

Gender-Based Variation in The Academic Performance of Medical Students: A Cross-Sectional Study

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Abstract: Objective: To determine the gender-based variation in the academic performance of medical students. **Methodology:** This cross-sectional was carried out from January to February 2023. The students were taught two Physiology and two anatomy lectures, then after a month, the theory BCQs test of a total of 150 marks and viva-voce and OSPE of 150 marks (Total 300 marks) from the same taught topics, was conducted. The gender-based difference in the grade of students was tested using the Chi-Square test. Data analysis was done using IBM SPSS version 23.0. **Results:** Among (n=290) students, 117(40.34%) were male students while 173(56.66%) were the female students. Among the 117 male students, the mean±sd of total marks was 164.8 ±38.67 out of a total of 300 marks, while among the 173 female students, the mean±sd of total marks was 181.50±30.90 out of a total of 300 marks. There was a statistically significant difference in the score of students based on gender (p<0.01). **Conclusion:** According to this study's findings, there was notable gender discrepancies among undergraduates and female students performed much better academically than male students, as indicated by the cumulative grade point average they earned at the university. There was a statistically significant difference in the score of students based on gender (p<0.01).

Keywords: Academic Performance, gender, medical students

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Introduction

The medical sector is a career that focuses on preventing, promoting, and restoring good health by discovering, diagnosing, and treating illnesses using scientific and highly specialized knowledge. Students should be expected to translate the characteristics of the medical profession according to the Pakistan Medical and dental council that is physician should be a clinical expert, educator, communicator, counselor, manager, protector, and mentor. According to the observation of teachers of LUMHS, female students are more diligent and have a stronger work ethic than males, and as a result, female students consistently outperform male students in terms of involvement and academic achievement. Various higher education institutions have reported inconsistent gender disparity patterns in academic performance¹. As a result, several studies found that female



students outperformed male students²⁻⁵. Studies show that the academic achievement gap between male and female graduates is not statistically significant⁶⁻⁸. For example, some researchers found that male undergraduates had a higher CGPA than female graduates⁹⁻¹⁰. Studies have also shown that the community's expectations of students' academic performance have influenced female students' educational attainment. Mamo, et al found that most female students agreed that sociocultural factors influenced their performance¹¹. Thus, gender-related differences in classroom behaviour could explain the higher rate of educational underachievement among males¹². A lack of proper guidance and support from universities is one of the main reasons why female students' academic achievement is lower than male students in Ethiopian higher education institutions¹³. Female students scored much lower on university entrance exams than male students. According to their high school achievement. In a similar vein, female university students performed poorly academically as compared to male pupils¹⁴. It is observed that female students are highly hardworking in their studies and typically earn high marks with excellent grades, whereas male students, on the whole, show little interest in their studies and earn lower grades than their female counterparts. Examining gender differences in undergraduates at Liaquat University of Medical and Health Sciences' overall academic performance was the aim of this study.

Methodology:

This Comparative cross-sectional study was conducted at the Physiology Department in Collaboration with the Anatomy Department LUMHS Jamshoro by non-probability purposive sampling. The study took 2 months from January to February 2023. The sample size was estimated as the maximum appearance of students in the exam. The population in this study were all students of 1st year MBBS of LUMHS, Jamshoro. After data imputation, based on incomplete data, the sample size was 290 (n=290). The students were taught two Physiology and two anatomy lectures, then after a month, the theory BCQs test of a total of 150 marks and viva-voce and OSPE of 150 marks (Total 300 marks) from the same taught topics, was conducted. Then, the marks were compared based on gender. The gender-based difference in the grade of students was tested using the Chi-Square test. Data analysis was done using IBM SPSS version 23.0.

Results:

Among (n=290) students, 117(40.34%) were male students while 173(56.66%) were the female students.

Among the 117 male students, the mean±Sd of total marks was 164.8 ±38.67 out of a total of 300 marks, while among the 173 female students, the mean±Sd of total marks was 181.50±30.90 out of a total of 300 marks. There was a statistically significant difference in the score of students based on gender (p value<0.01). **As shown in Table 1.**



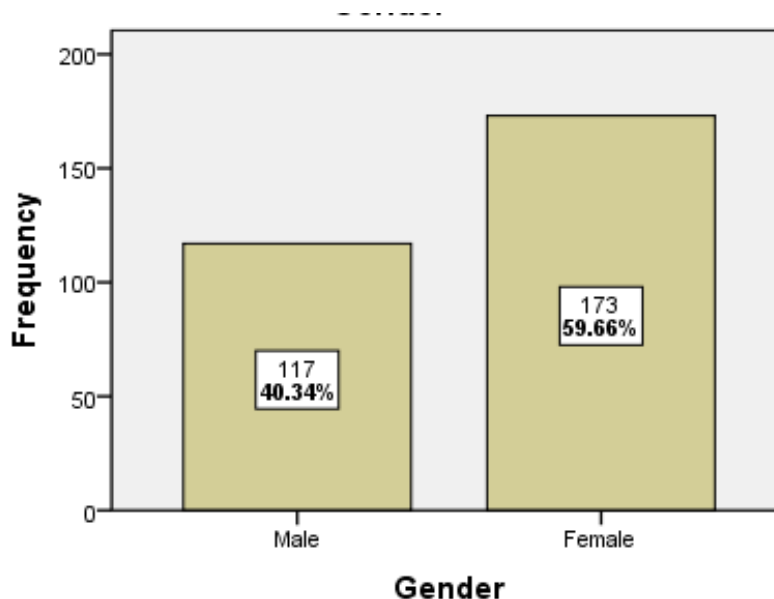


Figure 1: Gender distribution of the study population

Table 1: Gender-based difference in the marks of students

	Male (n=117) Mean±Sd	Female(173) Mean±Sd	p-value
Marks Viva & OSPE =?	93.73±23.4	102.0±17.2	<0.01**
Marks BCQ = 150	70.80±17.3	79.38±16.0	<0.01**
Total = 300	164.48±38.6	181.50±30.9	<0.01**

**shows high statistical significance

Out of the total of 4 (1.4%) students with grade A, 3(1.0%) were females and only 1 (0.3%) was male. Similarly, out of a total of 38 (13.1%), students with grade B+, 28(9.7%) were females, and only 10(3.4%) were male students. Among the failures, 11.7% were males, and only 9.0% were females. ($\chi^2=11.53$ and $p\text{-value}<0.01$) As shown in Table 2

Table 2: Gender-based difference in the grade of students

			Grades of students					Total	p-value
			A	B+	C	C+	F		
Gender	Male	Count	1	10	41	31	34	117	<0.01**
		% of Total	0.3%	3.4%	14.1%	10.7%	11.7%	40.3%	
Female	Count	3	28	57	59	26	173		
	% of Total	1.0%	9.7%	19.7%	20.3%	9.0%	59.7%		
Total		Count	4	38	98	90	60	290	
		% of Total	1.4%	13.1%	33.8%	31.0%	20.7%	100.0%	

**shows high statistical significance

Discussion:

The purpose of this study was to examine whether academic performance among undergraduate students differs by gender. In this study, the majority of female students have good results



because the majority of female students agreed that self-study can help them in achieving a higher ranking.

In their study, Ashong and Commander found that while male students' relationships are more competitive, female students are more likely than male students to seek out collaboration and connection with their peers¹⁵. (Similar to this, female students are more likely than male students to ask their peers for assistance, especially after getting positive responses at first¹⁶. A study conducted in Nepal discovered a link between a student's gender and academic achievement. The statistical significance of the fact that more female students (71.67%) than male students (70.83%) received first division or higher shows that female students outperformed male students¹⁷. Male and female medical students did not perform much differently academically, according to a local Pakistani research¹⁸. Clinical performance was measured in an international study using scores on clinical topic exams and the clinically based COMLEX Level 2 exam. In these two clinical performance metrics, there were no significant gender differences. In clinical clerkship performance evaluations, women outscored men¹⁹. In local research, girls performed much better academically than boys across all groups (p-value = 0.00)²⁰. In a local survey, the most important elements influencing academic achievement were parental monitoring and guidance; less time spent on social media; excellent grades from friends; studying alone without interruption; and teaching style²¹.

Conclusion

Many reasons that have contributed to male underachievement in academics have been uncovered by numerous studies on the same issue. According to this study's findings, there were notable gender discrepancies among undergraduates and female students performed much better academically than male students, as indicated by the cumulative grade point average they earned at the university. Among (n=290) students, 117(40.34%) were male students while 173(56.66%) were the female students. Among the 117 male students, the mean±Sd of total marks was 164.8 ±38.67 out of a total of 300 marks, while among the 173 female students, the mean±Sd of total marks was 181.50±30.90 out of a total of 300 marks. There was a statistically significant difference in the score of students based on gender (pvalue<0.01).

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

No animals were used in this study. The study on humans was conducted in accordance with the ethical rules of the Helsinki Declaration and Good Clinical Practice.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

None.

FUNDING

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

References:



1. Pilotti MA (2021). What lies beneath sustainable education? Predicting and tackling gender differences in STEM academic success. *Sustainability*,13(4):1671
2. Yakubu, M.N. and Abubakar, A.M. (2022). Applying machine learning approach to predict students' performance in higher educational institutions. *Kybernetes*, 51(2), 916-934.
3. Andrews, N., Cook, R.E., Nielson, M.G., Xiao, S.X. and Martin, C.L., (2022). *Gender in education*. Routledge. [https://doi.org/10,4324\(97811\),38609](https://doi.org/10.4324(97811),38609)
4. Zainal R, Yahya R, Abdul Rahman K. Influences of gender on academic achievement of fiber optic communication system: an experience of politeknik merlimau melaka. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*. 2014;19(8):108-11.
5. Obadaki YY, Omowumi YK. Comparative study of gender difference performance in geography: A case study of some selected schools in Zaria inspectorate division of Kaduna state, Nigeria. *Educational Research and Reviews*. 2013 Mar 10;8(5):179
6. Maniaci, G., La Cascia, C., Giammanco, A., Ferraro, L., Palummo, A., Saia, G.F., Pinetti, G., Zarbo, M. & La Barbera, D., (2023). The impact of healthy lifestyles on academic achievement among Italian adolescents. *Current Psychology*, 42(6), 5055-5061
7. Puju J.A, Netragaonkar Y.D. (2014). Self concept and academic achievement of under-graduate male and female students of Kashmir. *Scholarly Research Journal For Humanity Science and English Language*,1(5), 670-676
8. Farhan S, Khan I.(2015). Impact of stress, self-esteem and gender factor on students' academic achievement. *International Journal on New Trends in Education and Their Implications*, 6(2), 143-156
9. Olkaba T.T.(2013). Disparity in academic achievement in selected colleges of teachers education in Oromia Region. *Ethiop. J. Educ. & Sc.*, 9(1), 15-38
10. Yigermal ME. Determinant of Academic Performance of Under Graduate Students: In the Cause of Arba Minch University Chamo Campus. *Journal of Education and Practice*. 2017;8(10):155-66.
11. Mamo H, Gosa G, Hailu B. (2017). Perception of University female students on factors affecting their academic performance and competency: A study from Dire Dawa University, Ethiopia. *Science Journal of Education*, 5(5), 211-215.
12. Fergusson, D. M., & Horwood, L. J. (1997). Gender differences in educational achievement in a NewZealand birth cohort. *New Zealand Journal of Educational Studies*, 32(1), 83-96
13. Tenaw A. (2018). Factors Affecting the Academic Performance of Female Students at Higher Education in Ethiopia. *Global Journal of Human-Social Science: G Linguistics & Education*, 18(1), 24-28.
14. Guta, G. (2019). Assessment of gender disparity in academic performance among undergraduates of College of Medicine and Health Sciences, Ambo University, Ethiopia. *Assessment*, 9(5).
15. Ashong, C.Y., & Commander, N. E. (2012). Ethnicity, gender, and perceptions of online learning in higher education. *MERLOT Journal of Online Learning and Teaching*, 8(2), 98-110.
16. Kupczynski, L., Brown, M., Holland, G., & Uriegas, B. (2014). The Relationship between Gender and Academic Success Online. *Journal of Educators Online*, 11(1), n1
17. Acharya S. Homestay Tourism Development: A Case of Amaltari Madhyawarti Homestay in Southern Terai of Nepal. *Nepali Journal of Contemporary Studies*. 2018;18(1-2):25-48.
18. Faisal, R., Shinwari, L., & Hussain, S. S. (2017). Academic performance of males in comparison with female undergraduate medical students in Pharmacology examinations. *JPMA*, 67(204).



19. Dixon, D. (2007). Gender differences in academic qualifications and medical school performance of osteopathic medical students. *Med Sci Educ*, 17(1), 33-37.
20. Masud, S., Khurshid, M., Fazal, A., ul Qamar, M., & Tabbsum, M. (2019). Comparison of academic performance of 1st year mbbs male and female students in the subject of physiology. *Journal of Akhtar Saeed Medical & Dental College*, 1(4), 142-145
21. Khan KW, Ramzan M, Zia Y, Zafar Y, Khan M, Saeed H. Factors affecting academic performance of medical students. *Life and Science*. 2020;1(1):7-10.

