Website: http: jebhpme.ssu.ac.ir
EBHPME 2019; 3(4): 259-65 pISSN: 2538-5070

EBHPME

ORIGINAL ARTICLE

Evidence Based Health Policy, Management & Economics
Health Policy Research Center, Shahid Sadoughi University of Medical Sciences

The Effect of Health System Evolution Program on Out-of-pocket Payment in Hospitals Affiliated to Mashhad University of Medical Sciences

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ARTICLEINFO

Article History:
Received: 18 Mar 2019
Revised: 1 Sep 2019
Accepted: 25 Dec 2019

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ABSTRACT

Background: Providing financial resources for health services is the responsibility of the government, insurers and direct payments of individuals. Considering that health services are one of the most essential people's needsand impose a high cost on individuals, and may create catastrophic health costs for poor people. Therefore, the present study was conducted with the aim of analyzing the effect of health system evolution (HSE) program on out-of-pocket (OOP) payment in hospitals affiliated to Mashhad University of Medical Sciences.

Methods: This descriptive-analytic study was conducted in 24 hospitals of Mashhad University of Medical Sciences from 2013 to 2017 in order to survey the effect of HSE Program. The sample of this study included all patients with basic insurance referring to hospitals. Data were collected based on a researcher-made checklist for urban and rural patients. The statistical analysis software $SPSS_{19}$ was used to analyze the data.

Results: According to the research findings, the total OOP payment percentage fell from about 20 % to 8 % at the end of the year. The percentage of the patient's spending on consumer use declined from 60 % to 6 %, for drugs from 30 % to 5.5 %, for services from 12 % to 4 %.

Conclusion: Increasing people's financial access to health care will improve the health of the community, which is expected to improve community health indicators by lowering their OOP payments. The continuation of OOP payments reduces the need for macroeconomic policies and sustainable budgets.

Keywords: Health Services, Out-of-Pocket payment, Health Care Costs

Citation

This paper should be cited as: Adel A, Javan Biparva A, Ebrahimipour H, Badiee Aval Sh, Askarzadeh E. **The Effect of Health System Evolution Program on Out-of-pocket Payment in Hospitals Affiliated to Mashhad University of Medical Sciences.** Evidence Based Health Policy, Management & Economics. 2019; 3(4): 259-65.

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[DOI: 10.18502/jebhpme.v3i4.2066]

Introduction

Health services are one of the most essential people's needsin all countries (1). Health services benefit all people and are one of the most important policies of the health system of each country (2). Various mechanisms include consumer payments, public and private taxes and prepaid plans for financing health services (3). The reason for the existence of health systems is the production of health through the provision of services to patients. People are forced to use health services for maintaining health, preventing, and treatment, while the healthcare costs are high (4). So every health system has an obligation to protect households against health costs (5). If the state does not have the ability to finance health care, the burden of financing is on the people and should be paid directly from the patient (6). Paying from the pocket is the cost of treatment paid from the pocket of the household at the place of reception of the service (7). OOP payment as the most inefficient way to finance the health system has a negative effect on the access and use of services, especially among poor people (8, 9). Increasing chronic illnesses, increasing population ageing, using new technologies and increasing demand for health services will increase the cost of treatment and, consequently, increase the payment from the pocket of patients. By paying OOP payment, there will be a decline in pay, which causes catastrophic costs among people (10). Health system reform is considered as one of the most strategic issues of concern to governments, looking to increase efficiency and equity and effectiveness (11). Reducing the effect of these direct payments on standards and quality of life and the health system's need for reform has prompted policymakers to implement health system reform. Reforms should have full coverage of treatment for basic needs of the people and reduce the share of people in the cost of treatment (12). In 2014, the HSE Program was implemented with eight supportive packages. One of the main goals of this program is to reduce the rate of OOP payment and to protect citizens against health costs focused on vulnerable populations (13). A study in Sanandaj was conducted on Health System Response after implementing Health System Reform in 2015, which found that the average OOP paymentshas declined from $ 59.4 before the Health Plan to $ 17.66 after the Transition Plan Health, which has been lower in public centers than in private centers (14). A study comparing the share of pocket payments was conducted from the total cost of treatment and the contribution of drug to patients with leukemia, before and after the implementation of the Health Evaluation Plan in Sari by Sarkhanloo et al. (15), which represented a 14 % reduction in pocket payments from the total cost of treatment. Many studies have examined the impact of the HSE program and its role on OOP payment, but the present study provided a clear insight into the HSE program compared to before the implementation of this program. The purpose of this study was to survey the effect of HSE program on OOP payment in hospitals affiliated to Mashhad University of Medical Sciences

Materials and Methods

The present study was a descriptive-analytic study that examined the rate of OOP payment (from 2013 to 2017) of all inpatients to hospitals affiliated to Mashhad University of Medical Sciences. Mashhad University of Medical Sciences had 24 hospitals during the study period. There were 8 educational and therapeutic hospitals and 16 therapeutic hospitals. The research population was all the patients who were admitted to hospitals affiliated to Mashhad University of Medical Sciences which have been studied in the census. The criteria for entering this study were patients who were covered by basic insurance and other patients were excluded from the study. Considering that the city of Mashhad is a tourist city and the people are from all parts of the country in this city, therefore the patients are a sample of all patients admitted to government hospitals throughout the country, and this issue has affected HSE Program on OOP payment. The data collection tool in this research was a researcher-made form that included the patient's gender,

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[DOI: 10.18502/jebhpme.v3i4.2066]

length of stay, type of insurance, the total amount of the patient's cost, the part of the cost that is covered by insurance, and the amount of OOP payment. To ensure the same look at the data collected by the forms, two different researchers collected data from the same source in the same month and the results were compared to eachother.

Given the varying values of different currencies and the fact that the price of a commodity varies according to economic conditions in different countries, a measurement that could be used to compare countries and different services was needed. In order to solve this problem according to the dollar rate at the time of this research, this rate was used during all stages of the research to convert the Iranian Rial to the dollar ($ 1 = 85.500 Rials).

After getting permission from the university, all data were received from the HIS dashboard of MUMS and the HSE Secretariat of the National Health Evolution. In order to ensure the accuracy of the data, 10 records from each hospital were randomly checked at the hospital and matched to the data in the HIS and if the cost information of the patient record was incomplete, the record was excluded from the study. After the information was confirmed and the scientific advisor was approved, the data were recorded in the forms. Descriptive data were analyzed using descriptive statistics of Excel 2016 software and the effect of the HSE program was investigated by the T-test in SPSS software[19]. The significance level was considered 0.05. This research has been reviewed by the Ethics Committee of Mashhad University of Medical Sciences and approved by IR.MUMS.REC.1397.058 Code of Ethics.

Results

Comparing the amount of OOP payment per patient in 2013 and 2017 showed that the amount of OOP payment per person was $ 20.7 in 2013, and $ 3.8 in 2017. The OOP payment of female patients between 2013 and 2017 was less than male patients.

In 2013, the percentage of OOP payments from the patients has decreased from the total billing figure of 23 %, which decreased to 2 % in 2017. After implementing the HSE Program, the share of basic insurance has increased from 71 % in 2013 to 94 % in 2017.

The percentage of OOP payment of the patient in 2017 in comparison to 2013 which had the highest reduction in the percentage of payment from the pocket of patients was in its Self-employed insurance fund and was about 19 %. The reason for this significant decline was the general health insurance plan.

Percentage of OOP payment inpatients, in urban patients, declined from 20 % to 9 % and in rural patients from 20 % to 5 %. The share of patient costs from medical consumable expenditures has dropped from 57 % to 14 % and in rural patients dropped from 68 % to 6 %.

The percentage of OOP payment in 2017 in comparison to 2013 has decreased 18 percent in the health insurance organization, 21 percent in the social insurance organization, 8 percent in the armed forces insurance, and 7 percent in the insurance of Imam Khomeini Relief Committee.

Table 1. The comparison of the percentage of OOP payment by gender in 2013 and 2017($)

Time (Year)	Gender	Number of hospitalized patients	total amount of OOP payment	OOP payment to the total amount of bill (%)	amount of OOP payment per patient
2013	female	214735	4,188,282	24	19.5
	Male	198617	4,430,539	23	22.3
	Unknown	4934	23,364	34	4.7
	Total	418286	8,642,184	23	20.7
2017	female	252265	834,877	2	3.3
	Male	246038	1,044,793	2	4.2
	Unknown	561	900	1	1.6
	Total	498864	1,880,570	2	3.8

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[DOI: 10.18502/jebhpme.v3i4.2066]

Table 2. The comparison of the percentage of OOP payment to separate insurance organizations in 2013 and 2017

Insurer Organization	The year 2013		The year 2013	
	The amount of OOP payment	OOP payment (%)	The amount of OOP payment	OOP payment (%)
Health insurance	3,507,706	19	672,067	1
Social insurance	2,022,761	22	317,316	1
Armed forces	125,746	8	5,537	0.1
Imam Khomeini Relief Committee	67,541	10	57,116	3

Table 3. The comparison of the percentage of OOP payment to separate insurance funds

Insurance fund	The year 2013		The year 2013	
	The amount of OOP payment	OOP payment (%)		The amount of OOP payment
Employee	1,357,760	19	Employee	1,357,760
Rural Insurance	1,659,616	19	Rural Insurance	1,659,616
Other strata	143,147	10	Other strata	143,147
Self-employed	1,050,377	20	Self-employed	1,050,377

Table 4. The comparison ofthe percentage of payment OOP payment of rural and urban patients in 2013 and 2017

Plan	Time/period	Percentage of OOP payment	OOP payment from Medical consumables (%)	OOP payment from drug (%)	OOP payment from other services (%)
OOP payment of urban patients (%)	Before you start the HSE Program	20	57	26	13
	After implementation of the HSE Program	9	14	11	9
OOP payment of rural patients (%)	Before you start the HSE Program	20	68	27	12
	After implementation of the HSE Program	5	6	6	5

There was a significant difference between the percentage of OOP payment of patients before and after implementing the HSE Program.

Table 5. Independent T-test. Percentage of OOP payment in patients understudy

Performance Indicators	Confidence interval (95%)		t	df	P
	Lower	Upper			
OOP payment of urban patients (%)	12.74	14.59	41	4	0.000*
OOP payment of rural patients (%)	5.26	9.4	9.83	4	0.001*

Significance level < 0.05

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[DOI: 10.18502/jebhpme.v3i4.2066]

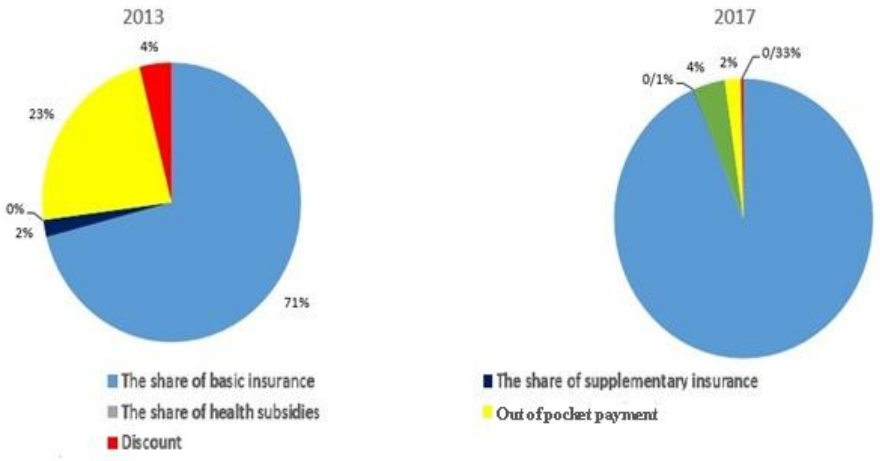


Figure 1. The Comparison of the share of Medical expenses financing items in 2013 and 2017

Discussion

Based on the findings of many studies, increasing OOP payment would cause catastrophic costs. In this regard, one of the goals of the HSE is to reduce OOP payment and thus reduce the risk of catastrophic costs (16). The implementation of this program, according to the Institute for Health Research has reduced the cost of rural households by 4.5 % and urban households by 1.8 %(17, 18).

The present study showed that the percentage of OOP payment for patients who were admitted to hospitals in Mashhad Medical Sciences in 2017 compared to 2013 has decreased in the health insurance by 18 percent in the organization of social security, 21 % in the medical insurance, 8 %, in Armed Forces, and 7 % in the insurance of Imam Khomeini Relief Committee.

The findings of a study by Zarei and Mohammadi (19) in Ilam showed that the share of OOP payment of the insured patients in the health insurance organization in December 2014 compared to the previous year declined 10.5 % in the inpatient wards.

Yardim and colleagues (20) conducted a study entitled "Patient financial protection in Turkey during the effects of the Health Transit Program", which showed that the decline in household expenditure in the period in question had a positive effect on reducing catastrophic health care costs which can be transferred in the health system.

In the study by Zarei and Mohammadi (19), the reduction in the share of patients in the rural fund was more than the other funds whereas, in the current study, the percentage of OOP payment of the patient in 2017 was compared to 2013, and the highest decline in pocket payments has been about 32 % in self-employed insurance fund. It is probable that in 2017, due to the widespread public health insurance among its members, the share of payments in the fund has been reduced.

The purchase of services and goods from outside the hospital, in addition to high costs, also raised concerns about the quality of services. To this end, minimizing the number of referrals out of the hospital and supplying medicines and supplies through the hospital itself has been one of the goals of the health promotion program (21).

The findings of the present study showed a 10 % decrease in the share of payment for urban patients and 15 % in the share of payment for rural patients. In 2017 compared to 2013, the percentage of OOP payment of urban patients of the drug dropped 15 % and in rural patients dropped 21 percent. Also, in a study by Sarkhanloo et al. (15) the findings showed that the share of OOP payment has decreased from 17.12 % in 2013 to 3.23 % in 2014, the share of the drug consumed by patients of total paid costs has declined from 16.8 % to 7.7 %. A Study by Heidrian and Vahdat (11) showed that after the implementation of HSE program, the amount of OOP payment has fallen by 17.43.

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[DOI: 10.18502/jebhpme.v3i4.2066]

Conclusion

This study showed that the rate of OOP payment of hospitalized patients at Mashhad University of Medical Sciences hospitals has dropped from above 20 % to around 2 % in 2017. Increasing financial access of individuals to health care will improve the health of the community. For this reason, it is expected that the health indicators of the community be improve by reducing the OOP payment of patients. The continuation of pocket payments reduces the need for macroeconomic policies and sustained budget allocations. Considering the importance of financial protection for patients, as the main goal of health systems, it is essential to sustain the HSE Program. Researchers must perform comprehensive studies in order to improve their strengths and weaknesses. In this study, only patients referred to the public sector have been examined that cannot be generalized to the entire community.

Acknowledgments

This manuscript was extracted from a research project entitled "Effect of HSE on OOP payment in patients referring to hospitals affiliated to Mashhad University ". The ethical code of the study was IR.MUMS.REC.1397.058. Mashhad University of Medical Sciences Services provided the access to the scientific databases. The authers appreciate all the participants and staff who contributed to conduct this research.

Conflict of interests

The authors declared no conflict of interests.

Authors' contributions

Ebrahimipour H and Badie Aval Sh designed research; Adel A and Javan Biparva A conducted research; Askarzadeh A analyzed data; and Adel A and Javan Biparva A wrote manuscript. Askarzadeh A had primary responsibility for final content. All authors read and approved the final manuscript.

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[DOI: 10.18502/jebhpme.v3i4.2066]