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# Investigating the implementation challenges of the research doctoral program and providing related solutions: a qualitative study

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## Abstract

**Background** Doctoral programs have consistently garnered the attention of policymakers in medical education systems due to their significant impact on the socio-economic advancement of countries. Therefore, various doctoral programs have been implemented with diverse goals. In Iran, a research doctorate program, known as PhD by Research, was introduced primarily to engage in applied research related to healthcare needs. Nevertheless, the achievement of the program's goals has been questioned. This study aimed to identify the implementation challenges of the Research Doctorate Program and its solutions in Iran.

**Method** This descriptive qualitative study followed the Standards for Reporting Qualitative Research: A Synthesis of Recommendations and was conducted in two steps. Firstly, the challenges of the Iranian Ph.D. by research program were identified through the perspectives of the program's students and graduates. In the second step, relevant solutions to these challenges were determined by focus groups of key informant experts. The transcripts were analyzed using qualitative content analysis.

**Results** Five students and six graduates were interviewed in the first step and seven experts participated in the second one. The challenges and related solutions are explored in four main themes, including: (1) admission criteria, (2) program goals and expected outcomes, (3) curricula, and (4) financial and human resources. The study showed that various dimensions of the doctoral program are not aligned with each other and how to adapt the program in these dimensions.

**Conclusion** The study revealed the importance of a systematic approach in defining various dimensions of doctoral programs according to program goals and provided specific solutions for defining a research doctorate program in the context of a low- and middle-income country.

**Keywords** Research doctorate, Doctoral program, Policymaking, Iran, Medical education

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## Background

Doctoral education plays a strategic role in national and regional economic, scientific, technological, and social development [1]. It lies at the heart of a university's research capacity, which is also recognized as the primary source for research productivity and innovation in the global knowledge economy [2]. Hence, the significance of doctoral education captures the interest of policymakers at both international and national levels, as well as institutional leaders [3, 4].

Over the past decades, doctoral education has witnessed a profound transformation [5] and takes various forms that can impact the quality and success of doctoral programs [6]. Doctoral programs offer students a study plan in their chosen field, which helps them gain a broad understanding of their discipline, develop expertise in the fundamental knowledge and methodologies, and acquire competencies to contribute to meaningful and practical scientific advancements [7]. Also, it prepares candidates for their various academic tasks [8].

Around the world, universities and medical education systems have established various types of doctoral programs tailored to their unique goals and requirements. Therefore, there is a wide range of doctoral programs. The most prevalent form of doctoral degree is the 'Doctor of Philosophy' or Ph.D., which signifies the recognition of students' expertise in conducting research and contributing to generating novel knowledge [3]. In addition, the highest level of formal education belongs to the Doctor of Philosophy (Ph.D.) degree, because it equips individuals with the necessary knowledge and skills to push forward the boundaries of knowledge in a specific field [9]. Traditional Ph.D. programs typically center around dissertations. Additionally, there are also taught Ph.D. and Ph.D. by publication models, which respectively emphasize coursework and publications. Also, to enhance graduates' preparation for the work environment, there are various types of work-based and professional doctoral programs [10]. The most important reasons for reforming traditional doctoral programs and creating diversity within them include: increasing the employment opportunities for graduates in the private sector [11], heightened focus on commercializing research outcomes [12], fostering competition and enhancing skills among graduates, facilitating a transition in career paths from academia to industry through collaborations between industry and universities [13], and aligning with market demands in the context of a competitive and dynamic knowledge-based economy [14].

Extensive research has been conducted on doctoral programs, resulting in a substantial amount of literature available. Some studies focused on students' experiences during the doctorate journey, because students go through an emotionally and intellectually demanding

journey that encompasses a diverse range of both positive and negative experiences [15]. As well as, their live truly is a 'constant juggling act' and they may encounter different challenges and experiences that undergraduate may not come across [16, 17]. From this perspective, Pyhältö and his et al. (2012) reported doctoral students' problems which were related to supervision, the research community, domain specific, the general working process and resources [17]. Prendergast et al. studied the well-being of doctoral students [16].

Other studies are concentrated on the evaluation of doctoral programs. For example, Cross and Backhouse conducted a comprehensive investigation of the various limitations, obstacles, and possibilities within African doctoral education. They also proposed a framework for evaluating these programs which consisted of six elements including (1) expected outcomes, (2) candidates in context, (3) curriculum, (4) structures, (5) resources, and (6) funding, and partnership opportunities [18]. Meuleners et al. evaluated five aspects of the 82 life science doctoral programs in Germany, including (1) interdisciplinary, (2) the international orientation of these programs, (3) courses offered, (4) formal characteristics of supervision, and (5) examination regulations of the doctoral programs (6).

Assessment of research-doctorate programs have been conducted in different regions such as the United States [19] and Africa [20]. The University of Pennsylvania School of Nursing revised research-focused doctorate programs in October 2019. Some of the proposed changes involve enhancing the readiness of Ph.D. program graduates to connect research with practical applications, redesigning funding and support systems for students on an accelerated Ph.D. track, and developing ways to measure and evaluate the achievements of graduates [21].

In research-focused doctorate, it is crucial for doctoral students to gain a deep understanding of specific concepts in order to become independent researchers [22]. Studies in this area have demonstrated that traditional Ph.D. programs may not adequately provide graduates with the essential skills and knowledge they need [23]. To ensure the successful completion and achievement of doctoral graduates, it is important to consistently work towards developing doctoral programs that are adaptable to the learning needs of doctoral candidates and to overcome any barriers to desired outcomes [8].

In 2008, Iranian educational policymakers in the Ministry of Health and Medical Education (MoHME) made the decision to design a research-focused doctorate program (Ph.D. by research) to enhance the practicality of doctoral education and make a connection between doctoral education and job requirements. The purpose of this program was to educate candidates who can meet

the needs of the country and expand the boundaries of knowledge by using advanced research methods and the latest research for problem solving [24]. This program consists of two parts, in the first part (M.Phil.), candidates learn research and technology theoretical and scientific skills, and in the second one, they should conduct a thesis and they are supported by a supervisory team which typically consists of two supervisors. The program was revised in 2013, 2014, and 2020. However, it appears that the program has not effectively achieved its intended goal. The evidence regarding the situation of graduates in the job market and their struggles in finding suitable employment confirms several obstacles within the program. Therefore, the aim of this study was to detect the implementation challenges of the Research Doctorate Programs from the students and graduates' perspectives.

### Materials and methods

This study was conducted according to the Standards for Reporting Qualitative Research: A Synthesis of Recommendations [25].

#### Study design

We applied a qualitative descriptive methodology to achieve an in-depth and rigorous description of the challenges of the research-focused doctorate program and relevant solutions. The study was conducted in two steps. Firstly, the challenges of the Iranian Ph.D. by research program were identified, and in the second step, relevant solutions to these challenges were determined.

#### Participant and sampling

Participants were selected based on their direct experience and knowledge of the Iranian Ph.D. by research program. Therefore, purposeful sampling was used to select participants, including students and graduates (P) from various fields in the doctoral program (first step). The purposeful sampling was of the maximum diversity type. This means that the students were selected from different fields so that the type of field does not lead to bias in available data. Also, information-rich experts were invited to participate in focus groups to propose solutions regarding the identified challenges (second step). In this step, experts (E) were selected from decision makers and policymakers in the doctorate program, medical education experts and researchers, professors and directors from academic institutions that conducted the program. In the first step, two participants were selected according to program records and the further participants were selected through snowball sampling technique. The interview guide and informed consent form were sent to potential research participants via email. If they agree, schedule the interview with them.

The inclusion criteria for the first step were students enrolled in a research doctorate program who were at least in their third year of study or had graduated from the program and had signed the informed consent form to participate in the research. The exclusion criteria included students who were below the third year of their study and those who did not wish to participate in the interview. For the second step, the inclusion criteria were decision-makers and policymakers in the doctorate program, medical education experts and researchers, faculty members, and directors from academic institutions who had been involved with the program for at least five years and had also signed the informed consent form to participate in the research. The exclusion criteria were experts who did not want to participate and did not have at least five years of experience with this program.

#### Data collection

For the first step, data collection was conducted through in-depth interviews with students and graduates (one in-depth interview with each participant). Data saturation determined the size of the study sample and the number of interviews. There are various models of saturation in qualitative studies. Saunders et al. identified four main saturation models including data saturation, a priori thematic saturation, Theoretical saturation and Inductive thematic saturation [26]. Data saturation implies on situation when data collection doesn't provide any new data [27, 28]. The interview guide was developed by conducting three pilot interviews. Transcripts of pilot interviews were included in the study analysis. The semi-structured interview was done face-to-face by MHA and ShSh and audio recorded with the participants' permission. The interviews were transcribed verbatim from the audio recordings. The mean length of interviews was 45 min.

To addressing the identified challenges, we conducted semi-structured focus groups with experts. Data saturation was achieved by conducting five focus group sessions, each with an average of five participants. The team of facilitators included a discussion facilitator who motivated participants to engage in conversations with one another. The second one was responsible for taking notes and documenting the responses and memos. The third facilitator guided the focus group in answering the questions on the interview guide. Data was collected through audio recording and note-taking during the focus group sessions. The average duration of focus groups was 60 min. We have provided the study scripts in Supplementary files 1 & 2.

#### Data analysis

The transcribed recorded in-depth and focus group interviews, as well as the notes of facilitators, were managed and organized using MAXQDA 20 software. The

**Table 1** Demographic characteristics of the interviewees

Participant	Field of study	Gender	Graduates/ students
1	Nutrition science	Female	Student
2	Epidemiology	Female	Student
3	Epidemiology	Female	Graduate
4	Medical Education	Female	Graduate
5	Epidemiology	Male	Student
6	Biostatistics	Female	Student
7	Bacteriology	Male	Graduate
8	Epidemiology	Female	Graduate
9	Biostatistics	Male	Graduate
10	Health sciences	Female	Student
11	Environmental Health	Female	Graduate

transcripts of in-depth interviews with students and graduates were analyzed conventionally. Accordingly, the transcripts were read word by word and key concept were highlighted where appropriate. In this step, three researchers independently analyzed the data, and the final codes, categories, and themes were discussed to achieve consensus. The analysis process includes repeatedly reading the transcripts, assigning meaning to each phrase, labeling the meaning units with codes, reviewing the codes, and organizing them into categories based on their similarities. Finally, the main themes are identified by interconnecting the categories.

In the second step, the focus group transcripts were analyzed using directed content analysis. In fact, the passages were coded using primary codes and categories from the first step.

**Trustworthiness**

This study describes the experience of conducting a doctoral program, including its challenges and solutions. Therefore, the study can provide guiding principles to consider when conducting any doctoral program. The credibility of study is confirmed by its adherence to the steps of the inductive content analysis method. Also, conformity was achieved by introducing the background of the researchers, who have various experiences and knowledge to analyze data from different perspectives. Additionally, the researchers confirmed the participants' responses by transcribing the interviews and sharing the transcriptions with them. The interviewees confirmed that the transcripts contain their own words.

**Results**

**Description of participants**

In the first step, out of the 15 individuals initially contacted, 11 agreed to participate and signed the consent form. Among the participants, five were actively enrolled in Ph.D. programs, while six had already graduated. Three participants self-identified as male (27%) and eight as female (73%). The backgrounds of the participants

**Table 2** Experts' demographic information

Experts	Positions	Gender
1	Program's decision makers	Male
2	Program's decision makers	Male
3	Director of program /Faculty member	Female
4	Directors of program/ Faculty member	Male
5	Medical education expert	Female
6	Medical education expert	Male
7	Medical education expert	Female

were illustrated in Table 1. The shortest interview lasted 20 min, while the longest interview lasted 60 min. This phase was conducted from September 21, 2023, to December 10, 2024, at the research centers and their workplaces.

At the second stage, the invitation emails were sent to 10 experts and seven agreed to participate in this phase. The focus groups were conducted on January 2024, at the National Agency for Strategic Research in Medical Sciences Education.

**Description of experts**

Seven experts, including the program's decision makers (2 participants, 28.5%), directors (2 participants, 28.5%), and medical education experts (3 participants, 43%) were emailed and recruited to discuss about the potential solutions in dealing with detected challenges (Table 2). Four experts were male (57%) and three as female (43%). The interview guide constitutes four main questions based on the detected challenges at the first step.

The authors concluded that data saturation had been achieved, indicating that additional interviews would not have resulted in new or distinctive findings.

The explored themes were related to: (1) unspecified admission criteria, (2) deviation from defined goals and expected outcomes, (3) ineffective curriculum to achieve program goals, (4) financial and human resources challenges. Detected themes, their classes and sub-classes are presented in Table 3. As the focus groups were conducted based on the identified challenges in the first step, the solutions were categorized and presented within each theme as subcategories (Table 4).

**Theme 1: unspecified admission criteria**

Our analysis revealed some issues related to admission criteria, such as admission bias and special requirement.

**1-1: admission bias**

In many interviews selection based on supervisor 's preferences emerged: *"Since the acceptance (at the interview stage) is based on the supervisor's opinion, the interest of the professors will play an important role in this process (P2). "Most centers choose candidates based on previous acquaintance with students. Personally, I was introduced*

**Table 3** Research doctorate program challenges: themes, class, subclass

Themes	Classes	Subclasses
Unspecified admission criteria	Admission bias	Interest of the professors Choose candidates based on previous acquaintance
	Special requirement	Familiarity with healthcare system and its problems
Deviation from defined goals and expected outcomes	Objectives unrelated to the program	Increase the ranks of the center Employment of graduates
	Implementation barriers	Working opportunities
Ineffective curriculum to achieve program goals	Inefficient courses	Non-applicable courses
	Lack of priority setting	Unspecified according to scientific fields / Irrelevant lessons to fields priorities
Financial and human resources challenges	Human resources problems	Busy supervisors Lack of Supervisors' awareness toward student tasks
	Financial resources problems	Lack of financial support Failure in timely funding

**Table 4** Challenges in the field of research doctorate programs and evidence-based solutions to acquire the expected competencies and qualifications

Challenges	Solutions
Unspecified admission criteria	Adapting admission criteria based on program goals Clarify of future duties and expectations during admission
Deviation from defined goals and expected outcomes	Creating a robust control and evaluation system Clarifying students' future duties and expectations during admission
Ineffective curriculum to achieve program goals	Aligning curriculums with program goals and structure
Financing and human resources	Providing additional supervisor with relevant practical experience Clarity of duties and performance criteria Sustaining financial resources

to several centers based on my selection priorities, and later I found out that in the centers where I was not accepted, the accepted student had already been selected and the professor and student knew each other perfectly (P4)”.  
**1–2: special requirement**

Our data illustrate that the specialized requirement of research institutes and the professional and occupational records of candidates in the specific field are not considered in admission process: “Most centers choose candidates based on previous acquaintance with students. Personally, I was introduced to several centers based on my selection priorities, and later I found out that in the centers where I was not accepted, the accepted student

had already been selected and the professor and student knew each other perfectly (P4)”. “In my opinion, that is better to admit candidates who have worked in the healthcare system for some time, they have known the problems of the system, and they can better solve system problems with their research projects (P6)”.  
**1–3: solutions**

**Adapting admission criteria based on program goals** Experts emphasized the importance of redefining criteria for student admissions. According to their opinions, the criteria should be aligned with the institution’s mission and defined specific to program goal. In fact, students should be selected according to their potential to be a good fit for job in their expertise.

They reached a consensus on considering relevant work experience and published research in the field of study and alignment with the institution’s mission as effective criteria for achieving the objectives of the doctoral program. “In fact, it is better that the students’ articles be related to the mission of the institution because it is effective in achieving the objective of conducting applied research and increasing the employability of the students (E1)”. “The mission of the institution where the student is going to spend his/her education should be considered when choosing a student (E2)”.  
**Theme 2: deviation from defined goals and expected outcomes**

This theme includes two classes (1) objectives unrelated to the program and (2) implementation barriers.

**2–1: objectives unrelated to the program**

This class includes two subclasses: 1) increase the ranks of the center, 2) employment of graduates.

Candidates and graduates brought up how the goals and expected outcomes did change because the centers follow objectives which are not related to the goals and objectives of the program: “Many research centers accept Ph.D. students because they only want to increase the ranks of the center in the ranking systems, by implementing research projects that do not consider as the priority of the health system (P2)”. “The goal of this initiative is to facilitate the employment of graduates in the job market, rather than solely focusing on training a few research doctoral students. (P7)”.  
**2–2: implementation barriers**

This class is related to the providing working opportunities as an important goal of the program which are not reached because of various implementation barriers. Moreover, they acknowledge that the defined purposes and outcomes did not reach: “No thought for recruitment

after graduation. The decision makers should have thought about the working opportunities of the graduates, from the beginning (P5)".

### 2-3: solutions

**Clarifying students' future duties and expectations during admission** Regarding increasing commitment and adherence to the objectives of the institution and the field of study, it is also important for participants to be aware of the program goals, their duties, and the expectations placed on them during and after completing the program. "At the beginning, we must clarify for the student what we want from her/him during the education, many times neither the student knows what we want from her nor we ourselves (E4)".

**Creating a robust control and evaluation system** Institutions should be continually monitored and evaluate regarding their adherence to the program goals. This requires the creation of a monitoring and evaluation system and the definition of indicators for successful performance in inputs, processes, and outputs. "Research centers should admit students in a purposeful manner and their performance should be continuously evaluated and monitored by the Ministry of Health and Medical Education (E5)".

### Theme 3: ineffective curriculum to achieve program goals

This theme captured specific ideas and recommendations for the curriculum and includes two classes: (1) inefficient courses, (2) lack of priority setting.

#### 3-1: inefficient courses

The non-applicable courses were emerged in this class. According to the results, the training methods and material of courses are not up to date and based on current relevant issues in field of studies: "the lessons were not useful at all. We didn't learn anything new in the general courses, which should have taught us about research, statistics, and epidemiology (P5)".

#### 3-2: lack of priority setting

Irrelevant lessons to fields priorities was proposed by the participants. Further, the thesis topics and research institutes' priorities are not consistent: "At least some theoretical courses should be customized for the scientific field of the student. All students pass shared courses in all research centers with different fields of activity (P1)".

Curiously, most students suggested that the curriculum should be revised according to the candidates' learning needs, current issues, and the competencies which they are required in their future jobs.

### 3-3: solutions

**Aligning curriculums with program goals and structure** Experts stated that the program structure and courses' curriculums should be adjusted based on the fields of studies. "Conducting need-based applied research requires students to have relevant professional skills and knowledge in their field of study (E3)".

In addition, they believed that the program contents are needed to revise based on the program objectives. "Currently, all students in different research centers study the same courses, while the needs of each center and field must be identified first, and then courses based on them should be defined (E6)".

### Theme 4: financial and human resources challenges

This theme consisted of two classes, (1) human resources problems and (2) financial issues.

#### 4-1: human resources problems

Faculties are not able to prepare students for job market and conducting need-based researches. This might be due to the lack of sufficient faculty members in the educational system and their high workload which are stated by candidates. "Supervisors need to dedicate more time to their students, but they are primarily focused on administrative tasks. (P1)". In addition, faculty members have poor understanding of the program, have not sufficient practical experience in their field of expertise and they restrict candidates' freedom of action. "My supervisor did not have any learning program or research idea (P5)". "The supervisors turn the student into a task-fulfilling machine, and the student has no authority in any of the academic fields, including the courses and even the title of the thesis, and only says yes, sir! (P7)". Many respondents mentioned unprepared faculty members as a challenge of the program. "The professors themselves have not been well explained about the program and it seems that the professors are still not aware of the requirements of Ph.D. by research program (P3)".

#### 4-2: financial resources problems

Another aspect is the financial resources issues. Lack of financial support and failure in timely funding were defined as two subclasses.

Another aspect is the Lack of financial resources. This challenge is related to student perspective and suggestions about financial problems: "Don't talk about financial support! As much as the university gave a grant, I also spend additional cost for the thesis! (P5)". "Due to the high cost of the thesis, the payments were not made on time (P9)". In addition, students noted the importance of timely funding in completion of their applied research:



*“The professor admitted the student, then applied for a grant or research budget. It’s very late! (P5)”.*

#### **4–3: solutions**

**Providing additional supervisor with relevant practical experience** Another important aspect of achieving the objective of conducting need-based applied research is to ensure that supervisors possess relevant practical experience and knowledge in the field of study. According to participants’ opinions, this achievement can be accomplished through collaboration between relevant academic institutions, health service providers, and product provision institutions in the introduction of supervisors. *“One important aspect to take into account in this program is the utilization of faculty members who have expertise in research and possess teaching relevant skills. (E4)”.*

**Clarity of duties and performance criteria** Lack of sufficient faculty members and their high workload necessitate managing them by standardizing and documenting their duties and clearly defining expectations. *“It is important to distribute students to supervisors based on their workload, such as assigning fewer students to professors with administrative responsibilities. (E5)”.*

**Sustaining financial resources** Diversifying financial resources through collaboration with relevant public or private academic, health service, and product provision institutions was the main recommendation of experts to provide sustainable funding for the doctorate program. *“Faculty members should try to obtain national and international research grants such as World Health Organization grants (E7)”.*

### **Discussion**

This study aimed to detect implementation challenges and relevant solutions of the research doctorate program in context of a low-middle income country from the perspectives of its beneficiary including students, graduates and key informants.

Based on the analysis of semi-structured interviews, four challenges were identifying, including unspecified admission criteria, deviation from defined goals and expected outcomes, ineffective curriculum to achieve program goals, financing and human resources.

#### **Challenge 1: unspecified admission criteria**

As Burford noted the doctoral admissions process is a subject of intense global discussion [29] and a wide range of admission criteria has been observed in doctoral programs which are encompass various aspects such as academic preparation, potentialities, attitudes, and competences [30]. Meanwhile, admission involves evaluative

processes that are frequently unclear to those outside the system, but are considered routine by those within. In this regard professors play an important role as gatekeepers of the profession [31]. According to our findings, selection between applicants was based on supervisor ‘s preferences and previous acquaintance with applicants, and they were led to a decrease in the quality of research doctorate program. In addition, the lack of transparency in the terms and conditions for entering the program were reported by participants. These criteria should be clearly defined during the student recruitment process [32, 33]. Therefore, admission criteria for research doctorate programs should be adjusted to ensure the admission of students with the necessary ability, motivation, and commitment to conduct problem-based research. It is essential to consider the diversity (geographical, racial, and ethnic) within the admitted groups.

In addition, having relevant work experience in the specialized field facilitates conducting applied research and enables teaching the course on a part-time basis. As well as ensuring the employability of students for related jobs is guaranteed [34].

#### **Challenge 2: deviation from defined goals and expected outcomes**

This issue emerged as the second challenge of the program. In Iran, the goal of establishing a research doctorate program is to maximize the benefits influenced by stakeholders and beneficiaries, including individuals, groups, parties, and institutions. Meanwhile, students and graduates of the program face some challenges as they are not trained according to the needs of research institutes. Additionally, they struggle to find suitable job positions and encounter issues related to academic-family integration which are consistence whit Rockinson-Szapkiw findings [35]. In general, the continuation of this process can lead to a lack of motivation among the beneficiaries of the research doctorate program, including professors and students. Urgent reforms should be implemented in this program. In accordance with our results, other researchers have also addressed this issue [8, 36, 37]. It is necessary to identify the potential success metrics of the doctoral program, collect information related to the results of each metric, and standardize them based on the reports provided by various higher education institutions [16].

#### **Challenge 3: ineffective curriculum to achieve program goals**

According to the results, students and graduates of research doctorate program in Iran are studying and working in ambiguous and ineffective conditions. The results of this research are in line with the results of studies by Anderson et al. [38], Keshmiri et al. [39], and Shin

et al. [40], but there are differences in Iran. The main difference is that in research doctorate programs in Iran, special skills such as commercialization or other market skills are not included in the curriculum. There are no differences in terms of the designed and offered characteristics between research-oriented and education-oriented curriculums. Additionally, a significant aspect of the program is based on research. In fact, this program trains professional experts who are also researchers. Unlike the education-based doctorate, its goal is not to train researchers in a specific specialty. The various countries analyzed in this research follow two approaches: (1) Offering professional doctorate programs to managers, senior employees, and individuals with extensive experience, or (2) mandating a master's degree, relevant work experience, and a concurrent affiliation with the relevant work environment [6].

As a result, the curriculum should primarily focus on new scientific topics, expanding current fields of knowledge, and the emergence of new fields that are influenced by economic, cultural, and technological conditions, as well as the provision of healthcare services and policies [41].

#### **Challenge 4: financing and human resources**

In relation to this problem, participants mentioned that they had various roles and responsibilities beyond those of a doctoral student, indicating that they are “more than just a doctoral student.”

They also expressed dissatisfaction with the low quality of student guidance programs and described mentorships as below average. In various countries, the standards of doctoral programs in medical sciences regarding mentoring activities are reviewed and presented in a consolidated format [42]. In this regard, the following principles are recommended: (1) Establish quality standards for student guidance activities (2). Create a guideline that supervisors and students can follow. Professors and students should be aware of the standards of student guidance activities. Additionally, providing incentives can enhance the productivity of the relationship between the supervisor and the students.

Students and candidates noted that their supervisors are busy and do not spend enough time on their duties as a supervisor. To address this issue, the following solutions are recommended based on expert feedback: (1) Establishing internal and external collaborations among various specialties and institutions, (2) Taking into account the professors' workloads, (3) Sharing responsibilities and fostering participation, and (4) Providing flexibility in selecting supervisors.

Based on the study by Meuleners et al., it has been determined that assigning a single supervisor is usually not favourable for students. Instead, the use of a number

of supervisors/mentors or a supervision team is recommended [6]. In this situation, it is possible to develop efficient projects based on the up-to-date needs of society. In Iran, although this possibility exists, the shortage of professors and various problems and challenges within academic groups prevent it. In the research- doctorate program, it is necessary for each student to have one or more senior researchers to guide, help, and support the student in developing their research skills. In fact, the vital role of authentic mentorship is to guide doctoral students through designing their career development plans, assisting in overcoming challenges in doctoral studies, and facilitating professional networking. This can lead to significant job opportunities not only during the doctoral program but also after graduation [43].

Financial resources also play a crucial role in the success of doctoral programs [15]. Based on our results, the limitation of financial resources for research doctorate education was another challenge. Therefore, it is recommended to develop a strategy on the best approach to ensure the resources required by the faculty. Utilizing the partnership method is an effective way to maximize resources through collaboration. Partnership is the process of collaborating with other institutions and individuals to achieve shared goals. Therefore, the partners share the same risks and benefits. The use of private financing programs can lead to increased initiatives in specialized doctoral education.

Based on our findings, it seems that in Iran, similar to East Asian countries, a hybrid system combining elements from the USA and European models has been utilized in designing research doctorate programs. This approach emphasizes both supervision and coursework components. On the one hand, this system reduces the level of creativity due to excessive supervision of students' activities and emphasizes passing certain courses, thus limiting opportunities for defining problem-oriented projects. These conditions can be altered by transitioning to the European system and thoroughly evaluating the goals and anticipated results. Therefore, based on the results of this study, it is suggested to develop competency based curriculum or to reform the current program in order to solve its current problems. Future research is suggested to examine the practicality and effectiveness of the policy options proposed in the present study and prioritize them in terms of efficacy and effectiveness.

This study acknowledges a potential limitation in the alignment of proposed solutions with the actual challenges faced by students. While solutions are derived from experts' interpretations of student-reported problems, there may be an inadvertent overlap of differing rationalities. This suggests a need for a more nuanced explanation of the contrasting perspectives between students and experts in the analysis. By analyzing the



challenges raised by the students, the solutions proposed by experts, and reviewing similar studies in the **discussion** section, we aimed to elucidate this difference of opinion for the readers of the article.

## Conclusion

This study proposes evidence-based solutions for a research doctorate program tailored to the specific context of Iran's medical education system. Since the majority of researches on doctoral programs are grounded in Western perspectives on students, faculty, resources, and cultural contexts, this study has the potential to offer valuable insights and fresh perspectives.

The proposed framework is based on the outcome-based curriculum approach, which focuses on the essential competencies that students should achieve by the end of the program. The solutions consist of four main themes: admission criteria, goals and outcomes, curriculum, and resources, which aim to develop the technical and practical competencies of the students and graduates.

Research doctorate program graduates can play a vital role in improving the quality and performance of health-care services by pursuing various career pathways and job categories that align with their skills and qualifications. However, to achieve this, they need to be supported by the MoHME, which should review and update the curriculum according to the program goals and international best practices. Additionally, redefining admission criteria, clarifying future duties, managing human and financial resources, and providing effective mentoring are essential. Moreover, graduates of research doctorate programs should collaborate with other health professionals, policymakers, and stakeholders to promote inter-professional collaboration and enhance integrated health system improvement.

## Abbreviations

MoHME	Ministry of Health and Medical Education
PhD	Doctor of Philosophy

## Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12909-024-05815-2>.

Supplementary Material 1

Supplementary Material 2

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## Author contributions

A.K. conceived the study and contributed to the study design, data analysis, drafting, and finalizing of the paper. Z.F., M.H.A. contributed to the data analysis and drafted the paper. Sh. Sh. contributed to data gathering and data entry. M.H.A., A.K., and Z.F. contributed to the study design, interpretation

of data and intellectual development of the manuscript as well as critically reviewed the manuscript. MH contributed in writing, critical review and editing of manuscript. All authors read and approved the final version of the paper.

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## Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

## Declarations

### Ethical approval and consent to participate

This study was approved by the Ethics Committee of the NASR (No: IR. NASRME. REC. 1402. 073). The transcriptions of participants and their related analysis were anonymized to ensure confidentiality. First, we explained in detail to the interviewees the study objectives. The interview guide and focus group questions were sent to prospective study participants, and their informed consent for participation in the study was obtained prior to their involvement. Following that, since the research presents no risk of harm to interviewees, we acquired verbal consent from the participants as approved by the ethics committee. However, consent was audio recorded, where we guaranteed interviewees their privacy, confidentiality, and anonymity of any information they may provide. Afterward, interviewees made a voluntary choice about participating in the research and were given the right to opt out of the interview as and when they wished.

### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

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