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Designing A National Model of Medical Facilities Fair Distribution for Iranian Social Security Organization

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Abstract

Background: Fair Distribution of Medical Facilities is one of the most critical issues affecting economic and health indicators. Iranian Social Security Organization (ISSO) is a non-governmental organization responsible for providing medical services to insured individuals in 77 hospitals, 265 polyclinics, and clinics that has faced much demand from the insured to build a new medical center. So, Due to the significant role of ISSO in meeting the medical needs and its high coverage (almost 42%) in Iran, we aimed to identify the factors influencing medical facilities' fair distribution in the ISSO. **Materials and Methods:** This applied study was conducted as a descriptive study in the ISSO in 2018. Variables affecting medical facilities distribution were elicited from the literature review and through an interview with 16 experts who were occupied in the healthcare management field. Then, a Likert scale-based questionnaire with 56 items in 7 sections was developed. Questionnaires were distributed among 456 person received questionnaires, and 415 responded to all questions. All participants were experts in the healthcare section of the ISSO all over the country. Data were analyzed via exploratory and confirmatory factor analysis and structural equations using SPSS 23 and AMOS-24 software. **Results:** By exploratory and confirmatory factor analysis, seven main factors (demographic factors, geographical factors, functional factors, structural factors, humanistic factors, economic factors, and Contract parties factors) were identified as critical factors affecting medical facilities distribution. Each aspect included many components. AMOS software showed the significance of variables by P-value and critical ratio (CR) indices to analyze the conceptual model of the research. Function factors with standard coefficients of 0.85 had the most, and economic factors with a standard coefficient of 0.53 had a minor effect on the distribution of medical facilities in the ISSO. **Conclusion:** To have a more efficient medical facilities distribution in the ISSO must consider all identified factors, special attention should be given to the maximum use of available medical facilities. Furthermore, more attention should be paid to distributing human resources, finance, and medical equipment. **[GMJ.2022;11:e2012] DOI:10.31661/gmj.v11i.2012**

Keywords: Medical Facilities Distribution; Social Security Organization; Equity

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Introduction

The notion of distributive justice includes broad meaning concerning the health care systems because there are many different levels in providing health services and many affecting factors that can Influence the concept [1]. The World Health Organization charter and numerous international treaties have stated that all people have the right to access the highest standard level of health care [2, 3]. However, in many countries, health outcomes and quality of life vary from one point to another [3], resulting from inequity in the Allocation of Scarce Medical Resources [4]. Slum areas and marginalization have been increased because of urbanization [5, 6]. Moreover, high rural-urban migration and also other unavoidable factors have challenged equitable access to health care [4]. Therefore, politicians should consider the fair distribution of health services as a core objective according to the principle of horizontal equality [5] and prioritize who needs it most [1, 6, 7].

Iranian Social Security Organization (ISSO) is a public, non-governmental organization responsible for providing medical services directly (by ISSO's clinics and hospitals) and indirectly (by purchasing used services and contracts with physicians and all types of medical centers) to those covered by insurance [8].

According to ISSO's legal duties as direct services, it is responsible for managing medical centers and providing medical services free of charge to the insured individuals, specifically in 77 hospitals, 265 polyclinics, and clinics in 231 cities [9]. Many cities do not have a medical center, therefore insured demand from ISSO to provide medical services in the form of new clinics [10].

ISSO covers almost 42% of Iranians [11], and a substantial budget has been considered in this sector. As for the gap between the population's health needs and what is economically feasible to provide, which means ISSO's financial constraints, it is necessary to distribute health services equitably and avoid parallel and excess investment, especially in economically weak areas [12].

On the one hand, inappropriate distribution of facilities may lead to wasting resources [12, 13] and, on the other hand, can impose an extra cost to the system [12].

Heeding to this issue is very consequential due to other providers' presence in Iran, such as public, private, charitable, and academic medical centers [11, 14]. Equitable provision of health care services has been a concern for governments since years ago, but it has always faced serious challenges and obstacles. Allocating financial resources to health care priorities would be an excellent solution but obviously cannot solve problems alone [15].

Currently, in ISSO, the decision to establish medical centers in different cities has been made based on the insured population.

Although this is an important index, many other factors such as financial and human resources, deprivation, and political, economic, and social status are related to setting up medical centers [12,15,17].

It indicates the necessity of paying attention to the distribution of medical services across the country, considering the needs of different regions and affecting factors, including workforce availability [15, 17].

In this study, we aimed to design a national model for fair distribution of medical facilities in the ISSO by determining barriers that can influence access to those facilities. We hope it can help policymakers have a better vision for decision-making, towards allocating health care resources.

Materials and Methods

Questionnaire

This descriptive study was conducted in medical centers in the ISSO of Iran in 2018. Participants' work experience in hospitals as managers and experts were considered more than 15 years. In the preliminary stage of the study, access barriers to health services, as variables and factors affecting Medical Facilities Fair Distribution, were extracted from the literature review (books, journals, documents, reports, scientific papers, and search engines such as Irandoc, Medline, Pubmed Central, and Scopus). The time frame for the searches covered the period from 1994 onward.

Then factors were evaluated through interviews with 16 experts who were occupied in healthcare management in ISSO and Azad Tehran University of medical science.
The Likert scale-based five-point questionnaire with 56 items in 7 areas was developed based on determinate factors. These seven areas consist of demographic factors (5 components), geographical factors (8 components), functional factors (11 components), structural factors (15 components), humanistic factors (7 components), economic factors (6 components), and Contract parties factors (4 components).

Sample Size Calculation
To distribute the questionnaire by using the stratified method, the sample sizes in each province were determined in proportion to the size of the statistical population. Finally, after random distribution, 415 out of 456 distributed questionnaires were completed by 144 administrators of hospitals and clinics and 271 Expert staff forces in ISSO' all over the country. Besides, the Kaiser-Meyer-Olkin (KMO) index was used to ensure the adequacy of the sample size (KMO=0.933).

Table 1. Frequency of Demographic Characteristics Data

Parameters	Frequency (%)
Gender	
Male	313 (80.1)
Female	78 (19.9)
Age	
21-30	13 (3.3)
31-40	93 (23.8)
41-50	155 (39.7)
> 50	129 (33.1)
Educational level	
Bachelor	15 (3.9)
Master	22 (5.7)
MD	310 (78.9)
PhD	45 (11.5)
Work experience	
<5	40 (10.3)
6-10	53 (13.6)
11-15	61 (15.6)
16-20	92 (23.6)
21-25	97 (24.9)
>26	47 (12.1)

Statistical Analysis
All questions were analyzed by the exploratory factor analysis to determine Basic items and their variables to draw the initial concept and structure of the model. Then, to discover relationships between different components, confirmatory factor analysis with structural equation modeling (SEM) approach was done by Analysis of Moment Structures (AMOS 24) software. Finally, a reliable model called a scientific model was reached. Bartlett and KMO calculations were performed for the exploratory analysis stage.
The validity of the questionnaire was determined via expert judgment. Its consistency was approved by Cranach's alpha, which was estimated using Statistical Package for the Social Sciences (SPSS) software (version 23.0, Armonk, NY: IBM Corp., USA), which shows the reliability of the questionnaire.

Result

Descriptive Statistics
415 out of 456 questionnaires (91%) were completed. A total of 200 individuals, including 78 (19.9%) females and 313 (80.1%) males, with a mean age of 43 years, participated in this study. The mean work experience was 5.86±5.04 years, and Most of them (78.9%) had an MD degree. More demographic data are presented in Table-1.

Inferential Statistics
An exploratory factor analysis extracted eleven factors with Eigenvalues higher than one (agents with an eigenvalue less than one were removed from the analysis). Therefore, out of 56 items, they can be reduced to eleven conceptual factors.
The Eigenvalue of the first factor was 17.45, and the Eigenvalue of the eleventh factor was 1.029. These eleven factors can explain approximately 64.07% of the variance of

variables. Then in Table-2, after using the Varimax rotation, seven key factors were revealed. The eighth to eleventh factors are removed because the number of items in each area was less than 3.

The result of the KMO test in Table-3 shows that the value of KMO for all scales is more than 0.7, so the sample size is good enough to perform confirmatory factor analysis. Further, the result of Bartlett's test of sphericity (12730) which is significant at an error level (0.001), indicates that there is a proper correlation between the items in each factor.

Cranach's alpha was estimated (0.85) by using SPSS23 software, so internal consistency of every seven areas (demographic factors, geographical factors, functional factors, structural factors, humanistic factors, economic factors, and Contract parties factors) was approved (Table-3). The coefficients of variation ratio (CVRs) were higher than the critical level (CVR=0.48).

AMOS software shows the significance of variables by P-value and critical ratio (CR) indices to analyze the conceptual model of the research. Findings in Table-4 show that in all scales, the standard coefficient is more than 0.5 and the critical ratio is more than 2.56, so, at the 99% confidence level, the significance of the standard coefficient is confirmed. Among the main factors, the economic factor (standard coefficient=0.53) has the most negligible impact. The functional factor (standard coefficient=0.85) has the most impact on the distribution of medical facilities. The humanistic factor with the standardized coefficient of 0.82 is in second place, and structural factors with the standardized coefficient of 0.74 have a third place.

In the assessment of functional factor's components, it found that "the service usage" with factor loadings (FL) of 0.78 had the most influence, and "Referral from other regions" with factor loadings (FL) of 0.58 has the lowest influence at strategic planning.

The most and tiniest effective components in the demographic factors were "Migration" (FL=0.86) and "Total population" (FL=0.63), respectively. Also, in geographical factors, the items "geographical location" (FL=0.78) and "Centrality of the region" (FL=0.65) had the most and most minor effect, respectively.

In the Contract party factor, the most and least factor loadings were assigned to "Charity services" (FL=0.85) and "Private facilities" (FL=0.53), respectively. The items "Monetization" (FL=0.72) and "The per capita income" (FL=0.71) in economic factors have the greatest and least impact on the distribution of facilities, respectively. In terms of structural factors, the items "establishment of referral system" (FL=0.84) and "transportation system" (FL=0.81) were determined as highest and lowest factor loading. Moreover, in the assessment of humanistic factors' components, the items "non-physician expert staff" (FL=0.83) and "Possibility of providing Physicians" (FL=0.66), respectively, were recognized as the most and least influential factors.

Table-4 demonstrates the standard coefficients of factors and FL of components affecting

Table 2. Eigen Values of seven factors by Varimax Rotation

Factors	Eigen values		
	Total	Variance, %	Cumulative, %
Functional factors	17.45	31.17	31.17
Humanistic factors	4.35	7.77	38.94
Structural factors	2.47	4.42	43.35
Demographic factors	2.16	3.85	47.2
Contract party factors	1.88	3.35	50.56
Economic factors	1.66	2.96	53.51
Geographical factors	1.43	2.56	56.07

Table 3. Cranach's Alpha Coefficient of the factors affecting medical facilities fair distribution

Factors	Cranach's alpha coefficient	KMO
Functional factors	0.864	0.81
Humanistic factors	0.831	0.943
Structural factors	0.863	0.909
Demographic factors	0.900	0.845
Contract party factors	0.850	0.703
Economic factors	0.821	0.914
Geographical factors	0.829	0.865
Total	0.850	

medical facilities' fair distribution. Results of research hypotheses testing, regression coefficients, and significance level of structural model are presented in Table-4.
As shown, an overview of relationships between variables indicates that all the relationships have been confirmed.

Discussion

The findings demonstrated eight factors as an obstacle to access medical facilities. These factors and their components are barriers identified in our study to help design a model for fair distribution of medical facilities in the ISSO. Regarding the comparison with other researches, in Khan *et al*., structural, economic, and humanistic were Common factors with our study. The study was different in considering the aspect of consumer characteristics [18]. Peters *et al.* [19] mentioned population, functional, economic, and humanistic factors as obstacles to getting medical facilities. They also mentioned "reception by people," "the possibility of medicine," and "equipment provision" as new factors. The results achieved in the study done by Jacobs *et al.* [20] for Intervention in low-income Asian Countries says insight and expectation of the consumer, culture, viewpoint, and norms are barriers to access medical treatment
Andersen's behavioral model investigated in Korea was consistent with our population, structural, economic, and contract party factors, but showed that personal characteristics and sanitary behaviors are essential factors too [21].
Based on A scoping review, there were similarities to this research's findings in terms of geographical, functional, economic, and humanistic factors but different in terms of cultural factors and language [22].
The achieved results in WHO research, political conditions, and total coverage are practical factors [23]. Zhang's et al. [24] research (GIS) results were consistent with the results of this research in the case of geographical, functional, and structural, but different in the physical ability of the target society. In Jennifer's *et al.*, the four achieved factors, including population, geographical, functional, and contract party was similar to this research but not in cultural and determining health factors [25].

Conclusion

This study specified factors affecting the Medical Facilities Fair Distribution. Considering the exigency to modify and improve the distribution of medical facilities in ISSO, more attention should be paid to the distribution of human resources, finance, and medical equipment by using the appropriate mechanism for maximum use of available facilities. The findings of the current research can be used to manage public, private, and other healthcare organizations.

Conflict of Interest

The authors declare no conflict of interest.

Table 4. The standard coefficients of factors and components affecting medical facilities fair distribution

Factors	Standard Coefficient	Critical Ratio	Components	Factor Loading
Functional	0.85	13.67	Ability to use the service	0.72
			Service usage	0.78
			Service effectiveness	0.74
			Impatient admission rate	0.71
			waiting time	0.61
			Urgency in required services	0.62
			Referral from other regions	0.58
			Disease prevalence	0.69
Humanistic	0.82	12.18	Possibility of providing Physicians	0.66
			female workforce	0.69
			non-physician expert staff	0.83
Structural	0.74	13.32	Establishment of referral system	0.84
			Establishment of family doctor	0.81
			transportation system	0.62
Demographic	0.62	9.66	Total population	0.63
			Population growth rate	0.65
			The insured population	0.63
			Migration	0.86
			Demographic indicators	0.81
Contract party	0.69	12.34	Government facilities	0.68
			Private facilities	0.55
			Charity services	0.83
			Services of other sectors	0.81
Economic	0.53	7.92	The per capita income	0.67
			Monetization	0.72
			The cost of medical services	0.71
Geographical	0.63	9.27	Centrality of the region	0.65
			Country divisions	0.72
			geographical location	0.78

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