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Jayasree Radhamaniamma[1]
Mohammed Yahya Ahmmed Al Zubair[2]
Rency John[3]

[1]Faculty, Oman College of Health Sciences, Dhofar, Sultanate of Oman
[2] Faculty, Oman College of Health Sciences, Dhofar, Sultanate of Oman
[3]Faculty, Oman College of Health Sciences, Dhofar, Sultanate of Oman

Perception of Nursing Students on the factors influencing Academic Performance: A Cross - Sectional Study

Abstract

Background: Academic performance is vital for evaluating educational institutions, and understanding the factors that influence students' achievements is crucial for improvement.

Objective: The objective of this study was to explore nursing students' perceptions at Oman College of Health Sciences regarding the factors impacting their academic performance.

Methods: A cross-sectional study was conducted involving 150 undergraduate nursing students of Dhofar branch of the Oman College of Health Sciences, who completed a self-administered questionnaire.

Results: The results showed that most participants were females (91.3%), single (88.7%), and aged 19-20 years (47.3%). While nursing was a personal choice for the majority 46.7%, around 30.7% of students spent over two hours studying daily, and 21.3% did not study every day. Six factors were identified through exploratory factor analysis: teacher characteristics, study skills, learning environment, academic culture, domestic factors, and personal factors.

Conclusion: Teacher characteristics and study skills emerged as crucial factors influencing academic performance. These findings have significant implications for supporting at-risk or probationary nursing students, guiding college authorities, faculty members, students, and parents in understanding the factors that affect academic performance, and enabling appropriate interventions to address any concerns. This study provides valuable insights into improving the academic performance of nursing students.

Keywords: Nursing students, academic performance, factor analysis, teacher characteristics

Corresponding Author:
Jayasree Radhamaniamma
Faculty, Oman College of Health Sciences,
Post Box No. 2935, Salalah 211.
Dhofar, Sultanate of Oman
Email : jayasreebibi@gmail.com

Introduction

A time- and energy-intensive journey, nurse education is both an exciting and demanding experience. Nursing student's academic performance has a significant impact on the graduation of top-notch professionals who will lead Oman's workforce and contribute to the nation's development. Students' academic performance or their ability to meet the requirements set by the institution and the local government are both ways that institutions can be judged on their success[1]. The evaluation of student nurse's academic performance is based on their ability to perform professional skills, which is defined by their level of competence[2]. Both the students' capacity for managing their studies and the way they complete the various tasks that their instructors have given them are important. In addition, their ability to learn and retain information, and to communicate that knowledge using their professional skills are also important[3]. Nursing students face overwhelming complexity in their role as they continuously learn and engage. They encounter significant pressures, including challenging coursework, financial responsibilities, social and spiritual needs, and various personal stressors, while also gaining hands-on experience with patients and striving to meet academic requirements necessary for competent clinical practice[4]. Differences in nursing students' academic performance have been noted over time, even though they may have similar abilities, learn in the same setting, and adhere to the same course curriculum. The chance to advance in education is lost by bright students who don't excel for other reasons[5]. When students don't have the necessary knowledge to improve the professional skills needed to carry out fundamental nursing procedures for health, poor academic performance can put the institution in a difficult situation. Since all student nurses trained would be entrusted to patient care when they start working in hospitals, it is crucial to analyze the factors affecting their academic performance, and this study has become extremely important, meriting scholarly attention.

Background

Over the years, researchers have given a lot of attention to how well students perform academically. Research has shown that academic success and student achievement are related issues susceptible to a variety of factors.

Many studies found that "personal factors", "family related factors", "school-related factors", and "teacher-related factors" have an impact on students' academic performance[6,7,8,9]. The factors influencing low academic achievement by a learner are connected to the learner[10]. According to other researchers who backed up this assertion, a student who succeeds in the career of his or her choice has good study habits[6,11]. A student with successful study habits will likely succeed in his or her chosen career. Student-related variables such as the student's efforts, age, and level of motivation, preferred methods of learning, prerequisites, and previous education had an impact on academic performance. According to studies, students' academic performance is impacted by factors related to their families, educational status of the parents and family income[12]. Similarly, students who have educated parents perform better academically than students with less educated or uneducated parents[13]. Academic success of students is significantly affected by their family and home environment. According to consensus, a hostile home environment limits a child's ability to learn[14].

An important criterion to measure the quality of education at colleges and universities is student academic performance. This has been one of the top areas for research recently. Even though they all share certain traits, students are all unique individuals. Academic performance may be influenced by elements of the curriculum, the college, the teacher, the learner's family, and more. To continue their studies, students must achieve a Grade Point Average(GPA) of 2 or higher, per the current policy of the nursing program. From each level, we have a few students who are on probation. The college has created corrective measures to raise their score. Without addressing the issue's fundamental causes, all remedies are ineffective. Determining the factors influencing academic performance and taking the appropriate corrective action are therefore of utmost importance. In Oman, there have been very few studies done on the variables influencing nursing students' academic performance. Hence, this pilot study aims to investigate the factors affecting academic performance of undergraduate nursing students in Sultanate of Oman.

Methods

Study design : This study was a cross-sectional survey of nursing students.

Sample and setting : For the study, 150 nursing students enrolled in the undergraduate nursing program at Oman College of Health Sciences (OCHS), Dhofar Branch, Sultanate of Oman were sought out. Quota sampling technique was used to have a representative sample from each level of the program. Students who refused to consent or who were enrolled in the college's foundation program were excluded from the study.

Data Collection : A self-administered survey that the researchers had created was used to gather data. In the questionnaire's first section, sociodemographic information was gathered. The nursing student's perception on the factors influencing their academic performance was the subject of the second section of the questionnaire. A sixty-two item on a 5-point Likert scale was used for this part. The tool was reviewed by three academic experts, translated into Arabic, and pilot tested by 14 nursing students.

Data analysis : Data analysis in SPSS version 20 for Windows was conducted to examine the sociodemographic characteristics of the sample. Descriptive statistics were employed to analyze and summarize the data, providing a comprehensive overview of the participants' sociodemographic profiles.

To identify the factors that influence academic performance, exploratory factor analysis was employed. This technique, specifically principal axis factoring, was utilized to uncover the underlying factors within the data. Additionally, a Promax rotation was applied to enhance the interpretability of the factors.

By conducting exploratory factor analysis with principal axis factoring and Promax rotation, the study aimed to reveal the latent factors that contribute to academic performance. This statistical approach facilitated the identification and understanding of the key variables that impact academic achievement.

Ethical considerations

The ethical review committee of OCHS gave its approval to this study (RINS/HNS/10/2020). Prior to being enrolled in the study, each participant voluntarily consented. All study participants received a written consent form and information sheet outlining the study's purpose and pertinent details. Participants had access to the study questionnaire after providing their informed consent. Their response was guaranteed to remain anonymous. They also had the freedom to discontinue their participation in the research without experiencing any adverse effects or penalties.

Results

Socio-demographic data of the sample

Students from all four levels of the undergraduate nursing program participated in the study. One hundred and fifty nursing students completed the survey. Data from section one of the survey are grouped as baseline information, family environment data and study related data and presented in tables one to three respectively.

Majority (91.3%) of the sample were females and 46% of them were passionate about nursing profession and hence it was their first choice (Table 1). As per the family environment, most of the sample hail from large (78%) nuclear (60.7) families. Very few (5.3%) of the sample stay closer to the college and most (47.3%) of them live more than 20 km away from the college. (Table 2). Based on their daily study habits, the majority (59.4%) of the sample study for 2 or more hours daily, whereas 21.3% do not study daily. (Table 3).

Factors influencing academic performance of nursing students.

The study aimed to investigate students' perceptions regarding the factors influencing their academic performance. To assess the dimensionality of the data, principal axis factoring was applied to analyze a set of sixty-two items measured on a Likert scale. The researchers conducted the Kaiser-Meyer-Olkin (KMO) test, which yielded a value of .67. This value exceeded the acceptable threshold of .5[15].

Furthermore, Bartlett's test of sphericity produced statistically significant results ($\chi 2$ (1891) = 13372.2; p < .000), indicating that the correlations among the variables were sufficiently large for exploratory factor analysis. Figure 1 presents the scree plot, which illustrates the eigen values of the factors extracted from the data.

After analyzing the data, six factors were identified that accounted for 41.39% of the total variance. This

Table1. Baseline information of the sample (n=150)

Sample characteristics	Frequency (f)	Percentage (%)
Age in years		
19-20	71	47.3
21-22	52	34.7
23 and above	27	18
Gender		
Male	13	8.7
Female	137	91.3
Level of study		
I	43	28.7
II	38	25.3
III	29	19.3
IV	40	26.7
Marital status		
Single	133	88.7
Married	14	9.3
Divorced	3	2
Reasons for selecting Nursing		
Own choice	70	46.7
Parents/elders choice	21	14
Job security	32	21.3
Noble profession	20	13.3
Didn't get admission in other courses	7	4.7
Time spent /day for study		
One hour	29	19.3
Two hours	43	28.7
More than two hours	46	30.7
Do not study every day	32	21.3

Table 2. Family environment of the sample (n=150)

Sample characteristics	Frequency (f)	Percentage (%)
Type of family		
Nuclear	91	60.7
Joint	29	19.3
Extended	30	20
Order of birth in family		
First	34	22.7
Second	22	14.7
Third	25	16.7
Fourth	16	10.7
Fifth and above	53	35.3

Number of siblings		
Number of siblings		
One	2	1.3
Two	2	1.3
Three	13	8.7
Four	16	10.7
Five and above	117	78
Accommodation status		
Parents	132	88
Relatives	13	8.6
Friends	5	3.3
Distance between college and place of stay		
Less than 5 km	8	5.3
5-10 km	37	24.7
10-20 km	34	22.7
More than 20 km	71	47.3

Table 3. Study related data of the sample (n=150)

Sample characteristics	Frequency (f)	Percentage (%)
Level of study		
I	43	28.7
II	38	25.3
III	29	19.3
IV	40	26.7
Previous GPA		
Less than 2	15	10
2-2.49	28	18.7
2.5-2.99	49	32.7
3-3.49	34	22.7
3.5-4	24	16
Time spent/day for study		
Less than 2 hours	29	19.3
2 or more hours	89	59.4
Do not study everyday	32	21.3

determination was made based on eigenvalues, cumulative variance, and the examination of the scree plot, which showed distinct changes in slope that supported the retention of six factors. To enhance the interpretability of the factors, a Promax rotation was applied. During this process, items that exhibited cross-loading (loading on multiple factors) or no loading were removed from further analysis. Ultimately, out of the initial 62 items, 49 items demonstrated significant loadings on the six factors as shown in Table 4. The reliability of the scale was assessed using Cronbach's alpha, yielding an overall value of .88.

The first factor accounted for 16.22% of the total variance

with an eigenvalue of 10.05. There were 11 items loaded under this factor. Factor loading for items in this ranged from 0.80-0.43 as shown in Table 4. The items in factor one reflected teacher related behaviors and therefore, being classified as "Teacher Characteristics". The set of items within this factor demonstrated a strong level of internal consistency, as indicated by a Cronbach's alpha coefficient of 0.89. This suggests that the items within the factor consistently measure the same underlying construct or dimension. Nursing students perceived that a supportive and approachable teacher with mastery over her subject matter can affect their academic performance. The teacher also must be up to date with her knowledge, impose discipline in the class and give regular and comprehensive feed back to the students. Adopting various teaching strategies and use of audio-visual aids by the teachers can also affect the student's academic performances.

The second factor had 11 items loaded under it. The total variance was 7.28% with an eigenvalue of 4.51. Factor loadings of the items ranged from 0.58-0.45. Items loaded under this factor reflected the learner behavior in the class and test preparations. Therefore, it was classified as "Study Skills". Cronbach's alpha score for the items loaded under this factor was 0.81, which demonstrated excellent internal consistency. Learner behaviors like use of PowerPoint handouts, exam preparations, studying regularly, reading beyond prescribed materials, positive attitude towards studies, time management, regular attendance in the class, use of textbooks, being attentive in the class and participation in class discussions can affect the academic performance as perceived by the students. Another factor which can affect the academic performance is fluency in

Figure 1. Scree plot showing factors affecting academic performance of nursing students.

English language.

There were nine items loaded under the third factor. This factor accounted for 5.25% of the total variance with an eigenvalue of 3.25. Factor loadings of the items under this factor ranged between 0.66 and 0.42. This factor was classified as "Learning Environment" as the item loaded under it reflected about the college facilities including the clinical environment. This factor also scored an alpha of 0.84 demonstrating an excellent internal consistency of the items. The items listed under this factor were online resources, own course books and textbooks; well-equipped laboratory and computer lab and well stalked library with spacious and noise free reading room; adequate clinical area; spacious classrooms; and provision for extracurricular activities.

Furthermore, the fourth factor accounted for 4.58% of the total variance with an eigenvalue of 2.84. Factor loadings ranged between .0.61 and 0.45 for the items loaded under this factor. Items loaded under this factor reflected the way teachers and students behave at the college. Hence it was classified as "Academic culture". These items were setting priority and goal in life by the students, balancing study and leisure time, punctuality of the teachers, self-motivation, explanation of objectives by the teachers and announcement of exam dates in advance. Moreover, bullying teachers and calling them names can negatively affect academic performances. Cronbach's Alpha score was 0.76 which explains that the internal consistency of the items loaded was good.

Additionally, the fifth factor had six items loaded under it. The total variance was 4.19% with an eigenvalue of 2.6. Factor loadings of the items ranged from 0.77-0.41. Items loaded under this factor reflected the home environment of the learner. Therefore, it was classified as "Domestic factors". Cronbach's alpha score for the items loaded under this factor was 0.72, which demonstrated a good internal consistency of the items. Students perceived that home environments like having a space for studying can affect their academic performance. Also, the amount of household chores, financial and health problems, parental occupation, and family size too affect academic performance.

Finally, the sixth factor accounted for 3.88% of the total variance with an eigenvalue of 2.4. Factor loadings ranged
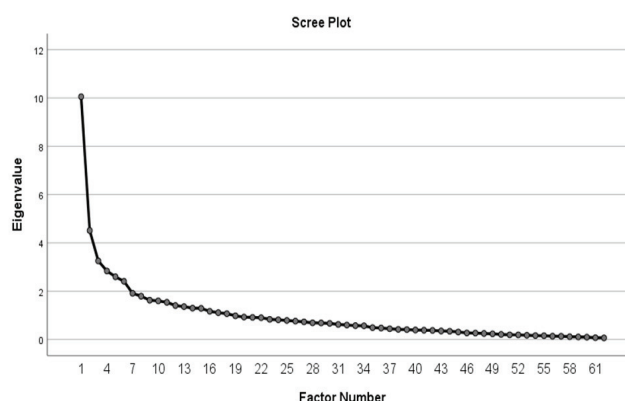
between .0.61 and 0.44 for the items loaded under this factor. Items loaded under this factor reflected the lifestyle habits and coping skills of the learner. Hence it was classified as "Personal factors". Cronbach's Alpha score was 0.66 which explains that the internal consistency of the items loaded was good. Results showed that personal factors like healthy eating

Table 4. Pattern Matrix

Items	Factor loadings						Commun alities
	1	2	3	4	5	6	
Approachable and supportive teachers	.80						.73
Updating students with current trends	.79						.79
Teacher–student relationship	.69						.80
Imposing discipline in the class	.63						.69
Teachers' mastery of the subject	.61						.73
Regular and comprehensive feedback	.60						.78
Supportive clinical instructor	.56						.75
Continuous clinical supervision	.55						.75
Use of various teaching strategies	.45						.75
Academic support services	.44						.67
Use of audiovisual aids by the teachers	.43						.68
Use of power point handouts		.58					.73
Exam preparation		.57					.67
Regular study		.53					.71
Reading beyond prescribed material	.	53					.67
Positive attitude towards studies		.51					.56
Time management		.49					.73
Regular attendance		.49					.54
Use of textbooks		.48					.60
Paying close attention to the lectures		.48					.68
Participating actively in class discussions		.46					.70
Fluency in English		.45					.56
Online resources - MoH-e library			.66				.67
Own course books and textbooks			.61				.71
Well-equipped laboratory			.61				.70
Comfortable and spacious classrooms			.58				.55
Adequate clinical area			.58				.65
Well-equipped computer lab			.46				.69
Spacious and noise free reading room			.43				.54
Well stocked library			.42				.68
Promoting extracurricular activities			.42				.62

Items	Factor loadings						Commun alities
	1	2	3	4	5	6	
Setting priority and goal in life				.61		.69	
Balancing study and leisure time				.53		.61	
Teachers come to the class on time				.52		.60	
Bullying teachers or calling them "names"				-.52		.61	
Explanation of objectives of each session				.49		.66	
Communication of exam dates in advance				.47		.74	
Self-motivation to be successful in life				.45		.66	
Having a specific study place at home					77		.73
Too many household chores					.58		.71
Financial problems in the family					.57		.63
Health problems or illnesses					.44		.55
Parental occupation of parents					.43		.61
Family size					.41		.63
Healthy eating habits						.61	.66
Adequate sleep						.60	.73
Coping with exam tension						.48	.67
Influence of technology						.48	.60
Regular exercise						.44	.64
Eigen value	10.05	4.51	3.25	2.84	2.6	2.41	
Percentage of variance	16.22	7.28	5.25	4.58	4.19	3.88	
Cumulative Percentage of variance	16.22	23.49	28.74	33.32	37.50	41.39	
Cronbach's Alpha	.89	.81	.84	.76	.72	.66	

habits, adequate sleep, coping with exam tension, regular exercise and influence of technology may affect the academic performances of nursing students.

Discussion

Majority of the students in this study were females (91.3%) between the age group of 19-20 years. Nursing was own choice for 46.7% of the students unlike in the study by George et al., (2017) where the majority selected nursing because of job security (50.5%) or on elders' suggestion (29.2%). 69.4% of them spend ≥2hours daily for their studies while 21.3% did not study every day.

Based on factor analysis, the present study identified "teacher characteristics", "study skills", "learning environment", "academic culture", "domestic factors", and "personal factors" as influencing the academic performance of nursing students. A similar study done by Alos et al. (2015), identified "teacher related factors", "study habits", "school related factors", "personal and home related factors" affecting academic performance of nursing students. Another study, reported that teacher related factors, resources and learning environment affected academic performance[16].Utilized factor analysis to identify various factors that impact the learning of undergraduate nursing students. These factors encompass the learning environment, supportive services, teacher characteristics, personal attributes, and learning obstacles[17].A study proposed that nursing students' academic performance is affected by learner related, teacher related, curriculum

related and learning resources factors[18]. A qualitative study,identified "quality of the learning environment as a key influence on their emotional well-being" and academic progress of the nursing students[19]. Dube and Mlotshwa, also reported that learning facilities are a major factor influencing academic performance of enrolled nursing students[20]. Another study done in Nigeria found study skills and environmental variables as important factors affecting the academic performance of nursing students[21].

Since it gauges a variety of teaching-related factors like subject knowledge, effective communication, lesson planning, and presentation, the effectiveness of teachers has been recognized as a multidimensional construct[2,22,23]. The significant category of variables thought to affect student nurses' academic performance is teacher-related variables[6]. The need for qualified teachers in the teaching profession was also strongly emphasized by Cerna & Pavliushchenko, who claimed that the success of any program is dependent on the teacher's aptitude for the subject[24]. "teacher-related factors" play a significant role in academic performance. These factors include the provision of personalized attention to weaker students, regular evaluations conducted by teachers, timely completion of the curriculum by teachers, establishment of performance goals by teachers, the professional qualifications of teachers, and their teaching performance[25]. Furthermore, emphasized that for students to excel in any examination, it is crucial that their teachers have a deep knowledge of the students they are instructing and a comprehensive understanding of their physical, intellectual, and psychological preparedness[22]. Study supported the findings that student - teacher relationship, mastery of the teacher over the subject matter, updating the students with current information, use of various teaching strategies and audio-visual aids and academic support services rendered by teachers can affect the academic performances of their students[2,20]. A study that demonstrated a positive correlation between teaching methods and the academic performance of nursing students[26]. Conducted a separate study which indicated that activities and service-related aspects had a higher average score compared to teacher-related factors[27].

There is a strong relationship between theory and practice in nursing education. In this study students perceived that adequacy of the clinical area, support from teachers and constant feedback during clinical posting can affect the academic performance of the nursing students. Similarly, it was reported that 88% of the respondents in a study perceived that adequacy of support received at the clinical area improved their practical skills and academic performance[20].

Study space in the classroom and accommodation was another factor that affected the academic performance of the nursing students which was supported by the findings of the study[20]. However, the above study found that facilities like library and computer lab were not good predictors of academic performance unlike the current study.

Fluency in English language also perceived as a factor affecting the academic performance of nursing students. Study found that student who speak English as their second language faced challenges with their academic performances[28]. All the respondents of the current study had Arabic as their first language. Hence the use of English language as a medium of instruction was perceived as a barrier to understanding topics discussed in the class. 69% of the respondents in a similar study supported the same findings[20].

The development of efficient study skills was another factor that was seen to affect academic performance. A study found a correlation between good study habits and academic success[1]. Students with better study habits are more likely to get higher academic results independent of their level of self-control. This is because study habits serve as a mediator between self-control and academic success[29]. A studybacked up these conclusions by claiming that participation in extracurricular activities and self-motivation for learning can improve academic performance[30].

Conclusion

Academic performance refers to students' capacity to comprehend and retain information, effectively articulate their knowledge through oral or written means, and successfully manage their studies along with various assigned tasks.This study investigated the factors influencing the academic performance of undergraduate nursing students. The researchers utilized factor analysis to identify several factors perceived by the students, with "Teacher Characteristics"emerging as the most significant one. Additionally, factors such as "study skills",

"learning environment", "academic culture", "domestic factors" and "personal factors" were found to impact academic performance. The use of factor analysis was a positive aspect of this study. However, it is important to acknowledge certain limitations. One major limitation is the small sample size, which was justified by the study's focus on exploring factors rather than developing a tool. Furthermore, it is important to note that the findings cannot be generalized as the study was conducted in a single nursing college in the Sultanate of Oman.

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Research data for this article

Survey respondents were assured raw data would remain confidential and would not be shared.

The data that has been used is confidential.

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