

The experience of purchaser–provider split in the implementation of family physician and rural health insurance in Iran: an institutional approach

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Background The Iranian health system, under the banner of family physician (FP) programme, has undergone substantial reforms to change utilization of health services, improve quality of care and enhance affordability. The national implementation of FP initiated in 2005 in parallel with rural health insurance (RHI) in rural areas and cities of <20 000 populations in Iran. The implementation of FP was the first national attempt to split the purchaser and provider of the primary health-care services in Iran. Using an adapted institutional approach, this article aims to explore the process of purchaser–provider split (PPS) during the implementation of FP and RHI reforms, and its consequences for the health system in Iran.

Methods We conducted 71 face-to-face interviews and three focus group discussions at national, provincial and local levels with policy makers, managers, researchers, health-care practitioners and representatives of the public. Interviews and focus groups were digitally recorded and transcribed verbatim. Data collection was supplemented by the review of relevant documents at all three levels. We analysed the data using an inductive–deductive framework analysis approach.

Results Views towards PPS and its consequences on the implementation of FP were diverse. Some participants identified the PPS as an essential reform for undertaking the parallel implementation of FP and RHI. Others wondered whether the split has been beneficial as expected and asked for more scrutiny.

Conclusions The implementation of FP and RHI in Iran demonstrated the mixed effects of PPS on health system performance. Our research revealed that PPS did not succeed in changing the *status quo*, became a reason for fighting, misunderstanding, lack of co-operation and failure of the fragile partnership between the purchaser and provider. We advocate careful contextual preparation prior to large-scale application of PPS during nationwide implementation of FP in Iran as well as other settings.

Keywords Family physician (FP), Iran, purchaser–provider split (PPS), rural health insurance (RHI)

KEY MESSAGES

- Purchaser–provider split (PPS) was selected as a fundamental strategy for parallel implementation of FP and RHI in the Iranian health-care system.
- The implementation of FP in Iran was jeopardized not only because of resistance to change but also because of the main players who followed divergent goals.
- To facilitate inter-organizational co-operation in materializing PPS, removal of contextual barriers is essential before the implementation of PPS.

Introduction

Purchaser–provider split (PPS) has been defined as an arrangement that separates ‘the purchaser, as the agent who decides what will be produced, from the provider, as the agent who delivers the agreed outputs or outcomes’ (Ryan *et al.* 2000). Splitting purchaser and provider was initially launched as a policy instrument to enhance competition in the provision of public services and shift political control (Siverbo 2004). In many health systems, separation of purchasing and providing functions is considered as a major structural change (Donaldson and Mooney 1993; Ashton 1995; Gallego 2000; Siverbo 2004). In the course of last two decades, a number of publicly funded health-care systems have employed PPS to improve quality of care and enhance cost-effectiveness of health services (Ashton 1995; Tynkkynen 2009). PPS can be implemented through various policy routes, including establishing an independent health insurance system to serve as a health-care purchaser or increasing the autonomy and independence of health-care providers, while reducing the state’s control over their internal activities (Cashin and Simidjijski 2000).

PPS is expensive, divisive and creates artificial divisions between different parts of the health services (Aveyard *et al.* 1999). International experiences underpin some difficulties to determine the appropriate degree of separation between purchasers and providers, i.e. practicalities of giving the purchaser the authority to determine total amount of funding to be allocated to the health-care system, geographical distribution of funding and service provision, and methods to distribute the funds among various types of health services (Cashin and Simidjijski 2000). Nevertheless, as a result of enhanced democracy, the adaptation of PPS has been increasing across various health systems globally (Ahgren 2010). Due to significant contextual differences and health system variations among and within countries, comparing the evaluations of the impacts of PPS on health systems is difficult (Siverbo 2004). As a result, the literature is controversial on whether PPS increases efficiency in health care and improves quality (Ahgren 2010). Studies to explore the impact of PPS on health care in Sweden (Anell 2005), New Zealand (Howden-Chapman 1993; Ashton and Cumming 2004), United Kingdom (Tremblay 1998), Australia (Street 1994), Finland (Xu and van de Ven 2009) and China (Xu and van de Ven 2009) have produced mixed results. Separating providers and purchasers in New Zealand showed no evidence of major efficiency gains at hospital level (Ashton *et al.* 2004). Evidence from the National Health Service (NHS) in England revealed that competition and market incentives do not necessarily lead to better or more positive outcomes in health care (Flynn and Williams 1997).

PPS created a quasi-market in the NHS that consequently impacted on the development of both new services and improved service delivery (Zolkiewski 2004). The Swedish experience showed similar results (Anell 2005).

Evidence suggests that local government reform involving both PPS and payment systems may lead to short-run effects on health-care productivity, namely providing more of the same service and reducing the length of stay (Anell 2005). Successful implementation of PPS in health systems relies upon management structures and cultural norms (Hughes *et al.* 2010). Thailand and Turkey represent relatively successful examples of PPS implementation in the context of middle-income countries (McManus 2010; Atun *et al.* 2013). Tiny literature exists, however, about nationwide experience of PPS in health system in Iran. This article aims to explore the process of PPS during the implementation of family physician (FP) programme and rural health insurance (RHI) reforms, and its consequences for the health system in Iran.

History of purchaser–provider relationship in the Iranian health system

Iran is a middle-income country with almost 77 million populations. In 1985, a universal primary health care (PHC) network was established in Iran. Local community health workers (Behvarzes) were key service providers of PHC, which remained comprehensive, particularly in rural areas (Mehryar 2004). The Iranian-exemplified PHC (WHO 2008) resulted in substantial improvements in health outcomes, i.e. reduced child and maternal mortality, increased life expectancy at birth, and improved family planning and immunization (Khosravi *et al.* 2007; Rajaratnam *et al.* 2010; Zolala *et al.* 2012); See Table 1).

The Iranian PHC is publicly funded, while secondary health-care services are both public and private entities with mixed funding. The role of private sector in provision of health services, particularly in outpatient care, specialist services and rehabilitation, has considerably enhanced in the course of last decade in Iran. The Ministry of Health and Medical Education (MoHME) is the main policy maker and provider of health-care services, while the Ministry of Co-operatives, Labor and Social Welfare (MoCLSW), previously known as the Ministry of Welfare & Social Security (MoWSS), which leads various public insurance firms, is the main financier of health-care services in Iran.

Over the past three decades, the Iranian health system has undergone substantial structural and organizational changes in the relationship between the purchasers and providers. Up until 2005, for the period of several decades, the MoHME was the sole purchaser and provider of primary care services in Iran’s

Table 1 Selected health indices in Iran just before the beginning of PHC (1981, 2000 and 2011)

Health index	1981	2000	2011
General life expectancy, years	46.7	69	73
Infant mortality rate (IMR), deaths/1000 live births	94	28.6	22
Population growth rate, %	3.9	1.24	1.3
Overall vaccination coverage, %	40	>90%	>90%

Source: Takian *et al.* (2013).

health system (WHO 2006). The MoHME provided PHC through publicly funded rural health networks. The Medical Services Insurance Organization (MSIO), which was part of the MoHME until 2004 and moved under the MoWSS thereafter, acted as a major (internal) purchaser of the services. The split of this major purchaser from provider was initiated in 2004, when the MSIO separated from the MoHME and moved under a newly formed MoWSS, currently called MoCLSW (Takian 2009).

In addition, Medical Services Insurance Act that was approved by the Iranian parliament in 1994 led to establishment of MISO, the then main purchaser of services for FP and RHI, along with financial autonomy of public hospitals in 1995 (Jafari *et al.* 2011). So-called hospital autonomy, the MSIO began to modify the relationship between purchasers and providers through changes in payment to hospitals to fee for service basis.

The PPS was not meaningfully put in practice until 2005, when concurrent implementation of FP programme and RHI as a part of universal health insurance, began in rural areas and cities of <20 000 population in Iran (Takian *et al.* 2011). FP covered almost 25 million people at the time. FPs were contracted by the MoHME and were paid by the MSIO through RHI fund. This was the first nationwide implementation of PPS in PHC system in Iran (Takian *et al.* 2013). Table 2 summarizes main changes that happened as a result of FP and RHI in rural Iran. Table 3 presents a summary of some tangible changes that happened as a result of FP and RHI concurrent implementation in Iran.

Aims

We, in this article, describe the changes that occurred in the relationship between the purchaser (MSIO) and the provider (MoHME) and explore the consequences of PPS on the process of implementing FP and RHI in Iran. Core lessons that will be drawn from this experience may, we envisage, help policy makers and health services researchers who seek to pursue similar reforms in their own settings.

Methods

We conducted a multilevel, longitudinal, qualitative and theoretical-based evaluation of the simultaneous implementation of FP and RHI in Iran. This study involved semi-structured interviews, focus groups, as well as content analysis of various

documents, reflecting on principal–agent theory and institutional rational choice (IRC) theory.

Sampling and data collection

We used purposive and snowball sampling to achieve maximum variation. AT conducted 71 semi-structured, in-depth and face-to-face interviews with different stakeholders' (policy makers, managers, practitioners and public representatives) at three levels, national (19 interviews), regional (nine interviews) and local (43 interviews) and in two sequential phases. Most interviews were performed at the participants' workplace. We developed a generic interview guide for each level (national, provincial and local) of interviewees and used it reflexively for every individual to perform a tailored data gathering. Supplementary Appendix SI presents the interview guide that was used for interviewees at a national level. The interview guide was piloted with six interviewees at both national and provincial levels and was tailored accordingly. The interview guides included questions around policy process development and consequences of PPS on the process of implementing FP and RHI policies in Iran.

In addition, we had three focus groups with service users and representatives of the public at three (out of six) purposefully identified rural health centres in Golestan province (located in northeast Iran). Supplementary Appendix SII presents more detail about characteristics of interviewees and focus groups' participants. All interviews and focus groups were audio-recorded and transcribed verbatim.

We also obtained a number of national, regional and local documents of various types with regard to FP and RHI. Supplementary Appendix SIII presents the list of categories used for selecting and analysing documents. Findings of preliminary document analysis about FP policy, its content and targets were used to guide interview questions, reflecting upon principles of institutional approach to PPS.

Data analysis

We used a mixed deductive (framework approach) (Mays and Pope 2006; Rashidian *et al.* 2008) and inductive (remaining open to accommodate emerging themes) (Green 1998) approach for the analysis of qualitative data and documents. Content analysis approach (Mays and Pope 2006) was used to conceptualize, interpret the text according to extracted themes and categorize relevant information to the content of contracts between providers and purchasers, before and during the implementation of FP. A.T. conducted first round of coding and data analysis, with A.R. and L.D. who conducted secondary thematic analysis of data and discussed the inconsistencies to reach inter-coder reliability.

Our theoretical framework

Conventionally, the principal–agent theory has been used to underpin PPS execution in the health systems of many countries (Ormsby 1998). Principal–agent theory streamlines the relationship between principals (e.g. purchasers, policy makers) and agents (providers) using contractual or other forms of agreements (Friedman 1995; Nguyen 2011). In this theory, principals specify what is needed from the providers and

Table 2 The characteristics of FP and universal health insurance programmes implemented in rural Iran, when compared with the pre-existing PHC

	PHC before FP	PHC with FP
Main stakeholders	The MoHME as the provider and purchaser organization. No provider–purchaser split existed in the PHC before FP.	The MoHME as the provider. MSIO (under the Ministry of Welfare and Social Services) as the purchasing organization.
Financing	Under the PHC, the funds are directly paid to the MoHME.	Via national budget through the MSIO.
Human resources	Behvarz at the Health House. General physicians in rural health centres. One physician for every 9000 population. In practice, one physician for ~7000 population.	Behvarz at the Health House. Family physicians (in rural health centre) were general physicians with no special training in family medicine. A few courses (induction workshops for newcomer physicians, distance learning courses and opportunities to become a specialist in FP were planned, but none had been conducted at the time of implementation. One family physician for every 4000 population.
Payment to providers	Monthly fixed salaries.	Contractual agreement with family physicians involving a partial capitation payment system. Substantial (about 3-fold) increases in physicians' payments compared with physicians under the PHC.
Access to family physicians and insurance coverage	Under the PHC, all referral to physicians was through the Behvarz.	Increased access to family physicians. Registered population could self-refer to family physicians. Also all rural inhabitants were covered by universal health insurance as a result of the reform. Referrals to secondary care became possible through family physicians, using the insurance.
Service package	General physician as the manager of the health team. Delivering public health, preventive and curative services, to the designated population.	Family physician as the manager of the health team now included nurses and more midwives. The same package as before, with more emphasis on treatment services and better opportunities for referring patients to secondary care.

FP, family practice; PHC, primary health care; MoHME, Ministry of Health and Medical Education; MSIO, Medical Services Insurance Organization.
Source: Takian et al. (2013).

establish mechanisms to ensure that the expectations are achieved (Buse *et al.* 2012). The approach illustrates the way(s) that particular individuals may act as governmental delegates (agents) and describes how the agents' own norms and values would affect the policy implementation (Michael and Ramesh 2003).

We also used IRC theory (Ostrom 1991; Schlager and Blomquist 1996) to illuminate the ways that various social and political institutions interacted with each other, with the government as well as other players to make the implementation of FP work in rural Iran. The IRC theory approaches the policy process as a strategic interaction between actors, like a dynamic game (Ostrom 2007). This helped us understand the reasons, for which the main institutions involved, i.e. the MoHME and the MSIO, decided to implement FP, despite their fundamental differences (Takian *et al.* 2013). The authors obtained ethical approval from their institution for this study.

Results

In this section, we describe the process of executing PPS and its consequences for the concurrent implementation of FP and RHI in Iran. Our research findings are presented in five main themes: the necessity of executing PPS, quality of health services, contracts between the purchaser and the providers, co-operation between the purchaser and the providers, and lack of co-ordination.

The necessity of executing PPS

For some interviewees, national execution of PPS was a compensation for inadequate funds, which were allocated to expand concurrent implementation of FP and RHI in Iran. They were concerned that without PPS in place (i.e. giving the purchasing power to the MSIO), the allocated funds might have been diverted towards other priorities:

“Given our long-run budget deficit, if we had the authority to control the (allocated) fund (for FP & RHI), we were definitely doing something else ...” [Senior provincial health manager].

The interviewees from purchaser side also identified PPS necessary, as it helped buying in services from physicians, whom were not employed by the public sector:

“Having only one organization (MoHME) to determine the price of services as well as selling and purchasing (services) by itself, was not acceptable to us. This could have enforced others to purchase only the MoHME's services. ...” [Provincial manager].

Some interviewees, in contrary, perceived that PPS may have actually enhanced the efficiency and quality of health services:

“The parliament approved the fund (for RHI) and allocated that money to the MSIO. At the same time, the parliament instructed the MoHME to act as the policy maker in FP. In fact, defining policies, designing healthcare services, and providing checklists were

Table 3 Expected changes as a result of implementing FP and some changes achieved in early stages of the implementation

Expected main changes by FP at rural level	Some changes achieved, by 2007 except noted otherwise
Establishment of a referral system through FP to enhance rationing services	Substantially more physicians per population. Limited evidence of increase in hospital admission
Increasing public's access to health services	Increase in patient visits to family physicians and outreach visits to health houses. Ten-fold increase in private pharmacies' contracts with PHC centres
Reducing out-of-pocket and catastrophic health-care expenditure	Overall out-of-pocket expenditure increased in this period. The increase is due to hospital care and private sector usage. No specific data available for rural areas.
Enhancing coverage of services	Over 20 million insured under RHI (~30% of total population) in 2010 ³⁵
Enhancing equity	Increased coverage. No evidence of impact on equitable financing.
Improving employment opportunities for physicians, midwives and nurses	Two-fold and 5-fold increase in the number of physicians and midwives in the PHC, respectively.

Source: NUHSR (2005); NUPHC (2007); Kavosi et al. (2012).

the MoHME's tasks. The MSIO was supposed to monitor the performance on the basis of the policies, while the MoHME was the provider of services. These two organizations function as complementary, not independent and interfering" [Physician, Member of Parliament].

Quality of health services

FP policy emphasized provision of health-care services mostly by the private sector practitioners [National Unit for Health Services Reform (NUHSR) 2005]. In practice, however, the public sector (the MoHME) was the main service provider of FP services. This was partly due to the weak existing infrastructure in rural areas that made the private sector reluctant to participate in the implementation of FP:

"We did not motivate the private sector to takeover administration and service provision in rural areas. To do so, the necessary infrastructure must have been built up appropriately. Otherwise, the private sector will not be willing to take the responsibility..." [Senior insurance policy maker].

As a result, the MoHME's employees, who were public sector practitioners, delivered the majority of FP services. This was in contrary to the intention of FP policy for commissioning service provision to private health-care practitioners and was perceived to have adversely affected the quality of services in FP:

"...we (the MoHME) are responsible to make policy, manage, plan, perform and monitor ourselves. However, we must reduce our size, be more focused on policy making and try to handover operational tasks to the private sector..." [Senior health official].

Some societal and cultural barriers to privatization were outlined as a reason for this:

"We have never conducted a correct analysis about the role of private and public sector in health services in our country. Most central policy makers are against privatization and private views therefore do not really exist. 80% of our outpatient services are provided by the private sector, versus 10% of inpatient services. On the other hand, 90% of inpatient services and 20% of outpatient services are provided by the public sector. What a mess! ..." [Senior insurance director].

Implementers' intention was to reduce public provision of services by contracting the private sector in small cities [National Unit for PHC Expansion & Health Promotion (NUPHC) 2007]. The proportion of such private practitioners was low, its effectiveness was not clear and it was flawed with respect to the preventive aspect of services:

"...follow-ups and keeping medical records are not properly carried out by private doctors. Moreover, there is no assigned population to private doctors..." [District health manager].

Conventionally, the private sector was the main provider of outpatient services in Iran. Despite longstanding efforts to make contract with the private sector, not many private practitioners were involved in FP. In addition, the responsibilities and duties of service providers, particularly with regards to the preventive aspect of health-care services, were not transparent:

"Conducting follow-ups and keeping medical records are not properly carried out by doctors in the private sector. Moreover, there is no assigned population to private doctors..." [District health manager].

Contracts between the MoHME and the MSIO

When FP started to implement in rural areas in Iran, there were sufficient numbers of health-care practitioners to be recruited. However, the format and content of the contracts with practitioners did not encourage many of them to participate in FP programme. Many doctors and nurses had to sign contracts that were branded unfair, and against their dignity and interests. The MoHME treated practitioners as contractors, not partners and key stakeholders to move FP programme forward. Health-care practitioners, particularly at the beginning of implementing FP, were not entitled to any sick leave, holiday, pension and insurance, which upset them:

"What reform? It [FP] is just a reform in name. As a citizen who delivers service to villagers, I am not even entitled for health and treatment service that my designated people do already enjoy. I am not even insured myself. ... even a street-sweeper has his off hours, why should not we have that?..." [Midwife].

Worse still, during the initial phases of FP programme, in order to be granted a contract, doctors (not other practitioners)

were asked to provide the MoHME with financial collaterals, which offended them very much:

"...practicing medicine is not a business. Why doctors are called contractors and asked to provide promissory notes? OK, if it is mandatory by law, why just for doctors? Are not midwives and nurses members of health teams? We are doctors not burglars. We are expected to settle in deprived areas and are deprived from many amenities. Being forced to go to the bank and buy promissory notes is an obvious exploitation that interferes with peaceful and efficient practice..." [National policy maker and physician].

Doctors were also forced to sign contracts with the MoHME, which had no detail about their time commitment, earning, etc. Contracts were often delayed, with little information about time, money and the employer's responsibilities. Health-care practitioners were pushed to sign and return the contract to the officials quickly; otherwise, they were likely to lose their job:

"The MoHME sent me a blank piece of paper as my contract. Only my name and my basic salary were mentioned there. They can easily manipulate my salary. This contract gives me no right what so ever..." [Midwife].

Due to the lack of other employment opportunities, most doctors had no choice but to accept aforementioned conditions, despite them being dissatisfied and angry:

"...sometimes I feel that someone is pressing my throat really hard. I wish I had become whatever but not a doctor. I live in a society in which doctors are valueless. My dignity has been smashed here. I do not care about money. If only you do not destroy my personality ... if the implementation (of FP) is going to continue this way, I prefer to work as a waiter in rural Australia, but not get the MoHME's money..." [Family doctor].

It is necessary to mention that these conditions, which existed at the initial phases of FP implementation, have improved now, i.e. pilot phases of implementing FP in urban areas, which is currently undergoing. Nonetheless, the impact of such contractual misconduct on service providers and their image of FP still exist. Last but not least, the MSIO has usually paid service providers with delay. Such a practice, which still continues, may have been beyond the MoHME's control, which was only the provider of health-care services in FP.

Lack of co-operation

One year into the implementation of FP programme, to boost the inter-organizational co-operation between the MoHME (provider) and the MSIO (purchaser), 'the National Office for FP' (NOFP) was established within the 'centre for PHC expansion & health promotion' in the MoHME:

"The NOFP is to feed the implementation theoretically, as well as to co-ordinate stakeholders' performance by conducting surveys, integrating resources, documenting histories and improving macro plans and strategies. The aim is to prepare a well-done action plan for executive units of FP" [A member of national team for reform].

The NOFP initiated to engage with some key stakeholders, whom had been overlooked previously. The NOFP invited some relevant institutions, including the General Physicians Association (GPA) and the Iranian Medical Association, which respectively represented general practitioners (GPs) and all doctors (including FP), to take part in the implementation of FP:

"Following recent interactions between the GPs and the MoHME, we organized few sub-committees within the main committee for FP in the GPA. Headed by one of our most experienced managers, its mission is bridging the gap. That guy has gathered 15 reputable managers and researchers, who have great experiences from the PHC. Their attempt is to find out better ways for the implementation of FP, which will be consistent with the MoHME's goals. We also convey doctors' opinions to the MoHME ... everything is done for assisting them to perform a better reform. We are determined to do this, even if the MoHME stops us to do so..." [National union manager].

The NOFP managed to initiate some improvements in the practitioners' contracts and tried to bridge the gap between key stakeholders' views about the two concurrent reforms (FP and RHI). However, this initiative did not last long. The head of the NOFP resigned after a few months and the office was dismantled eventually. Despite ample emphasis and the paper trail to endorse the principles of PPS, fundamental aspects of PPS were not followed in the implementation of FP. This was in part due to the general weak culture of inter-organizational co-operation in Iran:

"As an experienced health minister, I was always against the efforts to separate welfare and insurance affairs from the MoHME. The recently established MoWSS was proposed several times in Mr. X's era (PM 1982-1989). I objected the proposal, not because I had centralized views or was selfish, but I was fully aware of the weak inter-organizational cooperation culture in our country" [National policy maker].

Lack of inter-organizational co-operation led to policy gaps and brought unintended consequences both for FP and RHI reforms:

"...there is always the danger that one day the MSIO will ruin FP. Having monetary control over FP, particularly as long as the organization is chaired by people, who believe that they are not in charge of public health, it is quite likely that they do not take responsibility for health, stating they are just the insurer, and nothing more. I fear that one day they say that whenever insured people get sick, the MSIO will be responding accordingly. Such a situation would be the biggest disaster happened to FP ever..." [Former senior health official].

Lack of co-ordination

Irrespective of few, most interviewees were consistent that the co-ordination between the purchaser (MSIO) and the provider (MoHME) was lacking during the implementation of FP:

"Our health system is dissociated. It is better to say that there is no system in place at all. There is no land to be governed and no

organization to link the separated islands. Each single organization is working for itself..." [Senior insurance officer].

"...the essential command to move FP and RHI forward has not been yet established in the system..." [Senior member of national team for reform].

Due to the lack of common language between the purchaser (MSIO) and the provider (MoHME), there was no desire to establish a designated structure to co-ordinate the implementation between the two organizations:

"Despite more than a decade of legal emphasis, due to lack of common interpretation of FP, no real referral system has been implemented here. There is no specific unit responsible for the implementation of FP... everyone says that referral is good, but its implementation is challenged because it would restrict the freedom of choice and thus make people dissatisfied..." [Senior insurance director].

Therefore, a big call was echoed for co-ordination between the purchaser and providers to make the implementation of FP work in Iran:

"I cannot emphasize enough that if we are serious to reach goals [of FP], there must be a united management to prevent personal interpretations and wrong directions in its execution" [Senior health official].

Despite theoretical support for PPS to improve quality of care and reduce costs, in practice, many interviewees thought that PPS harmed the implementation of FP in Iran. A number of factors contributed to this. First, the purchaser (MSIO) and the provider (MoHME) followed contradictory goals and had diverse interpretations of the policy:

"One of our big challenges is that I (the MoHME) have to take the responsibility, while money is in the hand of the MSIO. We disagree even on simple issues like the drug list [to be provided in FP package]. If I am the policy maker, I must decide about the drug items... One of the biggest problems is that the MSIO can do everything without our approval. Our objection changes nothing, because the MSIO possesses the money. We cannot resolve all disputes with friendship and ceremonial greetings; we need more legal support..." [Senior health official].

Second, the fragile teamwork environment in Iran and the mutual hostile perceptions of the purchaser and provider from each other exaggerated their poor interaction. It was particularly difficult for the provider (MoHME) to be monitored by the purchaser (MSIO) in order to be paid for the services provided. Up until 1 year prior to beginning the implementation of FP (2005), the MSIO was part of the MoHME:

"In practice, the MoHME does not recognize the MoWSS. These two bodies used to be one. It was decided to separate the purchaser from the provider to increase their mutual interaction, and to enhance the competition for increasing quality of services. However, the result was the opposite" [Insurance policy maker].

On one hand, the MoHME still looked to the MSIO as its obedience, not a partner to conduct the common task of implementing FP. On the other hand, the MSIO was keen to use its purchasing authority in implementing FP to prove its independence:

"The conflict between senior managers to maximize their organizational share (of FP money) was damaging. It was hard for the MoHME to follow its previous subordinate (MSIO). The MoHME even lobbied the parliament to dissolve the MOWSS to take over the MSIO as its subordinate again..." [Senior insurance director].

This led to wasting monetary resources:

"550 billion TM (MUS\$ 600 in 2005) for FP was a huge amount of money which could have hugely boosted our health system. I do not see signs of such success in our performance..." [Member of parliament].

The two organizations followed somewhat divergent goals. The MoHME wanted to revitalize the PHC and establish referral through FP, whereas the MSIO was going to bridge the accessibility gap for rural people through RHI. The MSIO was reluctant to pay for primary care:

"It was difficult to convince the MSIO to pay for primary care. The MSIO accepted only to pay for secondary care services... it took a long time until the MSIO gradually adopted itself to not just pay for treatment, but for health too..." [Former senior health official].

As a result, the purchaser and the provider undertook parallel activities that wasted resources and lowered efficiency. The main issue was lack of trust between the two, which ended in parallel activities. For example, the MSIO did not accept the audit checklists prepared by the MoHME. Instead, the MSIO used its own checklists following different criteria than the ones advised by the MoHME:

"I accept that once upon a time treatment was our focus [MSIO], but we have undergone massive changes since then. We share results of our own audits with colleagues in the MoHME. Well, who likes to be monitored? One must appreciate the approach that we follow in our audits. We monitor the implementation of FP to increase the quality of services, and enhance public's satisfaction by improving performance... we just feed the MoHME with data and encourage them to provide better services..." [Provincial director].

Discussion

We discuss our findings in the light of our adapted theoretical framework (principal-agent theory and IRC theory). The nationwide concurrent implementation of FP and RHI was the first national attempt to execute PPS in the PHC system in Iran (Takian 2009). Our findings revealed that the execution of PPS, which aimed to improve the relationship between the principal and agents, damaged the relationship between the two organizations (MSIO and MoHME). This happened mainly

because of the two organizations' institutional past. Such a relationship became a strong barrier to effective co-operation. Also, lack of teamwork in the health system was a big challenge to the implementation of FP programme in Iran. The established culture of individualism was identified as the main reason for such poor collaboration.

Ineffective relationships in executing FP

The implementation of FP suffered from a lack of 'strong (formal)' and 'weak (informal)' co-ordination. Assuming that actors share core beliefs and trust with each other, our findings demonstrate that actors might alter their behaviour, which may lead to weak co-ordination in the implementation processes. Because of mistrust, the purchaser and provider lacked the opportunity for informal co-ordination, which is particularly important among stakeholders who may represent various organizations with legal or structural impediments. The relationship between beliefs and organizational interdependencies also highlights the lack of inter-sectoral collaboration between the MoHME, MSIO and other relevant actors, to cope with the turbulence and complexity of putting PPS policy into practice (McMahon *et al.* 2000). The weak inter-sectoral collaboration hampered the linkage between key players to overcome the organizational, procedural and cultural barriers in order to mobilize involved stakeholders for aligning their efforts to implement FP and RHI as a common task (Mattessich *et al.* 2001).

This research revealed that the relationship between service providers as contractors and the MoHME as both the policy maker and employer was flawed. On the basis of principal-agent perspective, suboptimal implementation of a policy is an inevitable result of the structure of modern institutions (Buse *et al.* 2012). This explains many failures of top policy makers (principals) because of personal discretions by agents and considers the impact of local actors and their boundaries in executing the implementation. However, it does not explain the institutional interests and values of principals, nor the impact of principals' approaches to the policy as well as the way that the policy is introduced.

According to principal-agent theory, principals can only indirectly and incompletely control agents (Pollitt 1993). Agents have discretion in how they operate on behalf of principals and may not even see themselves as primarily engaged in making a reality of the wishes of principals (Worsham and Gatrell 2005). The perspective opens avenues to link doctors and other practitioners' behaviour to their own discretion. During the implementation of FP, most health-care practitioners, e.g. doctors and nurses, were contracted by district health authorities. At the same time, these agents were members of professional unions, such as the GPA. Their discretion may have opened up the potential for ineffective or inefficient translation of the MoHME's plan, since agents have their own views, ambitions, loyalties, interpretation and resources, which can hinder policy implementation. This can be explained through the lenses of street-level bureaucracy (Lipsky 1980) perspective, which emphasizes the pivotal role of front-line staff's behaviour in policy delivery. Our findings showed that bottom-level actors' understanding of FP policy, their sense of ownership and degree of innovation to face challenges had a

considerable impact on the way that FP was executed, as well as outcomes of PPS as a result of front-line staff's discretion.

Following institutional interests instead of common goals

Applying the IRC perspective in this study revealed that it might be accurate to consider members of the policy system, either civil servants or managers, as representing the interests of the organization for which they work. In other words, pursuing organizational interest by members of the key coalition impeded implementers' constructive co-operation. More accurately and, in contrast to the IRC assumption, this study revealed that individuals did not cause this problem. Rather, engaging two organizations (the MoHME and the MSIO) with divergent approaches to carrying out a common task, which needed compromise and bilateral understanding, reduced their co-operation. The experience of FP also showed the impact of institutional interests to overrule temporary settlements, based on the IRC.

In line with IRC, the concept of actors' partnership was applicable in explaining the nature of common work in implementing FP. Such partnerships were centrally steered with specific deliverables and targets defined by the centre, rather than the individuals' relationships, which hampered the implementation substantially. Expectedly and similar to high-income countries, the notion of path dependency (Bevan and Robinson 2005) was applicable in Iran. Path dependency means that a change can have a number of different irreversible paths to its start point, which may lead to various consequences, i.e. opposite outcomes to desired goals (Wisford 1994; Takian 2013). Returning to the past was pursued when implementing FP in Iran. Therefore, the implementation of FP was not necessarily jeopardized of resistance to change, but actually main players' divergent goals pushed the reform towards the past.

The IRC perspective recognizes actors' ideas and interests in relation to their institution. The concept of 'ideas' covers both cognitive dimensions (descriptions and theoretical analysis of the social reality) and normative dimensions (values, beliefs and identities; Campbell 2004). The IRC can explain the preferences of the key actors who revitalized the abandoned policy of FP (Takian *et al.* 2011). The MSIO had the least institutional interest in providing or even paying for primary care. Instead, the MSIO's priority was to insure people and pay for their treatment when they got sick. Because no premium was paid by the insured to enjoy services provided through FP, the RHI was not an insurance policy per se. Rather, it was the government's subsidy to support some deprived people. The money that was allocated by the parliament to fund RHI incentivized the MSIO's officials to accept FP (a primary care policy), somewhat overlooking their institutional strategy.

In addition, by accepting to purchase the services for FP, the MSIO accelerated the flow of funds towards itself. This opportunity was used to end the long-term dominance of the MoHME over the MSIO. The MSIO agreed to implement the RHI programme in the framework of FP and as the purchaser of services. Yet, the MSIO was, by nature, reluctant to pay for primary care services, which were promoted through FP. The former deputy for health in the MoHME asked the President of

Iran to return the FP fund from the MSIO, towards the MoHME. He threatened that unless the request was fulfilled, FP could not succeed.

As described earlier, the PPS that aimed to improve the relationship between the principal and agents and increase the quality of health-care services resulted in tensions between the purchaser (MSIO) and the provider (MoHME), undermined their relationship and harmed FP eventually. The lack of inter-sectoral collaboration had two reasons. First, the organizational perspectives of the MSIO and the MoHME were divergent. The MoHME was branded as a preventive-focused organization, whose attempt was promoting health and improving primary care, whereas, many interviewees described the MSIO as a curative-focused body, which was by default reluctant to pay for primary care.

Second, the organizational past of the MSIO and MoHME bubbled up their tension, because of their effort to prove their supremacy. Devil shift (Sabatier *et al.* 1987) encompassed their relationship, particularly on the MSIO side. Most actors from each group assumed that they are correct, virtuous and fair in their judgements. Thus, anyone who disagreed with them must be mistaken about the facts, operating from the wrong value premises or acting from evil motives (Harrison 2004). On one hand, the MoHME was unhappy due to losing control over the MSIO. On the other hand, the MSIO seized the opportunity of FP to prove its independence and superiority to its rival (MoHME). Such a relationship became a strong barrier to their effective co-operation. They looked at each other as rivals not partners. The MoHME accused the MSIO of not releasing money and paralysing the MoHME to deliver services through FP. The MSIO was also accused of impeding the purchase of health services from the MoHME. Both organizations occasionally showed some degree of common language and agreed upon certain objectives. However, they never became close enough to run the common task of FP implementation together. Many interviewees praised the concept of PPS and its potential benefits for the health system in Iran. Nonetheless, the execution of PPS in FP programme resembled a political game for seeking organizational benefits (Congleton *et al.* 2008). This reduced the inter-organizational co-operation considerably; diminished trust; wasted resources in fighting, when unity and co-operation were badly required; and vanished the volatile partnership between the MoHME and MSIO. As a result, the MoHME admitted explicitly that due to mismatches between the MoHME and the MSIO, the general public had not experienced the benefits of FP after years into the implementation.¹

Contracting and auditing performance

The principal-agent perspective emphasizes the design of institutions and the choice of policy instruments in the knowledge that the 'top' needs to monitor and control local staff at a reasonable cost. This has led to an increasing focus on the contracts to define the relationship between principals and agents as a mechanism to ensure the principal that its objectives are followed by agents, aiming to improve the efficiency of service provision through market mechanisms (Mills 1992). This concept was adapted for FP through

establishing contracts between the district health authorities as the representatives of the government and practitioners.

Sheaff and Lloyd-Kendall (2000) argue that contracts must institute mechanisms to ensure that providers realize the principal's objectives and embody a strong principal-agent relationship between authorities and providers. In the context of primary care, they ask two particular dimensions to be considered in contracts. First, a greater focus on evidence-based processes of primary care, health outputs and patient satisfaction, and less concentration upon service inputs. Second, the need for longer-term contracts to promote the 'institutional embedding' of the agent in the wider management system. Neither of these dimensions was considered in making contracts in FP programme in Iran. Instead, a number of issues diverted the contracting procedure from its intended function and make it a painful experience for many practitioners and reduced their motivation eventually.

In addition, principal-agent perspectives recommend commissioning services to the private sector if this is regarded as superior to in-house, public provision or the establishment of more independent public providers so-called 'public firms' or 'public enterprises'. The implementation of FP was the first national attempt of splitting purchaser-provider in the history of PHC in Iran, which had never been undertaken previously. Similar experiences had been reported in decentralization of secondary care services and implementing financial autonomy of public hospitals in Iran (Jafari *et al.* 2011).

Rigour of this study

Our theoretical approach enabled us to map out the role of influential institutions (MSIO and MoHME) and the effect of splitting them as purchaser and provider in the implementation of two important policies (FP and RHI) in Iran. However, longer-term analysis is necessary to understand the actual impact of this approach on different functions of health system. We used some scientific criteria to address the rigour of this study. All approaches share basic principles: reducing the biases and accounting for the predispositions of researchers as well as data sources.

We did triangulation, both in terms of data and theory, to enhance the validity and reliability of findings. This technique helped us ensure the comprehensiveness of our results. By triangulating data (interview, focus group and document), we were able to compare and contrast between phenomena from diverse sources. We also employed different methods for collecting the data, which increased its credibility. The study involved data collection over time, in different places and from people at different levels. The use of both principal-agent theory and IRC theory (theory triangulation) helped wider understanding of PPS process.

Our findings might not be generalizable per se, but given the lack of understanding in the subject of PPS in health sector in Iran, our research is still helpful for other settings and scenarios. Besides, this research was concerned with depth and contextual understanding of a specific policy in Iran (conceptual generalizability). Therefore, statistical generalizability was not an appropriate aim. We took into account the wider social, historical and contextual factors in interpreting the findings.

Nonetheless, a long-span, accurate and comprehensive study may be needed to identify unintended and unexpected consequences or actual impact of PPS on the implementation of FP and RHI in Iran. This is particularly crucial as the Iranian health system is preparing to expand the implementation of FP to the whole country. We managed to analyse the data contextually; however, we cannot be certain of respondents' underlying rationalizations, whether it was to impress interviewer, show off or promote a particular view or undermine their rivals. We acknowledge that the data might be differently interpreted by using other theories and approaches for analysis.

Conclusions

This article explored the perceptions and attitudes of key stakeholders with regard to PPS in the concurrent implementation of FP programme (to improve quality and people-centred health-care services) and RHI (to increase insurance coverage: affordability) in Iran. Our research revealed that PPS, which was applied for the first time at this big scale in PHC system in Iran, did not succeed in changing the status quo. Rather, the policy became a reason for fighting, misunderstanding, lack of co-operation and failure in partnership between the purchaser and provider. We advocate the necessity of removing contextual barriers, prior to the execution of PPS, to facilitate inter-organizational co-operation in materializing PPS. Otherwise, it will be highly likely that theoretical potentials of PPS to improve quality and reduce cost of care services will be compromised, and public and users of services may disbenefit as a result.

Supplementary Data

Supplementary data are available at *HEAPOL* online.

Ethical Approval

This research was approved by the London School of Hygiene & Tropical Medicine ethics committee; the MoHME and the Golestan University of Medical Sciences in Iran. We obtained informed consent from participating organizations and individuals and ensured their anonymity.

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Endnotes

- ¹ interview on 20.10.2008: <http://www.farsnews.net/newstext.php?nn=8707280657>.

References

- Ahgren B. 2010. Competition and integration in Swedish health care. *Health Policy* **96**: 91–7.
- Anell A. 2005. Swedish healthcare under pressure. *Health Economics* **14**: S237–S254.
- Ashton T. 1995. The purchaser–provider split in New Zealand: the story so far. *Australian Health Review* **18**: 43–60.
- Ashton T, Cumming J. 2004. Contracting for health services in a public health system: the New Zealand experience. *Health Policy* **69**: 21–31.
- Ashton T, Cumming J, Mclean J. 2004. Contracting for health services in a public health system: the New Zealand experience. *Health Policy* **69**: 21–31.
- Atun R, Aydin S, Chakraborty S *et al.* 2013. Universal health coverage in Turkey: enhancement of equity. *Lancet* **382**: 65–99.
- Aveyard P, Cheng K, Almond J *et al.* 1999. Cluster randomised controlled trial of expert system based on the transtheoretical ("stages of change") model for smoking prevention and cessation in schools. *BMJ* **319**: 948–53.
- Bevan G, Robinson R. 2005. The interplay between economic and political logics: path dependency in health care in England. *Journal of Health Politics Policy and Law* **30**: 53–78.
- Buse K, Mays N, Walt G. 2012. *Making Health Policy*. Open University Press, United Kingdom: McGraw-Hill International.
- Campbell JL. 2004. *Institutional Change and Globalization*. United States: Princeton University Press.
- Cashin C, Simidjiski J. 2000. National health insurance systems: a review of selected international experience. *ZdravPlus Technical Report*. http://pdf.usaid.gov/pdf_docs/pnacu627.pdf.
- Congleton RD, Hillman AL, Konrad KA. 2008. *40 Years of Research on Rent Seeking 1: Theory of Rent Seeking*. Berlin: Springer.
- Donaldson C, Mooney G. 1993. The new NHS in a global context: is it taking us where we want to be? *Health Policy* **25**: 9–24.
- Flynn R, Williams G. 1997. *Contracting for Health: Quasi-Markets and the National Health Service*, Oxford University Press.
- Friedman BD. 1995. *Regulation in the Reagan-Bush Era: The Eruption of Presidential Influence*. Pittsburgh, PA: University of Pittsburgh Press.
- Gallego R. 2000. Introducing purchaser/provider separation in the Catalan health administration: a budget analysis. *Public Administration* **78**: 423–42.
- Green J. 1998. Commentary: grounded theory and the constant comparative method. *BMJ* **316**: 1064–5.
- Harrison MI. 2004. *Implementing Change in Health Systems: Market Reforms in the United Kingdom, Sweden and the Netherlands*. London: SAGE Publications.
- Howden-Chapman P. 1993. Doing the splits: contracting issues in the New Zealand health service. *Health Policy* **24**: 273–86.
- Hughes D, Leethongdee S, Osiri S. 2010. Using economic levers to change behaviour: the case of Thailand's universal coverage health care reforms. *Social Science and Medicine* **70**: 447–54.
- Jafari M, Rashidian A, Abolhasani F *et al.* 2011. Space or no space for managing public hospitals; a qualitative study of hospital autonomy in Iran. *International Journal of Health Planning and Management* **26**: e121–e137.

- Kavosi Z, Rashidian A, Pourreza A *et al.* 2012. Inequality in household catastrophic health care expenditure in a low-income society of Iran. *Health Policy and Planning* **27**: 613–23.
- Khosravi A, Taylor R, Naghavi M *et al.* 2007. Mortality in the Islamic Republic of Iran, 1964–2004. *Bulletin of the World Health Organization* **85**: 607–14.
- Lipsky M. 1980. *Street-Level Bureaucracy: Dilemmas of the Individual in Public Services*. New York: Russell Sage Foundation.
- Mattessich PW, Murray-Close M, Monsey BR. 2001. In: St. Paul MN, Amherst H (eds) *Collaboration: What Makes It Work*. 2nd edn. Wilder Foundation, Wilder Research Center.
- Mays N, Pope C. 2006. *Qualitative Research in Health Care*. England: Blackwell Publishing.
- McMahon TJ, Ward NL, Pruett MK, Davidson L, Griffith EEH. 2000. Building full-service schools: lessons learned in the development of interagency collaborative. *Journal of Educational & Psychological Consultation* **11**: 65–92.
- McManus J. 2010. Thailand's Universal Coverage Scheme: Achievements and Challenges. *An Independent Assessment of the First 10 Years (2001–2010)*. Nonthaburi, Thailand: Health Insurance System Research Office.
- Mehryar A. 2004. Primary health care and the rural poor in the Islamic Republic of Iran. *Scaling Up Poverty Reduction: A Global Learning Process*. Shanghai Conference, May 25–7. World Bank, p:4–6, http://web.worldbank.org/archive/website00819C/WEB/PDF/IRAN_PRL.PDF accessed 28 November 2013.
- Michael H, Ramesh M. 2003. *Studying Public Policy: Policy Cycles and Policy Subsystems*, Oxford University Press.
- Mills M. 1992. The case of food and health and the use of network analysis. *Policy Networks in British Government*, Oxford: Clarendon Press. pp. 149–66. doi:10.1093/acprof:oso/9780198278528.003.
- National Unit for Health Services Reform (NUHSR). 2005. *Health System Reform in the Islamic Republic of Iran*. 2nd edn. Tehran, Iran: National Unit for Health Services Reform, Ministry of Health & Medical Education.
- National Unit for PHC Expansion & Health Promotion (NUPHC). 2007. *The Operational Instruction for FM and Behbar*. Tehran, Iran: National Unit for PHC Expansion & Health Promotion, Ministry of Health & Medical Education.
- Nguyen H. 2011. The principal-agent problems in health care: evidence from prescribing patterns of private providers in Vietnam. *Health Policy Plan* **26**: i53–i62.
- Ormsby MJ. 1998. The provider/purchaser split: a report from New Zealand. *Governance* **11**: 357–87.
- Ostrom E. 1991. Rational choice theory and institutional analysis: toward complementarity. *The American Political Science Review* **85**: 237–43.
- Ostrom E. 2007. Institutional rational choice: an assessment of the institutional analysis and development framework. *Theories of the Policy Process*. Boulder, CO: Westview Press, pp. 35–72.
- Pollitt C. 1993. The politics of medical quality: auditing doctors in the UK and the USA. *Health Services Management Research* **6**: 24–34.
- Rajaratnam JK, Marcus JR, Flaxman AD *et al.* 2010. Neonatal, postneonatal, childhood, and under-5 mortality for 187 countries, 1970–2010: a systematic analysis of progress towards millennium development goal 4. *The Lancet* **375**: 1988–2008.
- Rashidian A, Eccles MP, Russell I. 2008. Falling on stony ground? A qualitative study of implementation of clinical guidelines' prescribing recommendations in primary care. *Health Policy* **85**: 148–61.
- Ryan NF, Parker RL, Brown KA. 2000. Purchaser-provider split in a traditional public service environment: three case studies of managing change. *Public Policy and Administration Journal* **9**: 206–21.
- Sabatier P, Hunter S, McLaughlin S. 1987. The devil shift: perceptions and misperceptions of opponents. *The Western Political Quarterly* **40**(3):449–76.
- Schlager E, Blomquist W. 1996. A comparison of three emerging theories of the policy process. *Political Research Quarterly* **49**: 651–72.
- Sheaff R, Lloyd-Kendall A. 2000. Principal-agent relationships in general practice: the first wave of English Personal Medical Services pilot contracts. *Journal of Health Services Research and Policy* **5**: 156–63.
- Siverbo S. 2004. The purchaser-provider split in principle and practice: experiences from Sweden. *Financial Accountability & Management* **20**: 401–20.
- Street A. 1994. *Purchaser/Provider and Managed Competition: Importing Chaos?*. West Heidelberg, Victoria, Australia: National Centre for Health Program Evaluation.
- Takian A. 2009. Implementing family medicine in Iran: identification of facilitators and obstacles. Ph.D. Thesis. London, UK: London School of Hygiene and Tropical Medicine.
- Takian A. 2013. The need for balanced health policies to avoid path dependent medicine. *International Journal of Health Policy and Management* **1**: 3–5.
- Takian A, Doshmangir L, Rashidian A. 2013. Implementing family physician programme in rural Iran: exploring the role of an existing primary health care network. *Family Practice* **30**: 551–9.
- Takian A, Rashidian A, Kabir MJ. 2011. Expediency and coincidence in re-engineering a health system: an interpretive approach to formation of family medicine in Iran. *Health Policy and Planning* **26**: 163–73.
- Tremblay M. 1998. *Finding Winners: Game Theory, Portfolio Analysis and the Internal Market*. Rainmaker Publications, an imprint of Tremblay Consulting. <http://www.tremblay-consulting.biz/wp-content/uploads/06-2-tremblay-game-theory-finding-winners-web.pdf>.
- Tynkkynen L-K. 2009. *Purchaser-provider models in Finnish health care*. *Health Policy Monitor*. Survey n: (14) 2009. http://hpm.org/en/Surveys/THL_-_Finland/14/Purchaser-provider_models_in_Finnish_health_care.html. accessed 19 June 2013.
- Wisford D. 1994. Path dependency, or why history makes it difficult but not impossible to reform health care systems in a big way. *Journal of Public Policy* **14**: 251–83.
- World Health Organization (WHO). 2006. *The role of contractual arrangements in improving health sector performance, experience from countries of the Eastern Mediterranean Region*. <http://gis.emro.who.int/HealthSystemObservatory/PDF/Contracting/Iran.pdf>. accessed 24 December 2013.
- World Health Organization (WHO). 2008. *The World Health Report*. 2008. Primary health care now more than ever. Geneva, Switzerland: World Health Organization.
- Worsham J, Gatrell J. 2005. Multiple principals, multiple signals: a signaling approach to principal-agent relations. *Policy Studies Journal* **33**: 363–76.
- Xu W, van de Ven WP. 2009. Purchasing health care in China: competing or non-competing third-party purchasers? *Health Policy* **92**: 305–12.
- Zolala F, Heidari F, Afshar N *et al.* 2012. Exploring maternal mortality in relation to socioeconomic factors in Iran. *Singapore Medical Journal* **53**: 684–9.
- Zolkiewski J. 2004. Marketization and the delivery of UK health services: three case studies. *Journal of Business Research* **57**: 1012–20.