Tıp Fakültesi Öğrencilerinin Çalışma Yaklaşımlarının Akademik Başarıya Etkisi

The Effect of Medical School Students' Study Approaches on Academic Achievement

[1]Zerrin GAMSIZKAN, [2]Mehmet GAMSIZKAN

[1]Düzce University Medical Faculty, Department of Family Medicine, Department of Medical Education, Duzce, Türkiye
[2]Düzce University Medical Faculty, Department of Pathology, Duzce, Türkiye

Zerrin Gamsızkan: https://orcid.org/0000-0001-8677-4004
Mehmet Gamsızkan: https://orcid.org/0000-0001-9942-4898

ÖZ

Amaç: Bu çalışmanın amacı, tıp öğrencilerinin çalışma yaklaşımları ve sosyodemografik özellikleri ile akademik performansları arasındaki ilişkiyi incelemek ve çalışma yaklaşımlarının klinik ve klinik öncesi dönemler arasında farklılık gösterip göstermediğini belirlemektir.

Materyal ve Metot: Çalışma tanımlayıcı-kesitsel bir çalışmadır. Tıp öğrencilerinden "Revize İki Faktör Çalışma Süreci Anketi (R-SPQ2F)" anketini doldurmaları istendi.

Bulgular: Çalışmaya yaş ortalaması 21,40±2,58 yıl olan 298 erkek ve 306 kız öğrenci alındı. Öğrencilerin % 57,8'i (n=349) klinik öncesi tıp öğrencisi ve %42,2'si (n=255) klinik öğrencisiydi. Öğrencilerin ikamet ettikleri yer ile tıp fakültesini tercih nedenleri arasında anlamlı bir farklılık bulunmamıştır (sırasıyla p=0,853, p=0,860). Klinik öncesi öğrencilerinin derin çalışma yaklaşımı puanları klinik öğrencilerine göre anlamlı düzeyde yüksek bulundu (p<0,014). Klinik öncesi öğrencilerinin derin stratejik çalışma puanlarının klinik öğrencilerine göre anlamlı düzeyde yüksek olduğu belirlendi (p<0,001).

Sonuç: Çalışma sonuçlarımız, çalışma yaklaşımlarından biri olan derin öğrenme davranışının daha yüksek akademik başarı ile ilişkili olduğunu göstermektedir. Çalışma sonuçları, tıp öğrencilerinin kullandıkları öğrenme yaklaşımlarının akademik başarı üzerindeki etkisini erken fark etmelerine yardımcı olabilir.

Anahtar Kelimeler: Akademik başarı, ders çalışma yaklaşımları, tıp eğitimi, tıp öğrencileri

ABSTRACT

Objective: The aim of this study is to examine the relationship between medical students' study approaches and sociodemographic characteristics with their academic achievement and to determine whether their study approaches differ between clinical and preclinical periods.

Materials and Methods: The study is a descriptive-cross-sectional study. Medical students were asked to fill out the "Revised Two Factor Study Process Questionnaire (R-SPQ2F)" questionnaire.

Results: The study included 298 male and 306 female students with a mean age of 21.40±2.58 years. 57.8% (n=349) of the students were preclinical medical students and 42.2% (n=255) were clinical students. No significant difference was found between the place of residence of the students and the reason for choosing the medical faculty (p=0.853, p=0.860, respectively). Deep study approach scores of preclinical students were found to be significantly higher than clinical students (p<0.014). It was determined that the deep strategic study scores of the preclinical students were significantly higher than the clinical students (p<0.001).

Conclusion: Our study results show that deep learning behavior, which is one of the study approaches, is associated with higher academic achievement. The study results can help medical students to realize the effect of learning approaches they use on academic achievement early.

Keywords: Academic achievement, medical education, medical students, study approaches

INTRODUCTION

Medical education is a long-term knowledge and skill education, and besides this long education, medical students have to cope with the ever-increasing knowledge load.[1] Due to the intensive curriculum, study approaches are important in terms of acquiring knowledge, especially in order to ensure academic success. Students' acquisition of knowledge and their ability to reflect their knowledge to academic success are affected by many factors.

When the studies conducted in our country are examined in terms of the factors affecting the academic success of medical school students, it is seen that the study approaches at the level of classes are not examined.[8,9]

The aim of this study is to examine the relationship between medical students' study approaches and sociodemographic characteristics with their academic performance and to determine whether their study approaches differ between clinical and preclinical periods.

MATERIALS AND METHODS

Ethics Approval: Before starting the study, approval was obtained from Duzce University Faculty of Medicine Non-Interventional Health Research Ethics Committee (Date: 25.05.2019, decision no: 2019/123). This study was conducted according to the World Medical Association Declaration of Helsinki.

Sociodemographic Data Form: The sociodemographic data form consisting of questions was used in which the students were asked age, gender, the residence of students, reason for choosing medical school. Socio-demographic data collection questionnaire was tested with a pilot application of 20 people before starting the study.

The Revised Two Factor Study Process Questionnaire (R-SPQ2F): Students' study approach data were collected using R-SPQ-2F questionnaire which was developed byBiggset al.[10] The scale consists of 20 questions, 10 of which measure the superficial approach and 10 of which measure the deep approach. In addition to deep and superficial approaches, surface motivation, deep motivation and surface strategy, and deep strategy sub-dimensions, each consisting of 5 items, were also defined in the scale. A 5-point Likert scale was used to evaluate the study approaches (1= never or only rarely true of me & 5= always or almost always true to me). The Turkish validation study of the original scale was carried out. It has been determined that the Turkish scale validly measures which of the deep and surface study approaches students adopt.[11] This scale used in the study was used to evaluate the study approaches of medical students.[12,13]

Academic Achievement: Academic achievement in this study was determined by the end-of-year grade point average of the students. The first three academic years of the six-year undergraduate program at Duzce Faculty of Medicine consist of preclinical lectures and laboratory practices. The academic year consists of seven modules in a year, and at the end of each module, a multiple-choice theoretical exam is given. At the end of each year, a final exam is also held, and the grade average of the exams held throughout the year is processed as the year-end grade. End-of-module exam questions are prepared with a question bank system, where each academician can enter with a special password. The Question Bank System has a dynamic structure that evaluates the measurement and evaluation quality of the questions at the end of each exam with feedbacks. In the fourth and fifth years, which are the clinical years, students take both theoretical and practical courses in clinical internships. At the end of each internship, the weighted average of the theoretical and practical exams is calculated for each student and is evaluated as the end-of-year grade.

RESULTS

Our study included 298 male and 306 female students with a mean age of 21.40±2.58 years. 23.5% (n=142) of the students are first grade, 20.4% (n=123) are second grade, 13.9% (n=84) are third grade, 22.5% (n=136) are fourth grade, and % 19.7 (n=119) of them were fifth graders. 57.8% (n=349) of the students were preclinical medical students and 42.2% (n=255) were clinical students. The sociodemographic information of the students is given in Table 1.

Tablo 1. Sociodemographic characteristics of the students included in the study.

		n (%)
Gender	Male	298 (49.3)
	Female	306 (50.7)
Class	I	142 (23.5)
	II	123 (20.4)
	III	84 (13.9)
	IV	136 (22.5)
	V	119 (19.7)

Tablo 1. Continue.

Preclinic-clinicterm	Preclinic	349 (57.8)
	Clinic	255 (42.2)
Reason for choosing me-dical school	Professional interest and desire	400 (66.2)
	Family request	77 (12.7)
	Economic reasons	71 (11.8)
	Others	56 (9.3)
Residence of students	Student dormitory	263 (43.5)
	Residence at home with friends	115 (19.0)
	Residence at home with family	69 (11.4)
	Alone at home	157 (26.0)

There was no significant difference between the gender of the students and their grade point averages (p=0.312). No significant difference was found between the place of residence of the students and the reason for choosing the medical faculty (p=0.853, p=0.860, respectively). Comparison of students' academic achievement and socio-demographic characteristics is given in Table 2.

Table 2. Comparison of students' academic achievement and sociodemographic characteristics.

		Academic achievement score	**p**
Gender	Male	69.75±6.26	0.312*
	Female	70.46±6.77	
Residence of students	Studentdormitory	70.13±6.26	0.853**
	Residence at home with friends	70.30±7.02	
	Residence at home with family	70.86±6.59	
	Alone at home	69.62±5.80	
Reason for choosing medical school	Professional interest and desire	71.61±7.93	0.860**
	Family request	70.55±6.25	
	Economic reasons	68.57±6.70	
	Others	69.29±5.34	

*: Mann-Whitney u test; **: Kruskal-wallis test.

When sub-dimensions of study approaches and academic performance are examined in detail according to the R-SPQ-2F questionnaire; a positive and moderate correlation of 0.423 was found between deep motivational and academic achievementscore, and this relationship was statistically significant (p<0.001). A same-sided and low relationship of 0.378 was found between the deep strategic approach and the academic achievement score, and this relationship was statistically significant (p<0.001). A negative and moderate correlation of 0.415 was found between the superficial motivational approach and the academic achievement score, and this relati-onship was statistically significant (p<0.001). A negative and low correlation of 0.328 was found between the superficial strategic approach and the academic achievement score, and this relationship was statistically significant (p<0.001). There is a moderate correlation of 0.427 in the same direction between the deep approach and the academic achievement score, and this relationship is statistically significant (p<0.001). There is a negative and moderate correlation of 0.403 between the superficial approach and the academic achievement score, and this relationship is statistically significant (p<0.001), (Table 3).

Table 3. Correlation between students' study approaches and academic achievement score.

	Academic achievement score	p
Deep motivational	0.423*	0.001
Deep Strategic	0.378*	0.001
Superficial Motivational	-0.415*	0.001
Superficial Strategic	-0.328*	0.001
Deep approach	0.427*	0.001
Superficial approach	-0.403*	0.001

*: Correlation is significant at the 0.01 level (2-tailed).

Deep study approach scores of preclinical students were found to be significantly higher than clinical students (p<0.014). It was determined that the deep strategic study aproach scores of the clinical students were significantly lower than the preclinical students (p<0.001). There was no significant difference in deep motivational study approach scores between preclinical and clinical term students (p=0.123). There was no significant difference between precli-

nical and clinical term medical students in terms of superficial approach scores (p<0.554). There was no significant difference between preclinical and clinical term medical students in terms of superficial strategic approach scores (p<0.755). There was no significant difference between the superficial motivational study scores of preclinical and clinical term students (p=0.079, Table 4).

Table 4. Comparison of academic achievement of preclinical and clinical term students.

	Preclinic students (n=349)	Clinic students (n=255)	p
Deep study approach scores	33.82±7.46	28.76±7.34	0.014*
Deep strategic study aproach scores	16.75±4.24	12.25±3.78	0.001*
Deep motivational approach scores	15.75±4.17	14.35±3.93	0.123*
Superficial motivational approach scores	13.45±4.25	14.75±4.79	0.079*
Superficial strategic approach scores	12.05±4.35	13.95±3.98	0.755*
Superficial approach scores	29.43±7.56	30.80±8.14	0.554*

*: Mann-Whitney U test.

DISCUSSION AND CONCLUSION

In our study, we evaluated the relationship between medical school students' study approaches and academic achievement. We also compared the study approaches of preclinical and clinical term students. According to our study results, a low positive correlation was found between deep learning and academic achievement. As deep learning increased, the academic achievement rate increased. The positive relationship between deep learning approach and academic success is also prominent in other studies.[14,15] In a study examining the academic achievement of the students of the Faculty of Medicine by evaluating their learning styles and study approaches together, it was determined that although learning "styles" were not related to exam performance, "learning" approaches were associated with success. According to this study, students with "strategic" and "deep" approaches to learning consistently performed better in medical school exams.[16] In a study conducted in Saudi Arabia, it was determined that students showed more deep approach, and it was reported that students with deep approach had higher grade point averages.[17] In medical education, it is widely assumed that students' deep learning approaches are optimal and that taking a superficial approach is associated with ineffective or temporary learning outcomes.[18] However, Bickerdike et al.[2] stated that traditionally medical school students have a common strategic or superficial approach to learning, and they said that academic success in medical school is affected by many factors, and academic achievement has many predictors such as learning approaches and individual factors.

In our study, data were also collected that allow us to examine the factors that can predict academic achievement. When the socio-demographic data of our study results were evaluated in detail, no significant difference was observed in academic achievement between male and female students in terms of gender in our study. According to Salihet al.[19] similar to our study, found that there was no significant difference between the academic achievementof medical students and their gender. The authors stated that a single factor cannot be decisive in the academic achievementof students. According to our study results, it has been determined that the choice of medical school voluntarily or with family will or for economic reasons does not affect academicachievement. Studies conducted in this context come up with different results. In a study they conducted at a medical school in Ethiopia, it was found that students who voluntarily entered medical school as their first choice had higher academic achievement scores.[20] Alfayez et al.[21] stated that there may be differences in the learning preferences of students with different motivations to study medicine, and they analyzed both the students' school entry purpose and motivation and their learning approaches together. As a result of their analysis, they concluded that while choosing the surface learning approach decreased the academic achievement grade, it did not cause a significant change in the purpose and motivation of entering the school. The results of this study support that learning approaches, as in our study, are an important determinant of academic success. Similar to the literature, no significant difference was found between study approaches in the context of gender in our study.[22]

According to our study results, deep study approaches of preclinical students were found to be significantly higher than clinical students. When we evaluated together with the sub-dimensions, the deep strategic approaches of the preclinical students were higher than the clinical students. Similar to our study, it has been shown in many studies that preclinical students prefer deep study approaches.[23,24] Preclinical students with courses such as anatomy, physiology, biochemistry and histology can explain the adoption of a deep learning strategy to cope with the large amount of information they need to internalize in a short time.[25] As a matter of fact, the theoretical knowledge intensity and attention required by the basic courses in the preclinical period are stated as the reason for this study approach.[22] Evaluation methods in the clinical period are different from the preclinical period. In particular, clinical performance evaluation is multifaceted, with reasons such as evaluator difference, assessment environment, and differences in measured characteristics.[26,27] This situation may differentiate the study approaches of preclinical and clinical students. Educational researches define medical students as those who use a varying mix of deep, strategic, and superficial approaches to study.[22,28] Therefore, it is very important to continuously evaluate students' learning preferences and approaches to achieve desired learning outcomes.

There are some limitations of our study. First of all, since the study is a single-centered study, it cannot be generalized for all medical faculties in our country. In addition, longitudinal monitoring of students' learning approaches was not performed.

In conclusion, our study results show that deepstudy behavior, which is one of the study approaches, is associated with higher academic achievement. In addition, it was observed that preclinical students exhibited more in-depth approach than clinical term students. The study results can help medical students to realize the effect of study approaches they use on academic performance early. Identifying and adopting optimal study approaches can increase successful academic outcomes. The positive relationship between deep learning and academic success is also recommended to be taken into account in curricula in medical education. Measuring students' approaches to learning can help educators interested in helping students become better learners, monitoring and improving the effectiveness of their education.

REFERENCES

1. Tengiz Fİ, Babaoğlu AB. Tıp fakültesi son sınıf öğrencilerinin kariyer tercihleri ve bu tercihleri etkileyen faktörler. SDÜ Tıp Fakültesi Dergisi. 2020;27(1):67-78. doi:10.17343/sdutfd.560350

2. Bickerdike A, O'Deasmhunaigh C, O'Flynn S, O'Tuathaigh C. Learning strategies, study habits and social networking activity of undergraduate medical students. Int J Med Educ. 2016;7:230-236. doi:10.5116/ijme.576f.d074

3. Mirghani HM, Ezimokhai M, Shaban S, van Berkel HJM. Superficial and deep learning approaches among medical students in an interdisciplinary integrated curriculum. Educ Health (Abingdon). 2014;27(1):10-14. doi:10.4103/1357-6283.134293

4. Shin HI, Jeon WT, Yang EB. Relationship between learning strategies and academic achievement in medical college and graduate medical school students. Korean J Med Educ. 2010;22(3):197-204. doi:10.3946/kjme.2010.22.3.197

5. Ward PJ. First year medical students' approaches to study and their outcomes in a gross anatomy course. Clin Anat. 2011;24(1):120-127. doi:10.1002/ca.21071

6. Ahmady S, Khajeali N, Sharifi F, Mirmoghtadaei ZS. Factors related to academic failure in preclinical medical education: A systematic review. J Adv Med Educ Prof. 2019;7(2):74-85. doi:10.30476/JAMP.2019.44711

7. Kiran F, Javaid A. Students' perceptions of factors for academic failure in pre-clinical years of a medical school. J Pak Med Assoc. 2020;70(5):803-808. doi:10.5455/JPMA.19548

8. Özcan KV, Bütün İ, Şahin Ş. Tıp fakültesi öğrencilerinin ders çalışma stratejileri ve öğrenme stillerinin akademik başarılarına etkisi. JOMEDIN. 2015;1(1):12-23.

9. Ogenler O, Selvi H. Variables affecting medical faculty students' achievement: A Mersin University sample. Iran Red Crescent Med J. 2014;16(3):e14648. doi:10.5812/ircmj.14648

10. Biggs J, Kember D, Leung DY. The revised two-factor study process questionnaire: R-SPQ-2F. Br J Educ Technol. 2001;71(Pt 1):133-149.

11. Yılmaz, MB, Orhan F. The Validity and reliability study of the Turkish version of the study process questionnaire. Education and Science. 2011;36:69-83.

12. Sandover S, Jonas-Dwyer D, Marr T. Graduate entry and undergraduate medical students' study approaches, stress levels and ways of coping: A five year longitudinal study. BMC Med Educ. 2015;15:5. doi:10.1186/s12909-015-0284-7

13. Paudel KR, Nepal HP, Shrestha B, Panta R, Toth S. Distribution and academic significance of learning approaches among pre-clinical medical students at Trinity School of Medicine, St Vincent and the Grenadines. J Educ Eval Health Prof. 2018;15:9. doi:10.3352/jeehp.2018.15.9

14. Mansouri P, Soltani F, Rahemi S, Nasab MM, Ayatollahi AR, Nekooeian AA. Nursing and midwifery students' approaches to study and learning. J Adv Nurs. 2006;54(3):351-358. doi:10.1111/j.1365-2648.2006.03814.x

15. Mattick K, Dennis I, Bligh J. Approaches to learning and studying in medical students: Vlidation of a revised inventory and its relation to student characteristics and performance. Med Educ. 2004;38(5):535-543. doi:10.1111/j.1365-2929.2004.01836.x

16. Feeley AM, Biggerstaff DL. Exam Success at undergraduate and graduate-entry medical schools: is learning style or learning approach more important? A critical review exploring links between academic success, learning styles, and learning approaches among school-leaver entry ("Traditional") and graduate-entry ("Nontraditional") medical students. Teach Learn Med. 2015;27(3):237-244. doi:10.1080/10401334.2015.1046734

17. Shaik SA, Almarzuqi A, Almogheer R, Alharbi O, Jalal A, Alorainy M. Assessing Saudi medical students learning approach using the revised two-factor study process questionnaire. Int J Med Educ. 2017;8:292-296. doi:10.5116/ijme.5974.7a06

18. Reid WA, Duvall E, Evans P. Can we influence medical students' approaches to learning? Med Teach. 2005;27(5):401-407. doi:10.1080/01421590500136410

19. Salih S, Fageehi M, Hakami S, et al. Academic difficulties among medical students at Jazan University: A case-control study. Adv Med Educ Pract. 2021;12:723-729. doi:10.2147/AMEP.S307554

20. Gedefaw A, Tilahun B, Asefa A. Predictors of self-reported academic performance among undergraduate medical students of Hawassa University, Ethiopia. Adv Med Educ Pract. 2015;6:305-315. doi:10.2147/AMEP.S78604

21. Alfayez SF Strand DA, Carline JD. Academic, social and cultural factors influencing medical school grade performance. Med Educ. 1990;24(3):230-238. doi:10.1111/j.1365-2923.1990.tb00006.x

22. Zilundu PLM, Chibhabha F, Chengetanai S, Fu R, Zhou LH. Zimbabwean pre Clinical Medical Students Use of Deep and Strategic Study Approaches to Learn Anatomy at Two New Medical Schools. Anat Sci Educ. 2022;15(1):198-209. doi:10.1002/ase.2064

23. Lee J, Kim RJY, Choi H. Most surface learning in the third year: Dental student learning approaches and implications for curriculum and assessment. J Dent Educ. 2020;84(4):464-472. doi:10.1002/jdd.12043

24. Wickramasinghe DP, Samarasekera DN. Factors influencing the approaches to studying of preclinical and clinical students and postgraduate trainees. BMC Med Educ. 2011;11:22. doi:10.1186/1472-6920-11-22

25. Yang R. How to arouse students' desire to learn biochemistry. Biochem Mol Biol Educ. 2020;48(6):572-578. doi:10.1002/bmb.21357

26. Pulito AR, Donnelly MB, Plymale M. Factors in faculty evaluation of medical students' performance. Med Educ. 2007;41(7):667-75. doi:10.1111/j.1365-2923.2007.02787.x

27. Pulito AR, Donnelly MB, Plymale M, Mentzer RM Jr. What do faculty observe of medical students' clinical performance? Teach Learn Med. 2006;18(2):99-104. doi:10.1207/s15328015tlm1802_2

28. Donnon T, Violato C. Medical students' clinical reasoning skills as a function of basic science achievement and clinical competency measures: a structural equation model. Acad Med. 2006;81(10 Suppl):120-123. doi:10.1097/01.ACM.0000236543.88782.b6