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Research Article

CURRICULUM AUDIT OF IRANIAN PHD OF ANATOMY ACCORDING TO EUROPEAN STANDARD, COMPARING WITH WORLDWIDE SELECTED COUNTRIES

Mostafa Rezaei Tavirani¹, Reza Valizadeh², Yousef Sadeghi³, Foruzan Kavarizadeh^{4*}¹Professor of Biophysics, Shahid Beheshti University of Medical Sciences, Tehran, Iran.²Department of Psychiatry, School of Medicine, Ilam University of Medical Sciences, Ilam, Iran.³Professor of Neuroanatomy, Department of Biology and Anatomy, Shahid Beheshti University of Medical Sciences, Tehran, Iran.⁴School of Medicine, Ilam University of Medical Sciences, Ilam, Iran.**Abstract:**

Anatomy is one of the basic essential sciences of medicine, which is recognized as a root that gradually formed other basic medical sciences. Therefore, educational program and curriculum are very important aspects of anatomical science. This study aimed to evaluate and compare training programs of the PhD in anatomical sciences in ten different universities according to European standards. This descriptive - comparative study was conducted using multi-stage sampling method to choose 10 universities from five continents. Then, curricula of PhD in anatomy for ten selected universities were compared to Iranian curriculum according to European standards. Data were collected using information provided in official website of respective universities. In this study, we evaluated eight elements of the training programs in which three elements including duration of program, educational content and educational levels of the ten selected universities were consistent with European standards. However, we found no information regarding duration of PhD program in the Iranian curriculum. Our findings indicated that African universities perform weaker than other universities. In addition, training program of doctoral anatomy in Iran showed satisfactory standards in comparison to other universities across the world. The training program in Iran was consistent with the world's greatest universities as well as European standards. Hence, future studies are recommended to focus on the correct implementation of training programs.

Keywords: Curriculum, PhD Anatomy, Standard ORPHEUS.**Corresponding Author:** \

Foruzan Kavarizadeh,
School of Medicine,
Ilam University of Medical Sciences,
Ilam, Iran. Email: pubmedp@gmail.com;
Tel: [+989189127926703](tel:+989189127926703)

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INTRODUCTION

Anatomical science is one of the oldest and most basic disciplines of medical sciences; it focuses on studying and analyzing the structure of human body and other animal species in different fields of developmental anatomy, microscopic anatomy, and macroscopic anatomy. Applying mentioned techniques and procedures have paved the ground for further research on the growth and evolution of various species and the categorization of this discipline in two distinct branches of embryology and comparative anatomy. The term 'curriculum' signifies activities included in a training program, the final educational objective set for the project, and required steps for the realization of this objective. According to Genn's definition of curriculum (1995), whatsoever activities conducted in relation with training programs can be gathered under the umbrella term of curriculum [1]. Apart from related concepts, terminology, and conceptions, each curriculum consists of four distinct parts of content, teaching and learning strategies, assessment processes, and evaluation processes. In fact, the indices provided by the Department of Health and Biomedical Science, which were designed primarily to coordinate the doctoral training programs for medical and health domain in developed countries, are now considered as European standards [2]. PhD is the highest university educational level which consists of a set of coordinated, educational and research activities [3]. Although the tendency towards PhD research-oriented courses is increasing worldwide, the majority of developing countries still focus on training programs at universities [4]. Research-based method is a common method for training PhD students around the world; the main objective of research-based courses is promoting learning and training through original research and training academic-minded individuals. Anatomical science is one of the oldest and most basic disciplines of medical sciences; various branches of medical sciences are supposed to have originated from this discipline. Owing to advances in the field of medical sciences, this discipline has enjoyed drastic alteration in the last two decades. Increase in the number of PhD students and, consequently, the need for more economic, human, and facility resources have necessitated the implementation of changes in this discipline. Despite the lack of experimental proofs, it can be surely stated that PhD curriculum of anatomical sciences is not consistent with the mission, content, duration, and the needs of learners. It, also, seems that subject-oriented models, despite being successful, have deficiencies, the precise diagnosis of which will yield more efficient research-

based models that would help the promotion of educational system. The integration of a systematic, comprehensive, and eclectic curriculum is an inseparable foundation of the education system of each community; in order to be effective, a curriculum must be designed, revised, and reformed in line with up to date needs of society [5, 6]. An Orpheus standard includes eight fields of research, result, admission policies, curriculum, supervision, doctoral dissertation, assessment, and infrastructure; the present study focuses on the investigation of PhD curriculum. The main objective of the present study is investigating the compliance of anatomical sciences PhD curriculum in Iran, in comparison to some other countries, with Orpheus standards.

MATERIALS AND METHODS:

The present comparative study was conducted in order to compare anatomical sciences PhD curriculum of famous universities in Iran and other countries around the world in three stages, with the measuring rod being Orpheus standards. The curricula of worldwide accredited universities are assessed according to London Times Higher Education Standard Journal, which is the oldest ranking journal in the world; the ranking criteria presented by Times include education, research, the impact of research (future citations to published articles), industrial proceeds (innovations and industrial applications), and international cooperation (professors and students) [7, 8]. Then, a researcher-made checklist, based on Orpheus European Standards of PhD education in the field of Health and Biochemical, which was published in 2012, was applied to assess the quality of PhD curricula of accredited universities around the world [9]. Finally, the curriculum of studied universities was compared according to the researcher-made checklist. A list of all universities which met inclusion criteria was prepared and some universities were selected out of each continent; Saint Louis University (USA) and McGill (Canada) were selected from America, Galway University (Ireland) and Masaryk (Czech) from Europe, International Delhi University (India) and Mersin (Turkey) from Asia, University of Sidney (Australia) and University of Otago (New Zealand) from Oceania, and University of Khartoum (Sudan) and University of Nairobi (Kenya) were selected from Africa. Then, according to the made checklist, following criteria were examined and assessed: general structure of curriculum, duration of the training program, mission, objectives, procedures, teaching/selection-oriented content, stages of education, and the role and position of graduates in PhD curriculum of anatomical sciences.

FINDINGS:

PhD course of anatomical sciences in Saint Louis University includes two fall and spring semesters, to which a summer one is added in case of necessity; if the student passes the comprehensive exam at the end of these two semesters, he gets to choose the title of his dissertation. Students pass theoretical subjects in the first two years and they are obliged to complete their dissertation in 2, or maximum, 3 years. Subject of Ethics is required; the majority of courses deal with science and anatomy courses and there are no direct courses of statistics and research methodology [10]. According to the curriculum of McGill University, students must pass 15 required courses, finalized by successfully passing the comprehensive test. Students share the findings and progression of their dissertations with peers, higher and lower education students, and their professors and use their ideas, if necessary. Students are, also, required to pass the comprehensive test, which consists of two parts of written composition and interview, in, at most, 18 months [11]. In Galway University, PhD students supervise educational activities of MA students. They are, also, in direct relationship with faculty members in the field of research. The structured, systematic PhD course of anatomical sciences lasts 4-6 years, during which the students are required to complete their thesis in one of majors of anatomical sciences [12]. According to rules and regulations of Masaryk University, PhD students are supposed to cooperate in teaching required courses, participate in teaching anatomy courses for a maximum of 4 hours per week, participate in research programs of the faculty, and present research findings in professional conferences, at least, once during their education course; full time and part-time PhD course in anatomical sciences lasts for 4 and 7 years [13]. In International University of Delhi, an anatomical science PhD courses lasts, at least 2 an, at most, 5-6 years. Teacher-training courses are presented in order to train teachers and professors with qualified abilities for various educational levels and disciplines. Specific, theoretical courses, research methodology, and teaching courses are required during the first year [14]. Academic education is provided in four distinct levels in Mersin university and PhD anatomical sciences is on the third level; this course takes about 4 years and all units are presented in the four required semesters [13]. According to regulations of University of Sidney, passing theoretical courses takes 6 months for full time and 1 year for part time students; two third of the duration of the course must be passed doing research and the remaining one third is devoted to curricula, workshops, lectures, and seminars.

Students are required to publish the findings of their research project in either a credited journal or domestic research journal [15]. In the University of Otago, full time PhD courses last from 2.5 to 5 years and part time courses are supposed to last from 4 to 8 years; students are required to participate in seminars and report the progress of their projects monthly [16]. According to rules and regulations of the University of Khartoum, full time PhD course lasts 2 to 5 years and part time courses last 3 to 6 years; students of research-oriented course are supposed to participate in 6-10 seminars during their 3-5 years course [17]. In Nairobi University, teaching is implemented with an eclectic approach, combining topography, microscopy, macroscopy, cardiology, and clinical anatomy [18]. Anatomical sickness PhD period consists of 50 courses, 30 of which are specific and required and 20 of which are doctoral dissertation. The curriculum is mainly designed to meet national and local needs, explicate future academic responsibilities of the students, emphasize international communications, and apply modern technologies. The research stage starts when the student passes the comprehensive test successfully and it ends with the completion of the dissertation [4].

DISCUSSION:

The present comparative study was conducted in order to compare anatomical sciences PhD curriculum of famous universities in Iran and 40 other countries around the world, with the measuring rod being Orpheus standards [19]. The overall standard structure of a PhD course was assessed in various countries in Europe, Asia, Africa, Oceanic, and America. According to the reports of Iran's Health Organization, doctoral training programs should be based on research and critical, analytics thinking. Based on the obtained results, Galway, Masaryk, Mersin, and Sydney universities obtained excellent scores and Saint Louise, McGill, International Delhi, Otago, Khartoum, Nairobi, and Iran universities attained good score. The next factor is duration of the PhD course; this factor was clarified in all universities, except for Iran university. According to the standard definition, PhD course must be structured within a time period of 3-4 years. The indicator of mission was clarified in all universities; the results showed high score of this factor in the assessment checklist of all universities. Saint Louise, McGill, Masaryk, Khartoum, and Iran universities attained excellent score and Mersin, Sydney, and Otago universities attained good scores. According to the standard of educational mission, a PhD course must generate certain qualifications in

candidate students. The next factor to be assessed is educational objectives and goals, according to which students must have enough knowledge about the discipline they are studying, skills they might get, and required research methodology. According to the results of the analysis of this factor, Iran university attained excellent score and universities of Saint Louise, McGill, Mersin, Sydney, Otago, Masaryk, Delhi, Khartoum, and Nairobi attained good score. Teaching must be done in a research and student-based manner so that it ensures the acquisition of certain qualifications and capabilities during the training program for the students. The results of the analysis showed high score of all studied universities in terms of this factor. The content of educational material must be designed to include courses on ethics, health and safety, animal testing, and research methodology. According to the results, all universities attained good score in terms of the content of teaching materials. Each standard educational course must integrate a 6-month period; Saint Louise, McGill, Mersin, Sydney, Otago, Masaryk, Delhi, and Iran universities attained excellent score and universities of Nairobi and Khartoum attained good score in this regard. The last factor was the role and position of graduated students in the mentioned universities; according to the results, this factor was specified in universities of Saint Louise, McGill, Mersin, Sydney, Otago, Masaryk, Delhi, and Iran and unspecified in the universities of Nairobi and Khartoum. According to study of Ghaffari *et al*, 2011, which was conducted in order to compare the curriculum of undergraduate medical sciences students of some credited universities in Iran and some other countries, there is a huge gap between curriculum of Iran and other countries in terms of the efficiency of educational indexes; thus, it is necessary to revise and reform existing training programs in order to remove possible deficiencies. However, according to the results of the present study, there is considerable consistency between Iranian and foreign universities in terms of educational standards [20]. According to the findings study of Karimi *et al*, 2015, which was conducted in order to compare MS curriculum of Iran and some other credited universities around the world, the curriculum implemented in Iranian universities is comprehensive and inclusive, which is consistent with the results of the present study [21]. According to study of Mehdizadeh *et al*, 2004, which was conducted to assess educational requirements and academic skills of MS students of anatomical sciences in comparison to social necessities, it is necessary to include some practical courses in order to compliment and enrich existing programs [22], which is consistent with the findings of the present

study. The present study was, also, inconsistent with those studies the results of which emphasized the necessity of revising and reforming curriculum of Iranian universities [23].

CONCLUSION

According to the findings of the present study, curriculum of Iranian universities is on the same level with credited worldwide universities and is consistent with their standards. It is recommended for future researches to investigate proper implementation of curricula and address other existing challenges.

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