Original Article

The Strategies of the Preventing Induced Demand for Medicine Prescription: A Qualitative Study

Azam Mohamadloo[1], Ali Ramezankhani[2]

[1]Department of Public Health, Faculty of Health, Kashan University of Medical Sciences, Kashan, [2]Department of Public Health, School of Public Health, Shahid Beheshti University of Medical Science, Tehran, Iran

ORCID:

Azam Mohamadloo: https://orcid.org/0000-0003-1125-0112

Abstract

Aims: The purpose of the present qualitative study was to investigate strategies of preventing induced demand for medicine prescription through in-depth interviews with various stakeholders (physicians, pharmacists, faculty members, and patients). **Materials and Methods:** For data gathering, we used in-depth interviews with a purposive sample of 20 participants who were selected according to their experience. Interviews were transcribed, analyzed, and identified, and the key themes were named and coded with a sample of quotation. We used content analysis to analyze the interviews. All authors participated in the analysis process to avoid bias and receive an agreement. **Results:** In the process of data analysis, all the strategies of preventing induced demand for prescription of medicine were elicited from the data analysis and were classified into two themes: Health education program and stewardship in the health system with 12 categories and 37 subcategories. Some strategies include promoting pharmaceutics' health literacy; developing, implementing, and evaluating policies to prevent induced demand for prescription of medicine; reforming the education system and medical research; development of health information; reforming the health system structure; reforming the monitor and control system in the health system; observing patients' rights charter; and reforming the insurance companies. **Conclusion:** The present study provides evidence that confirms the induced demand is preventable. Hence, we recommend that stockholders consider the strategies to preventing induced demand for the prescription to prevent unnecessary prescriptions of medicines and the consequences.

Keywords: Medicine, patients, physicians, prescription, qualitative research

Introduction

A major topic in researches of health economics is an inappropriate demand for health-care services which are considered to be unnecessary for the patients.[1,2] The inappropriate demand for health-care services could include a variety of medical interventions from simple medicine prescribing to complicated surgical.[3,4] The unnecessary prescribing was influenced by different factors of physician factors, patient factors, and political and institutional factors.[5] The WHO reported that over 50% of all drugs are inappropriately prescribed and sold.[6] In primary care, in developing countries, only 30% of patients in the private sector and less than half of patients in the public sector are treated in accordance with standard guidelines.[7]

A study showed that induced demand for medicine prescription has several consequences including health consequences and economic and social.[5,8] Irrational prescribing wastes health resources and imposes an additional burden on the healthcare system and has the health and economic consequences in patients.[9] Çelik *et al*. in a study conducted on evaluating the effects of irrational use of drugs suggested that the irrational use of drugs leads to resistant strains of microorganisms, lack of patient recovery, prolongation of disease, ineffectiveness in treatment, and waste of economic resources in the patient and the health-care system.[10] Ahmed's study on supplier-induced demand in health

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Address for correspondence: Dr. Azam Mohamadloo, Department of Public Health, Faculty of Health, Kashan University of Medical Sciences, Kashan, Iran.
E-mail: azammohamadloo@gmail.com

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care suggested some consequences of induced demand such as unnecessary use of the medicine, catastrophic expenditures for the patient, and prolonged treatments.[9] Previous studies showed that physician-induced demand (PID) can increase health expenditure potentially.[11,12] Thus, induced demand for medication could has impacts on the health, economic, social, and culture. The purpose of the present study was to investigate strategies of preventing induced demand for medicine prescriptions through in-depth interviews with stakeholders (physicians, pharmacists, faculty members, and patients).

Materials and Methods

We designed and conducted a qualitative study in a purposive sample. When the data were saturated (no new information or themes were observed in the data), the sample size was fixed. Accordingly, we held twenty in-depth interviews from September to December 2015 in Tehran to explore the participants' views and experiences about the strategies of preventing induced demand for medicine prescription. Of the 20 participants, 8 were nonfaculty members and 12 were faculty members [Table 1].

The author, A. M, who had formal training in interviewing had interviewed all participants. Informed consent and permission for voice recording were received by all participants. We reassured the interviewees about anonymity and maintaining respondent confidentiality. The interviews were exploratory and lasted for 30–60 min. The participants revealed their opinions and experiences about the strategies of preventing induced demand for medicine prescriptions. All the questions were open. As the interview process progressed, we added new questions or refined them. The interviews were stopped when the data were saturated. As the interview process progressed, interviews were transcribed and analyzed. We used content analysis to analyze the interviews. We identifed, named and coded the key themes. All the authors participated in the analysis process to avoid bias and receive an agreement. To increase the trustworthiness of research, the quotations, codes, and themes were double-checked by our research team to get consensus over any interpretations. The interview method and the analysis were also double-checked and verified by two experts in the field of qualitative research.

Results

In the process of data analysis, all the strategies of preventing induced demand for prescription of medicine were elicited from the data analysis and were classified into two themes: health education program and stewardship in the health system with 12 categories and 37 subcategories [Table 2].

Health education program

The participants revealed that health education program is necessary for promoting pharmaceutics' health literacy.

The strategy of promoting pharmaceutics' health literacy was confirmed by all participants. Participants confirmed on participation and collaboration of intersection (such as vice-chancellor of health affairs, Iran pharmacists association, and Iran medical council) and intersectoral (such as ministry of education, municipality, and Non government organization (NGO) with the ministry of medical and health education) in health education program. *"Explain the harms or the complaints of drug abuse. Because one of the problems is drug abuse" (P15). "So, one of the ways is that increasing knowledge in people about medicines" (p7). "We should*

Table 1: Participants characteristic

n	Participant	Degree	Job	Year experiences
1	Health educationist	PhD	Faculty member	37
2	Patient	Diploma	House worker	-
3	Health educationist	PhD	Nonfaculty member	10
4	Clinical pharmacologist	PhD	Faculty member	28
5	Health economics	PhD	Faculty member	23
6	Health economics	PhD	Nonfaculty member	10
7	Health economics	PhD	Faculty member	15
8	Health economics	PhD	Faculty member	10
9	Pharmaco-economist	PhD	Faculty member	10
10	Health economics	PhD	Faculty member	25
11	Pharmacologists	PhD	Faculty member	25
12	Pharmaceutics	PhD.	Faculty member	18
13	Pharmacologists	PhD	Faculty member	24
14	Pharmaceutics	PhD	Nonfaculty member	20
15	Patient	PhD	Nonfaculty member	10
16	General practitioner	MD	Faculty member	26
17	General practitioner	MD	Nonfaculty member	18
18	General practitioner	MD	Nonfaculty member	18
19	Health educationist	PhD	Nonfaculty member	20
20	General practitioner	MD	Faculty member	20

Table 2: The strategies of inducing induced demand for medicine prescription

Theme	Category	Sub-category
Health education program	Promoting pharmaceutics' health literacy	Participation and collaboration of intersection in health education program
		Participation and collaboration of intersectoral in health education program
		Public health education
		Promoting the culture of rational prescription and use of medicine
Stewardship in the health system	Developing, implementing, and evaluating policies to prevent induced demand for prescription of medicine	The policy of determining the number of physician visits
		The policy of increasing the price of pharmaceutical services
		The policy of controlling the financial incentives of health care providers
		The policy of controlling the consequences of induced demand for prescription
	Reform the education system and medical research	In-service education
		Change in educational curriculum
		Train and observant professional ethics
	Evaluating health technology	Health service research
	Development of health information	The existence of electronic records for patients
		Information sharing between organizations
	Reform the health system structure	Improve relationship between medical practitioners
		Compilation, and adherence to clinical guidelines
		Integration between organizations of health system
	Reform the monitor and control system in the health system	Reform the monitor and control the performance of physicians
		Reform the monitor and control the performance of pharmacies
		Reform the monitor and control the performance of pharmaceutical companies and supervising insurer organization
	Observance of the patients' rights charter	Patient education
		Providing the information appropriately and adequately for patients
		Aware of patient rights
		Access complaint system
		Improve patient-physician relation
	Developing and reforming the laws and regulations of supply and prescription of medicine	Performance bond
		Approve and implement the law and regulations of supply and prescription of medicine
		Implementation of the law and regulations prohibiting the sale of medicines without a prescription
	Providing mechanisms in the financial relationships of pharmaceutical companies with medical practitioners	Manage the relationships of pharmaceutical companies with medical practitioners
		Providing an ethical charter in the relationships of pharmaceutical companies with medical practitioners
	Reform supply, production, and distribution of health resources	Distribution the manpower appropriately
		Supply, production, and distribution of medicines appropriately
	Reform the insurance companies	Reform the laws and regulations of insurance companies
		Reform the monitor and control on insurance companies
		Existence the clinical policies in insurance companies
		Integrity insurance companies
		Reform the payment system in insurance companies

consider the cultural context. We should promote the culture of rational prescription and use of medicine in the physician, pharmacist, and patient" (p19). "Health education by mass media could be more effective on people, health care service providers, even us (physicians)" (P18).

Stewardship in the health system

Some functions of stewardship define the healthy vision, policies, and strategies to have better health, apply influence across all sectors, and use the regulatory, legal, and policy instruments to control health system performance.[13] The participants revealed some functions of stewardship in the health system [Table 2].

The strategy of developing, implementing, and evaluating policies to prevent induced demand for prescription of medicine was identified by 18 participants. *"See in the world, control systems have their own policies that they do control based on these policies. We have these policies too, but these policies are not suitable for our control system, our pharmaceutical and care system. These usually are a copy paste of another country. Because it is very important that policies are making based on situations, after policy making, it is necessary to implement the policy" (p12).*

The strategy of reforming the education system and medical research was identified by 16 participants. *"The ethical*

considerations should observe well and the courses of in-service education should emphasize on ethical considerations" (p15). "They have to learn how to correct prescribed and how to supply funding of these prescriptions, they need to train health economics and pharmacy economy" (p14).

The strategy of development of health information was identified by four participants. *"Where electronic records are registered, it's clear that a patient what medicines have taken and why medicines were prescribed" (p20). "If prescriptions will be paperless, they are controlled intellectually, although payment system is FFS, the physician knows that there are laws and controls on his prescriptions and his diagnosis" (p14).*

The strategy of reforming the health system structure was identified by 15 participants. *"Collaboration of intersection has a synergistic effect, When they can be more powerful, their potential will be even higher, parallel works will be reduced. Even it is cost-benefit and cost-effectiveness" (p19). "If the ministry of health and the medical council want to prevent of induced demand for medicine prescription should have collaborated and teamwork" (p 14). "When we could have the best control that we have the clinical guidelines based on electronic records" (p13).*

The strategy of reforming the monitor and control system in the health system was identified by 14 participants. *"Monitor and control will reduce induced demand for medicine prescription, but it should be smart" (p14). "The medical council must monitor and control on physicians" (p13). "There should be continuous monitoring, not periodic monitoring. Monitoring should be continuous, even in my opinion, if we monitor 50%, but continuous, it is much better than having a periodic monitoring" (p12).*

The strategy of observing the patients' rights charter was confirmed by 12 participants. *"If a patient doesn't know his/her rights, we should inform him about that" (p19). "In my opinion, if a patient is aware of patient rights a little, induced demand for the medicine prescription won't happen" (p20). "A physician should have explained about the disease, diagnosis, treatment, and complaints of medicines to his patient" (p18).*

The strategy of developing and reforming the laws and regulations of supply and prescription of medicine was identified by 15 participants for preventing induced demand for medicine prescription. *"The laws and regulations are no deterrent. Reform the laws and implementation of the laws, the control and follow them up should be prioritized. The policies should be prioritized" (p19). "You should confirm on the supply dimension and the laws and regulations. You should confirm the monitor and control the laws and regulations" (p10).*

The strategy of providing mechanisms in the financial relationships of pharmaceutical companies with medical practitioners was identified by four participants for preventing induced demand for medicine prescription. *"One way preventing induced demand for medicine prescription is providing a logical and appropriate mechanism, in first, the relationship of the physicians, second, the relationship of the pharmacists, third, the relationship of pharmaceutical companies with medical practitioners. We should make a framework or a charter for how to manage the relationship, and the medical council should do this manage" (p9).*

The strategy of reforming supply, production, and distribution of health resources was confirmed by five participants *"Training the manpower according to the country's need, distributing the manpower appropriately and allocating more financial resources for health sectors could help to reduce induced demand".(P8).*

The strategy of reforming the insurance companies was confirmed by 17 participants *"Insurance companies should have protocols that do not let physicians prescribe some medicines" (p13). "It should not exchange money between physician and patient, insurance companies should do it" (P8).*

Discussion

According to the results of this qualitative analysis, many strategies were reported that will prevent induced demand for medicine prescription [Table 2]. Our results indicated that one of the strategies is health education programs to promote the pharmaceutics health literacy and the culture of rational prescription and use of medicine. Positive effects of health education programs are that patients will know about the medicine complications and they possibly would not take expensive medicines.[14] Our results provide more evidence for the other studies.[14-17]

Developing, implementing, and evaluating policies to prevent induced demand for prescription of medicine is another strategy [Table 2]. Increasing the price of health-care services may not be the appropriate way to prevent induced demand for medicine prescription. Dusansky study showed that increase in the price of health care decreases the demand for health care and increase the demand for insurance, which follows that increases the demand for health care.[18]

The result showed that reforming the education system and medical research is another strategy. In Iran, one of the effective interventions is the training of pharmacists and physicians about the rational prescription.[13] In Saudi Arabia, one of the most effective strategies to improve medicine prescribing is the training of physicians that include training about quality of medicine prescribing, medicine interactions, clinical guidelines for chronic illnesses and acute infection of respiratory, the framework for changing problems of the irrational medicines use, the rational antibiotic prescription, laws and regulations of medicine prescribing, and training and investigating irrational medicine use problems.[19]

Other strategies are evaluating health technology and development of health information. One possible explanation is that the existence of electronic records for patients will oblige the physicians to adherence to clinical guidelines. In fact, the physicians are under a supervisory framework. A study showed

that electronic health records (EHRs) will improve physicians' decisions and patient treatment' outcomes. EHRs will inform health providers about their own performance and will finally inform the patients as well.[20]

The results indicated that reforming the health system structure is one of the strategies. In health system structure, the relationship between physician and pharmacist plays an important role in preventing induced demand for medicine prescription. A study showed that the scientific, accuracy, and attention of pharmacists are very important in diagnosis and correct possible errors of physicians. The pharmacist is required to avoid possible medical errors in a variety of ways, such as contacting a physician or counseling the patient to return to the doctor before taking the medication.[21]

Our study showed that another strategy is the reforming the monitor and control system in the health system [Table 2]. Controlling the medicine prescriptions is an effective way to rational prescription and reduce physician-induced demand (PID). Our results provide more evidence for other studies.[9,17,22,23] Observing the patients' rights charter is another strategy. Reducing the knowledge gap between patients and physicians by patient education and providing information for patients lead to patient empowerment to make decisions about their treatment. The results are in agreement with those of previous studies.[9,19]

Our results showed that developing and reforming the laws and regulations of supply and prescription of medicine is one of the strategies. The most probable explanation for this is that implementing the laws and regulations of medicine prescription and prohibiting the sale of medicines without a prescription in the drugstores could prevent increasing the irrational health-care consumption. Developing and implementing the effective laws on medicine prescribing,[9] the policy changes in the prescribing behaviors,[24] and the return policy for near-expiry antibiotics are the effective strategies of preventing induced demand for medicine prescription.[15]

Providing the mechanisms in the financial relationships of pharmaceutical companies with medical practitioners is another strategy. It means the relationship of pharmaceutical companies with medical practitioners should be established within a specific framework by controlling the financial incentives and monitoring and controlling the advertising and marketing of drugs and the effectiveness of drugs. Bhatia *et al*. in a study confirmed that the pharmaceutical companies are trying to influence their stakeholders like physicians, in a variety of ways, such as sales by the provision of free samples for physicians, meetings for physicians, and advertisements in physicians' magazines and in other media related to consumers.[25]

Our results showed that another strategy is reforming supply, production, and distribution of health resources including physicians, pharmacists, and medicines. One possible explanation is that the balance between supply and demand may be due to the appropriate supply, production, and distribution of health resources. Wibulpolprasert and Rainer in a study confirmed that inappropriate distribution of manpower in the health sector is a universal phenomenon and has the various dimensions, and the largest and first concern is related to the physician's distribution.

Reforming the insurance companies is another strategy of preventing induced demand for medicine prescription. One possible explanation is that the insurance companies could effect on physicians' performance with their policies. Several studies confirmed that the fee-for-service payment system provides the financial incentives for the physicians to create induced demand.[4,24,26,27] However, Chen study confirmed that the removal of the financial incentives alone would not improve the prescribing pattern. The policy of prescribing of the essential drugs list and the lack of a link between the payer and the provider of services is likely to change the prescriber behavior.[24] Previous studies showed that one of the effective policies in changing physicians' performance is to disconnect a financial link between the provider and the payer.[24,26]

One of the limitations of the study was that we might have missed some information because we did not have enough time for the interviews due to our participants who had the limited time. However, we have well managed the interview to get the best out of that by asking the right questions and letting the participants inform us of what they knew through open questions.

Conclusion

The present study provides evidence that confirms the induced demand is preventable. Hence, we recommend that stockholders, policymakers, and decision-makers consider the strategies to preventing induced demand for the prescription to prevent unnecessary prescriptions of medicines and the consequences. The health educational program for promoting pharmaceutics' health literacy could be useful for promoting the culture of rational prescription and use of medicine.

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Conflicts of interest

There are no conflicts of interest.

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