

Pharmacoeconomic Study

Pharmaceutical strategic purchasing requirements in Iran: Price interventions and the related effective factors

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ABSTRACT

Objective: Pharmaceutical access for the poor is an essential factor in developing countries that can be improved through strategic purchasing. This study was conducted to identify the elements affecting price in order to enable insurance organizations to put strategic purchasing into practice.

Methods: This was a qualitative study conducted through content analysis with an inductive approach applying a five-stage framework analysis (familiarization, identifying a thematic framework, indexing, mapping, and interpretation). Data analysis was started right after transcribing each interview applying ATLAS.ti. Data were saturated after 32 semi-structured interviews by experts. These key informants were selected purposefully and through snowball sampling.

Findings: Findings showed that there are four main themes as Pharmaceutical Strategic Purchasing Requirements in Iran as follows essential and structural factors, international factors, economical factors, and legal factors. Moreover, totally 14 related sub-themes were extracted in this area as the main effective variables.

Conclusion: It seems that paying adequate attention to the four present themes and 14 sub-themes affecting price can enable health system policy-makers of developing countries like Iran to make the best decisions through strategic purchasing of drugs by the main insurers in order to improve access and health in the country.

Keywords: Insurance organization; Iran; pharmaceutical; price; resource allocation and purchasing arrangements; strategic purchasing

INTRODUCTION

Pharmaceuticals are among most crucial and costly elements in health care provision. Among most constant concerns of health system policymakers are the timely provision of medicines that are new to the medical market, affordable, and financially covered by insurance organizations and purchasing institutions. According to such international organizations as World Bank and World Health Organization, strategic purchasing can help to take care the aforementioned challenges.^[1]

Strategic purchasing defines as the constant search for methods that maximize health system performance through enhancing the following: Decisions related to the type of purchasing, manner of purchase, and supplier selection.^[2] In other words, strategic purchasing is concerned with interventions that can improve the accountability of the health system and lead to financial fitness.^[3]

Evidence shows that strategic purchasing, as a policy instrument, is the key to universal health coverage,

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results in the accomplishment of health system objectives, and increases fair access to health service and fair financial protection.^[4] Moreover, strategic purchasing can create a better value for money, and may cause more clarity and bargaining power concerning control and management of pharmaceutical and other health services prices.^[5]

According to what is said, World Bank has suggested four interventions (supply-side, demand-side, price, and incentive regime) as necessities and requirements to Resource Allocation and Purchasing (RAP) agencies, price being the most important element.^[6] One of the most important results of paying attention to this element in strategic purchasing is the access to reasonable and affordable prices which itself depends on the following factors as well: Supplier payment method, accessibility of information related to costs, amount of service and outcomes, methods of calculating supplier costs and factors related to the supplier and buyer such as regulatory and legal environment, supplier independence, bargaining power, and the intensity of competition in the market.^[7]

Furthermore, access to affordable and standard medicines is possible if RAP agencies utilize the element of competition to their own advantage or participate in debates so as to reduce pharmaceutical prices to their minimum possible amount.^[8] It should be noted that the influence of RAP agencies on price depends on their size and scope of performance; for instance, governmental organizations and social insurance companies have more negotiation powers.^[9]

The results of strategic purchasing in developed countries indicate that in a country like the US, through strategic purchasing contracts, the price of four expensive drugs is 24% lower than the average price offered by drug suppliers.^[10]

In addition, to setting the initial pharmaceutical prices, generally handled by central or local governments, another effective price-controlling mechanism is monitoring systems that are not common in developing countries owing to limitations in workforce, financial difficulties, and problems existing in the delegation structure.^[11] Accordingly, in such countries, the following essential elements have to be taken into consideration if minimizing the total pharmaceutical costs is the order of the day:

- The real price of the purchased medicine
- Hidden costs associated with low-quality products, poor performance of the suppliers, or short expiration date of the drugs
- Costs related to innovation in different stages of drug supply system
- Operational costs and the authorities of drug procurement and allocation losing their capital.^[12]

Price is one of the most crucial bases for the inclusion of a specific drug in the list of drugs covered by insurance organizations (pharmacopoeia of insurance coverage) in developing countries like Iran, on the other hand, in Iran reimbursement and pricing are separate and pricing system done by government.^[13] Hence, in this situation price can play an important role in both price setting, pharmacopoeia of insurance coverage and reimbursement by insurers and, as a result, can highly influence the access to pharmaceuticals.

In this regard, studies have shown that price and its components recognizably influence the selection of drugs that purchasing institutions deem influential in strategic purchasing.^[14] Other studies have shown that the element of price can help implement strategic purchasing in different areas related to health care.^[15] Accordingly, the present research was conducted with the aim of identifying the elements affecting price to enable insurance organizations to put strategic purchasing into practice.

METHODS

The present research is a qualitative study where the sample population includes key informants, managers of Iran Health Insurance Organization, Social Security Organization, Imam Khomeini Relief Committee, and Armed Forces Health Service Organization, representatives of supplementary insurance organizations, the Ministry of Health and Medical Education, and Food and Drug Organization and the strategic deputy of the president. Key informants are those with sufficient knowledge regarding the health system financial provision, health management, health insurance, strategic purchasing of health service, and concepts pertinent to the foregoing. The key informants had to meet the following requirements: A minimum 3-year administrative experience in jobs related to health system financial provision, a minimum 3-year administrative experience in insurance companies and mastery over health service purchasing, awareness of the terms and conditions of the national medical system and willingness for cooperation and participation in the interviews.

The present research was conducted through combining such nonrandom sampling techniques as "Convenience, Purposive and Snowball Sampling;" in other words, the inclusion criteria were totally purposeful and nonrandom. Moreover, to maintain maximum variation in the selected samples and include those with disparate standpoints regarding the topic, the considered samples were chosen with maximum heterogeneity and based on purposive sampling.

Because in qualitative studies, sample size is not based on a precise criterion and sampling continues up until data saturation, the interviews were primarily conducted for those who were more available; other participants were included in the interview based on snowball method, which continued until 32 people (saturation level) were selected. Table 1 indicates the frequency of the interviewees.

Hence, as to prepare the interview protocol, we made use of state documents analysis of pharmaceutical strategic purchasing, comprehensive reviews, and expert opinions on the subject. Ultimately, the interview guide form was designed based on the main themes of the study, where five principle questions and eight minor questions were incorporated. The validity of the forms was evaluated through conducting six pilot interviews; four interviews were with the supervisors of each insurance organization and two with the authorities of the Ministry of Health and Medical Education.

Based on the results of these interviews, minor changes were applied to the structure of the questions. The data related to the pilot interviews were not incorporated in the final analysis. Subsequently, semi-structured interviews were individually done through the use of the final interview protocol.

Prior to the interviews, arrangements were made through phone calls or in person, where participants expressed their willingness and were informed of the objectives and the significance of the study. Furthermore, the participants were allowed to stop cooperating at any point during the interview, and it was made clear that their initial consent did not mean that they had to keep cooperating until the end of the interviews. We further assured the participants that any audio or written file would be prepared anonymously and would be archived after employment. No names, either of a person or a place, were mentioned throughout or following the interviews.

The interviews were conducted either in a calm place away from the frenzy of the participants' working

environment or after working hours in case they were disturbed by phone calls made by the clients. The duration of each interview varied from 45 to 55 min depending on the interest and tolerance of each participant. Hence, as to preempt any possible problem, the interviews were recorded through two electronic devices and the interviewers took note of the points emphasized by the interviewees, their facial expressions and body movements. The participants were finally appreciated for the time they dedicated to the study.

In qualitative studies, the transcription process commences immediately after each interview so that the saturation level can be specified through the degree of resemblance among participants' responses.^[16] The researchers read the transcripts twice while listening to the audiotaped interviews for the accuracy of the transcripts and then began the transcription process right after each individual interview. The validity of the transcriptions was determined through respondent validity technique where each transcription was sent to its respondent for approval.

In order to analyze the qualitative data of the interviews, we made use of content analysis with an inductive approach and the interviews were analyzed through a five-stage framework analysis which is designed for analyzing the qualitative data of studies related to policy making.^[17] In the first stage (the familiarization stage), a content-communicative summary was prepared for each interview. Second, a thematic framework was developed with the help of previous studies, the interview guide form, thematic guide, and study objectives.

The framework was discussed by the research team in two sessions, during which the transcribed audio files were reviewed and reevaluated. The third stage was allocated to the initial indexing of the interviews where, by the use of ATLAS-ti Scientific Software Development GmbH, different sections of the interviews were indexed (through coding) according to their thematic resemblance. The codes were

Table 1: Frequency of participants according to their affiliations

Affiliation	Frequency	Sex n (%)		Work experience (year) n (%)		
		Male	Female	<10	10-20	>20
Social Security Organization	6	5 (83.3)	1 (16.7)	0 (0)	3 (50)	3 (50)
Iran Health Insurance Organization	5	4 (80)	1 (20)	1 (20)	1 (20)	3 (60)
Armed Forces Health Service Organization	4	4 (100)	0 (0)	1 (25)	2 (50)	1 (25)
Imam Khomeini Relief Committee	2	2 (100)	0 (0)	0 (0)	2 (100)	0 (0)
Supplementary insurance organizations	4	2 (50)	2 (50)	1 (25)	2 (50)	1 (25)
Ministry of Health and Medical Education	4	3 (75)	1 (25)	0 (0)	2 (50)	2 (50)
Food and Drug Organization	4	3 (75)	1 (25)	1 (25)	2 (50)	1 (25)
Deputy of the president	3	3 (100)	0 (0)	0 (0)	2 (66.7)	1 (33.3)

primarily reviewed and modified by two members of the research team and were then discussed by all the team members.

In the fourth stage (charting), the standpoints of the interviewees were compared through analytic tables; the association between the main and sub-themes was further identified and analyzed. Finally, in the fifth stage (mapping and interpretation), all the topics were interpreted^[18] and the interview texts and the resulting codes were given a final approval by three experts in qualitative studies who were not part of the research team. It is worth noting that the people involved in the qualitative data analysis of the study did not have any reflexivity regarding the topic.

RESULTS

Table 1 demonstrates the demographic characteristics of the participants based on their organizational affiliation, kind of profession and work experience. Following the analysis of the qualitative findings of the study, four themes and 12 sub-themes were extracted as effective variables of price [Table 2]:

Essential factors

Actual pharmaceutical prices

Most of the participants (29 people, 91%) referred to the significance of this factor. Price, pricing and such issues as the realness of drug prices are of manifold importance both for the producer and the buyer. One of the interviewees believed that:

"Unreal pricing of drugs produced in Iran reduces the quality of the pharmaceuticals" [P₂₉].

In Iran, there is a huge gap between the reimbursed price and the actual price, a situation which ultimately

damages the structures of production and drug distribution, reducing the quality and effectiveness of pharmaceuticals as crucial factors for the purchasing organizations. The participants believed that:

"Presently, drug prices in Iran are almost the lowest in the world, hence the fact that both the producer and the distributor are unsatisfied... For instance, a certain nutritional medicine is one-tenth the price of its foreign equivalent..." [P₁₉].

"... The present prices and pricing systems do not have the necessary effectiveness to create a dynamic and efficient economy" [P₁].

When the drug prices are actual according to activity based cost and real appropriate price setting, the pharmaceutical system can economically prosper, the producers can take part in more competitive environments, and pharmaceuticals will qualitatively and quantitatively increase. In this regard, a participant stated that:

"Real drug prices are prerequisites of pharmaceutical industries movement towards better economic conditions, innovation and expansion" [P₁₀].

Drugs affordability and patient eligibility

The interviewees also made mention of this factor as an important variable besides realness. For example, an interviewee was of the opinion that:

"True that the realness of drug prices is gravely important, yet when there is increase in the prices, especially of chemotherapy drugs... affordability becomes an important issue" [P₃₀].

Competitive pharmaceutical prices

Twenty-seven participants (84%) considered this factor as contributing to strategic purchasing. They further stated that the most helpful mechanism that can control medical market prices is to increase the competition and avoid exclusiveness:

"As in any other industry, when the pharmaceutical market is based on competition, not exclusion, more quality products with reasonable prices can be purchased, not to mention that the customer can further benefit from additional services provided by the sellers in the competitive market" [P₂₆].

International factors

The effect of exchange rate fluctuations on the total cost of the pharmaceuticals produced in Iran

The challenges imposed by the economic system on different industries entail various effects; the pharmaceutical industry is no exception. One of these challenges is related to the effect of exchange rate fluctuation on domestic drug industries. Seventeen

Table 2: Themes and sub-themes related to pharmaceutical price interventions

Themes	Sub-themes
Essential factors	Actual pharmaceutical prices Drugs affordability Competitive pharmaceutical prices
International factors	Effect of exchange rate fluctuations on the total cost of the pharmaceuticals Influence of sanction on the final prices of pharmaceuticals Influence of exchange rate fluctuations on the hidden costs of imported drugs Influence of sanctions on the hidden prices of imported products
Economic factors	Efficiency and cost indexes Patient's ability of cooperation in payment
Legal factors	Power of bargaining and negotiation Policymaking for payment level Autonomy of drug suppliers

participants (53%) were of the opinion that such a change must not influence pharmaceuticals and medical equipment:

"Pharmaceuticals and medical equipment are indispensable requirements of a healthy society and any change in their prices can be a menace to that society. Accordingly, any increase in price that is caused by fluctuation in the exchange rate has to be professionally controlled and dealt with, on the other hand as the sanctions can lead to nonactual prices of drugs, exact controlling mechanisms are required here" [P₁₄].

"Because certain raw materials and medical equipment are produced overseas, increase in the exchange rate has a recognizable impact on the costs of drugs produced in the country" [P₃₀].

The influence of sanction on the final prices of pharmaceuticals produced in Iran

More than half of the interviewees (17 people, 53%) emphasized the effect of sanction on the production of drugs. Given the special political situation of Iran in Middle East and in the world, and with respect to various sanctions imposed on different sections of the country like banks, transportation system, transit and so forth, pharmaceutical industry is undergoing serious economic issues. It goes without saying that such issues influence the amount of drug production, the possibility of new technologies, and the final pharmaceutical prices (activity based cost):

"Food and drug sanctions are against international laws as they can hinder proper treatment of people. New sanctions, however, exert their effect in indirect ways; for instance, sanctions on banks, transportation and currency transactions can covertly threaten the structures of pharmaceutical industry" [P₁₇].

"Sanctions ultimately result in a condition where foreign expensive products easily find their ways in people's homes" [P₄].

Influence of exchange rate fluctuations on the hidden costs of imported drugs

Seventeen people (53%) emphasized the importance of controlling the exchange rate and allocating government-issued currencies to drug companies. In this regard, a participant was of the opinion that:

"So as to fight the increase in pharmaceutical costs, central bank has to allocate a certain amount of government-issued currencies to drug companies; otherwise, the lack of such currencies leads to drug importers raising the cost of their pharmaceuticals and threatening societal health in order to evade bankruptcy..." [P₂₄].

Influence of sanctions on the hidden prices of imported products
More than half of the participants (17 people, 53%) made mention of the significance of the challenges

imposed by direct sanctions that are designed to prevent drug import or increase the cost of transportation, which, in the end, increases the cost of imported products and hinders the implementation of strategic purchasing by insurance organizations.

Economic factors

Efficiency and cost indexes

Twenty-one participants (66%) held that the insurance company has to consider these two indexes when purchasing drugs and selecting the best pharmaceutical supplier:

"When buying pharmaceuticals, one has to heed not only the quality and cost-effectiveness of the item, but also its cost and efficiency, both of which influence the prices" [P₂₉].

Patient's ability of cooperation in the payment of the drug

Less than half of the participants (12 people, 38%) believed that this factor has to be paid attention to, alongside the realness of price and tariff. They further held that patients' cooperation (out of pocket payment) must be maintained at 30% of the total cost of health expenditures and 10% Franchise for inpatients' drugs. In this regard, one of the participants stated that:

"As health and also drugs are considered as products with no price elasticity, however expensive they get, will always have their market, the policy makers have to be on guard in case such a situation becomes an excuse for an unreasonable increase in the prices and higher out of pocket ..." [P₁₇].

Furthermore, when pricing the pharmaceuticals, such factors as the financial power and insurance coverage of the consumers have to be considered:

"Measures have to be taken so that when there is rise in the prices, no financial pressure is imposed on the patients and their families" [P₁₆].

Legal factors

Granting the power of negotiation and bargaining to insurance organizations (negotiable prices)

Twenty-eight participants (87.5%) were of the opinion that this factor is of great significance when trying to reach an agreed price with the seller:

"Negotiation with investors and producers so as to reach a final cost with reasonable profit margins seems to be an acceptable mechanism for controlling pharmaceutical prices in the market" [P₉].

Insurance organizations' policy for payment level

Fifteen participants (47%) believed that such indexes as the number of drug suppliers and distributors, their level of competition, patients' cooperation in the payment of the costs, the waiting time for services, and

accessibility of proper information can be employed in insurance companies' process of policy making for payment level. A participant was of the opinion that:

"The un actual tariffs and payment levels along with, out of pocket payments and informal payments to physicians by the patients are of remarkable significance for both consumers and medical service providers that can affect the procurement of health services and also pharmaceuticals by insurers" [P_s].

Insofar as supply is concerned, the number of providers entering the market, manner of service delivery, and the amount of provided service, all are under the influence of payment system. On the other hand, the appropriate payment system can mutually influence on the market flourish and supply increase. As far as demand is concerned, based on the price they have paid, the patients can decide on what kind of service they require and from which doctor or health organization they require it.

Autonomy of drug suppliers

Only 10 participants (31.5%) believed that this factor is contributing to the attainment of a competitive, real and agreed price, hence an effective variable in strategic purchasing.

In a summary, the present results imply that from the participants' points of view, real, payable, and competitive prices, negotiation power of purchasing companies, challenges caused by exchange rate fluctuations and sanctions on pharmaceutical industries, pricing principles, cooperation power of the patients in payment and efficiency indexes are important sub-variables as far as price is concerned, meaning that the foregoing interventions play crucial roles when it comes to implementing strategic purchasing.

DISCUSSION

As pointed out, the findings of the present research demonstrated that actual pharmaceutical prices, drugs affordability, competitive pharmaceutical prices, effect of exchange rate fluctuations on the total cost of the pharmaceuticals, influence of sanction on the final prices of pharmaceuticals, influence of exchange rate fluctuations on the hidden costs of imported drugs, influence of sanctions on the hidden prices of imported products, efficiency and cost indexes, patient's ability of cooperation in payment, power of bargaining and negotiation, policy making for payment level and autonomy of drug suppliers are important sub-themes as far as price is concerned; in other words, such interventions play significant parts when implementing strategic purchasing.

Interestingly, however, in 2012, national evidence related to Armed Forces Medical Services Organization, a major pharmaceutical purchasing organization, revealed that implementing strategic purchasing is logical only for drugs that are barely affordable for consumers and the insured, and only when there is the possibility of negotiation with the importing or manufacturing company.^[14] On the other hand, in a study conducted in 2011 with the aim of identifying variables affecting price in strategic purchasing concerning social security, Nasiripour *et al.* considered the followings to be significant: Negotiable, payable and real prices, competitive market, and bargaining power of purchasing organizations or insurance companies.

Unlike the two studies mentioned above, which discussed the conditions of drug purchasing and medical services for only one supplying or purchasing organization, the present research, employing a comprehensive approach, set out to identify the interventions influencing price with the hope of implementing strategic purchasing in Iranian insurance organizations, particularly basic insurances that are trying to attain a perfect health coverage. The sample population of this research was larger than the foregoing studies, accounting for the broader range of the included variables. It goes without saying, however, that, as far as implementing strategic purchasing in developing countries, it is more effective to combine the present results with those of Saravi and Nia and Nasiripour *et al.*

A huge part of pharmaceutical costs are reimbursed by Social Security Organization, Medial Services Organization, and Armed Forces Medical Services Organization (90% for inpatient and 70% for outpatients' pharmaceuticals), all of which reimburse the cheapest available medicine and include it in the their pharmacopeia;^[19] in this regard, granting the power of negotiation to purchasing companies and forming contracts with drug suppliers for an agreed price (stressed by the participants of the present research) are important when correcting drug reimbursement mechanism and implementing strategic purchasing in the country.

Another thing that can improve drug reimbursement is to develop a national comprehensive pharmacopeia (in line with World Health Organization Guide) in which drug categories and classifications are determined based on the insurance coverage and to obligate doctors to consider the categories and the level of coverage when writing prescriptions.

Evidence shows that workforce, innovation, capital market infrastructure, competitive strategic

backgrounds, business globalization, organizational activities and performances, and macroeconomic policies can create competitive environments in the pharmaceutical industries and drug market, and determine competitive prices.^[20] Needless to say, cultural or capital investment in each of the aforementioned factors can have a long-term and profound influence on the competition in pharmaceutical markets and prices.

Drug prices can affect the accessibility and provision of pharmaceuticals; moreover, based on evidence, the increasing cost of drugs is not only the result of the increase in drug consumption but also the rising costs of new drugs.^[21] Therefore, drug pricing mechanisms and affordability of pharmaceuticals, especially in the case of patients with refractory diseases, are crucial factors that have to be considered. Another factor discussed in the present research was the impact of sanctions on the final prices of domestic and imported pharmaceuticals. In this regard, based on a study done by Cheraghali in 2013, political sanctions have had major impacts on the pharmaceutical sector; for instance, the sanctions on banks and transportation have reduced timely access to vital medicines in domestic markets; furthermore, the pharmaceutical industry has undergone serious problems that are related to drug or raw material import.^[22] Although sanctions do not directly affect the health sector and pharmaceutical system, as was demonstrated by the findings, they can influence the final price of drugs produced in the country, production quality and the hidden prices of imported drugs. Accordingly, this element has to be seriously considered by the policy makers if a proper strategic purchasing is to be achieved.

Therefore, it seems that in developing and developed countries, the price is a major factor in drug provision,^[23] and price interventions are crucial mechanisms in drug reimbursement by purchasing organizations.^[7] With that in mind, and given the emphasis of World Health Organization and World Bank on price interventions as contributing to strategic purchasing implementation, it seems that heeding the sub-themes affecting price can enable health system policy-makers of developing countries like Iran to make the best decisions; furthermore, it can give a proper pattern for an effective drug reimbursement. In this regard, other international evidences indicate on attention to appropriate mechanisms to mobilize and represent community preferences along with more strategic contracting with providers in designing purchasing arrangements^[24] that both can be affected by price interventions.

It should finally be noted that for a successful implementation of this mechanism, the pharmaceutical

sector has to consider the requirements stressed by international organizations when procuring and allocating resources.

AUTHORS' CONTRIBUTION

Dr. Peivand Bastani has designed the study, collected and analyzed the qualitative data and prepared the manuscript draft, Dr. Rasoul Dinarvand has supervised the study. Dr. Mahnaz SamadBeik has revised the manuscript technically and Kimia Pourmohammadi has edited the paper grammatically and finalized the article submitted.

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Conflicts of interest

There are no conflicts of interest.

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