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Original Article

Future Financing Scenarios for Iran's Healthcare System

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Abstract

Background: The financing function within a health system is considered inherently complex, so it is of utmost importance to design a suitable future for this system given uncertainties and complexities of the environment. With regard to the current and future complicated conditions, health system financing is also likely to succeed if it can anticipate the impacts of effective factors in the future and further plan appropriate interventions ahead of time. Thus, the purpose of this study was to develop scenarios for the health system financing in Iran.

Methods: This mixed-design research of exploratory future studies type was conducted using the scenario method. In this respect, the key variables were evaluated using a questionnaire from two aspects of importance and uncertainty as well as formation of a future studies group (focus group). Finally, sensitivity analysis was carried out through cross-impact balance (CIB) analysis using the Scenario Wizard (Version 4.31) software.

Results: A total of 25 factors were selected based on the type and the position of the variables (driving force, bi-dimensional, risk, secondary leverage or modifiable-to-secondary leverage) over the diameter of the MICMAC chart. Considering the degree of significance and uncertainty, eight variables including all four driving force variables (oil sales and economic blockade, leadership and advocacy, bureaucracy and corruption, and possibility of using information technology in providing services), as well as the variables of resource sustainability, natural disasters, regional security, and specialization culture were chosen. Then, five variables were finalized as the key changes that would create the scenario based on sensitivity analysis and final expert opinions. According to the defined conditions, 270 scenarios were developed, of which fourteen scenarios were identified as poorly adaptable and five cases as highly adaptable.

Conclusion: The best scenario identified in this study based on the degree of adaptation included the use of massive technology and oil sales, mediocre economic conditions with high probability of occurrence, strong leadership and advocacy, high regional security, as well as bureaucracy and low corruption with medium probability of occurrence.

Keywords: Financing, Future studies, Iran's health system, Scenario development

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Introduction

Achieving health, as well as its promotion, is regarded as one of the goals of governments, and it is further taken into account as one of the fundamental civil rights in many countries. Besides, realization and promotion of community health and fair collaboration in providing resources are considered among important goals within a health system which cannot be possible except through proper functioning of financing.[1] Therefore, financial reform is often introduced as the first step in reforms and also known as one of the prerequisites for the success of other reforms within a health system. In other words, in order to increase responsibility, accountability, transparency, compensation for increased costs, definition of priorities, objectives, as well as resource allocation at macro levels, reform in financial health system can be one of the most important objectives.[2]

The health system and subsequently its financing function are regarded inherently complex; various payers and providers are assumed responsible for providing healthcare services to patients in different geographical areas with the exception of non-integrated social systems consisting of governments. Social systems are also different from other types of systems because they are based on people's decision-making.[3] Health care financing in Iran is based on social insurance and is a pluralistic funding system.[4] There are three main sources of health care funding in Iran: general government budget, health insurance payments and individuals' out-of-pocket expenses.[4] Therefore, they are likely to cope with uncertainties and complexities in issues raised and decisions made in this regard.

A Brief Explanation of Iran's Financing System

The future of the health system financing in Iran is likely to encounter key challenges such as resource

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sustainability, appropriate risk distribution, as well as optimal distribution and allocation in the framework of achieving the dimensions of universal coverage of services, especially financial protection indicators such as direct out-of-pocket payments and extremely poverty-inflicting health expenses.[5] In such conditions, a successful health system will be able to anticipate the effects of these factors in the future and consequently plan appropriate interventions ahead of time. So, proper comprehension of these factors and opting for an appropriate reaction can be made possible through future studies methods.[6]

Future studies are known as an approach that not only include understanding of possible future but also prepare scholars for making decisions in the future. Future studies also begin by identifying future options, then examine the options considering their likelihood. They can correspondingly consider the desirability of the options. A wide range of techniques are also used in various approaches of future studies. In this regard, scenario development can be one of the most popular.[7]

Understanding the fact that the world has become more complex and the requirement to eliminate uncertainties, scenario development has become much more popular. Essentially, the scenario method was widely welcomed after the energy crisis in 1973 following its successful use by Shell Oil Company that enabled this company to effectively respond to the crisis. The increasing application of this method was also due to the fact that scenarios take the complexity of the real world into account and represent alternative insights for the future in a logical sequence of events. In general, scenarios are possible future images showing the logical sequence of events.[8]

Using quantitative and qualitative categories, scenario development is an attempt to focus on future alternatives. In fact, it is a way of thinking right and a new paradigm in the field of thought and action. This method also has an especially unique place in the field of strategy and planning and aims at correcting shortcomings in governing methods and strategic schools.[9] In the same way, the Scenario Wizard software was also designed by Wimer at the University of Stuttgart in Germany in 2007 based on the interaction matrix of different conditions creating scenarios. This matrix could examine experts' opinions about the probability of the occurrence of uncertainty of each factor on the other uncertainty of the other factor in the form of verbal expressions. Finally, the progressive adaptable scenarios of the system examined could be extracted through calculating the direct and indirect effects of the states on each other.[10]

Considering the factors influencing the health system financing, the present study aimed to investigate the future of financing in Iran and also to map out the key goals and strategies for the selected scenario using the future studies approach and the scenario development technique.

Materials and Methods

The present mixed-design research was of the exploratory future studies type using the scenario development method. To this end, the variables and the key factors were extracted based on a review of the related literature and expert opinions (published in another paper on this project). In this study, the identified key variables were collected by forming a future studies group (focus group) via a questionnaire and analyzed from two aspects of importance (effectiveness of driving forces, secondary leverage or modifiable-to-secondary leverage) and uncertainty (probability of occurrence in the future). The questionnaire used in this study was also standardized; i.e. scored on a Likert scale from 1 to 10. In order to reduce the number of important uncertainties detected in the first stage, the experts also omitted eight variables, and finally, sensitivity analysis was conducted by constructing consistent scenarios using cross-impact balance (CIB) analysis. In order to expand and focus on more probable and consistent scenarios, five variables and the main driving forces were also selected. The Scenario Wizard (version 4.31) software was used to analyze the data. Then, the future studies team identified the five scenarios with the highest likelihood of occurrence and also a desirable scenario based on these five variables. Ultimately, regulatory and independent strategies and key points were proposed on the basis of dual and objective variables.

Results

According to the 45 experts' opinions and the results of determining the key factors in the MICMAC software, 25 factors over the diameter of the MICMAC chart were selected based on the degree and the type of variables (driving force, bi-dimensional, risk, secondary leverage, or modifiable-to-secondary leverage). Based on their importance and uncertainty, eight variables including all four variables (oil sales and economic blockade, leadership and advocacy, bureaucracy and corruption, and possibility to use information technologies in providing services), and sustainability of resources, natural disasters, regional security, and specialization culture were chosen (Table 1).

The eight selected variables were entered into the Scenario Wizard software; then, the five variables were finalized in Table 2 as the key variables based on the results of the sensitivity analysis and the final experts' opinions that would create the scenario. According to the scenarios defined in Table 2, 270 scenarios were developed, of which fourteen cases were poorly adaptable and five scenarios were introduced as highly adaptable.

Based on the experts' intended scenarios, the ones that were more stable and coherent were selected based on the degree of compatibility. Among the five compatible selected scenarios, the scenario which is shown in Table 3, and Table 4 was identified as the best one with the highest degree of consistency among different modes.

Discussion

Based on the findings, the best scenario was identified in accordance with the degree of compatibility including

Table 1. Key Variables Based on Status, Importance, and Uncertainty Affecting the Health Financing Scenario for Iran

No.	Classification Based on the MICMAC Chart	Key Factors for Creating Possible Scenarios	Degree of Importance		Uncertainty		Selected Variables
1	Driving force of the first quarter	Economic blockade and oil sales	10	Much	10	Much	☑
2		Making decisions and successful advocacy	9	Much	8	Much	☑
3		Administrative bureaucracy and fight against corruption	8	Much	7	Medium	☑
4		Possibility to provide remote services using vast technologies	8	Much	6	Medium	☑
5	Double	Country's development pattern	9	Much	5	Medium	☐
6	Risk	Government's political stability	8	Much	4	Medium	☐
7	Secondary leverage	Single-product economy	9	Much	3	Low	☐
8		Resource stability	10	Much	9	Much	☑
9		Membership in the World Trade Organization (WTO)	8	Much	2	Low	☐
10		Education and training	7	Medium	4	Medium	☐
11		Arrival of postmodern tendencies in the field of health	8	Much	5	Medium	☐
12		Separation of various governance roles in the field of health	8	Much	4	Medium	☐
13		Natural disaster	9	Much	9	Much	
14	Regulatory variable of modifiable-to-secondary leverage	Latent unemployment of vulnerable people	8	Much	6	Medium	☐
15		Overseas migrations	4	Medium	5	Medium	
16		Intra-national immigration (creating suburban areas)	5	Medium	4	Medium	☐
17		Changes in family structure	6	Medium	3	Low	
18		Regional security and political crises	10	Much	8	Much	☑
19		Inflation or stagnation (sustainability of economic situation) and stability of exchange rate	10	Much	8	Much	☐
20		Specialization culture	8	Much	3	Low	
21		Global warming and drought	5	Medium	3	Low	☐
22		Age pyramid and population bubble	8	Much	3	Low	
23		Changes in roles of women in society	6	Medium	5	Medium	☐
24		Industrial pollution of megacities (water, soil, air)	7	Medium	6	Medium	☐
25		Existence of harmful products in a country	6	Medium	3	Low	☐

Table 2. Scenario Factors and States or Various Presuppositions for Each

Level	Factor Code	Title	Scenario State Codes	Scenario Description	Scenario State Type	Probability	Percent
Economic	A	Oil sales (economic blockade)	a-1	Favorable oil sales and income	Favorable	Low	0
			a-2	Mediocre oil sales and income	Medium	High	60
			a-3	Low oil sales and income	Unfavorable	Medium	40
Managerial and political	D	Making decisions and successful advocacy	d-1	High leadership power and advocacy	Favorable	Low	20
			d-2	Mediocre leadership power and advocacy	Unfavorable	Medium	40
			d-3	Poor leadership power and advocacy	Unfavorable	Medium	40
	E	Administrative bureaucracy and fight against corruption	e-1	Bureaucracy and very little corruption	Favorable	Medium	40
			e-2	Bureaucracy and existing corruption	Unfavorable	Low	20
			e-3	Bureaucracy and high corruption	Unfavorable	Medium	40
	F	Regional security and political trends	f-1	Secure area with low political crises	Favorable	Medium	40
			f-2	Fragile regional security with political crises	Medium	Low	20
			f-3	Regional insecurity and many political crises	Unfavorable	Medium	40
Technology	G	Possibility to provide remote services	g-1	Widespread use of modern technologies and information technology (IT)	Favorable	Much	60
			g-2	Exploiting existing novel technologies and IT	Unfavorable	Available	40

the use of massive technologies and oil sales, medium economic conditions with high probability of occurrence, strong leadership and advocacy, high regional security, as well as bureaucracy and low corruption.

Based on the key factors identified in this study (MICMAC chart), the macro financing strategies and the selected scenario environment were proposed as follows (Table 5).

The development pattern of a country, in particular the development of the health sector, is a dual variable

Table 3. Compatible Scenarios of the Health Financing System

Scenario No. 1	Scenario No. 2	Scenario No. 3	Scenario No. 4	Scenario No. 5
A. oil income (economic blockade): - A2 middle oil income		A. oil income (economic blockade): - A3 low oil income	A. oil income (economic blockade): - A2 middle oil income	A. oil income (economic blockade): - A3 low oil income
D. make decision with limited advocacy: - D2 middle leadership and advocacy		D. make decision with limited advocacy: - D1 good leadership and advocacy	D. make decision with limited advocacy: - D3 poor leadership and advocacy?	
E. Bureaucracy-corruption: - low Bureaucracy-corruption	E. Bureaucracy-corruption: - E2 middle Bureaucracy-corruption	E. Bureaucracy-corruption: - low Bureaucracy-corruption	E. Bureaucracy-corruption: - E3 high Bureaucracy-corruption	
F. security political crisis: -F1 high security political& low crisis		F. security political crisis: -F2 current situation of security political crisis	F. security political crisis: - F3 low security political& high crisis	
G. IT improvement: - G1 high IT improvement			G. IT improvement: - G2 current IT situations	

Table 4. The Best and the Most Logical Scenario Compatible with the Health System Financing for Iran

Descriptor	Assumption	Consistency Value
G. IT improvement	-G1 high IT improvement	5
A. oil income (economic blockade)	-A2 middle oil income	3
D. make decision with limited advocacy	-D2 middle leadership and advocacy	2
F. security political crisis	-F1 high security political& low crisis	2
E. Bureaucracy-corruption	- low Bureaucracy-corruption	0

Table 5. Macro Strategies Proposed Based on the Environment of the Favorable Compatible Scenario (Selected)

Categorization of Strategies	Key Factors Affecting Financing Environment (Below the Diameter of the MICMAC Chart)	Strategies Based on Key Variables
Macro strategies to build sustainability of the financing system	Independent factors	Applying health technology assessment
		New financing methods
		Changing the structure and mechanism of taxation and tax collection rules
		Changing the structure and mechanism of insurance and rules for collecting insurance per capita
Macro financial strategies establishing a favorable financing situation for Iran	Based on target factors	Changing consumption patterns and behaviors in providers and recipients of services
		Modifying the tariff system and the payment system to reduce differences in income
		Reforming the investment system and management of investment funds in the field of health in interaction with operating banks
Macro strategies of service provision Creating favorable financing conditions for Iran	Depending on the regulatory factors that can be modified to the target	Strengthening the referral system and leveling service provision based on quality assured services
		Development of palliative care and rehabilitation services
		Increasing health literacy in social networks to promote self-care
Macro strategies for stewardship and resource management Creating a favorable financing condition for Iran	Based on regulatory factors that can be modified to the target	Transparency of financial information in fighting against corruption and black markets
		Changing legal and joint structures of private and public sectors together with the empowerment of the private sector
		Optimal management of human resources

that can also affect all factors and strategies as well as the system instability. Therefore, using a high-level leadership and advocacy scenario, a paradigm shift is almost always needed to move away from treatment-centeredness to the promotion of health based on effective social components.[11] This fundamental shift has been also mentioned in other studies. In this regard, the variable of the risk of management stability and the existence of a unitary discourse based on the consensus of different currents is similarly considered as a sensitive risk point.[12]

To this end, four strategies should be taken into account as ones adopted to stabilize the health system financing including decision-making and advocacy through the use of health technology assessment, use of new financing methods, restructuring of the tax and insurance mechanism, as well as tax collection and insurance laws.[13]

On the basis of key target variables, macro-strategies for paradigm shift and key changes in the financing system towards the desired status also include three strategies of changing consumption patterns and behaviors in providers and recipients of services, reforming tariff system and payment system to reduce differences in income, and modifying investment system and management of funds in the field of health in interaction with operating banks as highlighted in many studies.[14]

Based on the target-oriented regulatory factors, the two main categories of strategies related to provision of services as well as stewardship and resource management were developed. The service provision strategies included strengthening referral system and leveling provision of services on the basis of service quality assurance, developing palliative care and rehabilitation services, and integrating use of complementary or alternative medicine and increased levels of health literacy in social networks to enhance self-care status.[15]

Stewardship-related strategies and managers can also include transparency of financial information and reform payment system in terms of fight against corruption and black markets, and consequently change legal and joint sectors of private sector together with empowerment of private sector as well as optimal management of human resources.[16] Using these macro strategies, it is hoped that the key indicators of the area of financial protection based on sustainable resources, such as direct payments from the pocket and extremely poverty-inflicting health expenses are reduced.[1]

Limitation: Generally, the scenario-based theory is dependent on factors which can be changed on the level of the country, such as sanctions, or on a global level, such as COVID-19. The results of the scenario-based theory can be achieved or help policy makers in the situation where the country conditions return to sample l conditions.

In conclusion, in order to achieve the optimum situation in Iran's health system financing, the use of widespread modern IT is suggested to expand electronic services within healthcare which can also increase the ability of advocacy and strong leadership based on evidence-based decision-making in this area and consequently provide a basis for reducing bureaucracy and corruption. Interaction with such driving force factors can similarly provide the necessary context for changing paradigms from treatment-centeredness to health-centeredness in Iran's development plan, especially in the health sector. In this regard, provision of services, stewardship and resources management, and macro-based strategies for the financing function should be based on the target variables or leverages modifiable to the objectives proposed in this study. Besides, a road map and a strategic plan should be developed for each one based on the scenario environment. It is also suggested that stakeholders should conduct an analysis for each strategy and its related strategic plan, and policy-makers should put the identification of the role of each player and activists in that field in their agenda as part of their duty.

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Authors' Contribution

Design and conception: MR, AH; data acquisition: MR, RD, MM and MA; analysis and interpretation: MR, RD, MM; and writing the manuscript: MR, RD, MM and AF. All the other authors including MR, AH, RD, MM, MA and AF have read and agreed with the final article.

Conflict of Interest Disclosures

The authors declare that they have no competing interests.

Ethical Statement

Ethical Statement The ethics committee of the Kerman University of Medical Sciences approved the study protocol. This study has been registered at Institute for Futures Studies in Health in 2015.

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