

Structural and Contextual Dimensions of Iranian Primary Health Care System at Local Level

Mehdi Zanganeh Baygi¹; Hesam Seyedin^{1,*}; Masoud Salehi²; Mehdi Jafari Sirizi³

¹International Campus, Iran University of Medical Sciences, Tehran, IR Iran

²Department of Biostatistics, Faculty of Public Health, Iran University of Medical Sciences, Tehran, IR Iran

³Health Management and Economics Research Centre, School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, IR Iran

*Corresponding Author: Hesam Seyedin, International Campus, Iran University of Medical Sciences, Tehran, IR Iran. Tel: +98-2188772088, E-mail: h.seyedini@iums.ac.ir

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Background: In recent years, family physician plan was established as the main strategy of health system in Iran, while organizational structure of the primary health care system has remained the same as thirty years ago.

Objectives: This study was performed to illustrate structural and contextual dimensions of organizational structure and relationship between them in Iranian primary health care system at local level.

Materials and Methods: A cross-sectional quantitative study was conducted from January to June 2013, during which 121 questionnaires were distributed among senior and junior managers of city health centers at Medical Sciences universities in Iran. Validity of the questionnaire was confirmed by experts (CVI = 0.089 and CVR more than 0.85) and Cronbach α was utilized for reliability ($\alpha = 0.904$). We used multistage sampling method in this study and analysis of the data was performed by SPSS software using different tests.

Results: Local level of primary health care system in Iran had mechanical structure, but in contextual dimensions the results showed different types. There was a significant relationship between structural and contextual dimensions ($r = 0.642$, P value < 0.001). Goals and culture dimensions had strongest effects on structural dimensions.

Conclusions: Because of the changes in goals and strategies of Iranian health system in recent years, it is urgently recommended to reform the current structure to increase efficiency and effectiveness of the system.

Keywords: Health Services Administration; Organizational Structure; Organizational Culture; Primary Health Care; Iran

1. Background

Health is a valuable asset, which paves the way for the development of personal capabilities as well as steady development of the society. Promoting health is not only a responsibility but also a right and as mentioned by the Iranian constitution, the government must provide health care to population on an equitable basis (1). Iran has signed the Alma-Ata Declaration in 1978, aiming health for all by the year 2000 using the primary health care (PHC) strategy (2). Moving in this direction, policy-makers in Iran decided to enact and enforce the laws to reach the goal (3). To this effect, considerable changes were made in organizational structure of the health system. In 1985, at national level, medical education was merged with the health system duties and the Ministry of Health and Medical Education (MOHME) was developed (4). MOHME is responsible for all aspects of planning, leadership, supervision, and evaluation of health services in the country, including training of human resources for health at all levels (1). Moreover, at regional level, Medical Sciences universities were founded. Universities function independently but under the general rules and policies of MOHME (1).

In addition, health networks (HN) at local level are the

most natural administrative level promoted by WHO for health delivery (5). The networks comprise City Health Centers (CHCs) and City hospitals. Also, at first level, Urban and Rural Health Centers (UHC and RHC) were formed to affect health status. At this level, Health houses in villages and Health posts in cities deliver health services (Figure 1) (5).

This structure had enormous efficiency in its first two

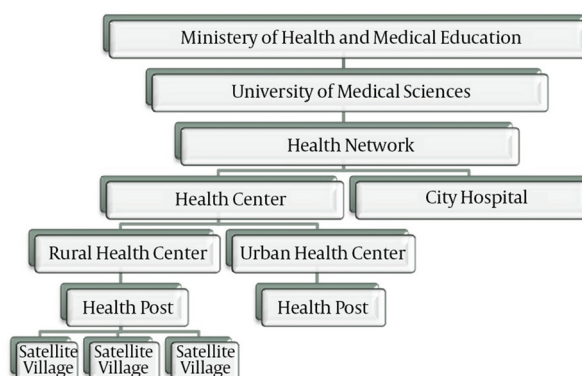


Figure 1. Organizational Structure of the Health System in Iran

decades of its operation (1, 3, 5, 6), as WHO reported in 2008: "the Islamic Republic of Iran's progressive roll-out of rural coverage is an impressive example of this model" (7).

In recent years, the MOHME implemented family physician and referral system plan as the main strategy in all rural areas and some cities (8). Despite the reforms, organizational structure of PHC system has not changed over the last thirty years (2). Organizational structure reform is required to have appropriate performance regarding new goals and strategies (9). A systematic review showed an imbalance between organizational structure and goals and strategies in Iran PHC system in 2013 (10). Also, the World Bank (WB) report stated that the current Iranian health system is inappropriate (11). Because an appropriate structure should be specified for reforms (12) and there was not any research about organizational structure of the system, this study aimed to illustrate the current organizational structure of PHC system at local level to help policymakers to better understand the weaknesses and strengths of the current system.

It is organizational structure that determines, organizes, and coordinates all organizational activities (9). Organizations design specific structures to perform their activities, increase coordination, and control their employees (13). Conformity of organizational structure with goals and strategies increases efficiency and effectiveness (14). Moreover, studies show that appropriate organizational structure promotes productivity, performance, and innovation (15-17).

Daft has divided Organizational structure into two dimensions: structural and contextual (13). Structural dimensions, which represent internal characteristics of organizations include formalization, complexity, centralization, specialization, standardization, hierarchy of authority, professionalism, and personnel ratios. These dimensions create a basis for measuring and comparing organizations. On the other hand, contextual dimensions are composed of goals, strategies, environment, culture, size, and technology. They describe organizational settings that influence and shape the structural dimensions (13). Table 1 shows the classification of contextual dimensions used in this study (18). Based on structural conditions, organizations are divided into organic and mechanical structures. Organic organizations have low formalization, complexity, and centralization, but mechanical organizations are quite the opposite (9).

In a study about organizational structure of Eastern Azerbaijan governorship in Iran, the structure was identified as mechanical with high formalization, complexity and centralization (19). In another study in 2013, organizational structure of Iranian Azad University was found mechanical with low complexity (17). High centralization in Iranian health system was mentioned in some studies (2, 20, 21). On the other hand, in a qualitative study about organizational structure of psychosocial care centers in Brazil, low formalization and specialization, high pro-

fessionalism, and decentralized decision making were detected as a result of team working (22). Significant relationship between contextual and structural dimensions was shown in a study about organizational structure of Iranian universities in 2004. In this research, except environment, all other contextual dimensions affect structural dimensions (23).

Table 1. Classification of Contextual Dimensions in This Study

Contextual dimensions	Classification
Goals and strategies	well-defined goals-goals not defined
Environment	unstable environment-stable environment
Organizational culture	clear norms and values-ambiguous norms and values
Technology	high effect of technology-low effect of technology
Size	large size-small size

2. Objectives

In the present study, researchers attempted to detect and explain structural and contextual dimensions and relationship between them in organizational structure of Iranian PHC system at local level.

3. Materials and Methods

3.1. Data collection

A quantitative approach was adopted for this research. This cross-sectional study was conducted in Iran from January to June 2013 and data were collected at one time point from the sample organizations. A comprehensive questionnaire, which had used to detect organizational structure at Tehran University was utilized as an instrument to collect data (24). The questionnaire included demographic information and 88 questions, which were divided into 13 structural and contextual dimensions. Sixty questions cover 8 structural dimensions (formalization, complexity, centralization, specialization, standardization, hierarchy of authority, professionalism, and personnel ratios) and 28 other questions examine 5 contextual dimensions (goals and strategies, environment, culture, size, and technology). Five-level Likert scale was used to rate the answers; the choices of them were, "strongly agree," "agree," "I do not know," "disagree," and "strongly disagree," which scored from 5 to 1. Score of each dimension was calculated by adding scores of each item.

In order to ensure asking the right questions and avoiding ambiguity, a pilot study was performed to test the validity and reliability of the questionnaire, and amendments were made to the questionnaire as a result of the pilot study. To test the validity, the questionnaire was sent to 20 specialists of organizational structure, and their

views were considered (CVI = 0.089 and CVR more than 0.85). In addition, to examine the internal consistency of the questionnaire, it was sent to 25 CHC managers, from them, 23 questionnaires were returned. The Cronbach α was 0.904, which shows a significant reliability for the questionnaire.

3.2. Sampling; Universities Clustering

Because of the various Medical Science universities in Iran, it was inapplicable to distribute the instrument in all universities. Therefore, universities were classified by K-Means Clustering method using seven important health indicators, which have been selected by health experts. They included infant mortality rate, under-one mortality rate, under-five mortality rate, low birth weight rate, delivery at home by unskilled attendants, crude birth rate, and population growth rate (25). Indicators have extracted from vital horoscope annually (26). Universities were classified in 3 clusters: good, intermediate, and weak.

By multistage sampling method, one university from every cluster was selected randomly: Shahid Beheshti, Sari, and Zahedan. Then, cities of these universities were classified into three clusters (good, intermediate, and weak) based on the same indicators. Because of the time and cost limitations, one city was selected from each cluster. At the end, 9 cities were selected randomly from 3 universities: Shahriar, Robat Karim, and Firuzkuh from Shahid Beheshti University, Galugah, Behshahr, and Neka from Sari University, and finally Zahedan, Konarak, and Iranshahr from Zahedan University.

All 121 CHC senior and junior managers in these health centers were selected as respondents. There were no inclusion or exclusion criteria for the study. Researchers hold a meeting to explain the study in each city for respondents. Then, the questionnaires were completed by them. Ethical issues such as voluntary participation, con-

fidentiality, and anonymity were considered in the study.

3.3. Data Analysis

The data were entered into SPSS software and after its clearance, the whole dataset was analyzed. After consulting a statistician and relevant literature to analyze the data, it was decided to assign a scale from 1 to 5 (from "completely disagree" to "completely agree"). Frequency tables, mean, standard deviation, and variance were used to describe the data and Shapiro-Wilk test, independent samples t test, 1-way analysis of variance (ANOVA), correlation coefficients (Pearson and Spearman), and multiple linear regression analysis were utilized for data analysis. Also, the normality assumption, independency and homogeneity of variances assumption were checked for t test and ANOVA tests.

4. Results

4.1. Demographic Information

Nine senior and 112 junior managers (52 men and 69 women) completed the questionnaire. The average age of respondents was 35.8 (± 6.6) years and their work record average was 12 (± 7.1) years. Eighty-one percent of the respondents had bachelor's or master's degree and 19% were physician.

4.2. Current Condition of Structural Dimensions

Based on the number of items in each dimension of the questionnaire, score range, upper range, and lower range were scaled. By calculating the scores, authors determined the level of structural dimensions in the current condition. Table 2 showed that local level of PHC system in Iran had high position in all dimensions except professionalism. On the whole, the structural dimensions of the system were mechanical.

Table 2. Iranian PHC System at Local level: Current Condition Level of Structural Dimensions ^a

Dimension	Items Number	Score Range	Lower Range	Upper Range	Raw Score	Transformed Score, %	Current Condition Level
Formalization	12	12-60	12-36	37-60	41.2 \pm 7.1	68.6	High ^b
Complexity	6	6-30	6-18	19-30	18.8 \pm 3.4	62.6	High ^b
Centralization	14	14-70	14-42	43-70	43 \pm 7.9	61.4	High ^b
Specialization	4	4-20	4-12	13-20	14.4 \pm 2.9	72	High ^b
Standardization	4	4-20	4-12	13-20	13.6 \pm 2.7	68	High ^b
Hierarchy	10	10-50	10-30	31-50	32.7 \pm 5.9	65.4	High ^b
Professionalism	6	6-30	6-18	19-30	16.7 \pm 4.8	55.6	Low ^c
Personnel ratio	4	4-20	4-12	13-20	13.2 \pm 3	66	High ^b
Total	60	60-300	60-180	181-300	193.9 \pm 20.5	64.6	Mechanical ^b

^b High level and Mechanical > 60%.

^c Low level and Organic \leq 60%.

^a Data are presented as Mean \pm SD.

Table 3. Iranian PHC System at Local Level: Current Condition Level of Contextual Dimensions

Dimension	Items Number	Score Range	Lower Range	Upper Range	Raw Score; Mean \pm SD	Transformed Score; %	Current Condition Level
Goals	8	8-40	8-24	25-40	26.4 \pm 5.2	66	Well-defined ^a
Environment	9	9-45	9-27	28-45	31.9 \pm 4.7	70.8	Dynamic ^a
Culture	4	4-20	4-12	13-20	11.6 \pm 3.3	58	Ambiguous norms and values ^b
Technology	4	4-20	4-12	13-20	13.5 \pm 3.5	67.5	High effect ^a
Size	3	3-15	3-9	10-15	7.7 \pm 2.4	51.3	Small ^b
Total	28	28-140	28-84	85-140	91.2 \pm 14.3	65.1	Proper ^a

^a > 60%.^b \leq 60%.

4.3. Current Condition of Contextual Dimensions

Scaling method of these dimensions was similar to the structural dimensions; however, in this part, the current condition had been determined according to Table 1. Results indicated that the local level of PHC system in Iran had well-defined goals and strategies, dynamic environment, ambiguous norms and values, and small size. Also, technology had strong effect on the system. Totally, the contextual dimensions of the system were proper (Table 3).

4.4. Comparison of the Results Among Different Universities and Different Posts

By using Schapiro-Wilk test to check the normality of total structural dimensions, it was found that the dimensions in different universities and posts were distributed normally ($P > 0.05$). Next, 1-way ANOVA test showed that there was no statistical difference among the mean of total structural dimensions in three universities ($P = 0.055$). Also, based on independent samples t test, there was no statistical difference among two groups of respondents: CHC senior and junior managers ($P = 0.894$).

4.5. Relationship Between Contextual and Structural Dimensions

Shapiro-Wilk test showed that contextual dimensions were not distributed normally ($P < 0.05$). Therefore, Spearman correlation coefficient test was used. Results showed that all of the structural dimensions had significant relationship with contextual dimensions in the current condition ($P < 0.001$). Centralization dimension had an inverse relationship with the contextual dimensions, however, the other structural dimensions had direct relationships (Table 4).

4.6. Prediction of Most Important Contextual Dimensions Which Effect on Total Structural Dimensions

Correlation coefficient only shows the bivariate relationship between different variables, but regression

analysis considers the relationship of the independent variables on dependent variable simultaneously. Multiple linear regression analysis, after checking its assumptions, showed that environment and size dimensions had no effects on total structural dimensions. Therefore, after removing insignificant dimensions in the final model (Table 5), the goals dimension had the strongest effect on the total structural dimensions, and the culture and technology dimension were in the second and third rank, respectively ($P < 0.05$).

Table 4. Correlation Coefficients Between Contextual and Structural Dimensions in Iranian PHC System at Local Level

Dimension	Spearman Correlation Coefficient	P Value ^a
Formalization	0.523	< 0.001
Complexity	0.385	< 0.001
Centralization	-0.562	< 0.001
Specialization	0.443	< 0.001
Standardization	0.504	< 0.001
Hierarchy	0.684	< 0.001
Professionalism	0.617	< 0.001
Personnel ratio	0.482	< 0.001
Total structural dimensions	0.642	< 0.001

^a Significant level $\alpha = 0.05$.**Table 5.** Final Model of Linear Regression Analysis Between Contextual and Structural Dimensions in Iranian PHC System at Local Level^a

Dimension	Est	SE	SdE	P Value ^b
Goals	1.605	0.329	0.407	< 0.001
Culture	1.343	0.483	0.221	0.006
Technology	1.123	0.476	0.195	0.020

^a abbreviations: Est, Estimate; SE, Standard Error; SdE, Standardized Estimate.^b Significant level $\alpha = 0.05$.

5. Discussion

Based on literature review, most of the published articles about Iran's health system are about target achievements and outcomes. For instance, a supplementary issue of Iranian Journal of Public Health in 2009 titled: Iran's achievements in health, three decades after the Islamic revolution (27). There was only a systematic review similar to this research carried out in 2013. The authors concluded that: "because of the fundamental changes in goals and strategies, reforms in the organizational structure of PHC system in Iran, especially in peripheral levels are highly recommended" (10). Also, this study can have useful results in this regard.

This study showed that organizational structure at local level of PHC system in Iran is mechanical. All structural dimensions except professionalism are located at high level. The reason for the low level of professionalism is the need for skillful employees, which has been neglected. Similar to the present findings, mechanical structure with high formalization, complexity, and centralization was identified in organizational structure of Eastern Azerbaijan governorship in Iran in 2012 (19). Also, the organizational structure of Iranian Azad University was mechanical with low complexity (17). These studies showed that organic structure has been neglected in these organizations despite recommendations of modern management models (9, 18).

High level of formalization, standardization, and specialization at this level might be due to diversity of activities, procedures, and jobs such as supervising family health, disease control, and environmental health activities of lower level, which are performed in the system (6). A similar study in 2008 showed that organizational structure at Chinese universities was mechanical with high formalization, standardization, and specialization (28). Contrary to these results, in a qualitative study about organizational structure of psychosocial care centers in Brazil, low formalization and specialization, high professionalism, and decentralized decision making were detected as a result of team working (22).

High centralization in the local level of PHC system in Iran is shown in the current study. Most previous researches in Iranian health system in different units support this issue (2, 20, 21). Moreover, WB report confirmed high centralization in PHC structure of Iran (11). Despite the formation of boards of trustees in all universities in Iran, decision making has not been decentralized properly, which requires consideration (29). Similar to Iran, PHC system in Thailand was over centralized based on a qualitative study in 2013 (30). In this regard, WHO and WB recommended governments, especially in developing countries to decentralize their health systems (31). Of course, this procedure has different effects in various countries. In a study, success of decentralization with proper outcomes was identified in four countries. For example, it concluded with proper outcomes in treatment

of the patients in Malawi (32); however, decentralization on health financing and governance policies in Mexico produced both positive and negative effects (33).

In this study, ambiguous norms and values in organizational culture of the system were significant considering the findings of contextual dimensions. As it was said: "Organizations whose cultures do not tolerate ambiguity, are closed to admitting mistakes, punish mistakes, and fall into the mechanistic category from the organizational cultural viewpoint" (34). Scott and colleagues believed that: "Managing organizational culture is increasingly viewed as an essential part of the health system reform". Moreover, they stated that: "yet planned culture change is a difficult, uncertain and risky enterprise" (35). Hence, to reach a better situation such as learning organizations or motivation in the work context, more attention should be paid to this issue (36).

In view of other contextual dimensions, well defined goals and strategies, dynamic environment, small size, and high effect of technology on Iranian PHC system at the local level, the findings of Brodar study about organizational structure of public sector in Varazdin county in Croatia were similar to this research (37). Also, in psychosocial care centers in Brazil, contextual dimensions such as complex environment, and small size were similar to our findings, however, regarding technology dimension, their results were different (22). The authors believed that: "low formalization level seems to be ideal for a small organization" but, in Iranian PHC system there is high formalization.

Significant relationship and effects of contextual dimensions on structural dimensions in this research were consistent with other studies (9, 18). Similar to the present findings, Farhanghi et al. believed that information technology affects structural dimensions and leads to high performance (38). In a study about organizational structure of Iranian universities, all contextual dimensions except environment affected structural dimensions (23). Another similarity with this study was that there was no difference between structures at universities. On the other hand, in that study technology had the most influence among contextual dimensions, despite the highest effects of goals and strategy in the present research (23).

Now, Iran is on the verge of running family physician and referral system plan as the most important reform in the health sector (8). Based on the present findings, decentralization is one of the main processes, which should be considered in the system. Majority of rules, programs, and guidelines are needed to be revised to reduce the formalization. High level of complexity leads system to be more fragmented and bureaucratic, which should be reformed based on new goals and strategies. As a result of these reforms, the system will be more organic. In this regard, paying attention to contextual dimensions, especially organizational culture can accelerate these processes. Upstream policies such as Iran fifth five-Year Development Plan and Iran's Health Map emphasize "im-

plementing universal and comprehensive health care system based on PHC system” and “modifying the organizational structure of health services network in order to meet priorities and basic needs” (39). Finally, it is clear that without appropriate adjustment between goals and strategies with organizational structure in PHC system, policymakers cannot successfully conduct their plans.

Difficulty of access to some important managers in different cities during the study and variety of items in the questionnaire limited our research. In this regard, authors arranged with respondents before going to the cities and hold the meeting to explain the concepts. Selection of different levels of universities and participants were strengths of this study; however, small sample size (because of time and cost limitation) was weakness of the study.

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Authors' Contributions

Designing the method of study; collection, validation, and analysis of the data; drafting the manuscript, and final revision: Mehdi Zanganeh Baygi and Heasm Seyedin. Validation and analysis of the data and final revision: Masoud Salehi and Mehdi Jafari Sirizi.

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