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Measuring Equity in Iranian Healthcare System Financing: Experiences of Recent Health Reform Plan

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ABSTRACT

Background: One of the main goals of the health system is the fair contribution of people to healthcare financing. Therefore, the current study not only evaluated the status of fair financial contribution, but also investigated the impacts of the health reform plan on the financial pillars of the Iranian healthcare system.

Methods: To conduct this retrospective descriptive study, the data of Income and Expenditure Survey (2011-2015) commissioned by Statistical Center of Iran were used. To measure fairness of financing, four indices were used. Data were analyzed using the Excel and SPSS software.

Results: The results show that although the health reform plan has increased insurance coverage of both rural and urban households, out of pocket, and even its proportion to household capacity to pay continues to rise. Prevalence of catastrophic health expenditures in the baseline year in rural and urban areas was 2.19% and 1.04%, reaching 3.69% and 2.39% at the end of the study, respectively. Accordingly, fair financial contribution in rural and urban areas was obtained 0.830% and 0.850% in the baseline year, reaching 0.823% and 0.850% in the last year of the study, respectively.

Conclusion: Although indices of fair financial contribution during the 5-year period varied, they ultimately showed a worse situation compared to the baseline year. Thus, it is assumed that the health reform plan has not yet been successful in meeting the goal of improving fair financial contribution to the health system.

Keywords: Health Expenditures, Health System Financing, Health Equity, Fair Financial Contribution, Catastrophic Healthcare Expenditures

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Introduction

Improving the health of populations is considered as an important goal set by governments in many countries, mainly because it is believed that health is a basic and civil right. To achieve this, health systems, which may have different structures in different countries, have been developed (1). Health systems are also seeking to fulfill three general objectives, namely, health promotion, responsiveness, and fair financial contribution. In the last few decades, health systems have been faced with challenges resulting from lifestyle change, disease transmission, and introduction of new and mostly costly technologies. Reform is therefore crucial to achieve the above goals (2). Iran, as a developing country, also is faced with these challenges. During the last 15 to 20 years, for example, the population aged 60 and over has grown rapidly, and due to lifestyle change, the prevalence of non-Communicable diseases (NCDs) has dramatically increased so that about 80% of deaths are related to the NCDs (3). As well, the Iranian Healthcare System (IHS) surfers from certain drawbacks such as high rate of OOP payment (4). To deal with these challenges, in May, 2014, Iran's Health Reform Plan (HRP) was introduced (5, 6). The HRP consists of three phases: (a) transforming healthcare services; (b) transforming public health services; and (c) providing compensation mainly through correcting the evaluation of healthcare services. The plan mainly focuses on financial protection against healthcare expenditures, increasing access to healthcare services, and improving quality of healthcare services (5). To reform healthcare services, eight packages were introduced, targeting the services delivered in hospitals affiliated to the Ministry of Health and Medical Education (MoHME). One of the packages is aimed at reducing patient payment to 6% of total expenditures in urban areas and 3% in rural areas in hospitals affiliated to the MoHME. Accordingly, all individuals without basic health insurance coverage were covered free of charge (7, 8). In this plan, financing is done through resources that are released through targeted subsidy plan and 1% increase in value added tax (6).

As already mentioned, fair financial contribution, which is also one of the main purposes of the HRP, is an important criterion to assess the financial status of health systems (9, 10). The World Health Organization (WHO) considers this criterion to be essential for health systems that must be taken into account in the context of macro-health policies to ensure household protection against Catastrophic Health Expenditures (CHE) (11). Fair contribution refers to the proximity of household contribution to the health system to their financial capacity (12, 13). Here household payment capacity refers to the direct payments made by patients for healthcare services. Patient out-of-pocket (OOP) payment is an inefficient and unfair way of financing health, leading to the increase of poverty in the community (2, 14). The high proportion of OOP payment means that patients, instead of insurance companies or the government, pay most of the healthcare system expenditures. This can jeopardize fairness of financing (15).

Various indicators have so far been proposed to measure the degree of fairness of financing the most important of which are as follows:

1.Household financial contribution: This refers to the ratio of households' payments for healthcare services to their capacity to pay. The lower this ratio, the higher the fairness of financing. It is much lower in high-income countries than low- and middle-income countries. According to this indicator, it can be argued that public contribution to health financing will improve the degree of fairness (16, 17).

2.CHE: CHE occurs when health expenditures of a household are equal or higher than 40% (based on the WHO index) of the household's capacity to pay. The lower the number of households facing with CHEs, the higher the degree of fairness of financing (7, 18-21).

3.Impoverishing Healthcare Expenditures (IHE): IHE occurs when household income decreases to lower than the poverty line after experiencing an OOP payment. The lower this ratio, the better is

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the degree of fairness of financing (22, 23).

4.Fair Financial Contribution (FFC): The FFC is to measure fairness in distribution of healthcare expenditures and was proposed by the WHO in 2000 as one of the three main goals of health systems. According to this indicator, health system will be fairly financed if the total contribution is proportional to the household capacity to pay regardless of household health status (22-24).

In the current study, the four above-mentioned indicators were investigated for a period of 5-years by using national data. The distinguishing point in the current study is the fact that throughout the study period the HRP was being implemented so that the plan could be evaluated for financial indicators. Therefore, the current study not only evaluated the status of fair financial contribution but also investigated the impacts of the HRP on the financial pillars of the Iranian healthcare system.

Materials and Methods

To conduct this retrospective descriptive study, the data of Income and Expenditure Survey (IES) (2011-2015) commissioned by Statistical Center of Iran (SCI) were used. The SCI performs this survey once a year. The IES sample consisted of more than 38000 households, including around 141,000 population in both urban and rural areas. Samples in the IES were selected by three-stage cluster random sampling method. Data were collected by a standardized questionnaire and face-to-face interviews. The IES data include income and expenditure of households. Since the average expenditure and income vary in different months, the SCI uses different samples in different months. These data have so far been extensively used in some studies on household health expenditures in Iran (25-28). In the present study, because the preparation and revision of the data were accomplished by the SCI, we only drew the required variables from the pooled data in order to achieve our research objectives and no changes were made to the data before data analysis. Data were analyzed using the Excel and SPSS software. Number of household members, number of sample households, and number of sample member's participants are shown in Table 1. The IES questionnaire consists of items on the demographic characteristics of household members, place of residence and household properties, non-food and food (including healthcare) expenditures, and household income. Depending on the items, the recall periods of income and expenditure data were determined to be previous week, previous month, or last year. It should be noted that the primary data of the current study are collected by the SCI and further analyses and research were conducted by Social Security Research Institute of Iran. In the current study, four indicators were used to measure fair financing, calculated as follows:

− Household financial contribution: The ratio of household payments for healthcare services to household capacity to pay;

− CHE: The ratio of number of households whose total health expenditures are equal to or more than 40% of their capacity to pay to total number of households;

− Prevalence of IHE: The ratio of number of households whose income is lower than poverty line following paying health expenditures to total number of households; and

− FFC: The following formula developed by the WHO was used to estimate the fairness of financing:

$$FFCI = 1 - \sqrt[3]{\frac{\sum_{h=1}^{n} w_h / oopctp_h - oopctp_0 /^3}{\sum w_h}}$$

where,

wh indicates household weighting variable, OOPCTPh represents OOPh/CTPh (h: the household identification code)-Out-of-pocket divided by capacity to pay.

FFC varies from 0 to 1; the closer FFC to 1, the fairer health financing system would be.

The study protocol was approved by the Social Security Research Institute (no. 395002092).

Results

According to our findings, the average households size in rural areas was larger than that in urban areas. Households size decreased through the five years of the study. The average household size was 4.03 and 3.66 in 2011 that decreased to

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3.67 and 3.46 in 2015 in rural and urban areas, respectively. As well, during the study period, gross income and expenditure of rural households increased by 102% and 75%, respectively. The corresponding gross income and expenditure of urban households increased by 114% and 99%, respectively.

OOP payment to Households Capacity to Pay

As shown in Table 2, during the study period, OOP payment increased in rural and urban households it by 240% and 280%, respectively. Meanwhile, household capacity to pay also increased by 170% and 200% in rural and urban households, respectively, but the increase of OOP payment was more pronounced. It should be noted that although the HRP increased insurance coverage for both rural and urban households, OOP payment and even its proportion to households capacity to pay continued to increase.

CHEs

During the study, the prevalence of CHE was higher in rural households than in urban ones. The prevalence of CHE in rural and urban areas was reported to be 2.19 and 1.04% in 2011, which increased to 3.69 and 2.39%, respectively, in 2015 (Figure 1). The highest prevalence of CHEs in rural and urban households was reported in 2012 and 2015, respectively, so that in these years 40 per 1000 rural households and 24 per 1000 urban households were faced with CHE. It should be mentioned that after HRP implementation, CHE partly decreased in rural areas but no noticeable change was observed in this indicator in urban areas.

IHE

The prevalence of IHE in rural and urban areas from 2011 to 2015 is illustrated in Figure 2. The IHE showed variation but generally its prevalence in rural areas increased from 1.3% in 2011 to 1.54% in 2015. In urban areas, it increased from 0.36 to 0.49% during this period. After HRP implementation, the IHE decreased in rural population but increased in urban households.

FFC

In both rural and urban populations, the FFC index showed variation. In urban areas, it showed a decreasing trend from 2011 to 2013, but did not change in 2013. In rural households, it also showed a decreasing trend but started to increase in 2015 (Figure 3). The average FFC in rural and urban households was obtained 0.822 and 0.844, respectively.

Table 1. Study population and samples

Year	Residency	No. of households (Total)	No. of households (Sample)	Sample size	Study population
2011	Rural	5,740,884	19,786	79,738	148,279
	Urban	15,418,149	18,727	68,541	
2012	Rural	5,622,157	19,657	76,859	143,770
	Urban	16,135,179	18,535	66,911	
2013	Rural	6,009,368	19,436	73,274	138,976
	Urban	16,627,656	18,880	65,702	
2014	Rural	6,143,612	19,390	72,325	137,667
	Urban	17,232,401	18,885	65,342	
2015	Rural	6,277,853	19,381	71,128	136,422
	Urban	17,837,157	18,871	65,294	

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Table 2. Out-of-pocket payment value and its ratio to household capacity to pay

Year	Residency	Capacity to pay (Rial)	Out out-of-pocket payment (OPP)	OOP to households capacity to pay	Households without insurance coverage (%)
2011	Rural	60,711,470	4,023,587	0.066	6.7
	Urban	109,490,676	6,225,431	0.057	17.4
2012	Rural	75,877,757	5,214,002	0.069	6.3
	Urban	133,758,657	7,819,824	0.058	16.3
2013	Rural	89,038,291	8,554,787	0.096	6.3
	Urban	168,244,380	13,099,019	0.078	15.8
2014	Rural	98,620,710	8,818,190	0.089	6.4
	Urban	195,497,292	14,937,425	0.076	15.7
2015	Rural	106,170,892	9,493,972	0.089	5.1
	Urban	219,461,389	17,663,760	0.080	10.7

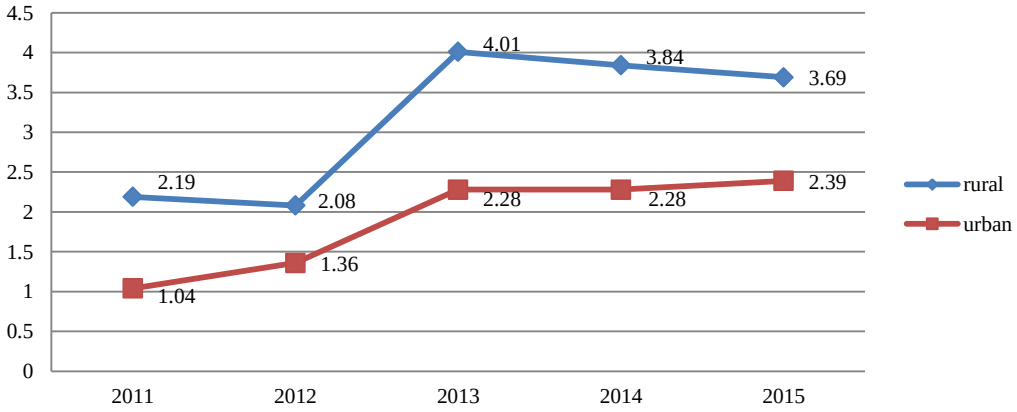

Figure 1. Percentage of households facing catastrophic healthcare expenditures

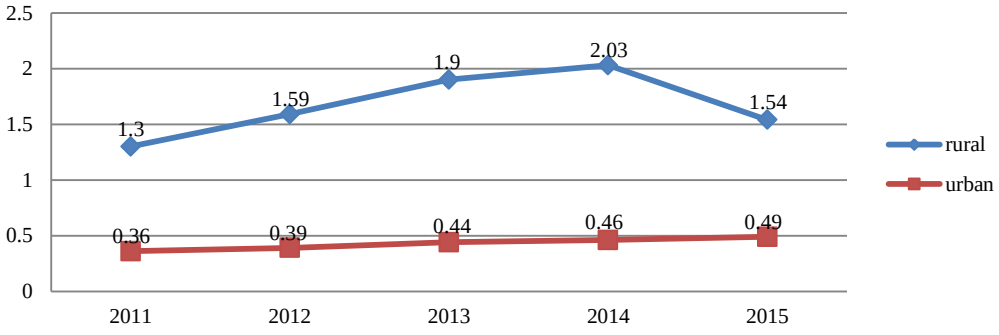

Figure 2. Percentage of households suffering from impoverishing healthcare expenditures

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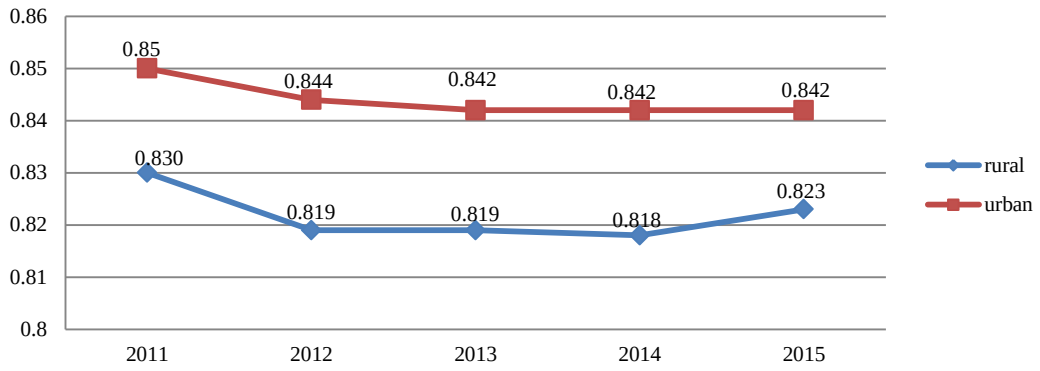

Figure 3. Fair financial contribution index

Discussion

The current study used different indicators to measure the degree of financing fairness in Iranian healthcare system in a 5-year period (2011-2015). Although a comprehensive reform, so-called HRP, has recently been implemented in Iran, the findings show that no significant improvement has yet been achieved and even some financing indicators were deteriorated.

The higher the OOP payment, the lower the equity in financing would be, which can lead to impoverishment in the households with low capacity to pay (14, 29). In the current study we calculated household OOP payment and then compared its trend with capacity to pay in Iranian households.

The findings show that during the study period OOP payment was on rise and its increase exceeded household capacity to pay. Therefore, it seems that the HRP, aimed mainly at reducing OOP payment, has not yet been successful in decreasing household healthcare expenditures.

Although the HRP includes a package to reduce the OOP payment of hospitalized patients covered by health insurance in hospitals affiliated to the Ministry of Health and Medical Education (MoHME) to maximally 6% for urban households and 3% for rural residents (7, 8), and also to cover all individuals not covered by health insurance free, the findings of the current study show that the HRP was not successful in decreasing OOP payment. Being incorporated into the HRP, the increase of healthcare tariffs can be one of the main reasons for this failure (7, 30). Other reasons may include narrow focus of the HRP on hospitals affiliated to the MoHME and ignoring outpatient visits and private sector services (6). Meanwhile, some studies have shown that the HRP has increased utilization of inpatient services (8). It is therefore likely that increased health expenditure is due to increased demand resulting from lower copayments for inpatient services in hospitals affiliated to the MoHME.

Another important index to evaluate fairness of financing is CHE. In this regard, the results of the current study show that in all covered years the CHE was higher in rural population than in urban population and at the end of the study period, in both populations the CHE was deteriorated. After HRP implementation, the CHE decreased in rural households but continued to increase in urban households. Higher CHE can mean that people have to cut down on necessities such as food and clothing, or are unable to pay for their children's education (16, 31). CHE reflects the financial burden imposed on families and the financial barriers that reduce their access to healthcare services. Actually, it provides insight into the level of financial protection that the health system provides for the citizens (32). A number of studies have investigated CHE in Iranian healthcare system. For example, Alizadeh et al. (2006) investigated the CHE by using IES in 2002; they found that 3.9% of households were faced with CHEs, which is consistent with our findings (33). A systematic review on studies related to the CHE

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(from 1995 to 2015) showed that, the average CHE was 3.91 (range; 1.97-24%) (34).

The IHE is another indicator included in the current study. Our findings show that the IHE varied throughout the study period, but at the end of the period, it increased in both rural and urban households and was higher in rural areas. Then, the impact of HRP was more pronounced on rural household's health financing indicators. Another study carried out in 2015 showed that IHE was higher in rural areas (35). Some studies conducted in other countries are consistent with findings of the current study (36, 37). Another reason can be the comparatively lower per capita income and therefore lower capacity to pay in rural households. Our findings show that urban household capacity to pay is twice higher than that of rural households. Lack of adequate health insurance coverage is an important reason for comparatively higher IHE in rural areas (36, 38).

Finally, the trend of FFC shows that during the past 5-years health financing has shown variations, but in general it can be argued that this indicator has declined. The decline in FFC means that equity in health financing has worsened. During the last year of the study the FFC was improved in rural areas that can be due to improved access to inpatient healthcare services. The average FFC of rural and urban households was obtained 0.822 and 0.844, respectively. Alizadeh et al. (2006) also reported an FFC of 0.844 (33).

Conclusion

Due to limited access to data, comprehensive and reliable investigation of the HRP, particularly its impacts of different aspects of the Iranian healthcare system, has so far been faced with certain difficulties and challenges. The current study was aimed to investigate financing of the Iranian healthcare system by examining the trend of four indicators in a 5-year period. According to our findings, HRP did not have any significant effect on the decrease of patient OOP payment. We also observed that fairness of financing has been even deteriorated for both rural and urban households, which requires directing special attention by policy-makers. Our study of variations in the trend of these indicators shows that success of HRP depends on various factors including economic and social that must be taken into account by policy makers when making decisions about its implementation. Undoubtedly, such studies can highlight the necessity to revise some aspects of the HRP and strengthen community perspective in health policymakings. In other words, health policymaking should be considered as a part of the wider social welfare system of the country and in line with its goals.

Study limitations

1- The current study results are based on the data of the IES of the SCI in which household healthcare expenditures are estimated according to the reports of households that potentially suffer from recall bias and bias due to infrequent payments.

2- This survey did not include indirect payments for healthcare services in calculating patient OOP payments.

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Conflicts of interest

The authors declare that they have no conflict of interests.

Authors' contributions

Ghaffari Sh, Fazaeli AA, and Toyserkanmanesh R designed research; Ghaffari Sh, Fazaeli AA, and Khodamoradi A conducted research; Khodamoradi A, Toyserkanmanesh R, Bigdeli F analyzed data; Khodamoradi A, Bigdeli F, Ghaffari Sh, Fazaeli AA, Toyserkanmanesh R, and Rasi V drafted the manuscript. Bigdeli F had primary responsibility for final content. All authors read and approved the final manuscript.

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