


Identifying Factors leadership's Performance in Medical Education: A Scoping Review

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Received: 15 May 2024

Published: 15 Jan 2025

Abstract

Background: Among various types of leadership, educational leadership has established a privileged position for itself. This is attributable to its major contribution to effective learning and teaching processes, along with changes in social structures and ideas. Recent studies have underscored the educational leaders' pivotal role in organizational success. In addition, the literature highlights various factors—including environmental and social influences—that impact leaders' performance. The present study aimed to identify and categorize the factors and parameters influencing the performance of educational leaders within the medical education setting.

Methods: This study adopts a scoping review approach, akin to a systematic review but with slight differences in the comprehensive search and quality assessment procedures. Medline, Embase, APA PsycINFO, Scopus, Web of Science, and CINAHL ProQuest Dissertations & Theses Completed were searched using advanced search options and Boolean operators “AND” and “OR” to retrieve the most relevant records.

Results: Of the total records obtained from 6081 online data sources, after removing duplicates and the records featuring irrelevant titles, abstracts, titles, or full papers, 17 articles were chosen for data extraction. We analyzed the challenges faced by educational leaders across 5 primary categories—organizational structure, human resources, education system, leadership characteristics, and external factors.

Conclusion: Leaders in medical education operate in a complex system that includes academic settings, health care organizations, and other regulatory and professional bodies. Medical education institutions must help address the critical needs of leaders and leadership development. It is suggested that the developments in the field of academic leadership should be founded based on the following threeelements—knowledge and individual leadership skills, organizational improvement, and strategic position of the organization.

Keywords: Leadership, Performance, Scoping Review, Medical Education

Conflicts of Interest: None declared

Funding: The Vice-Chancellor for Research at Shiraz University of Medical Sciences provided financial support.

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Cite this article as: Mehni S, Keshavarzi MH, Faghihi SAA, Dehnavieh Tijang R. Identifying Factors leadership's Performance in Medical Education: A Scoping Review. *Med J Islam Repub Iran*. 2025 (15 Jan);39:9. <https://doi.org/10.47176/mjiri.39.9>

Introduction

Medical education has undergone numerous changes and challenges in recent years. Many countries, with the support of organizations, such as the World Health Organiza-

tion, have undertaken measures to reform their medical education to align with the evolving needs of society (1-3). The most important changes and challenges are shifting to-

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↑What is “already known” in this topic:

This was the first exploratory attempt to identify management and leadership in medical science education Factors affecting the role of management and leadership that have not been addressed in the previous literature.

→What this article adds:

The present scoping review aims to summarize and incorporate previous research findings. This study additionally revealed the factors influencing the performance of management and leadership in medical science education, including organizational structure and human resources, issues related to leaders, the nature of work, and contextual influences

ward competency-based education, more emphasized inter-professional education, utilizing new technologies, and addressing social determinants of health in medical education (4).

On the other hand, medical education has not been very successful in keeping pace with the challenges ahead of the health care system—including high health care costs, racial disparities, deficiencies in recruiting health care providers, and concerns about health equity. The educational strategy that is being followed at present to provide value-based care is derived from fragmented, static, and traditional curricula that fail to prepare graduates to encounter modern health care complexities appropriately (3, 5).

In addition, the coronavirus disease 2019 (COVID-19) pandemic led to specific challenges in the field of professional health education that may catalyze rethinking how education and professional health education will be delivered in the coming decades (6, 7).

To address the health challenges of the 21st century effectively, more efficient, effective, and novel paradigms are needed in public health and medical education. The professional institutions working in the health sector must adopt leading roles in the integration of new technologies, promotion of new programs, and development of evidence-based curricula (8).

Therefore, attention to the quantity and quality of medical education, its future, and efforts to improve the current situation are undeniable and critical issues (9). These challenges prevent innovative procedures in medical specialist education and require effective educational leadership to get involved with them. Thus, university leaders in medical sciences, besides having general management responsibilities, also have a more important duty (10). They must respond to the health and medical needs of the community and increase the importance and sensitivity of their profession. Given the vibrant, evolving, and dynamic nature of health care, these leaders must be able to adapt and coordinate themselves with future changes and developments (11). On the other hand, one may regard leadership as a long-term process to influence individuals so that they accomplish their missions and realize the specific objectives of an organization or a group (12). Such a process determines the strategies and targets, increases dedication and alignment with organizational goals, and promotes team culture and dynamism in organizations (13). Additionally, continuous efforts to structure or restructure conditions and expectations of members are required (14). Studies on the importance of educational leadership in organizational success have emphasized various factors, such as environmental, social, et cetera, affecting leadership performance. However, these factors have not been precisely identified and examined (15, 16).

On the other hand, lacking sufficient awareness of factors affecting leadership performance in medical education can have negative effects—including reduced education quality and decreased levels of medical student advancement. Additionally, ignorance of these factors may lead to increased waste of resources, reduced efficiency of educational and human resources, decreased organizational effectiveness,

and disruption of educational processes. Ignorance of factors affecting leadership in medical education may increase medical errors and risks, as pioneers in medical education play a critical role in educating medical students. Therefore, having sufficient knowledge about factors affecting leadership performance in medical education is vital. Therefore, the present investigation is an attempt to identify the factors affecting the performance of educational leadership in the field of medical education.

The main research question of this study is as follows:

What factors influence leadership's performance in medical education?

Methods

The reporting of this review and the methodology were adopted from the Reviewers' Manual of the Joanna Briggs Institute (26) and Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist" (17).

Exclusion and Inclusion Criteria

The population/concept/context strategy functioned as a reference for the identification of our inclusion criteria to decide the relevance of every single reference.

Data Sources and Searches Strategy

The statistical population included educational leaders in medical education. The concept of management and leadership existed in the education of medical sciences and the field of medical education institutions. Research articles with quantitative, qualitative, and mixed methods published in the English language and within the last 20 years (January 1, 2004, to August 12, 2024) were included.

The present investigation exclusively focused on the management and leadership of medical science education.

- Articles that only deal with the management and leadership of medical science education in specified databases—Embase, Medline, APA PsycINFO, Scopus, CINAHLProQuest, Web of Science, and theses and completed theses. We used a combination of 35 keywords plus the main keyword. In addition, Boolean operators "AND" and "OR" were used to increase the relevance of retrieved records. The Web of Science was surveyed using the following methodology for illustrative purposes. The survey covered the period from January 1, 2004, to August 12, 2024, and included the Social Science Citation Index (SSCI), the Science Citation Index Expanded (SCI-EXPANDED), and the Emerging Sources Citation Index (ESCI).

The keywords were as follows: TS=((educational or training or educational or academic or transformation* or distributed or adaptive or change or school or college or university or institute*) NEAR/1 (management* or leadership*)).

TS= (Medicine or Clinical or Nursing or Dentistry or Pharmacy or 'Allied Health' or Paramedical or Health Care or 'Health Care' or 'Health Professions?' or 'Health Professions?') NEAR/0 (Education or Training or Teaching or teaching to a teacher or a teacher?)).

Table 1. Exclusion and Inclusion Criteria for the Suggested Investigation

Criteria	Inclusion	Exclusion
Language	English Language	Non-English article
Publication date	(January 1, 2004 to August 12, 2024).	
Study classification	Type of publication: Original articles, conference papers, short communications, and dissertation	Other publications have not been mentioned in the inclusion criteria
Distinct characteristics	Method, approach, and technique	Other distinct are not mentioned in the inclusion criteria

Eligibility Criteria

- Articles with ≥ 1 keywords listed.
- Articles reviewed and published in a scientific journal.
- Articles written in English.
- Articles published between 2004 and 2024.
- Articles with available full-texts.
- Articles focusing on educational leadership and leadership in medical schools.

Other studies were excluded due to the lack of alignment with the purpose of the study (Table 1).

Study Selection and Data Extraction

Data obtained from various databases were entered into EndNote 20 software (developed by Clarivate Analytics) to remove duplicate entries. Two independent reviewers (S.M. and M.K.) screened the studies based on their abstracts and titles. The full complete texts of papers with unclear abstracts or without abstracts were reviewed. Through consensus, their differences were resolved by the researchers. Also, through consensus with a third member (A, F.) or holding group discussions, disagreements between different authors were resolved. Excel was used to collect data. The collected data for every single article included publica-

tion year, authors, results, project locations, and other relevant details.

Results

Study Characteristics

After searching 7 online data sources, a total of 6081 records were identified. Once the duplicate records and the ones with irrelevant abstracts, titles, or full papers were removed, 17 articles were chosen for the purpose of data extraction (Table 2). Figure 1 depicts the selection process for the inclusion of papers in the review. The selected papers are categorized and summarized in Table 3. Those studies included in the present review had been carried out in 9 different nations (7 papers from the United States, 3 from Australia, 3 from Sweden, 2 from Iran, 1 from Canada, and 1 from England).

Discussion

A total of 17 articles with a focus on factors influencing leadership's performance were identified in the present study. These Factors were categorized into 5 major groups—including factors related to organizational structure, external factors, human resources, leaders' characteristics, and the educational system. These factors are strong

Table 2. Summary of Study Characteristics and Extracted Data

No.	Title	Corresponding Author, Year, and Country	Study Type	Dimension	Results
1	Healthcare Educational leadership in the 21st century	Davinder Sandhu 2019 (19) Ireland	descriptive	Organizational structure Context	We are in the social media, information explosion, and IT ether, which is known as the post-modernity era. Post-modernity viewpoints of leadership must determine how one may free himself/herself from these limitations. If modernity was about order, then, one may consider that post-modernity is about doubts, uncertainties, concerns, and questions. The hierarchy of leadership must be adaptable. In transformation, it is necessary to move people from their classic organizational boxes into flexible fluid management systems functioning as liquid networks. We must cease putting people into little squares on staffing structure charts. It is necessary to look at teams.
2	Adaptive leadership during challenging times: Strategies for health professions educators: AMEE Guide Issue. 148	Judy McKimma,b, Subha 2022 (20) UK	AMEE Guide	External factors	As one of the most challenging conditions for leaders in health professions education and healthcare, the COVID-19 pandemic made them make decisions 'on the fly' and adapt themselves to new challenges while attending to the well-being of themselves, academics, their professional staff, clinical teachers, and learners, and also, maintaining the stability of programs and organizations.

Table 2. Continued

No.	Title	Corresponding Author, Year, and Country	Study Type	Dimension	Results
3	Adopting artificial intelligence in dental education: A model for academic leadership and innovation	Nadim M. Islam DDS, 2022 (21)	descriptive	External factors	Artificial intelligence can complement and strengthen human tasks and have a wide-scope Impact on academia and healthcare. Adoption and planning by medical education leaders can enhance educational experiences and care delivery, and support current practices and future innovations.
4	Leadership in health and medical education: lessons from a symposium on health sector development in Ghana	Cephas K. Avoka1, 2023 (22) Ghana	symposium	Organizational structure Context	Leadership challenges identified focused on leadership skills for an event organization, effective collaborative speaking and teamwork, and learning from recognizing the contributions of outstanding leaders in the health sector.
5	Educational Leadership and the Pandemic	David Gurr 2020 (23) USA.	descriptive	External factors Leaders related	In terms of implications for leadership, the special issues of ISEA have reflected the fact that to help transition to remote education provision, in all education sectors, it has been necessary for teachers to remain more collaborative and for leadership to come from many. In addition, to upskill teachers quickly, rapid professional learning support has been a must. Also, it has been necessary to make leaders ready to be able to lead through crises.
6	Identifying challenges for academic leadership in medical universities in Iran	Ali Bikmoradi, 2010 (24) Iran	Qualitative	Organizational structure Context	The main challenges to academic leadership could be categorized under three themes: organizational issues (a very broad set of responsibilities and missions; inefficacy of academic governance; concerns with regard to the selection of managers); managerial issues (disagreement between responsibilities and authority; management styles; leadership capabilities), and organizational culture (low motivation; a boss-centered culture; inclination to governmental management)
7	'Important... but of low status': male education leaders' views on gender in medicine	Gunilla Risberg, Eva E 2011 (25) Sweden	Cross sectional	Leaders related External factors	The results indicate that male faculty leaders embrace the importance of gender-related issues, gender as a determinant of health and, as bystanders, they had witnessed inequalities and the wasting of women's competence.
8	Leadership aspirations among residents in obstetrics and gynecology in the United States: a cross-sectional analysis	Brindha Bavan 2019 (26) USA	cross-sectional	Leaders related External factors	Gender inequality in determining the goals of medical education leadership. The impact of targeted coaching, the presence of female role models in leadership, and the implementation of unconscious bias education in curricula should be explored as ways to overcome barriers for women and men alike.
9	Leadership, governance, and management in dental education – new societal challenges	G. Townsend 2007 (27) Australia	descriptive	Leaders related Education External factors	The financial challenge, the balance between the responsibilities of medical education leaders to lead and manage employees in the school and their responsibilities to the senior managers who report to them, increasing student numbers and public budget pressures for greater accountability, and universities are moving from a traditional academic approach to More corporate management styles are distanced.

enough to attract attention; however, there is no science to compare leadership performance, as leadership is contingent on specific situations and contexts (34). The factors of the first group are related to the role of organizational structure. Organizational structure in the field of medical education includes various divisions and tasks, hierarchical relationships, decision-making processes, and internal and external communications of the organization (35). This structure should be designed to facilitate the performance of

medical education tasks and goals and enhance coordination and collaboration among team members (36). The structure of every single university is usually designed over time based on the goals and strategies formulated to achieve the university's objectives. Since universities are involved in conditions of turmoil, complexity, and continuous changes, their structure may overlook good organizational performance. Literature reviews on organizational structure in higher education indicate that the present framework may not satisfy future higher education requirements. This

Table 2. Continued

No.	Title	Corresponding Author, Year, and Country	Study Type	Dimension	Results
10	Leading by Design: Lessons for the Future From 25 Years of the Executive Leadership in Academic Medicine (ELAM) Program for Women	Reshma Jaggi, 2020 (28) USA	descriptive	Leaders related External factors	Regrettably, based on some convincing evidence, the failure to realize gender equity at the leadership level in academic medicine does not merely result from a slow pipeline, but, instead, is indicative of multiple complex reasons.
11	Requirements for effective academic leadership in Iran: A Nominal Group Technique exercise	Ali Bikmoradi, 2008 (29) Iran	Qualitative	Organizational structure Context Leaders related External factors Human resources	medical universities may have not enough statutory powers to prove the need for managerial system reform. In contrast to these selection measures, the complexity of academic leadership does not enhance its stature in Iran due to the merging of medical education and health services, where great responsibilities exist. Academic leadership is further exacerbated by problems such as lack of appropriate budget, supervision, and expansion of health issues. Arguably, selected academic leaders sometimes lack the required merits or appropriate qualifications, so they tend to be conservative. Perhaps these factors pose limitations among academic leaders and create unpleasant experiences about utilizing their authority. Criteria supporting academic leadership have been delegated to politicization, informal groups, and external forces
12	Shifting norms and expectations for medical school leaders: a textual analysis of career advertisements 2000–2004 cf. 2010–2014	Diane Gorsky and Anna Mac-Leodb, 2016 (30) Canada	descriptive	Organizational structure Context Education	In medical education and other higher education settings, contemporary drivers include funding constraints, regulatory and accreditation changes, increased organizational complexity, new governance models, performance management curriculum renewal, and enhanced expectations regarding accountability and transparent
13	EDUCATIONAL LEADERSHIP IN HEALTH PROFESSIONS EDUCATION	Kristina Sundberg, 2019 (31) Sweden	THESIS	Organizational structure Context Leaders related	The educational leaders expressed ambiguity toward their identity as educational leaders due to both the difficulties perceived in leading colleagues toward educational development and change and also unclear educational roles. The educational leaders rarely received feedback on their work from higher institutional levels, which caused them to feel that their role had a symbolic character.
14	Academic Medicine in the Military Health System: Problems and Solutions for Academic Leadership Development	Jessica T. 2018 (32) USA	descriptive	Human resources Leaders related	The high frequency of turnover of faculty members and the ranking structure of faculty members, the lack of experience of new faculty members, the subsequent lack of self-confidence and the desire to leave their positions, and the burnout of old faculty members are among the challenges of medical education leadership

is because universities are required to generate a structure in which the parameters, such as innovation, creativity, entrepreneurship, knowledge-based economy, collective identity, and trust are essential (37). Researchers have shown in their research that complex and integrated public health services are rarely manageable through their expansion. Another challenge is the disagreement between power and leadership responsibilities. Such a disagreement causes uncertainty regarding the university accountability and freedom. The 2 mentioned characteristics of medical universities are essential for decision-making and policymaking on issues, for example, student admission, strategies, and goals (38). The human resources framework refers to

the elements that employees need to perform their work or achieve a desired goal. David Reese (38) noted that resource shortages—including inadequate human resources and insufficient and ineffective human resource programs—serve as leadership limitations in the public health system. Human resource deficiencies and improper distribution thereof are significant problems in medical science management and leadership. Due to increased workload resulting from human resource shortages, tensions and conflicts escalate, reducing the opportunity for friendly relations between staff and leaders (39). One of the most important leadership challenges in the field of human resources is having an appropriate motivational mechanism.

Table 2. Continued

No.	Title	Corresponding Author, Year, and Country	Study Type	Dimension	Results
15	Women's leadership in academic medicine	Lulu Alwazzan ,1 Samiah S Al-An-gari 2019 (33)	reviewed	Organizational structure Con-text Leaders re-lated	Our review revealed that in medical schools, women had less access to leadership positions, the evidence showed <50% of leadership positions— program directors, unit heads, or chairs, programme directors, or unit heads—were dedi-cated to female faculty members.
16	Develop tomor-row's leaders in health and social care education. Case studies in leadership in medi-cal and health care education. Special report 5. Newcas-tle-upon-Tyne: Higher Education Academy, Medi-cine Dentistry and Veterinary Medi-cine,	McKimm J. 2004 (15) UK	Case Studies	Human re-sources Leaders re-lated Organizational structure Con-text	maintain an appropriate work-life balance Managing both clinical and academic careers culture of their organization Balancing competing agendas healthcare systems, with rapid change accountability for the wider agenda
17	<i>Leadership development for clinicians: what are we trying to achieve?</i>	J. McKimm, S. 2011 (16) UK	cross-sec-tional	Organizational structure Con-text	Leaders work in complex systems which are comprised of healthcare organizations university environments, and other professional and regulatory bodies. Navigation through such complexity necessitates knowledge of policy agendas, systems, strategy strategies and organizations and understanding operational managerial procedures and processes

Inadequate and disproportionate rewards, overlooking individual differences in employee deployment, cannot properly motivate employees (40). Disbelief in management stability and opposing medical education reforms lead health care providers to prefer research and education over health services provision.

Large income disparities between other university personnel and physicians have reduced motivation and disinclination toward taking managerial or leadership positions in universities (40). Another factor is related to the educational system. Major changes have occurred in higher education worldwide. Such changes and challenges include more emphasis on interprofessional education, shifting toward competency-based education, the utilization of new technologies, the explosion of knowledge, and dealing with social determinants of health in the field of medical education (4). In addition, one of the most important recent changes in the field of medical education has been the transition to competency-based education. Other factors include an increase in the number of students, a decrease in public education budgets, and pressure for greater accountability (5). These changes directly impact medical education and have led to changes in leadership systems in many medical universities (41). Curriculum changes, clinical capabilities, and innovation in health care delivery are adaptive challenges that challenge medical education leaders and require new learning (15, 16, 42). Personal characteristics of leaders include values, ethical traits, authenticity in daily interactions, and spirituality. Leaders often have mul-

tiples roles and responsibilities. In modern leadership, leaders are compelled to strive for balance in complex and ever-changing environments (42). The challenges and problems facing medical education today are highly complex and unpredictable, and understanding leadership as an individual responsibility, while not wrong, is not sufficient (43). One of the main problems in medical education leadership is the unfamiliarity of managers with leadership and organizational behavior techniques due to insufficient training (44). Currently, men and women selected for leadership positions in medical university institutions are primarily chosen not because of their perceived leadership skills. In almost all cases, individuals are chosen because of their academic weight in their respective fields. This is a culture within medical universities. Some believe that this culture needs to change. They argue that individuals' leadership skills should be valued more than their academic achievements.

A study in Ethiopia showed that health care managers and leaders are unable to create a vision, lack leadership knowledge and skills, and therefore cannot hold these positions (40). This affects organizational performance. Poor leadership leads to weak management, poor service delivery, and worsening overall community health (45). Developing essential leadership capabilities is an important stage in leadership development. Educational leaders must carefully guide the educational set-up, outline a suitable vision, develop the abilities of their staff, encourage teamwork, and ensure accountability (46). According to studies, university managers use managerial instability as a coping mechanism rather than addressing it directly (47). In order

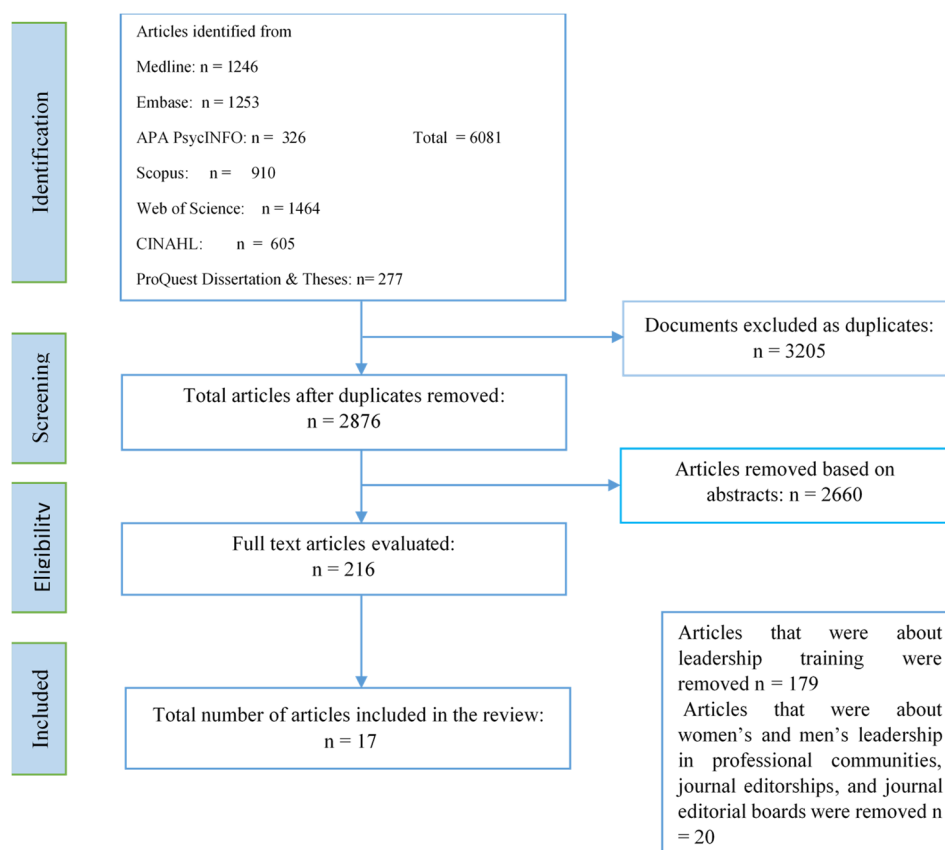


Figure 1. A PRISMA flowchart Leadership in Medical Education: A Scoping Review

Table 3. Five Classified Consist of Papers

Consist of Papers	Factors	Studies
Organizational structure	Complexity • Regulations and programs Centralization • academic	
Context	clinical governance, The wider agenda, rank structure, organizational obstacles, conservatism, new governance models, Boss-centred cultural Structures, systems governance; Balancing competing agendas,	1,2,6,11,12,13 14,15,16,17
External factors	Cultural issues, Accreditation; AI, crises, healthcare systems with social media, rapid change, enhanced expectations regarding accountability, and transparent	2,3,5,7,8,9,10 11'12,13
Human resources	funding,high frequency of academic faculty and program director turnover, Faculty attrition, subsequent new inexperienced faculty, resistance towards change, motivation	11,14,16
Education	funding constraints, Managing both clinical and academic careers performance management curriculum renewal, capacity to change, increasing student numbers, traditional collegial approach	6
Leaders related	Management styles; Knowledge and skills, gender equity, maintaining an appropriate work-life balance, Managing both clinical and academic careers, lack of authority, fatigue, qualifications,	5,8,9,10,11,13, 14,15,16

to solve issues in education, it will be simpler for them to blame managerial instability on uncontrollable outside forces, possibly even the political system. These pervasive and widely known elements are present throughout the world.

A boss-centric culture, where individuals in higher positions are respected and treated with respect, is prevalent in many societies. Researchers have found that, in higher education institutions, there is a need for leaders who may foster novel perspectives, collaboration, innovation, and empowerment by legalizing and adhering to ethical principles (48). Maintaining a proper work-life balance in medical education leadership, especially for those with family responsibilities and simultaneous clinical work, can be challenging (15). Crises and pandemics, including COVID-

19, are among the external factors imposed on medical education leaders, forcing them to adapt to new conditions and learn how to manage unprecedented challenges and significant uncertainties (49). Studies on gender inequalities in academic leadership have demonstrated notable gender differences in salaries and compensation, even considering age, experience, productivity indicators, and academic rank in medical education. This is despite the fact that more women apply for medical school than men (50). While Cooper's (51) study has shown this trend, it is just the beginning of a trend that will continue in the future. According to his analysis, women accounted for 57% of medical school applicants in 2020. This trend has significant implications for the future of medicine. Current academic medical leaders face a big problem: how can we meet the

unique demands of female doctors who want to work in academia?

Limitations

This study encountered some limitations. First, the scoping review methodology was adopted in the present work. As a result, the assessment procedure was not as strict as a systematic review. This is because a scoping review offers a general viewpoint of the subject and can identify themes. Therefore, the present study may help to become aware of general trends and serve as a background for more extensive investigations on the discussed subject. Second, only research on the management and leadership of medical science education had been done in this field, making the research topic special and relatively limited. The current study makes an effort to conduct a comprehensive investigation without overlooking any references. Nevertheless, certain materials might be absent.

Conclusion

This article presents several pressing factors that influence leadership's performance in medical education. Leaders in medical education operate within a complex system, which is composed of health care organizations, academic environments, and other professional and regulatory bodies. As Wisniewski suggests, higher education is tasked with developing academic leadership practices if it is intended to engage institutions and their faculties in coping with changes to effectively respond to complex social, educational, economic, political, and globalization concerns (40). Medical education institutions should help guide the crucial demands of leadership development and leaders, considering that suggested by Leit and Porter, one should find academic leadership development on 3 basic elements: knowledge and individual leadership skills, organizational improvement, and strategic position of the organization (52).

Authors' Contributions

All of the authors reviewed and approved the manuscript, participated in the discussion, and pledged to take responsibility for every component of the work, making sure that any concerns about the integrity or accuracy of any individual section are thoroughly examined and addressed.

Ethical Considerations

The ethics committee of Iran University of Medical Sciences approved the study with the ID number IR.SUMS.REC.1403.015. All authors demonstrate that they have adhered to the accepted ethical standards of a genuine research study and that the study is conducted with integrity, fidelity, and honesty.

Acknowledgment

The present research is part of a PhD thesis supported by Shiraz University of Medical Sciences (Code: 28185).

Conflict of Interests

The authors declare that they have no competing interests.

References

1. Majumder AA, Souza U, Rahman S. Trends in medical education: challenges and directions for need-based reforms of medical training in South-East Asia. *Indian J Med Sci.* 2004;58(9):369-80.
2. Palermo TM. Interprofessional collaboration within an anesthesiology department: Implications for the education and training of pediatric psychologists. *Clin Pract Pediatr Psychol.* 2013;1(1):10-20.
3. Wartman SA. The empirical challenge of 21st-century medical education. *Acad Med.* 2019;94(10):1412-5.
4. Thibault GE. The future of health professions education: emerging trends in the United States. *FASEB BioAdv.* 2020;2(12):685-97.
5. Frank JR, Snell LS, Cate OT, Holmboe ES, Carraccio C, Swing SR, et al. Competency-based medical education: theory to practice. *Med Teach.* 2010;32(8):638-45.
6. Gaur U, Majumder MAA, Sa B, Sarkar S, Williams A, Singh K. Challenges and opportunities of preclinical medical education: COVID-19 crisis and beyond. *SN comprehensive clinical medicine.* 2020;2(11):1992-7.
7. Lashley PM, Sobers NP, Campbell MH, Emmanuel MK, Greaves N, Gittens-St Hilaire M, et al. Student satisfaction and self-efficacy in a novel online clinical clerkship curriculum delivered during the COVID-19 pandemic. *Adv Med Educ Pract.* 2022;13(1):1029-39.
8. Torres-Calixto MG. Tendencias y retos de la educación médica. *Revista de la Facultad de Medicina.* 2021;69(3):e84330-9.
9. Faghihi A, Moghadam MH, Yamani N. Key educational and research factors affecting the future of medical education discipline in Iran: A qualitative study. *J Educ Health Prom.* 2020;9(1):151-62.
10. van Diggele C, Burgess A, Roberts C, Mellis C. Leadership in healthcare education. *BMC Med Educ.* 2020;20(1):1-6.
11. Leek C. Information systems frameworks and strategy. *Industrial Management & Data Systems.* 1997;97(3):86-9.
12. Tingvoll W-A, Sæterstrand T, McClusky LM. The challenges of primary health care nurse leaders in the wake of New Health Care Reform in Norway. *BMC Nurs.* 2016;15(1):1-8.
13. Arroliga AC, Huber C, Myers JD, Dieckert JP, Wesson D. Leadership in health care for the 21st century: challenges and opportunities. *Am J Med.* 2014;127(3):246-9.
14. Martin GP, Learmonth M. A critical account of the rise and spread of 'leadership': the case of UK healthcare. *Soc Sci Med.* 2012;74(3):281-8.
15. McKimm J. FDTL4 Leadership Development Programme: Developing Tomorrow's Leaders in Health and Social Care Education: Case Studies in Leadership in Medical and Health Care Education: Higher Education Academy; 2004.
16. McKimm J, Swanwick T. Leadership development for clinicians: what are we trying to achieve? *The clinical teacher.* 2011;8(3):181-5.
17. Grant MJ, Booth A. A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Info Libr J.* 2009;26(2):91-108.
18. Reed DA, Cook DA, Beckman TJ, Levine RB, Kern DE, Wright SM. Association between funding and quality of published medical education research. *Jama.* 2007;298(9):1002-9.
19. Sandhu D. Healthcare educational leadership in the twenty-first century. *Med Teach.* 2019;41(6):614-8.
20. McKimm J, Ramani S, Forrest K, Bishop J, Findyartini A, Mills C, et al. Adaptive leadership during challenging times: Effective strategies for health professions educators: AMEE Guide No. 148. *Med Teach.* 2023;45(2):128-38.
21. Islam NM, Laughter L, Sadid-Zadeh R, Smith C, Dolan TA, Crain G, et al. Adopting artificial intelligence in dental education: a model for academic leadership and innovation. *J Dent Educ.* 2022;86(11):1545-51.
22. Avoka CK, Nabila MS, Addy A, Okoh A. Leadership in health and medical education: lessons from a symposium on health sector development in Ghana. *Ghana Med J.* 2023;57(1):75-8.
23. Gurr D. Educational leadership and the pandemic. *Acad Lett.* 2020;29(1):1-5.
24. Bikmoradi A, Brommels M, Shoghli A, Khorasani-Zavareh D, Masiello I. Identifying challenges for academic leadership in medical universities in Iran. *Med Educ.* 2010;44(5):459-67.
25. Risberg G, Johansson EE, Hamberg K. 'Important... but of low status': male education leaders' views on gender in medicine. *Med Educ.* 2011;45(6):613-24.
26. Bavan B, Chavez J, Saravanabavanandhan B, Li J, MacLaughlan David S. Leadership aspirations among residents in obstetrics and

- gynecology in the United States: a cross-sectional analysis. *BMC Med Educ.* 2019;19(1):1-7.
27. Townsend G, Thomas R, Skinner V, Bissell V, Cohen L, Cowpe J, et al. Leadership, governance and management in dental education—new societal challenges. *Eur J Dent Educ.* 2008;12(1):131-48.
 28. Jaggi R, Spector ND. Leading by design: lessons for the future from 25 years of the Executive Leadership in Academic Medicine (ELAM) program for women. *Acad Med.* 2020;95(10):1479-82.
 29. Bikmoradi A, Brommels M, Shoghli A, Sohrabi Z, Masiello I. Requirements for effective academic leadership in Iran: a nominal group technique exercise. *BMC Med Educ.* 2008;8(1):1-7.
 30. Gorsky D, MacLeod A. Shifting norms and expectations for medical school leaders: a textual analysis of career advertisements 2000–2004 cf. 2010–2014. *Journal of Higher Education Policy and Management.* 2016;38(1):5-18.
 31. Sundberg K. Educational leadership in health professions education: Karolinska Institutet (Sweden); 2019.
 32. Servey JT, McFate T, Reamy BV. Academic medicine in the military health system: problems and solutions for academic leadership development. Oxford University Press; 2018. p. 7-10.
 33. Alwazzan L, Al-Angari SS. Women's leadership in academic medicine: a systematic review of extent, condition and interventions. *BMJ Open.* 2020;10(1):e032232-9.
 34. Hewison A, Morrell K. Leadership development in the English National Health Service: A counter narrative to inform policy. *Int J Nurs Stud.* 2014;51(4):677-88.
 35. Torkzadeh J, Dehghan Harati F. Developing and validating a scale to assess organizational behavior foundations. *Mediterr J Soc Sci.* 2016;7(6):72-61.
 36. Kezar A, Eckel PD. The effect of institutional culture on change strategies in higher education: Universal principles or culturally responsive concepts? *J High Educ.* 2002;73(4):435-60.
 37. Skogstad A, Einarsen S, Torsheim T, Aasland MS, Hetland H. The destructiveness of laissez-faire leadership behavior. *J Occup Health Psychol.* 2007;12(1):80-90.
 38. Reyes DJ, Bekemeier B, Issel LM. Challenges faced by public health nursing leaders in hyperturbulent times. *Public Health Nurs.* 2014;31(4):344-53.
 39. Ghiasipour M, Mosadeghrad AM, Arab M, Jaafaripooyan E. Leadership challenges in health care organizations: The case of Iranian hospitals. *Med J Islam Repub Iran.* 2017;31(1):96-106.
 40. Yedidia MJ. Challenges to effective medical school leadership: perspectives of 22 current and former deans. *Acad Med.* 1998;73(6):631-9.
 41. Erhard W, Jensen MC, Echeverria J. The First and Second and Third of Eight Course Readings, 'Being a Leader and the Effective Exercise of Leadership: An Ontological/Phenomenological Model'. Harvard Business School NOM Unit Working Paper, Barbados Group Working Paper. 2021;1(1):17-22.
 42. Swanwick T, McKimm J. Clinical leadership development requires system-wide interventions, not just courses. *Clin Teach.* 2012;9(2):89-93.
 43. Mercer J. Appraising higher education faculty in the Middle East: Leadership lessons from a different world. *Manag Educ.* 2006;20(1):17-26.
 44. Whitcomb ME. The future of academic medicine has begun. *Acad Med.* 2004;79(4):281-2.
 45. Kumar RD. Leadership in healthcare. *Anaesthesia & Intensive Care Medicine.* 2013;14(1):39-41.
 46. Teame K, Debie A, Tullu M. Healthcare leadership effectiveness among managers in Public Health institutions of Addis Ababa, Central Ethiopia: a mixed methods study. *BMC Health Serv Res.* 2022;22(1):540-55.
 47. Elenkov DS, Manev IM. Top management leadership and influence on innovation: The role of sociocultural context. *J Manag.* 2005;31(3):381-402.
 48. Souba WW. New ways of understanding and accomplishing leadership in academic medicine. *J Surg Res.* 2004;117(2):177-86.
 49. Nadarajah VD, Er HM, Lilley P. Turning around a medical education conference: Ottawa 2020 in the time of COVID-19. *Med Educ.* 2020;54(8):760-1.
 50. Jena AB, Olenski AR, Blumenthal DM. Sex differences in physician salary in US public medical schools. *JAMA Intern Med.* 2016;176(9):1294-304.
 51. Cooper RA. Impact of Trends in Primary, Secondary, and Postsecondary Education on Applications to Medical School.: II: Considerations of Race, Ethnicity, and Income. *Acad Med.* 2003;78(9):864-76.
 52. Leatt P, Porter J. Where are the health care leaders? The need for investment in leadership development. *Healthc Pap.* 2003;4 (3):14-3