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Pharmacy in Turkey: past, present, and future

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Pharmacy in Turkey underwent a radical change within the last decade. Introduction of the Health Transformation Program in 2003 has had a significant impact on Turkey's pharmacy system in accordance with objectives of the program to establish new pricing regulations for pharmaceuticals based on reference prices, and to develop better computer based health information/record systems. In this context, Pharmaceutical Tracking (Track-and-Trace) System using two dimensional matrix barcodes was initiated to prevent not only drug counterfeiting, but also fraud against the medical insurance system and off-record transactions within the pharmaceutical sector; and the process of recording prescriptions in an electronic format was launched. Some other improvements have also been made with respect to pharmacy education, law and practice. In contrast with all these positive outcomes, Turkish pharmacy sector is currently in a deep financial struggle. This paper aims to provide a brief overview of the recent developments in Turkish pharmacy system and to discuss future roles and challenges of the profession.

1. Introduction

Turkey is a country at a crossroads of Europe and Asia. It has a population of approximately 76 million, of which people between 15–64 years of age constitute the vast majority (67.4%). Turkish is the official language which is spoken by nearly 85% of the population as mother tongue (Turkish Statistical Institute 2010). The most commonly spoken foreign language is English and courses were also given in this language at some private universities.

For Turkey became an EU candidate in 1999, the prospect of converging with the Union has accelerated the economic and social reforms implemented in the country. Introduction of the Health Transformation Program (HTP) in 2003 has had a significant impact on Turkey's pharmaceutical system in accordance with objectives of the program to establish new pricing regulations for pharmaceuticals based on reference prices, and to develop better computer based health information/record systems. Some other improvements have been made with respect to pharmacy education, law and practice in the last decade (Memis et al. 2012; Yasar 2011).

2. Pharmacy in Turkey

2.1. Historical Background

In Turkey, pharmacies appeared for the first time inside hospitals during the Anatolian Seljuk dynasty between 11th and 13th Centuries. As one of the oldest hospitals including a pharmacy inside, the *Gevher Nesibe Dar'us-sifasi* was built in Kayseri in 1206 (Tekiner 2006a). Until the middle of the 19th Century, the pharmacist apprentice was personally trained under the direction of a master pharmacist. This practice, however, was discarded in 1839 when pharmacy education was offered for the first time at the Imperial School of Medicine in Istanbul where courses had initially being given in French (Baytop 2000).

After the proclamation of the Republican regime in 1923, the field of pharmacy underwent radical changes and the pharmacy system was reorganized by the implementation of new legislations. Women pharmacists became graduated for the first time in 1930. Following a short period of small-scaled manufacturing of pharmaceuticals inside laboratories, the first Turkish drug manufacturing company was founded in 1952. In the same decade two major laws concerning pharmacies and pharmacists, and the foundation of the Turkish Pharmacists' Association (TPA) were legislated (Baytop 2001). A guideline for Good Pharmacy Practice (GPP) was implemented in 1999. The European Pharmacopoeia was accepted as the national pharmacopoeia of the country by the Ministry of Health (MoH) in 2004.

2.2. Demographic data

As of 2012 there were around 26,081 registered pharmacists TPA; 93.6% of whom worked in community pharmacies, 4.45% in public institutions and hospitals, 0.61% were employed in the drug industry, 0.52% at universities, and 0.82% worked in other settings. The median age of pharmacists is 46, and women pharmacists constitute 55% of the whole population. Furthermore, there are approximately 2,900 people per pharmacist, and approximately 3,100 people per pharmacy. Number of licensed pharmacy technicians is around 47,000 (Anonymous 2013b).

Pharmacy distribution depends greatly on geographical location; approximately 36% of community pharmacies are found in Istanbul (21%), Ankara (8.3%) and Izmir (7.1%), where 30.2% of the population lives (Table 1) (Anonymous 2013b). In terms of professional satisfaction 27% of pharmacists were satisfied with their jobs and even 23% think quitting (Anonymous 2013a). The satisfaction rate is quite lower in comparison with the two

Table 1: Top 10 cities with highest number of pharmacies in Turkey, 2012

City	No. Pharmacies	Population	No. People per Pharmacy
Istanbul	5,118	13,854,740	2,707
Ankara	2,019	4,965,542	2,459
Izmir	1,737	4,005,459	2,306
Antalya	985	2,092,537	2,124
Bursa	814	2,688,171	3,302
Konya	734	2,052,281	2,796
Adana	638	2,125,635	3,332
Mersin	561	1,682,848	3,000
Gaziantep	452	1,799,558	3,981
Manisa	449	1,346,162	2,998

Resourece: TPA (2013)

previous studies conducted in 1998 and 2007, as found 66.9% and 52.6% respectively (Domac 2007).
There are approximately 7,700 students enrolled to pharmacy faculties of whom 1,770 are admitted in 2013 (OSYM 2013). In terms of postgraduate degrees; 9.3% of Turkish pharmacists possess a master of science degree and 1% have doctorate degrees (Anonymous 2013c).

2.3. Pharmacy education

As of July 2013, there are 23 faculties of pharmacy within 18 public and 5 private universities, offering pharmacy education in Turkey (Table 2). While 10 of these faculties are located in Istanbul and Ankara, the others are distributed to 13 different cities (OSYM 2013). The number of faculties is expected to reach a total of 37 in the near future with the inauguration of new ones, as stated by the TPA president (Anonymous 2013c). High school graduates who are in the top 1.3% to 6.1% on Transition to Higher Education Examination can get into a faculty of pharmacy. Number of students admitted to faculties of pharmacy per year is around 1,760. Top ranking faculties for the last three years are from Hacettepe University (Ankara), Marmara University (Istanbul) and Istanbul University (Istanbul) (OSYM 2013). Furthermore, there are five universities offering a 2-year of training for pharmacy technicians, apart from the short term (1.5 to 3 months) courses given by TPA's Academy in collaboration with MoH and Ministry of National Education (OSYM 2013).
A recent study indicates that 38.7% of pharmacy students chose the profession consciously while 27.2% by coincidence and 12.1% were influenced by family pressure. The reason for pursuing a career in pharmacy is by and large under the influence of common believes claiming that pharmacists can easily find a job, become their own boss and earn too much money, get high respect in society, work in flexible time intervals, and have time for family and social life; although these are not always true (Domac 2007).
Since 2005 bachelors' degree in pharmacy takes five years instead of four while masters' and doctorate degrees take two and four years respectively. Undergraduate students are represented at both International Pharmaceutical Students' Federation (IPSF) and European Pharmaceutical Students' Association (EPSA), and able to join EU's Erasmus Program to study or do an internship for a period of three months to a full academic year in any European country.
After four years at faculty of pharmacy, students are required to undertake a further one year training period which is called the internship year. This year may be taken in a range of pharmaceutical settings including community pharmacies in particular, then hospital pharmacies or industrial environment under the supervision of a tutor pharmacist. Graduate students, however, are not required to pass a national board exam for having license to practice pharmacy.

2.4. Community pharmacy practice

In Turkey, community pharmacists serve not only as drug distributors and patient counselors, but as well trusted and most respected professionals in society. Great majority of the patients prefer consulting pharmacists first, rather than having appointment with physician, which also indicates the significance of community pharmacy services in obtaining better public health results (Tekiner 2006b).
The current Law No. 6197 mandates that pharmacists must own the pharmacies where they serve as community pharmacists and that is not appropriate to own more than one pharmacy. For this reason chain pharmacies are not allowed in the country.
Those who wish to set up a community pharmacy must be a citizen of the Republic of Turkey, a graduate from any faculty of pharmacy in Turkey or an equivalent school abroad, obtain a pharmacy diploma approved by the MoH as well as a pharmacy license from the local health board, and to have at least one-year experience in pharmacy as an assistant pharmacist. Demographic criteria of one pharmacy per 3,500 inhabitants must be met. Excluding the basement or upper floor, the pharmacy setting has to be larger than 35 m^2 (approximately 377 ft^2), and have easy-to-clean surfaces, furniture that is fire-proof, a laboratory with all necessary equipment such as a water supply, a refrigerator, an on-duty (24 hours services) roaster which can be seen from the outside of the shop even at night.
Work hours for pharmacists vary widely between 30 to 50 hours a week. Those in community pharmacies tend to work longer shifts than other pharmacists, sometimes 10–12 hours at a time. Pharmacies also provide an on-duty (in 24 hour) service at least once in a month in accordance with the schedule appointed randomly by on-duty commissions of each chamber. Depending on the population of the city, the number of on-duty pharmacies changes (Erdogan and Meredith 2004).

2.5. Health Transformation Program

The Health Transformation Program (HTP) brought fundamental changes in the last decade in many areas related to pharmacy, in particularly financing, and information systems: Reductions in medicine prices ranging from 1% to 80% have been done (for nearly 300 times since 2004) (Anonymous 2013c). The VAT rates for pharmaceuticals have been reduced to 8% from 18%. The Social Security Institution's (SSI) beneficiaries were given access to all community pharmacies. SSI introduced the MEDULA (shortened version of *medikal ulak* in Turkish, meaning medical messenger) system which is integrated between SSI and health-care providers, to establish an information infrastructure for the universal health (OECD 2013). Pharmaceutical Tracking (Track-and-Trace) System using two dimensional matrix barcodes was initiated to prevent not only drug counterfeiting, but also fraud against the medical insurance system and off-record transactions within the pharmaceutical sector. Furthermore, the process of recording prescriptions in an electronic format was launched in 2012. Besides preventing unauthorized/incomplete prescriptions and errors caused by misreading, the system enables community pharmacists to access patients' prescriptions at ease and to save time when recording the prescription (ISSA 2013; Yasar 2011).
In contrast with all these positive outcomes, Turkish pharmacy sector is currently in a deep financial struggle. A recent newspa-

Table 2: Faculties of Pharmacy in Turkey, 2013

Faculty of Pharmacy	City	No. Students Admitted Annually
Agri Ibrahim Cecen University Fac. of Pharmacy	Agri	41
Anadolu University Faculty of Pharmacy	Eskisehir	129
Ankara University Faculty of Pharmacy	Ankara	159
Ataturk University Faculty of Pharmacy	Erzurum	67
Bezm-i Alem University Faculty of Pharmacy*	Istanbul	50
Cumhuriyet University Faculty of Pharmacy	Sivas	41
Dicle University Faculty of Pharmacy	Diyarbakir	41
Ege University Faculty of Pharmacy	Izmir	118
Erciyes University Faculty of Pharmacy	Kayseri	62
Erzincan University Faculty of Pharmacy	Erzincan	41
Gazi University Faculty of Pharmacy	Ankara	118
Hacettepe University Faculty of Pharmacy	Ankara	103
Inonu University Faculty of Pharmacy	Malatya	62
Istanbul Kemerburgaz Univ. Faculty of Pharmacy*	Istanbul	60
Istanbul Medipol University Faculty of Pharmacy*	Istanbul	60
Istanbul University Faculty of Pharmacy	Istanbul	175
Karadeniz Teknik University Faculty of Pharmacy	Trabzon	62
Marmara University Faculty of Pharmacy	Istanbul	123
Mersin University Faculty of Pharmacy	Mersin	62
Trakya University Faculty of Pharmacy	Edirne	41
Yeditepe University Faculty of Pharmacy*	Istanbul	70
Yeni Yuzyil University Faculty of Pharmacy*	Istanbul	50
Yuzuncu Yil University of Pharmacy	Van	31
Total		1,766

Resourece: OSYM (2013), *Privately operated

per article claims that considering the poverty level for 2013 was set at 3,610.84 TL for a family of four, by the Turkish Statistical Institute, nearly 12,000 community pharmacists (50% of the whole) are under the poverty threshold. The article also states that since 2005, number of pharmacists using bank loans have drastically increased to 14 times more and apart from the bank loans a total of 16,448 pharmacists (70% of the whole) applied for the TPA's Benevolent Funds (Anonymous 2013d). Furthermore, as a result of price pressures, maintaining profitability has become a major problem for pharmaceutical firms (Kretschmer 2011).

2.6. Pharmacy market and pricing

According to the Pharmaceutical Manufacturers Association of Turkey (PMAT), the Turkish pharmaceutical market was around US$ 9.2 billion in 2010, up from US$ 4 billion in 2003, growing by 12.6% of compound annual growth rate. There are 49 manufacturers in the industry, 13 of whom are foreign investors. The top 20 companies maintain over 70% share of market, with the top 10 multinationals holding over 40%. Turkey's export to import ratio for pharmaceuticals was solely 12.7% (Kretschmer 2011).

There are currently 8,883 available drug products. Antibiotics account for 14% of the total pharmaceutical market value while the OTC sector accounts for 9%. As of 2012, US$ 7.1 Billion was spent on drugs in Turkey, and the annual drug consumption per person was US$ 106.

Turkish government's move to balance its budget in the medium term resulted with higher discounts on innovative drugs and a revised reference-pricing system for generic drugs. The pricing of pharmaceuticals is based on reference prices taken from five European countries including France, Greece, Italy, Spain and Portugal.

Profit rates of wholesaler and pharmacy depend gradually on the cost of medication from 2% to 9%, and from 12% to 25% respectively (Fig.). Apart from the profits come from medica-

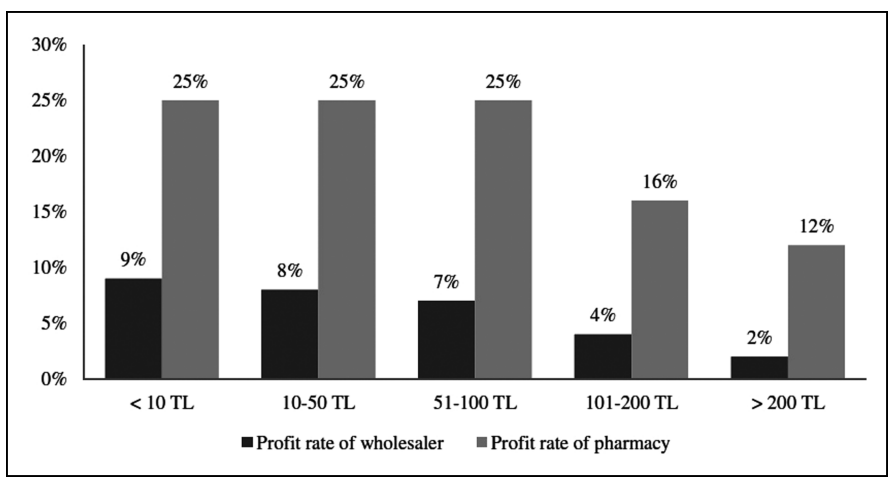

Fig.: Profit rates of wholesaler and pharmacy per price.

tions, pharmacists are also paid a service fee of 25 kurus (12.5 cents) per prescription.

3. Future roles and challenges

The future of Turkish pharmacy seems rather challenging due to steep rise in the number of pharmacies, squeeze on medication costs, and intense competition.

The number of pharmacists in Turkey is expected to be doubled in the next 15 years which will make it even harder to get a job. Due to limitation of 3,500 inhabitants per pharmacy, pharmacists will have to either move low-populated cities, located mostly in the Eastern part of the country, to open a pharmacy or to begin working as second pharmacists under the direction of another colleague. While the first possibility will help balancing unequal distribution of pharmacies over the country and providing easy access to pharmacies for people living in rural areas, the latter one may result great deal of pharmacy technicians to be replaced with second pharmacists.

Because of the continuous decrease in medication prices and low profit rates, there is an increasing risk of international companies to forgo selling products in Turkish market as have been experienced very recently. This may cause a dearth of some vital medicines imported to Turkey, including chemotherapeutic medicines in particular. Therefore the Turkish MoH is recommended to overview its pricing policy by carefully considering price-related medication deficiencies. Moreover, the economic contraction in medication prices also pushes community pharmacists to focus on new product ranges including OTCs, phytotherapy, cosmetic and orthopedic products as well as medical devices. Therefore future pharmacies in Turkey are expected to be more akin to health centers than dispensaries.

Since the roles of pharmacists have being expanded from the traditional tasks of dispensing medications to providing counseling services, there is an increasing need of re-professionalization of pharmacy in Turkey by giving more emphasis to pharmaceutical care and clinical pharmacy. Further steps have to be taken in promoting rational use of medicines, modernizing pharmacy curriculum that better responds to actual needs and conditions, and implementing a specific reference in law to recertification or to renewal of pharmacists' professional knowledge after getting pharmacist license (Toklu and Hussain 2013; Zellmer 2012).

As a result, the future of Turkish pharmacy lies in pharmacists' adaption to change and specializing in new areas, spanning from pharmaceutical care to specific drug therapies. Beside the individual efforts of pharmacists; academy, MoH, and TPA are strongly recommended to collaborate in developing a new strategic program for the first centennial of the country to be celebrated in 2023.

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