


Original Research

Pharmacy services in Mongolia: Historical background and current situation

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Abstract

Over a long history, the pharmacy was developed in close connection with Traditional Mongolian Medicine (TMM) as one part of it. TMM was Mongolia's only available healthcare method before Western medicine was introduced in the 20th century. The pharmaceutical sector, founded in 1923, has played an essential role in the health system of Mongolia over the last hundred years. During the socialist time, the pharmaceutical sector was state-owned, and privatization started in 1990 when Mongolia transitioned from a centrally planned economy to a market economy. Mongolian current pharmaceutical sector is fully privatized except for public hospital pharmacies, and as of the end of 2021, 2822 pharmaceutical facilities were operating in Mongolia. Before the transition to the market economy, the functions of the pharmaceutical sector were mainly focused on the production, supply, compounding, and dispensing of drugs. Still, since 1990, the scope of pharmaceutical care services has changed. The pharmaceutical care service has been transferring from product-oriented to patient-centered care since the mid-1990s.

Keywords: pharmaceutical industry; pharmacy practice; pharmaceutical care; pharmaceutical service

INTRODUCTION

Mongolia, a land-locked country in Northern Asia between China and Russia, is divided into the capital city, Ulaanbaatar, and 21 aimags (provinces), divided into 330 soums (sub-provinces) in terms of the administrative unit.¹ The total population of Mongolia was 734 042 in 1935 and 3 409 909 in 2021, of which 69.4 percent lived in cities and the remaining 30.6 percent in rural areas.^{1,2} The population density in 2021 was 2.2 persons per square kilometer, with an increase of 1.5 persons compared to 1963. The average life expectancy of a Mongolian person was 65.5 in 1965, which added to 5.2 years in the last 50 years and reached 70.7 in 2021.³

Traditional Mongolian Medicine (TMM), with a history of more than 5000 years, is one of the most valuable heritages of Mongolian people.⁴ Although, over the centuries, Ayurveda, Chinese, and Tibetan medicines impacted the TMM, Mongolian medicine developed its tradition and concepts, and the TMM developed from Mongolian folk medicine was influenced by Mongolian nomadic and herding lifestyle, culture, and harsh

climate conditions.⁵⁻⁷ Tibetan treatment strongly influenced the Mongolian medical system when Lamaism became the leading religion in the 16th century.⁸ TMM was the only available healthcare method in Mongolia before Western medicine was introduced at the beginning of the 20th century. From 1921, a modern health system developed in Mongolia along with the pharmaceutical sector. The current healthcare system of Mongolia consists of state-owned, private, and mixed-owned health facilities in charge of public health, medical care service, pharmaceutical supply, health education, research, and training.⁹ The medical care service is delivered to the population by two levels, primary and referral levels, and is organized according to the administrative division. Primary-level care is provided through family and soum health centers; specialized and general hospitals, specialized centers, regional diagnostic and therapeutic centers, maternal hospitals, and clinics are responsible for referral-level care.¹⁰ In 2021, 4952 health facilities were operational in Mongolia, including 28 specialized hospitals and centers, five regional diagnostic and treatment centers, 26 general hospitals, nine public health centers, 321 soum health centers, 208 family health centers, and 1787 private hospitals and clinics.³

The pharmacy was not separately developed from TMM before the People's Revolution of 1921 and was a part of TMM. After the victory of the People's Revolution, modern pharmaceutical science began to develop in Mongolia with its characteristics. Mongolia's current pharmaceutical sector, fully privatized except for public hospital pharmacies, aims to continuously, equitably, and adequately supply individuals and health facilities with effective, safe, good quality, and affordable medicines and ensure their rational use.

There needs to be more information about Mongolia's pharmaceutical sector history internationally, and this article

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outlines the history and current situation of Mongolia's pharmaceutical sector and services.

HISTORICAL BACKGROUND

Mongolia's pharmaceutical sector and service history are divided into four periods (Figure 1).¹¹

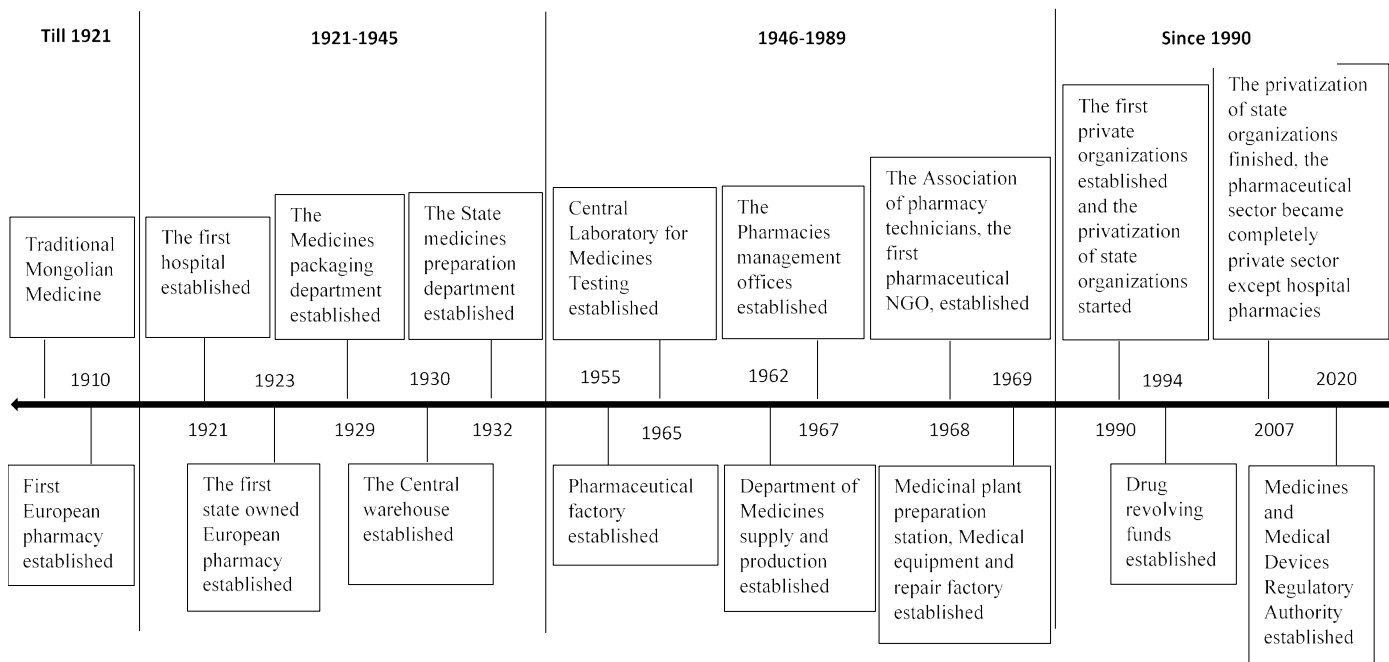


Figure 1. History of the pharmaceutical sector in Mongolia

diseases and preparing medicines were carried out by doctors who specialized in traditional medicine. The Mongolian people have practiced their medical methods and traditions since ancient times. They developed traditions and knowledge to use plants, animal raw materials, and minerals to treat diseases and prepared traditional medicines from natural materials for centuries. Natural raw materials were identified, collected from natural sources, washed, dried, soaked, processed, chopped, and powdered. Traditional medicines formulations were prepared by mixing, extracting, burning, and other methods in TMM for centuries.

Before the People's Revolution of 1921, TMM was the only available healthcare method, providing healthcare services to the population as "moving family hospitals." Paid care services were provided on the principle of "private hospitals and doctors." Fees were usually paid in kind at a specific rate under the name of "offerings," and free care services were provided to some poor by "doing charity".¹¹

Although Western medicine was not introduced in Mongolia before the revolution, there is evidence that some Russian doctors provided medical care to Mongolians and treated them with European medication. According to the literature, in 1811 and 1898, Russian doctors provided medical care to Mongolians

Before the development of Modern Medicine till 1921: A period in which the knowledge of non-healing art was created in the form of dom therapy and developed based on oriental traditional medicine

Over a long history, the pharmacy was developed in close connection with TMM as part of it. Diagnosing and treating

on their way to China. In 1861, the first Russian doctor who worked in Mongolia served Russian nobles and merchants and treated some Mongolian nobles. There is also evidence that some Mongolian doctors were apprenticed to Russian doctors to fight infectious diseases. Some Mongolian nobles sought to train young people to become doctors in Russia, and some brought small quantities of European medicines to Mongolia for use by their families and servants.^{11,12} In 1907, a Russian doctor performed medical examinations at the Russian consulate, and in 1909, the first medical point for obstetrics, gynecology, and surgical care was established at the Russian consulate. In 1913, the Russian Red Cross launched a 10-bed hospital, the first Western hospital in Khujirbulan. The first pharmacy opened in 1910; a Russian merchant specializing in medicine established the private pharmacy in 1913, then merchants from other countries like Russia, Italy, and Germany opened private pharmacies and medicines stores in the capital city.¹¹

Therefore, before modern health and pharmaceutical sciences were developed, although traditional medicine was the only medicine used by Mongolians, the understanding and use of European medicine were emerging in Mongolia. It became one of the foundations for developing those sciences in Mongolia after the revolution.

The early development stage of the pharmaceutical sector in 1921-1945: A period of the development of a state-owned drug supply system based on Western pharmaceutical science and medical organization after the People's Revolution

In April 1921, the Medical Department of the Ministry of Military was founded in Altanbulag, where a Provisional Government was established in March of the same year. On August 15, 1921, a Committee for the Treatment of the Sick People (Military Hospital Committee), the foundation of the present Central military hospital, was established under the Ministry of Military to provide free care service to soldiers and citizens and was changed to the Red Army Infirmary, a 36-bed hospital, in 1924. These became the basis for developing the modern health system in Mongolia. In July 1925, the Department of People's Health Protection was established under the Ministry of Internal Affairs; in October of the same year, a 15-bed civilian hospital was established.¹¹ Thus, the military and civilian medical care services were separated, and the hospitals began to work under the affiliation of two different ministries.

In the first years after the revolution, both modern medical and Tibetan hospitals were operating because it was not possible to directly abolish traditional medicine, which the people had used for centuries, and there was a lack of financial and personnel resources to build a large number of hospitals throughout the country to provide modern medical care service. The people's government has merged private Tibetan hospitals and opened Tibetan medical branches and pharmacies in the centers of large areas, rural areas, and some temples. The newly established modern medical hospitals provided traditional and contemporary health care services using European and traditional medicines, and Tibetan pharmacies operated in the hospitals.¹¹

In 1923, the first European pharmacy was established and started to operate with 14 staff under the Ministry of Military, which became a cornerstone of Mongolia's current pharmaceutical sector. Since there was no drug supply organization and due to the lack of national specialists to work in the hospital, the government agreed to buy drugs from a German firm in the capital and to invite specialists from Russia.¹³ There were no Mongolian pharmacists at that time, and specialists invited from the Soviet Union worked in the pharmacy. Initially, the pharmacy was mainly responsible for providing medicines to the military units, and in January 1926, the Government decided to separate the pharmacy service from the military. In April 1926, the affiliation of this pharmacy was transferred to the Ministry of Internal Affairs, to which the Department of People's Health Protection belonged until the Ministry of Health was established in 1930. The pharmacy was expanded as the State pharmacy responsible for providing services to citizens and importing, receiving, storing, and distributing medicines.¹⁴ Because there was only one pharmacy with a branch of pharmacy in the country, and there were no drug supply organizations, the pharmacy itself had to act as a supplier and distribute medicines to hospitals. Although both Tibetan and Western medication were available to citizens, the

number of people using Western medicines increased yearly. When the first pharmacy was established in 1923, it served 5-10 people a day, but in 1926, the State pharmacy served more than 200 people a day.¹⁵

In Mongolia, there was a great need to develop many new sectors, which required much funding and more professionals. Still, because of the limited capacity, it was only possible to establish pharmacies in some aimags. The location and organization of hospitals and pharmacies were related to administrative characteristics and population settlement of aimags.¹² The first rural branch pharmacy of the State pharmacy was opened in Altanbulag, a border village, in July 1928. It was essential in receiving, storing, and delivering the drugs ordered to the Soviet Union. In 1931, the first local pharmacies were established in Jargalant (Khovd province), Bayantumen (Dornod province), and Tsetserleg (Arkhangai province), connecting the western and eastern regions along the transverse direction of Mongolia.¹⁵ Due to the small number of pharmacies, measures were taken to prepare "home apteka" for citizens and a "medicines collection set" for soums to improve the supply and availability of medicines. As of 1931, only in Ulaanbaatar were 82 272 compounded medicines by prescription, 82 204 manufactured drugs, and 341 "home apteka" dispensed.¹⁴ Initially, there was no pharmacy in the hospitals, and since 1932, hospital pharmacies have been established in major hospitals and province centers.¹³

There was an urgent need to increase the availability of unit-dose packaged medicines. On the one hand, with the development of Western hospitals, the demand for drugs has grown. On the other hand, since there was no pharmacy, preparing medicines in the local area was impossible, so it was necessary to supply the local hospitals with the drugs in unit-dose packages. At that time, there was no hospital or pharmacy in soums; only nurse's units were working. Because of this need, the Medicines Packaging Department, the first foundation of Mongolian pharmaceutical manufacturers responsible for packaging liquid and powder medicines in unit doses and distributing them to local hospitals and pharmacies, was established in 1929.¹²

In 1934, the medicines packaging department was expanded into the Galenic Laboratory for medicines production. This institution compounded ointments, liquid, and powder medicines and prepared a collection set consisting of 20-40 packs of 4 types of ointments, 30-50 bottles of 6 kinds of liquid medications, 600-1000 packs of 9 types of powder medicines, 100 bandages of 4 types, syringes, cupping glass, and others. About 80 items were packed in 2 wooden boxes and delivered to 230 soums labelled "souv's apteka."^{13,15} At that time, there were not enough medical specialists in the local area; there were 12 pharmacies in 11 provinces, and no pharmacies were in soums. By 1939, the number of medical branches had reached 117, and 185 soums had an ambulance branch headed by a nurse.¹¹ Tablets were produced using a manual 3-pump machine; by 1941, 3.5 tons of pills, 3.4 tons of ointments, 4.1 tons of liquid medicines, and 771 medicines collection sets were produced.¹⁵



Initially, the pharmacy purchased medicines from German firms in the capital city and the Soviet Union, and the State Pharmacy was responsible for the drug supply until 1930. Due to the gradual increase in the use of European medicines and the need for a designated place for importing, storing, and distributing drugs, a "Central Warehouse," a national pharmaceutical supplier, was established in 1930.¹² Since pharmacies have been opened in rural areas and the number of pharmacies has increased throughout the country, there was a need for an organization responsible for the professional management of the pharmacies. In 1932, including the pharmacy branch in Altanbulag, five community pharmacies were operating in the country. In 1932, the State Medicines Preparation Department, primarily responsible for the drug supply, to which the State pharmacy, Central warehouse, Medicines packaging department, sanitary stores, sweet water factory, and rural pharmacies belonged, was established. This facility made foreign orders for medicines through the Soviet-Mongolian Joint Cooperative. Still, from 1935, it started to do it independently and was responsible for importing, checking quality, and distributing medicines and medical devices.¹⁵ Also, it was responsible for the human resources and management of the pharmaceutical sector for 30 years until the Department of Medicines Supply and Production was established in 1962.¹²

In July 1930, TMM was prohibited, the Tibetan hospital with pharmacy was pulled down, and the last Tibetan pharmacy was closed in 1937.¹³ As a consequence, only state-owned drug supply organizations could operate, and European medicines became dominant.

Pharmacy technician course was opened in 1926, and since then, pharmacy technicians have been trained in short-term courses. In June 1937, a permanent course was opened, and 3-year training of pharmacy technicians officially started in 1941.

This historical period was when modern health and pharmaceutical systems were introduced to Mongolia, and the foundations of drug supply and production were established.

An expansion of the pharmaceutical sector in 1946-1990: The pharmaceutical sector was developed based on the centrally planned economy of the socialist system

During this period, there was progress in the supply and availability of medicines, especially in rural areas, and Mongolia began to produce drugs domestically. In 1948, the pharmaceutical sector began to plan its functions with the 5-year plan for the social and economic development of Mongolia, and during this period, the pharmaceutical sector became stronger. In 1945-1947, the establishment of a pharmacy in soums was intensified to improve the supply of medicines in remote areas. As of 1945, soum's pharmacy accounted for 19.5% of all pharmacies; in 1947, it accounted for 35.7%. In 1945-1947, establishing 11 pharmacies in soums made it possible to create a regional system for organizing pharmacies.¹⁴

In 1955, a pharmaceutical factory was established based on the Galenic Laboratory for medicines production, and the

pharmaceutical factory with the capacity to produce tablets, injections, and galenic preparations was officially included in the list of state enterprises in 1959. In 1974, with the World Health Organization's help, a new infusion department was put into operation. When the pharmacy was first established, the number of manufactured products was small, and the number of compounding medicines was large. Due to the development of foreign relations and the establishment of the Mongolian pharmaceutical factory, the number of manufactured products has increased. As of 1969, the ratio of manufactured products to compounding medicines was 3:1; 49.3% of compounding medicines were a mixture, and 35% were powder medicines. The percentage of manufactured drugs in prescribed medications was 60 in 1972 and 72 in 1982. In 1989, the pharmaceutical factory produced 10-15 percent of the country's total medicines needs.¹²

As the population of the city grew, the number of pharmacies increased. By the end of 1950, there were more than 20 pharmacies in Ulaanbaatar, and the scope of work was expanding. On the other hand, the increase in infectious diseases has adversely affected the operations of hospitals and pharmacies. Due to the rise in infectious diseases, the pharmacies' workload increased, and the pharmacies had to work at night. All this created the need to change the operation and organization of the pharmacy, so at the end of the 1950s, the "Central Pharmacy for the Management of City Pharmacies" was established. In the mid-1960s, the health facilities, including city pharmacies, were organized into four districts according to the administrative schedule, with one pharmacy system per district. Pharmacies included in one system have unified administration and finance.¹³ In 1967, under the Department of Medicines Supply and Production, the Pharmacies Management Office of Ulaanbaatar city was established to centralize management, quality control, personnel, finance and economy, supply, distribution, and transportation of medicines. This organization operated with a medicines depot, a medicines testing cabinet, and a medicines information bureau under its affiliation.¹⁵

As of 1966, 10 hospitals in Ulaanbaatar had their pharmacies; in 1976, this number increased to almost 20. Hospital pharmacies prepared infusions for use in their hospitals, and the variety and quantity of infusions varied depending on the prevalence of the diseases. Since 1971, infusions have been prepared in the provincial general hospitals. In some provinces, an inter-soum pharmacy was established, which prepared infusions for the affiliated soum's pharmacy.¹² The hospital pharmacy belonged to its hospital and served only inpatients. Still, at the beginning of the 1980s, by the decision of the Ministry of Health Protection, the pharmacies of some hospitals in the capital began to serve both inpatients and outpatients, and the affiliation them was transferred to the Pharmacies Management Office of Ulaanbaatar city.

In the late 1930s, medicinal plants began to be used in European pharmacies and production.¹³ For 40 years, the organization that used the medicinal plant had been collecting and preparing it. As medicines are developed and produced



from native medicinal plants, it was necessary to solve the problem of preparing raw materials. In connection with the establishment of the pharmaceutical factory, the production of herbal medicines has increased dramatically because the government has followed the direction of development and mass production of new drugs using the abundant plant resources of the country. In 1969, the Medicinal Plant Preparation Station was established, which was responsible for determining the resources of medicinal plants, collecting and preparing medicinal raw materials according to appropriate requirements, checking their quality, and cultivating some medicinal plants for internal use and export. In 1970-1980, 300 tons of plants such as *Astragalus*, *Ephedra*, *Rhodiola*, and *Licorice* were exported to some socialist countries.¹⁵

Although TMM was prohibited in the 1930s, it was still popular and used secretly, especially in treating chronic diseases. In 1959, traditional medicine was again promoted, and research of traditionally used medicinal plants and TMM concepts started.¹⁶ But TMM was still limited, and the hospitals of traditional medicines were not allowed to be opened. As a result of the research, the indications of medicinal plants used in traditional medication were proved, and modern medicinal preparations were developed and introduced into practice.

Due to the growth of the Mongolian population, the increase of urban areas, hospitals, and pharmacies, the expansion of functions of drug supply organizations, and the rise in the number of employees, it was necessary to expand the organization and operation of professional pharmaceutical management. Therefore, the Department of Medicines Supply and Production was established in 1962 under the Ministry of Health Protection. The organization was affiliated with all pharmacies, pharmaceutical factories, and drug suppliers as an integrated system. The department was closed in 1964 to reduce the administrative staff and organized as the "Medicines Supply and Production Division" of the Ministry of Health Protection. However, because of the expansion of the number of affiliated organizations and the scope of their functions, the Department was reorganized in 1967 with responsibility for overall regulation and coordination of the pharmaceutical sector, including needs assessment, all foreign and domestic orders, planning the drug supply, and overseeing operations of all pharmaceutical facilities.¹⁴ In 1969, a medical equipment and repair factory was established in the capital, opening branches in the provinces. The glasses factory established in 1959 belonged to the Ministry of Health Protection in 1972. "Galenic workshops" were founded in provinces to produce medicines using native plants at the beginning of the 1980s.¹²

The Central Warehouse expanded into the "Medicines and Medical Devices Depot" at the end of the 1960s. Mongolia had an extremely low population density over a large territory, and its total population was 1 197.6 thousand in 1969. As of 1969, the average radius of pharmacy service was 39.8 km, but it varied according to the territorial characteristics of the provinces. It was 27.7 km in Selenge province in the north and 61.2 km in Umnugobi (South Gobi) province in the south.¹⁴ As of 1982, the average radius of pharmacy service was 3.1 km in urban areas and 31 km in rural areas.¹⁵

Due to the centrally planned principles of socialism, the management of medicines distribution was centralized in one place, in the capital city. Distribution of pharmaceutical goods from one point throughout the country was costly and took a lot of work and effort to organize. At that time, the infrastructure needed improvement, which made transportation difficult. The centralized management of the drug supply and distribution caused difficulty in the availability of medicines at more than 300 soums, which required creating a new structure. The "Pharmacies Management Offices" were established in Ulaanbaatar in 1967 and in aimags in 1972 to improve the availability of medicines and work management.¹³ Thus, with the establishment of Pharmacies Management Offices, the ordering, distribution, and transportation of medicines were coordinated by each province. Pharmaceutical goods were distributed from the capital city to the province center and from the province centers to soums.

To expand the functions of the pharmaceutical sector, it was imperative to improve the supply of professional personnel. Until the mid-1950s, there were no national pharmacists in Mongolia, only foreign pharmacists worked, and in 1954, the first national pharmacist graduated from the Soviet Union. In 1961, pharmacist training began at the Medical Institute (current Mongolian National University of Medical Sciences), the foundation of the current School of Pharmacy, MNUMS, and the first 33 pharmacists graduated in 1966. The increase in pharmaceutical professionals allowed for expanding the scope of operation of the pharmaceutical sector.¹⁷

"Central Laboratory for Medicines Testing," a state department for quality control, was established in 1965, and "Medicines Testing Cabinets" were found in all aimags in 1972. In 1968, the Association of Pharmacy Technicians, the first non-governmental organization of the pharmaceutical sector, was founded to introduce the findings of pharmaceutical science into practice and support pharmaceutical studies performed by pharmaceutical professionals.¹⁵

Just before a new stage of development, the pharmaceutical sector existed as a system with a regulatory agency, a single national entity for the importation, sale, and distribution of medicines with branches in all soums across the country, and one local manufacturer of medicines by the end of the 1980s.¹⁸ While Mongolia had 48 pharmacies in 1949 and 252 in 1969, the number of pharmacies increased to 462 in 1990, of which 358, or 77%, were rural pharmacies.^{12,14}

Thus, the supply and production of medicines expanded during this period, and significant progress was made in pharmaceutical education, research, and quality control. The structure of Mongolia's pharmaceutical sector as of 1989 is shown in Figure 2.

The development of the private sector since 1990: The period of globalization with the transition to a market economy and the establishment and development of private pharmaceutical facilities

When the socialist system collapsed in the 1990s, Mongolia transitioned from a centrally planned economy to a market



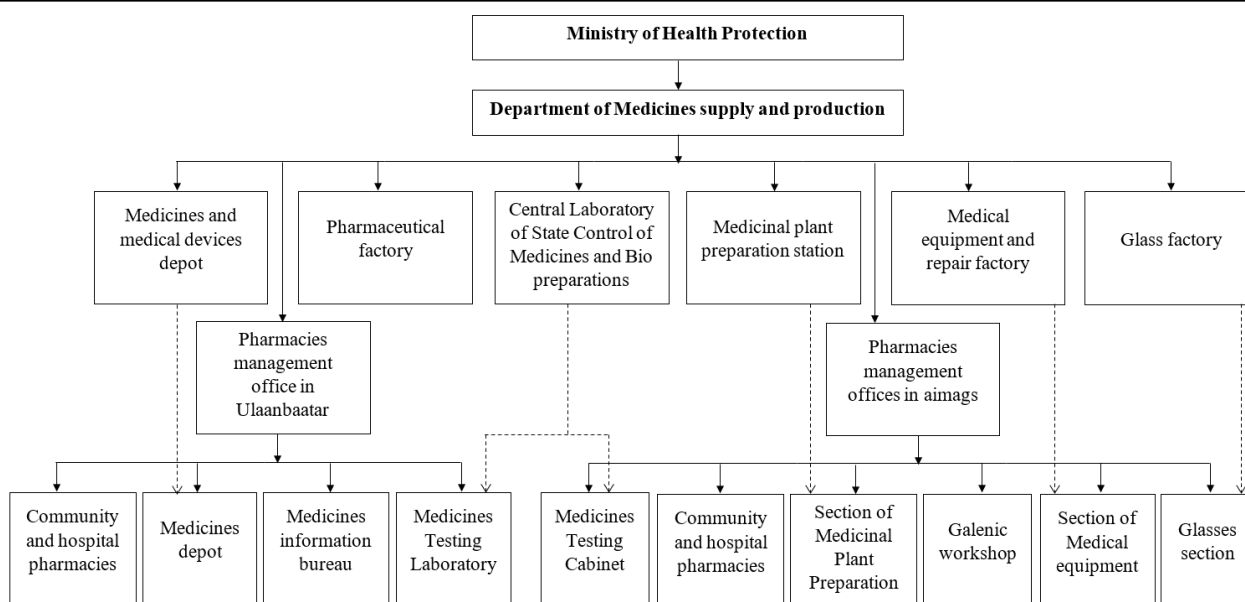


Figure 2. The pharmaceutical sector in Mongolia, 1989

economy. This social, political, and economic evolution has led to significant changes in the pharmaceutical sector. A deep financial crisis in Mongolia led to the challenge of financing the functions of hospitals and drug supply organizations; a considerable amount of debt and credit arose between these institutions. The type and quantity of medicines and medical devices to be purchased from socialist countries and their loans and aid have been drastically reduced. A medicines shortage caused by these reasons requires a change in the structure of the drug supply organizations and determining the direction of further functions to decide the drug supply problems. The government has decided to transfer some organizations to local governments and privatize some.

The state-owned facilities have been transferred to the private sector, and some were closed down. At the beginning of this transition, the state ownership of the pharmaceutical factory and supplier was kept. At the beginning of 1992, the Management office of Ulaanbaatar pharmacies was turned into the the capital's Medicines Supply Company. Pharmacy service centers were established in 6 districts and affiliated with this company. However, in 1994, these centers were organized as District Medicines Supply Company and transferred to the Mongol emimpex concern. In 1995-1997, the Management office of pharmacies in aimags closed down, and the central pharmacy of the provinces became a subsidiary of the Mongolemimpex concern under the name of the "Medicines Supply Company" in aimags. In 1997, the hospital pharmacies were transferred to the affiliation of the hospitals, and outpatient pharmaceutical care and service of the hospitals were stopped. The Capital and District Medicines Supply Companies operated until 1998. From 1994 to 1999, most pharmacies were auctioned off, and by 1999, there was no state-owned pharmacy in the capital.¹² While the operation of some pharmacies was kept, many were closed down, and banks, trade, and other facilities were established on the

premises of pharmacies. Pharmacists lost their jobs, and the pharmacy service began to be decreased. These factors were an impetus for the development of the private sector. In 1990, the first private manufacturer, a pharmaceutical and cosmetic manufacturer, "Monos", and pharmacies were established, and by 1992, about 30 private pharmacies and six manufacturers were operating in Mongolia.¹¹ Private pharmacies initially provided services in medicines sales, but in the mid-1990s, pharmacies began to have premises, the necessary furniture, and equipment.¹²

When the socialist regime fell, TMM was rehabilitated, and the manufacturing of traditional medicines has expanded since 1990. The first private traditional medicines manufacturer was established in 1990, and as of 1995, 6 traditional medicines manufacturers were operating. "Medicines and Medical Devices Depot," the significant state supplier, was restructured as "Mongol Emimpex cooperative" in 1990 and became a state-owned joint-stock company Mongol Emimpex concern in 1994. The pharmaceutical factory was privatized in 2004, and the privatization of "Mongol Emimpex concern" started in 2004 and finished in 2007, and this was the end of the pharmaceutical sector privatization. Privatization affected the distribution of medicines in rural areas, and the supply and availability of medicines were reduced at the soum level. The establishment of Drug revolving funds (DRF) in soums as a local property to address problems with availability, affordability, and access of medicines at that level with the help of international organizations was started in 1994. Over the years, different organizational models were implemented to solve problems such as financial sustainability and quality of services, but DRFs have been privatized in recent years.¹⁹

Since the close-down of the State Department of Pharmaceutical Supply and Production in 1992, the Ministry of Health and the Center for Health Development have been responsible for the management and organization of the pharmaceutical sector.

In December 2020, the Government’s implementing agency, the Medicines and Medical Devices Regulatory Authority, was established under the Ministry of Health.

CURRENT SITUATION

Pharmaceutical facilities and the economy

Mongolia’s current pharmaceutical sector, except for state hospital pharmacies, is entirely privatized and operates under the Ministry of Health and the Medicines and Medical Devices Regulatory Authority (Figure 3). In 2021, a total of 2822 pharmaceutical facilities were working, out of which 82.74 percent (2335) were pharmacies, 15.74 percent (444) were pharmaceutical suppliers, and 1.52 percent (43) were pharmaceutical manufacturers.²⁰ As of 2021, there were 6.85 pharmacies per 10 000 population, while there were 0.07 pharmacies in 1935 and 2.32 pharmacies in 1972 (Table 1).

The size of the pharmaceutical market is relatively small. Health sector expenditures are financed from the state budget, health insurance fund, and operating income. As of 2020, 77.2 percent of total health expenditure was financed from the state budget, 20.2 percent from the health insurance fund, and 2.6 percent from operating income. In 2020, the total health expenditure was MNT (Mongolian National Tugrug) 0.99 trillion (USD 346.3 million).⁹ Still, due to Covid-19, it was increased to MNT 1.69 trillion (USD 593.1 million) in 2021. In 2021, the government budget for medicines and medical devices was MNT 542.4 billion (USD 190.4 million), and medicines reimbursement from the Health Insurance Fund was MNT 60.4 billion (USD 21.2 million). The medicines expenditure percentage of health sector expenditure was increased by 35.8 compared to 2020 due to Covid-19 (Table 2).^{3,20,21}

In 2021, the country imported medicines worth approximately MNT 489.7 billion (USD 171.9 million) and medical devices of MNT 121.4 billion (USD 42.6 million), while medicines and medical devices worth MNT 105.9 billion (USD 37.2 million)

were manufactured by domestic producers. In 2021, domestic pharmaceutical manufacturers produced a total of 386 types of products, including 191 types of medicines (49%), 18 types of medical devices (5%), 22 types of biologically active products

Table 1. Pharmacy indicators from 1935 to 2020

Years	Number of pharmacies	Number of pharmacies per 10 000 population	Population per pharmacy, by thousands
1935	5	0.07	147.6
1940	17	0.23	44.0
1945	31	0.41	24.5
1961	142	1.56	6.4
1965	204	1.85	5.4
1969	252	2.5	4.4
1972	315	2.32	4.3
1982	413	2.33	4.3
1990	462	2.15	4.4
1998	720	3.08	3.3
2004	807	3.2	3.1
2015	1729	5.65	1.8
2020	2343	6.97	1.4

Table 2. Health expenditure from 2017 to 2021

Indicators	2017	2018	2019	2020	2021
The total expenditure on health percentage of gross domestic product	2.5	2.2	2.2	2.7	3.5
Medicines expenditure percentage of health sector expenditure	14.3	15.1	14.7	14.9	50.7
Medicines reimbursement percentage of Health Insurance Fund expenditure	12.9	12.0	9.32	9.6	4.0

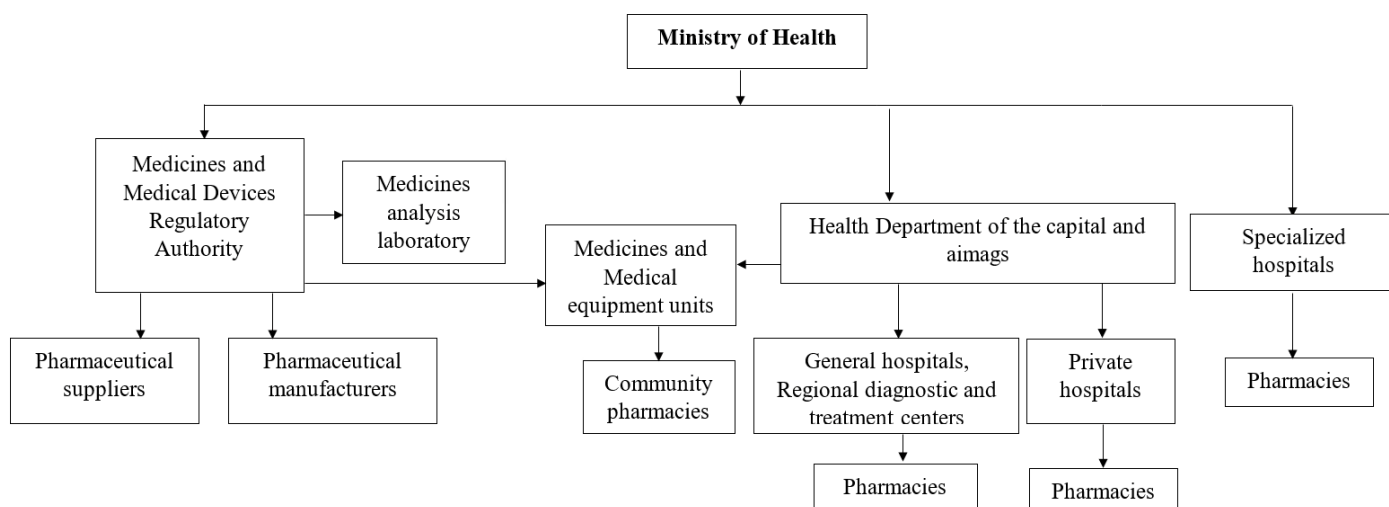


Figure 3. The pharmaceutical sector in Mongolia, 2023



(6%), 132 types of traditional medicines (34%), and 23 types of disinfectants (6%).

By the end of 2021, 4175 medicines were registered in Mongolia, of which 15% were domestic and 85% were imported. The most registered medicines in 2021 were from South Korea (24%), Turkey (17%), India (16%), Ukraine (7%), China (6%), Japan (6%), Russia (4%), Germany (3%), and Switzerland (2%).²⁰

Pharmacy service

Before the transition to the market economy, the functions of the pharmaceutical sector were mainly focused on the production, supply, compounding, and dispensing of medicines. Still, since 1990, the scope of pharmaceutical care services has changed. The number of compounding medicines in pharmacies has decreased dramatically, and the medications dispensed by pharmacies are mainly manufactured products. With the establishment of the IVCO intravenous fluid manufacturer in 2004, infusions were no longer prepared in hospital pharmacies.

The transition of pharmaceutical care from product-oriented to patient-centered care began in the mid-1990s. Still, progress has been slow, although certain efforts are being made to develop clinical pharmacy, patient-centered care, and team-based health care in hospitals. The Government of Mongolia supports the development of clinical pharmacy and the introduction of patient-centered care and multi-professional healthcare teams in hospitals to increase the results of medical care services and ensure the effectiveness and safety of pharmacotherapy and the action plan of the Government of Mongolia for 2020-2024 includes provisions on clinical pharmacy and pharmaceutical care services.²²

Two types of pharmacies, community pharmacies and hospital pharmacies, deliver pharmaceutical care services to the public. Community pharmacies are classified into the first and second categories according to their types of operation.²³ DRFs operate as community pharmacies to deliver services to rural populations at the soum level. 217 (9.3%) pharmacies were the first category, 1806 (77.34%) were the second category pharmacies, and 312 (13.36%) were DRFs. In the capital city, 1325 (56.75%) pharmacies operated, while 1010 (43.25%) pharmacies were in local areas.²⁰ By the standards applicable to the operation of the pharmacy of Mongolia, the pharmacy participates in information, training, advertising, and surveillance research in the fields of promoting the health of customers, protecting public health, and preventing infectious diseases, and organizes functions to improve the health education of citizens beyond dispensing.²³ Although the pharmacy is involved in the tasks specified in the standard, the primary role is limited to dispensing medicines. In recent

years, e-pharmacy and home delivery services have been introduced. The functions of pharmacies in urban areas are limited to dispensing medicines, while the operations of pharmacies operating in soums differ. Some DRFs have been working with health centers to handle drug issues, but in recent years, this practice has changed with the privatization of DRFs. Community pharmacies can expand their services with homecare and medicines review services, services to hospitals without a pharmacy, first aid and arranging follow-up care, and other advanced services according to international experiences and practices.²⁴ Services of medicine use review, medication therapy management, medication reconciliation, and collecting expired medicines are the most needed services to be implemented.²²

Hospital pharmacy services differ depending on the level of medical care and whether they operate in urban or rural areas. Although hospital pharmacies provide services such as in-service education, drug information, adverse drug reaction management, drug therapy monitoring, counselling, medical rounds participation, drug protocol management, drug use evaluation, and admission drug history, coverage of care and service is primarily affected by the lack of human resources in hospital pharmacies. According to the results of the 2022 survey, 0.143-2.04 clinical pharmacists were working per 50 beds in specialized hospitals, hospital pharmacies' functions are focused on dispensing medication in unit doses, and the time spent on clinical pharmaceutical care varies between hospitals.²⁵ In recent years, hospital pharmacies have been providing services to outpatients.

CONCLUSION

The pharmaceutical sector, established in 1923, has played an essential role in Mongolia's health system over the last hundred years. The ownership of the pharmaceutical sector was changed entirely from the state-owned sector, which was developed through the centrally planned economy during the socialist time till 1990, to the privately owned sector when Mongolia transitioned to the market economy. The establishment of private pharmaceutical facilities started in 1990, and the number of pharmaceutical facilities is increasing every year. Mongolia's current pharmaceutical sector is fully privatized except for public hospital pharmacies. It is one of the main sectors of the healthcare system to continuously, equitably, and adequately supply individuals and health facilities with effective, safe, good quality, and affordable medicines and to ensure the rational use of medicines. The pharmaceutical care service has been transferring from product-oriented to patient-centered care since the mid-1990s, and it should be expanded according to international experiences and practices.

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