



## **Examining the Effect of Executing the Health Reform Plan on the Share of Insurances, Franchise, and Health Subsidies in Shahid Sadoughi University of Medical Sciences in Yazd in 2013-2016**

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### **ABSTRACT**

**Background:** The Health Reform Plan was begun in 2014 as one of the most significant programs of the Ministry of Health to reduce hospitalization and out-of-pocket costs paid by people. Hence, we consider examining the economic consequences of this plan as one of the research priorities in this field. This study aimed to examine the effect of implementing the Health Reform Plan on the share of basic, supplementary insurances, franchise, and health subsidies from medical expenses in Shahid Sadoughi University of Medical Sciences in Yazd in 2013-2016.

**Methods:** This study is a descriptive study conducted in a quantitative and cross-sectional method. The study population included patients' bills in hospitals affiliated to Shahid Sadoughi University of Medical Sciences in Yazd. All patient's hospitalization files were examined by the census method. Information was extracted from financial documents and data in the hospital's HIS system. We referred to the basic and supplementary insurance organizations of the province to complete the data. Descriptive statistics and were used to analyze the obtained data by using SPSS<sub>16</sub> Software.

**Results:** Generally, it was specified that the share of basic and supplementary insurances had not changed considerably due to the doubling of the whole costs of patients' files, and basic insurances will pay on average 76 % of patients' costs. But, the patient's share of out-of-pocket payments has declined from 21 % to 11 %, which the Ministry of Health and Medical Education will pay this 10 percentage through the health subsidy to the affiliated centers.

**Conclusion:** This study's results explained an increase in patient's health costs and a decrease in patient's out-of-pocket costs. Consequently, it is required to pay attention to methods to increase medical centers' efficiency to reduce health costs. Furthermore, large-scale/macro programs should be designed and implemented at the national level to reduce patient's out-of-pocket payments.

**Key words:** Health reform plan, Out-of-Pocket payment, Expenses, Insurance, Hospital

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## Introduction

Currently, health systems are considered as one of the biggest and most significant economic and service divisions around the world, which have allocated about 9 % of GDP of the countries to themselves (1). In Iran, about 7 % of GDP has been allocated to the health division (2). More than 40 % of which is provided by the state sector. Hospitals have allocated about 50 to 80 percent of the whole health sector budget and a large share of trained and specialized personnel among all parts of the health system (3, 4).

The most significant mission of any health system is to promote health and satisfy the continually changing requirements due to different influencing factors. The health system requires to be reformed to respond to these fast and constant changes. Countries have purposes in providing services to the people, including increasing access to health services, fair payment, and providing high-quality services (5).

In public hospitals, funding is commonly implemented by government funding, insurance payments, and patient's direct out-of-pocket payments (6). A strong international trend has emerged concerning health system reform utilizing economic mechanisms in the last two decades because of health systems' inability to satisfy the new needs and expectations regarding healthcare and rehabilitation (7). Governments have paid attention to the fair provision of health services for many years, which has stopped the purposes and demands from being accurately realized. In the 11th government, this issue was raised again and a general effort was started to implement it with the emphasis of the Supreme Leader, the complete support of the President, the Minister of Health, members of the Islamic Consultative Assembly, and the public will, that all of them have resulted in planning, designing and offering a comprehensive package of reform in the country's health system. According to this plan's perspective, increasing people's satisfaction with health services and decreasing hospital izpublic plan's perspective pitals has been recognized as a significant priority. Additionally, support for

specialists in underprivileged regions and removal of insufficiencies in this ward, attendance of specialized physicians in public hospitals on a 24-hour foundation, fit physicians' tariffs in public and private wards, completing air emergencies, promoting hoteling and hosting services in public hospitals and particular support for patients suffering from special and incurable diseases can be respected as one of its promising points (8).

Health care services are recognized as one of the most required requirements in all countries. Providing the services and its desirability and usefulness level along with pension systems, is so significant that they are one of the fundamental parameters in the presidential candidates' program even in developed countries. The significance of this issue has been multiplied in recent years due to the spread of incurable and high-priced diseases. As official reports explain, the extravagant treatment cost draws an average of 7 % of the country's population under the poverty line yearly (9).

Studies have been conducted inside and outside the country about the influence of the reform plan on the indicators of the health sector that we can refer to the study conducted by Khayeri et al (10). in hospitals affiliated to the universities of medical sciences and health services in the country, which declared that the reform plan had affected positively reducing the patients' payments, increasing the percentage of normal delivery, enhancing hospitalization services and increasing the retention of physicians in underprivileged regions (10). A study conducted by Yardim et al (11). entitled Financial protection on health in Turkey and the influences of the Health Reform Plan also revealed that the implementation of the reform plan has resulted in patients' financial protection against excessive health costs (11). A study conducted by Wiz et al. entitled health improvement after Health Care Reforms in Massachusetts discovered that healthcare reform in Massachusetts has improved health and caused health services to be used more, particularly in weak groups (12). According to the studies



conducted by Dadgar et al (13). In Lorestan University of Medical Sciences, the reform plan's implementation has decreased the hospitalized patient's payment and increased the quality of visit services, and the number of beds in public hospitals became more active due to more patients referred.

Considering the importance of the mentioned subjects, assessing the health care system's performance, evaluating the efficiency of this system and the influence of reform plans are indisputable obligations in the health care system. Accordingly, this study aimed to examine the share of basic and supplementary insurances, health subsidies, and people's out-of-pocket payments before and after implementing the health system reform plan in Shahid Sadoughi University of Medical Sciences, Yazd.

### Materials and Methods

This study is a kind of descriptive study that was conducted in a quantitative and cross-sectional method in the period of 2013-2016 by examining the share of health subsidies and people's out-of-pocket payments from the whole cost of the patient file before and after the implementation of the reform plan, basic and supplementary insurances of the health system utilizing information associated with the patient bill of the hospitals affiliated to Shahid Sadoughi University of Medical Sciences in Yazd.

The inclusion criterion was all insurance files of patients hospitalized in the hospitals affiliated to the University of Medical Sciences in a census form in whole months during the years 2013-2016. Exclusion criteria denoted all hospitalized patient's files who did not have any type of insurance and have admitted without any insurance and in a free form. Also, patient's information admitted in Afshar Hospital has been excluded from the study because the HIS system is not connected to the Sepas system belonged to the Ministry of Health.

Financial documents and data in the hospital system were applied to obtain information and harmonize with the financial affairs of hospitals.

The data period was before the start of the implementation of the reform plan (2013) and comparing it with data belonging to 2016. The acquired data were analyzed by entering into Excel software and applying descriptive statistics. The year of 1992 was selected due to analyzing the information before implementing the Health Reform Plan. The year 1995 is selected due to analyzing the information after implementing the Health Reform Plan and the data registration and submission to the *SEPAS* system of the Ministry of Health (this system is related to sending all patients' files electronically and all the information of the file, including financial, etc., is recorded in it). Inflation had only been to increase the treatment tariffs, and because the share ratio of each of the studied indices has been compared, it has no significant effect on the study. It should be noted that the studied hospitals have been expressed in Latin letters in English to maintain the confidentiality of the information related to this study.

Ethics code: IR.SSU.REC.1397.029

### Results

A double increase in costs was recognized after the Health Transformation Plan based on the results concerning the whole costs of hospitalized patients before and after implementing the Health Reform Plan. These costs were increased after implementing the Health Reform Plan. Hospital A, with the highest cost of the whole file (807,338 Million Iran Rials), has had the highest cost difference after implementing the reform plan, which shows the highest number of patients referred to this center. Additionally, Hospital N with the lowest cost of the whole file (39,408 Million Iran Rials) has had the lowest cost difference after implementing the reform plan.

According to Table 2, the volumes of out-of-pocket payments for hospitalized patients before and after implementing the Health Reform Plan revealed that the hospital E has the highest percentage of the difference between the patient's out-of-pocket payments before and after implementing the Reform Plan (17,094 Million



rials). The hospital F has the smallest difference in the patient's out-of-pocket payment (184 million rials).

According to Table 2, the volumes of out-of-pocket payments of the hospitalized patient before and after implementing the Health Reform Plan indicated that Hospital E has had the highest percentage of the difference between the patient's out-of-pocket payments before and after implementing the Reform Plan (17,094 million rials) and Hospital F has had the smallest difference of the share of patient's out-of-pocket payment (184 million rials).

The share of patient's out-of-pocket payment has been decreased in all centers. In total, the reduction share of patient's out-of-pocket payment has been increased 1,24 times compared to the year before implementing the reform plan in the centers afflicted to Yazd University of Medical Science.

According to Table 3 has compared the volumes of basic insurance shares of hospitalized patients before and after implementing the Health Reform Plan that hospital A has had the highest difference percentage in basic insurance (298,779 million rials) and hospital K has had the lowest difference in hospitalized patient's basic insurance (19,296). In general, the share of basic insurance has grown 2.4 times compared to before implementing the Health Reform Plan.

According to Table 4, we have compared the volumes of the share of supplementary insurances

before and after implementing the Health Reform Plan. Hospital E has had the highest amount of difference in applying supplementary insurances (2,528 million rials). Hospital A, with the least volume of difference (1,433 million rials), has used less supplementary insurances.

According to Table 5, we have compared the volumes of health subsidies share paid to the hospital after implementing the health reform plan, that the hospital E with the highest amount has had the highest amount of health subsidy (92,149 million rials) and the hospital N with the lowest amount (1,724 million rials) has had the lowest amount of health subsidy.

According to Table 6, 76 % of the patient's file's whole cost can be paid through the basic insurance organizations before implementing the plan, which has increased to 77 % after implementing the plan. The share of supplementary insurances from the patient's file's total costs has been reduced to 3 % before implementing the health reform plan and 2 % after implementing the health reform plan. The patient's out-of-pocket payment share of the whole file cost has been reduced from 21 % to 11 % after implementing the Reform Plan and 9 % after implementing the Health Reform Plan. And 8 % of the whole cost of the patient's file is the share of health subsidies, which this share can be paid by the Ministry of Health by starting the health reform plan.

**Table 1.** The total cost of hospitalized patients before and after implementing the Health Reform Plan

Row	Hospital Name	Total Sum of Cost in 2013 before change plan (million rials)	Total Sum of Cost in 2016 after change plan (million rials)	Sum Difference (million rials)	Growth rate of the total cost of patients' records
1	Hospital A	399,055	807,338	408,283	2.0
2	Hospital B	143,781	352,333	208,551	2.5
3	Hospital C	74,418	173,364	98,946	2.3
4	Hospital D	58,162	126,524	68,361	2.2
5	Hospital E	38,989	221,092	182,103	5.7
6	Hospital F	23,226	57,992	34,766	2.5
7	Hospital G	22,250	103,740	81,490	4.7
8	Hospital K	20,996	46,277	25,281	2.2
9	Hospital L	18,828	51,268	32,439	2.7
10	Hospital M	17,208	48,985	31,776	2.8
11	Hospital N	12,931	39,408	26,477	3.0
<b>12</b>	<b>Total</b>	<b>829,849</b>	<b>2,028,327</b>	<b>1,198,478</b>	<b>2</b>



**Table 2.** Comparing the out-of-pocket payments for hospitalized patients before and after implementing the Health Reform Plan

Row	Hospital Name	Payment Share from the patient's pocket before the change plan (million rials)	Payment Share from the patient's pocket after the change plan (million rials)	The difference before and after change plan (million rials)
1	Hospital E	7,716	24,811	17,094
2	Hospital B	20,131	32,357	12,225
3	Hospital G	3,735	9,164	5,428
4	Hospital C	15,646	20,213	4,566
5	Hospital A	86,012	89,866	3,854
6	Hospital L	4,482	8,252	3,769
7	Hospital N	1,593	4,107	2,513
8	Hospital M	4,204	4,740	536
9	Hospital F	3,655	3,840	184
10	Hospital K	4,592	3,472	1,120
11	Hospital D	19,900	17,520	2,379
12	<b>Total</b>	<b>171,672</b>	<b>218,346</b>	<b>46,674</b>

**Table 3.** The volumes of basic insurance shares of hospitalized patients before and after implementing the Health Reform Plan

Row	Hospital Name	Basic insurance share before the change plan (million rials)	Basic insurance share after the change plan (million rials)	The difference before and after change plan (million rials)
1	Hospital A	293,455	592,234	298,779
2	Hospital B	122,198	291,425	169,227
3	Hospital E	30,881	171,259	140,377
4	Hospital C	57,388	133,657	76,269
5	Hospital G	17,445	81,560	64,114
6	Hospital D	36,417	93,551	57,133
7	Hospital F	18,967	48,946	29,979
8	Hospital M	12,947	38,779	25,831
9	Hospital L	14,006	37,665	23,658
10	Hospital N	10,758	32,091	21,332
11	Hospital K	16,642	35,938	19,296
12	<b>Total</b>	<b>631,109</b>	<b>1,557,109</b>	<b>926,000</b>

**Table 4.** The volumes of the supplementary insurance shares of hospitalized patients before and after implementing the Health Reform Plan

Row	Hospital Name	Amount of health subsidy cost before the change plan	Amount of health subsidy cost after the change plan
1	Hospital A	0	92,149
2	Hospital B	0	18,994
3	Hospital E	0	14,486
4	Hospital D	0	11,802
5	Hospital C	0	11,250
6	Hospital G	0	5,859
7	Hospital K	0	4,307
8	Hospital L	0	3,578
9	Hospital M	0	2,916
10	Hospital F	0	2,555
11	Hospital N	0	1,724
12	<b>Total</b>	<b>0</b>	<b>169,623</b>



**Table 5.** Comparing the volumes of the health subsidy shares before and after implementing the Health Reform Plan

Hospital Name	Supplementary insurance contribution before the change plan (million rials)	Supplementary insurance contribution after the change plan (million rials)	The difference before and after change plan (million rials)
Hospital E	632	3,160	2,528
Hospital G	1,243	3,369	2,126
Hospital C	1,392	2,627	1,235
Hospital B	1,383	2,327	944
Hospital N	345	777	432
Hospital L	329	690	361
Hospital F	589	789	199
Hospital K	83	259	175
Hospital M	54	56	1,691
Hospital D	931	875	55
Hospital A	17,174	15,740	1,433
<b>Total</b>	<b>24,160</b>	<b>30,675</b>	<b>6,514</b>

**Table 6.** General comparison of each share before and after implementing the Health Reform Plan

Row	Title	Before the Health change Plan (million rials)	Percentage before the Health change Plan	After the Health change Plan (million rials)	Percentage after the Health change Plan	For the difference before and after the change plan (million rials)	Percentage of difference before and after change plan
1	Basic insurance share	631,109	76	1,557,109	77	926,000	1
2	Supplementary insurance share	24,160	3	30,675	2	6,514	-1
3	The share of health subsidies	0	0	169,623	8	169,623	8
4	Payment Share from the patient's pocket	171,672	21	218,346	11	46,674	-10
5	<b>total cost</b>	<b>829,849</b>	<b>100</b>	<b>2,028,327</b>	<b>100</b>	<b>1,198,478</b>	<b>0</b>

**Discussion**

The share of basic and supplementary insurances, health subsidies, and patient's out-of-pocket payments of the total cost of the patient's file before and after implementing the health system reform plan was examined in this study.

Since policymakers in many countries had paid attention to the concerns about people's public health costs (14). Consequently, it is significant to pay attention to the economic and financial consequences in the health sector. One of the principal interventions in managing the financial burden of health services is to implement the planned plans in the health sector.

In other countries, various healthcare reform plans and providing various facilities to citizens at government expense have a long history. These plans and similar plans are implemented in most countries of the world. For example, the first comprehensive collection of health system reform was established in healthcare law in the United States in 2010 and began its operations (15).

This plan has been started its work since 2001 in New Zealand and enables people to utilize affordable hospital services (16). In Iran, the health reform plan has been implemented in various packages since 2014 in Iran. One of this plan's purposes is to decrease the share of the patient's



out-of-pocket payments and financial protection of patients in receiving health services.

This study results in Yazd public hospitals prove that the volume of patient's out-of-pocket payments for hospitalized patients before and after implementing the Health Reform Plan has declined in all centers.

In total, this decrease was near 10 % in Yazd medical science centers. The out-of-pocket payments are so high in most countries, particularly developing countries, that households cannot support them.

The World Health Organization has determined protecting people against patients' costs as one of the health system's three principal purposes. It is not a good mechanism for providing substantial health funding through direct payments in the financing division. When a household requires using medical care, if it is incapable of paying for it, it will encounter a big problem and may have to borrow, sell assets or reduce the costs of other parts to provide them (17).

The results obtained by the studies conducted in this field are consistent with the results obtained by this study. The results obtained from the study conducted by Kheiri and et al. (18) conducted in some country hospitals indicated that the reform plan had been influential in patient's payment amount. Heydarian and Vahdat (19) stated in their study that this plan had successfully reduced the patient's out-of-pocket payment in the public hospitals in Isfahan so that after implementing the plan, the payment has been reduced on an average between 23 to 64 %. The research conducted by Yazdan Panah and Zahra (20). examined the out-of-pocket payment by patients hospitalized before and after implementing the health reform plan in the Namazi Hospital of Shiraz indicated that costs of Patient's out of -pocket payment had been reduced significantly after implementing the health reform plan.

A great share of health expenses was provided through direct household payments in Iran before implementing the health system reform plan, like many developing countries, so that statistics indicate that the share of direct payments by

Iranian households from total health expenses has been increased from 53 percent to 59 percent since 2001 to 2011. On the other hand, households facing high costs are increased through the high share of direct payments and direct payments of households from the total health costs. Accordingly, one of the policymaker's most significant purposes in health had been to reduce the direct costs of households in health services (11).

According to the results, regarding the total cost of hospitalized patients before and after implementing the Health Reform Plan, the costs were doubled after the Health Reform Plan. These costs were increased in all studied centers and hospitals after implementing the Health Reform Plan. Zare and Hoshmandi (21) indicated in their study that implementing the reform plan had been caused to increase the health insurance costs. Cutler et al. (22), in their study, indicated that implementing the Health Reform Plan in the United States has increased medical costs and significantly degraded the share that people pay for health care services. The results of the study conducted by Ibrahim Nezhad and et al (23) entitled Comparing the costs, and the quality of hospitalization services after and implementing the health system reform plan explained that the cost of hospitalization services, equipment, beds, medicine, and surgery had been less than before the implementation of the plan. This amount has been increased after implementing the health reform plan. (23) Also, Rahmani and et al. (24) and Doshmangir and et al (25). emphasized the increasing the costs after implementing the health reform plan in their studies and also emphasized the necessity of controlling the costs.

Among the limitations of this study was the inability to access information from private-sector hospitals to compare the results better. Also, the payments paid out of hospital-related systems were not measurable due to the difficulty of accessing indirect payments in this study. Outpatient information was also not covered in this study.



## Conclusion

In total, the results obtained of this study indicated an increase in health costs and a decrease in patient's out-of-pocket payments. Consequently, it is necessary to pay attention to methods to increase medical centers' efficiency to reduce health costs. Macro plans should be designed and implemented nationally for services about the patient's out-of-pocket payments to constantly reduce out-of-pocket payments. It is recommended to examine the causes of increasing the costs of health reform plans in quantitative studies to conduct future studies and strategies to reduce them should also be declared. It is also suggested that this study be examined in private hospitals, and the results be compared before and after implementing the plan. It is also recommended for future researchers to examine non-direct payments through field studies.

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## Conflict of interests

None declared

## Authors' contributions

Motalehi AM, Roshanian E and Vafaenasab MR designed research; Roshanian E and Saffari S collected and analyzed data; Roshanian E wrote manuscript. All authors read and approved the final manuscript.

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