

# The Impact of Sanctions on the Iranian People's Healthcare System

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Sanctions against Iran started from 1979 and it has found new dimensions through time. But the new set of sanctions imposed against Iran in 2006 intensely influenced this country and directly affected people's lives. Especially after 2012, the sanctions have shifted toward civilians and its disastrous effects instead of aiming at nuclear technology development process, have made a huge humanitarian crisis. Sanctions on petroleum industry, cargo shipment, shipping insurance, followed by sanctions on banking system has damaged the economic situation in Iran, having destructive effects on providing commodities and services. While UN, EU, and the US sanctions do not directly include importation of humanitarian goods, these sanctions have acutely decreased Iranian people's access to commodities and major services, including medicine and treatment. (A list of sanctions which have influenced this field in somehow have been attached to this report)

This report aims at representing a part of destructive effects of sanctions on people in health care field. This impact is so severe that has violated basic human rights of Iranian citizens, and threatens their lives and quality of life. So in this situation, generally in medical field, educational levels, research and industry, these effects can be discussed separately.

## Methodology

To prepare this report, four diseases were selected as representatives of different group of diseases for treatment section: Cancer treatment as representative of high mortality diseases; Asthma as a prevalent disease, decreasing quality of life; MS as a prevalent disease in Iran, disturbing daily life; and surgery for Dystonia and Parkinson's disease as a high-tech surgery. For this study, we referred to medical specialists for each disease and some patients, and generated interviews in written forms or recorded videos. In some cases, information about diseases were gained from treatment centers or related associations. In doing research on medicine access, interviews were taken from pharmacists, managers of medicine producer companies, medicine importers and managers of distribution companies. Some information was also taken from 13Aban Central Pharmacy (the early pharmacy was founded by pharmacy college of University of Tehran), 1490 health system (a 24hrs/7days hotline designed to help patients by giving information about where different drugs could be accessed), and associations of some of these diseases. A set of this information is used to prepare this report and is referred to.

## Treatment phase

### The condition of Cancer patients in Iran

Cancer is a type of disease in which body cells lose their ability to divide and usual growth and turn to tumor which leads to capture, destruction and corruption of healthy tissues. Worldwide cancer mortality in 2006 has been 6.7 million which include 13 percent of worldwide mortality statistics. It is predicted that this number will increase up to 9 million people in 2015.

According to the latest statistical and epidemiologic surveys in Iran, cancer is the third mortality factor after cardiovascular diseases and unintentional accidents (Dr. Mohammadali Mohagheghi, director of research center at Cancer Institute, Imam Khomeini Hospital, in an interview with “healthcare and treatment” reporter of Iranian Students News Agency).

About 85 thousand cancer cases are detected in the country annually, from which 30 thousands result in death. It should be noted that the number of newly diagnosed patients from 17765 in 2000 had increased to 55855 cases in 2005, and the latest statistics show that it had reached to 85000 cases in 2011. The age of cancer incidence has decreased to less than 30 years old. Its reasons include air pollution and modern lifestyle which goes along with smoking, consumption of alcoholic drinks, low physical activity, fibreless diets with high amount of fat and sugar.

The 181 percent growth of cancer in Iran is worrisome and according to the predictions of Professor Nasser Parsa, a member of American Cancer Society, Iran will face a cancer tsunami in 2015. According to World Health Organization, Iran has the highest cancer prevalence in the Middle East (Mohammad Esmaeel Akbari, director of cancer research center at Shahid Beheshti University of Medical Sciences)

The most prevalent cancers in Iran are stomach or gastric cancer in men and breast cancer in women. Iran has 61 cancer treatment hubs and the government provides great subsidies for its treatment, but unfortunately fast growth of this disease in one hand, and its high costs in the other hand has made governmental aids ineffective, especially because of the inflation due to the economic sanctions of Iran in 2006 and then in 2012 which paralyzed treatment system of these centers and hindered their development. As a result, unfortunately half of these patients may not respond to the treatment because of the disease progress and die very soon (Alireza Zali, assistant director of Medical Council of Iran, annual cancer conference, 2012).

Cancer in Iran damages the patient in some respects:

Psychological problems: more than one third of patients in the world experience anxiety and depression resulted from anguish and stress after their disease diagnosis. This issue may affect the family of patients too. Though, this statistics may apply to half of the patients. Also, due to the following problems, these worries may be multiplied.

Financial problems and costs of medicine: The fear from high costs and financial problems is the second psychological problems. The results of Bazyar study shows that half of the cancer patients in Iran had to borrow money (in the research sample). Some of them had to move because they were in debt and more than half of them are living in a critical psychological and financial condition because of high costs, even in the first steps of the

treatment (life threat, the major challenge for the patients after cancer diagnosis, Nursing and Obstetric College of the Tehran University of Medical Sciences, (Hayat) vol. 18, no. 5, 1391, pp. 12-22)

Social work section of the Tehran Cancer Treatment Center informed the research team that before 2006, nearly all of the treatment and medicine costs were covered by the hospital and they were focusing on the psychological problems of the patients, but after 2006 and then suddenly in 2012 with multiple increase of the medicine prices because of sanctions, the patients turned to this center for the medicines too. The number of patients has been doubled or more in recent year. ( Data provided by Social work section of the Tehran Cancer Treatment Center )

Currently, with insurance coverage and extra governmental aids, the patient has to pay for 20-30 percent of the prices, but it is not still affordable for many of them. Some special medicines are not covered by insurance and due to lack of purchase, have become scarce in market. After sanctions on banking system, the medicines without Iranian equivalents no longer exist, and when a kind of medicine becomes available in another city for example, people rush to that city and they encounter many people in a pharmacy (Dr Aghili Interview transcripts attached to this report). So in addition to financial problem, the patients have access problems too.

Consequently, there are some patients who have left their cancer treatment because of sudden increase in medicine prices and lost their lives. The number of these patients is increasing, though the treatment in this center is free.

Due to the high costs of treatment and medicines, the patients do not refer to private centers and because of the lack of economic justification, these centers are semi-closed. So a large number of cancer patients from different social strata rush to the social work centers, and the people from vulnerable stratum of the society are not the only clientele anymore. This reference rate is obvious in statistics of the recent year (Mrs. Zohre Gholamhosein Fard, social work supervisor at Cancer Institute).

For instance, some patients like “Mahmud Ostad Mohammad”, a famous theatrical figure passed away, due to lack of medicine in last three months of his life, though he was well-to-do (to see price growth rate, refer to the statistics of this center and the complete interview transcripts attached to this report).

The problems of treatment access: altogether, the necessary facilities for cancer surgeries and also the related medicines (except the nuclear medicines for cancer diagnoses) are not under sanctions currently. But the usage overlap of radiotherapy pieces and some military devices (like radars) has made the sanctions focused on these pieces. The accelerator devices which are used for deep radiotherapies have been practically under sanctions, as in some cases after purchase and paying the money, the device, equipment or software were not delivered (for example, the Varian device.) Also, because of the sanctions, the other old devices couldn't get the necessary sources (radioactive cobalt), after the old sources were ran out. These devices broke down one by one and the patients who have been in their waiting list were added to the waiting lists of other remaining devices. Every morning, stressful crowds, gather in treatment centers with active devices, waiting for their treatment turn.

The golden time of treatment for some patients is wasted in waiting lists, and some even

die, waiting for their turn. On the other hand, treatment personnel work day and night and are worried about overloading the devices and losing these few devices too. While the special rooms for radiotherapy had been made with high costs, they are now used as storerooms because purchasing new devices were impossible (Dr. Aghili's interview transcripts attached to this report.)

Later, sanctions just included the public sector, but the private sector still didn't have the financial strength to buy such equipments and also the financial problems of patients led to the bankruptcy of some private sector agencies and thus, left the market. Devices were not still sold to the governmental sector. By imposing sanctions against banking system of the country, it was not possible to purchase these medical equipments because money transfer became impossible, while it is said that sanctions on medical equipments had been entirely removed! On the other hand, decrease in value of Iranian *Rial currency*, increased the prices for these devices in a sudden as it became practically impossible to buy them. As a result, cancer patients are deprived of this classic and standard option of treatment and lose their lives.

Healthcare system had to import low-quality Chinese devices. Later, it was found that they are harmful for patients because of their voltage fluctuations, so using these devices became obsolete.

Consequently, considering the inflation caused by sanctions, just a few well-off patients who are still able to afford costs of going abroad travel to countries like Turkey or Malaysia for radiotherapy treatment, and other patients are deprived of treatment or are still waiting in treatment queues of the remaining devices. In this situation, there are physicians and necessary specialties, but lack of access to equipments is the major factor of cancer mortalities (Dr. Kazemian Interview transcripts attached to this report).

It's worth noting that once, Iran has been a center for training foreign residents and also a cancer treatment center for patients from the region, but sanctions has made the neighbor countries lose this opportunity (Dr. Aghili Interview transcripts attached to this report).

## The condition of Asthma patients in Iran

Asthma as a disruptive disease which affects quality of life doesn't have high mortality rate, but makes the patient unable to do his daily activities. About 250 thousand people lose their lives because of asthma annually. The exact reason is not clear, but this disease is a combination of inherent and genetic characteristics of the person (like allergies), which may outbreak due to the environmental elements (like smoking or viruses). The financial cost of this disease is equal to the overall costs of diseases like AIDS and tuberculosis and is in the same level with diabetes and Alzheimer.

According to immunology research center, 2010 asthma and allergy, the average prevalence of asthma in Iran is estimated 13 percent for children and 5-10 percent for adults. Actually, there are 7.5 million people with asthma. In the most polluted cities like Tehran, the level of this disease has been reported to be up to 35 percent.

Iran's ministry of health has planned programs for prevention as well as confrontation with this disease, which one of its most important strategies is increasing public awareness and informing different groups of society, from healthy people to the authorities, about chronic respiratory diseases. Strategic and restricting plan of chronic respiratory diseases is also

prepared in this line to be implemented in medical science universities. As Dr. Masoud Movahedi, director of Iranian Society for Asthma and Allergy, mentioned, with all of these efforts, due to different factors such as high amounts of contaminants in large cities, asthma is not under control yet.

If Asthma patients have no access to the medicines, they will spend a hard time, not having the opportunity of living a normal life or succeeding in their profession because of the respiratory difficulties. Some medicines are found in the market which many of them are mainly expired or their expiration date has been manipulated. For example, Floxotide is a medicine which has been omitted from the market and many patients do not respond to Beclomethasone and they have to use edible Prednisolone Tablets. These alternative medicines may develop some complications like osteoporosis or more serious ones like femur break and other complications.

The medicine has a similar low-quality Indian product which is ineffective or less-effective on some patients. As a result, these medicines maybe provided for a limited number of people through smuggling, passengers, and other unethical ways. The case of research team is Dr. Kamran Aghakhani, one of the prominent Iranian physicians, forensics specialist and faculty member of Iran University of Medical Sciences. Despite his extended relations, asthma sprays and other medicines are inaccessible for him as well. (Dr. Kamran Aghakhani Interview transcripts attached to this report)

On the other hand, unfortunately when it became apparent that these medicines are inaccessible in Iran, like many other medicines, similar counterfeit medicines were produced by some illegal Indian and Chinese companies and were imported through illegal ways and are now used by the patients which may follow irreparable complications.

Considering the prevalence rate and its lack of control in Iran, asthma medicines have been wiped out of the market and have disrupted lives of many patients in recent years. Though asthma is not a fatal disease like cancer, in addition to its effects on people's lives, asthma mortality rate in Iran has been increasing which is a humanitarian crisis.

The asthma patients in Iran, considering their incurable disease, acknowledged that the issue of their disease should be noticed in international and humanitarian assemblies, and their access to medicines, and as a result a normal life, be provided in a way. Apart from increase in medicine prices, most of the medicine centers believe that the lack of cooperation of foreign banks for transferring money is the major problem in medicine inaccessibility which is due to the sanctions against Iran's banking system. Also, asthma specialists with their up-to-date knowledge prescribe new medicines which have been recently used in modern countries, but there is not a hope to access them in Iran.

These patients wish to have access to the medicines somehow, just like the people in other countries. Finally, as Dr Aghakhani stated, "Disease does not select the patient; poor and rich may become affected by the disease, but it is not proper that the patients' access to treatment and medicine be selective and dependent to condition".

## The condition of M. S. patients in Iran

After accidents, M. S. is the most prevalent cause of disabilities among young people and no definite treatment for this disease has been discovered yet. But the existing medicine can decrease the attacks and disabilities resulting from this disease.

Development and exclusive signs are different in every patient and are not predictable. M.S. is appears after destruction of central neural tissues. Based on the place of destruction on the nervous system, it shows different signs, including impaired vision, blurred vision, impaired balance, tremor, lack of balance in walking, vertigo, weakness and torpidity in body, inability to do harmonic movements, frequent urination, urgent urination, impaired bladder emptying, urinary incontinence. In some patients the attack intervals maybe a year or it is possible to have an attack which is followed by continuous attacks.

M. S. is growing shockingly fast in Iran. The number of patients in Tehran has reached to 50 in every 100 thousands and in Isfahan are 73 in 100 thousands, which are similar to statistics of the European countries. Totally, the number of M. S. patients in Iran is 52.9 in every 100 thousands and there are 50 thousand patients currently in Iran. So Iran is among the countries with highest rate of M. S. prevalence. There are no exact statistics from M.S. patients in Iran, but with the mentioned estimations it seems that Iran is among the top ten countries with high numbers of M. S. patients. This disease appears in people between 20-40 years old. The great youth population of Iran is a reason for high rates of this disease in young people. Most of them are young women (twice or three times more than men). It is more prevalent among the educated people and even the physicians themselves (Sahraian, neurologist and director of scientific committee of M.S. society, international M.S. day)(Jamshid Lotfi, director of M.S. society in an interview with "Shargh").

The research team had the opportunity for an interview with Dr. Mohammadali Sahraian, neurologist and director of scientific committee of M. S. society and asked about the patients' problems. (Interview transcripts attached to this report) He said that stress will increase the intensity of the disease and the number of attacks in M. S. patients. Stress and tension could be one of the factors which increases the number of M. S. patients in Iran.

Conditions of the society, especially the economic condition of people, intensely affect their normal lives and enforce a great deal of stress and tension on individuals. The daily deteriorating trend of these issues adds to the stress and tensions of these people and affects them in a negative way, and this trend may be one of the factors in growing number of M. S. patients.

M. S. is a disease that severely disrupts the patient's life and enforces many problems. As a neurological disease, stress and tensions may intensely influence the number of attacks. In Iran, patients are affected by lack of medicines in two ways: First, the stress about the scarcity of medicines increases the number of attacks. Second, lack of medicine consumption for more than one or two months again increases the number of attacks.

M. S. makes the patient dependent to one type of medicine. Considering the lack of the European medicine, when the same medicine with the same producer was imported from Turkey with a Turkish label, its medical effectiveness on the patients had decreased severely. While Iran has the knowledge and ability, and produces 70 percent of the medicine, still the psychological non-acceptance of the Iranian medicines has made them less effective on the patients.

The same as other diseases, the most problematic issue is the increase in prices because of sanctions against banking system. Actually, the difficulties in money transfer have increased the prices very much or have completely wiped them out of the market. For example the German Methaferone was 900000 rials eight years ago, but gradually its price went up and suddenly it reached to 16000000 rials, which is unimaginable for its monthly consumption.



Rebif which has not the similar Iranian product has reached from 450000 to 6000000 rials for per month consumption, Tysabri costs 4000 USdollars per month, Avonex from 900000 to 10000000 and then suddenly reached to 20000000 rials.

Also, sanctions on banking system, high costs and the lack of primary ingredients of medicines, have increased the prices for the Iranian products too. Actually, the non-acceptance of money and inability to open LC are the major problems in scarcity of medicines. Banks and then companies do not accept the money. The money transferred by patients or charity organizations has been blocked in Armenian and Azeri banks and patients cannot get the medicine even when they spend money. In the time of interview with Dr. Sahraian, for example Rebif was found in the market, but Avonex tablets and Methaferone were rare.

## The condition of Dystonia and Parkinson's patients

Dystonia is a neurological-dynamic disruption which results in repeated or long contractions in muscles. Dystonia often causes the appearance of unnatural and disabling movements. The main causes of this disease are hereditary and genetic, trauma and physical injuries, some kinds of infections, some medicine complications, oxygen shortage and injuries at the time of birth, and more than usual increase in bilirubin in the infancy period. Also some of the problems related to internal organs and skull may affect the outbreak of Dystonia.

Dystonia may appear local (for example, involuntary and continuous opening and closing of eyelid with several spasms, which prevents the proper movements of the eyes and eyelids and direct sight of the person) or as a generalized kind, is one the most disabling kinds of Dystonia. Because this disease involves all parts of the body including face, neck and spine, the patient's appearance becomes unusual (Mrs. Jalili, Asie Karimi and Hosein Oroujzade) and walking becomes difficult too. Some of them (like Amoushahi, Rahimi, Jahed and Zamani) at first walk on their toes or the external edge of their feet and when they start walking their feet twist. They don't have control over their muscles when they try to write; their fingers open and their hands tremble. These signs gradually increase, as in children the unnatural movements of neck toward a direction (like Faride Hamidinia), the continuous movement of head, spine and waist curve (Asie Karimi), involuntary gestures of mouth and uncontrollable movements of tongue (Hosein Oroujzade) causes speech and swallowing problems.

Dystonia is one of the diseases that almost show resistance against treatment. In the early stages, edible medicines, and sometimes botulism and Botox injection, maybe effective on temporary muscle paralysis. These toxicants have a temporary effect and after a while the human body produces antibodies and resists against them. New methods are based on stimulation of deep parts of brain. With electric stimulation of some deep parts of the brain through surgery and implanting electrode in it, it is possible to control patient's movements, but this is a very professional surgery. This surgery which is one of the advanced surgeries is done in Iran and its costs are very low in comparison with the European countries. Dystonia is not a fatal disease, but it is paralyzing as the patients always has involuntary gestures, unusual way of walking and severe uncontrollable movements which makes usual daily activities impossible, and sometimes the patient has to sit on a wheelchair or on bed.

As mentioned before, Dystonia surgery is an advanced surgery, based on using high-tech instruments and equipments. Dr. Gholamali Shahidi is a neurologist with fellowship in movement disorder, doing the related surgeries from 2005. In an interview of research team

with Dr. Shahidi, the problems and issues of these patients were examined. (Interview transcripts attached to this report) They have done 128 surgeries with good results, similar to the European surgeries, which 26 of them had been Dystonia. Contrary to the other countries, most of these patients are young. So this treatment improves their quality of life and returns them to the normal social life.

Pacemaker battery which makes electric pulses works between 1.5-5 years, depending to the kind of disease and should be replaced by a new one when it is necessary. Otherwise, if the battery finishes suddenly, it returns the patient to a condition worse than before and it is even possible that the patient faces medical risks, including dystonic storm and death. The battery is produced by the American company of Metronix exclusively. In many cases there were problems of importation due to its exclusiveness and they didn't easily extend its license for the representative company. On the other hand, increase in dollar price from 650 to 900 tomans because of sanctions, and after sanctions against oil industry and banking system from 1226 to 3100, made this battery very expensive. It reached from 13 million tomans to 54 million tomans. This high price is not affordable for many patients. In addition, after sanctions against banking system, the problems of money transfer practically has made it impossible to purchase new batteries. The patients have to wait for example three months. When the capacity of the battery reaches 2 percent, it is a life-threatening condition for the patient. Many patients turn to doctors to adjust their batteries on low consumption; thus increasing the involuntary movements, to keep the battery alive until they could replace it.

Many cases were introduced to the research team. For example, Dr, Hasan Farjak, a 60 years old professional, an educated man with a PhD and an active lifestyle, or Mr. Zolfagharlou a 40 years old lawyer who had to decrease his battery consumption to 50 percent until he finds a new battery and now has lost his ability for normal daily activities. Mohammad lived in a village and he had come late to change his battery and died three months after his battery was discharged. Roya Jahed was living with 52 pills when she was 15 and now has a normal life after surgery. She is married now and is doing her genetic tests before pregnancy. Zamani, Masoudi, Koosha Khoshghadam, Farshad and many others are worried about their batteries now.

## **The issue of medicine:**

The Iranian economy is heavily dependent on crude oil export; in fact Iran derives 80% of its hard currency from crude oil export. After the intensive sanctions imposed on Iranian oil export, Iran's ability to provide basic goods for its citizens was severely limited. Further sanctions on cargo shipment and shipping insurance limited the government's ability to provide humanitarian goods such as medicine and medical equipment. The global sanctions targeting Iranian banking system and money transaction effectively influenced the entire economy and import\export processes of the country.

Although none of the sanctions imposed against the Iranian government directly ban export of humanitarian goods such as pharmaceuticals to this country, their indirect devastating effect on the healthcare, welfare and access of ordinary people to these services is notable.

Iranian drug manufacturers' issues:

The main concerns of the Iranian manufacturing companies are:



- Acquiring the currency needed to purchase bulk material as the value of the Rial fell dramatically during the last 2 years.
- Opening accounts in the foreign country for purchasing process.
- And finding a way to sidestep sanctions and import products to Iran, despite insurance and cargo sanctions.

Each part of the process is costly, time consuming and uncertain. Every day with the imposing of new sanctions, companies find it harder to work and indeed the quality of medications are questionable as the manager at Abidi pharmaceuticals said in an interview (transcripts attached to this report ) with the research team, “sometimes pharmaceutical product’s transfer and shipment is delayed up to 8 months, this not only poses a drug shortage but certainly affects the drug’s quality which hadn’t been stored in an ideal condition”. Therefore sanctions have cut off manufacturer’s access to key pharmaceutical and medical supplies and have made it difficult to import key materials for manufacturing pharmaceuticals which comprises 90 percent of Iran’s pharmaceutical market.

Whenever importation of a kind of bulk material was restricted from western sources, manufactures shifted to Indian or Chinese sources, although this procedure was costly and time consuming due to paper work, legal issues and the need to repeat quality control tests and stability tests to determine the products’ quality, but manufactures at the end were able to partially retain their pre-sanctions production rates. This nevertheless was at the cost of decline in overall quality since alternative sources are generally less qualified and partially have unknown side effects.

About the medicine production, Dr. Namazi said that the low-quality primary sources need purification and also processing devices which cannot be imported due to their dual usage in nuclear issues, except through smuggling the pieces separately to the country. And then there are maintenance problems and if the device breaks down and need repair, there would be problems with the manufacturer company.

By banning and sanctioning main roots of import or at least making it extensively difficult, the foreign companies or entities reasonably lose their interest to deal with Iran. The international community has opened the door for illegal smuggling of medicines. “Opportunists are taking advantage of the public’s vulnerability in the time of medicine shortage”, mentioned the manager at Abidi pharmaceuticals in an interview with the research team. Many patients refer to black market to buy vital medicines, sometimes at prices 3 times higher than the original price. For many years Naserkhosro Street (the hub of illegal drug dealers) had been quiet and empty; nowadays it’s crowded with illegal drug dealers. These medicines are of unknown by origins, haven’t been stored properly and might be actually counterfeit.

“Although US law technically exempts food and medicine from sanctions in order to minimize the impact on civilians, the increasing implementation of financial sanctions has discouraged exporters from shipping to Iran, because they face problems getting paid, due to barring of money transaction and additional banning of insuring shipments to Iran, and because the U.S. Treasury Department’s licensing requirements are too time consuming and complicated,” Said, dean of faculty of pharmacy at Tehran University of Medical Sciences. (Interview transcripts attached to this report). Most of vital medicines like chemotherapy medicines, medicines for treatment of Thalassemia and other blood complications such as anti-bleeding medicines for hemophilia and immunosuppressive medicines for patients

undergoing transplant surgeries are manufactured by western companies. The sanctions, although put some relief for importing medicines from China and India which are very strict regarding importations from western countries, this has led to many miseries and loss of lives.

Data from June 2012 until September 2012, shows an average monthly shortage of 83 drugs, but from October 2012 the number of drug shortages dramatically rises from September 2012 until June 2013, when the average drug shortages was 144. There is a significant gap between the shortage of imported drugs and manufactured drugs in Iran. (Data is provide in the attachments)

The data obtained contains total number of calls made to 1490, in a period of four months, from 21 March to 23 July 2013. This data clearly shows how in a period of time a drug's accessibility has declined.

Warfarin sodium (anti-blood clot) is a good example; in the first month (21 Mar -20 Apr) the number of calls made to check warfarin's availability was zero, the second month (21 Apr. -21 May) the number of calls was only 2 and was successfully guided to the nearest pharmacy. But in the third month (22 May-21 June) the number of calls dramatically increases to 790 calls and in the fourth month (22 June-23 July) the number of calls reaches to 1701 calls. This irrespective of whether 1490 hotline was able to direct callers to a pharmacy shows that patients couldn't simply find the drug needed by reaching a regular pharmacy and had to call 1490 for help. Data shows that 27% of the callers in the 3<sup>rd</sup> month and 30 percent of callers in the 4<sup>th</sup> month, faced the shortage and they couldn't access the drug, respectively.

Methohexal (cardiovascular), for the 4 months above, Methohexal had a very low accessibility and an average of 77% of the calling patients were faced with the drug shortage and only 23% of the callers were guided to a pharmacy which could help them.

1296 kind of drugs were unavailable and the patients tried to access them by calling 1490. There are several vital drugs among them which their shortage endangers the health of the patients and even may cost their life. The data contains number of phone calls which 1490 failed to help them simply because of the lack of drugs in the country. These numbers are shown under "Failed Calls" column.

In following charts some statistics are given which are related to the drugs used to cure or help patients suffering diseases discussed in the previous section. The research is not focusing on the soaring prices of the drugs. Many of these are expensive drugs due to the declining state of Iranian economy -in part a result of sanctions- but it's worth mentioning that even if patients somehow gain access to these drugs, very few can actually buy them.

Drug Classification	Drug(Generic/Brand)	No. of calls
<i>Multiple Sclerosis (MS) treatment</i>	<i>Extavia</i>	385
	<i>Betaferon</i>	1233
	<i>Cinnovex</i>	109
	<i>Avonex</i>	172

Contrast media (Essential for radiological examination, are used to visualize vessels and tissues in radiography and CT imaging. Diagnosis of fatal complications are impossible without them.)	Visipaque	1760
	Iodixanol	180
	Omnipaque	1077
	Ultravist	955
	Iopromide	105
	Scanlux	235
	Iohexol	106

Drug Classification	Drug(Generic/Brand)	Failed calls
Anticancer chemotherapy (Shortage in chemotherapy drugs is very worrisome since lack of receiving a proper chemotherapy treatment in time, would possibly endanger a patient's life.)	Flutamide	895
	Flutamid	299
	Remicade	804
	Diferelin	520
	Diphereline	202
	Diferlin	494
	Microreltin	246
	Decapeptyl	232
	Erbix	599
	Chlormbucil	336
	Xeloda	148
	Zeloda	102
	Leukeran	225
	Infliximab	203
	Zometa	189
	Thalidomide	183
	Nexavar	171
	Bcg	182

There are also other drugs. The director of Iran's hemophilia society introduced cases like Manouchehr Esmaili-Liousi, a 15 years old teenager from tribes near the city of Dezful. He suffered from hemophilia and died on 14 November 2012 in hospital after his family failed to find the vital drug he needed to stop the bleeding. Or Taha Mahdi Hatamibabanari, a 4 years old hemophilic boy who died of bleeding caused by an injury. The necessary medicine could not be found while his parents and the hospital could not reach any due to shortage of access to hemophilia medicines. He stated that in the last two years the patients' accessibility to antihemophilic drugs have declined to one third, compared to the past years. Patients face high emotional stress every day not being able to find their medication. In the last two years, major hospitals in Iran many times completely lacked antihemophilic drugs and many affected children are suffering as a result.

Drug Classification	Drug(Generic/Brand)	Failed calls
Hemophilia, vonwillebrand's disease, diabetesbinsipidus	Minirin	179

About the Thalassemia patients, Dr. Arasteh noted that because of the difficulties resulting from sanctions on importing drugs and bulk materials for thalassemia drugs, the supply chain has been disrupted and patients are facing many adversaries, including diabetes, heart disease, skeletal problems, and liver problems.

Drug Classification	Drug(Generic/Brand)	Failed calls
Chelator	Desferal	115

Some 20.000 Organ transplant patients are at risk currently. These patients have to permanently take immune suppressant drugs in order to prevent organ rejection. These patients might suffer organ rejection or even die if they miss even one dose of their drug.

Their drugs have become tremendously expensive and rare patients have to spent days searching for their prescription drugs. The table below shows the amount of callers faced with drug shortage.

Drug Classification	Drug(Generic/Brand)	Failed calls
Transplant	Cellcept	274

Another vital drug is warfarin (anti blood clot). It prevents strokes and heart attacks due to thromboembolism, but in recent months its shortage has made so much panic for the patients and their families. The table below shows in a span of four months, the number of patients who weren't able to access their drugs after calling 1490.

Drug Classification	Drug(Generic/Brand)	Failed calls
Anticoagulant	Warfarin sodium	716

There are other drug classifications which the major ones are provided here, extracted from the data.

Drug Classification	Drug(Generic/Brand)	Failed calls
Antiasthma	Symbicort	398
	Seroflo	171
	Seretide	1368
	Salmeterol	108

Drug Classification	Drug(Generic/Brand)	Failed calls
Antidysrhythmic	Flecainide	242
	Flecainide acetate	233
	Sotahexal	139

Drug Classification	Drug(Generic/Brand)	Failed calls
Antidiabetes	Metohexal	491

Drug Classification	Drug(Generic/Brand)	Failed calls
Volume expander	Albumin	144

Drug Classification	Drug(Generic/Brand)	Failed calls
Anticonvulsant	Valproate sodium	212
	Depakine	149
	Orlept	124
	Tegretol	144

Drug Classification	Drug(Generic/Brand)	Failed calls
Adhd treatment	Ritalin	684

Drug Classification	Drug(Generic/Brand)	Failed calls
Pregnancy termination	Misoprostol	601

Drug Classification	Drug(Generic/Brand)	Failed calls
Antiparkinson agent	Madopar	2356
	Levodopa	185
	Levodopa/benserazide	151

Drug Classification	Drug(Generic/Brand)	Failed calls
Alzheimer's disease treatment	Galantamine	353
	Reminyl	166

Drug Classification	Drug(Generic/Brand)	Failed calls
Antimalarial	Pyrimethamine	164

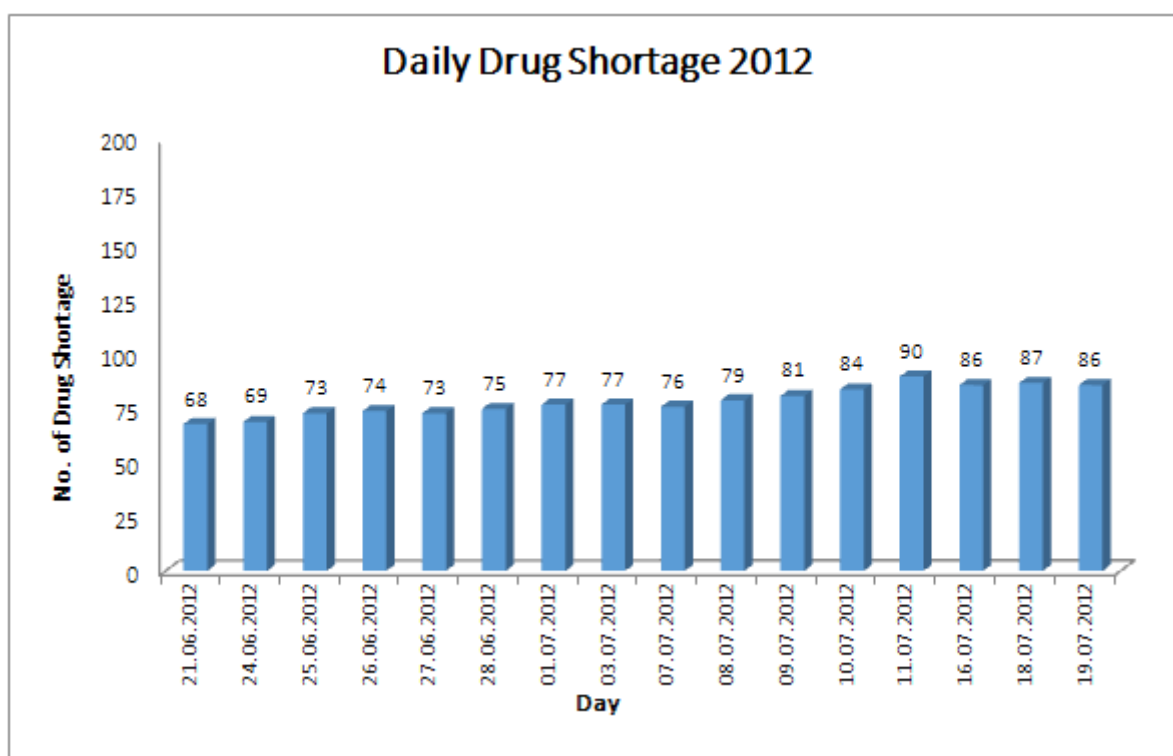
Drug Classification	Drug(Generic/Brand)	Failed calls
Antidepressant	Asentra	436
	Zoloft	382
	Sertraline	137
	Doneurin	141

Drug Classification	Drug(Generic/Brand)	Failed calls
Antiviral	Ganciclovir	345
	Tenofovir	228
	Tenobiovir	146

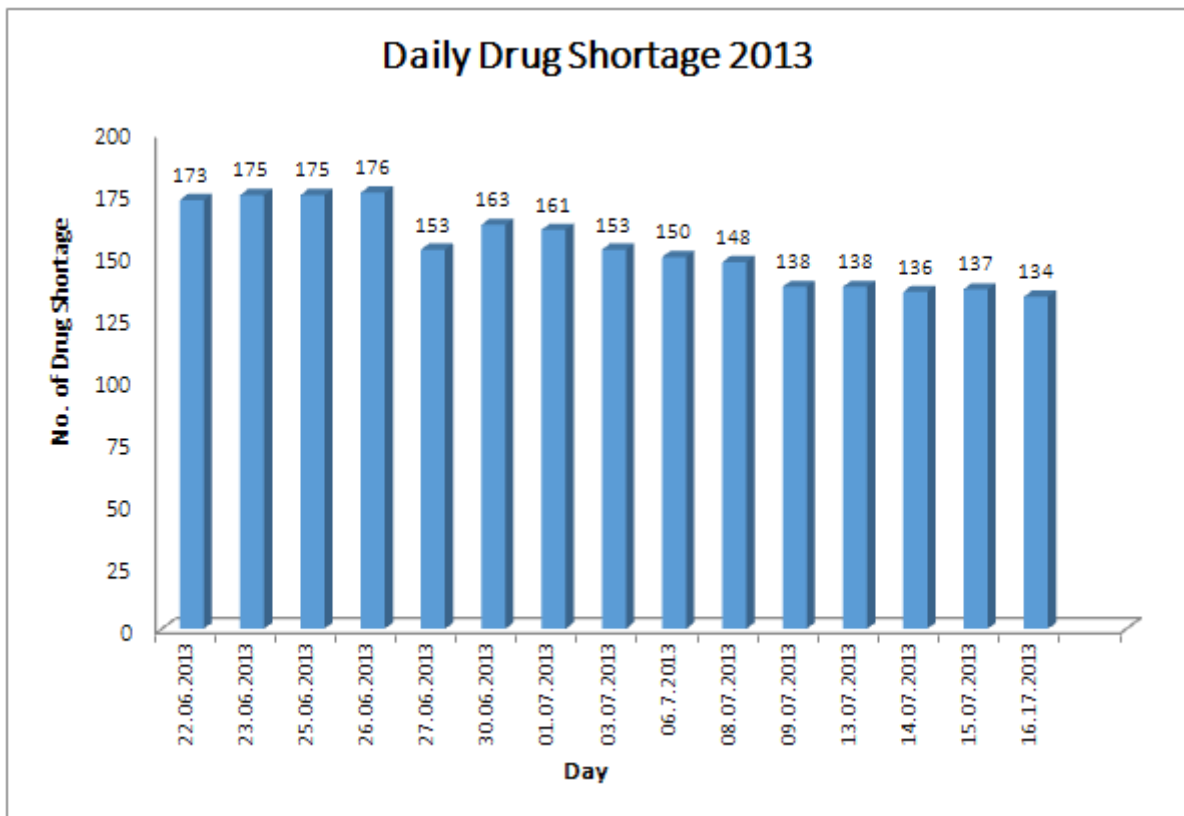
Drug Classification	Drug(Generic/Brand)	Failed calls
Infertility treatment	Hcg	1067
	Cetrotide	191
	Cetrorelix acetate	132

Drug Classification	Drug(Generic/Brand)	Failed calls
vaccine	Gardasil	119
	Bcg	182

There are two tables here, showing the comparative data of drug shortage in a period of 15 days in the years 2012 and 2013. Significant rise in number of drugs shortage comparing the exact dates from two years shows that during last year the situation has exacerbated and will continue if no solution is considered.







## Conclusion

It should be noted that the represented study and report is depicting a small part of the disaster occurring in Iran. During the study, many problems and issues in the field of treatment and medicine were discussed which there was not enough time to cover all of them. According to Dr. Namazi, a medical ethics specialist, there are many problems in healthcare field, including X-ray, access to radioactive medicines used in different types of CT scan and MRI, anesthetic medicine used in usual surgeries, lack of laboratory kits which make them to send a blood sample or urine sample to Turkey for a simple test.

The effects of sanctions on medicines have other dimensions too, for example undesirable effects on human food. For instance, the lack of bestial medicines leads to the prevalence of bestial diseases which affects humans too. As a result, more antibiotics are used to prevent the diseases, which severely have increased harmful antibiotics dosage in the bodies of Iranian people.

Clearly, with changing direction of sanctions, they are practically targeting the Iranian people. Also, sanctions against insurance and shipment are not just aimed at the government or political structure anymore. And these are civilians who have lost their primary access to the necessities such as treatments and medicines, and thus engaged in a life-threatening situation.

Financial isolation of people entirely for the political structure and politics, which is endangering their lives, is neither rational nor fair. It seems that political objectives and the existing problems between the governments have been preferred over the basic human rights and had influenced them.

Currently, the equipment and devices of treatment, medicines and other basic needs are under sanctions too, the same as automobile industry equipment or the sale of petroleum

products, though apparently it is not like this. Actually, the medical equipment are not under sanctions, but it is sanctions on banking system that has made them difficult to be imported. And the only objective of this sanction is damaging people.

These sanctions have violated human rights in different ways and different public dimensions. When the rights of many people is violated it means that “the right to a standard of living adequate for the health and well-being” as stated in the article 25 of the Universal Declaration of Human Rights, and also “the right to the enjoyment of the highest attainable standard of physical and mental health” as stated in Article 12 of International Covenant on Economic, Social and Cultural Rights are violated too. Also, the rights of children and women as stated in article 24 of “Convention on the Rights of the Child”, and article 12 and 14 of “Convention on the Elimination of All Forms of Discrimination Against Women” is violated too. It is the same for different ethnicities living in Iran, including Persians, Turks, Azeris, Kurds, natives of Luristan, Arabs, Baluchis and other ethnicities, as stated in article 5 of “International Convention on the Elimination of All Forms of Racial Discrimination”; and for disabled people as stated in article 25 of “Final report of the Ad Hoc Committee on a Comprehensive and Integral International Convention on the Protection and Promotion of the Rights and Dignity of Persons with Disabilities” as well. Now there are many people with different races and ethnicities in every part of this country struggling over their lives. This is a silent, continuous and hidden genocide.

Sanctions should be revised. With the high population in this century, sanction is a very unjust way of putting pressure on governments, because they trample rights of people. At least, sanctions should be devised purposefully under observation of Human Rights Organization, unless they are not fair.

We hope that after this report and representing a small part of what is happening in Iran, the aware conscience of gentle minds do something in this direction to prevent from a disaster. There should be at least a way to provide the basic needs of people.

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