Factors Affecting the Cost and Income of Pharmacies and to Improve Their Economy

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ABSTRACT

Background: Pharmacies are a prominent part of the health delivery system. Hence, valuable economic planning in designing and organizing pharmacies must be called. This study aimed to investigate the factors affecting pharmacies' economic outcomes to strengthen their overall economy in Shiraz City, Iran.

Methods: The type of study was descriptive-analytical and surveyed studies. All 343 active pharmacies in Shiraz were selected to be evaluated in this study. The data of all pharmacies were extracted with specifically designed questionnaires and analyzed (descriptive-analytical) with STATA software.

Results: The monthly mean cost and revenue of one daily pharmacy were 6171045803 and 6577041019 Rials, respectively, in 2020. Also, these figures are 11544444668 and 15184116543 for 24-h pharmacies. Our results showed that all influential factors significantly impacted the pharmacies' cost and revenue (P<0.01). Besides, the following factors like tax exemption, the exclusive sale of cosmetic products and medicines, increasing the drug's margin, immediate refund from health insurance, technical right's fee, and facilities significantly impacted pharmacies' economic (P<0.01).

Conclusion: The best ways to improve the pharmacy's economy included tax exemption, the exclusive sale of cosmetic products, the release of exclusive and rare drugs increase of margin, rate of covered drugs with health insurances, faster refunding by the health insurances, specialty rights, and medicines packing. Also, it is necessary to pay attention to the indicators of the pharmacy's economy and the factors affecting their income and expenses. This matter is even more pressing in developing countries, which are facing a severe shortage of resources.

Keywords: Pharmacy, Pharmacy economics, Income, Economics, Costs, Solutions

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Introduction

The health care system's goals are supplying, maintaining, and developing public health [1]. The health system consists of various parts that comprehensive and practical cooperation between these parts has a fundamental role in the effectiveness of the whole health system [2]. Pharmacies are a prominent part of the country's health delivery system's chain [3].

In the last decades, studies showed that one of the critical factors affecting the health system's performance is the performance of pharmacies. The vast range of pharmaceutical services has consumed a tremendous volume of the health system's limited resources. Nowadays, healthcare managers and politicians consider the pharmacies' performance a vital factor that significantly impacts the health system's goals [4, 5].

Medicine is one of the bridges between patients and the health system [6] and is one of the inseparable components in the disease treatment chain. Consequently, the lack of accessibility to medicines could cause grave complications during the treatment [7]. Pharmaceutical expenditures have increased in the last years with a rise in the GDP and health system's budget. On average, 15% of annual GDP is allocated to the healthcare system in developed countries, while these amounts have a negligible increase on health indexes [8, 9]. In most low-income countries, almost 50% of health expenditure belongs to pharmacies [10]. According to the documented data in the Iranian Food and Drug Administration (IFDA) in 2018, the number of pharmacies is 11036 in Iran (9633 daily pharmacies and 1403 24-h pharmacies). Also, 10028 pharmacies are private, and the remaining are related to the government or other related governmental founders [11]. As the result of the health system's amendments, private pharmacies are becoming one of the significant parts of healthcare systems, and mainly, the first line of health care system in developing countries [10, 12]. In the USA, pharmacies are managed with a gross margin of 23%-25% [13, 14]. The net income range of independent pharmacies varies between 3.5% (more than $4 billion) to 4.3% ($2.5-1.5 billion), while the operating net income of chain pharmacies is less. In the last two decades, the number of independent pharmacies has decreased proportionally as the low-income pharmacies have been shut down or purchased by chain pharmacy competitors [14]. However, chain pharmacies have not been allowed to work in Iran yet. Pharmacists provide a wide range of health services, which improve overall health outcomes [15].

Consequently, pharmacies, as one of the most prominent health providers to patients in any country, need to be evaluated. The first step to reaching this goal is controlling and evaluating pharmacy services [16]. This study aims to assess factors affecting pharmacies' income and, eventually, to introduce strategies to improve economic status of Shiraz pharmacies.

Materials and Methods

We performed a survey descriptive-analytical study. We collected the study data in 2018. The affecting factors on pharmacies' economics were analyzed after preparing suitable questionnaires.

Data Collection

Three types of questionnaires were designed after a comprehensive literature review to evaluate three subjects answered by pharmacy managers: affecting factors on the pharmacies' costs, inducing factors on the pharmacies' income, strategies to improve pharmacy economics. The experts, the project supervisor, and advisors confirmed the validity and reliability of these three questionnaires. Evaluating the factors that affect pharmacies' economic needs is a good questionnaire that considers fundamental elements from pharmacy owners' point of view.

The questionnaires' validity and reliability were evaluated by experts' opinions and pilot data collection from 15 pharmacies based on the Likert scale and test-retest methods (r=0.85). The respondents completed the questionnaires voluntarily. We guaranteed that their identification would be kept confidential.

Sampling

All of the private pharmacies in Shiraz City, Iran, in 2018 were included in this study. According to Shiraz Food and Drug Administration, there were 301 daily active and 9 semi-daily, and 42 24-h pharmacies in Shiraz.

Data Analysis:

We performed descriptive statistics (mean, median, and descriptive tables) and inferential statistics (Chi-square test) with STATA software for assessing the data and responding to the research questions.

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Table 1. General characteristics of pharmacies

Variables	Mean±SD	
	Daily Pharmacies	24-h Pharmacies
Number of pharmacies	301	42
Total income (Rials)	6577041019±1384394418	15184116543±1190212680
Total cost (Rials)	6171045803±1302518671	11544444668±1083751006

SD: Standard Deviation

Results

General characteristics of pharmacies

As presented in Table 1, there were 343 active pharmacies in 2018 (301 daily pharmacies and 42 were 24-h pharmacies). The monthly mean of cost and revenue of one daily pharmacy in 2020 was 6171045803 and 6577041019 Rials, respectively. These figures were 11544444668 and 15184116543 for 24-h pharmacies.

Factors affecting pharmacy costs

Two factors were considered fixed ones and 13 as variable ones. Property and building costs were fixed costs and human resources, consumable products, energy, renting price of the place, tax, insurance deductions, drug expiration date, delay in refunding, registration of prescriptions, legal charges, wasted drugs, the Internet, and human mistakes were considered variable costs presented in Table 2. All of these factors had a significant effect on pharmacies' costs ($P<0.01$).

Table 2. The results of statistical analysis (the views of pharmacists about the factors related to the expenses of pharmacy)

	Variables	Responders' Views					Chi-square Test	Sig.
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree		
Fixed	Depreciation of properties	45	81	150	23	1	226.93	<0.001
	Building depreciation	39	68	130	59	4	142.36	<0.001
Variable	Human resources	50	162	83	5	0	175.44	<0.001
	Consumable products	19	124	127	28	2	244.23	<0.001
	Energy	23	102	124	45	6	172.83	<0.001
	Building renting	102	146	50	2	0	156.32	<0.001
	Tax	128	119	52	1	0	143.33	<0.001
	Insurance deductions	139	87	63	9	2	215.73	<0.001
	Expired drugs	119	106	77	2	0	106.64	<0.001
	Delay in refunding	133	106	53	8	0	123.97	<0.001
	Prescription registration	53	113	114	20	0	86.32	<0.001
	Legal charges	49	84	116	50	1	123.56	<0.001
	Wasted drugs	30	79	140	50	1	187.36	<0.001
	Internet	29	43	126	90	12	146.83	<0.001
	Human mistakes	69	133	82	13	3	189.20	<0.001

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Table 3. The results of statistical analysis (attitude of pharmacists about the factors related to the income of pharmacies)

	Variables	Responders Attitude					Chi-square Test	Sig.
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree		
Fixed	Prescription drugs	1	104	144	50	1	267.56	<0.001
	OTC drugs	141	137	21	0	0	93.21	<0.001
Variable	Technical right	174	104	20	1	0	256.09	<0.001
	Cosmetic products	53	176	65	5	0	209.82	<0.001
	Cosmetics	42	172	78	6	1	327.57	<0.001
	Companies' discounts	53	163	77	6	0	173.81	<0.001
	Inflation of the drug's price	73	132	68	24	2	168.50	<0.001
	Long refund of drug prices	137	110	44	8	0	140.71	<0.001
	Beneficial drug consultant	102	130	64	2	1	226.16	<0.001
	Responsibility of pharmacy owner	148	93	56	2	0	151.74	<0.001
	Proportional of human resources	63	104	97	32	3	122.85	<0.001
	Selling of imported drugs	82	107	84	18	1	145.56	<0.001
	The specialty of near physicians	99	125	65	10	0	99.00	<0.001
	Daily pharmacy / 24-h pharmacy	97	135	56	10	1	217.23	<0.001
	Professional cooperation between pharmacists with near physicians	110	115	65	9	0	97.40	<0.001
	Delays in refunding from insurances	131	109	52	7	0	126.35	<0.001
	Geographic location	105	64	66	13	2	143.00	<0.001
	Change of laws	116	57	94	30	2	143.22	<0.001
	Health policy of the whole country	99	72	92	36	0	32.03	<0.001
	City of pharmacy	90	87	65	8	0	69.32	<0.001
	Long-term refund of pharmacies	122	123	47	7	0	132.71	<0.001

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Factors affecting pharmacies' income

In this part, two factors were defined as fixed factors and 19 as variable ones. As presented in Table 3, prescription and over-the-counter (OTC) medicines had a significant effect as fixed factors. Moreover, variable costs were consisted of : technical right, cosmetic products, cosmetics, pharmaceutical companies' discounts, inflation of drugs' price, Long refund of drug prices, beneficial drug consultant, Responsibility of pharmacy, proportional of human resources, imported drug's selling, the specialty of physicians located near the pharmacy, type of pharmacy (daily or 24 h pharmacy), professional cooperation between pharmacists with near physicians, delays in refunding from health insurances, geographical location, changes of laws, health policy of the whole country, City of pharmacy and Long-term refund of pharmacies had a significant effect on the pharmacies income and the general policy of whole countrys pharmaceutical system (P<0.01).

Table 4. Results of statistical analysis (the ways to improve the business of pharmacy)

Variables		Responders Attitude					Chi-square Test	Sig.
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree		
Fixed	Tax exemption	60	145	93	1	1	245.60	<0.001
	Exclusive sale of cosmetics products	88	152	53	7	0	149.41	<0.001
Variable	Release of exclusive and rare drugs	55	113	100	32	0	57.57	<0.001
	Increase of margin	61	88	101	46	4	96.63	<0.001
	Rate of covered drugs with insurances	75	132	82	11	0	98.58	<0.001
	Increasing the share of insurance companies	79	125	80	14	1	176.96	<0.001
	Faster refunding by the insurances	144	105	44	7	0	149.94	<0.001
	Technical rights	161	116	22	1	0	231.49	<0.001
	Obtaining facilities from banks	47	94	120	33	6	142.83	<0.001
	Selling of herbals and supplements	62	124	91	21	2	165.76	<0.001
	Observe written medication and monitor it	47	108	107	36	2	143.70	<0.001
	Creation of electronic files	45	86	107	45	16	88.14	<0.001
	Drugs packing	42	79	128	41	10	136.16	<0.001

Solutions to improve pharmacies' economy

In this part, two factors were mentioned as fixed factors and 11 as variable ones. As can be seen in Table 4, the best ways to improve the pharmacy's economy were tax exemption and the exclusive sale of cosmetic products as fixed factors, as well as the release of exclusive and rare drugs increase of margin, rate of covered drugs with health insurances, faster refunding by the health insurances, specialty rights, obtaining facilities from banks, selling herbal and supplements, creation of electronic files, and drugs packing as variable factors.

Discussion

Our analysis showed that the significant factors affecting a pharmacy's costs and expenses are the properties and building costs, human resources, energy, renting cost of the place, tax, insurance deductions, delay in refunding, expired drugs, the Internet, and human mistakes. Also, some factors such as the incomes earned from the sale of prescription medicines, OTC medicines, dispensing fees, hygienic and cosmetic products, location of pharmacy (city), imported drug's selling, the specialty of physicians located near the pharmacy, type of pharmacy (daily or 24-h pharmacy) had a more significant effect on the pharmacies' income and the general policy of whole county's pharmaceutical system.

Almost all of the variables considered in this study were similar to the findings of Keshavarz et al. [17]. The results of Schumock et al. (2018), like this study, showed that the rate of drug selling had increased 5.8% by inflammation in the drug's price [18]. Besides, Christensen (2006) showed that price increase related to the OTC drugs was one of the factors affecting the pharmacies' income [19]. Pharmacies' margin has a significant effect on the patient's compliance regarding generic medicines [20]. Therefore, by amending these variables at the national level, we could bring about better pharmacy management and improve its outcome. In Europe, the governments increased the drug's margin while their countries suffered from an economic crisis because they knew the importance of pharmacies' economics in the health care system. Although some governments like Greece have increased the value-added

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tax, they decreased it at a lower amount than before for pharmacies, just to maintain the drug accessibility [21].

One more vital consideration is the effect of health insurance coverage on the pharmacies' economics. The pharmacies' income would be increased if the health insurance coverage level increased due to higher demands for the medicines. More studies depicted that the health insurance level of coverage is a strong point for the pharmacies' economics [17, 22, 23]. Nevertheless, the problem starts when the health insurances refund the money to the pharmacies with extreme delay and a high level of deductions, and studies endorsed this assertion [24, 25].

The location of the pharmacy (city) is another important factor for various reasons. The economic classification of citizens, the level of tourists coming to the town, and their cultures affect the income of pharmacies. According to the expert's opinions, pharmacists' beneficial drug consultants could create a high level of trust in the pharmacy. The specialty of physicians near the pharmacy could affect the income tremendously; for example, orthopedics is prescribing medicines and supplements, which are almost expensive, and these medications could bring about more income for pharmacies. The pharmacy location could define the type of pharmacy from the perspective of OTC or prescription rate of selling. If the pharmacy is located near the hospital or physicians' offices, it has some benefits compared to the pharmacies in busy streets. OTC pharmacies do not have the problem of the delay on the refunding; however, they do not guarantee a sustained selling rate.

Study Limitations

We had limited access to the required data because pharmacists and pharmacy owners were reluctant to share the details with us. The data relating to the incomes and costs were collected as self-reporting, and assessing the data's accuracy was impossible.

Conclusion

According to the results of this study, the best ways to improve the pharmacy's economy included tax exemption, the exclusive sale of cosmetic products, the release of exclusive and rare drugs, increase of margin, the rate for covered medicines with health insurances, faster refunding by the health insurances, specialty rights, selling of herbal and supplements, creation of electronic files, and drugs packing. Also, it is necessary to pay attention to the indicators of the pharmacies economy and the

factors affecting their income and expenses. This is even more vital in developing countries, which are facing a severe shortage of resources.

Ethical Considerations

Compliance with ethical guidelines

All ethical principles are considered in this article. The participants were informed of the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information and were free to leave the study whenever they wished, and if desired, the research results would be available to them.

Conflict of interest

The authors declared no conflicts of interest regarding the content of this article.

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