

## Pharmacists Remuneration Models in Iran and Selected Countries: a Comparative Study

Amir Hashemi-Meshkini<sup>a</sup>, Khosro Keshavarz<sup>a</sup>, Shekoufeh Nikfar<sup>a,b</sup>,  
Iman Vazirian<sup>c</sup> and Abbas Kebriaeezadeh<sup>a\*</sup>

<sup>a</sup>Department of Pharmacoeconomics and Pharmaceutical Administration, Faculty of Pharmacy, Pharmaceutical Policy Research Center, Tehran University of Medical Sciences, Tehran, Iran. <sup>b</sup>Food and Drug Laboratory Research Center, Food and Drug Organization, Ministry of Health and Medical Education, Tehran, Iran. <sup>c</sup>Department of Pharmaceutics, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran.

---

### Abstract

Pharmacists are members of the healthcare teams that provide valuable services to society. Their incentive to deliver such services is influenced by remuneration methods. In this study, we aimed to review the remuneration models for pharmacists' services and the factors affecting the profitability of pharmacies in some selected countries, including France, Ireland, Canada and Turkey, and compared them to Iran. International data were collected by literature review on Google, Google scholar, PubMed and Scopus. In addition, domestic data were collected by contacting relevant organizations. There is no payment for pharmacists' cognitive services in Iran and in the countries investigated, except for some Canadian provinces. The dispensing fee system in Iran does not seem to be adequate, especially considering that most of the insurers do not cover these fees. The pricing method in Iran has resulted in a low price level, in comparison to the other countries, and this issue has dramatically affected the profitability of pharmacies in standard practice. It could be concluded that changing the current formulation for the dispensing fee to a more appropriate one, defining a remuneration system for non-owner pharmacists other than salary and implementing the new pricing method are necessary in order to improve the services provided by pharmacies.

**Keywords:** Pharmacist; Remuneration; Profit; Pricing; Iran.

---

### Introduction

Professional pharmacists are members of the healthcare teams that provide numerous services for patients. It has been shown that the services pharmacists offer in community pharmacies improve health outcomes (1). There are many studies that show the important role pharmacists play in detecting medical errors, drug interactions

and inappropriate prescribing (2-6). All such services clearly improve the impact of health services for patients. A study conducted in 1993 indicated that the lack of proper remuneration methods for pharmacists' services is a major impediment for providing such services (7).

Pharmacists' remuneration systems are defined as the methods by which pharmacists are compensated by those paying for the healthcare services they are providing (8). The remuneration method for pharmacists' services in community pharmacies depends on each country's health

---

\* Corresponding author:

E-mail: Kebriaee@tums.ac.ir

and pharmaceutical policies. The particular characteristics of the healthcare system, such as the health insurance level of coverage, the out-of-pocket payments made by the patients and the regulated or unregulated price levels of medicines can all affect the profitability of pharmacies and pharmacists (9), and perhaps their incentives for providing services as well. In recent years, most countries have followed cost containment policies to prevent expansion in their health expenditures, and these have affected the payments made to pharmacists in a number of ways. In Iran, cost containment strategies have been followed as an aim in National Drug Policy (NDP) including price control and generic-based policy (10, 11). Recently some arguments have been raised in favor of eliminating the dispensing fee system, as a tool for reducing patients' out-of-pocket payments. Conversely, pharmacists and pharmacy owners claim that their survival in the business depends on the dispensing fee and that it would not be fair to eliminate it (12). The third group believes that eliminating the dispensing fee, is the only incentive of pharmacists and the main source of their profit would probably substantially damage the healthcare system from a variety of aspects.

In this study, we investigated both the remuneration models and the pharmaceutical and healthcare policies related to pharmacists' profitability in a number of selected countries: France, Canada, Ireland and Turkey, and compare their situations to Iran's, to help resolve this dilemma.

### Experimental

This is a descriptive-comparative study. The required data were collected by an unstructured comprehensive literature review, using computerized databases. We searched Google, Google scholar, PubMed and Scopus for published articles, reports and acts, using the keywords: "pharmacists' remuneration", "payment to pharmacists", "dispensing fee", "pharmacist professional fee", "pharmacy reimbursement", "pharmaceutical policy", "pharmaceutical pricing", "medicine margin and mark up", from February to September 2011. In addition, for data collection about Iran

we also contacted the Iranian Food and Drug Organization (FDO) and Iranian Pharmacists' Association.

In selecting the other countries, we considered both developed and developing countries and tried to collect some diverse examples from across the world. Therefore, the following countries were chosen for evaluation and comparison to Iran: France, Ireland, Canada and Turkey.

### Result

The findings about the countries that were investigated are presented below (Tables 1 and 2). The following presents information regarding each country separately.

#### *France*

In 2000, there was one pharmacy per 2,578 people and one qualified pharmacist per 1,190 people in France (13). In terms of their type of activity, pharmacists in France are classified into seven groups (A to H). From these, Group A includes pharmacists who own their pharmacies and Group D contains assistant pharmacists who are not owners but are employed in pharmacies, insurance offices and hospitals, etc. In 2010, the percentage of pharmacists in Groups A and D was 38% and 36.1%, respectively (14). According to the law that was passed in 2000, the number of pharmacists in a pharmacy depends on the pharmacy's revenue. Pharmacies with annual revenues between 823,000 and 1.64 million Euros must have two full time pharmacists, and those with annual revenues between 1.64 and 2.47 million Euros require three full time pharmacists. Following that, they have to employ one additional pharmacist for every 823,000 Euros more in revenue (13).

Chain pharmacies and online pharmacies are not allowed in France, but people can buy medicine from foreign online pharmacies (15). Also, over the counter (OTC) medicines can only be sold in pharmacies (13).

In terms of price regulation for medicines, the prices for reimbursable medicines are fixed and regulated, and set by the Ministry of Social Security. The prices for OTC medicines that are not reimbursable are not regulated (16).

**Table 1.** The general information about pharmacy regulations.

	Number of pharmacies	Number of pharmacist	Chain / online pharmacy	Generic substitution
France	1 pharmacy per 2578 population	1 pharmacist per 1190 population	Not allowed/ Not allowed	Yes
Ireland	1500	NA	Allowed / Not allowed	No
Canada	8000	30553	NA/ Allowed	In some province
Turkey	22600	NA	Not allowed/ Not allowed	Yes
Iran	9000	NA	Not allowed/Not allowed	Yes

Note: NA: not available

The pricing method in France is a combination of internal and external reference pricing. The countries used as external reference are the U.K., Germany, Italy and Spain (15).

France's health insurance system is based on a compulsory coverage for all French residents. In 2006, about 88.4% of the country's population also had a voluntary insurance, most of which is supplementary. Many of these insurance coverages include co-payment or co-insurance (15).

The reimbursement rate (as shown in Table 3) is not the same for all medicines and is identified based on the effectiveness of medicine and the severity of the illness, as determined by a scientific commission (16). However, for a list consisting of 30 chronic and expensive diseases, the reimbursement is 100% (15).

The medicine margin in France is a regressive margin related to the price. The margin of medicines up to the retail price of 22.9 Euros is 26.1%, and from 22.9 to 150 Euros it is 10%. For medicines with a retail price of more than 150 Euros, the margin is 6%, but with a cap of 53 Euros per pack (16).

Although there is no dispensing fee in France and patient would only pay difference between the retail and the reimbursed prices, a 0.53-Euro fixed fee per pack would be added to the margin for reimbursable medicines (15).

This fixed fee per pack is defined at 0.84 Euro for special medicines that require advice from the pharmacist (17). Since 2004, the wholesaler discount and the direct discount by the manufacturers to the pharmacies (for companies that sell directly to pharmacies) have been organized and currently do not exceed 2.5% for reimbursable medicines. For generics, this amount is 10.74% (15).

### *Ireland*

There are more than 1,500 pharmacies in Ireland and about 420,000 people visit pharmacies each week (18). Management of a pharmacy can be handled either by a pharmacist or a firm. Chain pharmacies are allowed in Ireland (19), but generic substitution is not legal (17) and online pharmacies are not still allowed (20).

The Irish pricing system is related to the prices in the nine other E.U. countries. The average wholesale price for all medicines in Ireland is no more than in Finland, Germany, Denmark, the Netherlands, Belgium, the U.K., or France. The pricing for OTC medicines is unregulated (19).

There are four main coverage schemes in Ireland: the General Medical Services Scheme (GMS), the Drug Payment Scheme (DPS), the Long Term Illness Scheme (LTI), and the High-tech Scheme. Each of these has a different reimbursement policy. Under the GMS, which is designed for low-income people, patients pay 50 cent per prescription item, with a cap of 10 Euros per family, per month. Under this scheme, the pharmacist would be paid a dispensing fee, but no mark up. With the DPS, patients pay 120 Euros per month and the pharmacist would be paid with a dispensing fee and a mark up. Medicines for about 15 chronic diseases, such as multiple sclerosis, diabetes and epilepsy, would be free using the LTI, with pharmacists being paid both a dispensing fee and mark up. With the High-tech Scheme, which is for expensive medicines such as chemotherapy agents, patients have to pay 120 Euros as a deductible cost per month. The pharmacist is paid a 10% mark up as well as a patient's care fee (21, 22).

In 2006, there were more than 55.18 million prescription items in the GMS, a 4.6 million

**Table 2.** The remuneration systems and related subjects in investigated countries.

Country	Pricing	Reimbursement	Pharmacy Margin	Dispensing fee	Cognitive services payment
France	Internal & external reference pricing, For OTC: unregulated	Based on medical benefit and severity of disease	Based on the price + fixed fee per pack	No	No (but Fixed fee for special medicine is higher)
Ireland	Some reference countries (For OTC: free pricing)	Based on insurance scheme	Based on the scheme between 0% - 50%	3.51 euro for each items (reimbursable)	No
Canada	Based on provincial pricing policies	Based on provincial and federal systems	NA	Based on province: reimbursable	Some provinces
Turkey	Originators: Reference countries Generics: up to 80% of brand	NA	Descending based on price	No	No
Iran	Cost plus method, the new method is based on reference countries	70% Of reimbursable medicine	Imported products: up to 15% Domestic products: 21%	Based on price of prescription in two scales	No

Note: NA: not available

increase compared to 2005 (23). To control these rising expenditures in the pharmaceutical sector, a cost containment strategy was implemented after 2006 and under an agreement between the Health Department, Health Services Executive and the Irish Pharmaceutical Healthcare Association, the new pricing mechanism resulted in the reduction of the price level of medicines (24). The dispensing fee for all medicines was 3.51 Euros (22), but this has also been revised based on the number of items dispensed. Also, the pharmacy mark up with the DPS was reduced from 50% to 20% in July 2009 (25).

#### *Canada*

There are about 8,000 pharmacies in Canada and nearly 60,000 prescriptions per pharmacy are filled annually (26). There are also about 13,550 qualified pharmacists in this country (27).

The prices of generic medicines differ in different provinces. For example, in Ontario, the price of a first generic medicine would be set up to 70% of its brand and the price of the next generics would be up to 90% of the first generic. However, in Quebec, the first generic medicine would be priced at up to 60% of its brand and the next generics up to 54% of the brand price (28). In British Colombia, the pricing is based on internal reference pricing and on considering the cost-effectiveness of medicines in each therapeutic group (29). There is almost

a universal coverage in Canada and is the same in different provinces, except for outpatients' prescription drugs, which are not universally covered and the situation is different from one province to another (30).

The public health coverage schemes (which cover seniors, Veterans, Social assistance recipients, Institutionalized populations, Indians) consist of provincial (or territorial) and federal schemes. In addition, two-thirds of Canadians have private insurance coverage for prescription drugs, either individually or through their employers (31).

Nevertheless, some provinces, such as British Colombia, Manitoba and Saskatchewan, cover all of their residents (32) and most provinces have appropriate plans for low-income groups to protect them against expensive medical services (33). Catastrophic cost coverage (limitation on payment for each person) varies from province to province (34).

Some insurers prefer to pay passively, with the patient paying out of the pocket and receiving compensation later; in some other plans the cost of medicines is paid directly to pharmacies and beneficiaries pay only the co-payment (35). The professional fee is compensated by some of the private insurance companies (27). However, most private insurance plans have a deductible of about 25 Canadian dollars per individual or 50 dollars per family. The co-payment with

**Table 3.** Reimbursement rates in France.

Medical benefit	Serious illness	Non serious illness
Major or important	65%	35%
Moderate	35%	35%
Weak	35%	35%
Inadequate	0	0

private insurance is 0 to 30%. About 29% of the private insurance coverage did not have a co-payment in 2000 (36).

The drug formulary is not the same in all of the provinces (37), and the reimbursement systems through public schemes differ from one province to another (see Table 4).

None of the federal schemes have co-payment, and childhood prescriptions are covered by social assistance. In addition, there is often a cap for co-payment in public schemes that is not common in private schemes (32). In most provinces, payment to pharmacists is based on a fee for service model and in the form of a dispensing (professional) fee (38).

The average dispensing fee differs between provinces. For example, in 2001 the dispensing fee in Ontario was 6.74 dollars, while in Nova Scotia it was 7.67 dollars (39). In some provinces the dispensing fee is scaled regressively, depending on the price of the prescriptions (3 to 10 scales defined). Payment for pharmacists' cognitive services is separately defined in some provinces. For example, in Quebec, two of the services that pharmacist provide: "pharmacist's opinion" and "refusing to dispense a prescription", are reimbursable (40). In addition, in April 2007, Ontario implemented the MedsCheck system, which includes an annual 30 min meeting with a pharmacist for medical consultation to review the appropriate use of medicines, etc. This system is only for patients who are suffering from three or more chronic diseases. This service is free for patients and is financed by the public sector (41).

Rebates have become another source of revenue for pharmacies in Canada. A number of provinces, such as Quebec, allow a 20% rebate; however, this is not the case in some other provinces. For example, under the Ontario drug plan, all kinds of rebates are going to be

**Table 4.** Examples of reimbursement methods in Canadian provinces.

Province	Reimbursement method
Saskatchewan	Ex-factory price, Mark up, dispensing fee
Manitoba	Ex-factory price, dispensing fee
Prince Edward island	Price list

eliminated by 2014 (42). Generally, based on the estimated average of revenue earned by a pharmacy in 2006, a pharmacy earned 250,000 dollars from dispensing fees and mark up, and 250,000 dollars from rebates (43).

#### Turkey

Approximately 32% of the healthcare expenditures in Turkey are allocated to pharmaceuticals (44). Online and chain pharmacies are not allowed. The number of prescriptions per month is 21 million and, in 2008, the average cost of the prescriptions was about 42 Turkish Lira (45).

The pricing of originator drugs is based on external reference pricing. The prices of these medicines are set according to the lowest ex-factory price in the following reference countries: Portugal, Spain, France, Italy and Greece. The prices of generic medicines are set up to 80% of the brand. There is a regressive margin for pharmacies and wholesalers, which is shown in Table 5 (46).

Pharmacies must pay within three months of buying from wholesalers, although sometimes the wholesaler offers a longer period. The reimbursement time is about six months after a prescription is dispensed (45).

The entire Turkish population is under coverage through one of the health insurances. Reimbursement decisions are made by the Social Security Institution Reimbursement Commission, which considers criteria such as pharmacoeconomic studies, budget impact analysis and ethical issues, *etc* (24). No valuable data were available about the Turkish dispensing fee system in the literature.

#### Iran

There are more than 8,000 pharmacies in Iran (47); 95% of these are private pharmacies. Chain pharmacies and online pharmacies are

**Table 5.** Margin of pharmaceuticals in Turkey.

Ex-factory price	Wholesalers' (%) margin	Pharmacists' (%) margin
The price up to 10 YTL	9	25
between 10- 50 YTL	8	25
between 50-100 YTL	7	25
between 100-200 YTL	4	16
above 200 YTL	2	12

Note: YTL: Turkish Liras

not allowed. Iran has two types of pharmacies: the majorities are day-opened pharmacies and some are 24 h, seven-day pharmacies that are distributed throughout the cities, depending on the populations. Generic substitution is legal in pharmacy practice law. According to Iranian national law, the number of pharmacists in a pharmacy depends on the number of prescriptions the pharmacy dispenses (48), but this law is not enforced at the moment in private pharmacies.

Most medicines available in the market are generics. The generic scheme policy in Iran has been implemented as a tool for improving accessibility and affordability, by producing low-price medicines (49). The usage of medicines without prescription is common in Iran (50), which may be attributed to the low price of medicines. The pricing of pharmaceuticals in Iran is regulated and controlled by the pharmaceutical pricing commission of the Food and Drug Organization. The cost plus pricing method has been in use for many years, but recently a value-based new pricing method was introduced, based on some reference countries. However, this new method has not yet been implemented. Based on this new method, either the price would be set at least 60% lower than the brand for new generics (branded generics) and at 40% for high tech medicines or orphan medicines, or it would be set based on the lowest price in identified reference countries or the country of origin (whichever is lower). The defined reference countries are Spain, Greece, Saudi Arabia, Algeria and Turkey (51).

The margin for pharmacies is currently between 5% and 15%, based on a regressive model for imported medicines. It is 21% for domestic products and 20% for supplementary medicines.

Based on the official statistics, nearly 90%

of Iran's population is covered by at least one governmental health insurance system (52). Iran's health insurance system is greatly segmented and there are numerous insurance organizations and funds. The three main organizations are the Social Security Organization (SSI), which covers around 42% of the population (all formal workers and their families), the Medical Service Insurance Organization (MSIO), which covers 49% (government employees, rural residents, self-employed people, students and clerics, *etc.*) and the Armed Forces Medical Services Organization, which covers 6% of the population (53). The decision-making regarding the positive and negative lists falls under the authority of the "Medical Services Insurance Supreme Council" in the Ministry of Labor & Social Affairs (54). Recently, pharmacoeconomic studies have been accepted as important criteria for making decisions about new medicines.

The co-payment for outpatients is different with every coverage scheme, but in the three organizations mentioned above it is 30% and 10% for inpatient care (55). Also, medicines for some identified special diseases are free. Because of delays in insurers reimbursing pharmacies, they may prefer co-payment and out-of-pocket payments.

Non-owner pharmacists in Iran are paid a fixed income per month. There is a dispensing fee per prescription, which is scaled according to prescription price, between 5,000 and 9,500 Iran Rials (0.41- 0.78 US Dollars), which is 10% higher during the night time and on holidays (56). Some of the insurers cover this dispensing fee, but most do not. One argument is that, because of the low price of medicines, sometimes the dispensing fee is more than the price sum of prescription items. There are no defined pharmacists' cognitive services and no remuneration system for these services in Iran.

## Discussion

In this study, we evaluated the different remuneration models and profitability sources for pharmacists' services in Iran and several other selected countries. In terms of remuneration for pharmacists' cognitive services, we were unable to find any evidence of such models in

the countries we investigated, except for in some Canadian provinces. Dispensing fees or professional fees are common in most of the countries we studied. In Ireland, the new plan for dispensing fees will be related to the number of items. In Canada, the fee is in some cases a fixed amount per prescription and in others a regressive scaled fee. The dispensing fee in Iran is based on the price of the prescription in three main scales. A study of the payment models has shown that fee for service and capitation are the most common methods used for the remuneration of pharmacists (38). One study has suggested that between 75% and 85% of pharmacists are paid only through a salary method (57). Another study has shown that the performance-related remuneration can indeed affect the amount of services a pharmacist provides to patients and that these services may prevent some future costs (58). This could be one of the reasons that pharmacists in Iran are indifferent with respect to providing consultative services as one study has indicated that there is no desirable job satisfaction between practical pharmacists in Iran (59).

The price of the medicines is one of the important factors influencing the profitability of pharmacies. Because of the cost plus method of pricing in Iran, the medicines seem to be less expensive than in the other countries that were investigated, which mostly follows reference pricing. We found that, in addition to the higher pharmacy margin in these selected countries, the price of medicines *per se* can generate a good profit. Although, based on the current pricing method in Iran, policymakers have considered different aspects, such as medicine wastage costs and the margins of the manufacturers, distributors and pharmacies, but this mechanism for pharmaceutical pricing has threatened quality and competition in the market, as well as the profitability of pharmacies. Although most of the countries lower the pharmaceutical prices as a strategy for containing costs, the profitability for the pharmacies has to be achieved with this goal.

Another issue that has a dramatic impact on the profitability of pharmacies is the reimbursement method. Among the countries studied, the one with the most accurate pharmaceutical reimbursement method was

France, which takes the benefit and severity of the disease into consideration. In France, Ireland, Turkey and some of the Canadian provinces the medical costs for chronic disease are fully reimbursed. There is no such plan in Iran. Considering the delays that pharmacies in Iran experience in receiving reimbursements from the insurance systems, pharmacies are very vulnerable and policymakers need to take this into account before implementing any changes in reimbursement methods.

It has been shown that pharmacy margins and patient co-payments are very important incentives for pharmacists in convincing patients to use a generic or brand medicine (60). Although the pharmacy margin for medicines manufactured in Iran is higher than for medicines manufactured outside the country, this higher margin may not offset the significantly higher price of imported medicines and could, therefore, reduce any incentive for pharmacies to sell Iranian generics.

Another issue is the number of qualified pharmacists in a pharmacy. Studies have shown that there is a negative relationship between the number of prescriptions dispensed hourly and the number of prescription errors detected (61). Therefore, it is important to impose strict guidelines to address this problem because, in addition to detecting prescription errors, pharmacists need enough time to speak to patients who require advice.

Studies have also shown that computer-based prescription and reception systems can help to prevent medical errors (62). So far, Iran has not been able to put such systems into effect because of some infrastructural challenges.

## Conclusion

This study suggests that there is no appropriate conformity between the pharmaceutical price level, the margins and the dispensing fee in Iran. The current setting is not able to meet the pharmacists' expectations in standard practice and, therefore, pharmacists are involved in providing unrelated services. In addition, the lack of incentive for pharmacists that results from the inappropriate remuneration system ultimately causes patients to be unsatisfied with the services they receive. We propose a number of solutions,

in order to improve the current situation. These include implementing the new pricing method as soon as possible, changing the current formulation for the dispensing fee to a more appropriate model, having insurers cover the dispensing fee and making consultative services voluntary for patients. In addition, the Iranian system needs to define both a remuneration system for some cognitive services, similar to those such as Meds Check that some Canadian provinces have implemented, and a new remuneration system that is not based on salary for non-owner pharmacists. A relationship between the services pharmacists provide and the money they receive must also be established, as well as implementing rules about the number of pharmacists required in a pharmacy, based on the number of prescriptions, and restricting the activities of public pharmacies.

**Limitation:** In this study, we were faced with some limitations to the accessibility of data for some of the countries investigated. Because we searched only published articles and reports, we were not able to find the most recent information in some cases, such as Turkey and Ireland.

### Acknowledgment

The authors would like to appreciate the experts who participated in providing domestic information and anyone who helped to do this study. This study was not financially supported by any public or private organization.

### References

- (1) Bero LA, Mays NB, Barjesteh K and Bond C. Expanding the roles of outpatient pharmacists: effects on health services utilization, costs, and patient outcomes. *Cochrane Database Syst. Rev.* (2000) 2: CD000336.
- (2) Zhan C, Sangl J, Bierman AS, Miller MR, Friedman B, Wickizer SW and Meyer GS. Potentially inappropriate medication use in the community-dwelling elderly. *JAMA* (2001) 286: 2823-29.
- (3) Aparasu RR and Mort JR. Inappropriate prescribing for the elderly: Beers criteria-based review. *Ann. Pharmacother.* (2000) 34: 338-46.
- (4) The U.S. Pharmacopoeia Drug Utilization Review Advisory Panel. Drug utilization review: mechanisms to improve its effectiveness and broaden its scope. *J. Am. Pharm. Assoc.* (2000) 40: 538-45.
- (5) Erah PO. The changing roles of pharmacists in hospital and community pharmacy practice in Nigeria. *Trop. J. Pharm. Res.* (2003) 2: 195-196.
- (6) Barber N, Smith F and Anderson S. Improving quality of health care: the role of pharmacists. *Qual. Health Care* (1994) 3: 153-158.
- (7) Raisch DW. Barriers to providing cognitive services. *Am. Pharm.* (1993) NS33: 54-58.
- (8) Aas IH. Incentives and financing methods. *Health Policy* (1995) 34: 205-20.
- (9) Carroll NV. Estimating the impact of medicare Part D on the profitability of independent community pharmacies. *J. Manag. Care Pharm.* (2008) 14: 768-79.
- (10) Cheraghali AM. Iran pharmaceutical market. *Iran. J. Pharm. Res.* (2006) 1: 1-2.
- (11) Kebriaee-zadeh A. Overview of national drug policy of Iran. *Iran. J. Pharm. Res.* (2003) 2: 1-2.
- (12) Keshavarz K, Kebriaeezadeh A, Hashemi Meshkini A, Nikfar S, Mirian I and Khoonsari H. Financial perspective of private pharmacies in Tehran (Iran); is it a lucrative business? *Daru* (2012) 20: 62.
- (13) Mossialos E and Mrazek M. The regulation of pharmacies in six countries. Office of Fair Trading. London (2003) 45-49.
- (14) Ordre National des Pharmaciens. Available from URL: <http://www.ordre.pharmacien.fr/Le-pharmacien/Le-metier-du-pharmacien/La-demographie-des-pharmaciens>; Accessed 2011.
- (15) Van Ganse E, Chamba G and Bruet G. Pharmaceutical pricing and reimbursement information: France. European Commission, Health and Consumer Protection Directorate-General and Austrian Ministry of Health, Family and Youth. Vienna (2007) 23, 33, 44.
- (16) Grandfils N. Drug price setting and regulation in France. Institute for Research and Documentation in Health Economics (IRDES), Paris (2008) 4-18.
- (17) Martikainen J and Rajaniemi S. Drug reimbursement systems in EU member states, Iceland and Norway. The Social Insurance Institution, Finland, Social security and health reports 54 (2002) 39-42.
- (18) Irish Pharmacy Union. Available from URL: <http://www.ipu.ie/pharmacy-in-ireland.html>; Accessed 2011.
- (19) Elliott D and Byrne G. Pharmaceutical pricing and reimbursement information: Ireland. European Commission, Health and Consumer Protection Directorate-General and Austrian Ministry of Health, Family and Youth. Vienna (2007) 23, 32.
- (20) A and L Goodbody: Irish Regulation Of On-Line Pharmacies. Available from URL: <http://www.mondaq.com/article.asp?articleid=14064>; Accessed 2001.
- (21) Irish pharmaceutical healthcare association. Available from URL: <http://www.ipha.ie/alist/medicines-supply-and-reimbursement.aspx>; Accessed 2011.
- (22) Heaney R, Fortescue-Webb D, Coughlan JJ and Judge G. ISPOR Global Health Care Systems Road Map- Country specific health policy decision processes – Ireland (2009).
- (23) National care of Pharmacoeconomics (Ireland). Available from: URL: <http://www.ncpe.ie/document.php?cid=11&sid=31&dodid=122>; Accessed 2011.



- (24) WHO collaboration centre for pharmaceutical pricing and reimbursement. Country poster book of PPRI conference 2011, 29-30 September, Vienna (2011).
- (25) Usher C, Tilson L, Bennett K and Barry M. Cost containment interventions introduced on the community drugs schemes in Ireland—evaluation of expenditure trends using a national prescription claims database. *Clin. Ther.* (2012) 34:632-9.
- (26) Grootendorst P, Rocchi M and Segal H. An Economic analysis of the impact of reductions in generic drug rebates on community pharmacy in Canada. Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto (2008) pages 3-4.
- (27) Canadian Institution for Health Information. *Pharmacists in Canada* (2009). Available from URL: <http://www.cihi.ca>; Accessed 2010.
- (28) Paris V and Docteur E. Pharmaceutical pricing and reimbursement policies in Canada, Health Technical Paper no. 24, OECD (2006) 31.
- (29) British Columbia Office of Auditor General. Managing Pharma Care: slow progress toward Cost-effective drug use and a sustainable program. Government of British Columbia (2005) 11.
- (30) Anis A. Pharmaceutical policies in Canada: another example of federal-provincial discord. *CMAJ* (2000) 162: 523-6.
- (31) Competition Bureau Canada. Generic drug sector study (2007). Ottawa: Competition Bureau. Available from URL: <http://www.competitionbureau.gc.ca>; Accessed 2011.
- (32) Applied Management, Fraser Group and Tristat Resources. Canadians access to insurance for prescription medicines, Volumes 2: The un-insured and under-insured, submitted to Health Canada (2000) 8.
- (33) Demers V, Melo M, Jackevicius C, Cox J, Kalavrouziotis D, Rinfret S, Humphries KH, Johansen H, TU JV and Pilote L. Comparison of provincial prescription drug plans and the impact on patients' annual drug expenditures. *CMAJ* (2008) 178: 405-9.
- (34) Phillips K. Catastrophic drug coverage in Canada. Library of Parliament: Social Affairs Division. Parliamentary Publications and Research Service (2009) 7.
- (35) Quebec, Regie de l'assurance maladie. Services for the public: prescription drug insurance. Private Plans (2009). Available from URL: [http://www.ramq.gouv.qc.ca/en/citoyens/assurancemedicaments/regimesprives/lescouts\\_alapharmacie.shtml](http://www.ramq.gouv.qc.ca/en/citoyens/assurancemedicaments/regimesprives/lescouts_alapharmacie.shtml); Accessed 2011.
- (36) Fraser Group, Tristat Resources. Drug expense coverage in the Canadian population: protection from severe drug expenses (2002) 25.
- (37) Grégoire JP, MacNeil P, Skilton K, Moisan J, Menon D, Jacobs P, McKenzie E and Ferguson B. Inter-provincial variation in government drug formularies. *Can. J. Public Health* (2001) 92: 307-12.
- (38) McDonald S, Lopatka H, Bachynsky J and Kirwin D. Systematic review of pharmacy reimbursement literature (Working Paper 99-4). Edmonton: Institute of Health Economics (1999).
- (39) Morgan S, Kozyrskyj A, Metge C, Roos N and Dahl M. Pharmaceuticals: therapeutic interchange and pricing policies. Manitoba Centre for Health Policy (2003).
- (40) Kroger E, Moisan J and Gregoire JP. Billing for cognitive services: understanding Quebec pharmacists' behavior. *Ann. Pharmacother.* (2000) 34: 309-16.
- (41) Ontario, Ministry of health & long term care. Available from URL: [http://www.health.gov.on.ca/en/public/programs/drugs/medscheck/medscheck\\_original.aspx](http://www.health.gov.on.ca/en/public/programs/drugs/medscheck/medscheck_original.aspx); Accessed 2011.
- (42) Ontario Ministry of Health and Long-Term Care. Reforming Ontario's drug system (2010). Available from URL: <http://www.news.ontario.ca/mohltc/en/2010/04/reforming-ontarios-drug-system.html>; Accessed 2011.
- (43) Generic Drug Pricing and Access in Canada: what are the implications? A commissioned discussion paper by SECOR Consulting (2010).
- (44) Celik Y and Seiter A. *Turkey: Pharmaceutical Sector Analysis*. World Health Organization, Ankara (2008) 22.
- (45) Kanavos P, Uste I and Font J. Pharmaceutical reimbursement policy in turkey. Commissioned by New Hope in Health Foundation (2005).
- (46) Notification regarding the pricing of medicinal products for human use (official gazette). Ministry of health of Turkey. General director of pharmaceuticals and pharmacies(2007). Available from URL: <http://www.ieg.gov.tr/Default.aspx?sayfa=regulations&lang=en&thelawtype=14&thelawId=225>; Accessed 2012.
- (47) Isfahan University of Medical Sciences, Food and Drug Deputy. Available from URL: <http://www.fdo.mui.ac.ir/-fehrestdarou-686>; Accessed 2011.
- (48) Kebriaee zadeh A, Eslamitabar Sh and Khatibi M. *Iranian Pharmaceutical Law and Regulations*. Razi Distribution Press, (2009) 199-206.
- (49) Madani H, Shahhosseiny MH and Khamse A. Impact of generic plan on development of technology capabilities. *Hakim Res. J.* (2011) 14: 23-31.
- (50) Business Monitor International. Iran pharmaceuticals and health report Q3 2004. (July 2004).
- (51) Iranian Ministry of Health and Medical Education. *Pharmaceutical Pricing Method. The Ministry, Tehran* (2011) 9.
- (52) Ramin M. Health System in Iran. *Japan Medical Association J.* (2009) 52: 69-73.
- (53) Regional Health Systems Observatory, EMRO. Health systems profile: Islamic republic of Iran. Available from URL: <http://www.gis.emro.who.int/HealthSystemObservatory/PDF/Iran/Health%20care%20financing%20and%20expenditure.pdf>; Accessed 2010.
- (54) Medical services insurance supreme council. Available from URL: [http://www2.refah.gov.ir/c/portal/layout?p\\_l\\_id=PUB.1009.65](http://www2.refah.gov.ir/c/portal/layout?p_l_id=PUB.1009.65); Accessed 2011.
- (55) Medical services insurance supreme council. Available from URL: <http://www2.refah.gov.ir/c/portal/>

- layout?p\_1\_id=PUB.1.506; Accessed 2011.
- (56) Iranian Pharmacists Association. Available from URL: <http://www.daroosaz.net>; Accessed 2011.
- (57) Lopatka H. Alternative reimbursement for pharmacist services. *Pharmacy Post supplement, Issues in Managed Care* (1997): 1-2.
- (58) Farris KB, Kumbera P, Halterman T and Fang G. Outcomes-based Pharmacist Reimbursement: Reimbursing Pharmacists for Cognitive Services. *J. Manag. Care Pharm.* (2002) 8: 383-93.
- (59) Majd M, Hashemian F, Younesi sisi F, Jalab M and Majd Z. Quality of life and job satisfaction of dispensing pharmacists practicing in Tehran private-sector pharmacies. *Iran. J. Pharm. Res.* (2012) 11: 1039-1044.
- (60) Brekke KR, Holmas TH and Straume OR. Margins and market shares: pharmacy incentives for generic substitution. *NIPE Working Papers* (2010) 11.
- (61) Rupp MT, DeYoung M and Schondelmeyer SW. Prescribing problems and pharmacist interventions in community practice. *Med. Care* (1992) 30: 926-40.
- (62) Chen YF, Neil KE, Avery AJ, Dewey ME and Johnson C. Prescribing errors and other problems reported by community pharmacists. *Ther. Clin. Risk Manage.* (2005) 1: 333-42.
- 
- This article is available online at <http://www.ijpr.ir>