Strides Dev Med Educ. 2021 December; 18(1):e1038 doi 10.22062/sdme.2021.195607.1038

Research Article

# The Comparative Study of Accreditation Standards of Medical Sciences Educational Programs in Iran and Some Other Countries of the World

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**Received:** 2021 January 20
**Revised:** 2021 July 10
**Accepted:** 2021 July 11
**Published online:** 2021 December 11

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**Citation:**
Sharifi P, Manzari Tavakoli AR, Kamyabi M, Zeinaddiny Meymand Z. The Comparative Study of Accreditation Standards of Medical Sciences Educational Programs in Iran and Some Other Countries of the World. Strides Dev Med Educ. 2021 December; 18(1):e1038. doi: 10.22062/sdme.2021.195607.1038

**Abstract**

**Background:** Program accreditation is a quality assurance educational program implemented in many countries.

**Objectives:** This study aimed to compare program accreditation standards of the Ministry of Health of Iran with several selected countries and to extract program accreditation standards to benefit from the experiences of other countries.

**Methods:** The present descriptive-comparative study was performed in 2020. The information required for the study was collected by searching on the Internet on valid websites of accreditation institutes of medical sciences and higher education in Iran and other countries. Among them, the World Federation for Medical Education (WFME) program accreditation standards and eight countries from different continents were compared with Iran. The research was conducted using the Beredy model.

**Results:** The results showed that the standards in the studied programs were significantly different both quantitatively and qualitatively. It was also found that the accreditation standards of educational programs in Iran, Kazakhstan, and the WFME were consistent regarding the areas' number and titles, but there was a difference in the number and titles of the criteria and indicators.

**Conclusion:** Considering the vital role of graduates of medical sciences in promoting community health and also given the current and particular situation and the global conflict with COVID-19 epidemic, which has disrupted face-to-face education and evaluation at all educational levels, upgrading and improving the quality of medical education programs seems necessary more than ever. Therefore, to evaluate and promote the quality of these programs, it is suggested to codify accreditation standards of educational programs locally and according to the current conditions.

**Keywords:** Accreditation, Educational Program, Comparative Study, Beredy Model

## Background

Universities are considered the most important educational institutions, centers for science and culture production and training specialists required by the country, and also centers for creating new knowledge and advancing the frontiers of science. The primary mission of universities includes education, research, and social services, of which the role of education is more critical due to its nature (1). Medical education is a part of the higher education system that deals with human life, and community health depends on the quality of education in these universities (2). Today, the disciplines of medical sciences are increasingly expanded. In addition to providing healthcare services, the universities of medical sciences have an essential mission to train capable and qualified individuals who have the knowledge, attitude, and skills required to maintain and promote the health of community members (3). Thus, educational systems must maintain their dynamism to coordinate with the advancement of knowledge and science. In doing so, continuous and permanent evaluation of the quality of the educational system and the improvement of different courses and programs is essential. Given the critical responsibility to maintain and promote community health, this necessity is especially more tangible in the professions

of medical sciences (4). Some countries have reduced this concern in the last two decades and tried to address it through continuous evaluation. Some of the efforts include implementing internal and external evaluation plans at the national level and establishing regional and international accreditation mechanisms (5). Global studies confirm that higher education institutions need a codified, scientific, and institutionalized evaluation system to evaluate the quality and accreditation of curricula (6). Numerous evaluation models have been considered to evaluate the quality of higher education. Among these models, the accreditation model has gained relatively universal acceptance and has been used almost as a model for specific evaluation of higher education in many countries and a large number of universities (7).

In recent years, accreditation has been proposed as one of the essential methods of quality assurance and promotion in medical sciences education in the country, and some measures have also been taken to establish accreditation structures in some parts of medical education (5). For example, in 2017, the Secretariat of the General Medical Education Council reviewed the national standards for accreditation of general medical education programs, which had been codified in 2007, and announced the country's universities of medical sciences (8). Also, to codify national accreditation standards of educational programs, the Secretariat of the Pharmacy and Specialized Education Council of the Ministry of Health made the draft standards of the general pharmacy course available to the country's universities of medical sciences to be considered by these universities; at present, the accreditation of the general doctoral course program in the country's pharmacy schools is underway (9). In most countries, however, there are independent institutions of educational program accreditation that act to codify and review the national standards for educational program accreditation; for example, the World Federation for Medical Education (WFME) in the United States recommends a set of global standards in basic medical education (10). The Academic Quality Assurance System (AQAS) is an independent organization recognized by the German Accreditation Council (GAC) since 2001 and is an informed body for the accreditation of higher education institutions and programs in Germany. The AQAS is also a vital member of the European Nations for Quality Assurance in Higher Education (ENQA) and is listed on the European Quality Assurance Register for Higher Education (EQAR) (11). By summarizing the definitions presented classically for accreditation, accreditation refers to granting a license or certification to an educational center that has met the pre-determined criteria based on the judgment of experts in the relevant field (12). According to the definition provided by the United States Council for Higher Education Accreditation (CHEA), accreditation is a process based on self-assessment and peer-assessment designed to ensure the quality of the institution or university educational course to improve the quality and accountability and determine whether the desired institution or program has met the standards published by the relevant accreditation organization and its mission and objectives or not (13).

Accreditation can be performed for an institution as a whole (institutional accreditation) or only includes accreditation courses under cover (specialized accreditation). If the unit to be evaluated in the accreditation system is an institution as a whole, the quality of the organization and its activities, including administrative affairs, budget, other resources and facilities, research affairs, educational facilities, and quality assurance mechanisms in that institution are evaluated, but if it is an educational course, the quality of the course is evaluated in a specific area (14). Program accreditation is a type of quality assurance performed in many countries and is usually associated with accountability and improving program quality (15). Program accreditation is typically used for programs, departments, or colleges that are part of the institution. Although the general frameworks of institutional and program accreditation are not much different, they are significantly different regarding implementation, criteria, and standards of judgment (16, 17).

In recent years, efforts have been made to develop national and local models for accreditation of educational programs in some medical sciences disciplines in Iran and other countries. The following items are some of these measures and studies.

In a study conducted to review and compare the standards and indicators of quality assurance and accreditation in higher education, Dameh (2011) analyzed the regional analysis and case studies of prominent accreditation experts. The author proposes the CIPOF (Context-Input-Process-Output- Feedback) accreditation model in this research, which has eight main areas (18). In another study conducted to propose a set of standards and indicators in quality assurance and accreditation, Hamalinen et al. (2004) also proposed a conceptual framework with five categories of standards (19). In a study conducted to determine the relative importance of the set of standards used by accreditation agencies worldwide, Van Xanten et al. (2012) concluded that there was a difference in the importance of some accreditation standards and some criteria were more important than others (20).

Blouin (2020), who identified new and effective accreditation indicators to determine the value and impact of accreditation, proposed eight program accreditation standards (21). In a study, Queto et al. (2006) compared the accreditation systems of medical education programs of the undergraduate course in nine developing countries (Argentina, India, Kenya, Malaysia, Mongolia, Nigeria, Pakistan, Philippines, and South Africa) with accreditation methods in the United States. The results of their study showed that accreditation systems in these countries existed with well-defined criteria, standards, and procedures and these systems were also similar to the accreditation systems of developed countries. The criteria of this study included in the areas of mission and objectives, educational programs, students, scientific/educational staff, educational resources, financial support and financial stability, the process of evaluation, monitoring, and improvement of curriculum, educational

management, executive and senior management, and leading planning strategies and activities (22). Allahdadian et al. (2008) conducted a study to propose appropriate national standards for nursing and midwifery based on international standards (a case study of master's course in nursing and midwifery). According to the results of their study, 28 standards (criteria) and 224 indicators in master's course were proposed as the final standard (23). In an effort to codify local standards for the accreditation of clinical nursing education, Naseri et al. (2010) conducted a study to codify accreditation standards for clinical nursing education in Iran based on international standards. The results of their study led to proposing 55 standards in five areas of faculty members and assistant clinical instructors, students, educational programs, clinical facilities, and teaching-learning activities for the accreditation of clinical nursing education in Iran (24). Aliyari et al. (2016) also conducted a study to codify and present a model for accreditation of the undergraduate course curriculum of nursing in medical universities first identified nine factors, 39 criteria, and 143 indicators and then, according to global experiences, characteristics, and the existing conditions in the country codified and localized their proposed model (6). Safdari and Meydani's research entitled "The Comparative Study of Healthcare Information Management Accreditation Standards in Canada, USA, and New Zealand" was conducted by a comparative method to be used as a model for reviewing the country's medical record standards under information management standards (25).

Considering that a coherent, consistent, and strict national quality assurance system makes the stakeholders in the higher education department sure that the standards are met (14) and also given the importance of accreditation programs in improving the quality of higher education, especially medical sciences education, this study aimed to compare the accreditation standards of undergraduate degree educational programs in the field of medical sciences using a comparative research method and benefit from the successful experiences of other countries. After comparing the similarities and differences, the final standards were extracted, and suggestions were provided for their application in Iran, and finally, took a step toward aligning national standards with international standards.

## Objectives

This study aimed to compare program accreditation standards of the Ministry of Health of Iran with several selected countries and to extract program accreditation standards to benefit from the experiences of other countries.

## Method

The present research is a descriptive-comparative cross-sectional study conducted in 2020. One of the research methods in reviewing and modernizing educational programs is conducting comparative studies. Comparative studies are a rational strategy for using the experiences of others (26). In definition, a comparative study is a practice in which two or more phenomena are put together, and their differences or similarities are analyzed. Comparative study leads educational program to create the ability to solve educational problems and difficulties and shows the set of factors and contexts effective in creating the successes and failures of educational systems (27-29). The Beredy model (1969) was used in the present study. This model is an absolute and abstract method among the methods of comparative studies that identifies four stages of description, interpretation, proximity, and comparison in comparative studies (30). In the description stage, research phenomena are prepared based on evidence and information, note-taking, and preparation of sufficient findings for review and critique in the next stage. The information is assessed and analyzed in the first step, i.e., in the interpretation stage. In the proximity stage, the information prepared in the previous stage is classified and put together to create a framework for comparing similarities and differences. In the comparison stage, the research problem is examined and compared according to the similarities and differences and answering the research questions (26). Based on this model; first, the required information about the latest accreditation standards of educational programs of medical sciences educational institutions extracted from related electronic sources, databases of organizations providing accreditation services in the world, as well as databases such as Springer, Web of Science, PubMed, Science Direct, Iranmedex, Magiran, Elsevier, Emerald, Ovid, Oxford, ProQuest, ISI web of Knowledge, MedLib, Irandoc, SID, Cochrane library, Scopus, ERIC, Embase, and search engines such as Google Scholar and Google and referring to the relevant internal authorities (standards for educational programs of the Ministry of Health, Treatment, and Medical Education) and reviewing the accreditation systems of world educational programs between 2004 and 2020 and using keywords such as "Program Accreditation", "Specialized Accreditation", "Assessment", "Criteria", "Degree", "Medical Sciences", "Standards", "Bachelor", "Quality Evaluation", and "Quality Assurance" was obtained and studied.

Inclusion and exclusion criteria of studies in this research were:

Inclusion Criteria

• Standards of program accreditation for the undergraduate degree in medical sciences (clinical and nonclinical) and higher education

• Articles in English, valid Persian articles, documents

Exclusion Criteria

• Institutional accreditation standards, hospital accreditation standards, postgraduate accreditation standards

• Gray literature, electronic and printed information not endorsed by reputable publications

• Reports, ideas, editorials, and views

In this study, the accreditation standards of educational programs in the field of medical sciences based on searching on the databases mentioned above

were used. To compare the accreditation standards of the world countries (all five continents); first, the countries that had a codified and national plan for the accreditation of undergraduate degree educational programs in all disciplines of medical sciences were selected. The first preference was the bachelor's course in all disciplines of medical sciences, and in the absence of a program in this course, the use of nursing accreditation standards, the preliminary stage (first 4 years) of general medicine (basic medical education (BME), primary medical programs (PMP)) in countries such as Iran, Malaysia, Kazakhstan, and Australia, respectively. In the next step, in the absence of a specific accreditation program for medical sciences, accreditation standards that were generally codified for higher education in an undergraduate degree (such as the European Union and the United Arab Emirates) were used.

In the next stage, experts in the areas of institutional and program accreditation with specializations in curriculum planning, educational management, educational psychology, and medical education identified, reviewed, and analyzed the accreditation standards of various educational programs. The information was then tabulated for each accreditation standard so that the name of each university was placed in the rows of the tables. In this way, by ordering the data, similarities and differences were determined, and practical and specific suggestions and solutions were presented. The present study was approved by the Ethics Committee of Kerman University of Medical Sciences (IR.KMU.REC.1399.455).

## Results

The findings of this study were the result of reviewing accreditation standards of nursing in the United States, Kazakhstan, and Caribbean Community, Australian and Malaysian medical introductory standards, and higher education in the United Arab Emirates, South Africa, and the European Union. In Iran, national standards for accreditation of undergraduate degree educational programs have not yet been announced. Therefore, for comparison, national standards of general medicine were used as reference standards in Iran. Also, given that the WFME standards are a valid and international reference and countries around the world have used these standards to improve the quality of medical education to develop and design accreditation standards of educational programs in the field of medical sciences, it is recognized as a valid reference for comparing standards (10).

The study results on each of the accreditation systems of the studied educational programs are presented separately in Tables 1-11. It is worth noting that some of the studied countries did not have information in some areas; therefore, their names are not mentioned in some tables.

According to Table 1 regarding 10 countries and the accreditation program studied by Iran, the WFME, the United States, Australia, and Kazakhstan have the mission and objectives area; of course, with a slight difference in the titles of the areas and also in the number of criteria and indicators, the number of criteria and indicators varies from 2 to 9 and 6 to 26, respectively.

According to the information presented in Tables 2, 3, and 4, three areas of the educational program, students, and educational resources were areas with which all 10 countries and the program under study had a complete agreement and were included in their accreditation program.

According to Table 5, the area of student evaluation has not been included in United States accreditation standards. This area is one of the criteria in the field of course evaluation in the United Arab Emirates, one of the criteria in the field of students in Caribbean Community, and one of the criteria in the field of continuous monitoring and periodic review in the European Union.

According to Table 6, the area of faculty members exists in all countries and programs under study, with

**Table 1.** Comparison of accreditation standards in the area of mission and objectives based on the studied countries

| The Studied Countries | | The First Area: Mission and Objectives |
|---|---|---|
| National Standards of General Medicine in Iran | | Mission and objectives, including two criteria: 1- Mission and objectives and 2- Authority, which is evaluated by six indicators (8). |
| World Federation for Medical Education | | Mission and results, including four criteria: 1- Mission, 2- Organizational autonomy and academic freedom, 3- Educational results, and 4- Participation in codifying mission results, which is evaluated by 26 indicators (10). |
| The United States | | Mission and administrative competence, including these criteria: 1- Mission and philosophy, 2- Administrative competence, 3- Program policies, 4- Management organization, 5- Managers' competence, 6- Authorities and responsibilities, 7- Program budget, 8- Participation of stakeholders, and 9- Distance education, which is evaluated by 11 indicators (31). |
| Australia | | Outcomes (results) of the program, including two criteria: 1- Objective and 2- The results of the medical program, which are evaluated by 7 indicators (32). |
| Eurasia | Kazakhstan | Mission and results, including four criteria: 1- Mission, 2- Organizational autonomy and academic freedom, 3- Educational results, and 4- Participation in the development of mission and results, which is evaluated by 14 indicators (33). |
| Caribbean Community | | Organizational regulations, including four criteria: 1- Senior and executive management, 2- Vision, mission, values, and strategies, 3- Academic environment, and 4- Safe and positive environments, which is evaluated by 24 indicators (34). |

**Table 2.** Comparison of accreditation standards in the area of educational program based on the studied countries

| The Studied Countries | | The Second Area: Educational Program |
|---|---|---|
| National Standards of General Medicine in Iran | | An educational program, including four criteria: 1- Program framework, 2- Educational content, 3- Educational strategies, and 4- teaching-learning methods, which is evaluated by 20 indicators. |
| World Federation for Medical Education | | An educational program, including eight criteria: 1- Program framework, 2- Scientific method, 3- Basic medical sciences, 4- Behavioral and social sciences, medical ethics, and spiritual rights, 5- Clinical sciences and skills, 6- Program structure, composition, and duration, 7- Program management, and 8- The relationship between medical practices and the health sector, which is evaluated by 40 indicators. |
| The United States (Nursing) | | A curriculum, including the criteria: 1- Regulations, 2- Program design, 3- Program content, 4- Educational processes, 5- Healthcare areas, and 6- Evaluation methods, which is evaluated by 11 indicators. |
| Australia | | A medical curriculum, including six criteria: 1- Duration of the medical program, 2- Curriculum content, 3- Curriculum design, 4- Curriculum description, 5- Local health, and 6- Choices opportunities for students to promote the breadth and variety of experiences, which is evaluated by 10 indicators. |
| Asia | The United Arab Emirates | Educational programs, including fourteen criteria: 1- Program planning and development, 2- Budgeting for programs, 3- Requirements for structuring and completing the program, 4- Framework of national competencies, 5- Postgraduate studies program, 6- General education, 7- Compensatory courses, 8- Internship or practical course, 9- Teaching methods, 10- Student evaluation, 11- Course presentation, 12- Course and program evaluation, 13- Program effectiveness, and 14- Content change of programs, which is evaluated by 85 indicators (35). |
| | Malaysia | Program development and presentation, including three criteria: 1- The statement of academic goals of the academic program and learning outcomes, 2- Program development: Process, content, structure, and teaching-learning methods, and 3- Program presentation, which is evaluated by 17 indicators (36). |
| Eurasia | Kazakhstan | The educational program, including eight criteria: 1- Program framework, 2- Scientific method, 3- Basic medical sciences, 4- Behavioral and social sciences, medical ethics, and spiritual rights, 5- Clinical sciences and skills, 6- Program structure, composition, and duration, 7- Program management, and 8- The relationship between medical measures and the health sector, which is evaluated by 25 indicators. |
| Caribbean Community | | The educational programs, including six criteria: 1- Curriculum codification and management, 2- Clinical, educational program, 3- Education and evaluation, 4- Satellite campuses, online programs, and license issuing (geographically separated campuses, online and Franchise Programs), 5- Program evaluation and review, and 6- The program effectiveness, which is evaluated by 49 indicators. |
| South Africa | | Program design includes seven criteria: 1- Communication with the institutional mission and planning, 2- Needs of students and other stakeholders, 3- Intellectual credibility, 4- Coherence, 5- Rhetoric, 6- Specifications and needs of professional and occupational education, and 7- Learning content development, which is evaluated by 14 indicators (15). |
| The European Union | | Design and approval of programs, including eight criteria: 1- Designing under the general objectives of the program, organizational strategy, and with specific learning outcomes, 2- Participation of students and other stakeholders in program design, 3- Using the external experts and reference points, 4- Reflecting the goals of higher education in the Europe Council, 5- Uniform and regular student progress, 6- The student workload amount and volume, 7- The best placement structure, and 8- The formal process of organization approval, which does not have any specific titles (37). |

**Table 3.** Comparison of accreditation standards of the area of students based on the studied countries

| The Studied Countries | | The Third Area: Students |
|---|---|---|
| National Standards of General Medicine in Iran | | Students, including three criteria: 1- Student admission and selection, 2- Student counseling and support, and 3- Presence of student representatives, which is evaluated by 17 indicators. |
| World Federation for Medical Education | | Students, including four criteria: 1- Student admission and selection policy, 2- Student recruitment rate, 3- Student counseling and support, and 4- Student representative, which is evaluated by 20 indicators. |
| The United States (Nursing) | | Students, including four criteria: 1- Student policies, 2- Student support services, 3- Program general information, and 4- Student's educational background, which is evaluated by 12 indicators. |
| Australia | | Students, including six criteria: 1- Student recruitment rate, 2- Admission and selection policy, 3- Student support, 4- Professionalism and readiness for practice, 5- Student representation, and 6- Payment of compensation and student insurance, which is evaluated by 15 indicators. |
| Asia | The United Arab Emirates | Students, including fifteen criteria: 1- Codified list (about the institute and its programs), 2- (How to) accept bachelor's degree, 3- (How to) accept postgraduate studies, 4- Admission and transfer, 5- Recognition of previous learning (RPL), 6- Registration and Academic background, 7- Academic status (full-time, part-time) of the student and number of credits, 8- Student support services, 9- Counseling services, 10- Activities and publications (articles, research, etc.), 11- Student behavior and academic honesty, 12- Student appeals and prosecution, 13- Student handbook, 14- Graduates, and 15- Feedback from students, which is evaluated by 95 indicators. |
| | Malaysia | Student selection and support services, including five criteria: 1- Student selection, 2- Transfer, 3- Student support services, 4- Student representation and participation, and 5- Graduates, which is evaluated by 20 indicators. |
| Eurasia | Kazakhstan | Students, including four criteria: 1- Student admission and selection policy, 2- Student recruitment rate, 3- Student counseling and support, and 4- Student representative, which is evaluated by 17 indicators. |
| Caribbean Community | | Students, including six criteria: 1- Admission, 2- Transfer and guest students, 3- Student services, 4- Learning environment, 5- Student evaluation, and 6- Student representative, which is evaluated by 36 indicators. |
| South Africa | | Student recruitment, admission, and selection, including seven criteria: 1- Employment, 2- Legal consequences, 3- Extensive access, 4- Fairness and impartiality, 5- Learning obligations, 6- Occupational needs, and 7- The program capacity to provide high-quality education, which is evaluated by 13 indicators. |
| The European Union | | Student (admission, progress, recognition, and certification), including four criteria: 1- Academic achievement, 2- Admission policies, processes, and criteria, 3- Official recognition of higher education qualifications, and 4- Qualifications of graduates (indicators have been expressed in descriptive terms). |

**Table 4.** Comparison of accreditation standards in the area of educational resources based on the studied countries

| The Studied Countries | | The Fourth Area: Educational Resources |
|---|---|---|
| National Standards of General Medicine in Iran | | Educational resources, including six criteria: 1- Physical facilities, 2- Clinical education resources, 3- Information technology, 4- Research and scholarship, 5- Medical education proficiency, and 6- Educational exchanges, which are evaluated with 21 indicators. |
| World Federation for Medical Education | | Educational resources, including six criteria: 1- Physical facilities, 2- Clinical education resources, 3- Information technology, 4- Medical research and scholarship, 5- Educational proficiency, and 6- Educational exchanges, which are evaluated with 29 indicators. |
| The United States (Nursing) | | Resources, including three criteria: 1- Financial resources, 2- Physical resources, and 3- Learning and technology resources, which are evaluated with 4 indicators. |
| Australia | | Learning environment, including four criteria: 1- Physical facilities, 2- Information resources and library services, 3- Clinical learning environment, and 4- Clinical supervision, which is evaluated by 12 indicators. |
| Asia | The United Arab Emirates | Learning resource center, including five criteria: 1- Facilities and infrastructures of the learning resource center, 2- Staff, 3- Activities, 4- Electronic and non-electronic complexes, and 5- Cooperation agreements, which is evaluated by 19 indicators. |
| | Malaysia | Educational resources, including four criteria: 1- physical facilities, 2- Research and development, 3- Financial resources, and 4- Educational specialization, which is evaluated by 12 indicators. |
| Eurasia | Kazakhstan | Educational resources, including six criteria: 1- Physical facilities, 2- Clinical education resources, 3- Information technology, 4- Medical research and scholarship, 5- Educational proficiency, and 6- Educational exchanges, which are evaluated with 26 indicators. |
| Caribbean Community | | Educational resources, including three criteria: 1- Public facilities, 2- Finance, and 3- Information resources and library services, which are evaluated with nine indicators. |
| South Africa | | Infrastructure and library resources, including six criteria: 1- Places, 2- Information technology and education infrastructures, 3- Size and extent of library resources, 4- Integration of library resources in the curriculum, 5- Management and maintenance of library resources, and 6- Library support and access to students, which is evaluated by 12 indicators. |
| The European Union | | Student learning and support resources, including five criteria: 1- Physical resources, 2- Staff support (for students), 3- Planning and providing student learning and support resources, 4- Organizing activities and support facilities, and 5- The role of administrative and support staff (indicators have been expressed by descriptive terms). |

**Table 5.** Comparison of accreditation standards in the area of student evaluation based on the studied countries

| The Studied Countries | | The Fifth Area: Student Evaluation |
|---|---|---|
| National Standards of General Medicine in Iran | | Student evaluation, which includes no sub-area or criteria and is evaluated by 10 indicators. |
| World Federation for Medical Education | | Area name: Student evaluation, including two criteria: 1- Evaluation methods and 2- The relationship between evaluation and learning, which is evaluated by 15 indicators. |
| Australia | | Student learning evaluation, including four criteria: 1- Evaluation approach, 2- Evaluation methods, 3- Evaluation feedback, and 4- Evaluation quality, which is assessed by 11 indicators. |
| Asia | Malaysia | Student learning evaluation, including three criteria: 1- The relationship between evaluation and learning outcomes, 2- Evaluation methods, and 3- Student evaluation management, which is evaluated by 11 indicators. |
| Eurasia | Kazakhstan | Student evaluation, including two criteria: 1- Evaluation methods and 2- The relationship between evaluation and learning, which is evaluated by 13 indicators. |
| South Africa | | Student evaluation policies and procedures, including seven criteria: 1- Internal evaluation, 2- Balance between internal and external evaluation, 3- Monitoring student progress, 4- Evaluation validity and reliability, 5- Recording the results, 6- Security, and 7- Recognition of prior learning (RPL), which is evaluated by 16 indicators. |

the difference that in Australia, it is not an independent area but it is considered one of the criteria in the area of medical program provisions (Table 11).

According to Table 7 of the studied programs, only Iran, Australia, Kazakhstan, and the WFME have the area of course evaluation.

The information in Table 8 shows that the area of executive and senior management, except in the United States and the European Union, has been included in the rest of the programs under study. This area is one of the criteria for the area of medical provisions in Australia (Table 11).

The information in Table 9 indicates that the area of continuous review has been used by Iran, Malaysia, Kazakhstan, the European Union, and the WFME.

According to the information in Table 10, the area of teaching-learning has been used by Australia, South Africa, and the European Union. In Iran, it is a criterion in the area of the educational program. In the United States, it is one of the criteria in the area of curriculum and educational processes. In the United Arab Emirates, it is one of the

**Table 6.** Comparison of accreditation standards in the area of faculty members based on the studied countries

| The Studied Countries | | The Sixth Area: Faculty Members |
|---|---|---|
| National Standards of General Medicine in Iran | | Faculty members, including two criteria: 1- Calling and recruiting faculty members and 2- Rank promotion and activities of faculty members, which are evaluated by 13 indicators. |
| World Federation for Medical Education | | Faculty members, including two criteria: 1- Recruitment and employment policy and 2- Activities and progress of faculty members, which is evaluated by 12 indicators. |
| The United States (Nursing) | | Faculty members and staff, including six criteria: 1- Competence and credibility of faculty members and staff, 2- Number of faculty members and staff, 3- Non-nursing faculty members, 4- Instructors, 5- Cooperation type of faculty members (full-time-part-time), and 6- Performance of faculty members, which is evaluated by 10 indicators. |
| Asia | The United Arab Emirates | Faculty members and professional staff, including 16 criteria: 1- Faculty members handbook, 2- Professional staff handbook, 3- Calling and terms of employment, 4- Academic degrees, 5- Faculty members of postgraduate studies, 6- Professional staff qualifications, 7- Faculty members workload, 8- Part-time faculty members, 9- Roles of faculty members, 10- Professional development, 11- Staff background, 12- Evaluation, 13- Behavioral regulations, 14- Disciplinary actions and consequences, 15- Complaint, and 16- Postgraduate studies assistants (the use of postgraduate students as assistants in teaching and education), which is evaluated by 65 indicators. |
| | Malaysia | Academic staff, including two criteria: 1- Recruitment and management and 2- Service and promotion, which is evaluated by 15 indicators. |
| Eurasia | Kazakhstan | Faculty members, including two criteria: 1- Recruitment and employment policy and 2- Activities and progress of faculty members, which is evaluated by 11 indicators. |
| Caribbean Community | | Professors and staff, including three criteria: 1- Number, qualifications, and performance 2- Personnel policies, and 3- Professional development of professors and staff, which is evaluated by 15 indicators. |
| South Africa | | Staff, including eleven criteria: 1- Qualifications, 2- Teaching experience, 3- Evaluation competence (regarding students), 4- Research characteristics, 5- Development of faculty members, 6- Degree and seniority, 7- Full-time and part-time staff, 8- Employment rules and conditions, 9- Methods of selection, appointment, establishment, and payment, 10- Contractual arrangements, and 11- Administrative and technical staff, which is evaluated by 13 indicators. |
| The European Union | | Educational staff, including five criteria: 1- Recruitment processes, 2- Recruitment conditions, 3- Occupational development, 4- Scholarship activities, 5- Teaching methods (indicators have been expressed as descriptive expressions). |

**Table 7.** Comparison of accreditation standards in the area of course evaluation based on the studied countries

| The Studied Countries | | The Seventh Area: Course Evaluation |
|---|---|---|
| National Standards of General Medicine in Iran | | Course evaluation, including two criteria: 1- Course monitoring and evaluation system and 2- Students' and graduates' performance, which is evaluated by eight indicators. |
| World Federation for Medical Education | | Course evaluation, including four criteria: 1- Course monitoring and evaluation system, 2- Professor-student feedback, 3- Students' and graduates' performance, and 4- Stakeholder participation, which is evaluated by 23 indicators. |
| Australia | | Monitoring and evaluation, including three criteria: 1- Monitoring, 2- Evaluation of results, and 3- Evaluation feedback and quality report, which is evaluated by eight indicators. |
| Eurasia | Kazakhstan | Course evaluation, including four criteria: 1- Course monitoring and evaluation system, 2- Professor-student feedback, 3- Students' and graduates' performance, and 4- Stakeholder participation, which is evaluated by 19 indicators. |

**Table 8.** Comparison of accreditation standards in the area of senior and executive management based on the studied countries

| The Studied Countries | | The Eighth Area: Senior and Executive Management |
|---|---|---|
| National Standards of General Medicine in Iran | | Senior and executive management, including five criteria: 1- Senior management, 2- Education management, 3- Educational budget and resource allocation, 4- Management and implementation, and 5- Interaction with the health sector, which is evaluated by 13 indicators. |
| World Federation for Medical Education | | Senior and executive management, including five criteria: 1- Senior management, 2- Educational leadership, 3- Educational budget and resource allocation, 4- Management and implementation, and 5- Interaction with the health sector, which is evaluated by 15 indicators. |
| Asia | The United Arab Emirates | Senior and executive management, including 10 criteria: 1- Perspective and mission, 2- Organization, 3- Executive management, 4- Policies and methods, 5- Organizational planning 6- Crisis management, 7- Organizational management and executive management, 8- University campuses in the United Arab Emirates, 9- University campuses of the United Arab Emirates in other countries, and 10- Campuses that are the branches of foreign institutions, which are evaluated by 59 indicators. |
| | Malaysia | Program management, including four criteria: 1- Program management, 2- Program leadership, 3- Administrative (executive) staff, 4- Academic backgrounds, which are evaluated by 16 indicators. |
| Eurasia | Kazakhstan | Senior and executive management, including five criteria: 1- Senior management, 2- Educational leadership, 3- Educational budget and resource allocation, 4- Management and implementation, and 5- Interaction with the health sector, which is evaluated by 13 indicators. |
| South Africa | | The services of administrative programs, including four criteria: 1- Providing information, 2- Identifying inactive and at-risk students, 3- Addressing the needs of the diverse student population, 4- Ensuring the integrity of the certificate, which is evaluated by seven indicators. |

criteria in the area of educational programs entitled teaching methods. In Malaysia, it is one of the criteria in the area of program development and presentation. In the WFME and Kazakhstan, it is one of the indicators of the program framework criterion of the area of the educational program. In Caribbean Community, it is one of the criteria in the area of the educational program entitled education and evaluation. According to Table 11:

- In Australian standards, there is an area called "program content" consisting of criteria such as senior management, staff (educational and administrative), and research and scholarship, which have been included in some programs as independent areas.

- The United Arab Emirates has 11 accreditation areas, of which five areas (educational program, students, faculty members, educational resources, senior and executive management) are shared with the areas of some studied programs, and the other six areas have not been included in other studied programs. These areas include quality assurance, scholarship and research activities, health, safety and environment, financial resources, financial management and budgeting, legal agreement, public transparency, and interaction with the community.

- In the standards of Caribbean Community and South Africa, an area regarding postgraduate education has been included, entitled "continuation of professional education" in Caribbean Community and "postgraduate policies, regulations, and procedures" in South Africa dealing with the conditions of continuing education and the rules and regulations of postgraduate courses.

- Out of 10 areas of the European Union, six areas, including educational program, student, faculty members,

**Table 9.** Comparison of accreditation standards in the area of continuous review based on the studied countries

| The Studied Countries | | The Ninth Area: Continuous Review |
|---|---|---|
| National Standards of General Medicine in Iran | | Continuous review, which includes no sub-area or criteria and is evaluated by 14 indicators. |
| World Federation for Medical Education | | Continuous review, which includes no sub-area or criteria and is evaluated by 15 indicators. |
| Asia | Malaysia | Program monitoring and continuous quality review and improvement, including one criterion: 1- Mechanisms of program monitoring, continuous quality review, and improvement, which is evaluated by 9 indicators. |
| Eurasia | Kazakhstan | Continuous review, which includes no sub-area or criteria and is evaluated by 15 indicators. |
| The European Union | | Continuous monitoring and periodic review of programs, including eight criteria: 1- Evaluating program content, 2- Evaluating society changing needs, 3- Evaluating workload, progress, and completion of students, 4- Evaluating students (regarding program effectiveness), 5- Evaluating students' expectations, needs, and satisfaction with the program, 6- Evaluating learning environment and support services, 7- Participation of students and other stakeholders in reviewing the program, and 8- Publishing the specifications of the modified program (indicators have been expressed in descriptive terms). |

**Table 10.** Comparison of accreditation standards in the area of teaching-learning based on the studied countries

| The Studied Countries | The Tenth Area: teaching-learning |
|---|---|
| Australia | Teaching-learning, including seven criteria in the form of descriptive sentences and evaluation indicators have also been expressed in descriptive terms: 1- The provider of medical education that uses a wide range of teaching-learning methods to respond to the results of the medical program, 2- Encourages the students' medical program to self-assessment and learning responsibility and prepares them for lifelong learning, 3- The medical program enables students to develop core skills before using them in a clinical setting, 4- Students engage in adequate patient supervision to increase their clinical skills to the required level by enhancing participation in clinical care because they go through a medical program, 5- The medical program promotes the role model as a method of learning, especially in clinical practice and research, 6- Teaching-learning methods in the clinical setting promote the concepts of patient care and participatory interaction, and 7- The medical program ensures that students cooperate with and learn from other health professionals to learn and enhance work experience in inter-professional teams. |
| South Africa | Teaching-learning strategy, including five criteria: 1- The importance of students' learning progress, 2- Organizational model, presentation methods, and student combination, 3- Appropriate teaching-learning methods, 4- Improving teaching methods, and 5- Objectives, executive programs and monitoring methods, impact evaluation, and result improvement, which is evaluated by 11 indicators (33). |
| The European Union | Student-centered learning, teaching, and evaluation, including seven criteria in the field of teaching and learning: 1- Diversity and needs of students, 2- Teaching (education) methods, 3- Educational methods, 4- Modification and evaluation of educational methods, 5- Learner independence, 6- The relationship between learner and teacher, and 7- Students' complaints consisting of seven criteria in the evaluation section, including: (1) Evaluators' skills, (2) Evaluation criteria and methods, (3) Achievement of learning outcomes and feedback, (4) Number of evaluators, (5) Evaluation rules, (6) Evaluation conditions, and (7) Student requests (indicators have been expressed in descriptive terms) (34). |

**Table 11.** Comparison of accreditation standards in other areas based on the studied countries

| The Studied Countries | Other Areas |
|---|---|
| Australia | The content of the medical program, including nine criteria: 1- Senior management, 2- Leadership and authority, 3- Medical program management, 4- Educational proficiency, 5- Educational budget and resource allocation, 6- Interaction with the health sector and society, 7- Research and scholarship, 8- Staff resources, and 9- Staff appointment, promotion, and development, which are evaluated by 21 indicators. |
| The United Arab Emirates | Quality assurance, including three criteria: 1- Quality assurance system, 2- Continuous quality improvement, and 3- Quality assurance unit, which is evaluated by 13 indicators. |
| | Research activities and scholarship, including five criteria: 1- Strategies and policies, 2- Support for research activities and scholarship, 3- Participation in research and scholarship, 4- Expectations from research and scholarship, and 5- Outcomes of research and scholarship, which are evaluated by 10 indicators. |
| | The field of health, safety, and environment, including four criteria: 1- Occupational health and safety, 2- Facilities, 3- Dormitories, and 4- Technological infrastructure, which is evaluated by 35 indicators. |
| | Financial resources, financial management, and budget, including nine criteria: 1- Financial resources, 2- Student support plan/maintenance of education (course), 3- Organization and executive management, 4- Budgeting, 5- Cost, 6- Financial management, 7- Accounting and auditing, 8- Financial report to the Ministry of Education, and 9- Insurance, which is evaluated by 35 indicators. |
| | The area of legal agreements and public transparency, including five criteria: 1- The institution name and the program title, 2- Legal agreement and contracts, 3- General information, 4- Honesty and transparency, and 5- Communication with the Ministry of Education, which is evaluated by 25 indicators. |
| | The area of interaction with the community, including six criteria: 1- Community interaction strategy, 2- Relationships with employers, 3- Relationships with other education providers, 4- Relationships with graduates, 5- Continuous education, and 6- Evaluation, which is evaluated by five indicators. |
| Caribbean Community | Professional education continuance, which includes no criterion and is evaluated by five indicators. |
| South Africa | Postgraduate policies, regulations, and procedures, including three criteria: 1- Policies, regulations, and procedures, 2- Equality and accessibility, and 3- Students' readiness, which is evaluated by 11 indicators. |
| The European Union | Quality assurance policies, including five criteria: 1- Organization of quality assurance system, 2- Responsibility of departments, organizational units, managers, and stakeholders in quality assurance, 3- Scientific competence, autonomy, and vigilance against academic fraud, 4- Protection of students or staff against any kind of prejudice or discrimination, and 5- The participation of external stakeholders in quality assurance (indicators have been expressed in descriptive terms). |
| | Information management, including seven criteria: 1- Main performance indicators, 2- Student population characteristics, 3- Students' progress, success, and dropout, 4- Students' satisfaction with their programs, 5- Student learning resources and support, 6- Graduates' career paths, and 7- Methods of data collection and analysis (indicators have been expressed in descriptive terms). |
| | General information, including two criteria: 1- Information related to activities and 2- Information related to graduate employment (indicators have been expressed in descriptive terms). |
| | External periodic quality assurance, including one criterion: 1- External quality assurance framework (indicators have been expressed in descriptive terms). |

educational resources, continuous review, and teaching-learning, are consistent with the areas used by some countries and programs, but areas of quality assurance policies, information management, public information, and quality assurance of external courses are not among the standards used by other studied countries.

Also, by studying each area and analyzing and comparing their similarities and differences, it was found that the program accreditation standards used in Iran, the WFME, and Kazakhstan have been codified in nine very similar areas (albeit with a slight difference in the number of criteria and indicators). These nine areas include mission and objectives, educational program, student evaluation, students, faculty members, educational resources, course evaluation, senior and executive management, and continuous review.

## Discussion

According to the findings of the study, accreditation standards in the field of medical sciences, the areas of mission and objectives; senior and executive management; educational program; students; faculty members and technical and administrative staff; educational resources; teaching-learning; scholarship and research activities; financial resources, financial management, and budget; interaction with community; stakeholder satisfaction and expectations; continuous review, and quality assurance are proposed as a framework of program accreditation standards.

As noted, the first six areas are the standards used in most accreditation programs; therefore, these standards are among the main and basic areas of accreditation, and their existence in the standards used in Iran is one of the strengths of this program, which is consistent with the results of studies by Queto et al. (2006) and Allahdadian et al. (2008) (22, 23).

Although only a few of the programs studied in this study have used the standards of "continuous review" and "quality assurance", it seems that the importance of up-to-date and high-quality educational programs becomes clearer when special conditions govern the society, the educational system, and the health of countries and the world. For example, in times of civil and foreign wars or health crises that affect governments and the world, such as COVID-19 pandemic, which has affected our country and also all countries of the world and, subsequently, educational

systems, the necessity of revising educational programs to improve the quality of these programs to adapt to specific circumstances becomes even more noticeable. Therefore, a combination of these two standards as "continuous review and quality assurance" is recommended and, as can be seen, the findings of the studies by Blouin (2020) and Hamalinen et al. (2004) also confirm this finding (19, 21).

Distance learning, especially electronic learning (e-learning), challenges conventional knowledge of the nature of the teaching-learning process and the types of learning experiences that each learner must experience in higher education. Therefore, based on norms and rules, e-learning of conventional systems also challenges quality assurance and accreditation. Many features of distance learning are so different from traditional teaching modes that conventional quality evaluation standards and indicators can no longer be used. The learning (e-learning) experience is fundamentally different from face-to-face learning. Traditional concepts of learning can no longer be used in e-learning courses. There are no more university campuses. The role of faculty members and the separation of parts of educational activities; for example, the separation of face-to-face and actual education, face-to-face evaluation, and evaluation of the lesson plan, changed fundamentally (18). With this description, due to the importance and impact of the "teaching-learning processes" standard on the quality of the educational program and also given the world's current condition that is engaged with the coronavirus pandemic, education and face-to-face learning have impaired and as a result, have made educators inevitable to use new methods of teaching and learning and distant education compatible with these conditions. Therefore, it is suggested that this standard be considered an independent field with clear and measurable indicators. The results of Aliyari et al. (95), Dameh (2011), Naseri et al. (89), and Allahdadian et al.'s (87) studies are consistent with this finding (6, 18, 23, 24).

Also, considering the prominent role of areas such as "research and scholarship" and "budget and financial resources" in increasing the quality of education, as well as the effect of standards such as "interaction with community" and "stakeholder satisfaction and expectations" on awareness of the needs of the community and stakeholders and better communication between health and society, standards such as "scholarship and research activities", "financial resources, financial management, and budget", "interaction with the community", and "stakeholder satisfaction and expectations" are the standards that can significantly affect the credibility of an educational program if approved or not approved by the evaluation and accreditation team. Therefore, it is suggested that these standards be included in the accreditation program as main areas and with extensive and independent criteria and indicators. The findings of Blouin (2020), Allahdadian et al. (87), and Queto et al.'s (2006) studies confirm these findings (21-23).

The results of the present study can be made available to policy-makers, decision-makers, and staff of medical sciences education and accreditation of educational programs in the country to integrate accreditation standards of undergraduate degree educational programs, and ultimately it is hoped that it will lead to improving the quality of medical sciences education in the country.

Finally, it is suggested that more research be conducted on the localization of these standards and the development of a national model for accreditation standards of undergraduate degrees of medical sciences that is compatible with the country's social, cultural, and economic conditions, as well as facilities, resources, and infrastructure of medical sciences. Also, the accreditation organization in the field of medical sciences, apart from the Ministry of Health, should be established as an independent organization aiming at planning and implementing accreditation at all levels of accreditation, including institutional, program, and hospital accreditation.

## Conclusion

In line with the results of this study, it seems necessary to develop a local framework for accreditation of medical programs in the undergraduate degree for Iran. Also, with a special look at this process, it is possible to develop an applied accreditation program consisting of appropriate and desirable areas and standards that has validity and reliability and be achievable and measurable at the same time and can desirably evaluate an educational program, which finally leads to the promotion and improvement of the quality of education in the undergraduate degree in medical sciences.

**Supplementary material(s):** is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

## Acknowledgment

We would like to thank the esteemed professors and colleagues of Kerman University of Medical Sciences, especially Dr. Sara Shafian, who sincerely helped us carry out this research.

**Conflict of Interests:** The authors declared there was not conflict of interest.

**Ethical Approvals:** This study was approved by the Ethics Committee of Kerman University of Medical Sciences (IR.KMU.REC.1399.455).

**Funding/Support:** N/A

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