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Original Article

Predicting research self-efficacy through spiritual intelligence and academic stress in medical students

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Abstract

Background: Research competence and self-efficacy are crucial skills for medical students, as they significantly enhance their involvement in research activities. The current study aimed to investigate the relationship between spiritual intelligence and academic stress with research self-efficacy in medical students in Ilam.

Methods: The statistical population of this descriptive-correlational study included all medical students of higher education in Ilam (Iran) in 2022. The convenience sampling method was employed to select 301 students as the research sample, and the Pearson correlation coefficient was used with stepwise regression for data analysis. The research instruments included the Research Self-Efficacy Scale, Spiritual Intelligence Questionnaire, and Academic Stress Inventory (ASI).

Results: The results indicated a significant positive correlation between spiritual intelligence and research self-efficacy, whereas there was a negative significant relationship between academic stress and research self-efficacy ($P<0.001$). Moreover, spiritual intelligence and academic stress explained 18% of the variance in research self-efficacy of students; however, spiritual intelligence contributed more to research self-efficacy.

Conclusion: Given the research results and the pivotal role of students in the future development of every country, it is possible to perceive and believe in their competence in light of a powerful factor such as spirituality.

Introduction

Throughout history, social transformations have stemmed from universities, the main principles of which are generated by students.[1] Research is considered among the pillars of development in societies. In other words, no scientific and logical campaigns are possible without research support.[2] Hence, conducting research is a major task of universities and higher education centers for national development and the progression of knowledge and technology. In addition to passing their courses, university students are required to conduct research during their education.[3]

In fact, conducting research and research education are among the fundamental processes and skills required by students, especially in higher education. They play key roles in improving educational processes and expanding scientific services in society.[4] Research attitudes and beliefs, especially a researcher's own beliefs, pertain to research in these areas. In fact, research beliefs have a central role in avoiding or conducting research. They can act as important factors in performing or canceling research.[5] Accordingly, research self-efficacy pertains toa researcher's beliefs in conducting research and refers to people's judgment about their capabilities of organizing and implementing research activities.[6] University students who doubt their competence in performing a research task and do not believe that practice and diligence will lead to success are often worried and feel ashamed, especially when they are evaluated.[7] Instead, the students who believe in their competence can conduct research and will be more successful in research tasks [8]. Generally, research self-efficacy indicates to what extent the cognitive-social concept of self-efficacy matches scientific research at universities, something which is among the best predictors of success in research activities.[9]

If we analyze the factors affecting research self-efficacy among university students, we will be able to identify the detrimental effects of their research incompetence. University officials can then arrange certain plans to help students tackle the negative outcomes. If professors and lecturers are aware of the research self-efficacy of students, then they can play a key role in nurturing

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researcher students.[10] Hence, it is essential to administer different tests, evaluate research competence, and propose evaluation models. Accordingly, different factors affect the research self-efficacy of students in higher education. Apparently, spiritual intelligence is one effective factor. Intelligence has various grades, the highest of which is considered spiritual intelligence, which underlies the beliefs, norms, notions, and values by which humans act.[11] In fact, spiritual intelligence is defined as a set of adaptive capacities in the brain based on the nonphysical and transcendental aspects of reality.[12] In other words, spiritual intelligence encompasses a kind of adjustment and problem-solving behavior, which would include the highest levels of development in different cognitive, behavioral, emotional, and interpersonal areas. It guides people in coordination with surrounding phenomena to achieve intrinsic and extrinsic integrity.[13,14]

Spiritual intelligence gives people a general insight into life and all of its experiences and events, enabling them to compartmentalize and reinterpret their experiences by deepening their cognition and knowledge.[15] In fact, spiritual intelligence is an intriguing new topic about which there are insufficient theories, research findings, and empirical findings. Failure to pay sufficient attention to spiritual intelligence can challenge or reduce consciousness or a sense of bond with a superior power or a holy being.[16,17] Different studies have shown a significant relationship between spiritual intelligence and research self-efficacy.[18-20]

Unlike spiritual intelligence, academic stress can adversely affect research self-efficacy, especially in medical students who start working in clinical wards of hospitals to closely experience the presence of patients in addition to passing theoretical courses.[21] Hence, their fatigue, lack of sleep, tension, tests, and academic presentations can reduce their academic performance and increase their academic stress. As a result, their research self-efficacy will decrease.[22] According to Agha Yoosefi et al,[23] there was a negative significant relationship between academic stress and research self-efficacy.

High levels of stress can have negative effects on health, quality of life, academic progress, and the level of students' readiness to accept their professional roles; Therefore, paying attention to the category of stress and adopting appropriate strategies to get rid of it is of particular importance. On the other hand, understanding the relationship between stress and the spiritual intelligence of medical students can be important from both a practical and a theoretical point of view. The rationale of this study lies in the positive effects of research self-efficacy for higher education students in addition to the lack of any studies analyzing the correlations of research variables. Moreover, medical students of higher education have different spiritual intelligence conditions; hence, the results of this study can be utilized to deal with research challenges, potential opportunities, severe fatigue, and extreme stress of medical students. According to the mentioned materials, the current study aimed to investigate the relationship between spiritual intelligence and academic stress with research self-efficacy in medical students.

Materials and Methods

The statistical population of this descriptive-correlational study included all medical students of higher education in Ilam (Ilam province, Iran) within the 2022–23 academic year. Finally, a total of 301 participants fully completed the questionnaires and were included in the research process. The inclusion criteria were as follows: giving consent for participation in the study, being physically healthy and mentally healthy, and having passed at least one semester. The exclusion criteria were as follows: reluctance to continue participation in the study, experiencing no stressful events (e.g., death of a loved one within the past six months, experiencing an incurable disease, or any other events having adverse effects on the life routine and a participant's behavior or performance), failure to complete questionnaires, having a history of taking sedatives and nervine. After making the arrangements and explaining the research rationale to students, the researchers distributed the questionnaires. For ethical considerations, the students were also assured that the research data would be kept confidential and analyzed anonymously.

Measurement tools

Research Self-Efficacy Scale: Designed by Salehi et al,[24] the Research Self-Efficacy Scale includes 55 items that measure seven factors: statistical and analytical self-efficacy, theorization self-efficacy, self-efficacy in methodology and implementation, qualitative research self-efficacy, reporting self-efficacy, and self-efficacy in competence, skills, and morality. The items are scored on a five-point Likert scale (ranging from 1 for "very low" to 5 for "very high"). The minimum and maximum scores are 55 and 275, respectively. The reliability of the Research Self-Efficacy Questionnaire was reported 0.76 using Cronbach's alpha.[24]

Spiritual Intelligence Questionnaire: Designed by Abdollahzadeh et al[25] considering cultural characteristics of Iranian society, the Spiritual Intelligence Questionnaire consists of 29 items and two micro variables called "perceiving and connecting to the source of creation" (12 items) and "spiritual life" (17 items). This questionnaire is scored on a seven-point Likert scale (i.e., 1 for "completely disagree", 2 for "disagree very much", 3 for "slightly disagree", 4 for "neutral", 5 for "slightly agree", 6 for "agree very much", and 7 for "completely agree"). The minimum and maximum scores are 29 and 203, respectively. The total score ranges of 1–100, 100–160, and 160–203 refer to low, average, and high levels of spiritual intelligence, respectively. Abdollahzadeh et al[25] reported a Cronbach's

alpha of 0.87 for the Spiritual Intelligence Questionnaire.

Academic Stress Inventory (ASI): Designed by Sun et al,[26] the ASI includes 16 items scored on a five-point Likert scale (ranging from 1 for "completely disagree" to 5 for "completely agree"). The scores range from 16 to 80 in this inventory. Higher scores indicate higher levels of academic stress. Aramfar and Zeynali[27] reported a Cronbach's alpha of 0.73 for the Persian version of the ASI.

Data analysis

Descriptive statistics (i.e., mean and standard deviation) and inferential statistics (i.e., Pearson correlation coefficient and stepwise regression) were used for data analysis in SPSS 27 to predict research self-efficacy through spiritual intelligence and academic stress.

Results

According to the demographic findings, the mean (±standard deviation) of age was 26.16 (±2.51) years among students, 250 of whom were single, whereas 51 students were married. Moreover, there were 164 female and 137 male students. Table 1 indicates the descriptive statistics including mean, standard deviation, skewness, and kurtosis, whereas Table 2 reports the correlation coefficients of research variables.

The results indicated a positive significant correlation between spiritual intelligence and research self-efficacy (r = 0.43), whereas there was a negative significant correlation between academic stress and research self-efficacy (r = -0.22). Moreover, the stepwise regression analysis was employed to determine which variable had a more effective role in predicting research self-efficacy. Therefore, spiritual intelligence and academic stress were used as predicting variables, whereas research self-efficacy was considered the criterion variable in the equation.

According to Table 3, spiritual intelligence played a crucial role in predicting research self-efficacy in the first model. The coefficient of correlation between this variable and research self-efficacy was 0.42, and it managed to predict 17% of changes in research self-efficacy. After spiritual intelligence, academic stress was entered into the equation in the second model. The coefficient of correlation between these two variables and research self-efficacy was 0.43, and they managed to predict nearly 19% of changes in research self-efficacy. The use of academic stress as a variable led to a 2% increase in the prediction power. Given the order by which variables were entered into the equation, spiritual intelligence with a standard beta of 0.43 played a pivotal role in predicting research self-efficacy changes. Subsequently, academic stress and spiritual intelligence played a significant role in predicting research self-efficacy, with a standard beta of 0.40.

Table 1. Mean, standard deviation (SD), skewness, and kurtosis of the research variables

Variables	Mean	SD	Skewness	Kurtosis
Research self-efficacy	103.83	23.01	0.64	0.94
Spiritual intelligence	115.20	24.23	-0.10	-0.56
Academic stress	46.31	6.95	0.08	-0.53

Discussion

The current study aimed to investigate the relationship between spiritual intelligence and academic stress with research self-efficacy in medical students. The first research finding indicated that spiritual intelligence had a positive significant relationship with research self-efficacy among medical students of higher education. This finding is consistent with the results of previous studies.[19] To explain this finding, it can be stated that spiritual intelligence helps an individual not be scared of life events and hardships with the help of patience, endurance, and profound insights to withstand difficulties through high self-efficacy and find logical solutions. Critical existential thinking frees people from the passive acceptance of realities and events; as a result, they gain self-efficacy by enhancing their knowledge about the causes of events and realities.[19] In addition, regarding the research findings about personal conceptualization and knowledge expansion, it should be stated that performing rituals such as invocation and meditation as well as enhancing knowledge about the nonmaterial aspects of life can affect how people experience life events. In fact, a person's ability to find meaning and purpose in life can help him/her adapt to stressful conditions. For instance, different people infer various meanings and concepts from an experience of failure, something that plays a major role in weakening or strengthening their self-efficacy.[28]

Another research finding indicated that academic stress had a negative significant relationship with research self-efficacy among medical students of higher education. This finding is consistent with the results of previous studies.[29,30] In conclusion, the governing convention of higher education has tried to nurture high-quality human resources to solve social problems for at least the past fifty years in developed countries. In fact, universities have sought to educate critical thinkers who could convey their thoughts, solve problems, and finally play a key role in improving their lives and those of others.[29] Probably, the most prominent gap in research activities would be the identification of existing obstacles and bottlenecks from the perspective of the most axial elements, i.e., university students, for the first step in solving problems, would be to identify and know students. If so, appropriate executive

Table 2. Pearson correlation coefficients among the research variables

Variables	Research self-efficacy	
	r	*P*
Spiritual intelligence	0.43	0.001
Academic stress	-0.22	0.001

Table 3. Regression analysis predicting self-efficacy through spiritual intelligence and academic stress

Model	Predictor variable	F	R	R^2	B	SE	β	*t*	*P*
1	Spiritual intelligence	66.77	0.42	0.17	0.41	0.05	0.43	8.17	0.001
2	Spiritual intelligence and academic stress	33.88	0.43	0.19	0.38	0.05	0.40	7.05	0.001

solutions can then be found.

If we analyze the factors affecting the research self-efficacy of university students, we will be able to identify the negative outcomes that university students encounter as a result of failure to conduct research. Therefore, universities can arrange certain programs to help students resolve these negative outcomes. The awareness of professors and lecturers about the research self-efficacy of students can play a key role in nurturing researcher students. Hence, it is essential to design tests, evaluate results, and propose a model for assessment. Furthermore, medical students experience higher levels of academic stress due to tension from work and education, which can adversely affect their self-efficacy. In fact, research self-efficacy is defined as the feeling of assurance that students have about their capabilities and their perception of their research competence. It is among the effective factors in conducting research. Anxiety, stress, or uncertainty in conducting research and low levels of research self-efficacy are among the factors that can disrupt learning, education, and willingness to conduct research and motivate students further to participate scientifically in this area. These factors can weaken the performance of students.[8]

At all education grades, low research self-efficacy is a setback that has adverse effects on academic performance, wastes human resources, and increases costs. University students who lack self-efficacy usually experience certain conditions such as disinterest in materials, lack of participation in class activities, and incompetence in learning. Given the important roles of university students in the future development of every country, their capabilities can be perceived and believed in the light of a powerful element called spirituality. Hence, facilitating further identification of spiritual dimensions at young ages can improve self-belief.

This study confronted certain limitations. For instance, the research sample was selected from the higher education students at Ilam University of Medical Sciences. Furthermore, more complicated statistical methods (e.g., structural equations) were not used.

Conclusion

The research findings revealed significant correlations between spiritual intelligence, academic stress, and research self-efficacy among medical students in higher education. Therefore, students can have higher levels of research self-efficacy if they are further motivated for research. Hence, it is essential to make specific plans to solve problems in the self-efficacy of higher education students. Developing educational plans to improve spiritual intelligence can be among the useful and effective solutions to research self-efficacy improvement for university students. Planners are recommended to make certain arrangements in which students who have spiritual intelligence for various reasons are sufficiently supported by families, professors, and peers to prevent or prohibit self-efficacy, for spiritual intelligence is a major factor in the research self-efficacy of learners. In fact, planners should consider holding training workshops taught by experienced experts to teach research skills, improve research facilities (e.g., tools and laboratories), and increase the research budgets of universities.

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Authors' Contribution

Conceptualization: Parviz Asgari.
Data curation: Parastoo Hosseinabadi.
Investigation: Parastoo Hosseinabadi.
Methodology: Parviz Asgari.
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Software: Saeed Bakhtiarpour.
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Writing–original draft: Parviz Asgari.
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Competing Interests

The authors declare no conflict of interests.

Ethical Approval

The study was approved by the Ethical Committee of Islamic Azad University- Ahvaz Branch (Code: IR.IAU.AHVAZ.REC.1401.191).

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References

1. Amiresmaili M, Saberi H, Barkhordari F. Identifying the effective factors on the transition to the third-generation university: a qualitative study. J Educ Health Promot. 2019;8:235. doi: 10.4103/jehp.jehp_340_18.
2. Canti L, Chrzanowska A, Doglio MG, Martina L, Van Den Bossche T. Research culture: science from bench to society. Biol Open. 2021;10(8):bio058919. doi: 10.1242/bio.058919.
3. Yang X, Zhang M, Kong L, Wang Q, Hong JC. The effects of scientific self-efficacy and cognitive anxiety on science engagement with the "question-observation-doing-explanation" model during school disruption in COVID-19 pandemic. J Sci Educ Technol. 2021;30(3):380-93. doi: 10.1007/s10956-020-09877-x.
4. McKenney S, Reeves TC. Educational design research:

portraying, conducting, and enhancing productive scholarship. Med Educ. 2021;55(1):82-92. doi: 10.1111/medu.14280.
5. Erol A. How to conduct scientific research? Noro Psikiyatr Ars. 2017;54(2):97-8. doi: 10.5152/npa.2017.0120102.
6. Brancolini KR, Kennedy MR. The development and use of a research self-efficacy scale to assess the effectiveness of a research training program for academic librarians. Libr Inf Res. 2017;41(124):44-84. doi: 10.29173/lirg760.
7. Doménech-Betoret F, Abellán-Roselló L, Gómez-Artiga A. Self-efficacy, satisfaction, and academic achievement: the mediator role of students' expectancy-value beliefs. Front Psychol. 2017;8:1193. doi: 10.3389/fpsyg.2017.01193.
8. Garavand H, Pakmehr H. Presenting a causal model of the effect of motivational orientations and academic stressors on research self-efficacy: the mediating role of research spirit. Research in School and Virtual Learning. 2021;9(1):89-102. doi: 10.30473/etl.2021.59566.3534. [Persian].
9. Vahedi L, Taleschian Tabrizi N, Kolahdouzan K, Chavoshi M, Rad B, Soltani S, et al. Impact and amount of academic self-efficacy and stress on the mental and physical well-being of students competing in the 4th Olympiad of Iranian universities of medical sciences. Res Dev Med Educ. 2014;3(2):99-104. doi: 10.5681/rdme.2014.020.
10. Tiyuri A, Saberi B, Miri M, Shahrestanaki E, Bibi Bayat B, Salehiniya H. Research self-efficacy and its relationship with academic performance in postgraduate students of Tehran University of Medical Sciences in 2016. J Educ Health Promot. 2018;7:11. doi: 10.4103/jehp.jehp_43_17.
11. Jasour M, Maleki Avarsin S. The relationship between attributional style and spiritual intelligence and job performance of employees of Tabriz University of Medical Sciences. Res Dev Med Educ. 2016;5(2):55-61. doi: 10.15171/rdme.2016.012.
12. Samul J. Emotional and spiritual intelligence of future leaders: challenges for education. Educ Sci. 2020;10(7):178. doi: 10.3390/educsci10070178.
13. Mohammadipour M, Afzood A, Zolfaghari S, Salmabadi M. The role of spiritual intelligence and distress tolerance on coronavirus anxiety in students. Health Spiritual Med Ethics J. 2021;8(2):95-102. doi: 10.32598/hsmej.8.2.5.
14. Ma Q, Wang F. The role of students' spiritual intelligence in enhancing their academic engagement: a theoretical review. Front Psychol. 2022;13:857842. doi: 10.3389/fpsyg.2022.857842.
15. Hills K, Clapton J, Dorsett P. Spirituality, silence and solitude: a reflective interpretation regarding mystery and people with nonverbal autism. J Study Spiritual. 2019;9(2):138-51. doi: 10.1080/20440243.2019.1658266.
16. Severino-González P, Toro-Lagos V, Santinelli-Ramos MA, Romero-Argueta J, Sarmiento-Peralta G, Kinney IS, et al. Social responsibility and spiritual intelligence: university students' attitudes during COVID-19. Int J Environ Res Public Health. 2022;19(19):11911. doi: 10.3390/ijerph191911911.
17. Mosavinezhad M, Safara M, Kasir S, Khanbabaee M. Role of spiritual intelligence and personal beliefs in social anxiety among university. Health Spiritual Med Ethics J. 2019;6(3):11-7. doi: 10.29252/jhsme.6.3.11.
18. Pant N, Srivastava SK. The impact of spiritual intelligence, gender and educational background on mental health among college students. J Relig Health. 2019;58(1):87-108. doi: 10.1007/s10943-017-0529-3.
19. Rahmanian M, Hojat M, Zeini Jahromi M, Nabiolahi A. The relationship between spiritual intelligence with self-efficacy in adolescents suffering type 1 diabetes. J Educ Health Promot. 2018;7:100. doi: 10.4103/jehp.jehp_21_18.
20. Khosravi M, Nikmanesh Z. Relationship of spiritual intelligence with resilience and perceived stress. Iran J Psychiatry Behav Sci. 2014;8(4):52-6.
21. Bergmann C, Muth T, Loerbroks A. Medical students' perceptions of stress due to academic studies and its interrelationships with other domains of life: a qualitative study. Med Educ Online. 2019;24(1):1603526. doi: 10.1080/10872981.2019.1603526.
22. Kristensen SM, Larsen TMB, Urke HB, Danielsen AG. Academic stress, academic self-efficacy, and psychological distress: a moderated mediation of within-person effects. J Youth Adolesc. 2023;52(7):1512-29. doi: 10.1007/s10964-023-01770-1.
23. Agha Yoosefi A, Khodaie A, Shokri O. Academic stress, academic self-efficacy and academic achievement among undergraduate students title. J Educ Psychol Stud. 2014;10(18):41-66. doi: 10.22111/jeps.2014.1844. [Persian].
24. Salehi M, Kareshki H, Ahanchian MR, Karimi Mouneghi H. Validation of research self-efficacy scale for postgraduate students of Ferdowsi University and Mashhad University of Medical Sciences. Iran J Med Educ. 2012;12(6):396-409. [Persian].
25. Abdollahzadeh H, Bagherpoor M, Mehrabi S, Lotfi M. The 29-item Spiritual Intelligence Questionnaire. Spiritual Intelligence: Concepts, Measurements and its Applications. Tehran: Ravansanji Publications; 2009.
26. Sun J, Dunne MP, Hou XY, Xu AQ. Educational stress scale for adolescents: development, validity, and reliability with Chinese students. J Psychoeduc Assess. 2011;29(6):534-46. doi: 10.1177/0734282910394976.
27. Aramfar R, Zeynali A. The relationship between educational stress and educational help seeking and students' academic achievement. Journal of Instruction and Evaluation. 2015;8(31):37-48. [Persian].
28. Beiranvand S, Safapour F, Zarea S. Assess relationship between nurses' spiritual intelligence and self-efficacy. J Nurs Educ. 2019;8(5):19-24. [Persian].
29. Perdomo J, Hernandez B, Munoz Ruiz J, Griffin M, Rea CJ. Impacting caregiver self-efficacy and stress during the COVID-19 pandemic through a virtual toddler group visit pilot. Clin Pediatr (Phila). 2022;61(1):12-6. doi: 10.1177/00099228211048597.
30. Niazov Z, Hen M, Ferrari JR. Online and academic procrastination in students with learning disabilities: the impact of academic stress and self-efficacy. Psychol Rep. 2022;125(2):890-912. doi: 10.1177/0033294120988113.