

Empowering the Healers: Strengthening Self-Efficacy and Learning Environment in Boosting Academic Resilience

Saurabh Ram Bihari Lal Shrivastava^{1*}, Kevin Jonathan Pradipta²

¹MD, FAIMER, PGDHHM, DHRM, FCS, ACME, M.Phil. (HPE), MAMS, Deputy Director (Research and Development), Off Campus, Datta Meghe Institute of Higher Education and Research, Department of Community Medicine, Datta Meghe Medical College, Datta Meghe Institute of Higher Education and Research, Wanadongri, Nagpur, Maharashtra, India

²MD, Department of Anatomy, Universitas Kristen Maranatha, Bandung, Indonesia

Received: 2023 October 01

Revised: 2023 December 05

Accepted: 2024 January 07

Published online: 2024 January 09

***Corresponding author:**

Department of Community Medicine, Datta Meghe Medical College, Off-campus centre of Datta Meghe Institute of Higher Education and Research, Hingna Road, Wanadongri, Nagpur - 441110, Maharashtra, India.
Email: drshrishri2008@gmail.com

Citation:

Shrivastava SR, Pradipta KJ. Empowering the Healers: Strengthening Self-Efficacy and Learning Environment in Boosting Academic Resilience. Strides Dev Med Educ. 2024 January; 21(1): 48-52.
doi:10.22062/sdme.2024.199010.1282

Abstract

The journey of medical students can prove to be extremely challenging and tough owing to academic pressures, parental expectations, peer pressure, and students' inability to adapt to the environment in a medical school. Academic resilience among medical students refers to their ability to persevere, adjust, and sustain encouraging learning outcomes despite the challenges, obstacles, and varied stressors they encounter during their period of undergraduate training. Self-efficacy can be regarded as one of the key factors in strengthening academic resilience, and accordingly, we must take specific measures to develop and improve the same among them. The learning environment in a medical school significantly impacts and determines the academic resilience levels of medical students. In conclusion, acknowledging the challenges and problems that medical students have to experience during their undergraduate training period, it is quite essential that specific measures be taken to augment the academic resilience among medical students. The need of the hour is to adopt a comprehensive approach that addresses self-efficacy and the learning environment simultaneously and helps them promote their overall well-being and academic success.

Keywords: Academic Resilience; Self-Efficacy; Learning Environment; Medical Students; Medical Education

Background

The journey of medical students can prove to be extremely challenging and tough owing to academic pressures, parental expectations, peer pressure, and students' inability to adapt to the environment in a medical school (1). Academic resilience among medical students refers to their ability to persevere, adjust, and sustain encouraging learning outcomes despite the challenges, obstacles, and varied stressors they encounter during their undergraduate training period (1, 2). In other words, it means acquiring desired skills, developing specific attitudes, and adopting relevant strategies to overcome potential obstacles, and thereby learn the art of thriving academically (2,3).

Significance and Need for Academic Resilience: In the context of medical students, academic resilience is of paramount importance, as each student must find their

own way to stay on track to meet the targets of subject-specific competencies within the given time frame (1, 2). In general, a medical student is subjected to a challenging curriculum with high academic demands (i.e., vast syllabus, complex concepts, multiple competencies that need to be acquired in different learning domains, non-cognitive attributes, rigorous assessments, patient care, etc.), and this justifies the need for developing academic resilience that will help them cope with the demanding workload and sustain their academic performance (3, 4). Moreover, as the duration of training is quite long-lasting for many years, students must have academic resilience, which will keep them motivated to learn and grow throughout (5). Academic resilience plays a defining role in managing high levels of stress, maintaining well-being, effectively handling

pressure, and performing better in high-stakes examinations (4).

Academic resilience also motivates students to engage in the process of continuous lifelong learning, as the branch of medicine continues to change every day (2). In other words, it plays an instrumental role in shaping the professional development of medical students, including the self-reflection ability (6). At the same time, academic resilience helps students develop critical thinking and problem-solving skills while dealing with real-life situations in hospital settings and thus make more sound clinical decisions, and provide high-quality care to the patients (7). It also empowers students to deal effectively with emotional challenges (viz. ethical dilemmas, patient sufferings, and handling difficult conversations in special circumstances), without letting their studies be affected. Further, we can say that all these applications of academic resilience enable students to prioritize and manage their time effectively, which in turn enables them to maintain a balance between personal and professional lives (6, 7). All these factors cumulatively highlight the importance of academic resilience among medical students in maintaining their personal well-being, academic success, and future professional practice (6, 7).

Self-Efficacy and Academic Resilience: In simple terms, self-efficacy refers to the self-belief that an individual has in their ability to meet the assigned tasks by overcoming different challenges (8). Self-efficacy can be regarded as one of the key factors in strengthening academic resilience, as students with high self-efficacy consider challenges as opportunities for growth rather than impediments (8, 9). Furthermore, medical students with high self-efficacy tend to have high motivation to engage in academic activities, possess the ability to bounce back from failures, and have more belief to succeed regardless of prior negative outcomes (8, 10). Moreover, students tend to demonstrate more determination and participate in effective problem-solving strategies when they are subjected to academic difficulties (10, 11). In addition, students with high self-efficacy will have better control over their learning outcomes, as they will be proactive and seek guidance from teachers and their peers whenever they face obstacles (11).

In continuation, self-efficacy also has an impact on the students' emotional well-being and confidence level and enables them to handle stress and academic pressure with a positive mindset (12). Also, these students know

the art of self-regulation and thus are more equipped to set realistic goals, plan effectively, monitor their progress, and adapt learning strategies to meet the set goals, which in turn augments their academic resilience (13). Further, self-efficacy nurtures a growth mindset, wherein the students believe that if they make an effort and practice more, they can improve their overall intelligence (11, 13). In addition, students with better self-efficacy tend to accept and attribute their success and failure to their individual actions, instead of blaming others (2-4). In short, students with high self-efficacy generally adopt a positive outlook on things happening around them and take proactive measures to thrive and excel on the academic front (2, 8, 13).

Strategies to Augment Self-Efficacy: The above discussion clearly justifies the role of self-efficacy in improving academic resilience among medical students, and accordingly, we must take specific measures to develop and improve the same among them (1, 2). This has to begin with providing an ample number of opportunities where students can experience success in their academic activities, and these activities can be gradually made more difficult (7, 8, 14). The next strategy is to provide the students with specific and constructive feedback about the things at which students are good and the domains that need improvement (1). The feedback should be given to encourage self-reflection and motivate students to take the onus of their learning by setting realistic learning goals (2). Another strategy will be to expose students to good role models, who can inspire students to put in more effort and demonstrate determination to succeed in their set goals (2).

The institution can strengthen its mentorship program, wherein teachers can guide and support students in their individual areas of weakness (15). At the same time, mentors can encourage students to set realistic targets that can be accomplished by them and that will make them more confident and believe in their abilities (12, 15). Further, mentors can also discuss with students about their past accomplishments and make them believe that if things can happen in the past, the same things can be achieved in the present and the future (15). Moreover, students can be encouraged to prepare a study routine that suits their learning styles and gives them an opportunity to maintain a balance between academics and personal life (16). At this stage, we must remember that it is extremely crucial that we celebrate

the small milestones and motivate students to enjoy the learning process, helping them improve their self-efficacy, which in turn will augment their academic resilience.

In addition, students can be sensitized on effective study techniques, time management, and organization skills (viz. breaking down complex tasks into smaller, manageable steps); all these initiatives will help students handle the academic workload effectively (17). It is always a good move to establish a supportive learning environment, wherein students can come forward to share their views without having the fear of being judged (18). In this regard, teachers can take measures to facilitate peer learning and collaboration between students to help them learn from each other and also improve their confidence levels (12, 19). By ensuring the implementation of these measures, we can cultivate self-efficacy and augment the academic resilience of students, which will enable them to traverse through the challenges during their undergraduate period (16-18).

Learning Environment and Academic Resilience: The learning environment in a medical school significantly impacts and determines the academic resilience levels of medical students (20). The presence of an inclusive learning environment gives a feeling of belonging and once students know that they are supported and their contributions are acknowledged, they show more drive and energy to deal with potential setbacks (20, 21). In fact, once a student knows that their learning environment is culturally inclusive, wherein their opinions are valued regardless of the geographical and socio-demographic attributes, there is a significantly higher level of academic resilience among them (20, 21). The presence of an engaging learning environment ensures that students actively participate in classroom learning activities and have better motivation to be productive (22).

Further, the organization of collaborative learning activities (such as group projects) promotes students' teamwork, critical thinking, problem-solving, and decision-making skills, enhancing academic resilience cumulatively (23). In continuation, opportunities for experiential learning expose students to real-world contexts and enable students to apply their knowledge (7, 18, 23). Additionally, the presence of a well-designed curriculum that provides an appropriate platform for students, where they can build upon their knowledge and skills gradually, is crucial in augmenting academic resilience (23). Moreover, the provision of a flexible learning environment aids students with different

learning styles and learning needs to actively participate in learning activities. In addition, the provision of a well-maintained physical learning space will also play its role in improving the overall academic resilience (18).

The presence of knowledgeable and skilled faculty members in the college also improves the learning environment, which in turn promotes confidence and resilience among students. These faculty members apart from teaching, play a defining role in mentoring, guiding, coaching, and providing constructive feedback to the students about their learning progress (15). Further, encouragement of reflection and self-assessment within the learning environment promotes the development of metacognition skills and self-regulation, which are crucial in the development of academic resilience (2). Moreover, once students have easy access to learning resources (viz. textbooks, articles, research materials, technology, etc.), they remain abreast with relevant and recent information, which is quite essential to overcome academic challenges (24, 25). The various aspects of the learning environment that can influence academic resilience have been demonstrated in Figure 1.

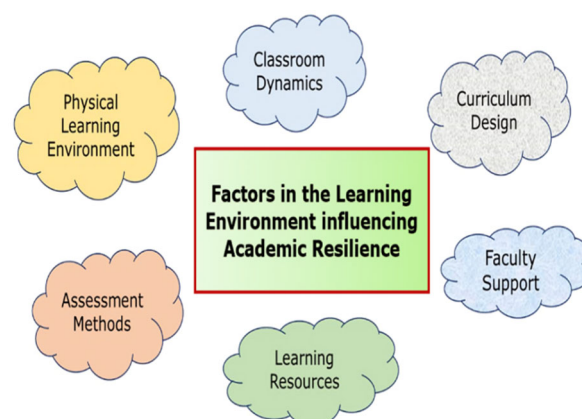


Figure 1: Factors in the learning environment influencing academic resilience

Strategies to Create an Optimal Learning Environment in Order to Promote Academic Resilience:

After considering the relationship between the learning environment and the development of academic resilience, we must necessarily take measures to improve the same (26, 27). In fact, several strategies can be tried to strengthen the learning environment, starting from establishing a culture of respect, empathy, and support in the institution, by devising policies that encourage both inclusivity and diversity among students as well as teachers (20, 21). The next approach is to organize

multiple faculty development programs to strengthen and refine their mentoring and feedback delivery skills (15). From the student's perspective, we have to initiate different supportive services (viz. mentorship, career guidance, counseling, coaching, etc.) that will play a defining role in improving their well-being (28, 29).

The medical curriculum should have a mix of theory and practical learning experiences, which must be delivered with the help of active learning strategies (viz. simulation, problem-based learning, group projects, etc.) (18, 22, 24). Students should be given opportunities to get engaged in research projects, experiential learning, and community-based learning, as all of them will help the students acquire a wide range of competencies (7, 30). In addition, they should be given access to a wide range of recommended learning resources and technology to help them feel supported (24, 25, 31). We can also initiate a buddy system, wherein seniors can guide junior students in academic matters and share their experiences (19). In addition, we must develop a system to recognize and celebrate the achievements of students, which will motivate them to continue the good work and feel confident as well. Teachers should be encouraged to cultivate resilience among students, and a feedback mechanism should be established in the institution, wherein both teachers and students are given constructive feedback on a regular basis (1, 15).

Conclusion

In conclusion, acknowledging the challenges and problems that medical students have to experience during their undergraduate training period, it is quite essential that specific measures be taken to augment the academic resilience among medical students. The need of the hour is to adopt a comprehensive approach that addresses self-efficacy and the learning environment simultaneously, helping them promote their overall well-being and academic success.

Acknowledgements: This research work was done as a part of the Master in Medical and Health Professions Education Course offered by the Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia. Special mention for Mr. Muhamad Farid, Academic Administrator, and Mrs. Annisa Nurul Huda, Marketing and Public Relation Affairs for supporting us throughout via their constant and untiring efforts.

Conflict of interests: There is no conflict of interest.

Ethical approval: Not required as it does not involve interaction with human participants.

Funding/Support: None.

References

- García-Crespo FJ, Fernández-Alonso R, Muñoz J. Academic resilience in European countries: The role of teachers, families, and student profiles. *PLoS One*. 2021 Jul 2;16(7):e0253409. doi: [10.1371/journal.pone.0253409](https://doi.org/10.1371/journal.pone.0253409). [PMID: [34214094](https://pubmed.ncbi.nlm.nih.gov/34214094/)] [PMCID: [PMC8253434](https://pubmed.ncbi.nlm.nih.gov/PMC8253434/)]
- Jowkar B, Kojuri J, Kohoulat N, Hayat AA. Academic resilience in education: the role of achievement goal orientations. *J Adv Med Educ Prof*. 2014 Jan;2(1):33-8. [PMID: [25512916](https://pubmed.ncbi.nlm.nih.gov/25512916/)] [PMCID: [PMC4235534](https://pubmed.ncbi.nlm.nih.gov/PMC4235534/)]
- Janssen TWP, van Atteveldt N. Coping styles mediate the relation between mindset and academic resilience in adolescents during the COVID-19 pandemic: a randomized controlled trial. *Sci Rep*. 2023 Apr 13;13(1):6060. doi: [10.1038/s41598-023-33392-9](https://doi.org/10.1038/s41598-023-33392-9). [PMID: [37055499](https://pubmed.ncbi.nlm.nih.gov/37055499/)] [PMCID: [PMC10099024](https://pubmed.ncbi.nlm.nih.gov/PMC10099024/)]
- Tran TX, Vo TTT, Ho C. From academic resilience to academic burnout among international university students during the post-COVID-19 new normal: An empirical study in Taiwan. *Behav Sci (Basel)*. 2023 Feb 27;13(3):206. doi: [10.3390/bs13030206](https://doi.org/10.3390/bs13030206). [PMID: [36975232](https://pubmed.ncbi.nlm.nih.gov/36975232/)] [PMCID: [PMC10044710](https://pubmed.ncbi.nlm.nih.gov/PMC10044710/)]
- Shahidi Delshad E, Nobahar M, Raiesdana N, Yarahmadi S, Saberian M. Academic resilience, moral perfectionism, and self-compassion among undergraduate nursing students: A cross-sectional, multi-center study. *J Prof Nurs*. 2023;46:39-44. doi: [10.1016/j.profnurs.2023.02.006](https://doi.org/10.1016/j.profnurs.2023.02.006). [PMID: [37188420](https://pubmed.ncbi.nlm.nih.gov/37188420/)]
- Selameab T, Mason MR. Addressing workforce disparities by improving the academic resilience and professionalism of health science students through structured and targeted supports. *Front Public Health*. 2021 Sep 21;9:634548. doi: [10.3389/fpubh.2021.634548](https://doi.org/10.3389/fpubh.2021.634548). [PMID: [34621714](https://pubmed.ncbi.nlm.nih.gov/34621714/)] [PMCID: [PMC8490653](https://pubmed.ncbi.nlm.nih.gov/PMC8490653/)]
- Hwang EH, Kim KH. Relationship between optimism, emotional intelligence, and academic resilience of nursing students: the mediating effect of self-directed learning competency. *Front Public Health*. 2023 May 18;11:1182689. doi: [10.3389/fpubh.2023.1182689](https://doi.org/10.3389/fpubh.2023.1182689). [PMID: [37275498](https://pubmed.ncbi.nlm.nih.gov/37275498/)] [PMCID: [PMC10234118](https://pubmed.ncbi.nlm.nih.gov/PMC10234118/)]
- Klassen RM, Klassen JRL. Self-efficacy beliefs of medical students: a critical review. *Perspect Med Educ*. 2018 Apr;7(2):76-82. doi: [10.1007/s40037-018-0411-3](https://doi.org/10.1007/s40037-018-0411-3). [PMID: [29484552](https://pubmed.ncbi.nlm.nih.gov/29484552/)] [PMCID: [PMC5889382](https://pubmed.ncbi.nlm.nih.gov/PMC5889382/)]
- Hayat AA, Choupani H, Dehsorkhi HF. The mediating role of students' academic resilience in the relationship between self-efficacy and test anxiety. *J Educ Health Promot*. 2021 Aug 31;10:297. doi: [10.4103/jehp.jehp_35_21](https://doi.org/10.4103/jehp.jehp_35_21). [PMID: [34667797](https://pubmed.ncbi.nlm.nih.gov/34667797/)] [PMCID: [PMC8459863](https://pubmed.ncbi.nlm.nih.gov/PMC8459863/)]
- Lopes AR, Nihei OK. Burnout among nursing students: predictors and association with empathy and self-efficacy. *Rev Bras Enferm*. 2020 Feb 10;73(1):e20180280. doi: [10.1590/0034-7167-2018-0280](https://doi.org/10.1590/0034-7167-2018-0280). [PMID: [32049247](https://pubmed.ncbi.nlm.nih.gov/32049247/)]
- Wu H, Li S, Zheng J, Guo J. Medical students' motivation and academic performance: the mediating roles of self-efficacy and learning engagement. *Med Educ Online*. 2020 Dec;25(1):1742964.

- doi: [10.1080/10872981.2020.1742964](https://doi.org/10.1080/10872981.2020.1742964). [PMID: [32180537](https://pubmed.ncbi.nlm.nih.gov/32180537/)] [PMCID: [PMC7144307](https://pubmed.ncbi.nlm.nih.gov/PMC7144307/)]
12. Salles A. Self-efficacy as a measure of confidence. *JAMA Surg.* 2017 May 1;152(5):506-7. doi: [10.1001/jamasurg.2017.0035](https://doi.org/10.1001/jamasurg.2017.0035). [PMID: [28273296](https://pubmed.ncbi.nlm.nih.gov/28273296/)]
 13. Zheng B, Chang C, Lin CH, Zhang Y. Self-efficacy, academic motivation, and self-regulation: How do they predict academic achievement for medical students? *Med Sci Educ.* 2020 Nov 10;31(1):125-130. doi: [10.1007/s40670-020-01143-4](https://doi.org/10.1007/s40670-020-01143-4). [PMID: [34457872](https://pubmed.ncbi.nlm.nih.gov/34457872/)] [PMCID: [PMC8368447](https://pubmed.ncbi.nlm.nih.gov/PMC8368447/)]
 14. Yang S, Wang W. The role of academic resilience, motivational intensity and their relationship in EFL learners' academic achievement. *Front Psychol.* 2022 Jan 26;12:823537. doi: [10.3389/fpsyg.2021.823537](https://doi.org/10.3389/fpsyg.2021.823537). [PMID: [35153940](https://pubmed.ncbi.nlm.nih.gov/35153940/)] [PMCID: [PMC8826434](https://pubmed.ncbi.nlm.nih.gov/PMC8826434/)]
 15. Burgess A, van Diggele C, Mellis C. Mentorship in the health professions: a review. *Clin Teach.* 2018 Jun;15(3):197-202. doi: [10.1111/tct.12756](https://doi.org/10.1111/tct.12756). [PMID: [29318730](https://pubmed.ncbi.nlm.nih.gov/29318730/)]
 16. Vinales JJ. The learning environment and learning styles: a guide for mentors. *Br J Nurs.* 2015;24(8):454-7. doi: [10.12968/bjon.2015.24.8.454](https://doi.org/10.12968/bjon.2015.24.8.454). [PMID: [25904452](https://pubmed.ncbi.nlm.nih.gov/25904452/)]
 17. Martin AJ, Marsh HW. Academic buoyancy: Towards an understanding of students' everyday academic resilience. *J Sch Psychol.* 2008 Feb;46(1):53-83. doi: [10.1016/j.jsp.2007.01.002](https://doi.org/10.1016/j.jsp.2007.01.002). [PMID: [19083351](https://pubmed.ncbi.nlm.nih.gov/19083351/)]
 18. Mash B, Edwards J. Creating a learning environment in your practice or facility. *S Afr Fam Pract (2004).* 2020 Aug 12;62(1):e1-e5. doi: [10.4102/safp.v62i1.5166](https://doi.org/10.4102/safp.v62i1.5166). [PMID: [32787390](https://pubmed.ncbi.nlm.nih.gov/32787390/)] [PMCID: [PMC8377814](https://pubmed.ncbi.nlm.nih.gov/PMC8377814/)]
 19. Edwards M, Williams E, Akerman K. Promoting academic resilience through peer support in a new pre-registration nursing programme. *Br J Nurs.* 2022 Dec 15;31(22):1144-1148. doi: [10.12968/bjon.2022.31.22.1144](https://doi.org/10.12968/bjon.2022.31.22.1144). [PMID: [36519471](https://pubmed.ncbi.nlm.nih.gov/36519471/)]
 20. Jin S, Fang G, Cheung KC, Sit PS. Factors associated with academic resilience in disadvantaged students: An analysis based on the PISA 2015 B-S-J-G (China) sample. *Front Psychol.* 2022 Sep 29;13:846466. doi: [10.3389/fpsyg.2022.846466](https://doi.org/10.3389/fpsyg.2022.846466). [PMID: [36248566](https://pubmed.ncbi.nlm.nih.gov/36248566/)] [PMCID: [PMC9559738](https://pubmed.ncbi.nlm.nih.gov/PMC9559738/)]
 21. Fang G, Chan PWK, Kalogeropoulos P. Social support and academic achievement of Chinese low-income children: A mediation effect of academic resilience. *Int J Psychol Res (Medellin).* 2020 Jan-Jul;13(1):19-28. doi: [10.21500/20112084.4480](https://doi.org/10.21500/20112084.4480). [PMID: [32952960](https://pubmed.ncbi.nlm.nih.gov/32952960/)] [PMCID: [PMC7498124](https://pubmed.ncbi.nlm.nih.gov/PMC7498124/)]
 22. Izadpanah S. The impact of flipped teaching on EFL students' academic resilience, self-directed learning, and learners' autonomy. *Front Psychol.* 2022 Dec 5;13:981844. doi: [10.3389/fpsyg.2022.981844](https://doi.org/10.3389/fpsyg.2022.981844). [PMID: [36544452](https://pubmed.ncbi.nlm.nih.gov/36544452/)] [PMCID: [PMC9760732](https://pubmed.ncbi.nlm.nih.gov/PMC9760732/)]
 23. Shao Y, Kang S. The association between peer relationship and learning engagement among adolescents: The chain mediating roles of self-efficacy and academic resilience. *Front Psychol.* 2022 Aug 3;13:938756. doi: [10.3389/fpsyg.2022.938756](https://doi.org/10.3389/fpsyg.2022.938756). [PMID: [35992466](https://pubmed.ncbi.nlm.nih.gov/35992466/)] [PMCID: [PMC9384863](https://pubmed.ncbi.nlm.nih.gov/PMC9384863/)]
 24. Ryan E, Poole C. Impact of virtual learning environment on students' satisfaction, engagement, recall, and retention. *J Med Imaging Radiat Sci.* 2019 Sep;50(3):408-415. doi: [10.1016/j.jmir.2019.04.005](https://doi.org/10.1016/j.jmir.2019.04.005). [PMID: [31229502](https://pubmed.ncbi.nlm.nih.gov/31229502/)]
 25. Gifford KA, Choi E, Kieffer KA. Resources for clinical learning environment orientation. *Med Educ Online.* 2022 Dec;27(1):2013404. doi: [10.1080/10872981.2021.2013404](https://doi.org/10.1080/10872981.2021.2013404). [PMID: [34905448](https://pubmed.ncbi.nlm.nih.gov/34905448/)] [PMCID: [PMC8676697](https://pubmed.ncbi.nlm.nih.gov/PMC8676697/)]
 26. Caverzagie KJ, Goldenberg MG, Hall JM. Psychology and learning: The role of the clinical learning environment. *Med Teach.* 2019 Apr;41(4):375-379. doi: [10.1080/0142159X.2019.1567910](https://doi.org/10.1080/0142159X.2019.1567910). [PMID: [30761927](https://pubmed.ncbi.nlm.nih.gov/30761927/)]
 27. Cleland J, Cilliers F, van Schalkwyk S. The learning environment in remediation: a review. *Clin Teach.* 2018 Feb;15(1):13-18. doi: [10.1111/tct.12739](https://doi.org/10.1111/tct.12739). [PMID: [29266811](https://pubmed.ncbi.nlm.nih.gov/29266811/)]
 28. Hwang E, Shin S. Characteristics of nursing students with high levels of academic resilience: A cross-sectional study. *Nurse Educ Today.* 2018 Dec;71:54-59. doi: [10.1016/j.nedt.2018.09.011](https://doi.org/10.1016/j.nedt.2018.09.011). [PMID: [30245256](https://pubmed.ncbi.nlm.nih.gov/30245256/)]
 29. Cassidy S, Mawdsley A, Langran C, Hughes L, Willis SC. A large-scale multicenter study of academic resilience and well-being in Pharmacy education. *Am J Pharm Educ.* 2023 Mar;87(2):ajpe8998. doi: [10.5688/ajpe8998](https://doi.org/10.5688/ajpe8998). [PMID: [35338069](https://pubmed.ncbi.nlm.nih.gov/35338069/)] [PMCID: [PMC10159510](https://pubmed.ncbi.nlm.nih.gov/PMC10159510/)]
 30. Zia Z, Salehi A, Amini M, Vardanjani HM, Tavabe MS. Relationship between research self-efficacy and evidence-based practice in the medical students. *J Educ Health Promot.* 2022 Jul 29;11:221. doi: [10.4103/jehp.jehp_1233_21](https://doi.org/10.4103/jehp.jehp_1233_21). [PMID: [36177414](https://pubmed.ncbi.nlm.nih.gov/36177414/)] [PMCID: [PMC9514302](https://pubmed.ncbi.nlm.nih.gov/PMC9514302/)]
 31. Deng L, Daverpanah N, Izadpanah S. The effect of educational computer games on the academic resilience, academic self-regulation, and academic achievement of EFL students. *Front Psychol.* 2023 Jan 23;13:947577. doi: [10.3389/fpsyg.2022.947577](https://doi.org/10.3389/fpsyg.2022.947577). [PMID: [36755985](https://pubmed.ncbi.nlm.nih.gov/36755985/)] [PMCID: [PMC9901295](https://pubmed.ncbi.nlm.nih.gov/PMC9901295/)]