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Review Article

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So Near, So Far: Four Decades of Health Policy Reforms in Iran, Achievements and Challenges

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Abstract

The Islamic revolution of 1979 in Iran emphasized social justice as a pillar for development. The fundamental steps towards universal equitable access to high-quality healthcare services began with the creation of the Ministry of Health and Medical Education (MoHME) and the nationwide establishment of primary healthcare (PHC) network in 1985. Now, in the 40th anniversary of the Islamic revolution, the history of health system development in Iran is characterized by constant policy changes; i.e. structural and procedural transformations. Ever since and despite the imposed 8-year war with Iraq and continuous unfair sanctions against the country, noticeable progress has been achieved in the health system that has led to better population health including among others: self-sufficiency in training health workforce; advances in public health and medical sciences; establishment and expansion of health facilities within the hard-to-reach areas aiming to enhance equity in access to needed healthcare services; domestic production of most medicines and medical equipment; and meaningful expansion of health insurance coverage. These have led to admirable improvement in public health indicators; i.e. maternal mortality, child mortality, life expectancy, and vaccination coverage. Despite achievements, there still remain challenges in health financing, protecting the public against high expenditure of medical care, establishment of referral system and rationalization of service utilization, provision of high quality healthcare services to all in need, and conflict of interest in health policy making, all of which may hinder the goal to reach "universal health coverage", identified as the main goal of the health system in Iran by 2025. Recently, the MoHME began structural and functional reforms to boost societal efforts and enhance intersectoral collaboration to address social determinants of health, improve actions for prevention and control of non-communicable diseases and other social health problems. Drawing upon the World Health Organization (WHO)'s "six building blocks" model, this article presents an analytical description of the main health policy reforms during the last four decades after the Islamic revolution in Iran, divided by each decade. Learning from the historical reforms will create, we envisage, a better understanding of health system developments, its advances and challenges, which might in turn contribute to better evidence-informed policy making and sustainable health development in the country, and perhaps beyond.

Keywords: Health system framework, Health System, Health Policy, Reform, Iran, Universal Health Coverage

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Introduction

To respond to the emerging challenges of an evolving healthcare system, it is pivotal to develop and implement innovative and evidence-informed initiatives, for instance through learning from global best practices and tailoring them into the specific context.[1,2] The current challenges of public health, including epidemiologic and demographic transitions, fast growing urbanization, e.g. increased migration from villages to cities, occupational changes, and people's health literacy, plus significant lifestyle modifications have all led to huge burden of non-communicable diseases (NCDs) and changing patterns of mortality, morbidity and population dynamics.[3,4] These challenges are numerous and too complex to be overcome through business-as-usual approaches.[5,6] To achieve sustainable health development, bold policy reforms are essential in core components of the health system, i.e. governance, delivery of healthcare and financing.[5,7]

After the Islamic revolution of 1979, the revised constitution and all upstream laws emphasized health and equitable distribution of healthcare services as basic rights for all citizens of Iran.[8] Ever since and to address the ever-increasing and emerging societal needs and healthcare demands for prevention, treatment, diagnostic tests, rehabilitation services, and also to boost drug supply, hospital beds, health facilities, ambulatory services and

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workforce, various reforms have been implemented within the health system of Iran.[9] This article narrates an analytical, sequential and chronological exploration of key historical events, achievements and challenges within the Iranian health system during the past four decades.

Methods

We conducted a comprehensive document review and synthesized data within the historical context. We also identified and read all publications regarding the health policy interventions in Iran for the period of concern. A chronological thematic content analysis was used to describe and interpret the major health policy initiatives during the past four decades in Iran. We identified major health reforms and studied the way they were formulated, became agenda, and implemented. Data were collected from various sources, i.e. the parliament, the MoHME, the Iranian Health Insurance Organization (IHIO), the Social Security Organization (SSO), the Iranian Academy of Medical Sciences (AMS), plus newspaper articles, journal articles, and social media – the latter was helpful in extracting experts' opinions regarding the hot topics in the health policy arena in Iran, particularly in the course of the last few years.

To begin, we asked some established experts and scholars to provide us with a list of policy reforms and main policy interventions for the period of our concern. We then attempted to locate all relevant documents for the reforms that were identified during the first step.

We then used thematic content analysis (inductive and deductive) for analyzing data. We utilized a predefined conceptual framework (WHO' six core components or "building blocks") including service delivery, health workforce, health information systems (HISs), access to essential medicines, financing, and leadership/governance[7] in deductive data analysis, while we also inductively accommodated the emerging themes. Finally, we described and interpreted the past events, achievements and challenges to help inform decisions to be made in the future.

Results

Health System in Iran: A Brief Overview

Table 1 summarizes the main demographic characteristics in Iran.

Table 2 presents selected main health indicators in Iran and their trends during the last four decades.

Leadership/Governance

There are three main hierarchical leadership levels in the health system of Iran, each with its own specific leadership and governance functions. There are two multisectoral bodies designated for health affairs. The Supreme Council for Health and Food products Security (SCHFS) functions to ensure inter-sectoral collaboration and decision making for health,[9] while the Supreme Council for Health Insurance (SCHI) is mainly tasked with health benefit package design.[10] Table 3 describes the membership of two supreme councils affiliated to the MoHME.

By law, the MoHME acts as the steward of the health system, makes decisions about various functions including public health, curative affairs, medical research and education, food and drug, among others, and reaches out to the entire population for healthcare services[11] through currently 67 medical universities across 31 provinces in Iran. After the establishment of the MoHME in 1985, Iran is among the few countries with integrated medical education with the healthcare services.[12,13] The MoHME administers the universities' board of trustees through its secretaries. The deputies of the MoHME interact directly with the vice-chancellors of medical universities as their local counterparts (Figure 1).

The Board of Trustees at the medical universities is the second administrative level. The medical universities are autonomous entities with semi-autonomous control over the health sector for their designated regions.[14] The university hospitals (teaching and non-teaching) provide specialized care to citizens in the major cities, some of them have become autonomous during the last 15 years. Public hospitals work under the supervision of the district health network. At the third level, there are

Table 1. Main Demographic Indicators in Iran (1996–2016)

Demographic indicators	1986	1996	2006	2016
Total population	49445010	60055488	70495782	79926270
Male population	25280961	30515159	35866362	40498442
Female population	24164049	29540329	34629420	39427828
Number of households	9628399	12359295	17501771	24196035
Sex ratio (F/M)	105	103	104	103
Family size	5.1	4.8	4	3.3
Population density	30.3	36.4	42.7	49.1
Urban population (%)	26844561 (54.3%)	61.3	48259964 (68.5%)	74
Rural population (%)	22349351 (45 %)	38	22131101 (31%)	25.9
Literacy rate (%)	61.8	79.5	84.6	87.6

Source: Statistics Center of Iran (SCI).

Table 2. Iran's Selected Health Indicators (1979-2019)

Indicator	1979	1984	1997	2000	2010	2017
Infant mortality rate (IMR) per 1000 live births	81.8	51	28	28.6	17.6	9.48
Under 5 mortality rate per 1000 live births	154	60	35	36	19.6	15.5
Maternal mortality rate (MMR) per 100 000 live births	237	140	37.4	37	27	19
Life expectancy, male (y)	57	67.7	70.7	73	72.7	75.47
Life expectancy, female (y)	58	71	73.4	71	75.6	79.36
Population with access to PHC in rural areas (%)	8	20	80	90	94	99
Annual population growth rate (%)	3.7	3.2	1.4	1.34	1.29	1.24
Hospital beds per 1000 population	0.005	1.50	1.58	1.64	1.68	1.72
Overall bed occupancy rate in public hospitals (days)	—	48	51	58	68	75
Mean length of stay in public hospitals (days)	—	—	3.3	3.6	3.07	2.78
Population/physician ratio	—	2915	1078	955	930	900
Access to improved water resources (%)	51	71	83	95	97	99

Sources: The MoHME's official data.

Table 3. Supreme Councils Affiliated to the MoHME and Their Members

Council's name	Members
Supreme Council for Health and Food Security (SCHFS)	President (Chair) Minister of Health and Medical Education (Secretary) Vice President the Management and Planning Organization Minister of Education Minister of Interior Minister of Agriculture Minister of Industry, Mining and Trade Minister of Economic Affairs and Finance Minister of Cooperatives, Labor, and Social Welfare Head of the Environmental Protection Organization Head of National Broadcasting Organization Head of General Medical Council Head of Armed Forces Medical Services Insurance Organization
Supreme Council for Health Insurance (SCHI)	Minister of Health and Medical Education (Chair) Minister of Cooperatives, Labor, and Social Welfare Minister of Economic Affairs and Finance Vice president for the Management and Planning Organization Head of the MoHME's Drug and Food Organization (FDO) Head of General Medical Council Head of Social Security Organization (SSO) Head of the Iran Health Insurance Organization (IHIO) Head of Armed Forces Medical Services Insurance Organization Head of Imam Khomeini Relief Foundation's Health Insurance Representatives from "Commission for Health" and "Commission for Planning, Budgeting and Calculation", the Parliament

health centers and health houses, whose focus is on public health and primary healthcare (PHC) services. They act as the gateway through which people are referred to the secondary and tertiary health levels. Figure 1 provides an overview of Iran's health system structure.

Service Delivery

Healthcare services are delivered through three main ways in Iran: the public-government system, the private sector, and non-governmental/charity organizations. The world health report of 2000, ranked Iran 58 in healthcare and 93 in health-system performance.[15] Population health indicators have all improved over the last four decades in Iran (Table 1). The key reform at the heart of this progress has been the establishment of an extensive PHC Network since 1985. As a result, child and maternal mortality indicators have improved significantly, and life expectancy at birth has been rising remarkably and continuously.[16] The public sector owns 80% of all hospital beds and plays a main role in providing inpatient services, whilst in contrast, the private sector is the dominant provider of outpatient services, including auxiliary and diagnostic care. A small proportion of healthcare is provided by governmental bodies, for instance Defense Ministry, Petroleum Ministry and SSO through their own hospitals for serving their employees. Table 4 presents the number of hospitals in Iran.

Currently, there are over 18 000 health houses, recruiting about 32 000 *Behvarzes* (local healthcare workers with two years of training) that provide basic PHC services (vaccination, screening, mother and childcare, etc,) to more than 95% of rural population in Iran. In 2018, the number of health posts, rural and urban health centers increased to 1666, 2407 and 2186, respectively. The PHC

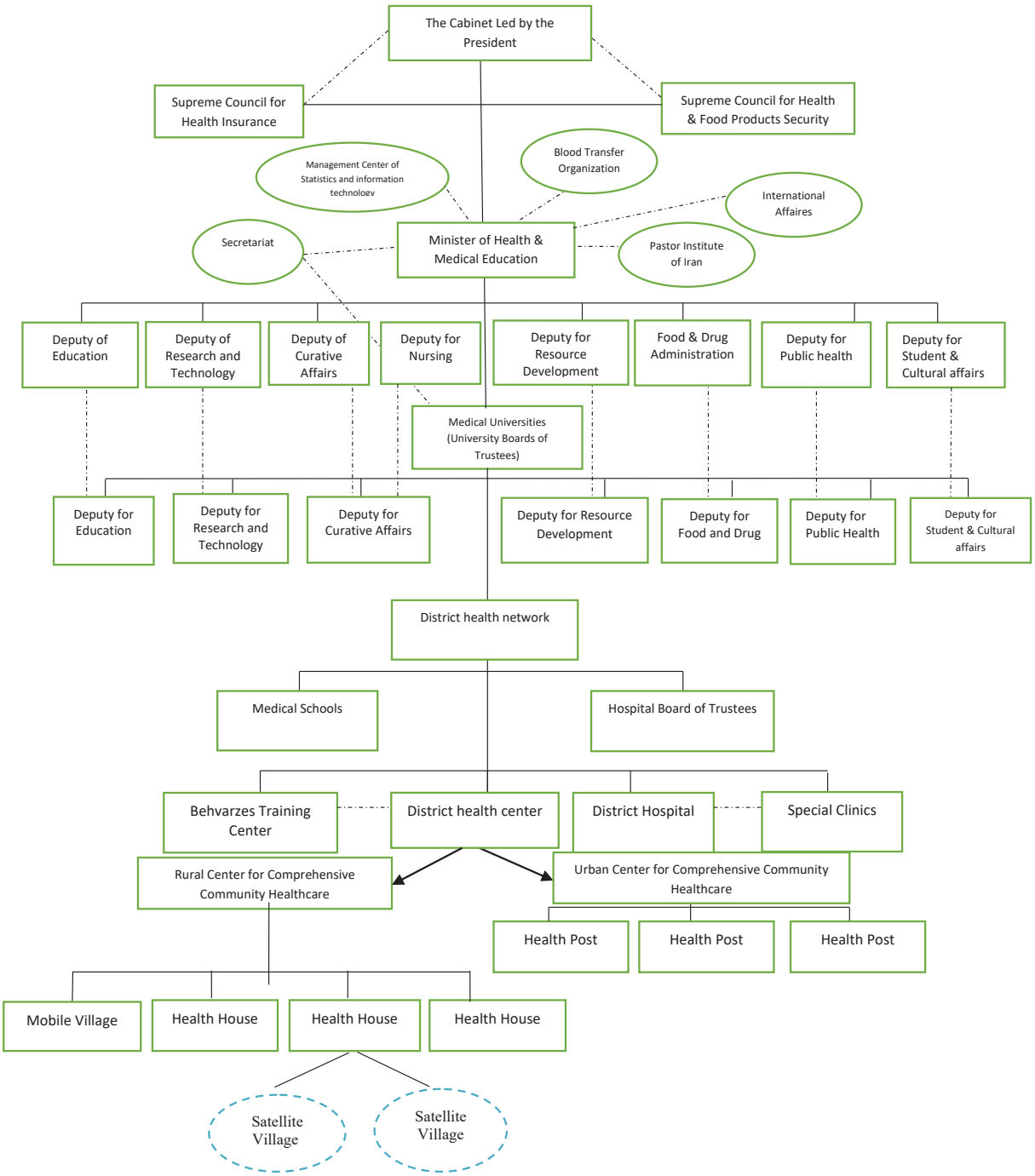


Figure 1. Organizational Structure of the Health System in Iran.

network has been crucial in the expansion of vaccination coverage (i.e. BCG, DTP3, Pol 3, Hep B3, and Measles) to the peripheral and hard to reach areas in Iran.[17]

Health Workforce

To overcome serious shortages in human resources for health (HRH), the medical education was integrated into healthcare services to create the MoHME in 1985.[13,18] Although it is not still optimal, particularly in some medical specialties within remote and deprived areas, the strategy has been successful to produce the ever-increasing number of required HRH across the country. In the entire country, there were only 10 schools of medicine in 1979, which in 2019 increased to 67 public medical universities and faculty of medical sciences (some with medical school); including medicine, dentistry, pharmacy, public health, nursing and midwifery, etc; plus 14 medical schools affiliated with the Army and the semi-private Islamic Azad University, all contribute to training medical students in various fields and levels of specialty. Before 1979, only 17

MSc in basic medical programs and two PhD programs were taught in few universities. In 2019, 81 MSc and 61 PhD programs are offered by various universities across the country. There were about 13 000 physicians in 1978 in Iran. The 2014 statistics show significant increase among various HRH in Iran, including 51 416 general physicians, 32,180 specialists, 114 681 nurses, 33 208 midwives, 25 155 dentists, 15 615 pharmacists, 31,431 health clinicians, 35 000 *Behvarzes*, and 30,450 other paramedical staff, whose impact on health indicators is evident.[17,19,20] In 2015, the MoHME created the comprehensive roadmap of the required HRH by 2025, which is being used to regulate intake and distribution of healthcare personnel across the nation. It is also worth mentioning that an evolutionary and innovative plan for the medical education using forecasting approach was formulated in 2014. The status of HRH in Iran is shown in Table 4.

Health Information Systems

There is no integrated electronic health record (EHR) system in Iran, nor exists a microarchitecture of e-health in the country.[21] The MoHME hosts the Office of Statistics and Information Technology (OSIT), whose responsibility is creating an integrated HIS and enabling the health system to use data and statistics for making evidence-informed decisions as well as providing better healthcare.[22] The office has regulated and monitored, rather passively, the development and procurement of some parallel e-health solutions, for instance the Iranian Integrated Health Portal, the so-called SIB®, where 72 out of 81 million people are registered and their demographic and health administration data is recorded.

In some hospitals, some HIS solutions are in partial use, while no two hospitals are interconnected. Since 2005 when the family physician (FP) plan began in rural areas and small cities, several HISs have been introduced to establish electronic medical records, many of which were put aside due to technical and structural problems and even personal preferences. Although SIB is the most commonly EHR portal within primary care settings, there are many challenges to its integration with secondary and tertiary care and the establishment of meaningful referral system. Moreover, many healthcare workers are not effectively trained to make the system work for better patient care.

Mobile health and telehealth are in their infancy period of usage. Further, there are two main registries for mortality data in Iran: the OSIT within the MoHME and the civil registry under the supervision of the Ministry of Interior. The only official source for live births data is the civil registry.[23] Nonetheless, the MoHME receives electronic data of all public healthcare settings through the medical universities.

Table 4. Number of Teaching and Non-teaching Hospitals and Their Staff in Iran (2018)

Organization	No of Hospitals	Beds	Number of Staff
The universities of medical sciences (UMS) affiliated to the MoHME	749	90 003	261 497
The private sector	166	16 626	70 966
The SSO	73	10 853	32 984
The Military	32	2190	2559
Charity organizations	37	4198	15 732
The Ministry of Education	1	62	351
Islamic Revolutionary Guard Corps	17	2483	1060
The Iranian National Oil Corporation (NIOC)	9	967	5195
The Judicial System of Iran	8	845	3274
Foundation of Martyrs and Veterans Affairs	10	902	2027
Islamic Azad University	6	556	1515
Banks	1	233	1148
Others	8	994	3815
Total	1117	130 912	402 123

Access to Essential Medicines

The modern pharmaceutical industry was launched in 1920 along with foundation of the Pasteur Institute of Iran. The first parliamentary law for governing food and medicines was passed in 1955.[24] The value of pharmaceutical industry is about US$4 billion, 95% of its volume and 65% of its value is produced locally.[24] The Food and Drug Organization (FDO) is the quasi-dependent body under the MoHME and is responsible for regulation, procurement and distribution of medicines, cosmetics and food nationwide.[25] The FDO is also responsible for providing access to sufficient quantities of safe, effective and high-quality medicines that are affordable for the entire population.[24,25] Since the revolution in 1979, Iran has adopted a full generic-based National Drug Policy (NDP), with local production of essential drugs and vaccines. Per capita expenditure of medicines was US$2.28 in 1997, which reached US$34.43 in 2010, experiencing an annual average growth of 10.8%.[26] Although over 92% of the population use insurance to reimburse their drug expenses, the pharmaceutical production/import are substantially subsidized to enhance affordability.

There are about 186 local pharmaceutical manufacturers (compare to the beginning of the revolution when the pharmaceutical industry was really small), 232 importers, 50 distributors and their wholesalers [the top five distributors hold more than 49.26% of market share (value), 42.19% (volume)] and over 12,000 pharmacies. In terms of pharmaceutical self-sufficiency, although a major share of drugs is produced domestically, most drugs for complicated diseases are imported. Worse still, the ongoing unfair and imposed political and economic sanctions have hindered access to imported drugs and vaccines.

Financing & Payment Systems

Health financing in Iran is a mixed system, predominantly funded through the public budget, health insurance funds and out-of-pocket (OOP) payments. The IHIO, currently affiliated with the MoHME, along with the SSO, affiliated with the Ministry of Cooperation, Welfare and Social Security (MoCWSL) are the main providers of public health insurance in Iran.[22] Total health expenditure (THE) was 1 140 000 billion IR Rial (US$ 36 billion) in 2016. Mostly provided by the government, the proportion of public financing has gradually increased from 430 525 691 (US$10 billion) in 2014 to 622 682 873 million IR Rial (US$15 billion), (from 3.75% to 4.42% of GDP) in 2016. Medical universities, the PHC, FP program, and public hospitals are publicly funded through the MoHME budget. The government also provides a great deal of financial support for free health insurance coverage for rural residents and the self-employed. Different financial sources including the public budget, social health insurance funds, and OOP accounted for 23.5, 30.5 and 35.5 percent of THEs in 2016.

Until 1994, when the parliament approved the Medical Insurance Act, OOP was one of the main sources of financing in the health system. Until 2014, when health transformation plan (HTP) began, OOP reached about 54% of THE. Although OOP decreased to 40.6% in 2014 (Figure 2), it is still far from the identified target of below 30%, as endorsed by the fourth national development plan of Iran.[27] Sustainable health financing still remains a big challenge for the health system in Iran.[27] More tailored sub-national plans are essential to improve health financing system and reduce the provincial inequality in Iran. Strengthening prepaid-based mechanisms, equitable distribution of financial resources and the health insurance system that is adjusted to the deprivation index are among strategies to overcome the challenge.

The providers' payment system is significantly based on "fee for service", both at public and private healthcare sectors. The low quality of insurance performance and ineffective strategic purchasing mechanisms have led to remarkable overuse and unnecessary medical interventions.[28,29]

First decade after the Islamic revolution (1979–1989)

The Organizational Changes of Health System in Iran

The first main structural reform in Iran's health system after the Islamic revolution of 1979 was formation of the MoHME in 1985. Establishment of the Ministry of Wellbeing and Welfare (1941) and provincial health organizations (1994) were the first serious attempts towards organizing healthcare system with degrees of administrative and financial authority.[12] In 1931, the first health workers training center (Behdari Training Center) was established in Mashhad city, northeast Iran, whose aim was to educate health staff to serve in rural areas across the country.

In the 1980s, severe shortages of health workforce led to hiring thousands of foreign physicians, whose language barrier and overall low-quality performance resulted in users' dissatisfaction, as well as many cultural and social challenges. The government assigned a group of academics, representatives from the ministry of health (MoH) at the time (the MoHME was not established yet), and experts from the ministry of wellbeing, along with some medical students who were supported by senior academic from all over the country, to assess the quality of medical education in Iran. The main identified challenges were: high disparities in the educational programs among medical schools, recruitment of most HRH graduates by the private sector and health facilities that were not affiliated with the MoH (as called at that time), and weak association between medical education and the community. These findings initiated substantial debate that eventually led to removing all medical schools that were under the Ministry of Higher Education to the Ministry of Wellbeing, and establishing the MoHME in 1985. As a result, until now, Iran has been among few countries to merge medical education into health services provision.

The early successful experiences of integration of medical education into the health services delivery system

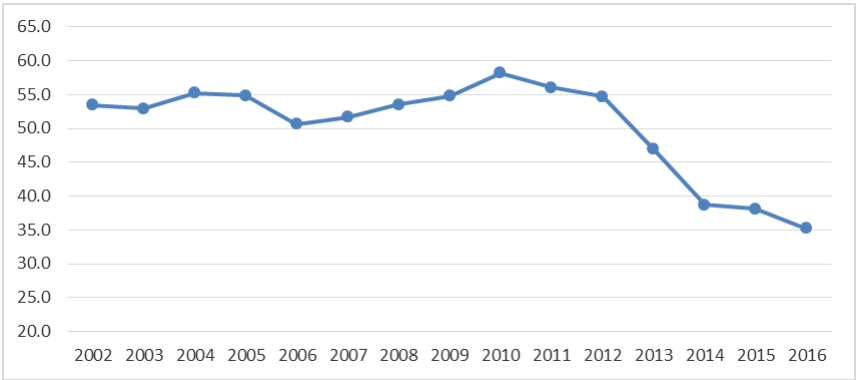


Figure 2. Out-of-Pocket Health Spending as Percentage of Total Health Expenditure (2002–2016).

was a policy intervention which only occurred in Iran.[13,30] Such integration was a notable turning point in the structure of health system in Iran that shifted direction towards community-oriented and need-based healthcare provision.[30] The Edinburgh Declaration in 1993, the Global Health Education Conference in 1993, and the Al Ain's Conference in 1995 all endorsed the formation of the Iranian MoHME as a globally unique reform to bring these advantages to the health system.

Ever since it was established, the MoHME was mandated to create at least one medical university within each province to represent the MoHME at the provincial level, i.e. planning and management of all activities related to health including education, research, and health services provision. By integrating medical education into health service, the MoHME became responsible for training high-quality HRH of various disciplines, who stay close to where people live, and are empowered to address all health issues related to the community, while are creative in applying and devising new methods of medical education.[31,32] The MoHME was mandated to lead a gradual movement towards improving equity and quality of care, while ensuring access to needed cost-effectiveness healthcare services across the nation. More than 30 years on and for the population number of 2.3 folds compared to the outset of the revolution in 1979, a significantly higher number of various HRH have graduated and been employed in Iran, while almost close to zero patients need to seek healthcare abroad and no foreign physician is required to practice even in remote areas of Iran any more.[33]

Despite achievements, there still remain various challenges and problems with the merger reform. Yet, and contrary to its concept, comprehensive integration has not occurred in all educational, healthcare and management endeavors across the entire health system. Further, scholars are divided when comparing to balance the advantages and disadvantages of this reform. The debate continues whether the integration has led to reducing quality of medical education and provision of healthcare services within teaching hospitals.[32] Although noticeable growth has been achieved in the number of various HRH across the nation, fair and needed-based distribution of HRH, particularly within remote and deprived areas, there still remains a big challenge.[34,35] Furthermore, a notable proportion of HRH leave the country hoping for better life elsewhere.[36]

The second main structural reform was the establishment of PHC network in 1985, which led to a series of fundamental initiatives afterwards.[37] In 1972, well before the revolution and the Alma Ata Declaration of 1978 on PHC, in collaboration with the WHO, a joint project was carried out by the Ministry of Wellbeing and the School of Public Health-Tehran University (now Tehran University of Medical Sciences) in West Azerbijan province. The aim was creating a suitable pathway to provide public health services to the community members within rural and remote areas by non-physician local health workers. This pilot initiative led to training lay and local community health workers, so-called "*Behvarz*" to serve people in premises called "health houses" within the villages. In March 1985, the parliament approved a bill to allow the newly-established MoHME to universally expand the PHC network all over the country.[37,38] The main focus of PHC network was mother and child care plus tackling communicable disease, which were the main causes of disability and death at that time.[39] Further, *Behvarz* Training Centers were established in all provinces, whose aims were to train and empower health workers to address the populations' needs at the community levels.

More than three decades on, the Iranian PHC network has been praised as an effective and coordinated policy, which has contributed to fairer distribution of healthcare resources and services across the country, as well as improving public health indicators, i.e. life expectancy at birth, infant and child mortality rate, and maternity mortality rate, particularly in rural and remote areas (see Table 1).[40-42] Despite achievements, especially in child and maternal health indicators, the PHC network remained fragile in the cities and did not help establish the FP program and referral system universally and meaningfully.[17,39,43,44] In addition, PHC was not suitable and competent to address the emerging burden of NCDs[38] and other evolving social problems; an important aspect that has been recently prioritized in current PHC reforms.

Revising the Structure of Healthcare Service Delivery

While the MoHME began to boost training of required HRH, including doctors, and encouraged them to stay and work in deprived areas, the fee-for-service payment method was introduced to public health facilities and hospitals.[45] The policy aimed to increase the productivity of public health sector and improve patients' access to the healthcare services they needed. Still running, the policy has remained controversial in achieving the expected goals.[46]

In 1987, special clinics were formed within the medical education centers affiliated with the MoHME. The initiative aimed to encourage medical groups to work in the public sector instead of private settings. Despite some achievements, the policy has not resolved the inefficiency of healthcare services within the public sector. To curb healthcare expenditures and enhance public satisfaction, in 1983, the MoHME revised the medical tariffs on the basis of an American model, so-called the California book. The method failed to fully consider the relative value of healthcare services and caused new challenges. Defining realistic medical tariffs has been one of the main challenges in the Iranian health system that has led to healthcare providers' complaints and dissatisfaction.[45,47,48]

In 1988, the parliament passed the "Board of Trustees for Universities and Institutes of Higher Education and Research" Act.[49] The aim was strengthening the universities of medical sciences (UMSs) governance in resolving the myriads of institutional management problems.[50,51] The UMSs boards began their work officially in 1992 and remained partially-active during their first decade of existence, due to intra- and extra-organizational ignorance. In 1993, the Act resulted in substantial structural transformation in service delivery through the establishment of the universities of medical sciences and health services in each province. The Act recognized incentivizing the HRH to work in the public sector, and led to some initiatives for compensation of expensive healthcare services in hospital-based settings.[49] Although the Boards' performance has improved by now, it is still far from their assigned missions.[49] Article 49 of the Fourth 5-Year National Development Plan (NDP) (2005-2010) and Article 20 of the Fifth NDP (2010-2015) also reinforced the prominent role of the Boards in moving towards more autonomous UMSs.[49]

All the three above-mentioned reforms aimed to change the structure of healthcare provision towards achieving health for all. Despite its global long history, for instance in Harvard University and the University of Edinburgh, the board of trustees' policy was somewhat a new initiative for the UMSs in Iran. In 2002, the Board of Trustees' Act was approved, mandating the Ministry of Science, Research and Technology and the MoHME to establish the Board of Trustees' within all universities and higher educational and research institutes nationwide, whose main responsibilities were to determine the universities' vision, approve the executive policies and procedures for the implementation of such goals, and review and approve the university's operational and capital budget.[52]

Second Decade after the Islamic Revolution (1990–1999)

Focus on Improving Financial Accessibility of Healthcare Services

In 1994, the parliament passed the "Universal Health Insurance (UHI) Act" that led to the Medical Services Insurance Organization (MSIO) and the SCHI to be established. The UHI Act mandated the government to provide basic health insurance to eligible citizens within a maximum of a five-year period, particularly to uninsured groups, i.e. villagers and self-employed individuals in urban areas.

The UHI also mandated the government to establish the SCHI within the MoHME, whose aim was to extend health insurance coverage, regulate policies and decisions about the benefit packages, premium rates, and medical tariffs; supervise the quality of health insurance performance; and coordinate and evaluate the quantitative and qualitative aspects of health insurance system at the national level, to ensure that all insurance schemes operated under the same regulations and operational instructions. Although their sources of finance were different, the benefit packages and their provision became the same. Nevertheless, the UHI failed to: provide sustainable insurance coverage for rural residents and urban self-employees; set the premium for rural residents and devise strategies to collect premiums regularly from villagers and self-employees. As a result, the government was forced to cover rural residents and urban self-employees free of charge.

Changes in Public Hospitals Administration

The UHI endorsed hospital autonomy, whose bill was simultaneously enacted with the UHI bill in 1995. The bill mandated hospitals to manage their financial resources and provide high-quality services without any support from the public budget.[46] Although hospitals were allowed to spend their revenue as they planned, the implementation of hospitals' autonomy law led to decreased provision of free healthcare to patients. To compensate their reduced financial support by the government, the autonomous hospitals began to reimburse their employees' salaries through demanding and imposing higher medical tariffs on patients. Successful implementation of hospitals' autonomy required other prerequisites such as setting realistic medical tariffs and higher per capita premiums, so the participating hospitals could operate and be financially sustained in the long run.[45] The UHI ended in significant OOP increase, so hospitals' autonomy was abolished eventually.

Until 1994, over 60% of Iran's population had no health insurance. Changing public hospitals administration in line with this reform were the main policy interventions that lasted until 2003. Since 1994, a few selected public teaching hospitals began to move towards autonomous administration, whose aims were to enhance their control over their own expenditures and revenues and become more efficient ultimately. The initiative did not last for long and was replaced with another policy known as "modern administration of hospitals", which introduced a new payment method.[53] The new payment method did not succeed as expected, which forced the MoHME to implement another administrative reform: "Board of Trustees in hospitals" in 2005. This policy did not reach its targets to revise the administrative and economic structure of hospitals.[46] Many experts believe that university hospitals are not administered as board of trustees and that these reforms have not truly materialized.[46,53] In 2017, the MoHME issued a new set of regulations called the "independent hospitals", aiming to increase hospitals' revenues from non-governmental sources. Yet, many scholars argue that the policy is just the revival of hospital autonomy policy and will be likely to witness the same bitter past experiences,[46] without having any significant effect on hospitals' efficiency.

Third Decade after the Islamic Revolution (2000–2009)

Focus on Purchaser and Provider Split (PPS)

In 2004, the parliament approved the "Comprehensive Welfare and Social Security System (CWSSS)" Act, and the Ministry of Welfare and Social Security (MoWSS) was established as a result. The main purpose of CWSSS Act was to centralize all social security functions, e.g. health insurance, unemployment, retirement, accidents and basic and supplementary insurance, financial support and empowerment services for the poor within the MoWSS. To strengthen PPS in the health system and promote strategic purchasing, major health insurance funds, i.e. the MSIO, currently called the IHIO, and the SCHI were transferred from the MoHME to the MoWSS (currently the MoCLSW). Despite its desire, the split led to fragmented stewardship that was rooted in chronic conflict of interests between the health insurance funds and the MoHME.[54] The tension continued to the scale that the MoHME pursued to take over the health insurance funds again. Although the social health insurance fund is still under the patronage of the MoCLSW, in 2017, the parliament approved the IHIO to be returned under the MoHME. The decision is in contrast to Mega Policies for Health of 2014, which emphasized PPS and aimed to enhance accountability and equality in provision of high-quality care for all citizens.

Universal Health Insurance

In the course of the last two decades, a number of policy initiatives have been implemented to expand access to healthcare services in Iran. Since 2005, to improve access and quality of care with less financial hardship, the parliament passed a law, by which the MoCLSW, through the IHIO, executed FP program and rural health insurance plan for all residents in rural areas and cities of fewer than 20 000 residents (almost 25 000 000 population), while the MoHME became responsible for establishing a referral system through the FP program.[17] In 2011, the MoHME started to expand the FP program to urban settings, with pilot schemes in two cities.[39] Similar to previous reforms, this program also had its own challenges that hampered materializing all of its goals.[39] Since the referral system has not been meaningfully established, the FP program was implemented in cities with fewer than 100 000 citizens and within designated suburban areas.[43]

In addition, the fourth NDP entitled people who were injured in driving accidents for free treatment in all public and private hospitals. The required budget was supposed to be provided through earmarking 10% of car insurance premiums towards the MoHME. The funds were to compensate the negative externalities of health expenditures of injured people and also to reduce deriving accidents' mortality and morbidity by on time free health service provision. The MoHME was obliged to use this financial source exclusively for providing free healthcare services for the injured patients.[55]

Before 2010, food products safety and drug issues were under the supervision of an office affiliated to the MoHME. In 2010, the MoHME established its quasi-dependent agency, the so-called "Food and Drug Organization" (FDO), whose responsibility was to promote health and improve food safety, monitoring production and distribution of drugs and cosmetics.

The Last Decade after the Islamic Revolution (2010–2018)

The Quest to Achieve Universal Health Coverage

The fragmented health insurance system resulted in substantial inequity in access to health care services among various groups of populations. The disparity in benefit packages was substantial among citizens under different health insurance schemes that suffered inadequate funds or insufficient redistribution of cross-subsidy between the insurance schemes. In 2010, the fifth NDP mandated to merge all existing health insurance funds into the Medical Services Insurance Organization to create a new single health insurance fund, so-called the IHIO. The IHIO was established, but the real merger of health insurance funds to create a sin gle national insurance never materialized.

Since 2014, the MoHME has been implementing the HTP, aiming to reach UHC by 2025. HTP is a comprehensive and multidimensional policy in health promotion, public health, treatment, and education, whose various components aim to enhance financial protection and improve health services quality.[46,53] Funded mainly by targeted subsidies and value added tax (VAT), HTP expanded free basic health insurance to extra 10 million people who had no insurance before; therefore, over 92% of population are now covered by at least one insurance scheme. HTP led OOP to reduce from 47.5% in 2013 to 35%, which is attributed to GDP per capita for health increase from 6.1% in 2013 to 8.13% in 2016.

HTP extended the benefit package coverage to include many expensive drugs and healthcare interventions for hard-to-treat diseases, e.g. cancers and other long-term conditions. Medical tariffs were also significantly increased, while patients' co-payment also decreased, which led to induced demand and overutilization of healthcare services, particularly at public hospitals, both jeopardizing the financial sustainability of HTP eventually.[27,56] Constantly increasing healthcare expenditures caused health insurance funds to face difficulties to reimburse providers on time and the co-payment began to increase again to compensate the gap. HTP can lead to higher OOP payment in the long-term, which in turn is quite the contrary to its early purpose.

To overcome the challenge, the MoHME emphasized again the merger of health insurance funds. In practice, the IHIO moved under the MoHME in early 2017 again and the PPS was abolished.

Emphasizing the Social Determinants of Health

In 2013, a joint guideline was approved by the MoHME and the Ministry of Interior regarding management of health affairs at the provincial level, whose main objectives were to encourage intersectoral collaboration of all non-health organizations and public participation to boost health for all. As a result, the new deputy of social affairs was formed within the MoHME. The secretariat of the SCHFS was moved under the new deputy, and all the UMSs were mandated to establish a deputy of social affairs in their organization. The deputy became responsible for addressing SDH, promoting public participation for health through establishment of National Health Assembly (NHA), approved by the SCHFS, and strengthening the required structures to enhance charity financial support for health[57]. Nevertheless, the deputy of social affairs was abolished in early 2019, and its responsibilities were distributed among other departments within the MoHME. Table 5 summarizes main reforms and their reasons after the establishment of the MoHME in Iran.

Discussion

Despite several upstream policies and laws on health policy reforms, the Iranian health system is still facing serious challenges, i.e. escalating healthcare expenditures, unsustainable fiscal space, unequal access to health services among different groups of population, high OOP payments in the private sector, low financial support by public health insurance funds, and rapid and threatening increase of NCDs. Further, delays in hospitals reimbursements and providers' payment have led to disappointment among providers.

Despite its achievements, e.g. the merger of medical education into service and establishment of the MoHME, which has created a potentially good platform for knowledge translation and evidence-informed policy-making, the health system in Iran has been suffering from lack of defined philosophy, transparent ethical approach to the health system, and a master plan to navigate various policy interventions and reforms towards a suitable healthcare model. A comprehensive and long-term master plan may help avoid parallel, expensive, unnecessary and contradictory policy reforms with little benefit.[58] System thinking principle can facilitate to prevent the possible consequences of policy interventions and actions, take the interactions between health system elements and contextual factors into consideration, and stimulate system behavior under explicit assumptions before taking any decision in the health system.[59,60] In addition, firm political support and policy makers' commitment are essential for appropriate implementation of health policy reforms, the pillars that have not come together in the course of the last few decades in Iran.

Despite the extensive PHC network and its considerable outcomes, particularly in rural areas, the PHC network did not succeed in accommodating the FP program and the referral system in urban settings (apart from two pilot provinces of Fars and Mazandaran).[61] This was in contrast to mega health policies of Supreme Leader in 2013 that mandated the MoHME to recruit FPs as the gate keepers to access the specialists and prioritize the referral system. In contrast, expensive hospital-based and specialized healthcare services; irrational use of medicines, medical equipment and paramedical services; and flawed implementation of fee-for-service payment model led to inefficient management of healthcare resources and ever-increasing THE and OOP. On the other hand, the alarming burden of NCDs and their risk factors (80% of cause of premature death is due to NCDs in Iran), which are mainly due to people's lifestyle and SDH, would make it necessary, now more than ever, to move towards community-based FP. This requires shifting the focus of PHC network and *Behvarzes* from communicable diseases and sanitation towards effective prevention and control of fast growing NCDs and other social health problems.

Forty years after the Islamic revolution of 1979, significant progress has been achieved in terms of both quality and quantity of healthcare services, HRH, financing, etc., in the health system of Iran. Most needed healthcare workforce in various fields are trained internally, foreign physicians are no longer needed in the country, most of very complicated medical needs, e.g. liver and kidney transplantation, are treated in Iran, while a number of foreign patients choose Iran as their destination to seek care (medical tourism, in which Iran ranked 53 globally).

During the 1990s, high OOP, unadjusted medical tariffs among various health professionals, and significant public dissatisfaction led policy makers to reform medial tariffs, introduce fee-for-service payment, encourage the private sector to supplement healthcare services provision, and implement hospital autonomy. The implementation of these policies undermined the PHC network and prioritized secondary and tertiary services eventually.[62] The lack of coordinated and integrated care, plus the dysfunctional referral system resulted in overutilization of healthcare services, most of which were reimbursed by the insurance funds, albeit difficult to afford. Such ever-increasing costs have paralyzed various health insurance schemes to expand their health benefit packages and increase financial protection for the beneficiaries against medical expenditures.[63] HTP could potentially reduce the inequalities in access to healthcare services among various population groups, particularly in public hospitals. Nevertheless, unsustainable financing, overutilization, delayed payment to service providers, and diverse benefit packages offered by different insurance firms, have endangered HTP to tackle inequalities and move the health system towards UHC.[64,65]

A review of the HTPs over the last few decades indicates that policy reforms have been skewed mostly

Table 5. Main Reforms and Their Reasons Since the Establishment of the MoHME in Iran

Year	Reform/policy intervention	Reason
1979	Islamic Republic of Iran's Revolution	
1985	• Establishment of the Ministry of Health and Medical Education (MoHME), transferring medical education from the Ministry of High Education to the MoHME	• Merging medical education and health service delivery to enhance quality of health care • Community needs-based health education • Enhancing the quality and quantity of health workforce education • Emphasizing public health than medical services • Emphasizing outpatient rather than inpatient health services • Putting more priority on the health of deprived sittings
1988	• Integrating provincial health organizations within medical sciences universities or medical faculties	• Aligning organizational structure of health in provinces with the MoHME
1989	• Formation of the Board of Trustees within the Medical Universities and Higher Institutes for Education and Research	• Increasing financial and administrative authority of medical universities to develop educational and research services
1990	• Formation of health volunteers	• Expanding health services to deprived areas
1994	• Dissolving Regional Organizations and Integration within Medical Universities and Establishment of the Universities of Medical Sciences and Health Services	• Providing more educational facilities for students • Further intervention by the medical university in providing health services • Improving the quality of health services • Development of community-based medical education • More integration between the primary, secondary and tertiary levels of service provision • Reducing or eliminating the resilience of staff provincial health organizations in collaboration with the health educational system • Moving towards decentralization in health management across the provinces • Integrating financial resources of health provision and health education under the Board of Trustees' supervision for easer decision making
1994	• Approving and communicating the UHI Act • Implementation of hospitals autonomy policy based on the guidelines of the new hospital management system (known as the fee-for-service plan)	• Increasing people's access to health services by providing sustainable financial resources • Encouraging financial autonomy of hospitals and reliance on internal resources
1995	• Formation of MSIO and SCHI	• Expanding health insurance coverage to the entire population
1997	• Establishment of Health Information Management System (Hospital)	Integration of health information circulation in the health system
1999	• Implementation of the organizational restructuring plan of the MoHME -Implementation of regionalization of inpatient health services Organizing hospital and pre-hospital Emergency Network	-Rectifying decision making processes in different levels of the MoHME and reducing overlaps in healthcare provision -Increasing access to health care for all in all regions in an efficient and cost-effective way
2003	• Experimental implementation of Board of Trustees plan in hospitals -Entrusting health services tariffs in the private sector to the Medical Council of Iran	-Management autonomy (in addition to financial independence) of hospitals aiming for faster decision making processes and delivering health services - Increasing competition among health care providers
2004	• Approval of the Comprehensive Welfare and Social Security System Law • Formation of the Ministry of Welfare and Social Security and transferring health insurance funds towards it • Experimental implementation of rural health insurance plan • Implementation of the so-called "on bed health insurance coverage" for patients without insurance coverage	• Providing health insurance coverage for all and improving health equity • Enhancing access to health care services • Improving the performance of PHC network • Providing infrastructures for implementing FP plan
2005	• Launching free treatment plan for people injured in accidents	• Reducing traffic accidents' mortality and morbidity by on time free health service provision
2008	• Beginning of implementation of the new financial system plan	Improving transparency in financial flows and strengthening evidence-based decision-making power in different levels of management
2011	• Formation of the Ministry of Cooperative, Labor, and Social Welfare • Formation of Food and Drug Organization • Returning the authority for setting medical tariffs back to the government	• Downsizing the government • Improving the capacity of production and quality of drugs, cosmetics, health, food and beverage products
2012	• Establishment of the IHIO and SCHI	• Reaching universal health insurance coverage and improving equity in access to healthcare services
2014	• Launching HTP • Implementing FP in cities and marginalized areas around the cities	• Improving access to health care for poor people and those living in deprived remote areas • Reducing financial burden and OOP expenditure
2016	• Moving the IHIO under the MoHME	• Strengthening the stewardship function of the MoHME to get more control over financial resources

towards health financing, resource generation, and service provision, whilst stewardship and governance dimensions have remained under-developed, and rather under the shadow.[66] Ironically, although the upstream policies have assigned the MoHME as the steward of the health system, the MoHME has become very much involved in service provision and workforce training, while it has been suffering from lack of tools and infrastructure for evidence-informed policy making and leadership.[67] The SCHFS is a potentially strong player to ensure multisectoral ownership for complex decision making and avoid conflict of interest. We advocate a more powerful role for the SCHFS in leading health reforms, including the continuity of HTP along the pathway towards UHC in Iran.[66]

During the recent decades, due to poor public awareness and common misconceptions as well as poor scientific-administrative capacity in the private sector, the government had to become directly involved in policy implementation, in addition to developing strategies, setting standards, and preparing the executive plans. Nonetheless, the emerging public needs, advance technologies, strong platforms for exchange of medical and health-related information, improved literacy and public awareness, and the increasing potential for engagement of the non-public sector in service delivery, government monopoly is no longer required in health policy implementation. Instead of rowing the ship, the government is expected to steer the policy-making process, regulate the non-public sector, and focus on setting and enforcing standards and regulations for required quantity and better-quality care.

The integration of medical education into service delivery in 1985 was a notable turning point in the governance of health system in Iran. Now, over three decades on and while Iran is experiencing serious reforms to reach UHC, fundamental reforms in the health system and other associated sectors are required, more than ever, to strengthen the governance, eliminate conflict of interest, and ensure sustainable resources. Unless this essential transformation will take place within the health system, sustainable health development may still remain a moving goal in Iran.

Conflict of interest still remains a serious challenge in Iran's health system. As an example, since 2004, purchaser-provider split was executed to empower health insurance system and implement strategic purchasing.[68] Despite challenges, the reform was bringing more transparency and greater efficiency to the health system. Yet, and contradicting the upstream policies, i.e. mega policies for health, following parliamentary approval, in 2017, the IHIO again moved under the MoHME.

A long-term challenge that the health system in Iran has been dealing with, which has only scaled up in the course of the last few years, is the international unfair sanctions against Iran and its likely adverse effects on health indicators, access to healthcare services, and ultimately reaching universal health coverage. For instance, per capita consumption of milk and dairy products and fish have all decreased in the last years, and access to essential medicines has decreased,[69-71] while the price of medicines has increased.[72]

Concluding Remarks

Blended with success and failure, Iran's health system has undergone several main reforms over the past four decades. To accommodate the ever-growing public needs and demands and respond to demographic changes, it is fundamental to strengthen the stewardship of the health system and perform the required structural reforms, through reorganization of the MoHME and meaningful efforts to eliminate the conflict of interest. Redefinition of health insurance system to ensure sustainable revenue raising and meaningful contribution of the insured, plus more grass-root reforms to incorporate the principles of resilience economy to overcome the difficulties of unfair international sanctions that are impeding the HTP implementation, are crucial steps to provide universal insurance coverage to all Iranians and move towards UHC more meaningfully. Multisectoral collaboration and meaningful partnership are the pillars to overcome the numerous and very complex challenges of any health system. As the chief of the SCHFS, the capacity and role of the president can contribute to fostering more trust and coordination between the MoHME (provider) and the MoWCL (purchaser), to implement effective strategic purchasing, reduce conflict of interest, adjust the ever-growing healthcare expenditure, and enhance the quantity as well as quality of healthcare services towards harvesting better health outcomes. This partnership will also facilitate to establish a functional and nationwide referral system, which is the key for rational utilization and ensuring sustainable costs.

At the outset of its fifth decade of life, analytical reflection on the past is necessary to illustrate the future direction. Healthcare reforms are inherently political and very challenging. Successful implementation of evidence-informed reforms necessitates knowledge of the structures of government, society participation, and understanding the ways through which the official structures mediate the demands from competing groups for policy change.

Authors' Contribution

LD, MB and AT contributed to the conception of the work, LD and MB drafted the first draft of manuscript. AT and RM provided critical comments for intellectual development of the paper. AT edited the whole article for scientific accuracy and is guarantor. All authors approved the final version of manuscript.

Conflict of Interest Disclosures

Authors declare that they have no competing interests.

Ethical Statement

This article reports part of a study that was approved by the Ethics Committee of Iran's National Institute for Health Research (No:

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