



## Out-of-pocket and informal payments in Iran's health care system: A systematic review and meta-analysis

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Received: 12 Mar 2017

Published: 5 Oct 2017

### Abstract

**Background:** Out-of-pocket and informal payments are considered as 2 most important topics for equity in health care financing. Therefore, this study was conducted to systematically review and meta-analyze the status of these payments in Iran's health care system.

**Methods:** Required data were collected through searching the following key terms: "Unofficial", "Informal Payment", "Iran", "Health Financing", "Health expenditure", and "Out-of-pocket" on Scopus, PubMed, IranMedex, SID, and Google Scholar databases. After extracting and screening previous studies, data were collected from the articles using PRISMA pattern. To perform the meta-analysis, Comprehensive Meta-Analysis (CMA: 2) software was used.

**Results:** A total of 15 studies were entered in this review. Overall, the rate of out-of-pocket payments was estimated to be 50% (95% CI: 45-57%). A significant correlation was found between gender and the rate of out-of-pocket payments ( $p \leq 0.05$ ). Moreover, the overall rate of informal payments was found to be 35%. Most of the informal payments were in form of cash, and the main reasons for informal payments were appreciating the staff and medical team as well as requests made by the hospital staff. Length of stay, marital status, employment status, income, and insurance coverage were key factors in the field of informal payments.

**Conclusion:** According to the results of the present study, out-of-pocket and informal payments are more prevalent in Iran. Considering the negative effects of these payments on the health care system, it is of prime importance to implement extensive interventions to reduce or even prevent these payments.

**Keywords:** Out-of-pocket, Informal payments, Health financing, Health system, Equity

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**Cite this article as:** Mirabedini SA, Esmaeil Fazl Hashemi SM, Sarabi Asiabar A, Rezapour A, Azami-Aghdash S, Hosseini Amnab H. Out-of-pocket and informal payments in Iran's health care system: A systematic review and meta-analysis. *Med J Islam Repub Iran.* 2017 (5 Oct);31:70. <https://doi.org/10.14196/mjiri.31.70>

### Introduction

Many factors have raised health costs in recent years. The most significant factors are technological revolution in the field of health services (1), higher level of people's awareness, hygienic expectations, and high inflation rate in the health care sector compared to other economic sectors (2).

Health expenditures reduce families' productivity, as the most important factor in national production by decreasing savings and allocating less income to other expenditures such as appropriate food and education, which have an undeniable influence on children as human capital accumulation. Therefore, the negative influence of a fi-

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#### ↑What is "already known" in this topic:

About 55% of the health system's resources are supplied by families' out-of-pocket payment. The average out-of-pocket expenditures for health is 24% in the world, however, this percentage reaches up to 50% in low-income countries. Studies have indicated an increase in informal payments worldwide, especially in countries with low and average incomes.

#### →What this article adds:

The amount of out-of-pocket payments was 50% in total. The amount of informal payments was around 35%. Cash payments were the most common type of informal payments. Appreciating the efforts of hospital staff, physicians, and clerks' requests were the main factors in informal payments. Hospitalization period, marital and employment status, income level, and insurance coverage could be mentioned among the main influential factors in informal payments across different studies.

financial system's malfunction in health care sector can be considered in the process of capital accumulation and a society's future economic development (3).

Despite all the considered measures, supplying finances for health services in countries that have low- and middle-incomes relies mainly on out-of-pocket payments and a relative lack of prepayment mechanisms such as tax or health insurance. One of the unpleasant consequences of this financial supply mechanism is imposing high expenses on families, while they are suffering from diseases (3). Out-of-pocket expenses can be defined as any kind of direct payments for the health expenditures when receiving health care services, and it is also the weakest and most unfair payment mechanism for health care. This mechanism, with respect to risk protection and justice, is regarded as the worst financial supply mechanism and results in the most financial risks for individuals (4).

In defining medical poverty trap, Whitehead et al. (2001) stated that "An increase in out-of-pocket payments for public and private health care services has pushed many families towards poverty and has intensified the poverty of those families who have already been in a poor state." (5). The average out-of-pocket expenditures for health is 24% in the world, but this percentage reaches up to 50% in low-income countries (6). According to the studies conducted on Iran's National Health Accounts, 55% of the health system's resources are supplied by families' out-of-pocket payment, while they are suffering from diseases (7). Based on what has explicitly been mentioned in Article 34 of the Fifth National Development Plan, to reach justice index in health, people's out-of-pocket payments for health care should reach up to 30% of the total expenditures, and people's fair access to health services should be guaranteed (8).

From economic experts' point of view, informal payments are a kind of out-of-pocket payment and can be defined as payments that are paid to individuals or health care organizations, which are not part of the formal payment channels and can be made in the form of cash, presents, gratuitous aids, and etc. These payments are also the main resource of financial supply for health care services in countries with low- and average- incomes, which can cause critical obstacles in modifying the health system (9-12). The results of the conducted studies revealed an increase in informal payments worldwide, especially in countries with low- and average- incomes (13-16). The range of changes in the amount of informal payments is very wide, from 2% in Peru to up to 96% in Pakistan (17).

Because in the recent years in Iran supporting families for high expenditures of health care as a favorable goal has been unanimously accepted as a policy of the health system (18), it is essential to collect detailed and scientific information about out-of-pocket payments and informal payments, which are 2 important issues in financially supporting the health system. This information provides the health policymakers and planners with valuable information on the expenditures imposed on families due to health expenditures and the poverty because of it. Although some studies have been conducted on out-of-pocket payments and informal payments in Iran's health

system in recent years, these studies could not provide precise, sufficient, and clear information to planners and policymakers of the health system. Thus, it seems that collecting and scientifically analyzing the results of the conducted studies and presenting a clear image of out-of-pocket payments and informal payments status can remarkably help the health system's planners and policymakers. Therefore, the present study was conducted to systematically review and meta-analyze out-of-pocket payments and informal payments in Iran's health system.

## Methods

This systematic review was designed and implemented in 2016 and took an advantage of the systematic review approach adapted from a book named "systematic review for supporting evidence-based medicine" (19).

### Searching strategies

The required data were collected from Scopus, PubMed, IranMedex, SID and Google scholar databases using the following key terms and their Persian equivalents: "Iran", "Finance", "expenditure", "out of pocket", "out-of-pocket payment" and "informal payment". The related articles were published during 2000 and 2016. To find more published articles, hand searching was used after searching the databases. After excluding some studies that were weakly related to the goals of this review and selecting the main articles, the reference lists of the articles was checked once again to ensure identification reliability. In addition, some experts in the health system's financial supply and health economy sectors were consulted.

### Inclusion and exclusion criteria

The criteria for including the studies were as follow: referring to at least one aspects of out-of-pocket payments or informal payments in Iran's health system; and studies conducted in the society and hospitals (Those studies that investigated out-of-pocket payments or informal payments in primary health care were omitted.).

Excluding criteria were as follow: non-English and Persian studies; the articles presented at seminars; and those which had investigated out-of-pocket payments and informal payments in Iran's health system before and after the Health Revolution Plan.

### Evaluation

All the studies were evaluated after being extracted from data bases by 2 evaluators using strengthening the Reporting of Observational studies in Epidemiology (STROBE) check list, with 22 items (21, 22). This check list was selected because of its usability for evaluating observational studies, its translation into Persian, and its validation in Persian (20). In this study, those studies that paid no attention to at least half of these items (11 out of 22 items) were excluded.

### Data extraction

To extract data, at first, 3 data extraction forms were manually designed using the Word software: the first one was for the studies, which had reported the amount of out-

of- pocket payments; the second one for those that had reported informal payments; and the third one for the other studies that had not reported out- of- pocket payments and informal payments. At first, the data of 3 studies were extracted to design these forms, and then, the flaws and problems in the primary forms were fixed.

Extracted information in the first form was as follows: author/ year, city/ region, data collection year, participants/ medical problem/ medical service, Health center type, sample size, (%), out- of- pocket, risk factors.

Extracted information in the second form was as follows: author/ year, city/ region, data collection year, participants/ medical problem/ medical service, health center type, sample size,(%) , informal payment, types of informal payment, causes of informal payment, and risk factors of informal payment.

Extracted information in the third form was as follows: author/ year, aim of the study, type of the study, participants, and overall results.

### Data analysis methods

Meta-analysis of the statistical methods with fixed models was used to calculate the amount of out- of- pocket

payments and informal payments. Comprehensive Meta-Analysis software (CMA: 2) was used to perform meta-analysis. Forest plot graphs were applied to report the results in which the size of each square shows sample volume, and the lines on each side of the squares show 95% confidence interval. For studies on out- of- pocket payments, the results were obtained according to the place of conducting the study (hospital or the society) by subgroup analysis. Q statistic and I<sup>2</sup> index were used for heterogeneous assessment of the study results. In this study, the I<sup>2</sup> was determined to be more than 50% for the studies' heterogeneity criterion.

### Results

From the 129 articles found among data bases and other sources, 41 were excluded due to being common among different sources, 68 were disregarded after checking their titles and abstracts, and 5 were omitted after being checked completely. Finally, 15 articles (7 articles on out- of- pocket payments, 5 on informal payments, and 3 on other studies) were used in this study (Fig. 1).

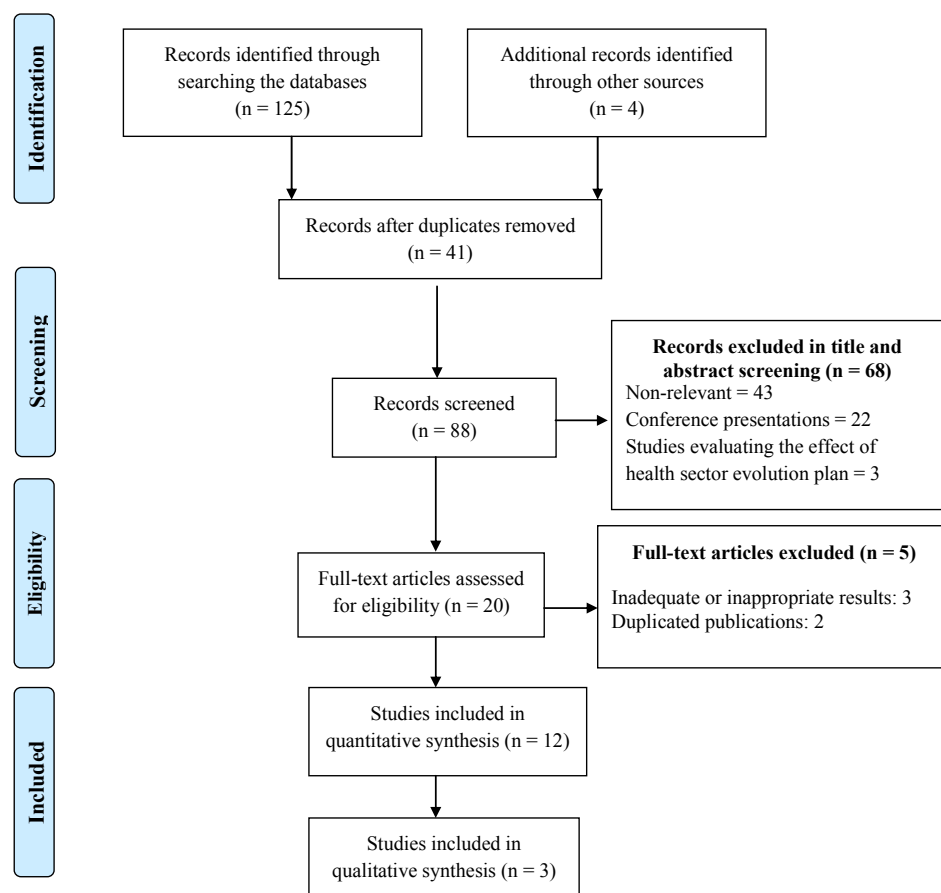


Fig.1. Searching and the inclusion process

Health care payments in Iran

The specifications and information about the 15 investigated articles have been presented in Tables 1, 2, and 3. The studies on out- of- pocket payments had been conducted in 5 cities of Tehran, Qazvin, Kurdistan, Gilan, and Tabriz; and the studies on informal payments were done in 4 cities of Tehran, Tabriz, Shiraz, and Urmia; and other studies had been conducted in Kerman (2 studies) and Tehran (1 study). Overall, some studies had only been performed in 8 cities of Iran.

The results of meta-analysis for out- of- pocket pay-

ments revealed that this amount was about 50% (95% CI: 45-57) (Heterogeneity test:  $Q= 7.41, df= 6, p= 0.28, I^2=19$ ). The amount of out- of- pocket payments in the conducted studies in the society was estimated to be 56% (95% CI: 49-65, Heterogeneity test:  $Q= 0.14, df= 2, p=0.93, I^2= 0$ ). The amount of out- of- pocket payments in hospitals was estimated to be 41% (95% CI: 33-50, Heterogeneity test:  $Q= 1.01, df= 3, p= 0.79, I^2= 0$ ) (Fig. 2).

Out- of- pocket payment was mentioned as an important factor in only 2 studies conducted by Asefzadeh S, et al.

Table 1. Characteristics of included studies about out-of-pocket payments in Iran's health system

Author/ year	City/ region	Data collection year	Participants/ medical problem/ medical service	Health center type	Sample size	Out- of- pocket (%)	Risk factors
Yavangi M, et al. 2013 (9)	Tehran	2009	Obstetrical complications	Teaching hospitals	1172	37.6	-
Asefzadeh S, et al. 2014 (1)	Qazvin	2011	Outpatient diagnostic services	Teaching hospitals	800	45.3	Gender
Gharibi F, et al. 2013 (10)	Kurdistan	2010	households	Health care services and health equipment	1518	55	-
Keshavarz A, et al. 2011(11)	Qazvin	2009	Urban households	Health care services and health equipment	384	59.7	-
Marzban S, et al. 2015 (2)	Tehran	2014	Outpatient imaging services	Teaching hospitals	100	32	Gender
Semmani S, Keshtkar AA. 2003 (12)	Gorgan district	2002	Urban households	Health care services and health equipment	1014	57	-
Hassan Nejad N, 2012 (13)	Tabriz	2009	Hospitalized diabetic Patients	Teaching hospitals	94	47.2	-

Table 2. Characteristics of the included studies about informal payments in Iran's health system

Author/ year	City/ region	Data collection year	Participants/ medical problem/ medical service	Health center type	Sample size	Informal payment (%)	Types of informal payment	Causes of informal payment	Risk factors of informal payment
Ghiasi-pour M, et al. 2011(3)	Tehran	2009	Discharged patients	Teaching hospitals	300	21	Cash (88.8), gift (1.6), Commodity (9.5)	Appreciation (55.6), to be forced to (28.6), hope to get more services (9.5), staff request (6.5)	Length of stay, marital statuses
Vahidi RGH, Saadati M. 2011(5)	Tabriz	2010	Cardiac patients	Teaching hospitals	50	10	-	Staff request (80), appreciation (20)	-
Jafari A, et al. 2015(4)	Shiraz	2012	Discharged patients	Teaching hospitals	201	20	Cash (39), gift (39), Commodity (9.8), Commitment (12.2)	-	Employment status, primary insurance,
Meskarpour-Amiri M, et al. 2016(14)	Tehran	2014	Discharged patients	Teaching hospitals	480	48	-	-	Older people, members of small and wealthier families, employed, under coverage of only basic medical insurance
Khodamoradi A, et al. 2015(15)	Urmia	2013	Discharged patients	Teaching, private, and social security hospitals	265	30	-	-	Type of hospital, place of settlement, treatment procedure and income

Table 3. Results of other studies on out-of-pocket and informal payments in Iran's health system

Author, year	Aim of the study	Type of the study	Participants	Overall results
Amir-esmaeil et al. 2013(6)	Causes of informal payments in hospitals of Kerman city	Qualitative study	30 patients, 12 doctors, and 3 policy makers	<p>Causes of informal payments from patients' point of view:</p> <ul style="list-style-type: none"> <li>-Cultural factors including gratitude and appreciation, the importance of health compared to other issues, existence of the culture of complimenting, and patients' unawareness</li> <li>-Quality-related factors including better and more famous doctors, receiving better health services, fear of stopping the treatment, by passing the waiting list, unwillingness of medical students to work</li> <li>-Legal factors including weakness of regulations and inefficient system of dealing with complaints</li> </ul> <p>Causes of informal payments from doctors and policymakers' point of view:</p> <ul style="list-style-type: none"> <li>-Tariff-related factors including unreal, inadequate, unfair tariffs, and lack of appropriate regulatory system</li> <li>-Structural factors including regulatory issues, direct financial relationship between the physician and patient, health low share from GDP, inappropriate insurance attitude, poor referral system and classification, discrimination in the medical community, and inefficient system of dealing with complaints</li> <li>-Ethical factors including fading of professional ethics</li> <li>-Showing competence and skills</li> </ul> <p><u>Factors involved in getting informal payments:</u></p> <ol style="list-style-type: none"> <li>1. Underpayment tariffs</li> <li>2. Direct physician-patient relationship</li> <li>3. Lack of control of authorized organizations</li> <li>4. Not complying with codes of ethics by some physicians</li> <li>5. Too much financial expectation of some physicians</li> <li>6. Low payments of insurance companies (insufficient government investment)</li> <li>7. Personal financial problems of physicians</li> <li>8. Normalization of this kind of payment because of its commonness</li> <li>9. Inefficacy of health care system</li> </ol> <p><u>Negative consequences of informal payments</u></p> <ol style="list-style-type: none"> <li>1. Increase in the patients' health costs</li> <li>2. Imposing additional expenditures on health system and damaging limited health resources of the country</li> <li>3. Increase in the price of health care delivery</li> <li>4. Decrease in quality care delivery</li> <li>5. Damaging health economy because of incorrect cash flow in health services</li> <li>6. Ruining the social status of physicians</li> <li>7. Normalization and dissemination of illegal and immoral behaviors</li> <li>8. Establishment of injustice in health care system- the richer a person, the more they benefit from services</li> <li>9. Performing unnecessary procedures</li> <li>10. Impaired physician-patient relationship</li> <li>11. Increase in the lawsuits of physicians</li> </ol> <p><u>Approach to the informal payments</u></p> <ol style="list-style-type: none"> <li>1. To realize tariffs</li> <li>2. To cut the direct physician-patient financial relationship</li> <li>3. To support the insurance companies</li> <li>4. To increase the physicians' salaries</li> <li>5. The strict control on health care services by authorized organizations</li> <li>6. Fair distribution of services throughout the country</li> <li>7. To reform the referral system and family medicine</li> <li>8. To inform and educate the physicians about the side effects of under-the-table payments</li> </ol>
Parsa M, et al. 2015(7)	Different aspects of under-the-table payments in Iran	Qualitative Study	12 medical specialists.	<p>About 70% of the participants did not have enough information about informal payments. According to the participants' point of view, thanking the doctors either in cash or by giving gifts is acceptable provided that patients do it voluntarily and without doctors' request. On the other hand, in their opinion, requesting the money by the doctor before delivering the health care services was completely unacceptable.</p> <p>Of the participants, 87% did not know that there are legal organizations that they can take their complaints to. About 17% of the patients were optimistic about effectiveness of their complaints.</p>
Setayesh et al. 2007(8)	Kerman people's opinion on informal payments	Cross-sectional study	525 patients referred to private and public health care centers	<p>2014 (23) and Marzban S, et al. 2015 (24); and in both of these studies, there was a significant relationship between sex and out- of- pocket payment; ie, males had more out- of- pocket expenses compared to females.</p>

Meta-analysis of informal payments revealed that the total amount of out- of- pocket expenses was 35% (95%CI: 26-47, Heterogeneity test: Q= 6.3, df= 4, p=0.17, I<sup>2</sup>= 37.3) (Fig. 3).



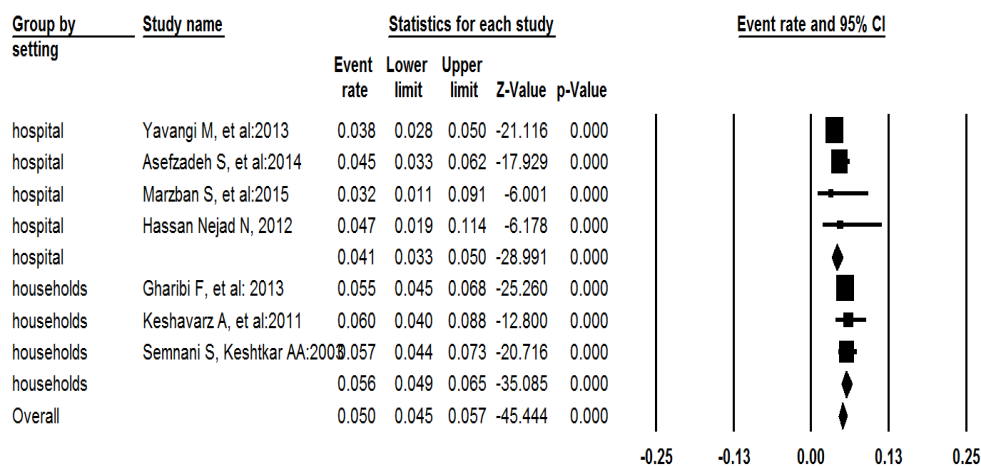


Fig. 2. Meta-analysis of out-of-pocket payments in Iran's health care system

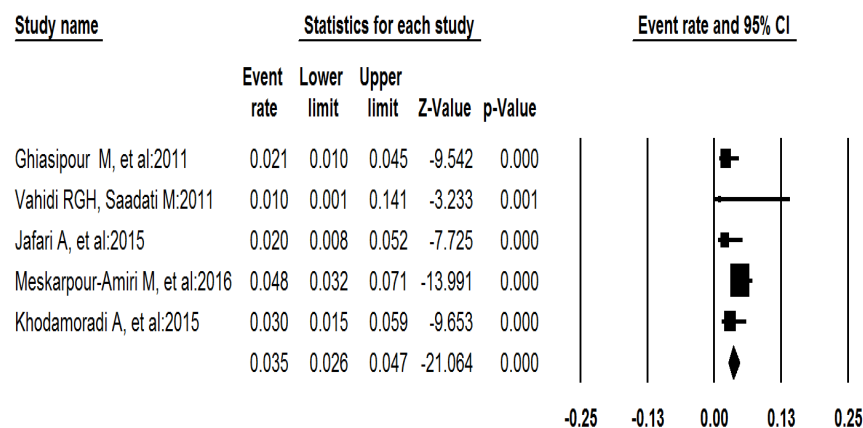


Fig. 3. Meta-analysis of informal payments in Iran's health care system

In both studies of Ghiasipour M, et al. 2011 (25) and Jafari A, et al. 2015 (26), the type of informal payments was mentioned, and in both studies cash payments were the most common type. Giving gifts and commodities were among the other types of informal payments. In a study conducted by Ghiasipour M, et al. 2011 (25), appreciating the efforts of hospital personnel and physicians was the main reason for informal payments. In contrast, in another study done by Vahidi RGH and Saadati M 2011(27), clerks' request was mentioned as the main factor in informal payments.

Hospitalization period, marital and employment status, income level, and insurance coverage can be mentioned among the influential factors in informal payments found in different studies.

In a study conducted by Amir Esmaili et al. (2013) (28), the most important reasons behind informal payments from patients, physicians, and policymakers' point of view were found to be cultural factors, quality-related factors, legal, tariff-related, structural and ethical factors as well as showing skills and competency. In a study done by Parsa et al. (2005) (29), effective factors in informal payments, the negative consequences of informal payments, and common approaches in informal payments were investi-

gated. The results of another study conducted by Setayesh et al. (2007) (30) on the reasons behind informal payments and based on a survey of 525 people in Kerman, revealed that around 70% of the participants had sufficient information about informal payments (bribes) (Table 3).

### Discussion

The results of this study revealed that the amount of out-of-pocket payments was about 50%. In the conducted studies, sex had a significant relationship with out-of-pocket payments; eg, males had more out-of-pocket expenses. The amount of informal payments was estimated to be around 35%. Cash payments were the most common type of informal payments. Appreciating the efforts of hospital staff and physicians and clerks' requests were the main factors in informal payments. Hospitalization period, marital and employment status, income level, and insurance coverage can be mentioned among the main influential factors in informal payments found in different studies.

According to the results of the study, only in 8 cities/provinces of Iran some studies had been done on out-of-pocket payments and informal payments. In other words, out-of-pocket payments and informal payments

data in the other 23 provinces of Iran have not been scientifically investigated. Given the importance and sensitivity of the matter and great cultural and socioeconomic differences in different regions of the country, it is highly important that the local data be scientifically and precisely calculated and reported to be used in decision-making and planning.

According to the results of the reviewed studies, the amount of out-of-pocket payments was 50%; this amount is 8.2% in China (38), 3.4% in Cambodia (39), and 1.7% in Vietnam (40). Out-of-pocket payment in countries with high income is generally about 24%, but in countries with low- and average- incomes, it is more than 50% (41). According to the studies done on Iran's National Health Accounts, 55% of the health system's resources are supplied by families' direct payment, when they are sick (7), which is convergent with the results of the present study. Since it is explicitly mentioned in Article 34 of the Fifth National Development Plan to accomplish justice index in health, people's direct payments for health care must reach to 30% of the total expenditures at most, and people's fair access to health services must be guaranteed (8). Therefore, the required financial support and the other measures and planning should be provided. Moreover, the calculated 50% for out-of-pocket payment in this study was based on the studies conducted before the health revolution plan. On May 15, 2014, the Ministry of Health and Medical Education sent the health system's revolution plan agenda to all medical universities. This agenda included 7 general plans, whose first plan was reducing the amount of payments for hospitalized patients in Health and Medical Education Ministry hospitals (42, 43). By performing such agenda in the Health and Medical Education Ministry hospitals, the amount of out-of-pocket payments has decreased significantly. The results of the study done by Piroozi et al. (2016) in Kurdistan revealed that after performing the health system's revolution plan, the percentage of out-of-pocket payments in hospital bills has significantly dropped (44). Furthermore, the results of another study performed by Nahid and Shaghayagh (2015) in Isfahan revealed that the Health System Revolution Plan has reduced out-of-pocket payments in Isfahan's governmental hospitals up to 17.3% (45). In addition, the results of another study conducted by Sarkhanloo et al. (2016) revealed that the health system's reform plan has managed to significantly reduce out-of-pocket payments for patients, who are suffering from cancer (46). Because to assess the efficiency and accomplishments of this great national plan some valid data about the time before starting is required, the data of the present study can be used as a valid and basic source to compare the previous status of the health system before this plan.

Given the results of some studies, the amount of informal payments was estimated to be up to 35%. In a study performed by Liaropoulos et al. (2008) in Greece, the amount of informal payments given to physicians, nurses, and other clerks was 36%, 11%, and 8.5%, respectively (47).

In addition, in another study done by Ozgen et al.

(2010) in Turkey, 31% of the patients had an experience of out-of-pocket payments (48). The results of the conducted studies revealed the increasing trend of informal payments around the world, especially in countries with low- and middle- incomes (13-16). The range of the amount of out-of-pocket payments is so wide, from 2% in Peru to up to 96% in Pakistan (17). Among the unpleasant effects and consequences of informal payments, some of the most important ones are changes in government's investment priorities, inefficiency of the health system, an increase in corruption, and a decrease in trust and the system's clarity, justice in health access, taking an advantage of services, quality of services, building motivation among service providers, increasing expenditures, presenting wrong information about treatment expenditures, and patients' share of payments (14, 15, 49-53). Therefore, it is highly important to take the necessary measures to reduce and prevent such payments. Informing the public, increasing the received payments of health service providers, understanding the tariffs, exerting more control over hospitals, and disconnecting the financial relationship between patients and health service providers are among the measures that can be taken by managers and policymakers. Lack of sufficient data on informal payments and effective factors about out-of-pocket and informal payments can be mentioned as the most important limitations of this study, which restricted further analyses and discussions concerning the issue. It is recommended that researchers pay ample attention to the discussed matters in their future studies.

### Conclusion

The results of the present study revealed that out-of-pocket payments and informal payments are among the strategic goals of the health system in Islamic Republic of Iran and most countries. Therefore, given the unpleasant effects and consequences of out-of-pocket payments and informal payments, it is of paramount importance to take fundamental measures to reduce and prevent such expenses. Reinforcing and continuing the health revolution plan, instructing people, and restricting the direct financial relationship between patients and health service providers are among the most important solutions, which can be used by managers and policymakers.

### Conflict of Interests

The authors declare that they have no competing interests.

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