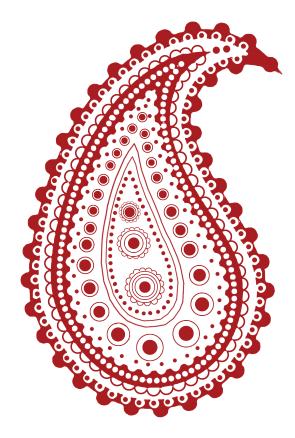
DANESH

THE OU UNDERGRADUATE JOURNAL OF IRANIAN STUDIES





Iranian Studies Program

The UNIVERSITY of OKLAHOMA®

College of International Studies

DĀNESH: The OU Undergraduate Journal of Iranian Studies

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Volume 1 (2016)

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From the Faculty Advisor

It is with great pleasure that I introduce this inaugural issue of *DĀNESH: The OU Undergraduate Journal of Iranian Studies*. The initiative for this journal grew from the hard work and dedication of undergraduate students in the University of Oklahoma's Iranian Studies Program. In particular, I would like to acknowledge **Andrew Akhlaghi** (MA 2016) and **Elena Gharipour** (BA 2016) for their tireless effort in leading this project from its inception, in the spring of 2015, to the publication of this inaugural issue.

Since the founding of the OU Iranian Studies Program in 2011, our goal has been to promote knowledge regarding all aspects of the history, culture, society, and politics of Iran and the Persianate world. As the program has grown over the past five years, the work of OU undergraduate students in the field of Iranian Studies has become truly outstanding. The publication of $D\bar{A}NESH$, a peer-reviewed journal published under the auspices of the OU Iranian Studies Program and the OU College of International Studies, is dedicated to highlighting the research of a growing undergraduate program in Iranian Studies at the University of Oklahoma. As we continue to mature, we are confident that the vitality of the program will be reflected in the pages of this journal.

The name of the journal, $D\bar{A}NESH$, comes from the Persian word meaning *knowledge*, *learning*, and *wisdom*. We believe this is a fitting name for a journal that seeks to foster deep and compassionate understanding of one of the world's most culturally rich and historically complex civilizations. It is with this goal in mind that we inaugurate the publication of $D\bar{A}NESH$.

Afshin Marashi Farzaneh Family Chair in Iranian Studies Director, OU Iranian Studies Program

From the Editors-in-Chief

We are extremely proud to have been a part of this project. We are proud of both the quality of research in the journal and to have been part of such a wonderful process. Each of these papers addresses an important aspect of U.S.-Iranian relations. We hope that these papers will provide much needed context and perspective to the ongoing debates on U.S.-Iranian relations.

We are also privileged to have had such a positive experience editing the journal. Our associate editors worked extremely hard on each of these papers and they were a joy to work with throughout the process. Ultimately, any journal is only as strong as the writers and in this regard we were very fortunate. All of the writers came into this process with the utmost professionalism. We are also indebted to the University of Oklahoma Libraries for helping us archive and host the journal through the SHAREOK system.

The quality and overall process of making the journal are a reflection of the kind of academic environment in the Iranian Studies program and the University of Oklahoma. Finally, we would like to acknowledge the crucial role of Dr. Afshin Marashi. Without his guidance and dedication to the Iranian Studies program, none of this would have been possible.

Andrew Akhlaghi Elena T. Gharipour Editors-In-Chief

Unintended Consequences: The Impact of Sanctions on the Iranian Pharmaceutical Industry

Elizabeth Vernon

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The United States first imposed sanctions on Iran after a breakdown in diplomatic relations following the end of the 1979 Iranian hostage crisis. Many have debated whether these sanctions have had an actual effect on the Iranian government. While the United States originally imposed unilateral sanctions on Iran, it later collaborated with the European Union and United Nations to put multilateral sanctions on Iran with better success. But while the U.S. has been targeting the Iranian government, these sanctions have also had an impact on the Iranian citizens. While sanctions have been intended to pressure the government to stop or reduce enrichment of uranium, they have also had an impact on the population, particularly in the medical arena. Although the US allows for some exceptions to the sanctions in order to provide Iran with the necessary products for the pharmaceutical and medical industries, sanctions still have a direct impact on patients. As shown by trends in the pharmaceutical industry and by the failed Vienna Agreement in 2009, intended to discuss a fuel swap for the Tehran Research Reactor, the required treatment for about 850,000 patients went unmet.¹

One must wonder if sanctions, particularly under the Obama administration, have had their intended effect on the Iranian government or if they have had a greater impact on the Iranian population. Only after examining the histories of the Iranian pharmaceutical industry, the sanctions on Iran, and the impact of sanctions on the industry today can we determine how sanctions have actually affected the Iranian population.

Beginnings of the Iranian Pharmaceutical Industry

Pharmaceutical practices in Iran can be traced back more than 3000 years. Iranians have had a vast knowledge not only of the medicinal value of herbs but of food and different minerals.² One of the earliest records of pharmaceutical practices in Iran was a Zoroastrian text,

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¹ Trita Parsi, A Single Roll of the Dice: Obama's Diplomacy with Iran (New Haven: Yale University Press, 2012), 115.

² Manizeh Abdollahi and Ehya Amalsaleh, "The History of First Modern Pharmacies Founded in Iran," *Revue d'Histoire de la Pharmacie* (N.D.), 3-4.

which discussed the health benefits of different herbs and plants.³ There are also records of various pharmacies from 1502-1722.⁴ These early establishments ultimately paved the way for future pharmacies.

The first modern pharmacy in Iran was established about 100 years ago in Tehran by German, French, and Austrian pharmacists. In 1851, Amir Kabir founded Dar al-Funun, a science university where pharmacology was taught.⁵ In order to establish the university, the Amir sent a special representative, John Daud Khan, to Vienna to gather a group of professors to teach in the university. One of these men was Dr. Jacob Edward Polak, an Austrian who ultimately taught medicine and surgery at Dar al-Funun. Polak also worked at the first modern hospital in Tehran and educated Europeans about Iran.⁶ Polak is considered to be highly influential in the history of Iranian medicine and is praised for his contributions to the industry. Following the establishment of Dar al-Funun, the first pharmaceutical company, Abidi, was established in 1946, paving the way for further advancement of the pharmaceutical industry.⁷

Nationalization and the Pharmaceutical Industry

In 1951, Prime Minister Mohammad Mossadegh successfully nationalized the oil industry in Iran. Following Mossadegh's removal from power, the concept of nationalization lived on in Iran and this sentiment carried over to the pharmaceutical industry, which was nationalized after the 1979 Revolution. Abbas Kebriazeeadeh of the Tehran University of Medical Science noted that after the revolution, "two major motions caused fundamental changes: nationalization of the pharmaceutical industries and the generic scheme." Hashemi-Meshkini et al. note that the generic scheme employed by the Iranian government required all pharmaceutical companies to "produce and market their products only by generic names and with a unique price determined by government for the same products of all companies." The generic scheme helped to nationalize the industry and ultimately place it under the control of the Iranian government. By requiring that all pharmaceuticals were a generic brand and by setting a price for these products, the government successfully nationalized the industry.

It should also be noted that Iran adopted a second policy on the generic scheme in 2000. While the generic scheme made a positive contribution to the pharmaceutical industry, Hashemi-Meshkini et. al argue that the brand-generic scheme did not have a positive impact. Although implementing the generic scheme, in which companies sold a certain brand of a product, was a good concept, the brand-generic scheme ultimately failed. This failure was attributed to outside

³ Mohammad-Hossien Azizi, M.D., "Dr Jacob Eduard Polak (1818-1891): The Pioneer of Modern Medicine in Iran," *Archives of Iranian Medicine* 8, no. 2 (2005): 151-152.

⁴ Abdollahi & Amalsaleh, "History," 3-4.

⁵ Ibid.

⁶ Mohammad Hossien Azizi, "Dr. Jakob Eduard Polak," 151-152.

⁷ Abbas Kebriaeezadeh, "Trend Analysis of the Pharmaceutical Market in Iran; 1997–2010; Policy Implications for Developing Countries," *DARU Journal of Pharmaceutical Sciences* (28 June 2013): 1, (accessed: November 15, 2015, http://www.darujps.com/content/pdf/2008-2231-21-52.pdf.)

⁸ Ibid.

⁹ Amir Hashemi-Meshkini, Mehdi Varmaghani, Mehdi Yousefi, Saeed Yaghoubifard, Hedieh-Sadat Zekri, Shekoufeh Nikfar, and Abbas Kebriaeezadeh, "From Generic Scheme to Brand-Generic Scheme: Have New Policy Influenced the Efficiency of Iranian Pharmaceutical Companies?" *Journal of Research in Pharmacy Practice* 3, no. 3 (2014): 88.

factors, such as the lack of international companies in Iran as well as the pricing policy. ¹⁰ In more recent years, the pharmaceutical industry has shifted towards privatization rather than nationalization. ¹¹ Iran now subsidizes medication, which helps to reduce the cost of medical treatments for its citizens. One may wonder how it affords to do so under international sanctions. Ultimately, the Persian state has no other choice than to subsidize goods such as medication, oil, and food, as many of its citizens would be otherwise unable to afford these products.

Abdol Majid Cheraghali of the Iranian Journal of Pharmaceutical Research noted that, "over the past decades, the government subsidized local production of medicines in order to increase the availability and affordability of the medicines... the government pays direct subsidies to the importers of these medicines in order to reduce their costs." While subsidies have made these products more affordable for Iranian citizens, there are two major issues with the program. Firstly, it encourages reckless behavior, thereby increasing the population and the amount of energy consumption. Secondly, the program increases the wage gap between poor and wealthy Iranians. However, the program still has problems obtaining certain types of medication and treatment for patients. As a result, subsidization seems to be unsustainable under international sanctions.

To keep the cost of some treatments low, Iran implemented a plasma fractionation plan for patients in need of a blood transfusion. ¹⁴ Fractionation is a method in which plasma is recycled so it can be used for patients in need rather than letting the plasma go to waste. In using this process, Iran saved money as opposed to spending precious resources to obtain more blood for plasma transfusions. Furthermore, fractionation made the cost and accessibility of plasma derived medicines (PDMs) much more manageable and realistic for patients. ¹⁵

History of Sanctions on Iran

Following the 1979 Iranian Revolution and the hostage crisis, the United States severed diplomatic relations with Iran and placed economic sanctions on the Persian state. While there were multiple acts concerning sanctions on Iran, three in particular stood out in relation to the pharmaceutical industry. These acts included the Iran and Libya Sanctions Act of 1996, the Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010, and the National Defense Authorization Act for Fiscal Year 2012.

First, the Iran and Libya Sanctions Act of 1996 had main four objectives. It discussed US national security in terms of Iranian/Libyan "attempts to acquire weapons of mass destruction and sponsor [...] of acts of international terrorism, multilateralize U.S. efforts to isolate Iran," authorize [...] economic sanctions on individuals that "made investments in Iran of at least \$40

¹¹ Kebriazeeadeh, "Trend Analysis," 2.

¹⁰ Ibid.

¹² Abdol Majid Cheraghali, "Iran Pharmaceutical Market," *Iranian Journal of Pharmaceutical Research* 5, no.1 (Winter 2006): 1-7, (accessed November 15, 2015, http://ijpr.sbmu.ac.ir/article_646_5.html).

¹³ Semira N. Nikou, "The Subsidies Conundrum," *The Iran Primer* (August 2015), (accessed November 15, 2015, http://iranprimer.usip.org/resource/subsidies-conundrum).

¹⁴ Abdol Majid Cheraghali, "Impacts of International Sanctions on the Iranian Pharmaceutical Market," *Daru: Journal of Pharmaceutical Sciences* 21, no. 1 (July 2013): 63, (accessed November 15, 2015, doi: 10.1186/2008-2231-21-64).

¹⁵ Thierry Burnouf, Jerard Seghatchian, "'Go No Go' in Plasma Fractionation in the World's Emerging Economies: Still a Question Asked 70 Years After the COHN Process was Developed," *Transfusion and Apheresis Science* 51, no. 2 (October 2014): 113-114.

million in any one year that directly contributed to Iran's ability to develop petroleum resources," and put extra pressure on the Libyan government to cooperate with the United Nations Security Council Resolutions 731, 748, and 883. These resolutions demanded that Libya end the sponsorship of international terrorism and the acquisition of weapons of mass destruction. ¹⁶

Second, the Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010 prevented foreign companies from doing business with Iran. This act is a third-party act, which allowed the United States to punish foreign companies if they did not comply. This act had an impact on companies like Siemens, a German technology company that at one point provided Iran with medical and other technology. The German company formerly had a relationship with Iran and enjoyed trading with the Persian state. However, due to international sanctions, the company decreased or halted its business with Iran. Sanctions therefore took away the medical technology and resources that Siemens provided. The National Defense Authorization Act for Fiscal Year 2012 followed the same lines as the aforementioned act. This act stated that "under Section 1245 of the Act, foreign financial institutions that knowingly facilitate significant financial transactions with the Central Bank of Iran ("CBI") or with Iranian financial institutions designated by Treasury risk being cut off from direct access to the U.S. financial system." 19

Impact of Sanctions on Iran's Medical and Pharmaceutical Industry

While many may be aware that U.S. sanctions placed on Iran were intended to pressure Iran to decrease or stop production of nuclear materials/uranium, many may not be cognizant of the other consequences these sanctions have had on the Iranian population. In particular, these sanctions have had a major impact on the Iranian medical and pharmaceutical industries, and, consequently, the health of Iranian citizens in general. Current sanctions against Iran hindered the ability pharmaceutical companies to obtain and distribute medication to Iranian citizens. Cheraghali wrote that "obvious reduction in public resources allocated for health sector along with restrictions on importation of vital medicines and equipment will ultimately result in a weakened physical and medical infrastructure and strain the ability of health systems to provide medicine and services to the patients." While Iran was able to produce many medications and treatments on its own, it did rely on imports from other countries for certain types of treatments and medical equipment. One notable case is that of the Tehran Research Reactor. This reactor was a point of contention in 2009, and again in late 2011 and 2012, which will be discussed later. 21

¹⁶ Lucien J. Dhooge, "Meddling with the Mullahs: An Analysis of the Iran and Libya Sanctions Act of 1996," *Denver Journal of International Law and Policy* 27, no. 1 (Fall 1998): 3-4.

¹⁷ Department of the Treasury, *CISADA: The New U.S. Sanctions on Iran* (Washington D.C: Department of the Treasury, N.D.), 2-3, (accessed November 15, 2015, http://www.treasury.gov/resource-center/sanctions/Programs/Documents/CISADA_english.pdf).

¹⁸ David Crawford and Vanessa Furhmans, "Siemens Business Surges in Iran: Company Weighs its Contracts Against Risks of Working in a Sanctioned State," *Wall Street Journal* (5 April 2011).

¹⁹ U.S. Department of State, "Section 1245 of the National Defense Authorization Act for Fiscal Year 2012," *Diplomacy in Acton* (Washington, D.C.: November 8, 2012), (accessed November 15, 2015, http://www.state.gov/e/eb/tfs/spi/iran/fs/200286.htm).

²⁰ Cheraghali, "Impacts," 64.

²¹ David Cutler and Fredrik Dahl, "Factbox: Tehran Research Reactor," *Reuters*, February 16, 2012, (accessed November 15, 2015, http://af.reuters.com/article/energyOilNews/idAFL5E8DF2I720120215).

As previously mentioned, Iran has a long history of pharmaceutical and medical knowledge. In their Al-Jazeera article, Maziar Shirazi and Sammy Almashat discussed the impact of sanctions on the Iranian healthcare system. They wrote that, prior to the tightening of sanctions in the past two years, Iran was a regional leader in the healthcare industry. Furthermore, Iran was a pioneer in terms of treating people in rural areas throughout the 1980s. "The Iranians built 'health houses' to minister to 1,500 people...Each house is a 1,000-square-foot hut equipped with examination rooms and sleeping quarters and staffed by community health workers." These staff members provided services to local people by providing nutrition and family planning advice, administering immunizations, and monitoring the quality of water. Today, Hansen noted approximately 23 million Iranians are served by 17,000 health houses in rural areas. ²³

In 2012, however, drug shortages increased, not only due to a lack of resources to produce them, but the imports of "newer, more advanced medicines from US and European drug manufacturers decreased 30 percent in 2012." Shirazi and Almashat further wrote that, although the Obama administration has claimed the sanctions are intended to hurt the government and not the people, this shortage in medical supplies nevertheless impacts the civilian population. Therefore, sanctions consequently targeted both the civilian population and the government, regardless of whether or not they are designed to have a negative impact on the population. Although sanctions seem to be aimed at the government, they have a big impact on the citizens of Iran. When citizens cannot access the goods that they need, they lobby the government to change policies. Consequentially, the Iranian government felt the impact of the sanctions both internally and externally.

Cancer Patients

In terms of the patients themselves, cancer patients have perhaps been the most affected by sanctions. Not only have the high costs of cancer treatment been a factor, but also the number of Iranians with cancer has increased. Cancer rates have increased due to smoking and air pollution, though patients with diseases such as HIV/AIDS and heart disease are equally at risk.²⁶ The research indicates, however, that cancer is one of the fastest-growing diseases in Iran and the shortage of medical treatment has only increased in the period after the implementation of sanctions. The International Institute for Peace, Justice, and Human Rights (IIPJHR) noted that, "About 85 thousand cancer cases are detected in the country annually from which 30 thousands result in death...the number of newly diagnosed patients from 17,765 in 2000 had increased to 55,855 cases in 2005 and the latest statistics show that it had reached 85,000 cases

²² Maziar Shirazi and Sammy Almashat, "Sanctioning Iranians' Health," *Al Jazeera*, February 23, 2014, accessed: November 15, 2015, http://www.aljazeera.com/indepth/opinion/2014/02/sanctioning-iranians-health-2014214124138767459.html.

²³ Suzy Hansen, "What Can Mississippi Learn from Iran?" *New York Times*, July 27, 2012, (accessed: November 15, 2015, http://www.nytimes.com/2012/07/29/magazine/what-can-mississippis-health-care-system-learn-from-iran.html? r=0).

²⁴ Maziar Shirazi and Sammy Almashat, "Sanctioning Iranians' Health."

²⁵ Ibid

²⁶Economist Intelligence Unit, "Iran Pharma Impeded by Sanctions," *The Economist*, August 20, 2013, (accessed: November 10, 2015, http://www.eiu.com/industry/article/790872263/iran-pharma-impeded-by-sanctions/2013-08-20).

in 2011."²⁷ Dr. Nasser Parsa of the American Cancer Society further noted that cancer rates will likely increase significantly in 2015.²⁸ In Iran, cancer is the third leading cause of death, after cardiovascular diseases and accidents. Many believe that the high number of cancer cases comes not only from smoking and air pollution but a "modern lifestyle," which means diets that include alcohol, are high in fat and sugar, and are low in fiber.²⁹

In addition to these issues, the lack of access to treatment further exacerbated the problem. The fact that Iranian medical facilities have trouble obtaining the necessary treatment means that they have long waiting lists and high prices. Although Iran has subsidized medicine, it is often not enough for citizens to be able to afford treatment. Many have died while on a waiting list and many more simply cannot afford the treatment.³⁰

Medication is certainly one resource that is difficult to obtain, but another resource, and one possibly far more affected by international sanctions, is that of radiation therapy. Although the United States allows for exceptions to sanctions, many treatments are still difficult to obtain due to the type of therapy or radiation required for treatment. The Center for Research on Globalization stated, "the usage overlap of radiotherapy pieces and some military devices (like radars) has made the sanctions focused on these pieces." This was why obtaining the treatment necessary for cancer was so difficult and the fact that the Obama administration placed stricter sanctions on Iran makes it even more so. Although the sanctions previously placed on Iran made it difficult for Iran to provide cancer treatments and other resources, there is hope that the recent talks between the US and Iran will make the process of obtaining crucial treatment for cancer and other diseases easier.

U.S. Policy under the Obama Administration

Though U.S. sanctions on Iran were tightened under the Obama administration, there have recently been talks between the US and Iran in hopes that Iran would scale back its nuclear program in exchange for an ease in sanctions. Although the Obama administration first attempted to take a more diplomatic approach to sanctions on Iran, it tightened sanctions after talks failed in 2009 and 2012. The main reason for these particular talks was that Iran wanted more fuel for one of its reactors, the Tehran Research Reactor, in order to provide treatment for 850,000 heart, kidney, and cancer patients. To be able to provide such treatment and create the required number of medical isotopes to produce this, the reactor would need more fuel pads.³²

In response to this request, President Obama proposed a plan: the Iranians would send 1200 kilograms of low enriched uranium (LEU) to Russia, which would turn the LEU into 19.75% enriched uranium and, ultimately, create the fuel pads necessary for the research reactor. Parsi noted that this would buy the Obama administration more time and leverage for negotiations as the enrichment process would take about one year. ³³ Erdbrink added that the enrichment that would take place in Russia would be supervised by the IAEA and Iran would be

²⁷ International Institute for Peace, Justice, and Human Rights, "The Impact of Sanctions on the Iranian Peoples' Healthcare System," *Center for Research on Globalization* (October 18, 2013), (accessed: November 15, 2015, http://www.globalresearch.ca/the-impact-of-sanctions-on-the-iranian-peoples-healthcare-system/5354773).

²⁸ Ibid.

²⁹ Ibid.

 $^{^{30}}$ Ibid.

³¹ Ibid.

³² Parsi, Single Roll, 115.

³³ Ibid.,116.

unable to enrich any remaining uranium itself as it would be left with an insufficient amount to develop "weapons-grade uranium." Many of the parties to the plan were suspicious. Although the general director of the IAEA, Mohamed El Baradei was optimistic about the plan, US allies including France, in particular, were skeptical that it would be successful. Before the talks set for October 1, 2009 could occur, Iran revealed that it had a facility in Qom, which was a violation of the Nuclear Non-Proliferation agreement. Despite this setback, the U.S. and Iran had productive talks in Geneva, Switzerland. But ultimately, the deal fell through after disastrous negotiations in Vienna.

This case demonstrates the lack of trust between the United States and Iran and shows that, in order to have successful negotiations, there should be a gesture of good faith on both the Iranian and American sides. Negotiations cannot work unless there is some level of trust that each side will uphold an agreement. Yet many Westerns have not fully understood the medical implications of the plan. One interesting aspect of the Erdbrink article is that it does not mention the medical aspect of the fuel swap. Perhaps if the media had focused more on the medical reasons for the Tehran Research Reactor there would have been more public support and negotiations would have been more productive. However, many Westerners seem to be unaware of the medical impact that sanctions have had on Iran and seem to only consider nuclear weapons and the potential threat to national security. The medical and humanitarian aspect should be more publicized and further considered in talks. It is understandable that some American officials may be skeptical of Iranian motives but they should still take into account the need for humanitarian and medical resources.

Exceptions to Sanctions

Exceptions to sanctions are necessary. Despite the fact that the United States has placed sanctions on Iran, there are humanitarian-based exceptions. The Department of the Treasury's Joint Plan of Action allows for a "financial channel to facilitate humanitarian trade for Iran's domestic needs using Iranian oil revenues held abroad...This channel could also enable transactions required to pay Iran's UN obligations...and direct tuition payments to universities and colleges for Iranian students studying abroad."³⁴ These channels provide a way for the UN or other countries to send aid to Iran without fear of reprisals from sanctions.

Recognizing that Iran cannot fully provide for its citizens under the sanctions and that some foreign aid is necessary, the United States allows for exceptions to sanctions in the form of commodities and medical and agricultural resources. Medical exceptions to sanctions include things like medical kits, catheters, antiseptic wipes, prosthetic limbs, and equipment for measuring patients' vital signs. 35 As previously discussed, these resources are helpful. However, they cannot provide the treatment necessary for certain diseases like cancer. The Obama administration recognized this problem and took steps in July 2013 to further ensure that humanitarian aid to Iran would not be impeded by sanctions. The United States Treasury Office of Foreign Assets Control (OFAC) expanded the list of medical supplies to include "electrocardiography machines (EKGs), electroencephalography machines (EEGs), and dialysis

³⁴ U.S. Department of the Treasury, Guidance Relating to the Provisions of Certain Temporary Sanctions Relief in Order to Implement the Joint Plan of Action Reached on November 24, 2013, Between the P5+1 and the Islamic Republic of Iran, as Extended Through June 30, 2015 (25 November 2014), http://www.state.gov/p/nea/rls/220049.htm.

³⁵ Office of Foreign Assets Control, *The Iranian Transactions and Sanctions Regulations*, 31 C.F.R., Part 560 (Washington D.C.: Office of Foreign Assets Control, 25 July 2013).

machines."³⁶ While the OFAC argues that humanitarian aid is not impeded by sanctions, access to critical medical resources remains limited.

Despite these further exemptions, difficulties remain in obtaining medicine and treatments that require materials such as Technetium-99 for the research reactor. Furthermore, even with the exemptions, "many companies and financial institutions remain reluctant to trade with Iran out of fear of penalties. In March 2012, all Iranian banks deemed to be in breach of EU sanctions were disconnected from the global system." Despite the fact that there are exemptions to the sanctions, many companies fear conducting business with or providing resources to Iran and accidentally stepping outside of the boundaries of the exemptions.

Even if the companies do take this risk, Cheraghali wrote that, "many international companies failed to fill orders from Iran due to restriction on money transaction, proper insurance, and sometimes assurances that the item indeed was exempted from the embargo. On the other hand, local pharmaceutical companies find it extremely difficult to access lines of credit for importing medicines or APIs." The World Health Organization defined an API as an "Active Pharmaceutical Ingredient" which is a substance or mixture of substances designed to further the pharmacological activity in a medication. In layman's terms, it helps the medication work. Therefore, if Iranian pharmaceutical companies cannot obtain APIs, they will be unable to fully provide medication that will actually help their patients.

Although the United States does have some exceptions concerning humanitarian aid to Iran, sanctions have impacted patients' abilities to obtain the medication they need. Cheraghali further wrote that the difficulty paying for and obtaining "health services" often severely affects citizens. He went on to note that economic sanctions actually increased hardships for civilians—particularly for minorities and those who have chronic diseases and that "medical infrastructures" suffered as a result of sanctions. ⁴⁰ The sanctions must be revised.

Conclusion: Looking Forward

The most recent negotiations between the United States and Iran suggest that the diplomatic talks under the Obama administration have been heading in the right direction. Yet to continue to have successful negotiations, there must be some level of trust between the two states. U.S. sanctions have greatly impacted the Iranian medical and pharmaceutical industry, making it difficult for Iranian companies to obtain the required equipment and resources for treatment. Ultimately Iranian citizens have suffered. One way to build more trust would be to allow Iran to have technology like the Technetium-99 so that Iran would be able to have nuclear technology for medical purposes. While U.S. politicians are understandably wary about allowing Iran to possess such technology, a sign of good faith may help to rebuild the relationship between the two countries and help improve the Iranian medical industry.

³⁶ U.S. Department of the Treasury, *Treasury Expands List of Basic Medical Supplies Authorized for Export to Iran and Further Clarifies Export and Financing Mechanisms Available for Humanitarian Goods* (25 July 2013), (accessed: November 30, 2015, http://www.treasury.gov/press-center/press-releases/Pages/jl2123.aspx).

³⁷ Economist Intelligence Unit, "Iran Pharma."

³⁸ Cheraghali, "Impacts," 63.

³⁹ World Health Organization, "Definition of Active Pharmaceutical Ingredient," *Working document QAS /11.426/Rev. 1* (July 2011), http://www.who.int/medicines/areas/quality_safety/quality_assurance/DefinitionAPI-QAS11-426Rev1-08082011.pdf.

⁴⁰ Cheraghali, "Impacts," 63.