

The Centennial of the establishment of the Kingdom of Jordan-One hundred years of development in the health sector in Jordan

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Abstract:

The Emirate of East Jordan was established in 1921 and included most of the lands east of the Jordan River, from which it took this name. Since then, the health sector in the Hashemite Kingdom of Jordan has witnessed a significant and tangible development, although it faced many challenges. The Kingdom paid attention to providing comprehensive health care to all individuals in society, as the health sector is considered one of the most vital sectors in the Kingdom. This article highlights different milestones the health sector passed through during the last 100 years including Population growth, historical events, the healthcare system components in Jordan which consists of several sectors that provide the service, namely the public sector, the private sector, international organizations, non-governmental organizations, and charities.

This article presents some health demographic indicators such as Infant Mortality Rate (defined as the number of infant deaths for every 1,000 live births) which in addition to giving us key information about maternal and infant health, it is an important marker of the overall health of a society. Another indicator is Maternal Mortality Rate (defined as the number of maternal deaths during a given time 100,000 live births during the same time). It depicts the risk of maternal death relative to the number of live births and essentially captures the risk of death in a single pregnancy or a single live birth.

Moreover, this article provides information on a range of health statistics such as hospital beds, available resources, the numbers of healthcare professionals per capita, the availability of healthcare resources (e.g., medical professionals, technologies, and other infrastructure) which may have an impact on proper functioning of a health system in different ways, including an easier access to care, affordability of services, and preparedness to crisis.

In addition, it explores the percentage of vaccination coverage which reduces major health risks to infants and children and discusses civil health insurance coverage. Moreover, it explores the epidemiological transition in Jordan, where the number of infectious disease cases decreases while the number of chronic disease cases increases. An overview of medical tourism including medical investments and therapeutic resorts where consumers elect to travel across international borders with the intention of receiving some form of medical treatment. Furthermore, it discusses main challenges facing the healthcare system which are viewed in different converging topics: demographics, human resources, behavioral factors, financial challenges and more.

Keywords: The centennial, Jordanian state, health sector, development, Jordan.

We are proud that we have reached the Centennial of the Kingdom establishment despite the difficulties and challenges. Yet a small country, Jordan was able to confront these wars, migrations, waves of disease, and epidemics, to move steadily into the digital age, modern medicine, politics, wise and contemporary, and specialized university education, preserving its heritage, embrace and historical depth. Here stands Petra, Jerash, Rabat Ammon, Rehab, Amman Citadel, and the Roman Amphitheater ... it stands tall, connecting the past and the legacy with modernity.

The Emirate of East Jordan was established in 1921 and included most of the lands east of the Jordan River, from which it took this name. Since then, the health sector in the Hashemite Kingdom of Jordan has witnessed significant and tangible development, although it faced some challenges. The Kingdom is interested in providing comprehensive health care to all individuals in society, as the health sector is considered one of the most vital sectors in the Kingdom. The successive governments have given their citizen's health a significant concern, which

was evident in weaving strings of supportive policies that guaranteed their citizens the right to health as a fundamental human right.

The Institute for Family Health is proud to be a part of the Jordanian health system, as it is over 36 years old. The Institute has provided a range of medical, psychological, social, rehabilitation, awareness, and training services across 24 sites in the Kingdom. In 2020, despite the Covid-19 pandemic (177,928) beneficiaries, received (227,267) services through their repeated visits, and approximately 2,241 trainees received various training in the fields of reproductive health, mental health, and rehabilitation.

The following is an overview of the development of the health sector in Jordan over the past 100 years:

Population growth in Jordan during a hundred years

Population numbers in Jordan have increased dramatically since 1921, the year the Kingdom was founded. The population of the Emirate of Transjordan at that time was about 230,000 people. It reached 300,000 people in 1940 and 586,200 people in 1952, and the number increased to more than 900 thousand people in 1961, to more than two million people in 1979, and more than 4 million people, as stated in the results of the 1994 census. Then the population of Jordan reached about 5.1 million, according to the 2004 General Population and Housing Census.

The population clock of the Department of Statistics in 2020 showed that the population of Jordan reached (10,820,644) people (47 times what it was when the Emirate was founded), and the Life Expectancy at Birth in Jordan is estimated at 75.75 years (74.25 for males and 77.35 for females). The percentage of the urban population is 91.4% of the total population in Jordan (2020), and the percentage of the population is as follows:

(1.0-14) years: 33.05% (males 1,837,696 / females 1,738,935)

(15-24) years old: 19.77% (males 1,126,567 / females 1,012,812)

(25-54) years: 38.39% (males 2,250,328 / females 1,903,996)

(55-64) years: 5.11% (male 290,633 / female 262,827)

65 years and over: 3.67% (males 194,464 / females 202,386)

The increase in population numbers is due to several reasons, including the high fertility rate, high migration rates, and asylum seekers to the Kingdom due to the ongoing tensions in neighboring countries.

Despite the doubling of the population by about 47 times during the hundred years, Jordan has managed to face this vast population inflation, keep pace with the global health development, and provide the best services to its citizens and residents, in terms of quantity, quality, and geographical distribution. The following is an overview of the health situation in Jordan and its accompanying developments and challenges.

Health sector development historical events

Among the most prominent historical milestones and achievements that we must stop at in Jordan's medical history over previous years are the following:

Before the establishment of the Ministry of Health

- 1921: The first health consultant was appointed, the late Mazhar Pasha Arslan, and the first health director was appointed, Dr. Reda Tawfiq and the first government hospital was established, and the number of beds was (20) beds.

- 1923: The Consultative Council issued the first law to regulate health affairs during the emirate's era under the title (Law Concerning Hospital Medicine).

- 1924: His Highness Prince Abdullah approved the list of conditions for establishing the Italian Salt Hospital, and the central laboratory was established for the first time in Jerusalem.

- 1925: The founder of the first health department in Jordan, Dr. Halim Abu Rahma, was appointed, and the first pharmacy was opened.

- 1926: The first comprehensive law to regulate health affairs in the emirate was issued, which was the Health Law of 1926, and this law continued to be enforced until 1971, and the Malaria Resistance Law was also issued. In the same year, the government gave the Dangerous Drugs Law.

- 1927: The first medical analysis laboratory was established in eastern Jordan in the city of Ma'an, and the first legislative law for the work of pharmacy and drug trade was issued, and it was called the "Law on Pharmacy and the trade of poisons and poisons."

- In 1928: The number of patients treated by the Health Department in Transjordan reached more than (70) thousand patients.

- 1929: Instructions were issued regarding the formation of medical committees for government employees.

- 1935: The government hospital was opened in Irbid, with a capacity of (12) beds, and the Italian hospital was opened in Karak, with a total of (36) beds.
- 1939: The Health Department was linked to the Ministry of Interior.
- 1940: The first laboratory was established in Amman.
- 1946: The number of hospitals in Amman was 7: The Communicable Diseases Hospital, the Surgical Hospital, the Ainy Hospital, the Central Prison Hospital, the Italian Hospital, Dr. Qassem Malhas Hospital, and Dr. Boutros Abu Saba Hospital.

After the establishment of the Ministry of Health

- 1950: The first Ministry of Health was established on 12/14/1950 and began its duties in 1951.
- 1953: The first nursing college and a central laboratory for medical examinations were established.
- 1954: The Medical Syndicate was established.
- 1962: The Princess Mona College of Nursing was established.
- 1963: The first health insurance system was implemented in the Kingdom for members of the armed forces.
- 1965: The Ministry implemented the first civil health insurance system in the Kingdom.
- 1966: Public Health Law No. 43 was issued.
- 1970: The Faculty of Medicine was established at the University of Jordan.
- 1971: Public Health Law No. 21 of 1971 was issued, replacing Public Health Law No. 43 of 1966.
- 1973: The Hussein Medical City was inaugurated, and the Allied Medical Professions Institute was opened in Amman.
- 1972: The first kidney transplant in Jordan was performed at Amman Military Hospital.
- 1977: The Higher Health Council Regulation No. 60 was issued.
- 1978: The Allied Medical Professions Institute was opened in Irbid.
- 1980: The Faculty of Pharmacy was opened at the University of Jordan.
- 1985: The first heart transplant and the first stem cell transplant surgeries.
- 1986: The Institute for Family Health was opened.
- 1987: The first IVF operation and the first bone marrow transplant.
- 1998: The first cochlear implant procedure.
- 2004: The first liver transplant in Jordan.
- 2008: Public Health Law No. 47 was issued, according to which the ministry regulates health matters in the Kingdom.
- 2016: The first open heart "laparoscopic" operation at Prince Hamzah Hospital.
- 2018: Launching of the National Mental Health Action Plan 2018-2021.
- In 2021: The Royal Medical Services performed 50 bone marrow transplants, with a success rate of 80%, comparable to global rates.
- In 2021:
 - Four Jordanian health institutions received certificates of appreciation from the International Hospital Federation, for its response and excellence in dealing with the emerging coronavirus, after a comprehensive evaluation by the International Review Committee, which consists of 16 global experts in the health care sector.
 - The number of all hospitals that obtained the accreditation certificate from the Health Care Accreditation Council reached 35 hospitals
 - The number of health centers at the Ministry of Health that obtained accreditation reached 85 centers.

The most important laws on health:

- 1972:
 - Pharmacists Syndicate Law and its amendments No. 51
 - Registered Nurses and Midwives Union Law No. 18
 - Law of the Jordanian Medical Association and its amendments No. 13
 - Dental Association Law and its amendments No. 17
- 1977: The Human Body Organ Usage Act, as amended.
- 1988: Law on Narcotic Drugs and Psychotropic Substances.
- 1999: Law of the High Health Council 1999.
- 2001: The Drug Studies Procedures Act.
- 2005: Jordanian Medical Council Law.
- 2006: The Jordanian Nursing Council Law.
- 2008:
 - Food and Drug General Corporation Law No. 41.

- Public Health Law and its amendments.
- 2013: The Drug and Pharmacy Law and its amendments No. 12 of 2013
- 2015:
 - Food Law No. 30 of 2015
 - Amending the Pharmacists Syndicate Law No. 23

Health sectors in Jordan

The health care system in Jordan has evolved tremendously over the past two decades and has been classified as one of the best in the Middle East Region. Moreover, it is a mixture of various policy-formulation bodies (boards and institutions) and three major service delivery sectors: the public, private, and non-profit organizations.

The health system in Jordan consists of several sectors that provide the service, namely the public sector, the private sector, international organizations, non-governmental organizations, and charities. It also includes institutions and councils working to develop health policies such as the High Health Council, the Higher Population Council, the Medical Council, the Nursing Council, and the National Council for Family Affairs, the Food and Drug Administration and the Joint Procurement Department.

The public sector includes the Ministry of Health, the Royal Medical Services, University Hospitals (Jordan University Hospital and **King Abdullah University Hospital**), and the Diabetes, Genetics, and Endocrinology Center. The private sector includes private hospitals, diagnostic and treatment centers, and hundreds of private clinics. The international organizations, non-governmental organizations, and charities sector provides its services through the clinics of the United Nations Relief and Works Agency for Palestine Refugees.

The United Nations High Commissioner for Refugees (UNRWA), and some charitable hospitals such as the King Hussein Cancer Center, the Islamic Hospital, the Institute for Family Health / King Hussein Foundation, Caritas, the Jordanian Family Planning Association, and charity clinics.

The following is a close look at the different health sectors in Jordan:

• The public health sector:

The public sector consists of the Ministry of Health, the Royal Medical Services, and two smaller programs based on the public university sector: The University of Jordan Hospital and **King Abdullah University Hospital**.

1) Ministry of Health

The Ministry of Health is the largest sector in size, operation, and use than other sectors. It is responsible for all matters related to health in the Kingdom through the following tasks and duties:

1. Preserving public health through prevention, treatment, and health control services.
2. Regulating and supervising health services provided by other public and private health sectors.
3. Providing health insurance within the available capabilities.
4. Establishing and monitoring the management of health education institutions and centers following the relevant provisions of the legislation enacted.

The Ministry of Health provides primary, secondary, and tertiary health care services. Primary health care is mainly delivered through a network of health centers (112 comprehensive health centers, 377 primary health centers, 187 sub-health centers, 506 mother and child centers, and 429 dental clinics). The country established a wide network of primary health centers, with 6.4 health centers /100,000 citizens representing a high-density healthcare system according to international standards. It has 13.9 beds for every ten thousand people.

The Ministry of Health is also responsible for managing the civil health insurance program that covers civil servants, individuals classified as living in extreme poverty, people with disabilities, children under the age of 6 years, and blood or organ donor. Recently, the Ministry of Health opened its services to all citizens, including refugees, as anyone can receive available health services through any center affiliated with the ministry with fees subsidized by the government.

2) Royal Medical Services (RMS)

The Royal Medical Services is responsible for providing health care services and comprehensive health insurance for the armed forces' employees, including military personnel, retired personnel, beneficiaries, employees of the Royal Court, employees of Royal Airlines, Mu'tah University, and others.

RMS is providing high-quality health care, in which advanced operations and specialized treatment are performed for Jordanian and non-Jordanian patients. In addition to RMS's politically important role by participating in providing health services in the conflict areas through medical teams and field hospitals, there are also nine military health centers and clinics through which RMS provides medical support to the forces in operations. It is also one of the leading health authorities in Jordan, which plays a distinguished role in the Jordan health system and in all aspects of medical and health care levels.

It provides the following:

- comprehensive and tertiary health care.
- Treatment of more than 1/3 of Jordan's population (more than 2 million military personnel and civilian).
- Provision of healthcare services to the officers and soldiers of the Jordan Army and different security forces.
- Tactical medical support for Jordanian Armed Forces (JAF) units and during allied military exercises.
- Treatment of complicated medical cases referred by the other health sectors in Jordan.
- Coordination with the Ministry of Health & Private Health Sector on issues of public health concern.

3) University hospitals

University hospitals include both the University of Jordan Hospital and King Abdullah University Hospital, and they provide health insurance and health services to university employees and their beneficiaries. Each of the two University Hospitals is considered a referral center from other health sectors and educational centers for medical students. University hospitals are high-tech, specialized medical centers in the public sector.

- **The private sector:**

The private sector provides primary, secondary, and tertiary health care services through a network of clinics, medical centers, and private hospitals. Most of the private hospitals and clinics are located in the capital and contributing to 69 hospitals and 5334 beds from total beds in Jordan.

- **Non-profit organizations:**

1. United Nations Relief and Works Agency for Palestine Refugees (UNRWA)

UNRWA is responsible for providing health services to 2.29 million Palestinian refugees. The Agency seeks to improve Palestinian refugees' health status in Jordan and achieve the highest attainable level of health, as indicated in the first human development goal, "Refugee health is protected." The Agency provides primary health care services through 25 primary health facilities that handle more than 2 million visits annually. The services provided by UNRWA include Medical care, dental treatment, psychological treatment, pre-pregnancy, prenatal and postpartum care, family planning, disease prevention, health protection and promotion, environmental health. The program also covers partial financial reimbursement for admissions to government hospitals, with a ceiling of 150 dinars for refugees within the safety net and pregnant women with high-risk pregnancies, approximately 100 refugees.

2. King Hussein Cancer Center (KHCC)

The King Hussein Cancer Center (KHCC) is a specialized and pioneering center for cancer treatment in Jordan and the region, with 350 beds, representing approximately 2.5% of the total number of beds in the Kingdom's hospitals. It became the first center outside the United States to have a defined disease dependency. The center has established a program that focuses on comprehensive cancer care stages, from prevention to early detection of cancer through diagnosis and treatment and ending with palliative care.

3. National Center for Diabetes, Endocrinology, and Genetics (NCDEG)

This center was established in 1996 as an independent non-profit organization and as one of the centers affiliated with the Supreme Council for Science and Technology to provide high-quality care and education and training in diabetes, endocrinology, and genetics.

4. The Institute for Family Health /King Hussein Foundation

The Institute for Family Health was established in 1986 and with its geographic diversity it has more than 24 sites disseminated widely through the Kingdom, with 310 employees, (80% of whom are women). IFH is one of the regional centers that provide comprehensive family health care and services, training for specialists and caregivers in family health care, child protection, and rehabilitation for survivors of torture and gender-based violence cases.

The Institute, with its qualified staff, provides integrated health care including primary health care, reproductive and sexual health, psychological and social counseling, diagnostic and rehabilitation services for people with disabilities. IFH is considered a pioneer in national initiatives to combat gender-based violence and run programs, raising awareness about human rights and capacity building for civil society institutions and other national and international institutions. The Institute for Family Health also conducted two studies during the pandemic published in two scientific journals, "The impact of the Covid-19 pandemic on psychological health in Jordan" and "Quality of life during COVID-19 community spread in Jordan". The results showed that there are adverse effects of the pandemic on Jordan's psychological health and quality of life.

5. Other charitable clinics: Non-profit organizations include about 44 charitable clinics distributed in all regions of the Kingdom.

The development of the medical services during 100 years

Jordan, with its qualified health staff and specialists, is a reputable medical regional reference. Despite the financial difficulties and scarcity of resources, when comparing health indicators in the Kingdom with neighboring countries, we find that they are superior in achievement and quality. We do not dispute the truth if we say Jordan has come close in some of its accomplishments and indicators to the developed countries.

The various Jordanian governments have given special attention to the health sector by increasing the Ministry of Health budgets every year, which indicates the government's interest in raising citizens' health level and generalizing its services to all segments of society. The portion of the national budget allocated to the health sector in 1939 and 1950 was (11 thousand pounds and 240,774 thousand pounds, respectively), in 2020, it reached (610,541,000) Jordanian dinars.

If we compare the Ministry of health budget to the State's general budget during the years (1924-2019), we find that it was around 1.8% in 1924 compared to 7% in 2019. The kingdom of Jordan is one of the countries which are committed to support the healthcare system and implementing its related health policies and strategies where the health expenditure rate composes 9.3% of the Gross National Product (GNP). In 2019 the total expenditure on health care amounts to 2,566,425,650 dinars, of which about 594 million dinars are spent on medicines. The per capita spending on health care is 255 dinars.

The development of the health sector in Jordan over the past hundred years is evident in the number of hospitals, the number of beds in the health sectors, the numbers of primary and comprehensive health centers, government maternity and child centers, dental clinics, and pharmacies. The number of hospitals increased from 62 in 1992 to 118 hospitals in 2019 (of which 32 are government hospitals). The number of hospital beds increased from 20 beds at the beginning to 2,359 beds in 1992, then to 14,700 beds at the beginning of 2020. The distribution of hospitals and the number of beds in the Kingdom according to health sectors was as follows:

- The Ministry of Health: 32 hospitals with 5119 beds, (34.8%) of the total beds.
- The Royal Medical Services: 15 hospitals with 3091 beds, (21%) of the total beds.
- University hospitals (the University of Jordan and King Abdallah University Hospital): with 1156 beds, (7.9%) of the total beds.
- The private sector: 69 hospitals with 5,334 beds, (36.3%) of the total beds.

According to the Pharmacists Association, the number of pharmacies in Jordan increased from one pharmacy that was established in Amman in 1925 to about 3,500 pharmacies distributed throughout the Kingdom. On the other hand, the development was tangible in the qualification of health cadres and the workforce in the various health fields. It is noticeable that there has been a significant development in the number of doctors during the past hundred years. While the number of practicing doctors reached (83) doctors in 1939, an average of one doctor per 3617 Citizens, it increased to 28,911 doctors at the beginning of 2020 with an average of 27.39 doctors per 10,000 of the population (one doctor for every 400 citizens). As for dentists, their number has become 7,642, the number of pharmacists is 12056, the number of nurses and registered nurses is 12056, the number of midwives is 3701, the number of nursing assistants is 1713, and the number of associate nurses is 4,783.

The crude birth rate per 1,000 citizens has decreased since 1938 from 42 per thousand to 22.79 per thousand in 2020. The fertility rate had also reduced from 7.93 in 1970 to 2.64 in 2020. One of the reasons for this may be the widespread use of family planning methods—modernization and raising community awareness of the importance of family planning and pregnancy spacing.

Currently, Jordan is considered one of the countries with the lowest infant and maternal mortality rates in the region. The public health indicators reflected the quality and efficiency of the health services provided, where Life Expectancy at Birth is 75.75 years, and the maternal mortality rate decreased from 41 per hundred thousand live births in 1996 to reach 29.8 per hundred thousand Live births in 2018. In 2020, the infant mortality rate in Jordan was at about 12.8 deaths per 1,000 live births.

As for vaccinations, Jordan achieved universal immunization of children in 1988 and made a significant progress in reducing major health risks to infants and children. Major development in the vaccination field took place over the last hundred years, which enabled more efficient control and prevention of diseases. The use of safe vaccines caused a sharp decline of many infectious diseases. The percentage of vaccination coverage in the first year of life in 2019 reached the following: measles 87%, DTP virus 97%, polio third dose 87%, polio fourth dose 87%, DPT 97%, hepatitis B 97%, viral Influenza "B" 97%, and tetanus for pregnant women 34%.

Currently available vaccines include anti-snake venom, anti-scorpion venom, tetanus globulin, rabies 300 units, rabies 750 units, hepatitis B serum 200. The available vaccines are as follows: tetanus, double adult dose (TD), triple dose DTP, child polio vaccine dose, Single dose of measles, hepatitis dose for adults, dose for tuberculosis, influenza vaccine for adults, meningitis dose, MMR dose, childhood hepatitis vaccine dose, pentavalent vaccine, quadruple vaccine, second child polio vaccine dose, killed/inactivated polio vaccine dose, swine flu vaccine dose,

vaccine dose Hemophilus influenza, typhoid vaccine dose, Hexa enhanced vaccine dose, pneumococcal vaccine dose, yellow fever dose, rabies vaccine dose and measles dose.

The 2018 estimates indicated that the prevalence of HIV/AIDS among adults was less than 0.1%, that the number of people living with HIV / AIDS was less than 500, and the number of deaths was less than 100. The following is a group of infectious diseases that had zero infections according to MOH 2019report: cholera, plague, yellow fever, typhus, child polio (since 1995), diphtheria, neonatal tetanus, recurrent fever, rabies, leprosy, Syphilis, gonorrhea, and anthrax.

All social and economic strategies from the early 1980s affirmed the right of everyone to health and health care, which led to a significant decline in death rates with the continued high rates of fertility and childbirth, in addition to the decrease in the rates of infectious diseases and the high rates of chronic diseases. Besides, forced migration from neighboring Arab countries had a significant impact on the disease and health indicators of Jordan's population. The available data on morbidity shows increased prevalence of cardiovascular diseases, diabetes, and respiratory diseases among Jordan people.

The health system in Jordan continues to face increasing demand associated with epidemiological transition towards non-communicable diseases. According to the Department of Statistics estimates, 28% of the population in Jordan over the age of 25 suffers from chronic diseases. Despite this, Jordan has taken confident and rapid steps in treating and preventing non-communicable/chronic conditions, reaching developed countries' levels due to the high qualified staff and specialists who have great expertise, and provided with good medical technological capabilities.

To contribute to reducing the spread of chronic diseases, the response of the National Systems (2019) on reducing chronic diseases included the promoting policies to reduce sodium consumption, ensure the availability of essential medicines to treat blood pressure, and ensure the availability of blood pressure measuring devices in primary health care institutions.

Noncommunicable/chronic diseases, including diabetes, high blood pressure, asthma, cardiovascular disease, and chronic obstructive pulmonary disease, are among the most common causes of death in the region and Jordan. It was estimated in 2016 that non-communicable conditions caused 78% of disease-related deaths and cost the country \$ 840 million. The risk factors for chronic diseases are still a health concern in Jordan due to their ever-increasing growth, such as smoking, lack of physical activity, weight gain/obesity, and unbalanced diet.

The Ministry pays excellent attention to fortifying food to help prevent the occurrence of malnourishment in the population. For example, fortifying salt with iodine in Jordan has improved in recent years, reaching 99.9%.

Whether used for drinking, food preparation, or recreational purposes, access to an improved water source is essential to public health. Improving water supply and sanitation and better management of water resources can enhance the health of the community. The percentage of access to improved water in Jordan is 98.9% (100% in cities and 97.7% in the countryside), according to 2017 reports. The percentage of access to sanitation is also 98.5% (98.6% of the population in urban areas and 96.6% of the rural areas).

The government also pays attention to expanding the umbrella of civil health insurance to make it available to all citizens, including pregnant women, children under the age of six, the elderly, residents of remote areas, the less fortunate, as the percentage of the population who were insured has reached 55% according to statistics. For 2015, the percentage of the insured people reached 68% of Jordanian citizens and 55% of the Kingdom's population. The health insurance is divided into civil health insurance, which covers about 44.5% of the insured's total percentage, and military health insurance, which covers about 38% of the insured. In comparison, other insurances amounted to about 17.5% of the total percentage of the insured.

In medical tourism: the development in the health sector in the Kingdom has led to a noticeable increase in the number of tourists, as Jordan is considered the gateway to the Middle East in medical tourism, which contributed to placing Jordan in an advanced position. It is also one of the most attractive countries globally for medical investments and hospital resorts with several advantages. These include spa resorts, and skincare products rich in natural minerals.

Jordan also has the most significant natural health resort globally, the Dead Sea, which is the lowest point with a slope of 427 meters below sea level. The Dead Sea products extracted from seawater and rich in natural mineral salts which are effective in treating many skin diseases. Jordan is also famous for its natural healing resorts, including mineral water and hot waterfalls extending from the Jordanian region in the north to the city of Aqaba on the shores of the Red Sea in the south.

A large number of patients coming to Jordanian hospitals seeking treatment and advanced medical services, is reaching more than 250,000 patients annually, with revenues close to 1.5 billion dollars. Jordan nature has brought all the ingredients for natural treatment from hot water rich in salts, to volcanic mud, to mild weather and wonderful nature. However, the current reality indicates a decrease in the number of patients coming from these countries due to the Covid pandemic, which affected patients' travel and movement to Jordan.

The Kingdom has also recently witnessed a growing interest in digital transformation based on the noble royal vision, as an inevitable and necessary result of keeping pace with developments in the field of information and communication technology because of its significant and essential role in raising the efficiency and effectiveness of services and its impact on improving citizens' lives. Several vital successfully implemented electronic medical records (EMRs) as both a technical innovation and a major transformative change have been launched in the health sector, such as the Hakeem initiative to computerize medical and financial files for patients and the paperless government initiative. Despite these initiative's availability, its implementation in the health sector faces many obstacles that limit the speed of their completion as required.

Challenges

Despite the development of the health system, Jordan still faces some challenges, including:

- **The major demographic challenges affecting the health system in Jordan:**
 - High population growth rate resulting from high fertility rates and decreasing total fertility rate.
 - High rates of forced migration, especially the emigration of Syrian brothers.
 - There is still an increase in the proportion of young people and a change in the population's age structure where the trend of the people of the elderly group is increasing.
 - The significant and unplanned population increase in urban areas, especially in Amman and other major cities.
- **The economic challenges affecting the health system in Jordan.**
 - Low GDP growth rate.
 - The high rate of total public debt
 - High budget deficit.
 - Elevated rates of poverty and unemployment.
 - The economic burden of the Syrian asylum and the weakness of international donors' fulfillment of their financial obligations
- **The challenges facing the governance of the health system in Jordan**
 - Weak cooperation and coordination between the different health sectors.
 - The presence of overlap and duplication in some health laws and policies.
 - Weak supervision over the private sector.
 - Weak monitoring, evaluation, and accountability systems for implementing national health strategies and plans.
 - Weak empowerment of citizens to gain support and participate in determining health needs and priorities,
- **The challenges facing health insurance.**
 - The lack of compulsory health insurance led to keeping a quarter of the population outside the umbrella of health insurance.
 - Lack of fairness in the financial contributions of insurance beneficiaries.
 - Lack of separation between service delivery and paid service at the Ministry of Health, Royal Medical Services, and University Hospitals.
 - The lack of accurate statistical references about insurance coverage in the Kingdom.
- **The challenges facing financing in the health sector:**
 - About 25% of the population is not covered by health insurance.
 - Weak application of strategies to contain costs.
 - The diversity of insurance agencies in the public sector and the duplication of government health insurance.
 - High health spending directly out of the pocket.
 - High spending on medication.
 - Uncontrolled and unplanned expansion of health services.
 - Weak investment in primary health care services
 - The continuing rise in the cost of health care
- **The challenges facing primary health care in Jordan:**

- Weak spending on primary health care
 - Although there are many strategies and plans for primary care programs, some are not activated or implemented, either fully or partially, such as combating non-communicable diseases, combating smoking, and mental health.
 - Shortage of health personnel working in the field of primary health care.
 - The modest or non-existent contribution of the rest of the health sector components with the Ministry of Health in providing health care services.
 - Weak health information systems and lack of connection with secondary and tertiary health care levels, and the need to develop and implement an effective transfer system between health centers and hospitals.
 - The steady population growth and the presence of many refugees on Jordanian land.
 - The epidemiological shift of the pattern of disease occurrence in Jordan towards non-communicable diseases with a high cost and a high burden of illness, because of the increase in life expectancy at birth in addition to the high prevalence of non-communicable diseases, most of which are related to unhealthy lifestyle patterns and behaviors such as smoking, obesity, lack of physical activity and poor nutrition.
 - Environmental risks result from climate change, the significant shortage of water supply for citizens, the failure to cover many regions of the Kingdom with sewage networks, ambient air pollution, and the low level of service for solid household waste management.
 - Citizens' confidence in the quality and efficiency of health services provided in health centers is weak.
 - The increasing rates of poverty and unemployment, which are considered one of the most significant health threats.
- **The challenges facing secondary and tertiary health care.**
 - The need for more continuous improvement in the quality of services provided and hospital accreditation.
 - The need for more specialized and experienced human cadres in some rare specialties.
 - The need to develop emergency services and motivating the staff preventing them from emigration.
- **The most challenges facing the human resources:**
 - Weak evidence-based decision-making and policymaking.
 - Lack of approved national job descriptions for most health professions.
 - The lack of a national system for licensing/renewing the licensing of health personnel.
 - The lack of an updated database of nursing and midwifery.
 - Weak cooperation and coordination between health care institutions.
 - Adopting the performance evaluation system followed by the Civil Service Bureau, which does not reflect the employee's actual performance.
 - Lack of awareness and skills on the higher management levels regarding the importance of linking strategic planning with human resource planning.
 - Difficulty in attracting and retaining qualified health personnel in the government sector.
 - Violence in the workplace.
 - The limited supply of some medical specialties in the labor market.
 - Poor distribution of human health resources among the various geographical regions according to gender, the mix of skills, professions, and levels of service provision.
 - Weakness of the link between the human resource planning system on one hand and the performance management systems, rewards, incentives, training, and development systems on the other hand.
 - Shortage of midwives.
 - High rates of job turnover.
 - The ineffectiveness of information systems related to human health resources, especially those associated with the private sector.
 - Lack of correlation between continuous professional development and other human resource policies.
 - Weak technical skills in training and development.
 - The lack of a national system for continuous professional development related to the system for renewing health personnel licenses.
 - Lack of necessary funding to develop human resources for health.
 - Weak capacity-building activities and continuing education initiatives.
 - Weak advanced healthcare skills such as neonatal resuscitation and comprehensive nursing care among health service providers.

- The educational programs do not meet national, regional, and international health needs and do not keep pace with technological progress.
 - Lack of quality and short duration of clinical training.
 - The scarce number of research and studies and lack of integration with clinical practices.
 - Lack of opportunities to join internship programs for some health professions.
 - The limited adoption and application of the concept of comprehensive health care.
- **The challenges resulting from behavioral practices:**
 - The double burden of malnutrition.
 - The epidemiological shift of the pattern of disease occurrence in Jordan towards non-communicable diseases with high cost.
- **The environmental challenges:**
 - Climate change and its impact on health, which is a global phenomenon.
 - The drying up of some springs and underground sources during the past years.
- **The challenges related to the epidemiological situation:**

The Covid-19 pandemic and the challenges arising from it:

 - Shortage of medical personnel due to infection.
 - Limited access to health services during the ban.
 - Challenges related to services for the elderly and people with disabilities.
 - Increased pressures and difficult living conditions, which affected social support mechanisms.
 - Increased women's vulnerability to violations of their rights and increased rate of domestic violence, negative gender-related impacts increase the threat to job security and increase the household burden.
 - The impact on individual income.
 - The negative impact on health-related quality of life: In a study conducted by the Institute for Family Health aimed at identifying the quality of life for residents in Jordan during the pandemic and its relationship to the variables of sex, age, academic level, and employment status, the results indicated that the quality of life of all sample members was moderately negatively affected during the COVID-19 pandemic in all areas.

The future of the health sector in the next centenary

The Department of Statistics conducted a study of population projections for residents of Jordan 2015-2050 intending to study the effect of increasing the number of residents in the Kingdom on many development sectors in Jordan, including the health sector.

The study of population projections for residents in Jordan 2015-2050 showed that investing in the population opportunity, reducing fertility rates, and achieving a low scenario will have its effects on various developmental sectors as it will reduce the number of populations within the age of the study, and the number of people enrolled in the study.

The number of teachers required, the number of classrooms, laboratories, and other facilities required, thus reducing costs, and the occurrence of a large financial abundance that can be exploited and used to ensure the quality of education. It will also reduce fertility rates and reduce the number of doctors and nurses, hospital beds, and health centers. Other required health expenditures, thus reducing costs, can be exploited and improved the population's health care.

The study of the impact of population growth on some development sectors at the Kingdom level using the (RAPID) program implemented by the Higher Population Council in light of the population projections of residents in Jordan 2015-2050 showed the following effects on the health aspect:

- The data indicated that the number of health centers provided according to the high scenario would increase from 690 health centers in 2015 to 1,392 centers in 2050. in the case of the low scenario will increase from 690 health centers in 2015 to 1,112 centers in 2050.
- The data indicated that the number of doctors employed in all sectors according to the high scenario would increase from 19,145 doctors in 2015 to 38,600 doctors in 2050. As for the low scenario, the number of doctors required to be employed in all sectors will increase to 30,853 doctors in 2050.
- The data indicated that the number of nurses required to be employed in all health sectors according to the high scenario would increase from 30,333 male and female nurses in 2015 to 62,627 male and female

nurses in 2050. As for the low scenario, the number of nurses required to be employed in all sectors will increase to 50,057. And a nurse in 2050.

- The data indicated that the number of hospital beds required to be provided in all health sectors according to the high scenario would increase from 13,143 beds in 2015 to 26,499 beds in 2050. As for the low scenario, the number of hospital beds required to be provided in all health sectors will increase to 21,181 beds in a year. 2050.
- According to the high scenario, the data indicated that the financial cost of health care for Jordanians and residents in the Kingdom during the period 2015-2050 would amount to about 108.9 billion dinars. As for the low scenario, the expected financial cost will be about 98.3 billion dinars.

Jordan is witnessing during the reign of His Majesty King Abdullah the Second a comprehensive health renaissance during which he made remarkable achievements in various medical fields. Within these indicators and expectations, we must take into consideration the persistence, determination, and continuation of what has been built and what the health sector has accomplished during the hundred years of the state's life. We must start of comprehensive planning for the renaissance of this sector to achieve the vision of His Majesty King Abdullah bin Al-Hussein to accomplish the health well-being of citizens and residents on the Jordanian land.

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