educational environment is associated with students' satisfaction, engagement, and learning outcomes [5]. A study conducted among undergraduate nursing students in Karachi reported that perceptions of the educational environment varied according to demographic and academic characteristics, including age and year of study [5]. Similarly, Pakistani nursing students have reported that while their educational environments were generally acceptable, improvements in institutional support and learning resources were still needed [7]. The findings of the present study emphasize that improving academic outcomes requires attention not only to students and teachers but also to institutional facilities and learning conditions.

In the present study, home-related factors received the lowest mean score (3.29 ± 0.57) among the four domains; however, they remained an important component of students' academic experiences. This finding suggests that students perceived family support, availability of learning materials, and family-related challenges as less influential compared with teacher-, student-, and school-related factors. Previous literature has highlighted that socioeconomic conditions, family support, and personal circumstances can influence students' educational progress and ability to cope with academic demands [6]. The comparatively lower score in the present study may be related to the increased independence of university students, where academic

responsibilities are increasingly managed by students themselves. However, family guidance and emotional support may remain particularly important for students experiencing financial difficulties or family-related stress.

Regarding demographic characteristics, the majority of participants in the present study were young adults aged 18–24 years (87.9%), male (58.2%), unmarried (88.7%), and enrolled in the first year of BSN (35.5%). Similar demographic patterns have been reported among undergraduate nursing students, where the majority of participants are typically young adults entering professional nursing education. Previous research has demonstrated that demographic characteristics such as age and academic year may influence students' perceptions of educational environments and academic experiences [5]. The higher representation of first-year students in the current study may be important because students at earlier stages of nursing education often experience greater adjustment challenges related to university learning methods, academic expectations, and transition into professional education.

The findings of the present study are also comparable with evidence from Pakistan. A study conducted among undergraduate nursing students in Karachi reported that teacher-related factors, socioeconomic characteristics, and institutional factors were associated with students' academic performance [9]. Similarly, previous research from Sindh identified previous academic background and educational characteristics as important predictors of nursing students' academic outcomes [10]. However, unlike previous studies that examined individual predictors, the present study assessed four broader domains simultaneously, providing a more comprehensive understanding of factors perceived as relevant to academic performance among undergraduate nursing students in Sindh.

Conclusion

The study concluded that student-related, school-related, home-related, and teacher-related factors were all relevant to the academic performance of undergraduate nursing students in Sindh. Teacher-related factors showed the highest mean score, followed closely by student-related factors, highlighting the importance of effective teaching practices and students' learning behaviours. School-related factors also played an important role through the learning environment and availability of educational resources.

Nursing institutions in Sindh may consider strengthening faculty development programs, student mentoring, supportive learning environments, and academic guidance services. Nevertheless, the use of convenience sampling and a cross-sectional design limits generalizability and prevents causal interpretation. Future multicenter longitudinal studies using probability sampling and objective measures of academic achievement are recommended to further explore relationships between these factors and nursing students' academic outcomes.

Overall, the findings demonstrate that academic performance among undergraduate nursing students should be viewed within a multidimensional educational framework involving student-related, teacher-related, school-related, and home-related factors. Teacher-related and student-related domains were the most prominent factors identified in this study, highlighting the importance of effective teaching practices and students' active involvement in learning.

Although home-related factors had the lowest mean score, family support and home circumstances remained relevant to students' academic experiences. Nursing institutions should strengthen faculty development, student support, and learning resources to promote better academic outcomes. Further longitudinal research is recommended to establish the relationships between these factors and academic performance over time.

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