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Evaluating the Implementation of Family Physician Program in Urban and Rural Areas of Mazandaran Province Based on Process Approach

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ABSTRACT

BACKGROUND AND OBJECTIVE: Assessing health systems paves the way for reforms in structures and processes to achieve better results. Therefore, the present study was conducted to evaluate the implementation of family physician program in urban and rural areas of Mazandaran province using process approach.

METHODS: This cross-sectional study was conducted in 2017 among 238 managers, health experts and health insurance experts who were selected by census from 12 cities. Data were collected and evaluated using a researcher-made questionnaire with high validity and reliability, which evaluates urban and rural family physician program in three domains of structure, process and outcomes.

FINDINGS: The mean score of the domain of structure (4.27±27.38), process (4.33±0.41) and outcomes (4.31±0.39) of rural family physician program was significantly higher than urban family physician program ($p<0.001$). In the urban family physician program, the most important dimension in the domain of structure was equipment (3.35±0.76), in the domain of process was care for non-communicable diseases (3.15±1.06) and in the domain of outcomes was reasonable prescription of medicine (3.07±1.02). In the rural family physician program, the most important dimension in the domain of structure was physical space (4.41±0.60) and in the dimensions of process and outcomes, the health of mothers and children (4.20±0.90) and the improvement of health promotion indicators (4.33±0.76) were more important, respectively.

CONCLUSION: Based on the results of this study in three domains of structure, process and outcomes, the rural family physician program was relatively better than the urban family physician program.

KEY WORDS: *Family Physician, Urban Population, Rural Population, Process Evaluation.*

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Introduction

Health systems have always sought to make effective reforms in their structures and processes in order to achieve better results. According to many experts, investing in primary care-based reforms has always been highly efficient and effective (1,2). The World Health Organization (WHO) has identified the family physician program at the forefront of health systems' efforts to improve quality, cost-effectiveness, and equity in health care (3). In this regard, according to the law of the Fourth Development Plan, the Ministry of Health and Medical Education was obliged to implement the family physician program and referral system in the country by the end of the first year of this law (4). This program has been implemented in the rural phase since 2005 in the whole country and in the urban phase since 2012 in the two provinces of Fars and Mazandaran in experimental form (5).

The goal of the Family Physician Program is to improve the health of people while considering cost-effectiveness and efficiency, to promote justice, to improve service satisfaction, and to establish a system for referral and service level (5). However, this program is now facing several challenges. Reversal of the percentage of urban and rural population, disproportionate development of cities, especially its outskirts, changes in the appearance of diseases, low participation of society, inefficient structure of primary care in cities and low share of health funds from public resources are the most important challenges (5,6). Weaknesses in the structure and implementation of the program have led to poorer achievement of the expected goals (7,8). Therefore, it is necessary to carefully study this program and reform its structure and implementation processes. This program, like all programs implemented in health systems, must be systematically evaluated and reformed to improve performance (9).

Several studies in Iran have evaluated the family physician program. Kabir et al. in their study in 2017 measured the satisfaction of service providers with the urban family physician program and showed that the overall satisfaction of service providers was 3.5 out of 5 points, and was above average (10). In another study in 2016, Abedi et al. explained the strengths of the urban family physician program in areas such as easy access to services, service leveling, and reduction of unnecessary costs. Weaknesses of the program were also observed in management, human and physical resources, referral system, electronic health record, payment mechanism, internal coordination and control and evaluation system (7). In their study, Hooshmand et al. identified the most important challenges of the program to be information system, payment system, and evaluation of performance and facilities (11). In another study, Kashfi et al. evaluated the performance of rural family physicians in Fars province in five domains: management, performance, rules and regulations, community participation, and outcomes. In this study, the lowest and highest scores of family physicians were in the domains of community participation and outcomes (12).

According to the World Health Organization, the Donabedian model is an appropriate model for evaluating health programs and services (13). This model focuses on three domains of structure, process and outcomes. The domain of “structure” includes resources such as equipment and manpower that are used in the production and provision of services. The domain of “process” includes actions that lead to the successful use of resources to produce effective services. The domain of “outcomes” includes expected outcomes such as satisfaction, treatment and care of diseases (14). Therefore, in this study, based on the Donabedian model, the indices of each domain have been developed and the performance of the program has been evaluated in terms of achieving the defined goals.

What is needed by senior managers and policy makers of the health system is information based on scientific and comprehensive evidence regarding the status of family physician program implementation. This information provides the basis for making the right decisions and policies regarding the continuation or modification of this program. However, few studies have evaluated the urban and rural family physician program in Iran in terms of content supply chain process. Comparative studies, in addition to contributing to better understanding of the strengths and weaknesses of programs, facilitate effective corrections using modeling (15). Therefore, the present study was conducted to evaluate the implementation of family physician program in urban and rural areas of Mazandaran province based on process approach.

Methods

After being approved by the ethics committee of the medical school of Islamic Azad University, Sari branch with the ethics code IR.IAU.SARI.REC.1396.59 in

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2017, this cross-sectional study was performed on four groups, including experts in charge of health centers in the cities (including family health units, infectious diseases and noninfectious diseases), experts (including experts of the mentioned units of city health centers), supporting organization (including the head and deputy head of the city health insurance organization) and senior managers (including heads and deputies of city health centers and the head and technical deputy and executive deputy of the provincial health center).

12 densely populated cities under the auspices of Mazandaran University of Medical Sciences, including Amol, Ramsar, Tonekabon, Chalus, Nowshahr, Noor, Neka, Behshahr, Galugah, Babolsar, Qaemshahr and Sari were selected for the study. Inclusion criteria for senior managers were at least one year of experience in the relevant unit and membership in the strategic committee of the family physician. For the group of responsible experts and experts, at least one year of experience in the relevant post and communication with family physician programs was required. The managers of the city health insurance also participated in this study as one of the main beneficiaries of the program and they were included due to their participation in compensation insurance services and payment system as well as monitoring and evaluation of the program. The inclusion criteria for these managers was at least one year of experience and awareness of the family physician program.

Data were collected using a researcher-made questionnaire that assesses the success rate of urban and rural family physician program in three domains of structure, process and outcomes from the perspective of relevant managers and experts. The domain of structure had 26 questions, the domain of process had 24 questions and the domain of outcomes had 36 questions. The questions were based on the 5-point Likert scale: very good (5 points), good (4 points), fair (3 points), poor (2 points), and very poor (1 point).

Impact Factor was calculated to evaluate the face validity of the questionnaire. Content validity was done using the opinions of 10 experts and the content validity ratio and index were confirmed and after correcting, they were approved. Cronbach's alpha method was used to determine the reliability in a sample of 30 participants. This rate was calculated for structural domain questions (α=0.854), process domain (α=0.863), results domain (α=0.812), and the total reliability of the questionnaire was 0.847. Presentation of the letter of introduction, confidentiality of the personal information of the participants and explanation of the subject of the questionnaire for the participants were considered. Furthermore, the results of this study will be provided to senior managers of Mazandaran University of Medical Sciences and related organizations. Data were analyzed using SPSS software version 21 and Kolmogorov-Smirnov, Friedman, Kruskal-Wallis and Mann-Whitney tests and $p<0.05$ was considered significant.

Results

119 participants (50%) were working in urban areas and 119 (50%) in rural areas. About half of the participants had more than 20 years of work experience and more than half of them (57%) had a bachelor's degree (Table 1). According to the participants, the mean score of the rural family physician program in the domains of structure (4.27±0.38), process (4.33±0.41) and outcomes (4.31±0.39) was significantly higher than the urban family physician program score in these domains ($p<0.001$) (Table 2).

Comparison of the mean scores in the dimensions of each domain shows that the most important dimensions in the domain of structure in the urban family physician program were the dimensions of equipment (3.35±0.76) and physical space (3.32±0.74), respectively. In terms of process, the dimensions of non-communicable disease care (3.15±1.06) and monitoring and evaluation (3.13±1.08), and in terms of outcomes, reasonable prescription of medicine (3.07±1.02) were more important. In the rural family physician program, the most important dimension was physical space (4.41±0.60) in the structure domain, while in the process domain and outcomes, the health of mothers and children (4.20±0.90) and the improvement of health education indices (4.33±0.76) were more important, respectively (Table 3).

According to the managers of the Health Insurance Organization, the urban and rural family physician programs have had the most success in the domains of structure (3.12±0.63) and outcomes (4.37±0.30), respectively. Senior managers also believed that the greatest success of both urban (3.27±0.77) and rural (4.33±0.38) family physician programs was in the domain of process. The responsible experts also considered the domain of structure as the most successful area of urban plan (3.18±0.62) and rural area (4.34±0.37). However, the difference between the opinions of the participating groups was not significant in any of the studied domains ($p>0.05$) (Table 4).

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Table 1. Frequency distribution and demographic characteristics of participants in urban and rural family physician program in Mazandaran province

Demographic variables	Descriptive statistics	Number(Percent)
Area	Urban	119(50)
	Rural	119(50)
Job history	Less than 5 years	9(3.7)
	5–10 years	25(10.5)
	10–15 years	35(14.7)
	15–20 years	59(24.7)
	More than 20 years	110(46.2)
Participant group	Health insurance	72(30.2)
	Senior Managers	22(9.2)
	Responsible experts	48(20.1)
	Experts	96(40.3)
Type of organization	Healthcare	128(53.7)
	Health insurance	110(46.2)
Education	Associate Degree	12(5)
	Bachelor degree	136(57.1)
	Masters	64(26.8)
	General Practitioner	26(10.9)

Table 2. Mean and overall score of urban and rural family physician programs in Mazandaran province

Domain	Area	Mean±SD	Total	Man-Whitney z-score
Structure domain *	Urban	3.18±0.63	3.73±0.75	- 12.23
	Rural	4.27±0.38		
Process domain *	Urban	3.05±0.76	3.74±0.85	- 11.76
	Rural	4.33±0.41		
Outcomes domain *	Urban	3.15±0.79	3.68±0.89	- 11.57
	Rural	4.31±0.39		
Total *	Urban	3.12±0.68	3.71±0.80	- 11.88
	Rural	4.30±0.33		

***p<0.001**

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Table 3. Mean scores of domain and dimensions of urban and rural family physician program in Mazandaran province

Domain and dimensions	Urban Family Physician Area Mean±SD	p-value	Rural Family Physician Area Mean±SD	p-value
Structure domain				
Equipment	3.35±0.76	p<0.001	4.33±0.58	p<0.001
Physical space	3.32±0.74		4.41±0.60	
Manpower	3.19±0.73		4.22±0.54	
Awareness and skills of employees	3.16±0.77		4.35±0.47	
Service package	3.15±0.94		4.30±0.73	
Financing	2.89±0.81		4.04±0.74	
Process domain				
Non-communicable disease care	3.15±1.06	p=0.3	4.15±0.88	p=0.9
Monitoring and evaluation	3.13±1.08		4.16±0.98	
Health of mothers and children	3.13±1.07		4.20±0.90	
School health	3.08±1.11		4.17±0.98	
Infectious disease care	3.08±1.11		4.19±0.95	
Environmental and occupational health	3.02±1.10		4.15±1.05	
Health Education	2.98±1.08		4.20±0.97	
Outcomes domain				
Reasonable prescription of medicine	3.07±1.02	p<0.001	4.31±0.70	p=0.8
Improving school health indicators	3.03±1.03		4.29±0.75	
Improving the indicators of care for non-communicable diseases	3.00±0.99		4.26±0.76	
Improving the health indicators of mothers and children	3.00±1.05		4.25±0.96	
Improving environmental and occupational health indicators	3.00±1.07		4.22±0.97	
Improving the indicators of health education	2.96±0.98		4.33±0.76	
Improving infectious disease care indicators	2.96±1.03		4.21±0.86	
Overall satisfaction with the program	2.93±1.05		4.31±0.73	
Referrals based on demands	2.91±0.93		4.42±0.56	
Reverse referral from level two	2.67±1.05		4.17±0.84	

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Table 4. The difference between the mean scores of the participants in the urban and rural family physician program of Mazandaran province

Domain and group of participants	Urban Family Physician Area			Rural Family Physician Area		
	Mean±SD	Test statistics	p-value	Mean±SD	Test statistics	p-value
Structure domain						
Health insurance	3.12±0.63			4.25±0.42		
Senior Managers	3.22±0.66	2.11	0.549	4.23±0.36	2.89	0.408
Responsible experts	3.18±0.62			4.34±0.37		
Experts	3.20±0.54			4.40±0.31		
Process domain						
Health insurance	3.10±0.70			4.36±0.38		
Senior Managers	3.27±0.77	0.74	0.863	4.33±0.38	0.87	0.831
Responsible experts	2.90±0.85			4.27±0.53		
Experts	3.37±0.56			4.31±0.43		
Outcomes domain						
Health insurance	3.10±0.80			4.37±0.30		
Senior Managers	3.13±0.82	3.69	0.296	4.27±0.38	2.12	0.547
Responsible experts	2.83±0.79			4.27±0.50		
Experts	3.02±0.67			4.35±0.49		
Total						
Health insurance	3.10±0.66			4.32±0.30		
Senior Managers	3.19±0.72	3.05	0.384	4.27±0.31	1.08	0.782
Responsible experts	2.95±0.71			4.29±0.43		
Experts	3.17±0.57			4.35±0.34		

Discussion

According to the results of the research, the mean score of the rural family physician program was higher than the urban family physician program in all domains and this difference was significant. Comparison of mean score showed that the most important dimensions of the structure domain in the urban family physician program were the dimensions of equipment and physical space, respectively. In the process domain, the dimensions of non-communicable disease care and monitoring and evaluation were more important. In terms of outcomes, reasonable prescription of medicine was more important. In the rural family physician program, physical space is the most important dimension in terms of structure, and in terms of process and outcomes, the health of mothers and children and the improvement of health education indicators had higher scores, respectively. The results of this study showed that the rural family physician program was significantly more successful. In the study of Khedmati et al., it was also shown that the rural family physician program was more successful than the urban family physician program in achieving some of the studied indicators (16). Few studies have systematically evaluated urban and rural family physician programs in Iran. Many studies have evaluated these programs only on the basis of a specific dimension. In their study, Jabbari et al. extracted and reviewed 39 related articles and concluded that the rural family physician program, despite its weaknesses such as inadequate health team training, limited access to a physician, high workload and lack of appropriate welfare facilities, has been able to perform well in terms of referral system, accountability, improved access, cost reduction, service coverage, giving priority to health care services and the satisfaction and attitude of health team staff and service recipients (17). On the other hand, although the urban family physician program has had achievements such as increasing the covered population, free first-level visits, increasing access to services and improving the service leveling system (6, 18), the results of other studies showed that the urban family physician program based on current structure and method of implementation cannot gain significant results in achieving the desired outcomes. In the study of Keshavarzi et al., it was shown that more than 87% of managers and health professionals in Mazandaran and Fars provinces believe that the performance of the urban family physician program has been moderate and low. Only about 13% of these managers believed that the program was performing well (19). The results of this study showed that the lowest score in both urban and rural family physician programs in the domain of structure was related to receiving timely and optimal financial credits required from higher authorities (financing). In the study of Mohammadian et al., the subject of financing and payment system was introduced as the most important challenge of the family physician program (20). In the study of Mohammadi

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Bolbanabad et al., weakness in the performance of insurance and weakness in policy-making were mentioned as the reasons for this problem (21). This result was also observed in the study of Abedi et al., which saw the program's weakness in the payment mechanism and group purchasing organizations (7); on the other hand, increased referrals to these centers has exacerbated this problem. After the implementation of the family physician program, the number of referrals to executive centers has increased (18, 22), which means the need for more resources and facilities. These factors have made it difficult to receive optimal financial credits. Given the emphasis on upstream documents such as development plans and the health system transformation plan to implement this program, it seems that allocating a specific budget line can reduce the financial problems. It is important to note that the implementation of the family physician program has had a positive effect on reducing unnecessary costs (23), so investing in this program can reduce the costs of the health system. In the domain of process, the most important issue of the urban family physician program was related to the lack of adequate training in accordance with the family physician service package for health team members. The study by Mehrolhassani et al. showed that the training provided to health team members in the rural family physician program was not effective enough (24). Mohammadi Bolbanabad et al. also showed that the lack of university education among health team members, treatment-oriented training and weakness in in-service training are the three main challenges of the family physician program in this domain (21). It is essential that managers conduct appropriate and effective training courses for health team members and assess their scientific and practical skills at regular intervals. On the other hand, studies have shown that the administrative instructions of the family physician program are constantly changing (6, 20, 24), which may confuse the members of the health team and create problems in the quality of service provided by them. In the rural family physician program, the lowest score in the process domain was related to the implementation of the non-communicable disease care according to the standards stated in the guidelines. In the study by Hosseini Gardian et al., it was shown that in the rural family physician program, only 17% of the covered diabetic patients received adequate care (25). The results of this study, similar to the present study, show the need for improving the program's performance in the field of non-communicable disease care. According to the National Non-Communicable Diseases (NCDs) Policy document, Iran is committed to reducing the risk of premature deaths from non-communicable diseases by 25%. Utilizing the capacity of the country's health network and the urban and rural family physician program will be helpful due to its vastness, as well as the continuous communication of these centers with members of the community. In terms of outcomes, in both urban and rural family physician programs, the lowest score was given to reverse referrals from level 2 facilities. In many other studies, defects in reverse referrals have been emphasized. In a review article, Khedmati et al. showed that both urban and rural family physician programs have difficulty in referral feedback from higher levels (16). The study by Chamokhtari Safizadehe et al. showed that structural and process weaknesses of the referral system, such as lack of facilities and equipment, lack of electronic health records, payment system problems and incomplete insurance mechanism, have posed many challenges to the program (18). Mohammadi Bolbanabad et al. in their study confirmed the weakness of the family physician program in reverse referrals and introduced the three most important weaknesses of the referral system as: long referral process, lack of feedback from higher levels and non-observance of referral system by people, staff and doctors (21). The results showed that in the three dimensions of structure, process and outcomes, the rural family physician program is in a relatively better position compared to the urban family physician program. According to the results of the study, it is suggested that the processes of the reverse referral system be reviewed and corrective strategies be used to increase the participation of specialist physicians and the private sector. The use of appropriate monitoring and control processes can be helpful to compensate for the service. In the non-communicable disease care program, due to the growth of its risk factors in recent years, more attention of managers is necessary for evidence-based planning and policy-making.

Conflict of interest: The authors state that there was no conflict of interest.

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