Website: http: jebhpme.ssu.ac.ir
EBHPME 2019; 3(2): 96-104 pISSN: 2538-5070

EBHPME

ORIGINAL ARTICLE

Evidence Based Health Policy, Management & Economics
Health Policy Research Center, Shahid Sadoughi University of Medical Sciences

The Preferences of General Practitioners Regarding Family Physician Contract in the Underprivileged Areas of Iran in Using Conjoint Analysis

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ARTICLEINFO

Article History:
Received: 5 Jan 2019
Revised: 8 Apr 2019
Accepted: 22 June 2019

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ABSTRACT

Background: One of the most important methods for improving the fair access of people to health services is the family physician program, which is facing many challenges. One of these challenges is the lack of policymakers' understanding of physicians' preferences regarding the provisions of the family physician contract. Therefore, this study was aimed to investigate general practitioners' preferences regarding the type of family doctor contract in one of the underprivileged regions of Iran.

Methods: An analytical-cross-sectional study was conducted among 150 general practitioners (GPs) who registered in Ministry of Health and Medical Education (MoHME) family physician plan and were working in the health network of deprived regions in Iran. A discrete choice experiment (DCE) questionnaire was developed by the researchers and then distributed to GPs. Results were analyzed using Ordered Logistic Regression.

Data were collected using a questionnaire designed by orthogonal method in SPSS 20. Data analysis was performed using logistic regression model in Stata 13 software.

Results: Findings revealed that "type of employer" had the most significant effect on GPs' preferences (OR = 2.5), followed by "allocating quota for admission to medical specialty courses after 5 years" (OR = 2.25), being allowed to give medical services to population without geographical restriction (OR = 2.8), being allowed to provide services out of the defined service packet (OR = 1.4), and "decreased length of contract" (OR = 0.93).

Conclusion: The amendment of the provisions of the family physician contract in accordance with physicians' preferences increases the probability of their participation in and compliance with the family physician program.

However, the compliance of the provisions of this contract with relevant international standards and upstream laws of the country should be maintained as much as possible.

Key words: General practitioner, Family Physician, Logistic Model, Conjoint analysis

Citation

This paper should be cited as: Rafiei S, Mohebbifar R, Ranjbar M, Akbarirad F. **The Preferences of General Practitioners Regarding Family Physician Contract in the Underprivileged Areas of Iran in Using Conjoint Analysis.** Evidence Based Health Policy, Management & Economics. 2019; 3(2): 96-104.

[DOI: 10.18502/jebhpme.v3i2.1216]

Introduction

Despite the relative success of the health system and the promotion of many health indicators over the past two decades, the Iranian health system continues to face serious problems, the most important of which may be inequitable access to healthcare services and facilities.

Unfortunately, although the Constitution has considered access to minimum healthcare facilities as a *right*, it remains to be fully realized in practice (1).

Global experiences suggest that the moderation of the problem could be achieved by strengthening the referral system and establishing an integrated and strict family physician program.

The success of this program could contribute to people's equitable access to services, preventing the provision of unnecessary services and waste of resources, and reducing patient costs (2-5).

In this regard, the family physician program, in accordance with national health policies, aims to provide people with reasonable and equitable access to healthcare services by stratifying the healthcare services and strengthening the referral system (6, 7).

Although the program is highly important, there are several challenges facing its establishment, one of the most important of which is failure to encourage physicians to participate in and comply with the family physician program. One of the main reasons for this challenge is lack of codifying contracts according to their preferences (8).

Physicians are responsible for guiding the health team and providing clinical services within the framework of the referral system, and their lack of cooperation leads to significant problems in the national health system (9, 10).

It is therefore essential for health policy makers to identify the factors influencing the preferences of general practitioners regarding willingness to collaborate in the family physician program and to review their employment contracts with reference to identified factors so as to successfully implement the program (11).

Therefore, this study was aimed to help improve policymaking by identifying the preferences of the general practitioners working in one of the underprivileged regions of Iran regarding the family physician contract using conjoint analysis in 2016-2017.

Materials and Methods

This study is a descriptive-analytical survey conducted in the general practitioners working in one of the underprivileged regions of Iran using conjoint analysis in 2016-2017.

According to the classification of Iran health system, the country is divided into 10 macro regions. According to the results of research on the development of provinces and cities actross the country (12-15), region no. 8 (the medical universities of Kerman, Rafsanjan, Jiroft, Zabol, Bam and Zahedan) was selected as the underprivileged area to be studied.

The study population consisted of all general practitioners working in the health care centers affiliated to the medical universities of the region under purpose. To calculate sample size, the potential participants were assigned to 50-member subgroups according to similar studies in which the conjoint analysis was used. The selected subgroups included the gender and the city of employment that were considered for all 50 general practitioners in each subgroup. Accordingly, the sample size was calculated at 151 given an attrition rate of 30%.

To collect data, a questionnaire was designed using orthogonal method in the SPSS version 20. The questionnaire has two main sections.

The first section of the questionnaire consists of six questions about individual and demographic characteristics of the respondent, such as age, gender, marital status, place of employment, work experience and type of graduating university.

The second section consists of 18 contractual scenarios, consisting of six trim odal components and one bimodal component drawn by factor analysis (Table 1).

A total of 1458 (2 × 3 × 3 × 3 × 3 × 3 × 3) hypothetical scenarios were drawn for family physician contract.

Since the number of hypothetical scenarios was very high so that all of them could not be included in the questionnaire, 18 of them were selected for family physician contract by an orthogonal

[DOI: 10.18502/jebhpme.v3i2.1216]

fractional factorial design in the SPSS version 20, and then were randomly assigned to paired scenarios.

Finally, nine pairs of scenarios were codified into the questionnaire. In order to assess the validity of the questionnaire, a pilot study with 30 samples was performed. The results showed that all questions were understandable to physicians and did not need to be revised.

In addition, since the identification and selection of the contract components and their modes have been accomplished by expert panels and confirmed by the consensus of authorities, they must be sufficiently valid and compatible with Iran's context.

Furthermore, the use of orthogonal method to design scenarios ensures their validity and reliability with respect to the absence of linear correlation between components, the balanced frequency of the modes of components and the efficiency of the scenarios.

To do data analysis, conjoint analysis, the Stata software version 13, probit regression and logistic regression were used.

Conjoint analysis is a comprehensive research methodology and a set of quantitative techniques that, by means of a different approach to traditional research methods (8), estimates the desirability of each component of a product or service and the probability of choosing them (8, 12, 16) through statistical estimates with high precision (12).

According to Anderson, conjoint analysis is the most successful and most useful method for assessing client preferences and measuring client needs (17).

In this study, the dependent variable was the choosing of family physician program that is a bimodal variable. Independent variables included the modes of each of the components and demographic characteristics of physicians including age, gender, marital status, type of graduating university and city of employment.

Results

In this study, a total of 151 people participated, of whom 58.9% were women and 76.7% single and 66% had been graduated from state universities.

The mean age of participants was 26 (2.7). They were employed in Jiroft, Kerman, Rafsanjan and Zahedan (Table 2).

Most of the subjects were female (74.3%) and single (65.2%) and had studied in state universities (67.1%) (Table 2).

The mean age of participants was 25 (2.6) years.

In this study, we also used logistic regression to investigate the probability of choosing to be employed under the provisions of the family doctor program by changing the modes of the family physician contract's components (Table 3).

The results of the logistic regression showed that the probability of choosing employment choices when the duration of the family physician contract was one year was higher than when the duration of the family physician contract was three or five years.

Further, this probability was higher when the payment was per capita than when the payment was per capita payment plus service charge and per capita payment plus reward.

Our findings also indicated that if the medical system of the county was the employer according to the family physician contract, the physicians would be 2.5 times more likely to choose to be employed under the program compared to when the employer was the Iran Health Insurance Organization.

In addition, when the medical university was the employer, the physicians would be 1.6 times more likely to choose to be employed under the program compared to when the employer was the Iran Health Insurance Organization.

Regarding the population size covered in the family physician program, the results showed that physicians were more likely to opt for the program when the covered population size was 1500 than when it was 2,500 or 4,000.

Besides that, if there were no geographical restrictions levied on registering the service-receiving population, the physicians were most likely to choose to be employed under the program, so that they were two times as likely to choose the program as when they were allowed to register a population living within a distance of 1.5 km to their office.

[DOI: 10.18502/jebhpme.v3i2.1216]

The physicians who were allowed to provide services out of the defined service package and given the quota for admission to specialty program after 5 years of employment under the program were 1.4 and 2.25 times more likely to choose to be employed under the program than those who were not allowed to provide out of the defined service package and not given any quota for admission to specialty program, respectively. The associations of demographic variables such as age, gender, marital status and work experience of the physicians with their choosing to be employed under the family physician program are shown in Table 4.

Table 5 shows that the age, gender, and marital status of the respondents are inversely correlated with their choice.

More clearly, male physicians were less likely to choose the family doctor program than female ones, and married and older physicians were less likely to choose the program than the single and younger ones, respectively.

Furthermore, those who had studied in private or international universities were less likely to choose family physician program. However, none of these relationships were statistically significant (p-value < 0.05).

Table 1. Components and modes used in this study

Contract components	Component mode		
	Mode 1	Mode 2	Mode 3
Contract duration (yr)	1	3	5
Payment mechanism	Per capita	Per capita plus 25% fee for service	Per capita plus 15% bonus
Employer	Iran Health Insurance Organization	Medical university	County medical system
The number of covered population	1500 population	2500 population	4000 population
being allowed to give medical services to population without geographical restriction	Only registering people living up to 1.5 km distance	Giving priority to population living in 1.5 km distance also being allowed to register those up to 5 km distance	Being allowed to register people without geographical restriction
Right to provide services outside of specified package	Being allowed	Not being allowed	-
Quota for admission to medical specialty courses	Without benefit	After 5 years as a family physician	After 10 years as a family physician

Table 2. Absolute and relative frequency of demographic characteristics of physicians in region no. 8

GPs' demographic characteristics (Qualitative variables)		Percentage(%)	Number
Gender	Male	25.7%	39
	Female	74.3%	113
Marital status	Married	34.8%	52
	Single	65.2%	100
Type of University	State	67.1%	102
	Private	30.1%	45
	International	2.8%	5
GPs'Demographic characteristics (Quantitative variables)		Mean	Standard deviation
Age		25.5	2.6
Years of Medical Experience		0.2	0.02

[DOI: 10.18502/jebhpme.v3i2.1216]

Table 3. The probability of choosing different employment choices among physicians in the region no. 8

Components	Modes of components	OR	S.E	z	P
Contract duration (yr)	3	0.93	0.09	-0.6	0.4
	5	0.62	0.06	-4.8	0.00
Payment mechanism	Per capita + 25% fee for service	0.809	0.081	-2.1	0.03
	Per capita + 15% reward	0.782	0.709	-2.4	0.01
Type of employer	Medical university	1.6	0.16	4.7	0.00
	County's medical system	2.5	0.26	9.3	0.00
Population size covered	2500	0.83	0.082	-1.8	0.06
	4000	0.52	0.053	-6.3	0.00
Being allowed to register population without geographical restriction	Being allowed to register within a 5-km distance	1.38	0.14	3.17	0.00
	Without geographical restrictions	2.08	0.2	7.3	0.00
Being allowed to provide services out of the defined service package	Yes versus No	1.4	0.12	4.1	0.00
Type of benefits	After 5 years as a family physician	2.25	0.22	8.2	0.00
	After 10 years as a family physician	0.8	0.08	-2.1	0.03
Significant level at $P < 0.05$					

Table 4. The effect of physicians' demographic characteristics on their choosing to be employed under the Family Physician Program in the region no. 8

Demographic characteristics	coef	(S.E)	Z	P
Age	-0.0001	0.015	-0.01	0.929
Gender	-0.0004	0.089	-0.01	0.982
Marital status	-0.003	0.075	-0.04	0.972
Type of graduating university	0.0009	0.1	0.1	0.981
Significant level at $P < 0.05$				

Discussion

The results, as expected, indicate that 1-year duration of family physician contract, capitation payment, medical council as a contract employer, coverage of 1500 population, being allowed to give medical services to population without geographical restriction, being allowed to give medical services to population without geographical restriction and quota for admission to medical specialty courses would increase the probability of physicians' choosing to participate in the family physician's program.

As already mentioned, physicians were most likely to opt for being employed under the program when the county medical system was the employer, which can be attributed to their distrust of government institutes with respect to supervision and financing.

In fact, the physicians preferred the program to be managed and directed by the Ministry of Health and Medical Education independently and professionally so as to be adequately supported.

The results of a similar study conducted by Ranjbar et al. (11) in general practitioners across Iran in 2015 do not confirm the findings of the current study. Ranjbar et al. (11) found that if the employer was medical university, the willingness of physicians to participate in the family physician program would be higher.

Among the components of the study, quota for admission to medical specialty courses after 5

[DOI: 10.18502/jebhpme.v3i2.1216]

years was more important than type of employer.

In this regard, the government's previous policies on expanding universities and increasing student admission capacity, especially in medicine, the inappropriate distribution of general practitioners in different regions, as well as the willingness of patients to directly refer to specialists have led to an increase of unemployment rates among general practitioners.

In addition, physicians' dissatisfaction with the payments made to them, the requirement to provide services within a defined geographical package, limited authorities assigned to them compared to specialists, and lack of awareness of their important role and position in the health system, have all led to a reduction in general practitioners' choosing the program and their compliance with it and as a result, their willingness to admit to specialty programs have increased drastically.

The results of Ranjbar et al. (11), Ebadi et al. (5) Huicho et al. (18) and Marko et al. (19) also confirm this conclusion.

Our results showed that physicians were comparatively more willing to register people without geographical restrictions and provide medical services outside the defined service package.

One of the most important reasons for this can be the relationship between this component and the income of general practitioners (20).

One of the most important benefits of the per capita payment is to encourage the family physician to cover more people in order to earn more money (21). This can create some kind of positive incentive in family physicians by creating a competition among them for providing higher quality services (26).

It is therefore expected that the probability of registering more people by the physician will be increased with the increase of the scope of access to the physician, especially in cities with lower population density.

As a result, the physicians' concerns about population size in the area covered and consequently their income reduction will be partly obviated. This argument is consistent with the study of Ranjbar et al (11).

According to the Family Physician Program Practice Guidelines (version 02), family physicians are required to provide services defined in the services package for population they cover (22).

If they are permitted to provide outsourced services, they will be paid fee for service per each of the outsourced service provided. Because this provision increases the income of physicians, they will be more willing to choose to be employed under the program.

In the UK, for the purchase of services from family physicians they were permitted in new contracts signed in the UK health system from April, 2004 to provide outsourced services and would be paid for these services based on certain fees (23).

Among the modes of the components of the family physician contract, *shorter contract duration* increased the probability of physicians' choosing to be employed under the program. This conclusion is inconsistent with the study of Blaauw (24).

This can be due to general practitioners' lack of knowledge and confidence in the family physician program in Iran, which has led to their tendency to choose shorter family physician contracts. This finding is consistent with the results of Ranjbar (11) and Arifin (25).

The results of our study also showed that per capita payment plus 15 percent bonus had the greatest impact on the physicians' choosing to be employed under the program, followed by per capita payment plus 25 percent fee for service.

Similar studies in the UK, Brazil, Denmark, Poland, and Taiwan from 1989 to 2004, have shown that reward payment to physicians will lead to increase of their incentive, improvement of their performance and their long-term compliance with the programs codified by the national health system (23).

Evidence also suggests that there is a direct, significant correlation between physicians' income and willingness to comply with the contract and provide higher quality services (24).

[DOI: 10.18502/jebhpme.v3i2.1216]

The findings showed that the smaller population covered increased the willingness of physicians to participate in the family physician program.

Given that general practitioners, according to the family physician program, are held responsible for administering the health services to population they cover from birth to death and providing holistic care for them, which requires adequate time and continuous follow-up, it can be argued that in our studied region, physicians tend to spend more time providing continuous, holistic, and quality services for populations covered.

Conclusion

With regards to the importance of the various modes of components in the family physician contract for the selection of the plan by the physicians and in order to benefit more from general practitioners under this contract, it is recommended that the provisions of the family physician contract be codified in a manner so as to include the preferred modes of physicians' preferences in it as much as possible to motivate them to participate in and comply with the family physician program.

It should be however noted that the components of the family physician program have been codified in accordance with the international standards and upstream laws of the country.

Therefore, compliance with them should also be taken into consideration and addressed, along with physicians' preferences, in revising the effective modes of components on the family physician contract.

Given the gap between the preferences of general practitioners and the components codified in the family physician program, it is necessary to develop a long-term program aimed at changing the viewpoint of physicians and medical students and sensitizing them about the importance of family physician program and the substantial roles they can play in the health system of the country, so that the maximum benefits can be realized for the health system of the country through education and change of the predominant culture of the medical professionals and the people of the community so that they will welcome more and more of the family physician program and comply with the referral system.

This study has certain strengths, the most important of which is high validity and reliability due to the use of conjoint analysis.

This approach is based on the reported preferences, which will minimize response biases through indirect questioning and make it possible to evaluate the components that affect the preferences of the respondents using regression models.

The agreement between the estimates of the models and the researcher's expectations and scientific evidence demonstrates the strong theoretical validity of this approach.

Acknowledgements

Hereby, the authors acknowledge the collaboration of all the people who assisted us in conducting this study, especially the general practitioners working in the health care centers affiliated to the medical universities in the underprivileged areas under study.

Conflict of interest

The authors declare no conflict of interests.

Authors' contributions

Rafiei S, and Mohebbifar R designed research; Akbarirad F conducted research; Ranjbar M analyzed data; and Rafiei S wrote the paper. Akbarirad F had primary responsibility for final content. All authors read and approved the final manuscript.

This article was derived from a master's thesis on healthcare services administration at Qazvin University of Medical Sciences.

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[DOI: 10.18502/jebhpme.v3i2.1216]