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Title: What Are the Interventions for Internationalizing the Academic Program of Health in Disasters and Emergencies? A Qualitative Study in the Context of Iran

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Abstract

Background: The internationalization of universities is crucial for scientific advancement and global competitiveness. Since 2010, several Iranian universities have introduced the health in disasters and emergencies academic program, which offers substantial potential for international collaboration in education and research. This study seeks to identify key strategies and interventions to prioritize for advancing the program's internationalization within Iran's context.

Methods: This qualitative research employed a conventional content analysis approach. A total of 18 participants were strategically selected through purposive sampling. Data were collected through in-depth semi-structured interviews, ensuring rich and comprehensive insights. The data analysis was rigorously conducted using the inductive approach established by Graneheim and Lundman.

Results: A total of six main categories and 15 subcategories were identified from the data. The interventions and strategies for internationalizing the academic field of health in disasters and emergencies include political strategies, organizational strategies, human resource strategies, economic strategies, infrastructure development and improvement, as well as interactions related to Iran's high-risk profile.

Conclusion: The academic program on health in disasters and emergencies can play specific and important roles in improving the functions of disaster health management at national and international levels. Establishing the educational and research facilities in the highly disaster-prone regions in Iran for the international collaboration, as well as joint research and training programs is highly recommended.

Keywords: Health, Disaster, Emergencies, Internationalization, Academic program, Iran.

Introduction

Higher education is considered as one of the sustainable development factors and can play a strategic role in the advancement and promotion of the countries [1]. Currently, due to the importance of globalization, the spread of communication and information technology has led to eliminating geographical boundaries among academic societies, researchers, and scholars [2]. Hence, the universities and academic centers compete for improving their progress and performance at the regional and international levels [3].

Therefore, universities are committed to implementing important reforms and modifications to be able to respond to the economic and geopolitical requirements for their internationalization [4]. Thus, the internationalization of the academic programs are growing, especially in developing countries [5]. Internationalization of academic programs/fields is considered as the process of integrating international, intercultural, and global dimensions into the educational and research goals and functions defined for a university [6]. This strategy can play an important role in empowering governments to engage effectively with globalization and achieve progress in the economic, political, cultural, social, and scientific fields [7, 8].

Several factors contribute to the internationalization of the academic field, including qualified human resources, socio-cultural and political interactions, knowledge production, and the necessity of addressing both national and international needs [3, 9]. In other words, universities need to enter this field to gain international recognition [4]. As a result, various studies have documented the experiences of academic institutions and universities regarding the internationalization of their education and research programs [10]. For instance, the University of Melbourne in Australia initiated a project called "Traveling to Other Cultures" to encourage student participation in international exchange programs [11]. Additionally, Malaysia and Singapore have embraced the concepts of privatization and market orientation to foster an international environment for higher education. [12]. In New Zealand, increasing demands for accepting international students have led to more quotas allocated to universities [13].

It should be noted that about 50% of international students study in four English-speaking countries: United States of America, United Kingdom, Australia and Canada [14]. Other countries, such as France, Germany, China, and Russia, are also the hosts of about 30 percent of international students [15]. In Iran, the issue of internationalization of universities and academic centers has been considered as a mission for universities in accordance with the National Policy Statement

during the past decade [16, 17]. For example, a program for developing International Medical Education was planned by the Ministry of Health [18]. The internationalization of medical and health sciences in Iran, leveraging the strong potential of its universities, has significantly boosted foreign student enrollment. Nevertheless, the process requires further refinement to fully achieve its objectives[19].

Iran, among the world's most disaster-prone nations, prioritized improving disaster response following the 2003 Bam earthquake. Recognizing the need for skilled professionals and research-based insights, the country launched a postgraduate program in 2011 focused on health in disasters and emergencies[20].

The academic program on health in disasters and emergencies in Iran leverages regional and international opportunities in research and education, enhancing its potential for global collaboration. By offering training based on Iranian scholars' expertise and engaging in joint research and field surveys with regional and international peers, these university departments can drive internationalization further. This study seeks to identify strategies to globalize this academic program, proposing actionable steps for integration into future policies at local and national levels.

Materials and Methods

Study design

The current qualitative research employed a conventional content analysis, extracting codes, subcategories, and categories to identify internationalization interventions for the health in disasters and emergencies program. Accordingly, a detailed and comprehensive description and interpretation of the research topic were provided. This study was conducted between April and June 2024.

Participants

Participants were selected using a purposeful sampling method, in which the most knowledgeable individuals are selected by the researcher, who have sufficient ability to answer the research questions [21]. The inclusion criteria were determined as having international experience in the academic and public education, research, and management fields of health in disasters and emergencies, as well as expertise in the different dimensions of health in disasters and emergencies, disaster public health and epidemiology, disaster sociology, health policy, and crisis management. Furthermore, the international participants were selected based on their international experiences in the academic, education and research fields of health in disasters and emergencies

in their countries. The number of participants was determined based on the saturation principle, which means that no new data emerged following the further interviews. Finally, the total of 18 participants were interviewed for data collection.

Data collection

Data were collected using semi-structured in-depth interviews with the participants. At first, three in-depth unstructured interviews were conducted to determine the basic concept of our research topic. Each interview was analyzed immediately, and the retrieved information became a guide for further data collection (iteration process). Accordingly, 15 semi-structured interviews were performed using the interview guide. In developing the interview guide, meeting the prerequisites for conducting a semi-structured interview, knowledge of previous studies, setting the initial guide, its pilot application, and the finalized semi-structured questions were considered [22]. The interviews began with a main simple question and then probing was done to obtain the details of the research topic. For instance, the participants were asked “based on your experiences, which measures can be effective for the internationalization of the health in disasters and emergencies departments in Iran’s universities?” or “what is your perception about the barriers of the internationalizing the education field of health in disasters and emergencies program in Iran? Interviews continued until data saturation and all interviews lasted between 30 and 50 minutes.

Data Analysis

Data collection and analysis were conducted simultaneously. Data were analyzed using an inductive approach proposed by Graneheim and Lundman [23]. Each interview was initially transcribed verbatim using MS Word software. The transcripts were then carefully examined multiple times to identify statements that revealed the participants’ experiences, which were tagged as meaning units within the text. These meaning units were subsequently condensed and abstracted into codes. In the next step, these codes were grouped into subcategories based on shared characteristics, relationships, or distinctions. Finally, overarching categories were established by further sorting the subcategories. This iterative five-step process was applied to every interview until the main categories were finalized. The first author was responsible for completing the first three steps, while the final two steps involved collaboration among all authors. Although participants did not review the original interview transcripts or analysis directly, the

researcher incorporated their notes and feedback into the process after each interview. In cases where differences of opinion concerning codes or categories emerged between two researchers, the other authors were consulted to reach a consensus.

Trustworthiness

Data trustworthiness was obtained by the four criteria of credibility, transferability, dependability, and confirmability proposed by Lincoln and Guba [24]. To ensure credibility, the triangulation method as well as the peer and member were performed. To achieve peer checking, the interviews codes, and categorization were checked by an expert in both qualitative research and educational field and for member checking, the main researchers asked the participants about possible misunderstandings during interviews. Dependability was confirmed by providing a detailed explanation of the study process to ensure that the study could be repeated. To guarantee confirmability and dependability, an audit trail was established by maintaining copies of all Persian-language transcripts, field notes and relevant supporting documents. Transferability was ensured through detailed contextual information about the subject, participants, data collection, and data analysis as a research map [25]. Additionally, transferability was enhanced by providing detailed descriptions and experiences of participants using verbatim interview quotes. To minimize the researcher reflexivity, questions were posed at all stages of the study, including the research question, data collection, data analysis, and conclusion [26, 27]. The research team discussed how personal experiences and perspectives influenced the interviews and the interpretation of the results. Furthermore, the first and second authors practiced reflexivity including the informal self-reflexive processes of how their insight may influence an unbiased interview guide development and reflexive practices with a peer to identify and confront assumptions during the data collection and analysis process. Any possible discrepancies were reconciled by a peer who was not directly involved in the research.

Ethical statement

This study was approved by the National Agency for Strategic Research in Medical Education (NASR). (Ethical Code: IR.NASRME.REC.1402.071). Furthermore, the current research was conducted in compliance with ethical standards in research. All participants provided informed consent before participating in the interview.

Results

The mean and standard deviation ($X \pm SD$) of the age and work experience of the participants in the study were (50.7 ± 7.1) and (22.2 ± 7.5), respectively. The highest frequency of interviewees was in the 50-60 age group (50%). Additionally, 14 participants were men, and the remaining 4 were women with high academic qualifications. Further demographic characteristics of the participants are presented in Table 1.

Table 1. Demographic characteristics of participants

Subject	Frequency (N)	Percent (%)
Age (year)		
30-50	7	38.9
50-60	9	50
60-70	2	11.1
Gender		
Man	14	77.77
Woman	4	22.22
Education		
M.Sc	1	5.55
Ph.D	17	94.45
Academic position		
Professor	8	44.44
Associate professor	3	16.66
Assistant professor	5	27.77
Expert/researcher	2	11.1
Affiliation		
Iran	15	83.34
Other countries	3	16.66
Total	18	100

Based on the data analysis, the main interventions or factors that are important for the internationalization of the health in disasters and emergencies program were classified into 6 categories and 15 subcategories. The categories included political interventions (political interactions at the international level, development strategies at the national level, and interventions of the Ministry of Health level), organizational interventions (support from the international Vice-Chancellor in universities and establishing the internationalization structure and processes in universities), human resources interventions (empowering faculty members, empowering employees, empowering students), economic interventions (financial/economic support and investment), development and improvement of infrastructure (educational infrastructure, information technology infrastructure, welfare structure, and socio-cultural

infrastructure), and interactions related to Iran's risk profile (frequent experiences of disasters and recurrent experiences of destruction) (Table 2).

Table 2: The selected codes, sub-categories and categories extracted from data

Categories	Subcategories	Selected codes
Political interventions	Political interactions at the international level	Interaction with high-risk neighboring countries, reducing political isolation, strengthening scientific diplomacy, strengthening the country's security, increasing security and peace in the country, reducing /removing financial sanctions, utilizing the capacity of embassies, utilizing the cultural counselors in different societies
	Development strategies at the national level	Formulating a long-term strategy for developing the program, adding the issue of internationalization in policy-making, alleviating the restrictive laws.
	Interventions at the Ministry of Health level	Policy-making at the Ministry of Health, policy-making for international scientific interactions, providing health services in disasters at the regional level, providing health services in disasters at the international level, removing academic barriers, utilizing the capacity of professors with international networks, cooperating with international students, interacting with the Red Crescent, monitoring the scientific authority at the regional level, follow up the scientific authority at the global level
Organizational interventions	Support from the international Vice-Chancellor in universities	Interactions with relevant educational departments in the region, communicating to relevant educational departments around the world, , interaction with relevant research centers around the world, financial support for health in disasters departments, introducing Iran's efforts for disaster management, introducing the capacity of higher education program in disaster management
	Establishing the internationalization structure and processes in universities	employing professors with advanced English skill, employing highly knowledgeable professors, budget allocation for the internationalization of the program, facilitating educational processes for the internationalization, facilitating research processes for the internationalization, improving the international ranking of the universities, clarifying the registration process for international applicants, reducing the bureaucracy of the university for applicants,

Human resources interventions	Empowering faculty members	Providing the facility of visiting professorship programs, research grants for active professors at international level , accepting foreign visiting professors, programs for exchanging professors between Iran and other countries, strengthening professors' English skills, strengthening networking skills at the international level, , strengthening professional communication skills in relevant virtual networks, encouraging professors to attend in international conferences, strengthening teaching skills in English.
	Empowering employees	Holding training sessions, holding English classes, strengthening communication skills with foreign students, holding regular briefing sessions, encouraging committed experts.
	Empowering students	Providing study opportunities for students, holding classes in English, establishing an English platform for students, holding joint scientific events with international students, encouraging students to win international grants, providing scholarships for outstanding students.
Economic interventions	Financial/economic support and investment	Financial support for faculty members for internationalization, financial support for health in disasters departments for internationalization, financial support for related research centers for internationalization activities, financial facilities for participation in international scientific events. Allocating budget for introducing the program to regional universities, allocating budget for introducing the program globally, introducing the field to agents of international academic centers, investing in advertising and marketing, launching specialized websites in English, allocating incentive budget to active departments/universities.

Development and improvement of infrastructure	Educational infrastructure	<p>Strengthening joint research networks, launching an international database, launching peer-reviewed international journals, facilitating joint research projects, internationalizing the research proposal registration system, special grants for internationalization, strengthening research cooperation with the United Nations.</p> <p>Holding joint educational events, joint classes with foreign professors, launching short-term courses, launching summer/winter schools, updating teaching-learning mechanisms, providing the necessary educational equipment, joint educational courses with the Red Cross, skill- based training,</p>
	Information technology infrastructure	Strengthening distance learning platforms, strengthening the English websites of departments, improving internet speed, removing restrictions on access to international databases, launching educational simulators, using artificial intelligence, strengthening virtual platforms for internationalization
	Welfare structure	Providing student dormitories, providing quality meals, providing transportation facilities, using bilingual guidance signs, providing accommodation for international visiting professors, providing welfare facilities for international researchers
	Socio-cultural infrastructure	Cultural considerations of international partners, cultural considerations in using health facilities, considering Iran's cultural considerations in international cooperation, considering social norms and standards, promoting socio-cultural interactions with related countries, removing filtering of social networks.
Interactions related to Iran's risk profile	Frequent experience of disasters	Frequent occurrence of natural hazards, frequent occurrence of technological disasters, frequent experiences of catastrophes, occurrence of mass casualties
	Recurrent experiences of destructions	The opportunity to observe real disaster fields, benefit from lessons learned, sharing field experiences internationally, introducing high-risk areas for international partnerships, the opportunity of improving the practical skills of health in disasters experts.

Political interventions

One of the most important strategies that can significantly contribute to the internationalization of health in disasters programs is political interventions, which, of course, are likely to be applicable to other health science disciplines. The political interventions category includes three subcategories: political interactions at the international level, development strategies at the national level, and interventions at the Ministry of Health level.

Political interactions at the international level

According to the participants' experiences, strengthening scientific diplomacy and reducing political isolation play an important role in the internationalization of health in disasters and emergencies program by increasing political interactions at regional and international levels. In particular, our neighboring countries, which are highly disaster-prone, can benefit from appropriate scientific interactions through political negotiations.

"Active diplomacy in the field of disasters is very important. There are various challenges for international cooperation with countries around the world, such as political-security issues, sharing resources, researchers' visits, etc.". (p7)

Development strategies at the national level

Based on the data, development and formulation of long-term strategies for the health in disasters and emergencies program are crucial. Therefore, including the internationalization in the policy brief and political sheets, as well as addressing legal barriers can help improve the internationalization of the health in disasters and emergencies program in universities. A participant stated that:

"The discussion of internationalization of this program should not be limited to universities in Tehran. Areas that are most exposed to environmental and climate threats should be considered as focal points, and teaching and learning should be flexible". (p2)

Interventions at the Ministry of Health level

International scientific interactions, which need to be conducted in the Ministry of Health, can play a supporting role in the internationalization of this academic program. Furthermore, providing health services in disasters at regional and international levels, as well as utilizing the capacity of

professors by reducing academic barriers, can be useful measures for the internationalization of the health in disasters and emergencies program.

"In order to find a scientific authority in this program, disaster health program must be offered at the postgraduate level and we must prove our capabilities to the world and our neighbors, which requires having an up-to-date education program, media, faculty members, and good educational environments...". (p6)

Organizational interventions

Organizational interventions at the university level can facilitate the internationalization of health in disasters and emergencies programs. This category includes two subcategories: support from the international Vice-Chancellor in universities and establishing the internationalization structure and processes in universities.

Support from the international Vice-Chancellor in universities

Any international office placed at universities which benefit from the health in disasters and emergencies departments or specialties can facilitate the internationalization of this academic program through supportive strategies. Communicating with relevant international organizations such as the Red Cross, World Health Organization, and United Nations agencies (OCHA, UNFPA) in order to establish formal cooperation with specialists and departments of health in disasters and emergencies can be effective for internationalization initiatives.

"Initial interactions with well-known universities in the world should be followed, we should have good information, communication and advertising, which are the conditions for recognition in the way that scientific departments and stakeholders know us". (p14)

Establishing the internationalization structure and processes in universities

Based on the participants' experiences, strengthening the related structures and processes in universities can also play a significant role in the internationalization of the health in disasters and emergencies program. For example, employing knowledgeable professors who can teach in English, allocating resources for the internationalization of this academic program, as well as facilitating the research and academic process for internationalization need to be considered and included in the strategic plans of the university.

The internationalization process has been prioritized in universities, but perhaps it has not happened in the right process and structure. The program must have a problem-solving approach, and educational programs must be skill-based and compatible with modern educational technologies". (p5)

Human resources interventions

Human resources are considered one of the most important factors for the internationalization of the health in disasters and emergencies program. The subcategories include empowering faculty members, empowering employees, empowering students.

Empowering faculty members

Faculty members, as a group responsible for education and research in health in disasters and emergencies departments, need to acquire the necessary capabilities to improve the internationalization of this academic program. Accordingly, providing the resources and facilities for the health in disasters and emergencies professors to update their knowledge and skills and increase their international interactions and networks with international universities and academic centers is essential. Strengthening English language skills for teaching in English, allocating research grants to professors who are active in the internationalization of the program, and encouraging and supporting professors to participate in international scientific events are among the measures that can empower faculty members.

"We should invite experts from other countries to get to know the country and interact with our experts, and in the same way, our experts go to their countries and attend different courses and become familiar with the new science. A written and specific plan for cooperation should be defined". (p17)

Empowering employees

Based on the data, employees who work in the international affairs offices in colleges and universities need special abilities to interact and communicate with international students and professors. For instance, training and briefing sessions can strengthen such communication skills, especially in the health in disasters and emergencies departments. Furthermore, improving the

English skills of the staff and encouraging hard-working employees can be effective for internationalization.

"The duties of the staff should be obvious. The responsible processes and units need to be determined and their work has to be determined together. Trained personnel should be deployed so that the student is guided". (P10)

Empowering students

Students are one of the key groups who can potentially initiate and continue the internationalization of the health in disasters and emergencies program. This academic program has been specifically designed for post-graduate students (MSc and PhD), enabling them to play vital roles in strengthening the internationalization of health in disasters and emergencies departments. Conducting classes in English, strengthening students' skills to participate in international scientific events, encouraging students to network and collaborate on joint projects with international peers, and providing study opportunities for capable and motivated students were identified as interventions to empower students.

" Various books and journals, access to scientific databases, the issue of filtering and restrictions on the use of cyberspace, etc. should be resolved for internationalization. Professor and student exchanges programs should also be considered." (p2)

Economic interventions

Economic interventions and support are crucial factor for facilitating and accelerating the internationalization of health in disasters and emergencies programs. Subcategories of financial/economic support and investment were extracted from the data.

Financial/economic support and investment

Financial support for the faculty members, specialists, and students, as well as health in disaster departments is important to carry out activities related to the internationalization of the program. Furthermore, support for research centers and institutes that are involved and active in disaster research at the international level is essential for fostering scientific interactions globally.

"The economic situation of the country can be very supportive, if the economic situation is not well, it acts as an obstacle. Financial support and equipment are necessary...". (p8)

Allocation of funds and special budgets to improve the structure and update the internationalization processes of the program can be beneficial. In addition, adequate investments in marketing and introducing the program to academic centers in the region and around the world can play significant roles in the internationalization of health in disasters and emergencies program. Furthermore, appropriate fund allocation to encourage active departments and universities to establish and sustain internationalization programs and measures in the health in disasters and emergencies departments should be considered.

"Some students are looking for free education. If we have grants from international organizations and industry, we can take students in that form and involve the student to compensate for the costs."(p15)

Development and improvement of infrastructure

The internationalization of the health in disasters and emergencies program requires the establishment and development of key infrastructures to promote all education and research affairs at the regional and global levels. This category includes four subcategories: educational infrastructure, information technology infrastructure, welfare structure, and socio-cultural infrastructure.

Educational infrastructure

The importance of developing research infrastructures to strengthen research networks and joint research projects with health in disasters and emergencies researchers at the regional and global levels was highlighted by the participants. Access to international scientific databases that can be utilized by researchers around the world, as well as accessibility to related journals and books, is considered a means of strengthening research infrastructures.

"One of the solutions that leads to improving the level of research is the use of international grants. Research team should not be limited to national grants. If we use grants from WHO and other international institutions such as the World Bank, we will be forced to comply with the conditions, strategies, and methods of doing research accepted by the international community." (p1)

The development of educational infrastructure is also crucial for strengthening scientific and educational interactions with professors and students at regional and international levels. Designing short courses that cater to a wide international audience, and establishing

summer/winter schools in collaboration with other universities and academic centers can be effective measures for the internationalization of this program. Furthermore, providing suitable educational equipment for international academic programs and updating teaching-learning mechanisms are other significant interventions highlighted by the participants.

"Diversifying the higher education can increase both the quality and attractiveness of the subject. We need to do it in line with the latest qualifications in the world and see what is available in the curriculum of this academic program". (p3)

Information technology infrastructure

Based on the data, the development of information technology infrastructure can significantly contribute to promoting the internationalization of the program. Shifting from in-person training to distance learning, strengthening the English platforms and websites for introducing the health in disasters and emergencies departments, improving internet speed, establishing educational simulators, and utilizing artificial intelligence for teaching and training at the international level were mentioned as effective interventions for the internationalization of this academic program.

"Upgrading educational facilities and simulators that can make students more likely to learn, and provide appropriate educational environments, can be used...". (p8)

Welfare structure

Welfare infrastructure plays an important role in the positive feedback of international students, professors, and researchers who travel to Iran to continue their studies or to participate in joint educational and research programs. Providing welfare facilities, including dormitories, meals, and transportation, for students, as well as accommodation and welfare facilities for visiting professors and researchers, can significantly strengthen the internationalization of this program in the long-term.

"The facilities of the university are important for the satisfaction of foreign students. Among them, the issue of housing is the most important. If this issue is resolved, they will be able to cover their own living expenses." (p5)

Socio-cultural infrastructure

Cultural and social considerations were among other issues mentioned by the participants. International students and researchers need to become familiar with Iranian culture and consider the socio-cultural context during their educational and research programs in Iran. Cultural events and orientation sessions should be designed and conducted in universities to improve international interactions.

"Cultural differences are important. Many people are applying to European countries and are in line, but not to other countries. Conflicting laws, expensive housing, traffic, and air pollution reduce the application." (p13)

Interactions related to Iran as a highly disaster-prone country

Iran is one of the most disaster-prone countries in the world, and disasters such as floods and earthquakes have claimed the lives of many Iranians to date. In addition, disasters have significantly impacted the Iranian populations through the destruction of key infrastructures, health facilities, and social consequences. On the other hand, the frequent damage and destruction following disasters have provided numerous opportunities for improving disaster management systems and programs. This has also led to the implementation of training and research programs in universities and academic centers. Two subcategories, frequent experiences of disasters and recurrent experiences of destruction, represent the opportunity to internationalize the health in disasters and emergencies program by sharing lessons learned from previous disasters with international peers and students.

Frequent experiences of disasters

Some participants stated that the frequent occurrence of disasters in Iran has provided us with important experiences and lessons for effective disaster management, which can be shared and discussed in international scientific events, in classrooms, and during research projects.

"Iran has a high risk in terms of disaster occurrence, and this issue motivate the experts and researchers from other countries to learn about the lessons and experiences of this country." (p9)

Recurrent experiences of destructions

Iran can become a training and research field for health in disasters and emergencies professionals at regional and international levels. Real disaster fields can enhance the practical skills of

specialists and provide opportunities to benefit from the experiences of destruction and damage. Additionally, disaster-affected regions can offer opportunities for scientific and research partnerships and significantly contribute to the internationalization of health in disasters and emergencies programs.

"Iranian managers and experts have had numerous experiences in the field of disaster management and response that could be shared in a real-life classroom or training course for international students and researchers". (p14)

Discussion

Based on the findings, internationalizing the academic program of health in disasters and emergencies in universities can be achieved through political, organizational, human resources, economic interventions, as well as development and improvement of infrastructure, and interactions related to Iran as a highly disaster-prone country. In accordance with our findings, numerous studies have shown that the internationalization of higher education is a complex process influenced by various factors and challenges [28-31]. Political interactions, organizational strategies, human resource management, economic interventions, and infrastructure improvements play crucial roles in the internationalization of academic centers [32]. However, lack of clear policies, inefficient organizational structures, financial and infrastructure issues, and cultural differences have been reported as barriers to the internationalizing of the universities [33]. Despite all challenges, internationalization remains a strategic priority for many universities and governments, along with significant resources invested in international education and research programs [34, 35].

Political interventions were identified as one of the most important issues for the internationalization of health in disaster and emergencies program, especially the country's political interactions at regional and international levels. The study of designing a model for internationalizing higher education in Iran revealed that the country's political strategies received the highest score in the context of internationalizing academic program [36]. However, the political approach can influence internationalization strategies, the complexity of cross-border interactions, and the universities that can potentially participate at international levels [37]. Similarly, the findings of another study suggested that academics need to encourage governments to internationalize universities and inform them about the benefits of establishing internationalization

policies and decisions [38]. Similarly, another study has mentioned the political-diplomatic considerations of the country as an important element for the internationalization of universities [3].

Based on the findings, organizational interventions are recognized as a crucial measure for the internationalization of health in disasters and emergencies programs in universities. Accordingly, the relevant studies recommend that the effective internationalization requires a comprehensive approach, involving modifying the organizational culture [39], innovative management structures [40], engagement with international networks [41], and a holistic understanding of the process [42]. Also, evaluating and monitoring the management of internationalization are considered important issues. Universities and academic centers should engage proactively in the multi-phase innovation process to support internationalization [43]. Building a community and network of international scholars and researchers contributes to global scientific research and education. Achieving comprehensive internationalization in a higher education institution and joint research initiatives enables researchers to participate in internationally recognized programs [44].

Human resource empowerment was identified as the significant intervention for internationalization of health in disasters and emergencies program. Similarly, empowering individuals working in universities can be effective for their internationalization mission. For instance, enhancing the English proficiency of professors for teaching in English and special training for using the advanced technology-based infrastructure are considered as the useful measures [45]. Faculty members are an important group who need to improve their individual competencies and teaching, and research activities [46]. Medical universities should also work on their information technology capabilities, improving the English language skills of staff and students, as well as implementing appropriate marketing initiatives to increase the number of foreign applicants [47]. According to our findings, internationalization of the health in disasters and emergencies requires the establishment and development of critical infrastructure. Examples are education, research and socio-cultural infrastructures. Similar studies have also stated that the internationalization of the academic programs is driven by economic, social, and cultural factors. Furthermore, it involves students, faculty, programs, and institutions in communicating and establishing networks across borders [4, 48]. On the other hand, studies have noted the positive outcomes of the internationalization of research and education programs, such as the improvement of intercultural communication skills, strengthening political relations, employing foreign elites, increasing

international cooperation and scientific research products, economic growth, and financial improvement [18, 49]. Therefore, it seems that the financial and economic support for professors and students, health in disasters and emergencies departments and related research centers, and fund allocations for strengthening the necessary infrastructures need to be considered in the future policy-making and planning. Furthermore, improvement of education, research, information technology, welfare and socio-cultural infrastructures can have significant impacts on the success of the internationalization process. Likewise, leading universities that prioritize the internationalization of their research and educational initiatives strive to enhance their globally adaptable infrastructure to elevate the standard of their services [50, 51]. Based on our research findings, prioritizing structural factors plays a key role in the process of internationalizing universities and academic institutions [52]. Structural barriers, such as designing an inappropriate intercultural curriculum can lead to the inhibition of international cooperation [53]. Another issue is the lack of a comprehensive operational plan for improving the infrastructures, especially the socio-cultural ones, which can result in significant challenges for internationalizing the academic programs [46, 54, 55].

Iran is one of the most disaster-prone regions in the world, having experienced significant destructions and damage to date [56]. Accordingly, such frequent experiences and lessons learned from previous disasters can be shared with other related departments, universities, and academic centers at regional and international levels. On the other hand, hazard-prone regions in Iran can be considered as the research fields for the joint international research projects that will be conducted in the health in disasters and emergencies departments.

Limitations

There were some limitations at the time of conducting the current study. Since data collection involved the participation of international key informants, and there was a time difference between Iran and other countries, they were selected as the last participants for the interviews. Accordingly, the specific open-ended questions related to the concepts and aspects of internationalizing this program were sent to them. Another limitation was the small number of experts who had expertise in health in disasters as well as experiences in internationalizing academic or research programs simultaneously. Other limitations include potential cultural biases in the perspectives of international experts due to differences in cultural perspectives among societies. The generalizability of our findings to other contexts was also a limitation of this study.

Conclusion

The main interventions for the internationalization of health programs in disasters and emergencies should be considered based on various factors in Iran, including political, organizational, economic, human resources, infrastructure development, and disaster experience. The internationalization of health in disasters and emergencies is a long-term, intersectoral process that relies on a range of political, economic, financial, and socio-cultural activities.

It is strongly recommended to establish educational and research facilities in disaster-prone regions of Iran. This will foster international collaboration and joint research and training programs, requiring financial support, skilled professionals, and advanced infrastructure to host international partners.

Encouraging and motivating departments and experts in health during disasters and emergencies can be achieved by facilitating exchange programs for relevant scholars and providing financial support for participation in international scientific events. Resource allocation and planning should focus on empowering professors, students, and researchers actively working in the field of health in disasters and emergencies.

The processes and structures related to academic and research internationalization require modification or reform. This should align with political, economic, organizational, and infrastructure issues in Iran, while considering successful academic programs in disaster health management at both regional and international levels to inform future policy-making.

Further research is needed to identify the barriers to the internationalization of health in disaster and emergencies programs and to explore solutions to these challenges. Additionally, a quantitative study is necessary to collect and analyze data that will help determine the current level of internationalization in health departments dealing with disaster and emergencies, thereby enabling effective interventions.

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Declaration of competing interest

The authors of this article declare that they have no competing interest.

Authors' contributions

Study design: Sanaz Sohrabizadeh, Roya Alimoradzadeh and Katayoun Jahangiri; Data analysis: Sanaz Sohrabizadeh and Roya Alimoradzadeh; Conducting interviews: Sanaz Sohrabizadeh and Roya Alimoradzadeh Data collection: Roya Alimoradzadeh; Drafting the manuscript: Sanaz Sohrabizadeh, Roya Alimoradzadeh and Katayoun Jahangiri; Final approval: All authors.

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