

ORIGINAL ARTICLE

Investigation of Pharmaceutical Developments in Fars Province in Iran during the First Pahlavi Period

Abstract

Pharmacy has a very long history in Iran. Many pharmacists and physicians, particularly in the Fars province, have worked hard to expand this field by employing historical methodologies and descriptive-analytical approaches. The research relied heavily on historical documents to outline the achievements and challenges in developing the pharmaceutical system in Fars province during the first Pahlavi period. The results of our research showed that actions including the establishment of more hospitals and pharmacies, the expansion of pharmaceutical regulatory offices, the amendments of regulatory rules and regulations on pharmaceutical manufacturers, the augmentation of mobile pharmacies, and the increased influence of educated pharmacists were implemented to develop the pharmaceutical system and thus the health infrastructures. On the other hand, the lack of financing resources, lack of medicines, the resistance of traditional communities, insufficient supervision on medicine production, drug trafficking, and unauthorized, illegal practices of some pharmacists can be enumerated as some major drawbacks and challenges that hindered the expansion of the pharmaceutical system in Fars province in the mentioned period. In summary, our study revealed that through the development and expansion of some pharmaceutical activities, it was endeavored to improve public health in Fars Province during the first Pahlavi period in Iran. Future research on the history of pharmacy and pharmaceutical development in other historical periods is recommended to provide a more comprehensive understanding of the field's evolution in the region.

Key words: History of Pharmacy, Pharmaceutical, Drug legislation, First Pahlavi period, Fars, Iran

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Introduction

Pharmaceutical science and pharmacy are two medical specialties with a long history in Iran (Hemmati, and Fazlinejad, 2018, pp. 127-148; Sadeghi, et al., 2020, pp. 21-25). In Fars province specifically, the knowledge and practice of pharmacy have been advanced by distinguished physicians and pharmacists throughout various historical periods. These experts have made significant contributions to the field, producing notable works and driving substantial progress in pharmaceutical development within the region (Tadjbakhsh, 2000, pp. 491-510; Golshani, et al., 2012, pp. 341-350). During the *Āl-e Būya* period, Azdi Hospital of Shiraz was established in Fars province, focusing on medical and pharmaceutical development (Amiri Ardakani, Nikpour, and F., 2021, pp. 1-17; Fazlinejad, and Parvizinia, 2021, pp. 3-16). During the 8th and 9th centuries of Hijri (14th-15th centuries AD), Fars experienced a flourishing trade of medicinal plants, influencing the growth of pharmaceutical and medical knowledge (Fazlinejad, and Parvizinia, 2021, pp. 3-16). During the Qajar period, with the establishment of *Dar al-Funun*, modern pharmaceuticals expanded in Iran. In 1298 SH.(1919 AD), *Vezerat-e Maaref* (Ministry of Education) established a pharmacy regulation (*Nezamnameh-e Davaforoushi*), according to which the owner of the pharmacy must have a pharmacy certificate, and without it, no pharmacists have the right to practice and sell medicine (Roostaei, 2003, pp. 3-557).

At the beginning of the first Pahlavi period, pharmaceuticals and pharmacies in Fars province underwent changes through social and economic developments. With the beginning of industrialization and modernization, more demand for medicines and health services was created in society. For this reason, the pharmaceutical industry in Fars witnessed extensive developments that not only led to the domestic production of some pharmaceutical items but also improved access to medicines. (Danaei, et al., 2019, pp. 1984-2005; Heidari, 2018, pp. 17-30; Nadim, and Peiro, 2021, pp. 255-260)

The questions raised in this research are as follows: What was the state of pharmaceuticals at the beginning of the first Pahlavi period in Fars province, and when and how did modern pharmaceuticals enter this province? What was the performance and activity of pharmacies during the period in question? How was the establishment of laws and regulations, and how the government supervises the performance of pharmacists, pharmacies, and pharmaceutical affairs? Also, what were the issues and problems in expanding modern pharmaceuticals in Fars?

The purpose of this research is to investigate the developments of pharmaceuticals through historical documents, newspapers, and books to examine the process of changes in pharmaceuticals in the direction of development and deficiencies in Fars province during the first Pahlavi period. By examining the pharmaceutical developments in Fars province during this period, it is possible to examine the role of this region in the development of the pharmaceutical industry and its effects on the state of health and treatment in a more detailed manner.

Materials and Methods

This research is based on historical methodology and a descriptive-analytical approach, relying on the library resources and documents available in the National Library and Archives of the Islamic Republic of Iran. We aimed to analyze and investigate the developments and drawbacks of pharmaceutical infrastructures in Fars Province during the first Pahlavi period (1304-1320 SH; 1925-1941 AD).



Findings

1- The Status of Pharmacy in the Early Pahlavi Period

Figure 1 shows some of the highlighted developments in the pharmaceutical system of Fars province during the first Pahlavi period. While many developments and changes in Fars province's pharmaceutical system occurred during the Pahlavi period, it is essential to note that some significant advancements date back to the years preceding this era. Moreover, at the beginning of Pahlavi's rule in Fars province, there were serious problems in the field of healthcare services (Manuscript No. 98/293/972, 1933), as in other parts of Iran (Aghabeiglouei, et al., 2024, pp. 710-717; Rezaei Orimi, 2021, pp. 127-130).

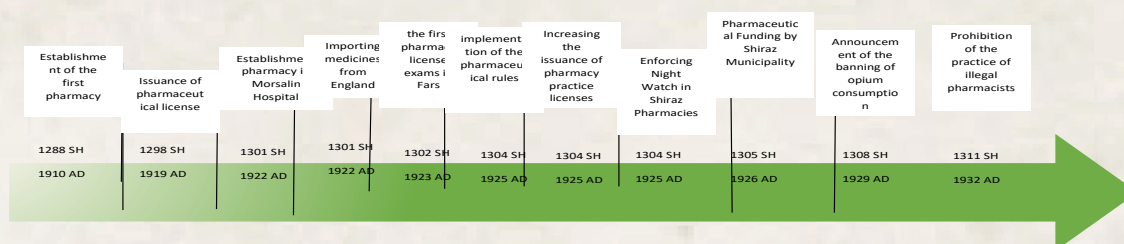


Figure 1. Some of highlighted historical developments in the pharmaceutical system in Fars province in Iran (Zarrabie, 2018, p. 158; Heidari, 2018, pp. 17-30; Manuscript No. 293/42958, 1936; Roostaei, 2003, pp. 3-557; Ettelihat Newspaper, 1939, p. 4; Manuscript No. 98/293/972, 1933; Manuscript No. 98/293/10951, 1934; Nadim, and Peiro, 2021, pp. 255-260; Ettelihat Newspaper, 1936, p. 4; Manuscript No. 639, 1934; Manuscript No. 293/1767, 1934; Manuscript No. 1240, 1932; Manuscript No. 350/2352, 1935; Manuscript No. 350/6778, 1938; Manuscript No. 293/45525, 1924).

A severe shortage of physicians and pharmacies, particularly in rural areas of Fars Province, was caused by various factors, including the concentration of healthcare facilities in urban centers, inadequate infrastructure, and insufficient allocation of funds to the health sector (Heidari, and Zarrabie, 2018, pp. 46-54). A significant part of the medicines were sold in infirmary pharmacies, clinics, and private pharmacies, and others were distributed for free among the underprivileged. Due to the lack of doctors and hospitals, mobile hospitals with medical equipment, including doctors, drugs, and surgical instruments, were engaged in examining and treating patients in different parts of Fars province. Medicines for these hospitals were bought from Sepah Pharmacy and sent to different areas. They had to take care of the patients in their area every fifteen days, and they did not have the right to receive money in exchange for treating patients or prescribing medicine (Manuscript No. 297/31979, 1932; Manuscript No. 98/293/972, 1933; Manuscript No. 98/293/15844, 1926-1927).

Given the scarcity of healthcare infrastructure, limited access to pharmaceutical drugs, and the deep-rooted traditional beliefs within the community (Aghamiri, Yalafani, and Kalhor, 2021, pp. 1-18), most people in Fars Province continued to rely on traditional pharmacists and healers due to economic and social reasons (Khodami, Nuraei, and Frooghi Abri, 2018, pp. 1-23). The medicines prescribed by the sages were complicated in the apothecary stores (*Attaris*). The old apothecaries (*Attars*) or pharmacists were allowed to sell 24 oral and unofficial medicines (known as 24 *Qalam Attari*). Medicines in the apothecaries included dried medicinal plants that were used to make decoctions, poul-



tices, and decoctions. Also, in addition to herbal medicines, small amounts of European chemicals such as iron and copper sulfate, quinine sulfate, cinchona bark, white alum, borax, mercuric chloride, and tartaric acid were found in some ataris. Generic chemical drugs of those times were different from today's drugs. In that period, medicines did not exist in the form of tablets and ready-made syrups; instead, pharmacists combined the components of the medication and gave them to patients in the form of powders or pills (in some cases, with a mixture of honey and water). Wholesalers or drug merchants were people who purchased and sold European or domestic drugs in large quantities. These people had to work for three years in pharmacies under the supervision of an erudite pharmacist. If they have no work experience, they could still sell medicines provided that they sell them in the form of packaging they received from the manufacturers (Ahmadi Ashtiani et al., 2013, pp. 127-198).

During the first Pahlavi period, institutions and hospitals in Fars province played an important role in providing medicines as well as health services (Azizi, Bahadori, and Raees-Jalali, 2009, pp. 321-324). *Behdari-e Shahrdari* (municipal health department), aid posts, a trachoma treatment office, and a center for smallpox inoculation vaccine (*Markaz-e Mayekoubi-e Abeleh*) are among health care centers in Fars province (Manuscript No. 310/13949, 1936; Heidari, and Zarrabie, 2022, pp. 46-54). *Shir-o-Khorshid Sorekh* Institute (Red Lion and Sun) (treated the sick and injured by establishing pharmacies, fixed and mobile hospitals, free public clinics, and road rescue and relief stations (emergency medicine service; EMS), and provided free medicines to poor people (Ettelahat Newspaper, 1935, p. 4; Ettelahat Newspaper, 1934, p. 1; Heidari, 2018, pp. 17-30).

According to the report presented in 1311 SH (1932 AD) by the head of the Fars province health office (*Sehieh*) about the health status of Shiraz, it is possible to know the number of pharmacists, pharmacies, and how to supply medicines. (Figure 2) This document states that: “medicines for the Shiraz hospital's pharmacy are provided from the funds allocated in the general health budget for Fars, and the mentioned medicines are used for internal patients of the hospital and external patients. These medicines are sent directly to the health doctors (*Ateba-e Sehie*) or indirectly by the head of the Fars province health office. Nonetheless, it is better and easier to send them directly to the health doctors (Manuscript No. 10299, 1933).

It is also stated in this report that in Shiraz, there are generally ten independent pharmacists and one Ghoshouni (army) pharmacist. Regarding the Ghoshouni infirmary (army hospital), the report mentioned that it had hospitalization rooms, a pharmacy, and a pharmacy that was the pharmaceutical arsenal for Fars province. *Shir-o-Khorshid Sorkh* Hospital (Red Crescent) had a pharmacy and a pharmacist. Regarding the method of supplying medicine to patients who referred to the general office of the municipality (aid post), it is mentioned that “indigent patients, after receiving a prescription, went to one of the pharmacies in the city and got their medicines in their prescription while paid through the municipality's account”. At the end of the report, it is stated that there were ongoing studies to establish a bacteriological institute and infrastructure for producing vaccines against rabies and smallpox (Manuscript No. 293/47304, 1927; Nadim, 2019. pp. 41-56).

2- The Performance and Activity of Pharmacies in Fars Province

At the beginning of the first Pahlavi period, pharmacies were not in good condition. In every part of Shiraz, there was a pharmacy on duty every night to meet people's need for



medicine at night. In addition to medicine, other goods such as photographic objects and accessories, newspapers, magazines, and books were sold in pharmacies. A comparative analysis of pharmacies reveals that these institutions not only served as medication distribution centers but also fulfilled multiple other roles. The presence of non-pharmaceutical products in pharmacies, in addition to meeting the pharmaceutical needs of people, acted as a facilitating factor in expanding the social and cultural activities of these establishments. This phenomenon can be attributed to several factors, including a shortage of commercial and cultural centers during that period, public trust in pharmacies as reliable and accessible institutions, and the absence of clear laws and regulations governing pharmacy operations (Yaghini, 2016, pp. 479-523).

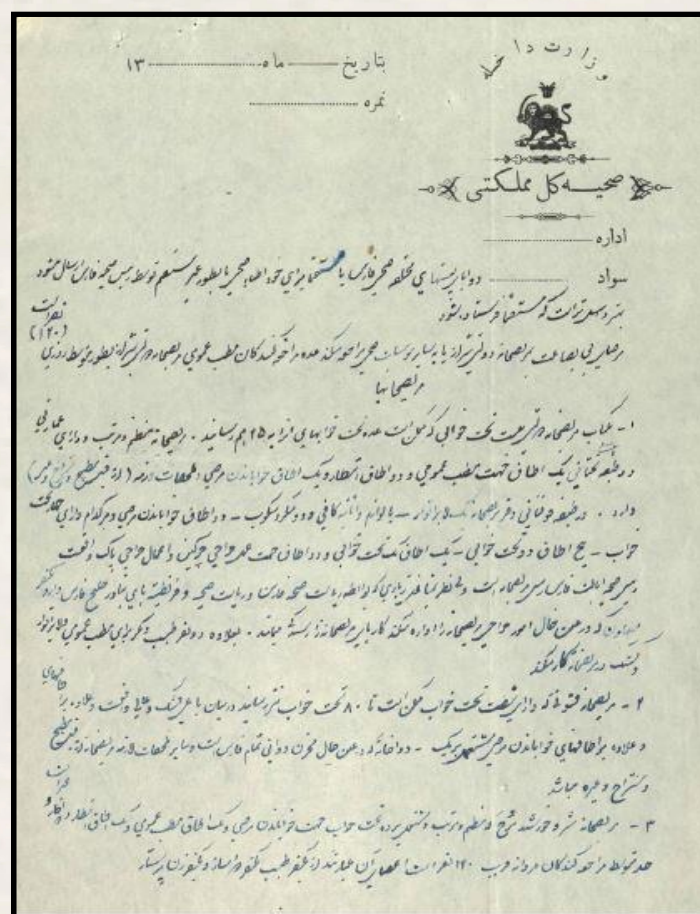


Figure 2. Reproduction of a report by the Fars Province Health Office in 1311 SH (1932 AD) detailing the pharmacy status in Shiraz (Manuscript No. 10299, 1933).

The existence or construction of the pharmacy was not based on a specific basis and had residents depending on their needs and requests. Some doctors had their own pharmacies and gave their medicines to the poor at no cost. During this period, pharmacies primarily relied on imported drugs to meet the population's medical needs. These medications were distributed through various channels, including pharmacies, hospitals, and clinics. However, a substantial portion of the populace still sought the advice of traditional healers and utilized their recommended treatments (Heidari, 2018, pp. 17-30; Ettelahat Newspaper, 1939, p. 4). Before the introduction of new pharmacies, access to medicines



was limited, with only a few substances like cinchona bark, mercury chloride, and imported processed salt being commonly available to the public. (Golshani, Nematollahi, and Sarafrazi, 2020, pp. 1-12).

At first, pharmacies were managed by licensed pharmacists. However, as medical doctors graduated from *Dar ul-Funun* and returned to Shiraz, they began establishing their own pharmacies and prescribing synthetic pharmaceutical medicines (Roostaei, 2003, pp. 3-557). A historical document states: “*These pharmacies offered a wide range of Iranian and foreign medications for sale, including liquid and solid forms, medical and surgical tools, and equipment. Each medicine was sold in specific packaging, such as envelopes, boxes, or specially labeled bottles, accompanied by the pharmacist’s seal and signature*” (Roostaei, 2003, pp. 3-557.).

Based on the remaining historical documents, the “*General and Central Pharmacy of Hesam al-Atteba va Shoraka*” was the first and oldest pharmacy in Fars province. This pharmacy was the first large central pharmacy established in Fars in 1288 SH (1910 AD) and was always of interest to the people of Shiraz (Table 1). *Bahauddin Hesamzadeh* documented the establishment of a significant pharmacy during this period, stating: “*The late Hesam al-Atteba’s general and central pharmacy, also known as the Hesam al-Atteba va Shoraka pharmacy, was widely recognized as the first large central pharmacy in Fars. This influential establishment opened its doors in 1288 SH*” (1910 AD). It was unique and famous for its general possession of medicine, tablets, and new European medicines. It was also unique regarding the quantity and freshness of medications and the regulations and conditions of pharmaceuticals. During the first Pahlavi period, this pharmacy functioned after being renamed “*Naqib al-Mamalek General Pharmacy*” under the auspices of *Bahauddin Hesamzadeh* and *Naqib al-Mamalek* (Figure 3) (Manuscript No. 98/293/972, 1933).

Table 1: Specifications of licensed pharmacies in 1304 SH (1925 AD) in Shiraz

No	Pharmacy Name	Pharmacy manager
1	Adab Pharmacy	<i>Sultan Habibullah Khan</i>
2	Nusrat Pharmacy	<i>Mirza Mohammad Hossein, the son of Nosrat al-Atba</i>
3	Behboudi Pharmacy	<i>Mirza Mohammad Hossein son of Haj Mohammad Hasan</i>
4	Rezazadeh Pharmacy	<i>Mohammad Hadi, the son of Mirza Mohammad Reza Tabib</i>
5	Ziyaian Pharmacy	<i>Mirza Mahdi, the son of Seyed Ali Akbar</i>
6	Iran Pharmacy	<i>Mirza Seyed Mohammad Khan, the son of Mirza Seyed Hossein</i>
7	Khourshid Pharmacy	<i>Aziz Khan, the son of Mostafa Qolikhan</i>
8	Hafez Pharmacy	<i>Mirza Hashim, the son of Mirza Ali</i>
9	Shafa Pharmacy	<i>Mirza Esmail Khan, the son of Mollahossein</i>
10	central Pharmacy of Fars	<i>Mirza Ziauddin, the son of Zia ettehad</i>

With the onset of the Pahlavi era and in line with modernization policies and the development of healthcare infrastructure, significant transformations occurred in the pharmaceutical sector of Fars Province. Governmental support, manifested in the formulation of specific regulations and the issuance of operating licenses, served as a key facilitating factor, paving the way for establishing numerous pharmacies in the province. The prima-



ry objectives of these measures were to ensure the availability of necessary medications for the public, facilitate equitable drug distribution in healthcare centers, and elevate the overall standard of healthcare within the province (Nadim, and Peiro, 2021, pp. 255-260). Several intervening variables played a pivotal role in this process. A shift in the government's perspective towards the importance of healthcare, the establishment of pharmacy schools and the cultivation of specialized human resources, advancements in communication and transportation, and heightened public awareness regarding the significance of medication were among the most crucial facilitating factors in expanding pharmacies. Moreover, the development of domestic pharmaceutical industries and the importation of novel drugs from foreign countries contributed to a diversified drug market and significantly improved the overall pharmaceutical landscape of the nation (Yaghini, 2016, pp. 479-523; Ahmadi, Aghamiri, and Sadeghi, 2022, pp. 1-18).

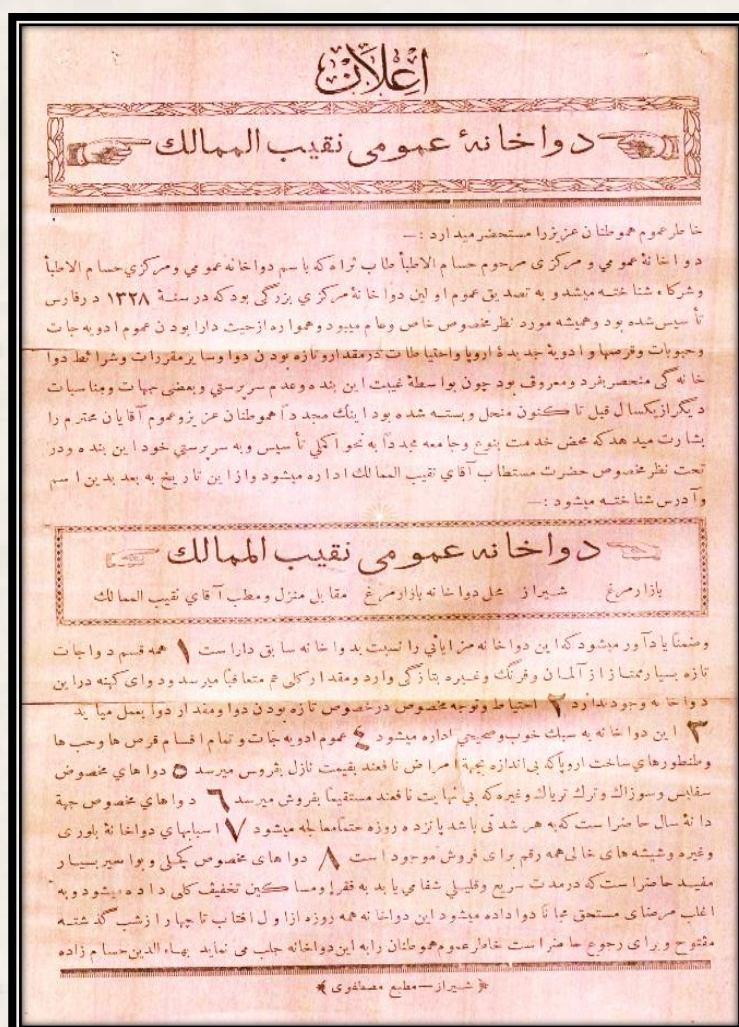


Figure 3. The announcement of the general pharmacy of Naqib al-Mamalek in the first Pahlavi period in 1304 SH (1925 AD) (Manuscript No. 98/293/972, 1933)

Since 1304 SH (1925 AD), according to the provisions of the pharmaceutical Vendors' Regulations (Nezamnameh Davaforushan), the issuance of pharmacy activity licenses by the Ministry of Education, Endowment, and Artistic Industries (Vezerat Maaref,

Oughaf, and Sanaye Mostazrafeh) has increased (Nadim, and Peiro, 2021, pp. 255-260). As indicated in Table 1, several pharmacies were granted licenses to operate this year (Manuscript No. 293/54094, 1938).

During the early years of the first Pahlavi period, the first pharmacy was established in Neyriz city and Bavanat, following requests from both Neyriz and Bavanat communities to set up pharmacies in these areas of Fars province. In 1306 SH (1927 AD), eighteen pharmacists were working in the pharmacies of Shiraz which were Ali Asghar Bahmani, Mirza Mohammad Hossein Mottahed, Mirza Jalal Khan Behboudi, Mirza Mohammad Shafi Vesal, Sultan Habib Ullah Khan Salmanpour, Mirza Alikhan, Mirza Azizullah Khan Arastou, and Mirza Ismail Khan Shafa (Ettelahat Newspaper, 1936, p. 4). Moreover, according to the historical documents, during the following years (till 1311 SH/1932 AD), other pharmacies were established in Shiraz, which included Roshan Pharmacy, Ehya Pharmacy, *Dar al-Shafa* Pharmacy, and Sepehari Pharmacy (Manuscript No. 297/21335, 1922). In terms of geographic location, these pharmacies were located in different areas of Shiraz, such as Zand Street, Vakil Bazaar, Shahpour Square, Agha Bazaar (Figure 3), Sardozak, Haji Bazaar, Masjideno intersection, Fath Mosque, and Dehnadi Street (Manuscript No. 293/6814, 1927). During the following years, the establishment of the pharmacy continued, so that a pharmacy was established in the city of Kazeroon and Jahrom in 1319 SH (1940 AD) (Figure 4) (Manuscript No. 297/36130, 1923; Manuscript No. 298/100417, 1940).

Watching and guarding pharmacies was one of the essential things executed to care for people's health and well-being. In 1304 SH (1925 AD), the "Regulation of Night Guards of Pharmacies (Nezamnamehe Keshike Shabaneh Davakhaneha)" was approved by the Council of Ministers according to the proposal of the Ministry of Interior and this act was implemented in Shiraz. According to this act, a rotation system was established for pharmacies in large cities with a population exceeding 60,000. This system mandated that four to five pharmacies should be on duty each night from 8:00 PM to 8:00 AM (Roostaei, 2003, pp. 3-557).

At the end of the first Pahlavi period and the beginning of World War II, a meeting was held in Shiraz Municipality with officials and pharmacists, and a night watch was arranged for pharmacists in Shiraz. (Figure 5) The chief of health of the seventh province announced to the military governor of the seventh province that the pharmacies on duty do not need a license, and it should only be announced that they should not leave the pharmacy during the nights of watch duty. The names of guarding pharmacies were as follows: Javid, Razi, Rahmat, Hayat, Saadi, Khursheed, Vedad, Bahar, General, Behboudi, Shafa, Roshan, Fatemi, and Farhoudi (Manuscript No. 1240, 1932).

3- The Arrival of the Modern Pharmaceutical System in the Fars Province

The introduction of modern pharmacy education at *Dar al-fonun* laid the groundwork for the integration of contemporary pharmaceutical knowledge and technology in Iran (Farsam, 2015, pp. 31-41; Azizi, 2015, pp. 333-335). However, the widespread dissemination and institutionalization of this knowledge in various regions of the country, including Fars Province, required additional factors. The introduction of modern pharmacy to Fars Province can be directly linked to the activities of Protestant missionaries, particularly the establishment of the Morsalin Hospital in 1279 SH (1900 AD). The Church Missionary Society (C.M.S), with the aim of expanding its cultural and religious



influence in Iran, established educational and medical centers such as Mersolin Hospital (Carr, 1928, pp. 21-31; Richter, 1910, pp. 279-336; Heidari, 2018, pp. 17-30).



Figure 4. Photo of the seals of Shiraz pharmacies in 1311 SH (1932 AD) (the first row from right to left: the seal of Shafa pharmacy, the seal of Roshan pharmacy; the second row from right to left: the seal of Ehya pharmacy, the seal of Behboudi pharmacy, the seal of Sepehri pharmacy; the third row from right to left: the seal of Dar al-Shafa Pharmacy, and the seal of Nusrat Pharmacy (Manuscript No. 297/36129, 1932).

In 1301 SH (1922 AD), the Telegraphkhane office requested C.M.S to send a doctor to Shiraz to take care of the health of its employees. Therefore, in this year (1301 SH; 1922 AD), Dr. Carr, accompanying his wife, a nurse named Alice Vernider, Dr. Emeline Stewart, and a religious missionary, departed to Shiraz to start practicing medicine at Bagh-e Telegraphkhane (Telegraph office garden) clinic. In addition to the clinic, a pharmacy was established with the assistance of Mary Bird, offering medical and pharmaceutical services to both Muslim Iranians and Christians (Heidari, 2018, pp. 17-30). Mohammad Hossein Namazi provided financial support to Mary Rebecca Stewart Bird in establishing a pharmacy in 1302 SH (1923 AD), contributing to the expansion of healthcare services in the region (Manuscript No. 98/293/972, 1933; Shiraz-e Emrouz Newspaper, 1952, pp. 161-162).



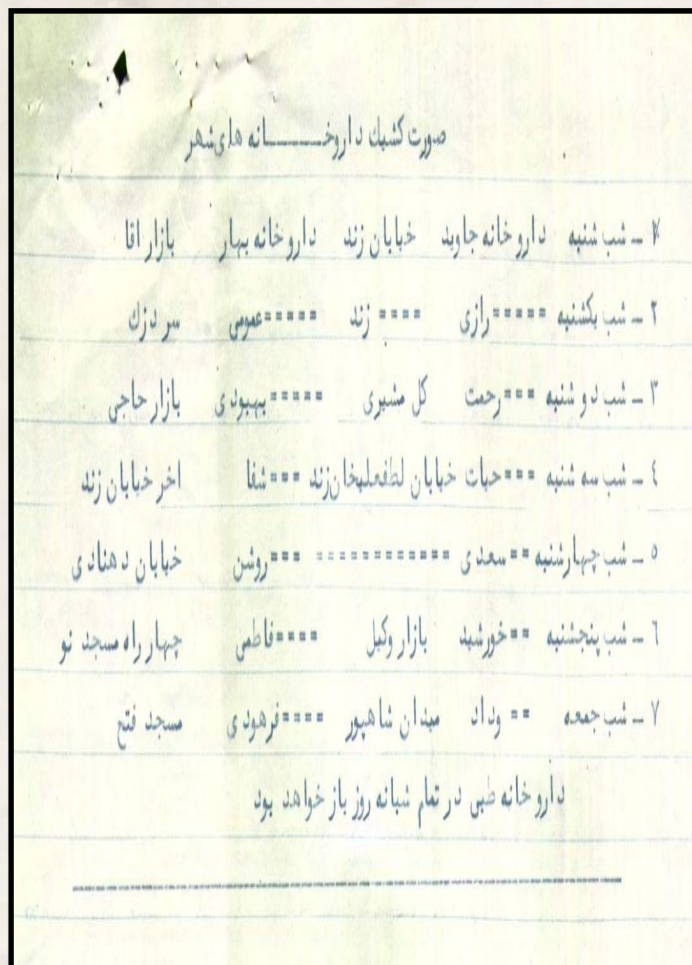


Figure 5. The photo depicting the guarding pharmacies of Shiraz in 1320 SH (1941 AD) (Manuscript No. 1240, 1932)

Numerous internal and external factors played a role in this process. These include British colonial policies in the region, Shiraz's unique position as a significant commercial and cultural center in Iran, the growing demand for modern healthcare services, and the financial support provided by the Church Missionary Society. The establishment of Morsalin Hospital served as a pivotal catalyst for the transfer of advanced pharmaceutical knowledge and technology to Fars Province. The presence of foreign physicians and pharmacists within this institution facilitated the exchange of expertise and the training of local personnel. Moreover, the establishment of an on-site pharmacy and the importation of pharmaceuticals from England enhanced the accessibility of novel medications for the local population (Figure 6) (Van Gorder, 1992, pp. 1-352).

4- Rules and Regulations for the Modern Pharmaceutical System

In the early Pahlavi era, the Iranian government enacted new pharmaceutical regulations to improve healthcare standards and ensure drug quality. The First World War and subsequent drug shortages highlighted the pressing need for oversight of drug distribution and quality. Moreover, the growing influence of Western medicine and urbanization necessitated more robust regulatory systems. The pharmaceutical regulation of 1298 was



the first important step in this direction (Manzooroladjad, and Saghafi, 2012, pp. 428-436; Roostaei, 2003, pp. 3-557).

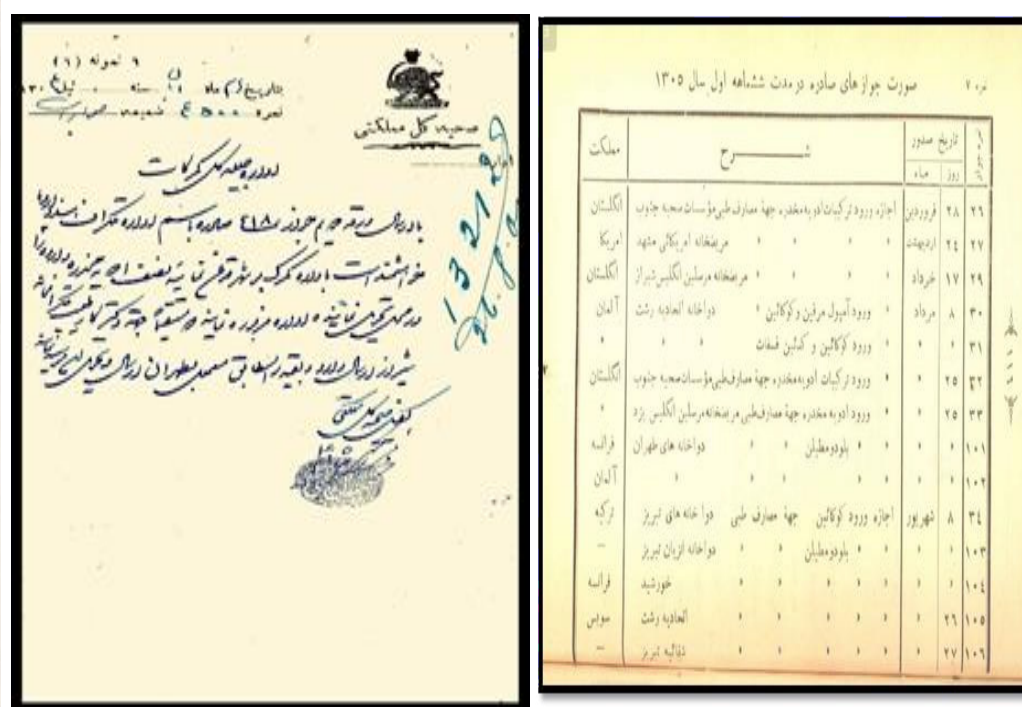


Figure 6. Right photo depicting a copy of the letter of the guarantor of Iran's National Health Service (during the first Pahlavi period) to the Iranian General Administration of Customs located in Bushehr province regarding the transport of medicines to Dr. Carr, the physician of the Shiraz telegraphkhaneh clinic in 1304 SH (1925 AD) (Manuscript No. 293/45525, 1924). The left photo demonstrates an issued license form for medicines to be transported from England to the Morsalin Hospital in Shiraz (Report of the General Directorate of Health to the government in 1305 SH/1925 AD) (Bahrami, 1926, p. 8).

This regulation aimed to standardize the pharmacy profession and ensure drug quality by requiring pharmacists to obtain licenses and pass specialized examinations. Government support was the primary driving force behind the enactment of pharmacy-related laws and regulations. The Ministry of Education was responsible for issuing licenses to operate pharmacies. Additionally, judicial oversight of law enforcement strengthened the legal standing of these regulations (Roostaei, 2003, pp. 3-557; Yaghini, 2016, pp. 479-523).

The Ministry of Education implemented a regulation mandating pharmacy owners to hold either a pharmacy certificate or possess a minimum of five years of experience, successfully complete a pharmacy certification examination, and acquire a pharmacy license (Roostaei, 2003, pp. 3-557; Manzooroladjad, and Saghafi, 2012, pp. 428-436).

In 1304 SH (1925 AD), the Ministry of Interior emphasized the medical law requirement for individuals practicing medicine or pharmacy to hold a license issued by the Endowment and Education Department, highlighting the need for formal qualifications in



the field (Zarrabie, 2018, p. 158). In 1309 SH (1930 AD), the Education Commission of the National Council introduced a new law mandating pharmacists to complete pharmacy coursework in high schools. Experienced, unlicensed pharmacists with at least five years in the field were permitted to open a pharmacy. Still, they were required to pass an examination in Tehran, ensuring a baseline level of competency among pharmacy professionals (Manuscript No. 293/42958, 1936; Manuscript No. 98/293/972, 1933).

The passage of new regulations and the implementation of specialized examinations between 1925 and 1932 indicate a strong determination by the government to regulate the pharmacy profession. By imposing stricter licensing requirements than before, these regulations aimed to enhance the quality of pharmaceutical services and prevent unauthorized practice. Furthermore, the emphasis on academic education for pharmacists in higher education institutions marked a significant step toward professionalizing the field (Manuscript No. 297/36130, 1923; Manuscript No. 297/36128, 1925).

Based on this, the pharmacists of Fars had to participate in the pharmacy exams to obtain their work permits and a satisfactory score (Manuscript No. 297/36130, 1923). In 1304 SH (1925 AD), the list of accepted pharmacists was announced and sent for issuing their pharmacy licenses (Manuscript No. 297/36128, 1925). Due to pharmacists' frequent demands and requests to hold exams and obtain their passing marks, these exams were held continuously. Since 1311 SH (1932 AD), the process of holding tests regarding the issuance of pharmaceutical licenses has accelerated, and the request to participate in pharmaceutical tests from the pharmacists of Fars has gradually increased (Roostaei, 2003, pp. 3-557). Among others, we can mention the request to participate in the pharmacy exam and the granting of a pharmacy license to Mirza Inayatullah Khan Nikbin and Hidaytullah Roshanzadeh in the year 1311 SH (1932 AD) (Manuscript No. 297/31979, 1932).

Mirza Enayat Ullah Khan Nikbin, the manager of Hekmat Pharmacy in Shiraz, has more than seven years of experience in managing pharmacies. In order to verify the information related to their employment in the pharmaceuticals and drug sales field, they collected testimonies and inquiries from ten pharmaceutical manufacturers in Shiraz. These testimonies were recorded in writing by the questioned people and confirmed with their seal (Manuscript No. 297/032000, 1931).

5- Monitoring the Distribution and Sale of Medicines

During the first Pahlavi period, monitoring the distribution and sale of drugs in pharmacies and the performance of pharmacists was usually localized and centralized at the province level. Surveillance was on the agenda to protect public health and ensure the safe and effective use of drugs. At this time, the drug distribution and sales monitoring system was implemented to monitor the quality and composition of drugs, drug pricing, and pharmacies (Yaghini, 2016, pp. 479-523).

In order to prioritize consumer health and safety, measures were put in place. These measures included prohibiting the sale of prescription medications without a doctor's prescription and imposing penalties for distributing adulterated or counterfeit drugs. In 1304 SH (1925 AD), the Health Minister addressed a letter to the Ministry of Interior, conveying the Health Care Commission's decision that advertisements for commercial drugs in newspapers should carry a statement indicating the requirement of a doctor's prescription for purchase (Torabi Farsani, and Ebrahimi, 2015, pp. 79-96). It is stated in



the Code of Criminal Affairs published on 27 Shahrivar 1305 SH (1926 AD) that perfumers and druggists who keep rotten spices in their shops will be punished for disrupting cleanliness and public health. Also, all druggists, drug makers, and perfumers who violate health regulations were sentenced to one to two days of solitary confinement or to pay a fine of three Gheran to one Touman (Manuscript No. 98/293/3954, 1926). Examining the documents shows that pharmacists violated their duties in many cases. Some newspapers were dissatisfied and complained about Shiraz pharmacies' non-compliance with prices and requested that government officials deal with this issue. In 1315 SH (1936 AD), the head of the health department of Shiraz appointed Dr. Sohrab to the position of health inspector of the Fars region, and he was selected and sent to monitor the supply of medicines in different parts of Fars province. (Figure 7) (Manuscript No. 98/293/1537, 1938)

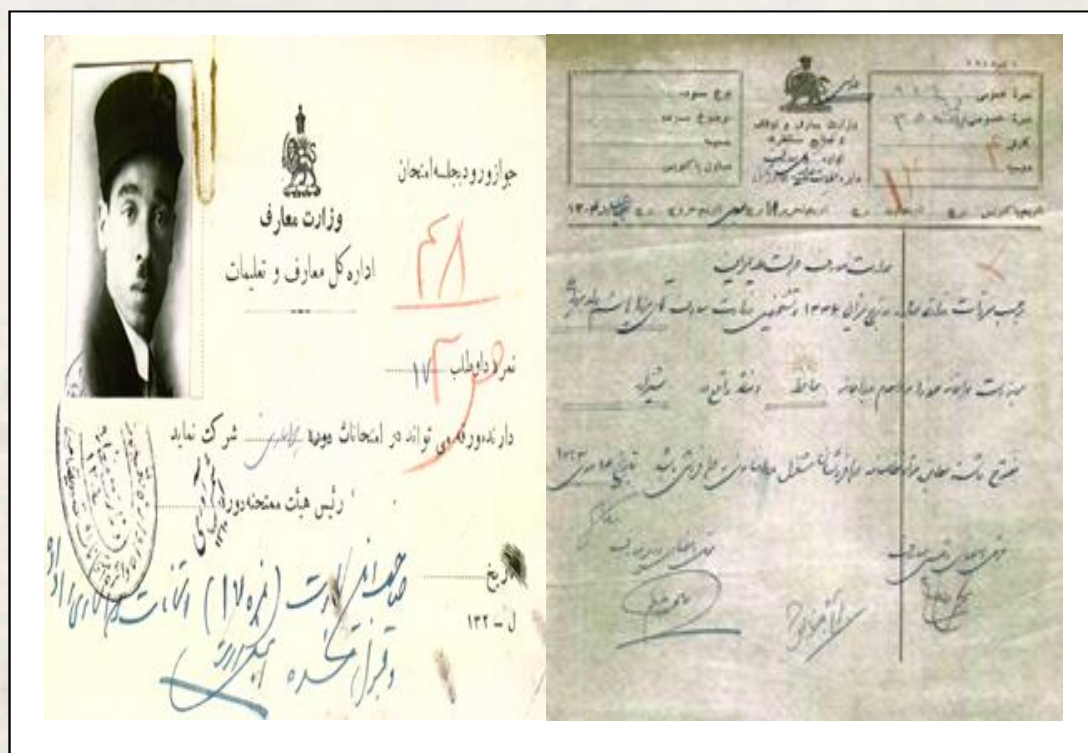


Figure 7. Right: the photo depicting the card of pharmacy entrance exam for Mirza Inayat Ullah Khan Nikbin, director of Hikmat Pharmacy in Shiraz in 1310 SH (1931 AD) (Manuscript No. 297/032000, 1931), and left: issuance of a license to open Hafez Pharmacy in Shiraz in 1304 SH (1925 AD) (Manuscript No. 297/36094, 1925).

6- Drawbacks and Problems in the Development of Modern Pharmaceuticals in Fars

The development of the modern pharmaceutical system in Iran has faced various obstacles and challenges. One of the basic and important issues was the lack of government financial resources for producing and distributing medicines. Considering the government's policy-making and prioritizing the issue of medicine as an important part of providing public health during the years 1304-1320 SH (1925-1941 AD), the allocation of resources was a challenging issue as it caused a lack of financial credits in the field of pharmaceuticals. During the first Pahlavi period in Fars province, the shortage of financial resources had far-reaching consequences. The limited government funds adversely



impacted the growth of the local pharmaceutical industry, reduced research and development initiatives, and increased reliance on imported drugs. This financial constraint led to an uneven distribution of medicines, restricting access to healthcare services and essential medications in rural areas. Additionally, the financial limitations contributed to increased healthcare costs for the community, particularly affecting low-income individuals (Manuscript No. 293/012299, 1934; Hamed and Alizadebirjandi, 2017, pp. 69-88). For instance, in 1317 SH (1938 AD), due to the high price of medicines and the low budget and credits of Fasa Municipality, it was difficult to buy the necessary medicines from Sepeh Pharmaceutical Company. According to the Fasa Governor's report, the amount of the municipal health budget for the purchase of free medicines was only 600 Rials (Manuscript No. 350/6778, 1938).

Lack of medicine was one of the important causes of death and one of the challenges of pharmaceuticals in the first Pahlavi period. Numerous reports from different parts of Fars province confirm this point. (Figure 8) In 1305 SH (1926 AD), the Fars Health Department reported that a large number of children in Kazeroon lost their lives due to the lack of smallpox vaccine (Manuscript No. 98/293/15844, 1926-1927).

In 1316 SH (1937 AD), Fasa Municipality urged the expeditious delivery of essential medicines in a letter concerning the municipality's medicinal supply requirements (Manuscript No. 293/12346, 1937). This issue persisted towards the end of the first Pahlavi period. In 1318 SH (1939 AD), several cities in Fars province, such as Kazeroon, continued to face a shortage of medicines and inoculation equipment necessary for disease prevention and control due to inadequate funding and insufficient supplies from the General Health Administration (Manuscript No. 310/19136, 1939).

Despite importing necessary medications from countries like England and Germany, trade monopolies posed a significant challenge in accessing vital drugs during the first Pahlavi period. Even though these medications were initially offered to patients at no cost, obtaining import licenses for them was often a lengthy and complex process (Richards, 1933, pp. 1-94). In 1315 SH (1936 AD), for example, Sepeh Pharmaceutical Institute faced difficulties supplying specific drugs requested by the Shiraz Municipality's Health Department, leading to complaints. The Institute's director attributed these delays to a shortage in their inventory, necessitating procurement from external sources (Manuscript No. 310/13949, 1936). At that time, Iran relied heavily on importing medicine from Western countries. This not only increased the cost of medicines significantly but also made it difficult for many people, especially in rural areas, to access medicine (Ahmadi, Aghamiri, and Sadeghi, 2022, pp. 1-18; Javanmardi, 2021, pp. 157-182).

Another significant challenge in the development and modernization of pharmaceuticals in Fars province during the first Pahlavi period was the resistance from traditional communities. This opposition targeted new medicines and pharmaceutical education and extended to broader changes within the healthcare system. Cultural or religious beliefs led some community members to reject regulations or changes related to medication use. In addition, the skepticism of Shiraz residents towards new physicians and pharmacists, especially those affiliated with institutions like the C.M.S, further impeded the delivery of healthcare services (Heidari, 2018, pp. 17-30).

Another problem was the lack of proper supervision and inspection of pharmaceutical institutions and pharmacies, which, in some cases, led to serious problems in the healthcare field. For example, in 1312 SH (1933 AD), Kazeroon experienced a smallpox out-



break despite previous vaccination efforts, primarily due to the use of outdated vaccines that failed to provide immunity against the disease. Similarly, in 1313 SH (1934 AD), a diphtheria outbreak in Jahrom resulted in numerous fatalities because of compromised anti-diphtheria vaccines (Manuscript No. 98/293/10951, 1934). Insufficient oversight by authorities and inadequate inspection standards left the pharmaceutical market vulnerable to fraudulent drug production, counterfeit or expired medications, and poor drug quality in various establishments. During the first Pahlavi era, despite the improvement of the monitoring and inspection system, there were still problems that needed to be corrected and improved (Heidari, and Zarrabie, 2022, pp. 46-54).

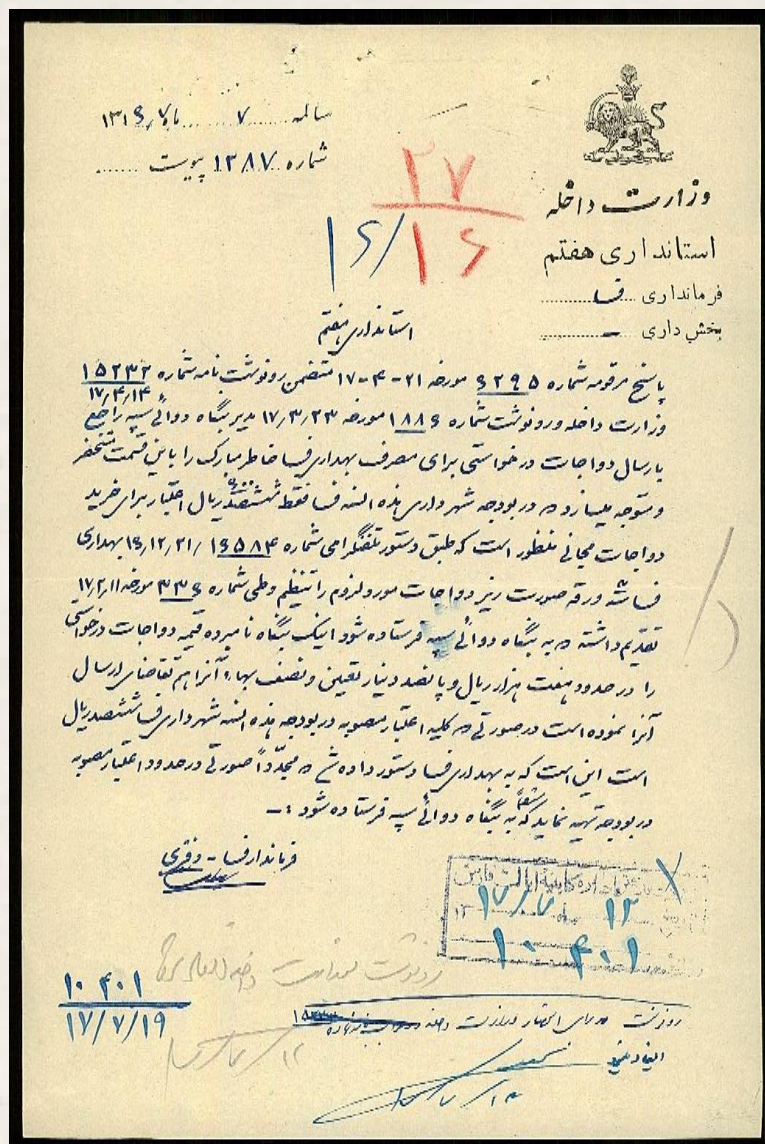


Figure 8. Letter from Fasa Governor to Governor of Fars Province regarding drug supply from Sepeh Pharmaceutical Company in 1317 SH (1938 AD) (Manuscript No. 350/6778, 1938).

During this period, one of the challenges was related to the activities of unlicensed perfumers and pharmacists. Even though unauthorized drug dealers in Fars were prevented

from continuing their work since 1311 SH (1932 AD), they continued to work in the subsequent years. For example, in 1307 SH (1928 AD), the principal of Zarghan school (located in Fars province) warned the Governor of Fars about the presence of unlicensed perfumers and the problems arising from their dispensing of various medicines (Manuscript No. 293/41283, 1928-1929).

Ignorance about medicine and its proper use posed challenges for pharmacists during this period. In 1317 SH (1938 AD), a pneumonia outbreak resulted in fatalities due to consuming boiled pepper and mountain burdock without professional medical advice. Additionally, the ingestion of mung bean and lentil juice by smallpox-infected children was linked to fatal outcomes. Unauthorized administration of medications by local midwives further complicated matters, with some providing pregnant women with abortion-inducing drugs that could potentially lead to death. The General Department of Health of Fars prohibited the use of any medicine for abortion without a doctor's permission, leading to criminal prosecution (Ettelihat Newspaper, 1936, p. 4).

Opium consumption was one of the main challenges in Fars province (Fasihi, and Farzi, 2015, pp. 137-163), which indicates an important social and health problem in the period under review (Manuscript No. 240/35205, 1941). About 26% of the country's opium was consumed in Fars province, so according to statistics, its consumption in 1319 SH (1940 AD) in Fars province was around 19,011 kilograms (Manuscript No. 240/35205, 1941). According to the historical documents, the poppy plant was cultivated and sold by farmers in this province (Manuscript No. 293/70096, 1935). There was a branch selling opium in Shiraz, and the agents of the State Monopoly Institute of Opium were monitoring and visiting the places of drug preparation and distribution (Manuscript No. 293/13001, 1932). Although regulations stipulated that the import and sale of narcotic drugs, including opium, were exclusive rights of the government and could only be sold by authorized pharmacists, opium smuggling remained a pervasive issue during this period (Manuscript No. 293/39376, 1931).

Various measures were taken to fight opium. In 1308 SH (1929 AD), the Fars Governorate announced the banning of smoking opium in public places and dealing with violators (Manuscript No. 293/12067, 1929). In 1317 SH (1938 AD), the ban on opium cultivation was announced, and a number of people were arrested for the crime of opium smuggling in Fars province (Manuscript No. 350/146, 1938). Among the actions of the government in the field of health, we can mention the establishment of the registry of drug addicts and the establishment of opium consumption licenses, the establishment of centers for free treatment of drug addicts, the free distribution of anti-opium drugs, the dispatch of doctors and the sending of drugs to different regions to quit opium (Fasihi, and Farzi, 2015, pp: 137-163). The increase in the consumption of opium has forced the Pahlavi government to implement preventive policies. Still, these policies were not very successful because the Pahlavi government needed the income from the increase in opium cultivation and trade. The programs that it prepared to increase the sale of opium, in practice, neutralized the programs envisioned for diminishing the consumption of opium.

Conclusion

During the first Pahlavi period (1304-1320 SH; 1925-1941 AD), due to the changes in the social structure, the pharmaceutical system also underwent various changes in Fars province. In this period, the creation and development of health and treatment structures



and systems increased. With the increase in the establishment of hospitals, pharmacies, and medical centers, the medical system and drug distribution improved to some extent. Also, the establishment of mobile pharmacies with doctors to examine and treat patients in different parts of Fars province increased people's access to health services. The number of pharmacies gradually increased during this period, and their structure became more modern. Regulatory and control departments were increased to better control the production and supply of medicines. These departments were responsible for monitoring pharmaceutical standards, approving licenses, and controlling prices. In summary, several factors hindered the progress of the pharmaceutical system in Fars province during this period, namely, the lack of financial resources of the government to support the pharmaceutical system, the lack of medicines, the resistance of traditional communities, insufficient monitoring and inspection of pharmaceutical institutions and pharmacies, the activity of pharmacists without a license, increasing dependence of the country on the West in the field of industrial drugs and people's ignorance about medicine and how to use it. Examining these challenges offers a comprehensive understanding of the obstacles faced in developing an effective pharmaceutical system in Fars province during this period.

Authors' Contribution

The authors confirm their contribution to the paper as follows: Conceptualization, Supervision, Validation, Writing- Reviewing and Editing: Somaiyeh Marghoub Khajeh and Jamal Rezaei Orimi. Investigation, Resources, Writing- Reviewing and Editing: Roshanak Saghebi and Morteza Mojahedi. Methodology, Software, Formal analysis, Writing- Reviewing and Editing: Farzaneh Ghaffari and Somaiyeh Marghoub Khajeh. Investigation: Morteza Mojahedi and Somaiyeh Marghoub Khajeh and Jamal Rezaei Orimi. Conceptualization, Supervision, Writing- Original draft preparation: Somaiyeh Marghoub Khajeh and Farzaneh Ghaffari. All authors read and approved the final version of the work.

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Conflict of Interest

None.

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