

Pharmacy Education Development In Iran

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For the first time in 1922, a pharmacy division was set up at the school of medicine. In 1926, the first union of Iranian pharmacy students who had graduated in France and returned to Iran. Duration of this course was 3 years. In 1939 this course changes to 4-years program and 140 Credits. After that Tehran University changed the Pharmacy degree from Masters to doctorate (Pharm.D.) and the duration of the study was increased to 5 years [1, 2].

During all these years pharmacy department were belong to faculty of medicine. In 1956 the first faculty of pharmacy was established. Then, in 1973 each academic year was changed into two semesters. After this modification, Pharmacy students would get their Pharm.D degree after writing theses and taking an oath [1]. Graduates need to present and defend their theses in different fields of pharmacy and this adds another year to their studies and generally after 6 years students can graduate as Doctor in Pharmacy. The Pharm.D degree program requires at least 2-years of specific pre-professional (undergraduate) coursework followed by 4-academic years of professional study. Pharmacy colleges and schools accept students directly from high school for Pharm.D program [3].

When Iranian students finished eight years of primary school and four years of high school in natural sciences (Experimental Sciences Diploma), can attend a national entrance exam for universities. At now, we have 16 faculty of pharmacy in university of medical sciences. After Five semesters which is equal to 90-100 credits of general and basic sciences study, students entrance National test named "the basic sciences exam" which is held for pharmacy students[3].

Key words:

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Accept in the basic sciences exam allows a student step up from basic courses (pre-professional coursework) like General Chemistry, Immunology, Molecular Biology and Genetics, Organic Chemistry, Parasitology, Physics, Physiology, Population & Family Planning, Statistics, Biochemistry, Bacteriology, Anatomy & Histology, Analytical Chemistry to Professional courses like Bio-Pharmacy & Pharmacokinetic, Cell Culture, Clinical Biochemistry, Cosmetics, Drug Therapy, Ethics in Pharmacy, Instrumental Analysis, Medicinal Chemistry, Medicinal Herbs, Microbial Control, Nutrient & Diet Therapy, Pharmaceutical Biotechnology, Biological Products, Pharmaceutics, pharmacognosy, pharmacology, Physical-pharmacy, poisoning control, Toxicology, Physiochemical Control, Training in Hospital Pharmacy/ Pharmaceutical Industry, Pharmacy Internship in pharmacy of Educational hospital and Thesis[3,4]. Passing a total of about 212 credits of all the general and basic sciences and professional courses in both theoretic and laboratory (practical) classes, Pharm.D candidate should prepare for defend their doctoral thesis [3]. All the faculties of pharmacy (the exception being Pharmaceutical sciences branch of Tehran Azad University and International unit of university of medical sciences) help students by financial aids and support complete tuitions, so students have free education[3,1]. At the end year of education, students must pass internship course (350 hours) at educational pharmacy of hospital [3, 5]. The Pharm.D Curriculum in Iran (Faculty of Pharmacy, University of Medical Sciences) is shown in Table 1. Nowadays Pharm.D Curriculum consists of new optional Courses, like Fundamental of Health Services, Ethics in Pharmacy, Management and Marketing in Pharmacy, Polymer Application in Pharmacy, Radio Pharmacy, and Traditional Medicine, etc. Because of free Education of Pharm.D program in Iran (the government-ministry of health and medical education assumes the tuitions fee) so after graduation pharmacy doctors should complete an obligatory return of service in governmental and education pharmacy and hospital (ministry of health and medical education); this period can be about 24 months.

Since 1990, some of the pharmacy faculties in Iran holding Ph.D. programmes in the fields of Medicinal Chemistry, Radiopharmacy, Pharmaceutics, Pharmacognosy, and Toxicology to the students owned a Pharm. D. Degree [4]. Since 1996, some of the pharmacy

faculties in Iran holding Ph.D. programmes of Clinical Pharmacy. Since 2000, some of the pharmacy faculties in Iran holding Ph.D. programmes of Pharmaceutical Biotechnology. Since 2009, some of the pharmacy faculties in Iran holding Ph.D. programmes of Pharmaceutical Nanotechnology and Pharmaco-economy and Pharmaceutical Management. Since 2010, some of the best Research Center in Iran holding PhD by research in pharmaceutical sciences [4, 6].

This facts illustrates the Pharmacy education development in Iran. For improve Educational System of Pharm.D program, ministry of health and medical education must improve the basic knowledge of curriculum development, promote lecturer training program content, teaching research in education and education in research. This new curriculum has prepared scientific wisdom regarding the Pharmaceutical technology and sciences. The important purpose of this curriculum design, covering the produce of pharmaceutical science lectures and symposium, new field of study, Basic Sciences Examination and research methods workshops during pharmacy program, is to enhance the quality of educational system, research and abilities at the faculties of pharmacy in Iran.

The Pharm.D curriculum would be designed to prepare pharmacy students as a Pharmacist (Pharm.D) who has the abilities and skills that are necessary to achieve outcomes related to:

- Providing pharmaceutical care to patients
- Developing and managing medication distribution and control systems
- Managing the pharmacy
- Promoting public health
- Providing drug information and education

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Conflict of Interests:

Authors have no Conflict of Interest

Table 1. Pharm.D. Curriculum at the Faculty of pharmacy, Shiraz University of Medical Sciences (the model of Iranian Faculty of pharmacy)

Year 1					
First Semester			Second Semester		
Course	Theoretical Credits	Practical Credits	Course	Theoretical Credits	Practical Credits
General Chemistry	4	2	Organic Chemistry(1)	3	1
Molecular Biology/Genetics	4	----	Parasitology	3	1
English	2		Anatomy & Histology	2	1
Mathematics	3		Physics	2	1
Physical Training(1)	----	1	Persian Literature	3	----
Islamic Studies and culture	2	----	Islamic ethics	2	----
Islamic History	2	----	Physical training(2)	----	1
Year 2					
First Semester			Second Semester		
Course	Theoretical Credits	Practical Credits	Course	Theoretical Credits	Practical Credits
Organic Chemistry(2)	3	1	Analytical Chemistry	2	2
Physiology(1)	4	----	Physiology (2)	4	1
Biology	3	1	Bacteriology	3	1
Immunology	3	1	Virology	1	----
Islamic Revolution	2	----	Islamic ideology (2)	2	----
Islamic ideology(1)	2	----	First Aid	2	----
Year 3					
First Semester			Second Semester		
Course	Theoretical Credits	Practical Credits	Course	Theoretical Credits	Practical Credits
Pharmaceutics (1)	2	----	Pharmaceutics (2)	3	1
Medicinal Chemistry (I)	2	----	Pharmacology (2)	4	1
Psychology	2	----	Terminology in Pharmacy	2	---
Physical Pharmacy(1)	2	----	Statistics Packages	2	1
Pharmacology (1)	4	----	Medicinal Herbs	2	1
Biological Products	2	----	Physical Pharmacy (2)	2	---
Cell culture	1	----			
Ethics in Pharmacy	1	----			

Year 4					
<i>First Semester</i>			<i>Second Semester</i>		
Course	Theoretical Credits	Practical Credits	Course	Theoretical Credits	Practical Credits
Pharmaceutics (3)	3	1	Pharmaceutics (4)	2	1
Toxicology	2	2	Medicinal Chemistry (3)	3	---
Medicinal Chemistry (2)	3	---	Drug Therapy (2)	3	---
Pharmacognosy(1)	2	---	Analytical Methods	3	1
Nutrient & Diet Therapy	3	---	Physicochemical Control	2	1
Drug Therapy(1)	3	---	Pharmacognosy (2)	3	---
			Thesis (1)	2	---
Year 5					
<i>First Semester</i>			<i>Second Semester</i>		
Course	Theoretical Credits	Practical Credits	Course	Theoretical Credits	Practical Credits
Pharmaceutics (3)	2	1	Management and Marketing in Pharmacy	2	---
Cosmetics	2	---	Poisoning Control	2	---
Medicinal Chemistry (3)	3	---	Training in Hospital	2	---
Microbial Control	2	1	Optional courses 1 (Elective courses)	2	---
Bio-Pharmacy	3	---	Optional courses 2 (Elective courses)	2	---
Drug Therapy (3)	3	---	Optional courses 4 (Elective courses)	2	---
Pharmacognosy	---	2	Optional courses 4 (Elective courses)	2	---
Thesis (2)	2	---	Thesis (3)	4	---
<i>Summer Semester</i>					
Course	Theoretical Credits	Practical Credits	Course	Theoretical Credits	Practical Credits
Training in Hospital pharmacy	---	2			
Training in Industrial pharmacy	---	2			

A theoretical credit is equal to 1 h per week; a practical credit is equal to 2 h per week; a training credit is equal to 3 h per week.

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