

Consequences of Induced Demand for Medicine Prescription: A Qualitative Study

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Abstract

Aims: The purpose of the present qualitative study was to investigate the consequences of an irrational prescription of medicine through in-depth interviews with various stakeholders. **Materials and Methods:** We used in-depth interviews for data gathering with a purposive sample of twenty participants who were selected according to their experience. We transcribed and analyzed interviews and identified, named, and coded the key themes with a sample of quotation. **Results:** In general, 14 subthemes or consequences were identified and classified, including health, economic, and social consequences. Some consequences are treatment failure, impose the financial costs to an individual and the government, waste of medicines, increase the financial burden of insurance organizations, trafficking medicine, disruption in the appropriate supply of medicine, deprive people needed for medicine, and deviation in policymaking. **Conclusion:** The present study provides evidence that confirms the induced demand effect on health, society, and economic. Hence, we recommend health practitioners plan the health education interventions to reduce unnecessary prescriptions of medicine and the consequences and prevent the induced demand for the prescription.

Keywords: Patients, physicians, prescriptions, qualitative research

INTRODUCTION

Inappropriate demand for healthcare services that are considered to be unnecessary for the patients is a major issue in health economic research.^[1-3] The inappropriate demand for healthcare services includes a range of medical interventions from simple prescriptions for medicine to complicated surgical interventions.^[4-7] Our previous studies showed that the unnecessary prescription was influenced by many factors, including patient factors, physician factors, and institutional and political factors.^[8,9] According to the WHO reports, more than 50% of all medicines are inappropriately prescribed or sold, and nearly half of the patients do not take them appropriately.^[10] In developing countries, in primary care, less than half of patients in the public sector and 30% of patients in the private sector are treated in accordance with the standard guidelines.^[11]

Unnecessary prescription of medicine imposes an extra burden to community healthcare system and wastes resources, leading

to health and economic outcomes in patients.^[10,12,13] Çelik *et al.*, in a review study conducted on evaluating the impacts of irrational use of medicine from a clinical pharmacist viewpoint, found out that the irrational use of medicine leads to lack of patient recovery, ineffective in treatment, prolongation of disease, resistant strains of microorganisms, and waste of economic resources in the patient and the healthcare system.^[14] Certain studies have shown that physician-induced demand can potentially increase health expenditure.^[15,16] Ahmed and Shaikh, in a study conducted on supplier-induced demand in healthcare, implied some consequences of induced demand such as catastrophic expenditures for the patient, unnecessary use of medicine, and prolonged treatments.^[13] Thus, induced demand for medicine could have effects on health, social,

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Received: 27-Apr-2020

Revised: 10-May-2020

Accepted: 16-May-2020

Published: 26-Aug-2020

Access this article online

Quick Response Code:



Website:
<http://iahs.kaums.ac.ir>

DOI:
10.4103/iahs.iahs_38_20

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How to cite this article: Mohamadloo A, Ramezankhani A. Consequences of induced demand for medicine prescription: A qualitative study. *Int Arch Health Sci* 2020;7:126-30.

economic, and culture conditions. The purpose of the present qualitative study was to investigate the consequences of irrational prescription of medicine through in-depth interviews with various stakeholders (faculty members, physicians, pharmacists, and patients).

MATERIALS AND METHODS

A qualitative study was designed and conducted using purposive sampling to choose participants who have experience about induced demand for medicine prescription, and the sample size was fixed when the data were saturated. Accordingly, twenty in-depth interviews were held from September to December of 2015 in Tehran to explore the participants' experiences and opinions about the consequences of induced demand for medicine prescription. Of 20 various stakeholders, 12 were faculty members and 8 were nonfaculty members [Table 1].

All participants were interviewed by the author AM who had a formal education in interviewing. We received informed consent and permission for voice recording from the participants. We reassured the participants about maintaining respondent confidentiality and anonymity. Each interview was exploratory and lasted for 30–60 min. The participants revealed their experiences and views about the consequences of induced demand for medicine prescription. As the interview process progressed, new questions were added or refined. All the questions were open. When the data were saturated, the interviews were stopped, transcribed, and analyzed. We used content analysis. The key themes were identified, named, and coded with at least one sample of quotation. To avoid bias and receive an agreement, all authors participated in the analysis process. To increase the trustworthiness in 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 consequences of induced demand for the prescription of medicine were elicited from the data analysis and were classified into three categories: health, economic, and social consequences. Two health, six economic, and six social consequences were disclosed by the participants [Table 2].

Health consequences of induced demand for medicine prescription

The participants revealed two health consequences of induced demand for medicine prescription, including increasing the side effects of the unnecessary use of medication and treatment failure.

Increasing side effects of unnecessary use of medication

Of 20 participants, 16 had the opinion that most of the medicines have side effects, especially unnecessary and inappropriate use of medications is harmful to the patient. *“It is possible, these medications are harmful to patients and may exacerbate disease or cause new diseases”* (P 15).

Treatment failure

Treatment failure was another consequence identified. Of twenty participants, two had the opinion that an ineffective treatment and an inappropriate therapy lead to prolongation of disease and effects on the recovery of the patient. *“That is an irrational prescribing when a doctor has induced you to use an unnecessary medicine. Because of unnecessary use of medication may occur a treatment failure and more complications. In this cycle, pharmacist, patient and doctor may be induced”* (P 11).

Table 1: Participants characteristic

Participant	Degree	Job	Year experiences
Health Educationist	PhD	Faculty member	37
Patient	Diploma	House worker	-
Health Educationist	PhD	Nonfaculty member	10
Clinical Pharmacologist	PhD	Faculty member	28
Health Economics	PhD	Faculty member	23
Health Economics	PhD	Nonfaculty member	10
Health Economics	PhD	Faculty member	15
Health Economics	PhD	Faculty member	10
Pharmaco-Economist	PhD	Faculty member	10
Health Economics	PhD	Faculty member	25
Pharmacologists	PhD	Faculty member	25
Pharmaceutics	Pharm.D.	Faculty member	18
Pharmacologists	PhD	Faculty member	24
Pharmaceutics	Pharm.D.	Nonfaculty member	20
Patient	PhD	Nonfaculty member	10
General Practitioner	MD	Faculty member	26
General Practitioner	MD	Nonfaculty member	18
General Practitioner	MD	Nonfaculty member	18
Health Educationist	PhD	Nonfaculty member	20
General Practitioner	MD	Faculty member	20

Table 2: The consequences of induced demand for medicine prescription

Category	Consequences
Health consequences	Increase side effect of unnecessary use of medication
	Treatment failure
Economic consequences	Impose the financial costs to an individual
	Waste the financial resources of the health system
	Waste of medicines
Social consequences	Impose the financial costs to the government
	Increase the financial burden of insurance organizations
	Deviation in the appropriate allocation of resources
	Trafficking medicine
	Disruption in the appropriate supply of medicine
	Deprive people needed for medicine
	Inappropriate use of medicine
	Decrease in productivity of society
	Deviation in policymaking

Economic consequences of induced demand for medicine prescription

The participants revealed six economic consequences of induced demand for medicine prescription, including imposing the financial costs to an individual, wasting the financial resource of the health system, wasting of medicines, imposing the financial costs to the government, increasing the financial burden of insurance organizations, and deviation in the appropriate allocation of resources.

Imposing the financial costs to an individual

Twelve participants said that to persuading the patients to buy unnecessary medicine leads to increasing health expenditure for the patient. *“Also, some patients are unable to buy medicine, but the patients have to do it and they will be under financial pressure”* (P 18). *“Patients, especially with low and middle-income will have a bad financial situation. Because the household income is spent for health”* (P 9).

Waste the financial resource of the health system and waste of medicines

Of twenty participants, ten confirmed that unnecessary prescription and storage additional medicine at home, leading to waste the financial resource of health. *“Some of patients storage medicine at home in the fridge or keep them in the inappropriate situation. While they know these medicines will expire”* (P 18). *“Doctors impose a financial burden on the country’s pharmaceutical system through the prescribed unnecessary medicine”* (P 12).

Impose the financial costs to the government

Six participants said that some physicians prescribe unnecessary medicine and these prescriptions will increase health expenditure for the health system. *“This creates extortionate costs for the government and the health system, while these costs could be used for prevention, not treatment”* (P 9). *“But now we look at the community, those who encourage others for induced demand and those who advertise that impose a very large amount of money to the country”* (P 1).

Increase the financial burden of insurance organizations

Three of the participants mentioned that induced demand for medicine prescription in insured patients is more than uninsured. *“We (insurance organization) pay for them based on their prescriptions and supplied services. The insurance funds are damaged by the induced demand, so the insurance companies will be unable to pay on time”* (P 14).

Deviation in the appropriate allocation of resources

A participant had the opinion that unnecessary costs were spent on unnecessary treatment, leading to lack of resource in necessary cases. *“Before I come to insurance organization, I worked in a pharmacy. I had not considered that what prescriptions I receive, whether they have an extra item or expensive medicine. Later I understood that due to these prescriptions; the financial resources become impaired”* (P 14).

Social consequences of induced demand for medicine prescription

The participants revealed six social consequences of induced demand for medicine prescription, including trafficking medicine, disruption in the appropriate supply of medicine, deprive people needed for medicine, inappropriate use of medicine, decrease in productivity of society, and deviation in policymaking.

Trafficking medicine

Of twenty participants, five confirmed that following the creation of induced demand for medicine, there is the possibility of risk of developing trafficking networks in medicine. *“Induced demand is created by doctors because they prescribe a medicine that there is not on the list of the pharmaceutical in the country. It is difficult for people buying this medicine and this leading to create trafficking medicine”* (P 20).

“Finally, we put people into a cycle by creating induced demand, which seriously harms the health and property of the people and the country’s economy and develops the culture of the irrational use of medicine. Trafficking medicine is created for two reasons: (1) Shortage of medicines in the country, (2) Induced demand for medicine” (P 9).

Disruption in the appropriate supply of medicine

Of twenty participants, three mentioned that unnecessary prescriptions for medicine lead to the imbalance in supply and demand. *“When it is not clear that what’s the real need for medication, when a doctor prescribes irrational medication, when there is the irrational use of medicines, the medicine may be produced on a large scale, so it will occur the inappropriate medicine production in the country”* (P 14).

Deprive people needed for medicine

Three participants said that patients collect the unnecessary medicines and keep at home while these will expire.

“When I store this medicine in the fridge and it may be I keep them at home without use of them or bad situation, while maybe someone else really needed it” (P 18). *“Induced demand causes some people taking unnecessary medicines. In contrast, people needed to these medicines, remain deprived of access to these medicines”* (P 8).

Inappropriate use of medicine

This consequence was confirmed by eight participants. Inappropriate use of medicine is defined as purchasing and taking unnecessary medicine. *“When, you buy medicine too much, you have to give them to the patient, and then indirectly, promote the irrational use of antibiotics”* (P 11).

Decrease in productivity of society

Three participants also mentioned that unnecessary visits lead to doctors and patients lose their valuable time. *“See, induced demand, directly and indirectly, hits to families and community and family economies. Directly, the money is paid, Indirectly, a person becomes unemployed because he had to go looking*

for the medicine, so he will be unemployed, because he went looking for the medicine, and has left the workplace” (P 19).

Deviation in policymaking

Three participants confirmed that policymaking will become wrong due to irrational use of medicine. “The second problem could be the wrong policymaking, the statistical information is a key factor for policymaking, making decision, planning, but when there is not correct statistical information and there is not the exact data about the medicine due to induced demand for medicine in the market, we cannot have a correct policymaking for future” (P 12).

DISCUSSION

The purpose of the study was to investigate the consequences of irrational prescribing of medicine. According to the results of this qualitative study, many consequences were reported that will create following inducing unnecessary demand [Table 2].

Our results indicated that increase side effects of unnecessary use of medication and treatment failure are the consequences of induced demand for prescription. These may be due to unnecessary and inappropriate use of medications. Çelik *et al.*, in a systematic review in 2013, reported that lack of safety and ineffectiveness in treatment, prolongation, or exacerbation of disease were caused by the irrational use of medicine.^[14]

Imposing the financial costs to an individual may be due to buy unnecessary medicines. Certain studies have shown that irrational prescriptions and physician-induced demand could be the crucial factors for increasing health expenditures and wasting economic resources.^[13-18] Bickerdyke *et al.* reported that induced demand has two major impacts of the viewpoint of the policymakers including (1) rising health expenditure and tax on national funding and (2) decrease effectiveness health sector. Because national resources will be allocated to unnecessary parts.^[18] Delattre and Dormont showed that inadequacy of supply and demand will lead to increased healthcare costs. This means that the inefficiencies of the supply section due to inappropriate behavior of suppliers lead to induced demand to patient.^[19] Ahmed and Shaikh in a study reported that in developing countries, induced demand may push a poor family into a defective circle of poverty and disease, especially with increase out-of-pocket payment. Induced demand leads to household income being spent on unnecessary treatment. Unnecessary prescriptions could be a risk factor for health and economic.^[13]

Following the unnecessary prescriptions will be occur medicines’ wastage. The medicines’ wastage may be due to several factors, such as keeping medicine in unsuitable situations in the house and expired dates of medicine. The results are in agreement with those of Çelik *et al.*^[14]

Our study showed that induced demand for prescription causes increasing the financial burden of insurance organizations. This increase may be due to the fact that physicians for financial gain prescribe unnecessary treatment for many patients, that

insurance organizations pay dollars per patient, and that the physician’s behavior is leading to an increase in the financial burden of insurance organizations. The limited resources of insurance organizations are not able to cover these services. As a result, increased debt of insurance organizations to hospitals and other health sectors will occur, which has also been observed in the previous studies.^[18,20]

Following the creation of induced demand for prescription of medicine, there is a possibility of trafficking medicine. This means that a physician provides conditions for trafficking medicine through creating demand for medicines that there is no on the pharmaceutical list of country. The patient is trying to provide prescribed medicines because of information asymmetry and low levels of health literacy. Therefore, patients have to prepare medication from an inappropriate medication chain, which is the trafficking network. Cline and Mott in 2003 confirmed that induced demand leads to develop unusual treatment and provide conditions for trafficking medicine. In addition, because prescribed treatments are not according to patients’ needs, leading to disruption of health equity.^[21]

Induced demand for prescription causes a disruption in the appropriate supply of medicines. One possible explanation is that due to increased unnecessary demand for medicines, the manufacturers and suppliers are pressured, or due to waste of resources, there will not be the possibility of providing new services. Furthermore, due to unnecessary medicine prescribing and consumption, there will be a problem of a shortage of medicines in the country and the deprived people in need of medication. The results are in agreement with previous studies.^[13,22]

The induced demand could increase the inappropriate use of medicine and in other word increase the healthcare consumption, which has also been observed in the Léonard *et al.*’s study in 2009.^[15] Çelik *et al.* reported some consequences of irrational medicine use, such as inappropriate use of medicine and save additional medicine or expired medicines at home.^[14]

Induced demand for prescription causes decrease in productivity of society. This may be caused by the loss of valuable time of doctor and patient and the absence of workplace. Our results provide more evidence for the other studies.^[17,23,24] In addition, policymaking will be diverted. One possible explanation is that due to inappropriate use of medicine, providing accurate statistics of prescribing and use of medicine is not possible. However, the policymakers need the accurate statistics. The results support those of Labelle *et al.*’s study; they reported that supplier-induced demand may be limited the policymaking regarding health service consumption.^[25]

One of the limitations of the study was that we might have missed some information because we did not enough time for the interviews due to our participant’s 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 to inform us of what they knew through open-ended questions.

CONCLUSION

The present study provides evidence that confirms the induced demand effects on health, society, and economic. Hence, we recommend stockholders identifying the factors of induced demand for the prescription and the preventing strategies to reduce unnecessary prescriptions of medicine and the consequences. Furthermore, we recommend health practitioners plan the health education interventions to reduce unnecessary prescriptions of medicine and the consequences and prevent the induced demand for the prescription.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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