



Introducing a New Framework on the Internationalization of Medical Education: A Lesson Learned From COVID-19 in Iran

Sadaf Jazayeri ^{1,*}, Hamid Akbari Javar ², Ali Namaki ¹ and Soleiman Ahmady ^{1,**}

¹Department of Medical Education, Virtual School of Medical Education and Management, Shahid Beheshti University of Medical Sciences, Tehran, Iran

²Department of Pharmaceutical Biomaterials, School of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran

*Corresponding author: Department of Medical Education, Virtual School of Medical Education and Management, Shahid Beheshti University of Medical Sciences, Tehran, Iran. Email: sadit5736@gmail.com

**Corresponding author: Department of Medical Education, Virtual School of Medical Education and Management, Shahid Beheshti University of Medical Sciences, Tehran, Iran. Email: soleiman.ahmady@yahoo.com/soleiman.ahmady@sbm.ac.ir

Received 2022 May 27; Revised 2022 November 28; Accepted 2023 March 06.

Abstract

Context: During the COVID-19 pandemic and challenges, medical education with insight toward training competent students with a global vision has highlighted the necessity of a robust approach toward sustainable development (SD) on internationalization. Inevitable transformations in medical education and its internationalization component due to the COVID-19 pandemic have not yet been investigated. Accordingly, the objective of this study was to assess the current situation and propose the operational framework of internationalization for medical education with a global vision toward SD.

Evidence Acquisition: A critical review was conducted on English papers extracted from Google Scholar, Scopus, PubMed, and Elsevier databases using the following search terms: Sustainable development, operational approach, educational environment, management strategies, internationalization, and COVID-19. Boolean operators were used to eliminate inappropriate hits with a focus on research goals. Ineligible studies were excluded by screening titles and abstracts. The knowledge management was applied to the related findings of the internationalization of medical education components.

Results: Evidence presents a new order of internationalization components of internal and external dimensions with an educational paradigm shift to virtual programs. Assessing these dimensions indicated the requirement of implementing SD. The suggested pathway should initiate from the internal institution dimensions (facilities and budget component with generating income), followed by the external institution dimensions (sociocultural element and nation-building).

Conclusions: The COVID-19 pandemic has forced educational institutions to shift to virtual education. The designed framework highlights educational activities toward virtual education and earning income, empowering faculties, and meeting social needs in medical education to achieve SD.

Keywords: Sustainable Development, Operational Approach, Educational Environment, Management Strategies, Internationalization, COVID-19

1. Context

For over 3 decades, due to globalization, the primary focus of educational institutions has been internationalization. It is a way for countries to respond to the impact of globalization by considering the respect and character of nations. Internationalization has indicated diverse concepts, depending on the educational conditions.

The Ministry of Health and Medical Education (MoHME) of Iran, from a governance position with a medical education mission, pays attention to the internationalization of medical universities through the "Internationalization Package" (1). This package, with an emphasis on educational content, has been formed based on Knight's proposed definition of the internationaliza-

tion of medical education (IoME): "Internationalization at the national, sector, and institutional levels is defined as the process of integrating an international, intercultural, or global dimension into the purpose, functions, or delivery of postsecondary education" (2).

On the other hand, UNESCO and the UN called institutions for sustainable development (SD) at the same time as the COVID-19 pandemic occurred and made multidimensional changes in the educational context.

By January 2020, the world was confronted with an unexpected pandemic, COVID-19. These changes have drawn attention to Wu et al.'s definition and expectation of IoME with the emphasis on the importance of attitude and transferrable skills to the combination of purposeful activities

to expand and improve the equity and quality of medical education and train physicians with global competencies and the ability to provide service (3).

According to the multifaceted approaches of medical educators to the issue of internationalization in medical science universities, the focus of activities will be in different forms, from international partnerships to research links between universities, to attract international students and provide an international curriculum. This issue has recently been highlighted by Knight (4). In the past 10 years in Iran, MoHME has tried to organize internationalization activities in both dimensions. We go forward to the educational internationalization aims of equity, quality, and accessibility of education for everyone. First and foremost, we have expanded our university campuses across the country, which has naturally resulted in greater equity. Also, student exchange programs and collaborative initiatives as the cross-border aspect of internationalization activities have increased in Iran (brain circulation index from -0.46 to -0.31). However, curriculum changes and approaches to developing global citizens, which are aspects of the at-home of internationalization, have mostly been ignored. On the other hand, the UN 2030 Agenda calls for action by all countries to achieve sustainable development goals (SDGs) to promote prosperity while protecting the planet (5). They offered strategies to protect the environment that builds economic growth and addresses a range of social needs, including education, health, social protection, and job opportunities. As for the fourth goal of SD, they mentioned the quality of education and, specifically targeted by 2030, ensure that all learners acquire the knowledge and skills needed to promote SD. They believed that despite cultural diversity and culture's contribution to SD, it could only happen through education for SD and sustainable lifestyles.

At the same time, the COVID-19 pandemic spread throughout the world. At first glance, the COVID-19 pandemic not only caused the stopping or slowing down of programs of higher education internationalization (HEI) but also stopped or slowed down traditional education (a common concept) around the world. These changes made institutions rethink education in both teaching and learning areas. In that period, medical departments worked harder than before, and society had more interaction with them. Medical information exchange around the world is faster than before using the internet. All data, health instructions, and guidelines are now worldwide. Although there were many restrictions on the movement of people through national or even regional borders, all people were connected by social media more than before. This situation underlines another aspect of IoME and its necessity for activities that further the mobility of educational pil-

lars such as students, programs, and providers.

Accordingly, the integration of the complexity of medical education internationalization, the COVID-19 pandemic, and education missions to train competent students with a global vision and SD approach has led us to assess the current situation. Confronting the COVID-19 pandemic was a real opportunity to learn how to do things right for the future, make an effort to foster international collaboration, and ensure that education will never stop.

Team researchers tried to propose an operational framework for IoME and demonstrate the necessity for an educated workforce with global competency, which is empowered by the latest knowledge. In this study, we also attempted to show the Iranian faculty approach to the IoME and answer many questions, such as What do we know about internationalization? What is our educator's concept of internationalization? What is the institutions' necessity to cope with the new situation? How can we build SD in the medical education field?

2. Evidence Acquisition

The present study applied to the Carnwell and Daly critical literature review and followed its steps: (1) Determination of the scope of the review; (2) identification of relevant information resources; (3) literature review; (4) writing the review; and (5) application of the review results in the study (6). We extracted English papers published from 2019 to 2022 from Google Scholar, Scopus, PubMed, and Elsevier databases. Search terms were sustainable development, operational approach, educational environment, management strategies, internationalization, and COVID-19. Boolean operators were used. All duplicated or overlapped papers or those that lacked scientific resources were eliminated. The research team screened the titles and abstracts of papers to find related articles and selected those that provided operational models and guidance on how to manage a strategy plan. We used the knowledge management cycle to find ways to build a knowledge-based infrastructure (7, 8). It provided a research roadmap to long-term knowledge-based development for observing the case's unique characteristics while providing a longitudinal understanding of the research topic.

Also, it helps the research team to make an accurate and practical classification of their findings from this study and 2 previous related independent studies. In 2 previous studies, they conducted a systematic review of the impact of COVID-19 on the IoME of Iran (9), and the conceptualization of Iranian faculties on internationalization was acquired (10).

In the next phase of the study, to gain an in-depth view of the topic and cover contextual settings, the Bento strat-

egy chart was used to categorize our vision of the future of IoME (11).

3. Results

The world community is engaged in pursuing SDGs as an opportunity for universities regarding teaching and research. They believe universities have a long-term impact on the world community by educating people (who will be future stakeholders besides collaborating with society) with a sustainable development perspective (12). Future SDGs include inclusive equity, justice, and prosperity within environmental constraints, with an emphasis on education, as stated in Goal 4 of the UN 2030 Agenda. The complexity of sustainability as a concept makes it challenging to relate educational learning outcomes to it. With the SDGs as endpoints for this state, education stakeholders and learners must construct a common vision of sustainability. To this point, recognizing the needed competencies and developing learning strategies are crucial. On the other hand, based on the evidence, SD has an impact on the economy, societal challenges, natural environment, policy-making, culture, and demographics, which are common areas of IoME. Therefore, the impact of SD on higher education institutions directly and indirectly, as well as the impression of IoME through the movement and migration of students and urban development, which is one of its consequences, on SD is undeniable (13).

Accordingly, we should aim to integrate the principles of SD into all aspects of higher education institutions. UNESCO would require a shift of attention from activities implemented in specific core elements to a focus on the natural environment and sustainable society. The activities of institutions have direct and indirect effects on SD, which has an impact on the framework of higher education institutions. The framework can provide a useful reflection on the potential impacts of institutions, thereby contributing to understanding how higher education institutions affect their stakeholders, the natural environment, the economy, and society. A successful experience showed that engaging 4 local sectors (i.e., government, companies, universities, and civil society) is essential to develop a city. It provides representation and facilitates knowledge exchange and collaboration. Local universities have a role in organizing events that seek to establish collaborative institutional partnerships with other universities and institutes. University faculties and researchers are leaders in knowledge-based development contexts. Their research, knowledge, and networks facilitate the unfolding of the event's topics into actions for city development (14).

The research team identified tacit knowledge and used knowledge management to revise the vision of interna-

tionalization. They collected Iranian faculties' knowledge to define future processes and linked higher education institutions' responsibility for SDGs to context and activities, as well as previous studies in IoME.

Based on the latest team study, Iranian faculties agree on the HEI definition provided by Knight at 3 levels (national, sector, and institutional) (15):

"The process of integrating an international, intercultural, or global dimension into the purpose, functions, or delivery of postsecondary education."

According to her definition, HEI implies the diversity of nations and cultures in the curriculum's details, and the operational framework shows the "functions" and "delivery" phases (15).

An investigation into the Iranian faculties' conceptual framework is summarized in Figure 1. According to medical education experts, the internationalization of universities is categorized into 2 dimensions: Internationalization at home (the internal institution) and cross-border internationalization (the external institution; Figure 1). The following steps were performed: (1) A critical review; (2) interviews with experts; (3) interview content analysis; (4) building a questionnaire by the expert panel; (5) distributing questionnaires among faculty members of medical universities; and (6) using Smart PLS to extract the internationalization model from Iranian faculty members' perspective in 2 dimensions (internal and external) and 7 components (education and research, planning, international relation, facilities/budget, politics, economics, sociocultural) (10).

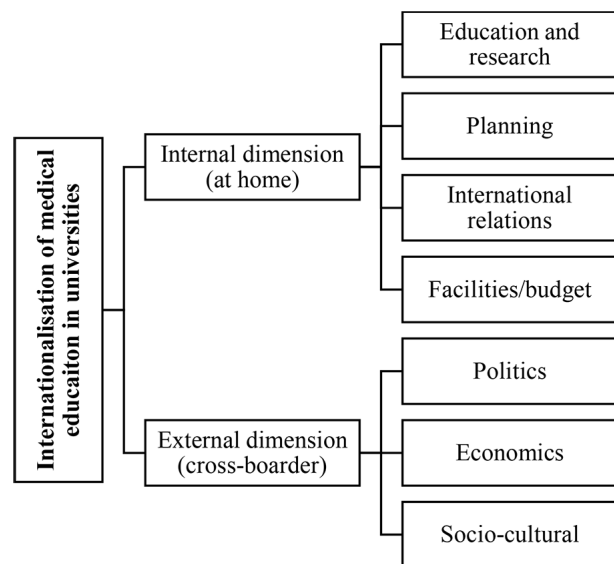


Figure 1. The conceptual model of internationalization based on Iranian medical educator's perspectives (10)

During the COVID-19 pandemic, institutions witnessed an accelerated paradigm shift due to the internet in education. Higher education gave more attention to virtual programs and changed the focus of IoME. Reviewing the articles showed that the performance of the Iranian medical universities with diverse approaches was different (Table 1). Briefly, Iranian medical universities' activities were classified as empowerment (student and faculty), policy-making, announcements, meeting hardware and software needs, and continuous evaluation (9).

All activities of the "at home" sector of internationalization had a new look and definition. Virtual education in the cross-border dimension changed the target point from international students to all students (indigenous and non-indigenous). The performance of medical education during the COVID-19 pandemic had a common sense according to the Knight's at-home dimension IoME (15). These activities that were represented and observed in training courses and extracurricular activities noticeably aligned with the goals of IoME (improve equity, quality, and accessibility; Table 2). A previous systematic review showed that Iranian medical universities' IoME operational activities due to COVID-19 and other university activities focused on community orientation, faculty empowerment, the labor market, and financial benefits (9). Since universities are considered economic foundations, we are obligated to organize our operational models based on the supply and demand market. Our research on operational models based on economic foundations led us to concentrate on new perceptions of marginal costs, profit, communication, and product transfer.

Rifkin (16) acknowledged the internet. The massive paradigm shifts in the commercial world and people's communication forced the economic foundations to have a new look at their product's presentation. He discussed that to win in competitions in the new world, products need to be adapted to the internet. He suggested using technology to reduce marginal costs and have the fastest communication to transfer products.

Strickler (17) asked all commercial institutions to have a new look at their visions and missions to build a new generation of trustable society by proceeding to the Bentoism theory. Bentoism comes from the word Bento, an acronym for "beyond near term orientation." This theory gives a multidimensional view of our self-interest and presents a simple and convenient model for decision-making and strategic planning. He aligns time and self-interest in the diagram to show our situation and what we want to be in the future. The chart divided it into 4 parts (now me, future me, now us, and future us). He stated that strategies planned for reaching our self-interest impacted us, and we had an impact on it.

Accordingly, we applied a Bento chart (11) to show the standing of the IoME in the education program during the COVID-19 pandemic and what should be done in the future (Table 3).

(1) Now Me: I am in the middle of the new and widely used methods of long-distance teaching and learning (eventually in medical courses). I should learn how to train medical students through long-distance and virtual educational methods without decreasing their professional ability, thereby improving their ability to be better-skilled workers. I acknowledge SD as a new concept.

(2) Now Us: We confront the lack of electronic medical-educational resources and the insufficient infrastructure of distance learning to help us fulfill our educational program needs. We have limitations in our virtual education tools. Our culture is not ready for this obligation and still believes that these changes are short-term and that everything goes back to how it was before. We are in the recovery time of COVID-19. We do not have any clue how to implement SD concepts in medical education programs.

(3) Future Me: I have a bright, progressive, standard medical education program with virtual and community learning. I have appropriate and reliable assessment tools for the medical competencies of my students. I have a reliable tool to assess SD in my program.

(4) Future Us: University medical education has a union program, and all medical information and research are reachable in a second for students. Now we can focus on more income and challenges in the market world without loss of quality. We have an SD approach in education, society, and the environment.

Following these steps by operational approach, we brought together the knowledge management of what we had done before that was related to the functions of management and formed our framework (Figure 2).

4. Discussion

During the COVID-19 pandemic, the board of directors of universities, by changing the educational approach from face-to-face learning to virtual education, acknowledged the importance of internationalization and realized that competition between medical institutions should not be focused solely on student attraction (18). These progressive changes influenced all students (indigenous and non-indigenous) in all types of universities (any scholastic rank) and forced universities to act. Similarly, these changes showed the impact of training from the context and indicated that universities' behavior depended on societal changes. Based on the evidence, it is undeniable that successful universities in IoME are detectable globally, attract more partnerships, and address the sociocultural as-

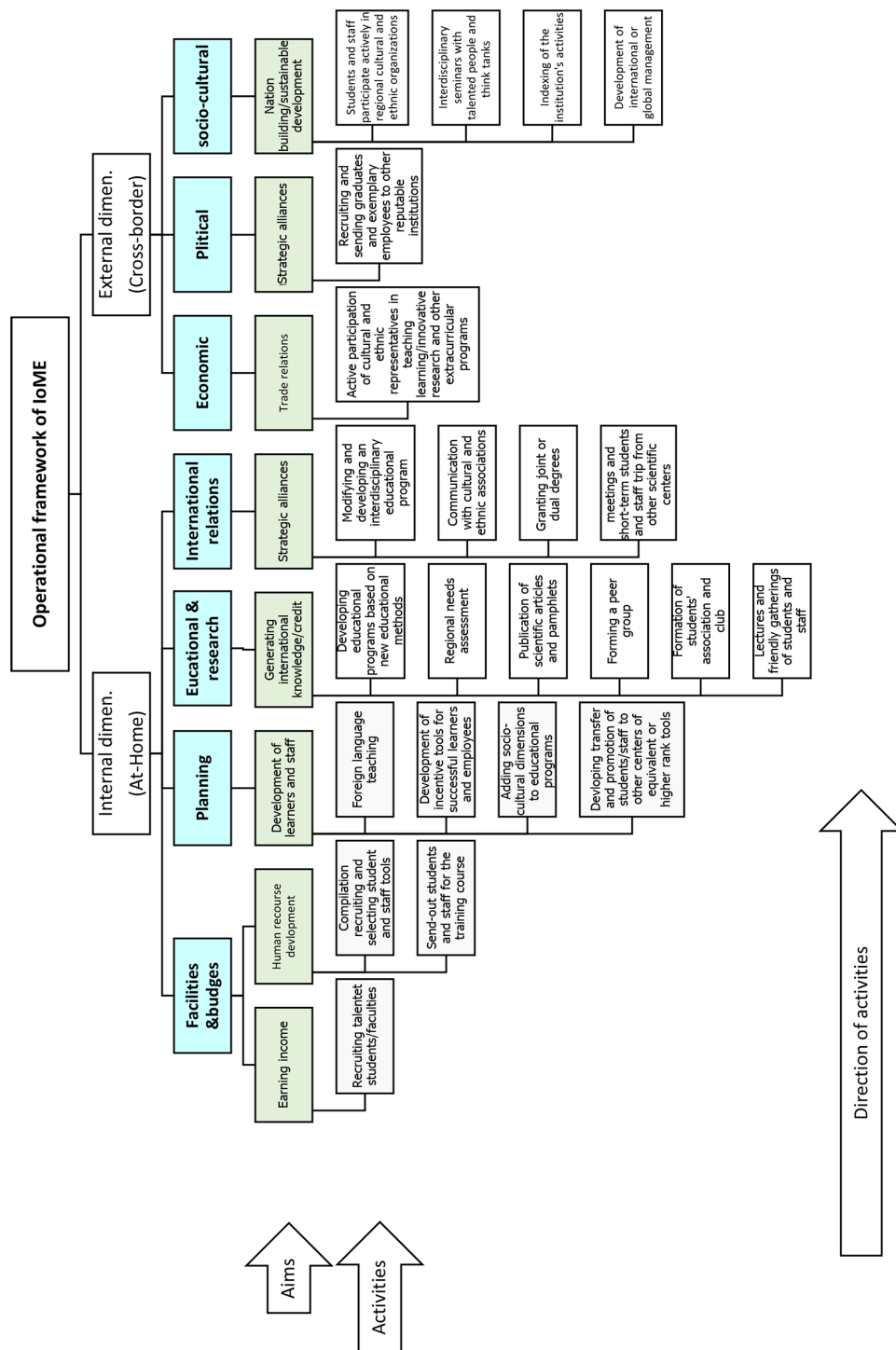


Figure 2. The operational framework of internationalization of medical education in Iranian universities

Table 1. The Classification of the Activities of Iranian Medical Universities During the COVID-19 Pandemic (9)

Activity	Description
Empowerment	Pillars involved in the educational program, including learners, teachers, experts
Policy-making	Adaptation and revision of existing regulations and instructions with training and testing electronically
Announcements	To the target community via SMS, website, and virtual meetings in addition to the office correspondence system
Meeting hardware and software needs	Tailored to the training and infrastructure needs for the use of the Navid Learning Management System (in asynchronous education), the meta-system (in electronic exams), the Adobe Connect software (in asynchronous education), and other educational interactive software selected by universities
Continuous evaluation	The distance learning process and necessary interventions in case of deviation from the program

Table 2. Activities in Accordance with the Goals of Internationalization of Medical Education During the COVID-19 Pandemic (9)

Accessibility	Quality Improvement	Increasing Justice and Equity
-Providing electronic lessons through personal devices (smartphones and tablets) and web-accessible software	-Empowering educational institutions by forming workshops and training courses in electronic education	-Offering cheap or free internet access for students and faculties
-Continuous access to educational content through the Navid System	-Reviewing educational content and updating it	-Establishing free educational workshops for using software in education
-Providing education in both synchronous and asynchronous ways	-Adaptation of educational content and electronic education	-Offering cheap or free English language courses
	-Adaptation of educational regulations and regulations to electronic education	-Setting up cheap or free computer training courses
	-Designing educational models and student evaluation in accordance with electronic education	-Public education through web platforms
	-Evaluation and continuous monitoring of educational activities	

Table 3. The Bento Chart of the Medical Education Since the Outbreak of COVID-19

Now Me:	Future Me:
I am in the middle of the new and widely used methods of long-distance teaching and learning (eventually in medical courses). I should learn how to train medical students through long-distance and virtual educational methods without decreasing their professional ability, thereby improving their ability to be better-skilled workers. I acknowledged SD as a new concept.	I have a bright, progressive, standard medical education program with virtual and community learning. I have appropriate and reliable assessment tools for the medical competencies of my students. I have a reliable tool to assess SD in my program.
Now Us:	Future Us:
We confront the lack of medical education e-content and the insufficient infrastructure of distance learning to help us fulfill our educational program needs. We have limitations in our virtual education tools. Our culture is not ready for this obligation and still believes that these changes are short-term and that everything goes back to how it was before. We are in the recovery time of COVID-19. We do not have any clue how to implement SD concepts in medical education programs.	University medical education has a union program, and all medical information and research are reachable in a second for students. Now we can focus on more income and challenges in the market world without loss of quality. We have an SD approach in education, society, and the environment.

Abbreviation: SD, sustainable development.

pects of internationalization. By the way, to improve educational attraction and train competent students, educational policymakers used educational diversity in institutions and formed educational hubs to share facilities and knowledge (19).

On the other hand, there is no doubt that financial maximization, in the new face of education, is a priority for universities and leads us to empower educational pillars (staff, faculties, and students) for the new world with an approach to SD.

Considering the actions taken during the COVID-19 pandemic, it seems that the future will happen much sooner than expected, and we will be in the middle of the chaos of the lack of environmental supply and a new generation of education. In response to competitiveness and revenue generation among organizations and concerning organization facilities and budget, the best action is to reduce costs while maintaining quality. Based on this hypothesis, educational programs should be developed (or revised) as a new generation of virtual and e-learning pro-

grams (in whole or part). Thus, using the internet in content production will reduce the cost of knowledge transfer and content modification, and it can be indefinitely sold (in terms of space, time, and number). This action will cause the final cost of content production to be reduced day by day, and after a while, it tends to zero. At this stage, decreasing the price of education will increase the number of students and long-term profitability, and a new generation of learners will reject all aspects of traditional education and its meaning. In addition to reducing the costs related to the physical space and its maintenance in institutions, it is possible for the institution to generate income by renting out the excess environment.

4.1. Conclusions

Based on our studies and considering the educational program after the COVID-19 pandemic, the research team proposed a new operational framework for IoME. It can help Iranian medical universities find their way to the SD by planning and implementing IoME programs. This framework was designed in 2 dimensions: internal institutions (at-home) and external institutions (cross-border) in 7 components. The pathway to the SD started from the internal institution dimensions, facilities, and budget component with the aim of generating income for the external institution dimensions, sociocultural element, SDGs, and nation-building goals. These activities are intended to cover institutional needs, such as income, faculty empowerment, and social requirement, for instance, the labor market with an SD approach to the world. The research team implicitly emphasizes empowering faculty and curriculum to change the approach of educational pillars toward SD. Our framework was designed for 2-year institutional activities, and all institutions should design their action plan according to their situations.

Acknowledgments

The Authors would like to acknowledge the constructive comments by Dr. Zohrehsadat Mirmoghtadaie and Dr. Zohreh Khoshgoftar.

Footnotes

Authors' Contribution: Conceived and designed the study (S. A., H. A. J., and A. N.); acquisition of data (S. J.); analysis and interpretation of data (all authors); drafting of the manuscript (S. J.); critical revision of the manuscript for important intellectual content (S. A., H. A. J., and A. N.)

Conflict of Interests: The corresponding author, S. A., is one of the editorial members.

Ethical Approval: The study protocol was approved by the Medical Ethics Committee of Shahid Beheshti University of Medical Sciences (code: IR.SBMU.SME.REC.1398.077).

Funding/Support: This research is supported by the Department of Medical Education, Virtual School of Medical Education and Management, Shahid Beheshti University of Medical Sciences.

References

- Shahid Beheshti University of Medical Sciences. *[Transformation and Innovation in Medical Education Package, Tehran, Iran]*. Tehran, Iran: Shahid Beheshti University of Medical Sciences; 2012. Persian. Available from: https://amayeshzone10.uswr.ac.ir/uploads/book-tahavol_22132.pdf.
- Knight J. Updated definition of internationalization. *Int High Educ*. 2003;(33).
- Wu A, Leask B, Choi E, Unangst L, de Wit H. Internationalization of Medical Education-a Scoping Review of the Current Status in the United States. *Med Sci Educ*. 2020;**30**(4):1693-705. [PubMed ID: 32837797]. [PubMed Central ID: PMC7406216]. <https://doi.org/10.1007/s40670-020-01034-8>.
- Knight J. Higher education internationalization: Concepts, rationales, and frameworks. *Revista REDALINT*. 2021;**1**(1):65-88.
- United Nations. *The Sustainable Development Goals: Our Framework for COVID-19 Recovery*. 2023. Available from: <https://www.un.org/sustainabledevelopment/sdgs-framework-for-covid-19-recovery/>.
- Carnwell R, Daly W. Strategies for the construction of a critical review of the literature. *Nurse Educ Pract*. 2001;**1**(2):57-63. [PubMed ID: 19036245]. <https://doi.org/10.1054/nepr.2001.0008>.
- Andreev I. *Knowledge Management: Importance, Benefits, Examples*. 2022, [updated December 22, 2022]. Available from: <https://www.valamis.com/hub/knowledge-management>.
- Veer-Ramjeawon P, Rowley J. Embedding knowledge management in higher education institutions (HEIs): a comparison between two countries. *Stud High Educ*. 2019;**45**(11):2324-40. <https://doi.org/10.1080/03075079.2019.1608431>.
- Ahmady S, Akbari Javar H, Namaky A, Pourvakhshoori SN, Jazayeri S. [Higher Educational Concurrence in the Field of Health and Internationalization of Medical Education During the COVID-19 Pandemic: A Systematic Review]. *Research in Medical Education*. 2021;**13**(4):55-63. Persian. <https://doi.org/10.52547/rme.13.4.55>.
- Jazayeri S, Akbari Javar H, Namaky A, Pourvakhshoori S, Ahmady S. Conceptual Model of the Internationalization of Medical Education: Iranian Faculty Members' Perspective. *RBMS*.
- The Bento Society. *Bentoism*. The Bento Society; 2023. Available from: <https://bentoism.org/>.
- Leal Filho W, Shiel C, Paço A, Mifsud M, Ávila LV, Brandli LL, et al. Sustainable Development Goals and sustainability teaching at universities: Falling behind or getting ahead of the pack? *J Clean Prod*. 2019;**232**:285-94. <https://doi.org/10.1016/j.jclepro.2019.05.309>.
- Kioupri V, Voulvoulis N. Education for Sustainable Development: A Systemic Framework for Connecting the SDGs to Educational Outcomes. *Sustainability*. 2019;**11**(21). <https://doi.org/10.3390/su11216104>.
- Findler F, Schönherr N, Lozano R, Reider D, Martinuzzi A. The impacts of higher education institutions on sustainable development. *Int J Sustain High Educ*. 2019;**20**(1):23-38. <https://doi.org/10.1108/ijsh-07-2017-0114>.
- Knight J. Internationalization Remodeled: Definition, Approaches, and Rationales. *J Stud Int Educ*. 2016;**8**(1):5-31. <https://doi.org/10.1177/1028315303260832>.

16. Rifkin J. *The zero marginal cost society: The internet of things, the collaborative commons, and the eclipse of capitalism*. New York City, USA: St. Martin's Press; 2014.
17. Strickler Y. *This Could be Our Future: A Manifesto for a More Generous World*. London, England: Penguin; 2019.
18. Bartell M. Internationalization of universities: A university culture-based framework. *High Educ.* 2003;45(1):43-70. <https://doi.org/10.1023/a:1021225514599>.
19. Knight J. Education Hubs: Issues, Indicators and Reflections. In: Knight J, editor. *International Education Hubs*. New York City, USA: Springer; 2014. p. 207-28. https://doi.org/10.1007/978-94-007-7025-6_12.