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Original Article

Presenting a Quaternary Prevention Model for the Rural Family Physician Program in Iran with an Interpretive Structural Modeling Approach

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Abstract

Background: Due to its ethical approach and its protection of patients and their interests, quaternary prevention can increase the quality-of-service provision and decrease costs and the wastage of resources. The present study used interpretive structural modeling (ISM) to classify the effective factors and determine a quaternary prevention model for Iran's Rural Family Physician Program. **Methods:** This study was a qualitative study with an ISM approach. Twenty-five health system experts and faculty members participated in the study. The interrelationships between the factors were determined using ISM, and after classification, the driving and dependence power of the factors were specified using MICMAC analysis. **Results:** The 20 factors were classified into five levels. The results indicated that patient interest and vulnerable groups had the highest effectiveness, and officials' and policymakers' commitment to providing serious support for family physicians had the highest affectability. The factors were placed into the two groups of linkage and dependence based on the MICMAC analysis. **Conclusions:** The new technologies are costly and sometimes only suitable for a specific group of patients. Costs and the issues of induced demand and defensive medicine necessitate a different view of health service distribution. The preventive and strategic view and the comprehensiveness of family physician services make quaternary prevention possible by providing high-risk and vulnerable groups with essential services based on patient needs and conditions with more benefit than harm.

Keywords: *Interpretive structural modeling, quaternary prevention, rural family physician*

Introduction

Quaternary prevention refers to actions taken to identify a patient or population at risk of overmedicalization, intending to protect them from invasive medical interventions and provide them with scientifically and ethically acceptable services.[1] Quaternary prevention is a new term referring to an old concept: the principle of 'primum non-nocere,' which means, 'first, do no harm.' This level of prevention includes actions that service providers take to protect their clients from unnecessary diagnostic, therapeutic, and preventive measures.[2] In 1999 this concept was accepted by the International Classification Committee, affiliated with the World Organization of Family Doctors (WONCA), and published in the *WONCA Dictionary of General/Family Medicine* in 2003.[1]

Quaternary prevention takes a critical approach to medical activities based on the principle of nonmaleficence. Quaternary prevention covers issues such as evidence-based medicine, quality assurance, defensive medicine, and ethical considerations. Introducing quaternary prevention can contribute to establishing a comprehensive logical process which is one of the principles underlying the Family Physician Program; in this way, the physician considers all the aspects of the treatment of patients and provides services according to patient needs.[2]

The Family Physician Program is one of the policies for cost-effectiveness in service provision; this program improves the quality of care and cost-effectiveness of hospitals, laboratories, specialized treatments, and expensive technologies.[3] Since family physicians help improve patients' health through more effective relationships with them and their families and control access to specialized services such as hospitalization and outpatient visits using the referral system, they play a prominent

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role in protecting patients from harm.[4] The WHO has recommended the development of primary healthcare to improve people's health and decrease costs. It has also announced family physicians as the basis of the efforts made to improve the quality and cost-effectiveness of healthcare services.[5]

The availability of new medical tests and therapeutic methods has led to an increase in unnecessary treatments and the overutilization of medical services.[6] The combination of media, pharmaceutical industries, and physicians can create doubts and concerns about health in even the healthiest people.[7] Healthcare has been contaminated by market-oriented policies that increase the provision of unnecessary services by creating new diseases. In this situation, diseases are classified according to the industry's needs, and some asymptomatic conditions are considered diseases. Moreover, a myriad of new diseases and medical measures have emerged under the label of prevention, leading to the overuse of medical services.[8,9]

Evidence shows that the correct implementation of the referral system and the Family Physician Program can eliminate unnecessary medical expenses, lead to the optimal distribution of health resources, promote society's health, and eventually, increase satisfaction in people and the medical society.[10] Family physicians are the gatekeepers of the health system and can play a significant role in detecting and reducing unnecessary services and increasing necessary ones.[11] Providing unnecessary services affects both the quality and costs of care provision. Experts estimate that a third of medical expenses are unnecessary, and some even cause harm. The ultimate goal of all health systems is to achieve the highest level of health among people and communities.[12]

Quaternary prevention is approved and supported by WONCA Europe, and Asian, South American, and European countries, and Canada have included quaternary prevention policies in their health systems in recent years; however, the review of evidence revealed that, unfortunately, this level of prevention has not been utilized in Iran. To date, no study has been conducted on the model of factors affecting quaternary prevention using the Rural Family Physician Program based on internal conditions. In this regard, it is necessary to develop a model based on a specific methodology, with principles and framework, benefiting from the concepts appropriate to the conditions of Iran and relying on operational capabilities in Iran. As the Rural Family Physician Program has been implemented since 2006 in Iran, this study focused on implementing quaternary prevention in rural family physicians' service provision in Iran. As family physicians and the referral system are at the forefront of healthcare provision, this study used ISM to identify the relationships between the influential factors and determine a quaternary prevention model.

Materials and Methods

This study was a qualitative study using ISM [Figure 1]. This method is interpretive because a group of people's judgment determines if there is any relationship between the elements. Also, it is structural as the basis of the relationships is a global structure extracted from a complex set of variables.[13] This method is a modeling technique in which the relationships and overall structure are presented in a digraph model. ISM has been used in various fields. The main idea of ISM is breaking down a complex system into several subsystems (elements) using experts' practical experience and knowledge to create a multilevel structural model.[14]

Factors affecting quaternary prevention in family physician services were identified in a meta-synthesis systematic review.[15] After identifying these factors and before compiling them in the form of a questionnaire, they were evaluated by experts (two experts in qualitative analysis and methodology and two content experts), who rated in terms of their significance in assessing quaternary prevention. Afterward, the factors with low and average frequency were omitted. Based on the experts' opinions, similar factors were also integrated. Finally, the questionnaire was used as a tool for collecting data and designing the model. They received questionnaires via email. ISM was used to determine the relationships between the final criteria. The study population consisted of health system faculty members and experts familiar with quaternary prevention. Twenty-five experts were selected

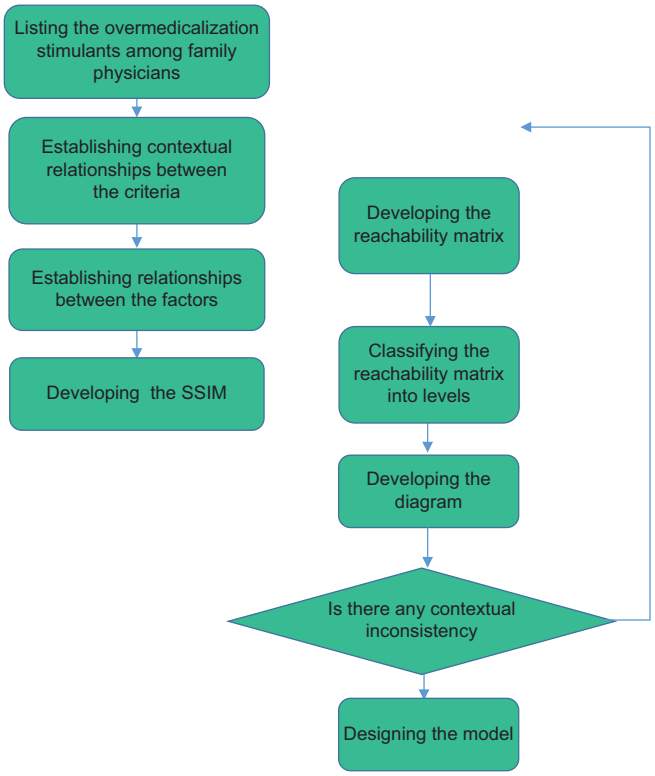

Figure 1: ISM analysis process

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using purposive sampling (Appendix 1). These people were health system faculty members and experts familiar with quaternary prevention and the Family Physician Program. The questionnaire containing the self-interaction matrix was given to them, and the opinions were recorded using the capital letters V, X, O, and A. A diagram demonstrating the relationships between the factors and their levels was created, and the significance of each factor was determined using the MICMAC technique.

ISM had the following steps:

1- According to the factors affecting quaternary prevention in the Rural Family Physician Program in Iran obtained through a systematic review and interview with experts, 36 factors were listed. In 4 sessions, the research team discussed and analyzed the factors, and by excluding some factors based on their significance measured (importance) using a 5-point Likert scale or integrating similar factors, a list of 20 factors was obtained.
2- A contextual relationship was defined between them, considering each pair of criteria and using the factors identified in the first step. A contextual relationship is a conceptual relationship between the parts of a system based on the systems' goals. In this study, an influence relationship was used.
3- The structural self-interaction matrix (SSIM) was developed for the factors affecting quaternary prevention in Iran's Rural Family Physician Program; this matrix revealed the pairwise relationships between the factors. This study used 25 experts' opinions to determine the relationships between the factors affecting quaternary prevention in the Rural Family Physician Program. The questionnaire resulting from the pairwise relationships was sent to the experts in the form of a 20 × 20 matrix so they could decide if there was a relationship between each pair of criteria. Four signs were used to determine the type of relationship between the criteria i and j (to simplify the relationships, English letters were used in the source): V (if only i influences j), X (if i and j influence each other), A (if only j influences i), and O (if there is no relationship). According to Warfield's guideline (1974), experts' feedback mode was used to determine the relationship between the factors affecting quaternary prevention in the Family Physician Program.
4- The initial reachability matrix (RM) was developed using the SSIM, The rules for replacing letters with numbers are as follows:
   A. If the (j, i) entry in the SSIM matrix is V, it will be 1 in the reachability matrix, and the (i, i) entry will be 0.
   B. If the (j, i) entry in the SSIM matrix is A, it will be 0 in the reachability matrix, and the (i, j) entry will be 1.
   C. If the (j, i) entry in the SSIM matrix is X, it will be 1 in the reachability matrix, and the (i, j) entry will be 1.
   D. If the (j, i) entry in the SSIM matrix is O, it will be 0 in the reachability matrix, and the (j, i) entry will be 0.
5- The final reachability matrix of step 4 was classified into different levels. After the initial reachability matrix is obtained, its internal consistency must be established. In this study, several experts answered the questionnaires. The statistical mode was used based on the highest frequency in each entry to develop the final reachability matrix.
   The number of 1s in the first row indicated the lines or effects resulting from the first criterion. Moreover, the number of 1s in the first column represented the effects exerted on the first criterion. A part that influenced all parts and was not influenced by any of them was called the source.
   The reachability and antecedent sets were developed for each factor to determine the level and priority of the variables. The level is related to whether the factor influences others or is influenced by them. Factors of the highest level (level 1) are influenced by other factors and do not influence them.
6- A directed graph was drawn, and transitive relationships were omitted based on the relationships determined in the reachability matrix. The model was developed based on the levels and the final reachability matrix in this step.
7- The final diagram was converted into an ISM by replacing the nodes with the variables.
8- Finally, the ISM developed in the previous step was reviewed to check for inconsistencies.

Analyzing driving and dependence power

In this stage, the driving and dependence power (effectiveness and affectability) of the factors affecting quaternary prevention in Iran's Rural Family Physician Program were determined to conduct the MICMAC analysis, and the MICMAC analytical graph was drawn. Cross-impact analysis, as the tool used in studies about the future, reveals variables' roles concerning one another and identifies variables playing a significant role in developing the system in the future. The information provided by this method is an image of the cross-impact between trends and variables. It is also an image of what is dependent and independent, a driver, and what is driven by other factors. Accordingly, the sum of the row values in the final reachability matrix for each factor shows the driving power, and the sum of column values shows the dependence. Based on the driving and dependence power, four groups of factors are specified:

1- Autonomous: Factors with low driving and dependence power.
2- Dependent: Factors with low driving power and high dependence power.
3- Linkage: Factors with high driving and dependency powers.
4- Drivers: Factors with high driving power and low dependency.

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After determining the driving and dependence power, the researcher can place the factors in the four clusters [Figure 2]. The boundary points are generally the mean of the number of factors, plus one. The boundary points enable the researcher to separate different factors in different clusters.

Results

In the present study, by placing the 20 criteria in the rows and columns of a matrix, the experts were asked to comment on the effectiveness of pairs of criteria. Expert feedback mode was used to fill the cells of the self-interaction matrix. Table 1 presents the structural self-interaction matrix designed based on experts' opinions.

The initial reachability matrix presented in Table 2 was obtained according to the resulting self-interaction matrix and the rules mentioned above, and accordingly, the final reachability matrix was developed as presented in Table 3. Table 2 shows the driving power (the extent to which each factor influences other factors) of the 20 criteria for quaternary prevention using the Rural Family Physician Program in Iran. The results indicated that the greatest influence was related to the level of health literacy in the society, transparency in decision making, reforming the financial and payment system, public awareness and media, availability of different technologies, providing infrastructure, officials and policy makers' commitment to providing serious support for family physicians, medical education accountability, encouraging stakeholders' involvement, evidence-based policymaking, efficient monitoring system, and patient participation in decision-making with a driving power of 19, and the lowest influence was attributed to vulnerable groups' interests with a driving power of 0.

After determining the level of all factors, the ISM model of this study was drawn, as shown in Figure 3. As illustrated in the figure, due to the elimination of transitive relationships and the final diagram, vulnerable groups' interests are placed at level 5, influencing other factors. The commitment of officials and policymakers to providing serious support for family physicians is influenced by other factors but does not influence other factors. The factor that Iran needs to implement quaternary prevention using the Family Physician Program is rooted in other factors in the country, which need to be investigated. The ISM graph for providing quaternary prevention using the Family Physician Program is presented in the figure below [Figures 3 and 4].

					↓ Driving power
					1
	Linkage		Dependent		2
					....
					n-1
	Dependent		Autonomous		n
N	n-1	...	2	1	→ Dependence power

Figure 2: Classification of the criteria based on the driving and dependence power

Based on the analysis of the research variables in the MICMAC matrix [Figure 5], the factors affecting quaternary prevention using the Family Physician Program can be divided into two categories in terms of driving and dependence power:

Intermediate or linkage variables with high driving and dependence power have a high effectivity and affectability, and any small change in these variables will cause fundamental changes in the system. These variables included health literacy in society, transparency in decision making, reforming the financial and payment system, public awareness and the role of media, existence of different technologies, providing infrastructures, officials and policy makers' commitment to providing serious support for family physicians, the process of medical tariff regulation, islanding, reforming the referral system, medical education accountability, encouraging stakeholders' involvement, evidence-based policymaking, efficient monitoring system, and participative decision-making.

Dependent variables had high dependence, low driving power, and, basically, high affectability and low effectivity on the system. Defensive medicine, induced demand, and vulnerable groups' interests were in this category [Figure 5].

Discussion

The present study aimed to identify and classify the factors affecting quaternary prevention using the rural Family Physician Program using ISM. In this study, using a systematic review of relevant studies[15] and the opinion of experts informed about the research topic, 20 factors were identified as factors affecting quaternary prevention using the Rural Family Physician Program. Based on the final reachability matrix, the 20 factors were finally classified into five levels, in which the effectiveness of the factors increases from level 1 to 5; therefore, a level 5 variable has the greatest and a level 1 variable has the lowest effectiveness.

The level 5 variable was a patient benefit, which included the "vulnerable groups' interests." Regarding implementing quaternary prevention using the Rural Family Physician Program, vulnerable groups' interests have the highest effectiveness, and planning should be initiated according to this category. Providing ethically acceptable services based on needs is one of the quaternary prevention characteristics. Quaternary prevention is a task of family physicians.[16] Due to the health activities of the family physician, increasing public access, providing advanced

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Table 1: The structural self-interaction matrix of quaternary prevention using rural family physicians in Iran

	the level of health literacy	transparency in decision making	reforming the financial and payment system	public awareness and media	availability of different technologies	providing infrastructures	Defensive medicine	vulnerable groups' interests	induced demand	Improving family physicians' status
the level of health literacy in society		v	x	x	a	x	v	v	v	x
transparency in decision making			x	x	a	x	v	v	v	v
reforming the financial and payment system				a	x	a	v	v	v	v
public awareness and media					x	x	v	v	v	v
availability of different technologies						x	v	v	v	v
providing infrastructures							v	v	v	v
Defensive medicine								v	x	a
Vulnerable groups' interests									a	a
Induced demand										a
Improving family physicians' status										
The commitment of officials and policymakers to providing serious support for family physicians										
the process of medical tariff regulation										
Islanding										
reforming the referral system										
medical education accountability										
encouraging stakeholders' involvement										
defining health insurance service packages										
evidence-based policymaking										
efficient monitoring system										
patient participation in decision-making (Participative decision-making) (SDM)										

	officials and policy makers' commitment to providing serious support for family physicians	the process of medical tariff regulation	Islanding	reforming the referral system	medical education accountability	encouraging stakeholders' involvement	defining health insurance service packages	evidence-based policymaking	efficient monitoring system	patient participation in decision-making (Participative decision-making) (SDM)
the level of health literacy in society	o	o	o	x	x	x	o	x	x	x
transparency in decision making	x	v	x	v	x	x	v	x	x	x
reforming the financial and payment system	a	x	v	x	o	x	x	a	a	o
public awareness and media	v	v	v	v	a	x	o	x	x	v
availability of different technologies	a	x	v	v	v	x	x	x	x	v
providing infrastructures	a	o	v	x	v	v	x	x	v	v
Defensive medicine	a	o	a	a	a	a	a	a	a	a
Vulnerable groups' interests	a	a	a	a	a	a	a	a	a	a
Induced demand	a	a	a	a	a	a	a	a	a	a

Contd...

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Table 1: Contd...

	officials and policy makers' commitment to providing serious support for family physicians	the process of medical tariff regulation	Islanding	reforming the referral system	medical education accountability	encouraging stakeholders' involvement	defining health insurance service packages	evidence-based policymaking	efficient monitoring system	patient participation in decision-making (Participative decision-making) (SDM)
Improving family physicians' status	a	a	a	x	a	x	a	a	a	x
The commitment of officials and policymakers to providing serious support for family physicians		v	v	v	v	v	v	a	x	v
the process of medical tariff regulation			v	x	o	o	x	a	a	o
Islanding				a	a	a	a	a	a	o
reforming the referral system					x	a	a	a	a	v
medical education accountability						x	o	x	a	v
encouraging stakeholders' involvement							o	x	x	x
defining health insurance service packages								a	a	o
evidence-based policymaking									x	v
efficient monitoring system										o
patient participation in decision-making (Participative decision-making) (SDM)										

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Table 2: The initial reachability matrix of quaternary prevention using the Rural Family Physician Program in Iran

	The level of health literacy	Transparency in decision making	Reforming the financial and payment system	Public awareness and media	Availability of different technologies	Providing infrastructures	Defensive medicine	Vulnerable groups' interests	Induced demand	Improving family physicians' status
the level of health literacy	0	1	1	1	0	1	1	1	1	1
transparency in decision making	0	0	1	1	0	1	1	1	1	1
reforming the financial and payment system	1	1	0	0	1	0	1	1	1	1
public awareness and media	1	1	1	0	1	1	1	1	1	1
availability of different technologies	1	1	1	1	0	1	1	1	1	1
providing infrastructures	1	1	1	1	1	0	1	1	1	1
Defensive medicine	0	0	0	0	0	0	0	1	1	0
Vulnerable groups' interests	0	0	0	0	0	0	0	0	0	0
Induced demand	0	0	0	0	0	0	1	1	0	0
Improving family physicians' status	1	0	0	0	0	0	1	1	1	0
The commitment of officials and policymakers to providing serious support for family physicians	0	1	1	0	1	1	1	1	1	1
the process of medical tariff regulation	0	0	1	0	1	0	0	1	1	1
Islanding	0	1	0	0	0	0	1	1	1	1
reforming the referral system	1	0	1	0	0	1	1	1	1	1
medical education accountability	1	1	0	1	0	0	1	1	1	1
encouraging stakeholders' involvement	1	1	1	1	1	0	1	1	1	1
defining health insurance service packages	0	0	1	0	1	1	1	1	1	1
evidence-based policymaking	1	1	1	1	1	1	1	1	1	1
efficient monitoring system	1	1	1	1	1	0	1	1	1	1
patient participation in decision-making (Participative decision-making) (SDM)	1	1	0	0	0	0	1	1	1	1
Dependence power	16	16	16	16	15	16	18	19	18	16

	Officials and policy makers' commitment to providing serious support for family physicians	The process of medical tariff regulation	Islanding	Reforming the referral system	Medical education accountability	Encouraging stakeholders' involvement	Defining health insurance service packages	Evidence-based policymaking	Efficient monitoring system	Patient participation in decision-making (participative decision-making) (sdm)	Driving power
The level of health literacy	0	0	0	1	1	1	0	1	1	1	19
Transparency in decision making	1	1	1	1	1	1	1	1	1	1	19
Reforming the financial and payment system	0	1	1	1	0	1	1	0	0	0	19
Public awareness and media	1	1	1	1	0	1	0	1	1	1	19
Availability of different technologies	0	1	1	1	1	1	1	1	1	1	19
Providing infrastructures	0	0	1	1	1	1	1	1	1	1	19
Defensive medicine	0	0	0	0	0	0	0	0	0	0	2

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Table 2: Contd...

	Officials and policy makers' commitment to providing serious support for family physicians	The process of medical tariff regulation	Islanding	Reforming the referral system	Medical education accountability	Encouraging stakeholders' involvement	Defining health insurance service packages	Evidence-based policymaking	Efficient monitoring system	Patient participation in decision-making (participative decision-making) (sdm)	Driving power
Vulnerable groups' interests	0	0	0	0	0	0	0	0	0	0	0
Induced demand	0	0	0	0	0	0	0	0	0	0	2
Improving family physicians' status	0	0	0	1	0	1	0	0	0	1	17
The commitment of officials and policymakers to providing serious support for family physicians	0	1	1	1	1	1	1	0	1	1	19
The process of medical tariff regulation	0	0	1	1	0	0	1	0	0	0	18
Islanding	0	0	0	0	0	0	0	0	0	0	18
Reforming the referral system	0	1	1	0	1	0	0	0	0	1	18
Medical education accountability	0	0	1	1	0	1	0	1	0	1	19
Encouraging stakeholders' involvement	0	0	1	1	1	0	0	1	1	1	19
Defining health insurance service packages	0	1	1	1	0	0	0	0	0	0	18
Evidence-based policymaking	1	1	1	1	1	1	1	0	1	1	19
Efficient monitoring system	1	1	1	1	1	1	1	1	0	0	19
Patient participation in decision-making (Participative decision-making) (SDM)	0	0	0	0	0	1	0	0	0	0	19
Dependence power	12	16	16	16	16	16	15	16	16	16	

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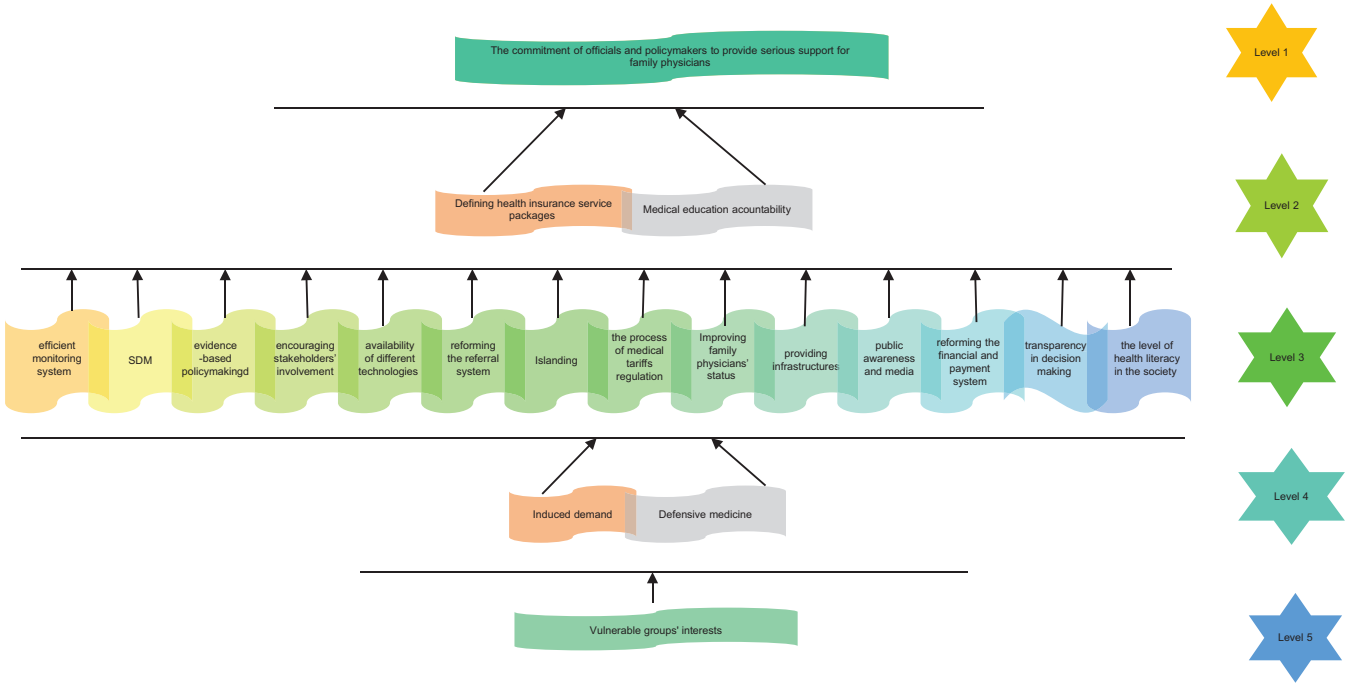

Figure 3: The diagram of the relationships between factors affecting quaternary prevention in the family physician program with Specifying levels

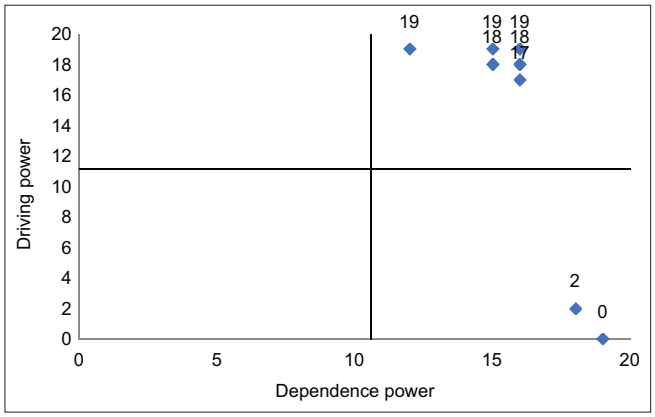

Figure 4: The diagram of the relationships between factors affecting quaternary prevention in the family physician program without Specifying levels

health care services by the family physician, timely identification of patients and follow-up of their care, and increasing the quality of services, the patient's beneficiaries are provided.[17] In promoting the correct knowledge, attitude, and culture of utilizing family physician services at all levels, we can strive to resolve patient confusion, revive health and prevention medicine, change the culture of referrals to physicians, and internalize the values of the family physician program.[18]

The fourth level is the overuse of services, including "defensive medicine" and "induced demand." These issues are among the causes of excessive and unnecessary service provision to patients. It is estimated that a significant percentage of medical interventions are unnecessary and place the patient at risk while imposing additional costs on the patient and the health care system.[6,10] Several factors affect this issue in Iran, including physicians worried about the consequences of not prescribing that, which leads to defensive medicine, revenue generation, the governing structure of the health system, medicalization of management, conflicts of interest, and the relationship between ministries and health organizations.[19] When the family physician program and referral system are implemented properly, in addition to preventing patients from visiting numerous physicians, receiving incomplete medical care, and duplicating services, it will ensure quality care as well as reduce healthcare costs and the use of unnecessary drugs.[4,15]

The third level included the facilitators of health service delivery, including "health literacy in the society," 'transparency in decision making," "the financial and payment system reform," "public awareness and the role of media," "existence of different technologies," "provision of infrastructures," "officials and policy makers' commitment to providing serious support for family physicians," "The process of medical tariff regulation," "islanding," "referral system reform," "medical education accountability," "encouraging stakeholders' involvement," "evidence-based policymaking," "efficient monitoring system," and "participative decision-making." These are the tools that a family physician can use to provide the needed and valuable services. In other words, they provide a platform for facilitators' interaction with patients. It is expected that with the use of these facilitators, family physicians will find their real place in the health system,

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Table 3: The final reachability matrix of quaternary prevention using the Rural Family Physician Program in Iran

level	variables	variables	variables	variables	variables	variables	variables	variables	variables	variables	variables	variables	variables	variables
Level1	vulnerable groups' interests													
Level 2	Defensive medicine	Induced demand												
Level 3	the level of health literacy	transparency in decision making	reforming the financial and payment system	public awareness and media	availability of different technologies	evidence-based policymaking	providing infrastructures	Improving family physicians' status	the process of medical tariff regulation	Islanding	reforming the referral system	encouraging stakeholders' involvement	efficient monitoring system	patient participation in decision-making (Participative decision-making) (SDM)
Level 4	defining health insurance service packages	medical education accountability												
Level5	The commitment of officials and policymakers to providing serious support for family physicians													

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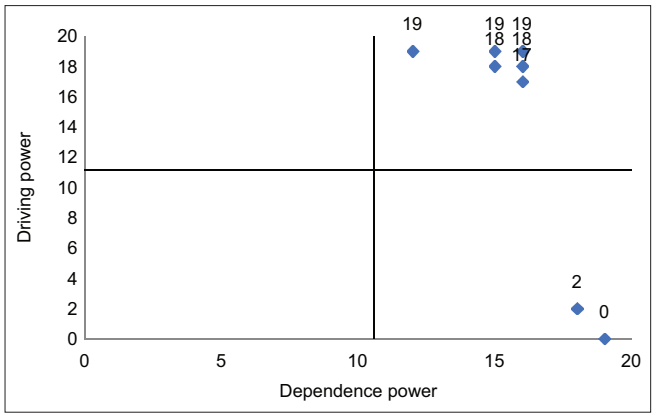

Figure 5: MICMAC analysis

and patient benefits will be provided by the entrance of these physicians who provide primary care services using the first level of health services and a health-oriented approach. Proper implementation of the Family Physician Program can lead to physician-patient communication and interaction, trust, provision of comprehensive services in the dimensions of prevention, treatment, and rehabilitation, and increased response to individuals' needs, all parts of quaternary prevention.[15]

The second level was effective value creation, which included "medical education accountability" and "defining health insurance service packages." Inadequate training on the duties expected from family physicians, lack of a community-based perspective in the education system, and a lack of serious participation in retraining health team members are some of the challenges in the family physician program. We can expect general practitioners to be able to work as family physicians if we synchronize and update the content of medical education with the PHC and rural doctors.[20] Therefore, designing health insurance service packages to reach universal health coverage by assessing cost-effectiveness and the impact of financial protection will be effective.[21] Thus, appropriate services delivered at the right time by the right person in the right place can protect him from financial and personal harm.

The first level was the officials' commitment, including the commitment of officials and policymakers to providing serious support to family physicians. This factor is dependent on other factors and has less influence on them. It has been challenging to establish the rural family physician program because the trustees are unfamiliar with the rules and criteria, and as a result, there is no accurate and comprehensive forecasting. In part due to a lack of commitment and willingness from state officials to enforce the law, representatives, districts, and villagers have put political pressure on the state to conduct the affairs of the villagers in any way they see fit without regard to the guidelines of the referral system and the family physician program.[20] For policy-making, planning, and proper implementation of the family physician program, determining the policy and planning areas within the three forces and the belief of senior managers are most important.

Conclusions

Due to limited resources and the high cost of health services, fair distribution of these resources in a way that vulnerable individuals and groups have access to at least the basic services is a matter that must be addressed in efficient and straightforward ways. Moreover, although new technologies effectively treat some diseases, they are costly and sometimes only suitable for a specific group of patients. Costs and the issues of induced demand and defensive medicine necessitate a different view of health service distribution. Finally, prevention has a higher status than treatment. Although prevention has always been more important than treatment, it is becoming more significant nowadays. A simple policy and response to meet people's needs and the fair distribution of health services are intrinsic to the Family Physician Program, the first level of treatment. The preventive and strategic view and the comprehensiveness of family physician services make quaternary prevention possible by providing high-risk and vulnerable groups with essential services based on patient needs and conditions with more benefit than harm.

The findings of qualitative studies are dependent on the participants and by selecting different people for participation in the study, different aspects of the subject can be addressed. In qualitative studies, the researcher is the primary tool of research, and his/her insight and views affect the collection and analysis of the data. Nevertheless, since the research team did not have a previously intense study on the subject, they did not have any conflicts of interest in this study, and they accurately documented the research stages. It seems that there was no bias in collecting and analyzing the qualitative data. Furthermore, in the interviews, the participants could have omitted some parts of their answers due to the fear of exposure of their statements. Therefore, there is a chance that they have censored some parts of their statements.

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Conflicts of interest

There are no conflicts of interest.

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References

1. Pezeshki Z, Pezeshk S. Educating quaternary prevention (P4) in Iran for decreasing the harms and costs of unnecessary services in clinical medicine and public health. Payesh. 2013;12:329-32.
2. Jamoulle M. Quaternary prevention: first, do not harm. Rev Bras Med Fam E Comunidade. 2015;10:1.
3. Gutkin C. Opportunities in the specialty of family medicine. Can Fam Physician 2008;54:320
4. Afkar A, Pourrza A, Khodabakhshi Njad V, Mehrabian F. Family physician performance from the perspective of Gilani customers. J Hospital 2013;12:39-48.
5. Sepehri B, Ghaffari R, Jeddian A, Salek F, Emrouzi R, Ghaffarifar S, *et al*. A descriptive-comparative study of implementation and performance of family physician program in Iran and selected countries. Iran J Public Health 2020;49. doi: 10.18502/ijph.v49i3.3151
6. Tesser CD. Why is quaternary prevention important in prevention?. Rev Saude Publica 2017;51:116.
7. Bernstein J, La Valle R. Because of science you also die.: Comment on" Quaternary prevention, an answer of family doctors to over medicalization". Int J Health Policy Manag 2015;4:615-6.
8. Jamoulle M. Quaternary prevention, an answer of family doctors to overmedicalization. Int J Health Policy Manag 2015;4:61-4.
9. Wolinsky H. Disease mongering and drug marketing: Does the pharmaceutical industry manufacture diseases as well as drugs?. EMBO Rep 2005;6:612-4.
10. Morgan DJ, Brownlee S, Leppin AL, Kressin N, Dhruva SS, Levin L, *et al*. Setting a research agenda for medical overuse. BMJ 2015;351:h4534.
11. Selby K, Cornuz J, Cohidon C, Gaspoz J-M, Senn N. How do Swiss general practitioners agree with and report adhering to a top-five list of unnecessary tests and treatments? Results of a cross-sectional survey. Eur J Gen Pract 2018;24:32-8.
12. Gofrit O, Shemer J, Leibovici D, Modan B, Shapira SC. Quaternary prevention: A new look at an old challenge. Isr Med Assoc J 2000;2:498-500.
13. Warfield JW. Developing interconnected matrices in structural modeling. IEEE Transactions on Systems Men and Cybernetics. 1974;4:51-81.
14. Attri R, Dev N, Sharma V. Interpretive structural modelling (ISM) approach: An overview. J Manag Sci 2013;2319:1171.
15. GhorbaniNia R. Designing and modeling for quaternary prevention for rural family physician services in Iran. Kerman University of Medical Sciences; 1401.
16. Kuehlein T, Sghedoni D, Visentin G, et al. Quaternary prevention: a task of the general practitioner. Prim Care. 2010;10:350-4.
17. Takian A, Doshmangir L, Rashidian A. Implementing family physician programme in rural Iran: Exploring the role of an existing primary health care network Fam Pract 2013;30:551-9.
18. Takian A, Rashidian A, Kabir MJJHp, planning. Expediency and coincidence in re-engineering a health system: An interpretive approach to formation of family medicine in Iran. 2011;26:163-73.
19. Salehi HR, Razavi M, Rafiei R. Basis of Physician's Civil Liability in Necessary and Unnecessary Treatments in Iranian and American Law. J Medical Law 2019;13:29-55.
20. Mehrolhassani MH, Jafari Sirizi M, Poorhoseini SS, Yazdi Feyzabadi VJH, Journal D. The challenges of implementing family physician and rural insurance policies in Kerman province, Iran: A qualitative study Sci Information Data 2012;1:193-206.
21. Heydari S, Seyed-Nezhad M, Moradi-Joo M. The role of health technology assessment in determining the benefits package: a review. Iranian Journal of Health Insurance. 2019;1:111-6.

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Appendix 1

Participants' characteristics

	Participants	Number
Faculty members	Health policy	2
	Healthcare management	6
	Preventive medicine	2
	Family physician	2
Family physicians	Family physician	7
Executive managers	Public Health Vice-Chancellery	6