

## Comparative Study of Pharmaceutical Costs in Iran's Insurance Systems: Review of National Data in an International Perspective

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### Abstract

**Introduction:** Medications are the substantial part of health care with high cost-effectiveness that a large share of the household expenditure is allocated to them. In recent years, most developed countries have been faced with increasing Pharmaceutical costs (about 10%-20%). In recent years, Iran's Pharmaceutical costs also have constantly increased. The aim of this study was to evaluate Pharmaceutical coverage, determine Pharmaceutical problems and find ways to overcome the problems.

**Methods:** This study was a comparative-descriptive, review and retrospective study that used library and internet sites as resources. The study has two major phases. In the first phase, we searched primary sources and the internet to find an appropriate model to gather information about Pharmaceutical systems in the selected countries. In the second phase, we collected the information and statistics relating to pharmaceutical use in outpatients and inpatients from 1994 to 2011 which was formally received from 4 Iranian health insurance organizations.

**Results:** The results show that the costs of pharmaceutical agencies at four main health insurance organizations in Iran had increased more than 722% between 2001-2011, while in the leading countries specific mechanisms have been used to control Pharmaceutical costs in the healthcare.

**Conclusion:** According to the findings of this review, different countries, especially developed countries have organized concepts such as new Pharmaceutical pricing, hospital Pharmaceuticals, over the counter (OTC) Drugs, control of Pharmaceutical use, patients share in the costs and etc which has controlled the pricing of the pharmaceutical products in their societies. Therefore, in all countries, these programs are oriented towards developing Pharmaceutical services, reducing the Pharmaceutical costs and the rational control of Pharmaceutical use in terms of the framework of the health care system. In reviewing the insurance systems and its current policy in Iran, the evidences relating to the methods and structures cited above can be seen, but in practice, many designed processes are not applying or are implemented incompletely. Growing Pharmaceutical costs in Iran indicate this issue.

**Keywords:** Pharmaceutical Economics, Pharmaceutical Costs, Insurance organizations, National Health Insurance, Pharmaceutical Services Insurance, Pharmaceutical Utilization

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### Introduction

pharmaceutic is an inseparable loop of patient care chain. Therefore, any defect in the treatment process due to of the high cost of pharmaceutic or inadequate access to them, imposes a huge cost to this process [1]. Medications are the substantial part of health care with high cost-effectiveness[2]; a large share of household expenditure is allocated to them [3]. High rise in the pharmaceutical costs has led to increased pressure for controlling these costs [4]. Policymakers in developing countries are trying to cope with the increasing pharmaceutical costs. The second or third place in the health care system is allocated to pharmaceutical costs and manpower costs, respectively. In developing countries, pharmaceutical costs compose up to 50% of the total health care costs; this proportion was 19% in 2009[5] among the country members of the organization for economic co-operation and development (OECD). In recent years, most developed countries have faced with

increasing pharmaceutical costs (about 10%-20%). If the use of expensive Medications becomes more cost-effective than other interventions, this issue may be not very important, but in most cases this is not issue[6]. Also, because the purchase of these products would lead to expending a high foreign exchange, inefficient selection and pharmaceutical pricing can be a major cause of wastage in health care spending [7].

Like any other pharmaceutical systems in the world, the pharmaceutical system in Iran is faced with high costs of new drugs and the consequence of changing the pharmaceutical systems from pure generic to the generic-commercial and from public to public-private system. Obviously, in such circumstances, the structures, policies and regulations of previous pharmaceutical insurance systems in Iran did not have the efficiency and effectiveness[8].

To avoid excessive prescription drugs or pharmaceutical abuse, we need to use cost control measures and



consumption monitoring. The role of insurance organization as payers for preparation and adjustment of regulations for controlling pharmaceutical use is evident [9]. The Social security organization, Iran health insurance organization, The Armed forces medical insurance organization and Imam Khomeini relief foundation are Iran's major insurer organizations that cover about 90% population of the country. The macro policies and regulations approved by the supreme council of health insurance is implemented by these organization. With the establishment of the ministry of welfare and social security, decision making and implementing of the reimbursement system of pharmaceutical costs have been changed and even in some situations, the role of these organizations is unclear. Furthermore, Iran has decided to join in the World Trade Organization (WTO). The Iran's pharmaceutical insurance system is one of the main concerns in this field[10].

Most governments use different ways to enact rules about pharmaceutical pricing [11]so that it leads to ensure the access of medicine at affordable prices for patients [12]. In recent years, the pharmaceutical costs also have been increased constantly in Iran. This can be attributed to the following reasons:

- Higher prices of new drugs,
- Developing new pharmaceutical technologies,
- Increasing pharmaceutical insurance commitment, particularly in recent years,
- Growth of chronic diseases,
- Rising rate of inflation and in turn rise in pharmaceutical prices,
- Developing new therapeutic indications for drugs,
- Lack of proper patterns of drugs prescribed in the country, particularly among the medical societies and the lack of existence and attention to treatment guidelines,
- Increase in population and life expectancy in recent years,
- Increase in the number of prescriptions.

These increased costs that do not follow a logical process, must be stopped by appropriate mechanisms. Benchmarking from of the successful world insurance systems would be the most useful method in this area.

## Methods

The study was a comparative-descriptive, review and retrospective one. Its aim was to study the status of pharmaceutical coverage in selected countries and pharmaceutical costs in Iran, to determine the medical problems and ways of overcoming these problems. According to the nature of this study, it lacks research community. The information sources were pharmaceutical insurance systems in France, Germany, Netherland, Britain, Australia, USA, Greece, Turkey, Malaysia and Iran. Data was collected from the field and library resources, databases, Internet, Iranian information and documentation center(IRANDOC) and the database of pharmaceutical costs from 4 Iranian health insurance organizations.

This study has two main phases. In the first phase, in order to find a model for suitable pharmaceutical systems in the selected countries and to collect a complete list of relevant

evidences, we used a search approach to find the data from different databases. In this search selected electronic databases which were used were ProQuest, PubMed, Science Direct, Google Scholar, Magiran, SID, etc.

The keywords used were: pharmaceutical policy, pharmaceutical insurance, health policy, health insurance, pharmaceutical economic, HTA, positive list, co-payment, risk sharing, hospital drugs, pharmaceutical pricing & OTC drug.

In the second phase, the information and statistics relating to pharmaceutical use in outpatients and inpatients from 1994 to 2011 were formally received from the four organizations. The data obtained through these organizations about the use of drugs and the number of insured people was analyzed by Excel 2010 software.

## Results

The results were divided into 2 sections: comparative study of the condition of pharmaceutical systems in the selected countries and comparative study of pharmaceutical costs in Iran's insurance system.

### Comparative study of the condition of pharmaceutical systems in the selected countries:

In this section, the conditions of pharmaceutical insurance system and their indices in France, Germany, Netherland, Britain, Australia, USA, Greece, Turkey, Malaysia and Iran were reviewed and analyzed. Table 1 shows the conditions and policies of pharmaceutical in 9 countries in comparison with Iran [14-50].

**Comparative study of pharmaceutical costs in Iran's insurance system:** In the charts below, the information and statistics relating to pharmaceutical use in outpatients and inpatients since 1994 to 2011 that was formally received from Iran's 4 health insurance organizations are shown.

**1. The pharmaceutical costs of Social Security Organization:** Although, the aim of this study were to collect information about the pharmaceutical costs of inpatients and outpatients of the medical section in health organization, but the information includes just the pharmaceutical costs in pharmacies under contract with social security. Chart 1 shows the data obtained from social security organization from 1994 to 2011 [53].

**2. The pharmaceutical costs of Iran Health Insurance Organization:** Chart 2 shows the pharmaceutical costs of Iran health insurance organization from 2001 to 2011 [54].

**3. The pharmaceutical costs of Imam Khomeini Relief Foundation:** Chart3 shows the condition of pharmaceutical costs of Imam Khomeini relief foundation [55]. The only information obtained was related to the pharmaceutical costs in pharmacies under contract with the Imam Khomeini relief foundation.

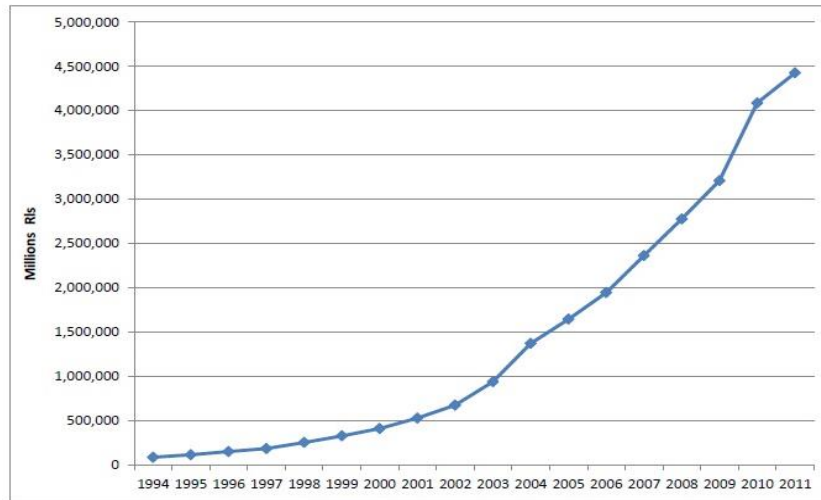
**4. The pharmaceutical costs of Armed Forces Medical Insurance Organization:** Chart 4 shows the condition of pharmaceutical costs in armed forces medical insurance organization [56].

**5. The pharmaceutical costs in four main Iran's insurance funds:** Charts 5 and 6 shows a comparison between pharmaceutical costs in these 4 insurance organizations.

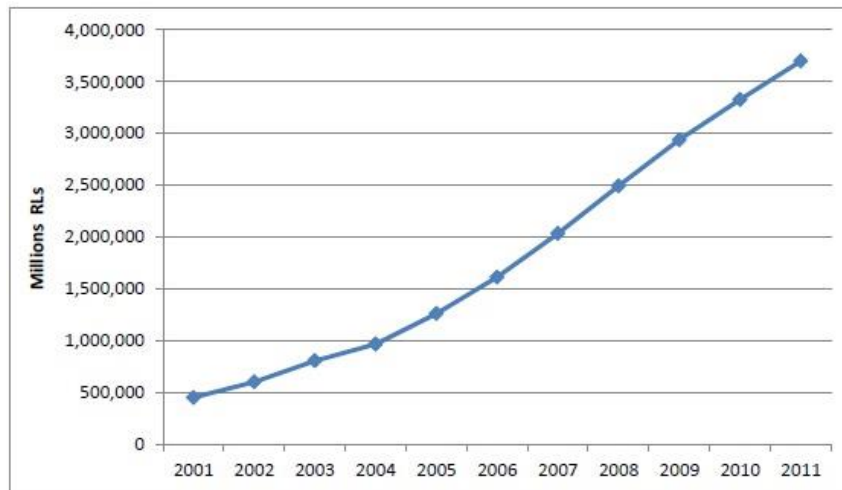
**Table 1.** The conditions and policies of Pharmaceutic in 9 countries in comparison with Iran

	France	Germany	Netherland	Britain	Australia	USA	Greece	Turkey	Malaysia	Iran
<b>Type of decision making system</b>	separate	separate	integrated	integrated	integrated	separate	integrated	Separate (coordinated decision-making)	integrated	Separate (without coordination)
<b>Limits for reimbursement of drugs</b>	Yes (based on ATV*)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
<b>National guidelines of pharmaceueconomics</b>	planning	Planning	Yes	Yes	Yes	No	No	Yes	No	No
<b>Using the pharmaceueconomics studies for pharmaceutic pricing</b>	Yes	Yes (pricing that insurance covered)	Some products	Yes	Yes	In some areas/ regional	Yes	Partly (reference pricing)	No	No
<b>Funding</b>	national	national	national	national	national	mixed	national	national	national	national
<b>Co-payment culture</b>	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes
<b>Discount on sales and bargain</b>	Yes	Yes	NA	Yes	Yes (strongly)	Yes	Yes	Yes	No	No
<b>Reimbursement of OTC drugs</b>	Yes	No	No	No	No	NA**	No	No	Yes	Yes

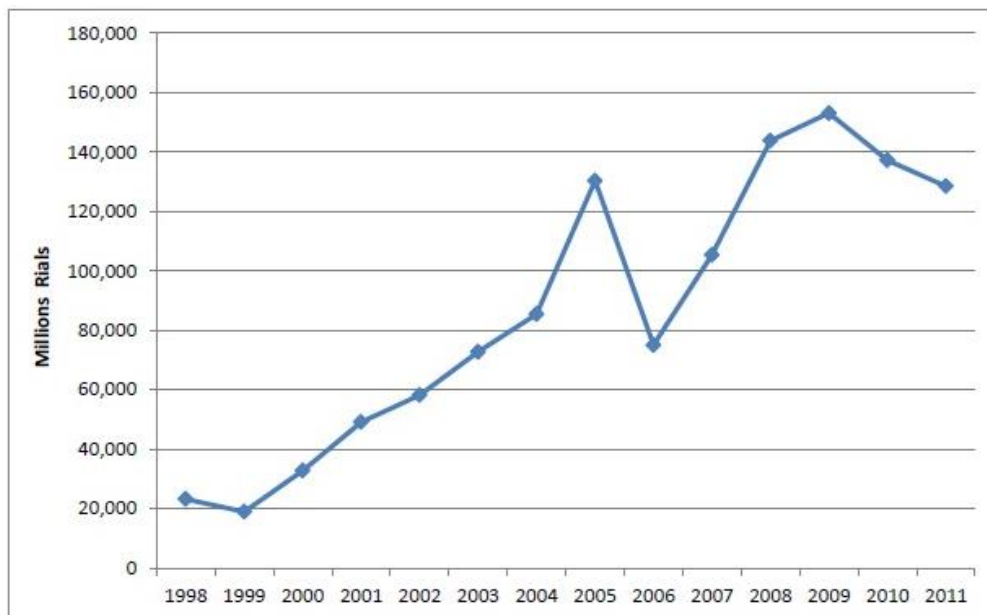
\*ATV: added therapeutic value; \*\*NA: Not Available



**Chart 1.** The pharmaceutical costs in pharmacies under contract with social security organization (1994-2011)



**Chart 2.** The pharmaceutical costs in pharmacies under contract with Iran health insurance organization (2001-2011)



**Chart 3.** Pharmaceutical costs in pharmacies under contract with Imam Khomeini relief foundation (1998-2011)

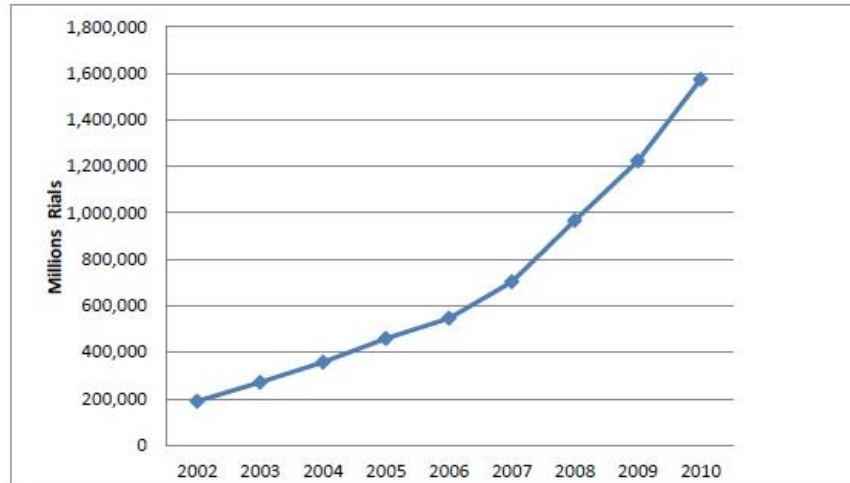


Chart 4. Pharmaceutical costs in armed forces medical insurance organization (2002-2011)

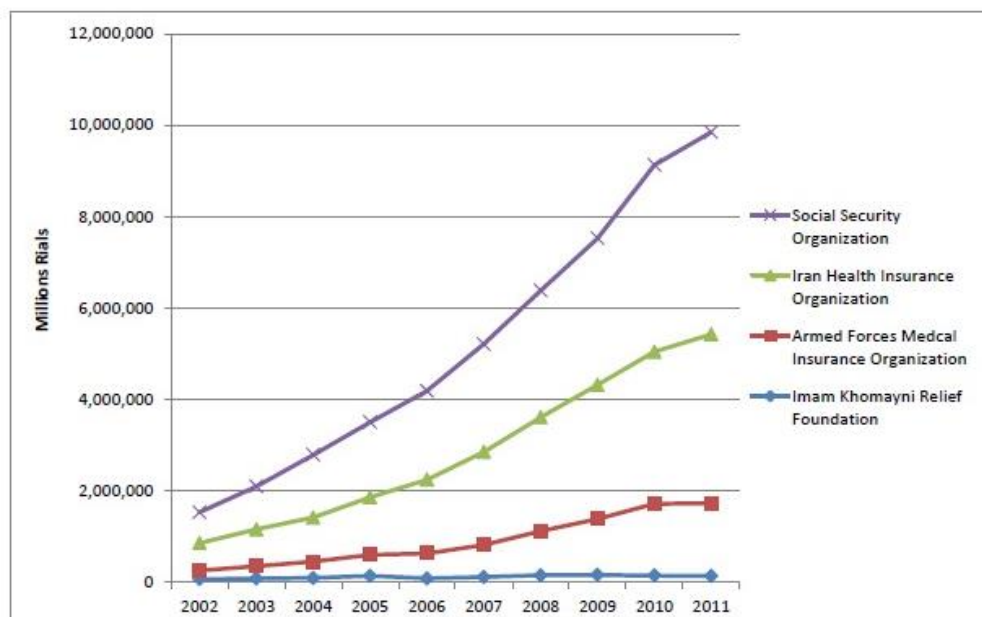


Chart 5. Pharmaceutical costs in pharmacies under contract with Iran's insurer organizations (2002-2011)

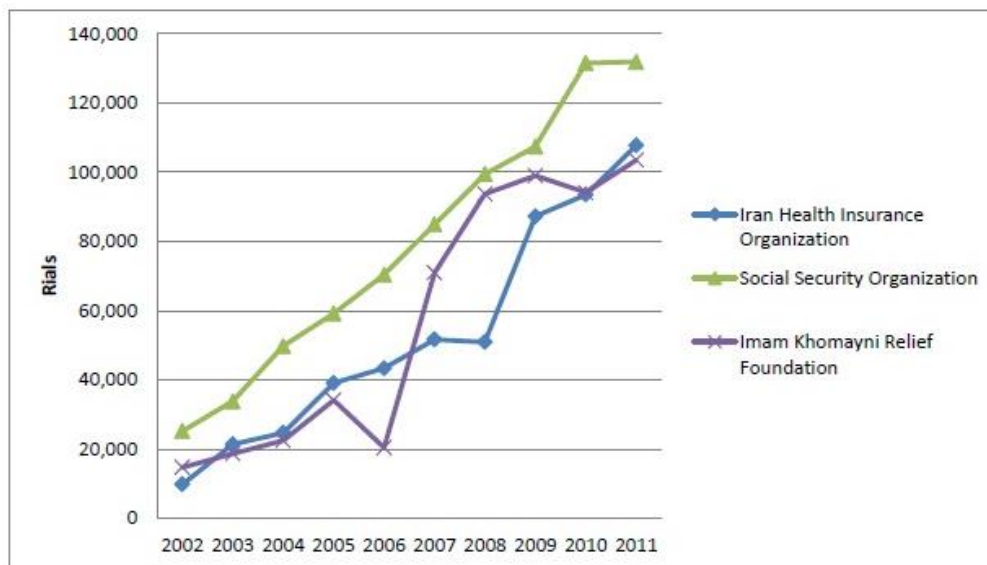


Chart 6. Pharmaceuticexpenditure per capita in Iran's insurer organizations (pharmacies) (2002-2011).

## Discussion

### Comparative study about pharmaceutical systems in the selected country:

Different mechanisms for controlling the pharmaceutical costs have been used internationally, including replacement of generic drugs, reference costs, positive or negative insurance lists, stable or rising copayment of patients, restriction on dividend payment, marketing costs of companies and risk sharing with physicians and pharmaceutical factories. Government also needs to maintain autonomy in decision-making and continuity of supply of the pharmaceutical against the big, powerful and organized pharmaceutical industry.

In most countries studied, the decision-making is based on the joint committee between the ministry of health and the insurance systems. The ministry of health which is responsible for health, has a more significant role to determine the type of pharmaceutical used and insurer organizations play an important role in pricing of drugs by using bargaining power. Patients have the lowest participation in paying the costs of vital drugs. Patients with chronic disease and vulnerable groups are identified for all health care costs and receive specific support. The selection of drug's rules in the insurance lists and their pricing is transparent and different methods in pricing drugs have been used. Controlling pharmaceutical use has been done through considering restrictions and incentives for doctors and pharmacists and cost control has been done through negotiations, pricing based on sales volume, the mandatory reduction of prices, getting discount from suppliers, distributor and pharmacies.

In many EU countries have targeted the suppliers to control rising pharmaceutical costs. They have used direct and indirect methods in pricing. Evidence of the impact of these plans is limited and varies. But evidence from mutual comparison of these countries shows the countries with strict rules to control pharmaceutical prices are more successful than the countries without strictions [51-52].

Among these mechanisms, the use of economic evaluations in decision-making about reimbursement and drug's entry to formulary also reduced the price of drugs. For these reasons, pharmaceutical costs in countries that apply these studies are lower than the USA which uses less from these studies (the price differences is 6-33%) [14].

### Comparative study of pharmaceutical costs in Iran's insurance system:

**1. The Social security organization's pharmaceutical costs:** The information obtained through social security organization indicates that the number of insured people of this organization had a 35.6% growth since 2000, while the number of prescriptions handled show about 83% growth from 1994 to 2011. At the same time, the Rial fee of these prescriptions had increased over 979%. The average cost of prescriptions shows a growth of 643% in the same period.

**2. The pharmaceutical costs in Iran health insurance organization:** Information obtained from Iran health insurance organization show that according to many changes and especially an increase of 18.7% of the people covered by this organization in 2004, the number of people covered in this organization had a reduction of 15% between

2001 and 2011. The main reason of this reduction can be attributed to the decline in formal employment among government employees, excluding the first consequential family member because of marriage and the reform of insured population statistics especially the rural fund.

Level 1 (rural insurance) of pharmaceutical costs, which was added to the organization during the 7 years (in 2005), showed a significant growth of 296% in 2011. Pharmaceutical costs in pharmacies under contract with Iran health insurance organization showed a growth of 720%. Pharmaceutical costs of temporary inpatient wards showed an increase of 911% between 2005 and 2011. The growth in the hospital outpatient wards was 433%. The most growth of pharmaceutical costs in inpatient ward had a growth of 1256%.

On average, patients with special diseases formed 0.104% of the insured population of Iran health insurance organization and they are patients with MS, hemophilia, thalassemia, hemodialysis, which on average received 7.17% of total pharmaceutical costs of Iran health insurance organization and pharmaceutical cost had a growth of 61% during 2007-11. In general, the total pharmaceutical costs in the organization showed an increase of 1092% between 2001 and 2011.

Although the organization, in term of insurance penetration across the country, has been successful, but from the perspective of people covered by this organization, especially the rural and deprived classes, the services specially pharmaceutical services is not enough and the access to pharmaceutical services for the majority of insured ones is not significant.

**3. The pharmaceutical costs of Imam Khomeini relief foundation:** The information obtained from this organization just collected only from their pharmacies, showed that the number of insured people had a reduction of 72.3% from 1998 to 2011 (because of the transfer of the rural insurance to Iran health insurance organization in 2005 and success in reducing poverty). Although the handled prescriptions showed a reduction of 69.33%, but the Rial fee of pharmaceutical costs of these prescriptions increased over the 452.7%. The average cost per prescription showed a growth of 1701%.

**4. The pharmaceutical costs in Armed forces medical insurance organization:** The information obtained from the armed forces medical insurance organization showed that the handled prescriptions, however, had an increase of 21.14%, but the rial fee of the prescriptions in pharmacies under contract with the organization had increased over 738.5%.

Although, the main focus of our study was the costs of drugs in insurance agencies, but due to continuity of pharmaceutical with other concepts in health sector, such as type of access to physicians, professional services coverage, how the insured receive healthcare services and etc, summarizing and presenting a clear and rational way to regulate the pharmaceutical services in insurance systems is somewhat difficult.

Documents and evidences obtained from the health sector of various countries showed that different sectors of the government are involved in organizing the insurance and

pharmaceutic services and only insurer organizations are not responsible for these problems. The methods and solutions used in every country are based on the country's economical, cultural and social situations, and therefore the action taken is not same. It should be noted that to guarantee success in controlling costs in the outpatient and inpatient services, which were the most important points of this study, is not merely obtained by government authorities or financing for the health sector, but a comprehensive plan to cover the citizens achieved by laws, regulations and guidelines for the use of the pharmaceutic should be considered.

Different countries, especially developed countries develop and implement their own considered programs to organize concepts such as new pharmaceutic pricing, hospital drugs, over the counter (OTC) drugs, control of pharmaceutic use, patient participation in the costs and etc. Therefore, in all countries, these programs are oriented towards developing pharmaceutic services, reducing the pharmaceutical costs and the rational control of pharmaceutic use in terms of the framework of the health care system.

Controlling pharmaceutic costs, have two aspects. One is to regulate the basic costs of new drugs and another is to guarantee the economical advantages of prescription drugs. The latter one requires researches that are not limited to economical-pharmaceutic aspects. In this regard, we should at least find ways for economical prescribing for physicians, training consumers, establishing the databases to control the prescriptions and the use of drugs, promoting and developing of detailed and precise information for treatment [57]. To control pharmaceutic costs, health care providers can use the way of controlling the supply side and demand side or a combination of demand and supply interventions.

A summary of the interventions can be outlined as:

- Rationalizing the reimbursement policies (negative and positive lists),
- Using the pharmaco-economical studies for reimbursement policies,
- Appropriate pharmaceutic pricing (such as reference pricing),
- Putting the bid and buying bulk drugs,
- Promoting the prescription drugs with generic source by physicians,
- Bargaining in buying locally produced drugs and imported drugs,
- Removing the OTC drugs from the reimbursement lists,
- Determining the separate formulary for hospitals,
- Setting the co-payment systems by patients,
- Applying the guidelines for pharmaceutic prescription by physicians,
- Training, supervision and feedback on physicians' prescriptions,
- Determining and ordering the hospital packaging to reduce the pharmaceutical costs [13, 51-52].

## Conclusion

In Studying Iran's current insurance systems and policies in comparison with other countries studied, we can see the evidences in relating to the methods and structures of cited

concepts. But in practice, many designed processes are not applying or are implementing incompletely. So the general output of this sector is not satisfactory. This means that on one hand insured people as the major elements in this collection are not satisfied with the relative services, and on the other hand, the service providers, both public and non-public institutions, are not satisfied to interact with insurance organizations.

We can say that the current insurance systems have these weaknesses: duality of decision-making authorities about drugs, unclear mechanisms of the pharmaceutic selection in insurance lists, lack of differentiation between the amounts of various drugs and pharmaceutic reimbursement levels, traditional methods of pharmaceutic pricing, incomplete support of patients with chronic diseases and vulnerable groups, the lack of incentive strategies towards rational prescription drugs for pharmacies and physicians.

Therefore, it is recommended that a systematic revision of the structure, pricing system rules, coverage of pharmaceutic insurance obligations in Iran be done with the following considerations:

- Setting out the strategic plans for pharmaceutic market,
  - Providing a comprehensive national strategy and policy for the pharmaceutic industry in Iran's 20-year vision and determining the future actions,
  - Modifying the pricing methods, in order to create competition in the country's pharmaceutic market and thus, create a condition to offer superior quality products,
  - Developing an appropriate scientific marketing and introducing the drugs produced in Iran to the physicians and pharmacies.
- This study had a few limitations. One of the aims of this study was to collect the pharmaceutic data from Iran's 4 medical insurance organizations from 1994 to 2011, but according to following reasons, we were only able to collect and analyze data from 2001:
  - The lack of structural consistency and professional manpower in some of the insurer companies from their establishment,
  - Establishment of Iranian health insurance organization in 1995,
  - The impossibility of recording or inappropriate recording of insurance organizations' pharmaceutic information (in paper and/or mechanized form) during the period considered,
  - The impossibility of separating pharmaceutical costs in the inpatient ward and therefore inability to calculate these costs.

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