

Original Article

The Islamic Revolution of Iran and Migration of Physicians to the United States

Hossain A. Ronaghy MD MPH^{1,2}, Anoshiravan Shajari BS¹

Abstract

Following the Islamic Revolution of 1979 in Iran, the trend of migration of physicians from the country continued. The total number of Iranian physicians migrated to the United States (US) increased from 1625 before revolution in 1974, to 5045 in 2010, thirty years post-revolution. The percentage of medical graduates migrating to the US, in the same period dropped from 15% to 5%. The reasons for this drop were restrictions imposed, along with creation of good postgraduate residency and fellowship programs in Iran. Following the revolution, the number of medical schools increased from 13 to 48. Despite all the restrictions and impediments for post-revolution medical graduates, over 500 medical graduates from newly established medical schools found their ways into the healthcare system of the US.

In spite of all hardships of eight years of imposed war, and 30 years of the US sanctions, Iran has been able to maintain good progress in its healthcare, education, and research in medicine and other branches of science and technology.

Keywords: Iranian physician migration, medical care, medical education

Cite the article as: Ronaghy HA, Shajari A. The Islamic Revolution of Iran and Migration of Physicians to the United States. *Arch Iran Med.* 2013; **16(10)**: 590 – 593.

Introduction

The Iranian Islamic Revolution in 1979 created a huge friction between Iran and Western countries in every respect, including political, cultural, and educational dimensions. The political aspect was particularly troublesome between Iran and the US as a result of the US embassy hostage crisis of 1981. Following the admission of the Shah of Iran to the US, the US embassy in Tehran was occupied and the embassy workers held hostages in exchange for the Shah. The Iranians were rightly suspicious of repetition of events of 1951, by which the US plotted a coup d'état against democratically elected Prime Minister.

As a result diplomatic relations between the two governments have been broken ever since. Prior to 1979 there was a free exchange of scientists and students between the two nations.

Indeed, some Iranian universities had official affiliations with American institutions and freely exchanged visiting professors and students with the US.¹

A brief background of medical education in Iran

Since the mid-19th Century Iran has been attempting to modernize its healthcare system. The first Iranian university was established in 1851, founded by Amir Kabir, who served as prime minister during the Ghajar Dynasty in Iran in the 19th Century. Dar al-Fonun originally was conceived as a polytechnic to train upper-class Persian youth in medicine, engineering, military science, and geology² It was similar in scope and purpose to American land grant colleges like Purdue and Texas A&M University. Like them, it developed and expanded its mission over the next hundred years, and eventually becoming the University of Tehran.²

Authors' affiliations: ¹Department of Medical Education, Shiraz University of Medical Sciences, Shiraz, Iran. ²Department of Medicine, University of California, San Diego (UCSD), USA.

Corresponding author and reprints: Hossain A. Ronaghy MD MPH, Department of Medical Education, Shiraz University of Medical Sciences, Shiraz, Iran. 3023 Bunker Hill Street, San Diego, California, 92109 USA.

E-mail: Ronaghy@yahoo.com

Accepted for publication: 17 July 2013

The process of modernization in medicine in developing countries and transition from traditional to modernity, and changing Ayurveda-based medical practice to scientific-based medicine is often complex and difficult. This transition may be associated with unpredictable and undesirable complications for developing countries.³ Iran created the first Western style medical school in Tehran, the capital of the country.

Tehran Medical School was established in 1934, with a French oriented curriculum. It started to have medical graduates in the late 1930's. Soon after that, several medical schools were established in the larger Iranian cities. In the early 1960's Iran had close to 500 medical graduates annually. By 1970 Iranian medical graduates from Western universities were returning to Iran and the number of physicians in the country reached over 10,000.⁴

While a large number of Iranians who were trained in medical schools of the US and Europe were returning to Iran, between 10%–15 % of Iranian medical graduates migrated to the US.³ This was the subject of a thorough investigation, which was previously reported.³ The causes of this migration were fully explored and the reasons behind it were identified.³

The major causes of migration of physicians, as any other type of migration, are based on push factors in the donating countries, and pull factor in the host countries.

Following the Islamic Revolution, a drastic change happened in healthcare and medical education in Iran. Over the first two decades of post-revolution, 35 new medical schools were established.⁵

The previously established medical schools were expanded and within thirty years of the revolution, the number of medical doctors in Iran had increased tenfold.⁵⁻⁶ One of the major steps in the healthcare system of Iran was the merging of all medical schools with the Ministry of Health in 1985, which was renamed as Ministry of Health and Medical Education.⁵ This newly created ministry rapidly expanded the number of hospital beds as well as tertiary care, with state-of-the-art medical technology. These facilities were mainly established in Tehran and other major Iranian cities.⁶

There has been a significant rise in the number of medical schools in Iran, from 13 in 1979 to 48 in 2012. The number medi-

cal schools annual admissions has also increased from 1387 to 18,141.⁵ Furthermore, there has also been a significant rise in research activities. The merger of all medical schools with the Ministry of Health in 1985 was a turning point in the pattern of both medical education and healthcare delivery in Iran.⁵ This merge demonstrates the success of Iran in upgrading medical education by the unification of health services and medical education within the same ministry. However, many questions remain regarding the pros and cons of this unification.⁵

This progress has been achieved despite war and the US sanctions, which resulted in restrictions of budgets for public health spending. In spite of these obstacles, Iranian medical educators have not been held back from undertaking training programs in a wide variety of medical education and healthcare delivery systems.⁶

In the initial five years following the revolution, there were some setbacks in medical education, due to a Cultural Revolution, and closure of medical schools. Iranian universities lost a proportion of their academic staff, yet soon in the first two decades post-revolution, the number of academic staff increased sevenfold.⁵⁻⁷

Furthermore, migration of Iranian medical graduates to the US despite all restrictions both in Iran and the US, continued with a special characteristic; while the total number of graduates migrating to the US had increased threefold, from 1600 prior to the revolution to 5000 post-revolution, the percentage of graduates had decreased from 15% of total graduates to 5% of all post-revolution medical graduates.

The number of medical schools per population in Iran ranks ninth out of 235 countries.⁵ At the present time studying in government-run medical schools is free. The duration of medical education is seven years. Curricula are mostly based on Western style education, which started in 1924, in Tehran, and followed by medical schools in other cities. Following the revolution, each of the thirty Iranian provinces has established at least one medical school. However, the general phenomenon of migration of medical graduates remains to be a problem. A study done in the early 1970s revealed that prior to the revolution, up to 90% of graduates of some medical schools migrated to the US.³

The purpose of the present report is to identify the pattern of migration of Iranian medical graduates to the US following the Islamic Revolution and to determine the rate of migration between previously established medical schools compared to new and smaller schools which have been established after the revolution.

We hope to eventually be able to determine the effects and consequences of the impediments, which have been created post-revolution, both in Iran and the US, and the reasons of post-revolution migration of physicians.

Push and pull factors

Basically, there are multiple factors in the phenomenon of migration. These comprise economic, social, educational, and political reasons, which are divided into two broad categories of push and pull factors. These factors are briefly reviewed, in the case of Iran.

1. Push factors in Iran

a) Closure of medical schools

Sociopolitical factors remain controversial, but because of the revolution all universities including medical schools, were closed for two years for the Cultural Revolution, starting in 1986. The purpose of the Cultural Revolution was to create a harmony be-

tween higher education and Islamic values in Iran. This process resulted in the loss of some academic staff.⁷ Furthermore, the absence of two years of classes of medical schools, caused delay in the graduation of medical students for at least two years.

b) Restriction of medical diploma

Following the revolution, the Islamic government imposed five years of medical service for all medical graduates, in underserved areas of the country, before granting a medical school graduation diploma. This included postgraduates, who had finished residency or fellowship. Exit visas for medical doctors were forbidden before completion of these five years of service. Meanwhile, an advanced program of specialty and subspecialty training was created in Iran. New graduates now have the opportunity and capability of entry into these programs. Entering into these programs will postpone the five years of compulsory service to underserved and deprived areas, which necessitate these doctors to remain in Iran. The medical graduates, who were required to go to the underserved areas, were close to 30 years of age, increasing their chances of getting married, starting families, and settling in Iran.

c) Quality of post-revolution medical graduates

As previously reported, following the Islamic Revolution a number of academic staff either retired or resigned and some who did not observe Islamic rules were purged from universities.⁷ Shiraz Medical School alone, lost over 60% of its entire academic cadre.⁷ Therefore, the graduates of Shiraz were less likely to pass the required US Medical Licensing Examination (USMLE) in order to enter into training programs in the US.

However, as previously stated, faculty development was started soon after the revolution, and in the subsequent two decades increased fivefold, from 1573 prior to the revolution to 7979 by 2010.⁵⁻⁶

2. Pull factors in the US

In 1983, the Educational Commission for Foreign Medical Graduates (ECFMG) in the US changed its method of admittance of foreign graduates to enter a US residency program, making it much tougher for international medical graduates (IMGs). Furthermore, the number of the US medical graduates increased, reducing the need for foreign medical graduates. Therefore, IMGs had less chance of entering competitive specialty training in post-graduate programs. Another impediment was the issuance of a travel visa for Iranian nationals, which became much more problematic as a result of the ongoing US/Iranian conflict. Despite these obstacles, since a number of professors in the most Iranian medical schools were the US trained, they played a role model for medical student; the post-graduate training in the US remains to be attractive for Iranian medical graduates.

Materials and Methods

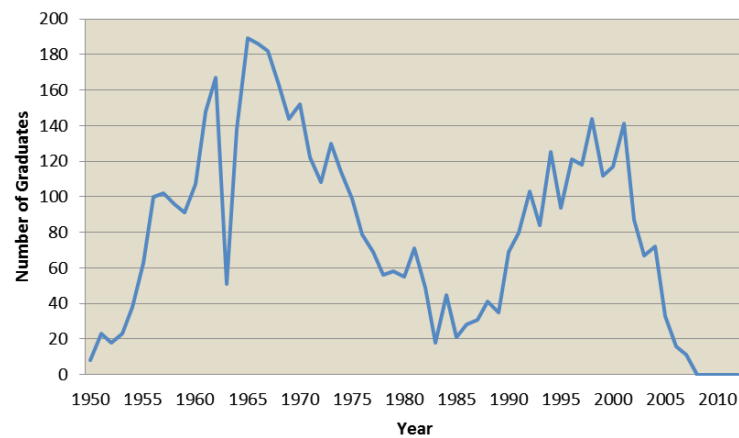
Information about Iranian medical school graduates, including the number of graduates, year of graduation, and the names of their medical schools, were obtained from the American Medical Association (AMA) database of 2012.¹³

The pertinent data were analyzed and tabulated for different medical schools, both before and after the Islamic Revolution.

The total number of practicing physicians who engaged in medical practice in Iran was obtained from the Iranian Medical Council (IMC).⁹ Both numbers of medical graduates from different

Table 1. Comparison of pre- and post-1979 physician migration from old and new medical schools of Iran to the United States.

Medical Schools	Pre-1979 Migrated	Post-1979 Migrated	Post-1979 Graduated	Total
Previously established	1625	1378	1592	4595
Newly established	0	454	454	908
Total	1625	1832	2046	5503

**Figure 1.** Number of Iranian medical graduates in the United States 1950 – 2010.

medical schools from IMC and AMA were analyzed. Because the number of graduates immigrating to the US from newly established Iranian medical schools was small, they were bundled into one category.

Results

Table 1 show the comparison of the number of physicians migrated to the US from old and new medical schools pre- and post-revolution.

Figure 1 shows the pattern of migration of Iranian medical graduates from 1950 to 2010. It is interesting to see that post-revolution, there was a down slope of the number of immigrants and soon after 1990, the pattern started to rebound again.

Figure 2 shows similar patterns in obtaining license to practice medicine in all fifty states for these graduates. Acquiring a license to practice, most probably means their intention to enter the healthcare system of the US and remain in that country permanently.

One interesting contrast is the total number of medical graduates prior to 1979 of 13 medical schools, and 45 post-revolution. Of the latter 45 medical schools, 40 (89%) were approved and accepted by the AMA. The total number of graduates has increased more than tenfold and the physician pool in Iran has reached over 100,000.⁹

Figure 2 shows the pattern of migration and licensing of these medical graduates, which appear to be almost identical. The influx of the number of immigrants is well explained by the political events in Iran.

Figure 3 shows medical graduates from each medical school, pre- and post-revolution. Three Iranian medical schools, namely Tehran, Shiraz, and Beheshti contribute to most of the overall physician immigrants in the US.

Discussion

Comparing the total number of physicians who migrated to the US in the year 1974 (1625) with those of 2012 (5043) gives the

impression that the migration has tripled following the Islamic Revolution.

A more detailed examination of the data clearly indicates that the majority of the latter figure (5043 physicians) belongs to previously established medical schools 3003 (60%) of them, which had been established pre-revolution, whereas only 2040 (40%) of all physicians graduated after 1979, had migrated.

Furthermore, of the 2046 graduates, 1592 (78%) graduates belong to the previously established medical schools, which leave only 454 physicians migrating from the 30 newly established medical schools in Iran.

In 1972, we suggested several measures to correct the loss of graduates.

Curriculum revision

The curriculums of many medical schools in developing countries are carbon copies of those of Western medical schools, most of which were incompatible with the needs of these societies. We suggested identifying the needs of predominantly rural societies and the revision of the curriculum based on these needs. In Shiraz we established the Department of Community Medicine and worked primarily in rural areas. We also identified the needs of rural societies, which comprised 70% of the total population of Iran at that time.¹⁰ The Department of Medical Education was also established in Shiraz with its primary function to modify the method of teaching to make it relevant to the needs of the majority of Iranian communities. Both departments were designated as the centers of education and primary healthcare for the entire Eastern Mediterranean Region, by the World Health Organization (WHO) in 1975. Needless to say other universities also had similar programs including Tehran University in Orumieh, which also was recognized by WHO

Postgraduate education

There was a great need for postgraduate training in developing countries, in order to meet the requirement for training specialists to become the future academicians, and to provide specialized medical care in the tertiary hospitals.

The healthcare system in Iran fundamentally resembles the sys-

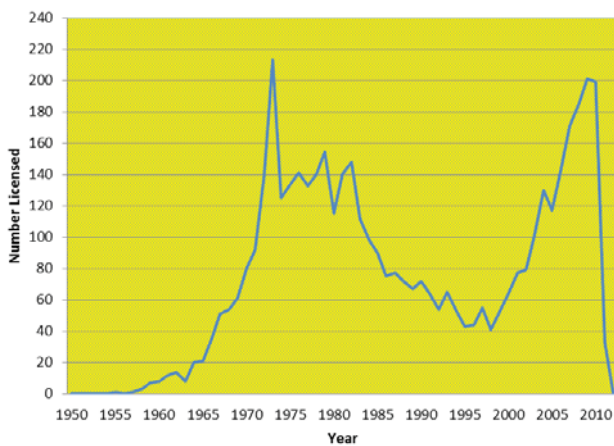


Figure 2. Number of Iranian medical graduates licensed in the United States 1950 – 2010.

tem of Western countries with a difference that basic medical care is available to the majority of the people. The program of village health workers was initiated in Shiraz University in 1971.⁸ This program was greatly expanded post- revolution, to the extent that the authorities in the state of Mississippi have consulted the Iranian rural health planners at Shiraz University for planning health in rural communities of Mississippi state.⁹

With preventive medicine as the primary purpose of these health posts in rural communities, the level of vaccination in rural areas of Iran had reached over 90% of its eligible pediatric population in 1998.⁵

Physicians in private practice and tertiary hospitals are financially doing well. The number of specialists and subspecialists, trained in Iran, has increased substantially; state of the art medical procedures are readily available in many Iranian cities and medical centers. The financial aspect as a push factor in Iran has been diminished.

There are 454 physicians who graduated from newly established medical schools (Table 1), who have migrated to the US. This indicates that the level of education in newly established medical schools is well above most of medical schools in developing countries. It also indicates that the tendency for migration has greatly diminished following the revolution. It should be realized that there is also a number of Iranian medical graduates who have migrated to other Western countries. Despite repeated attempts to obtain these data, we were not able to find any reliable source for other countries. For the US also the data reported here is at most a minimum well-documented figure. We are aware that many other Iranian graduates are engaged in research and pharmaceutical industries, there is no way to identify them and therefore they were not included in this report.

From these data, two important points can be extracted:

1. The initial loss of academic personnel in the first three years post- revolution was up to 60% in some medical schools.³ Despite the war, and sanctions, Iranian academicians were able to increase the academic staff from 1573 prior to revolution, to 7979 within 25 years post- revolution.⁵

2. There is more opportunity for Iranian medical graduates inside Iran for postgraduate training, which has decreased the migration rate of medical graduates. According to Science Matrix (2010), between the year of 1980 to 1994, the Middle East science growth index for Iran was 11.07, whereas that of the second country, Turkey was 5.47.⁷

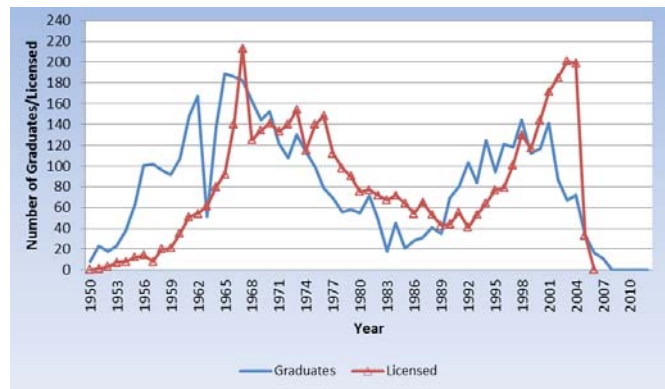


Figure 3. Number of Iranian medical graduates vs. licensed in the United States 1950 – 2010.

Declaration

The authors declare that they have not received any financial support from any government or institution. All expenses were personally paid by the authors.

Acknowledgments

The authors wish to sincerely thank Dr. Ricardo Cornejo, Professor Emeritus, San Diego State University, for his proofing review and advice on this paper. We also thank Professor Reza Malekzadeh for assisting in obtaining the Iranian figures.

Dr. Sagheb, the Vice Chancellor of Shiraz University, gave us encouragement to peruse this study. Dr. Kojuri, the Chairman of the Department of Medical Education, Shiraz

University of Medical Sciences and all his staff have given us full support for which we are sincerely grateful.

References

- Klemas AK. History of Institutional Planning at the University of Pennsylvania: Gaylord Probasco Hamwell, President (1953 – 1970). Available from: URL: <http://www.archives.upenn.edu/histy/features/uplans/hamwell.html>.
- Hosseini HR. Dar ol-Fonoun in want of love (“Dar ol-Fonoun Dar Hasrat-e eshgh”) [in Persian]. Jadid Online, September 22, 2008. Available online: URL: <http://www.jadidonline.com/stry/22092008/frnk/darolfo-noon>.
- Ronaghy HA, Cahill K, Baker TD. Physician migration to the United States. One country’s transfusion is another country’s hemorrhage. *JAMA*. 1974; **227**: 538 – 542.
- Iranian Medical Council Statistics. 1972; **1**: 1 – 8.
- Azizi F. The reform of medical education in I.R. Iran. *Med Edu*. 1997; **3**: 159 – 162.
- Mehrdad R. Health system in Iran. *JAMA*. 2009; **52**: 169 – 173.
- Ronaghy HA, Simon H. The fate of a Western style medical school in Iran. *Ann Intern Med*. 1985; **103**: 229 – 301.
- Science-Matrix 2010; Alexandria Virginia: pa 4 – 7.
- Iranian Medical Association Database 2012; Tehran, Iran.
- Ronaghy HA, Williams KN, Baker TD. Immigration of Iranian physicians to the United States. *J Med Educ*. 1972; **47**: 443 – 445.
- National Institutes of Health; Fogarty International; 31 Center Drive, MSC 2220 Bethesda, MD 20892-2220 USA.
- Ronaghy HA, Nasr K. Medical problems of developing nations: an attempt to bring medical care to rural communities in Iran. *Br Med J*. 1970; **1**: 295 – 296.
- American Medical Association (AMA) Database; 2012.