



The Hashemite Kingdom of Jordan

National Human Resources for Health Observatory Annual Report

2018

Prepared by

Ms. Shruoq Jebreel

Head of Planning and Project Management Division

Reviewed by:

Dr. Mohammad Tarawneh

Secretary General of the High Health Council

Mr. Muien Abu-Shaer

Acting Director of Technical Affairs, Studies and Research / High Health Council



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His Majesty King Abdullah II Ibn Al-Hussein



His Royal Highness Crown Prince Al-Hussein Bin Abdullah II



“ We have invested profoundly in developing our greatest national fortune- our people. In this world of knowledge economy, human resources are the real asset for a sustainable economy, and according to our judgment these capacities constitute the capital of Jordan’s future.”

Quotes by His Majesty King Abdullah II Ibn Al-Hussein

Foreword

Jordan is regionally and internationally known for investing in its human capital. Making human resources development a top national priority has proven effective. In the health sector, Jordan attracts people from around the region seeking diagnosis and treatment. Jordan also has a good reputation for the quality of its hospitals and provision of health care services which has highly qualified health care professionals who can provide sophisticated medical and health care delivery services in most clinical disciplines. Jordan has also been recognized for its quality of pre-service education for health professions, and the production of a high number of medical and other health professionals.

Health workforce is now widely recognized as having a critically fundamental role for the functioning of health systems. Following from that, inception of robust human resource information systems has recently attracted a lot of regional and global concern. The concept of human resources for health (HRH) observatories has been put forward to improve policy and decision making in the health sector.

Investing in HRH is a strategic necessity in Jordan to achieve the Sustainable Developmental Goals (SDGs) and the Universal Health Coverage (UHC). Political commitments at the highest levels were made clear to support related HRH activities and interventions.

The High Health Council (HHC) has placed HRH as a priority concern, thus the HHC general secretariat has been honored to host Jordan's National HRH Observatory (NHRHO).

This annual technical HRH report tried to analyze the distribution patterns of the health workforce among health sectors in Jordan and between different governorates for the year 2018. All stakeholders were greatly involved in the production of this technical report, moreover they are encouraged to take advantage and benefit from its potential. The aim of the report is to promote the use of evidence to support HRH policy.

Finally I would like to express my gratitude to all members of the National Coordinating Policy Forum, as well as to the focal points all over Jordan's governorates for their efforts in the process of field data collection, also I would like to thank the NHRHO focal point and the technical team at the HHC for development of this report that I hope it will benefit all concerned parties and policy makers in filling the gaps that were identified in the field of HRH data in Jordan.

Dr. Mohammad Tarawneh

Secretary General of the High Health Council

Acronyms

CHIP	Civil Health Insurance Program
HHC	High Health Council
HRH	Human Resources for Health
HRMS	Human Resources Management System
JAFPP	Jordanian Association for Family Planning & Protection
JD	Jordanian Dinar
JFDA	Jordan Food and Drug Administration
JMC	Jordan Medical Council
JNC	Jordan Nursing Council
JPD	Joint Procurement Department
J.U	Jordan University
JUH	Jordan University Hospital
J.U.S.T	Jordan University of Science and Technology
KAUH	King Abdullah University Hospital
KHCC	King Hussein Cancer Center
KHCF	King Hussein Cancer Foundation
M&E	Monitoring and Evaluation
MOH	Ministry of Health
NCDEG	National Center for Diabetes, Endocrinology, and Genetics
NHA	National Health Account
NHRHO	National Human Resources for Health Observatory
NSHS	National Strategy for Health Sector
PCs	Private Clinics
PHs	Private Hospitals
RMS	Royal Medical Services
TFR	Total Fertility Rate
UHs	University Hospitals
UNRWA	United Nation Relief and Works Agency
WHO	World Health Organization

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2. Dr. Ahmad saleh , Mr. Ghasan Al-qusban / Zarqa Governorate
3. Dr. Khaled Al-Wahdat , Mrs. Njah Al-Ateeat / Balqa Governorate
4. Dr. Ysra Baker , Mr. Malooh Shakatreh / Madaba Governorate
5. Dr. Snaa Abo Gdeesh, Mr. Esmac'el Nua'imi / Irbid Governorate
6. Dr. Fadia Ennab ,Mr. Ahmad Al-Qudah / Ajloun Governorate
7. Dr. Asma'a Keyyam Mr. Fawzi Otoom / Jerash Governorate
8. Mrs. Ruqaya Shdaifat , Dr. Ebtesam Zannoni /Mafrq Governorate
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11. Dr. Jameel Samreen , Mrs. Hebah Assaf / Ma'an Governorate
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Executive Summary

The observatory on human resources for health is defined as a cooperative initiative among relevant stakeholders aimed at producing information and knowledge in order to improve human resource policy decisions as well as contributing to human resources development within the health sector.

This is the ninth annual report for the National HRH Observatory. Which prepared by the HRH observatory team to serve as a tool for providing a comprehensive picture of the health workforce situation in Jordan at both the national and sub-national levels.

The NHRHO team has thrived to establish a database on physicians, dentists, pharmacists, registered nurses, midwives and Laboratory technician to help monitoring HRH stock and trends, also to identify inequitable geographical distribution of the health workforce in Jordan, if any.

Report highlights:

The following are some highlights from the report.

Physician's indicators:

The report shows that the total number of physicians is (22785) and the ratio of physicians to 10,000 population is (22.1) and about 57% of physicians are working in privet sector while 41% are working in public sector and 2% are working in international and cherty sector. The highest ratio of physicians per 10,000 population was found in Amman reaching nearly (37.9) meanwhile, the lowest ratio has been registered in Zarqa at (7.5) per 10,000 population.

(11017) students were enrolled in the six medical faculties, 73% of them were Jordanian students and 27% were Non Jordanian students.

(1525) students were graduated from Medical Faculties 52% of graduates were males and 48% were females.

Dentist's indicators:

The report shows that the total number of Dentists is (7406) and the ratio of Dentists to 10,000 population is (7.2) and about 81% of Dentists are working in privet sector while 18% of Dentists are working in public sector and 1% are working in international and cherty sector. The highest ratio of Dentists per 10,000 population is found in Amman reaching nearly (12.8) meanwhile, the lowest ratio has been registered in Zarqa and karak at (2.7) per 10,000 population.

(2766) students were enrolled in the two dentistry faculties, 60% of them were Jordanian students and 40% were Non –Jordanian students.

(694) students were graduated from dentistry faculties 73% of graduates were females and 27% were males.

Pharmacist's indicators:

The report shows that the total number of Pharmacists is (15400) and the ratio of Pharmacists to 10,000 population is (14.9) and about 90% of Pharmacists are working in privet sector while 10% of Pharmacists are working in public sector and 1% are working in international and cherty sector. The highest ratio of Pharmacists per 10,000 population is found in Amman reaching nearly (28.7) meanwhile, the lowest ratio has been registered in Ajloun at (2.6) per 10,000 population.

(13443) students were enrolled in eighteen pharmacy faculties, 60% of them were Jordanian students and 40% were Non- Jordanian students.

(3370) students were graduated from the pharmacy faculties 72% of graduates were females and 28% were males.

Registered Nurse indicators :

The report shows the total number of Registered nurse is (27579) and the ratio of Registered nurse to 10,000 population is(26.8) and about 52% of Registered nurse are working in privet sector while 44% are working in public sector and 3% are working in international and cherty sector . The highest ratio of Registered nurse per 10,000 population is found in Amman reaching nearly (46) meanwhile, the lowest ratio has been registered in Zarqa at (7.1) per 10,000 population.

(4832) students were enrolled in fourteen nursing faculties, 88% of them were Jordanian students and 12% were Non- Jordanian students .

(1530) students were graduated from the nursing faculties 67% of graduates were females and 33% were males.

Midwives indicators:

The report shows the total number of Midwives is (3630) and the ratio of Midwives to 10,000 population is(3.5) and about 56% of Midwives are working in public sector while 43% of Midwives working in privet sector and 1% are working in international and cherty sector . The highest ratio of Midwives per 10,000 population is found in Tafileh reaching nearly (5.2) Meanwhile, the lowest ratio has been registered in Zarqa at (1.7) per 10,000 population.

1. Introduction

Jordan is a middle-income country with limited natural resources. Its surface area is about 89,318 km² of which only 7.8% is arable land. with population is about 10,309,000 of whom 90.3 % live in urban areas. Population and housing census for the year 2015 showed that 30% of the population are non-Jordanians, almost half of them are Syrians (1.3 million). The population is distributed among 12 governorates over three regions (North, Middle and South). The majority of the population lived in Amman Governorate (42%), followed by Irbid governorates (19) and then Zarqa governorate (14%). Population Growth Rate For Jordanians 2.4% for the year 2018.

Jordan has approached development from a holistic perspective, realizing that poverty, illiteracy, and health, form a triangle which must be addressed together. Advances in the struggle against poverty and illiteracy, in addition to the spread of sanitation, clean water, adequate nutrition, and housing have been combined to work for future Jordanian citizens.

Health status in Jordan is among the best in the Middle East; this is primarily due to the Kingdom's stability and to a range of effective development plans and projects which have included health as a major component. This is reflected in the kingdom's core health indicators which are considered to be good and are improving steadily. The overall average life expectancy reached 73.5 years, (72.8 for males and 74.2 for females), the infant mortality rate declined from 23 in 2009 to 17 in 2017 (Per 1000 Live Births) . The crude birth rate and the crude death rate per 1000 population were 22.3 and 6.0 respectively in 2017. Jordan attained universal child immunization in 1988 and had no reported polio cases since 1995

The total fertility rate (TFR) Women of 15-49 Years is relatively high in Jordan, although it has declined steadily in recent years to reach 3.38 in 2018. The declining mortality rate and the high total fertility rate have contributed to overall population growth. From the other side, Jordan found itself in a position to host millions of refugees in successive waves; the last was from Syria, this caused high rates of population growth and urban expansion. All of this imposed significant stress on Jordanian society, infrastructure, and limited natural resources, with a negative impact on the socio-economic development and health of the country.

According to the National Health Account (NHA) report 2016/2017, Jordan spent approximately JD 2.5 billion on health or JD 255 per capita. The total health expenditure represented 9% of Jordan's GDP. The public sector is the largest source of health funding (57.6%), followed by the private sector (33.9) and the donors (8.5%). While providing basic health care services throughout the kingdom governorates to be a major concern for the government especially with the huge influx of Syrian refugees, treating non-communicable illnesses, which are often the result of rapidly changing lifestyles, has presented a new challenge facing health expenditure in recent years.

The economic situation in Jordan has faced several crises, many of which are beyond its will and ability to cope. The high population growth rate, the epidemiologic transition, the rising cost of health care, and the growing expectations of people pose challenges to the health care system in the country. Given the economic situation, sustaining this level of spending, let alone increasing it, constitutes a huge burden and may deprive other sectors of funds needed for a balanced social and economic development.

2. Health Policy in Jordan

The national health policy in Jordan is formulated by the High Health Council (HHC) according to its law number 9 for the year 1999. The HHC is headed by the Minister of Health, it includes in its membership the Minister of Finance, Minister of planning and international cooperation, Minister of Social Development, Minister of Higher Education & Scientific Research , Minister of labor, Secretary General of the High Health Council, Director of Royal Medical Services, the president of the Private Hospitals Association, President of Jordan Medical Association, President of Jordan Dental Association, President of Jordan Pharmacists Association ,Jordan Nurses and Midwives Council, Representative of the Medical Technology and laboratory Society, Representative of the Patient Protection Coalition, Deans of the medical faculties from one of the governmental Jordanian universities, one of the directors of university hospitals, appointed by the chairman on a rotating basis every two years. According to its Law, the objectives of the HHC is to draw the general policy of the health sector and to put forward the strategy to achieve it and to organize and develop the health sector as a whole so as to extend health services to all citizens according to the most advanced methods and scientific technology.

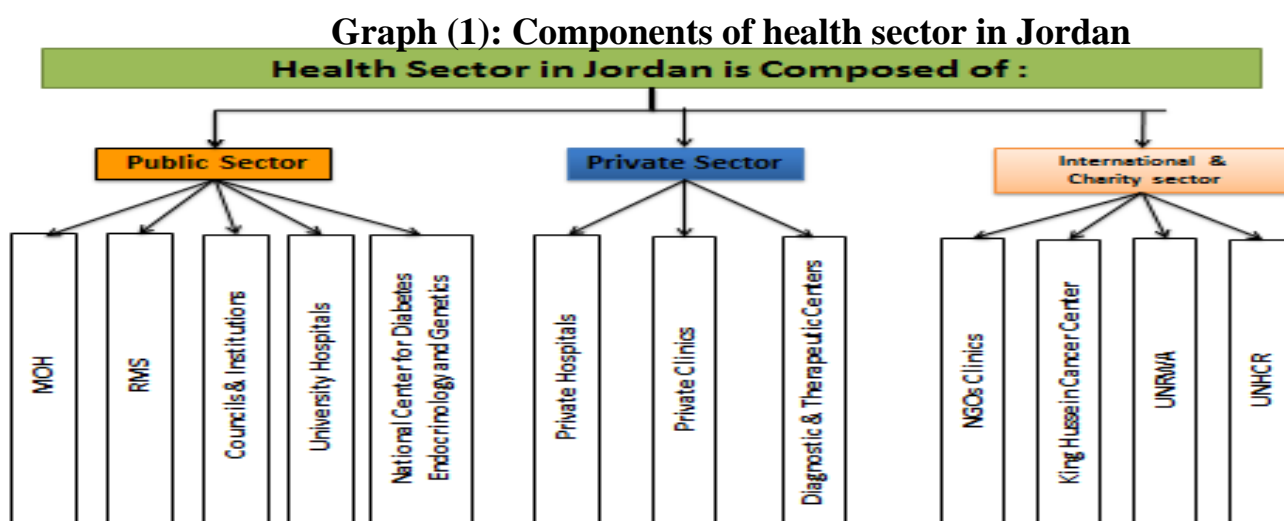
To achieve these objectives, the HHC set the **National Strategy for Health Sector** in Jordan (NSHS) for the years 2016-2020 with four main strategic objectives that constitute the outcomes of the health system, and comprehensively reflect the performance of the health sector; this strategy analyzed the human resources as one of the main six building blocks of the health system, and thus identified the challenges and proposed certain interventions and policy directions to overcome these challenges.

The NSHS strategy is consistent with the goals of the “National Agenda,” “We are all Jordan,” Jordan Vision 2025 and its Executive Developmental Program 2016-2019 as well as other health and health-related sub-sector strategies and plans.

Jordan Vision 2025 was developed in 2015 to determine the kingdom’s political and socio-economic reform policies and programs over the next ten years. It emphasized the need for structural reforms to promote private investment and employment generation, along with an emphasis on education, health development, and poverty alleviation.

3. Health sector in Jordan

Jordan’s health care system has improved dramatically over the last two decades and is ranked as one of the best systems in the Middle East. The healthcare system in Jordan is mainly composed of three healthcare providers: the public sector, the private sector, and the international and charity sector **Graph (1)**.



3.1 Public Sector

The public sector consists of the Ministry of Health (MOH), Royal Medical Services (RMS) in addition to two University-Based Hospitals which are Jordan University Hospital (JUH) and King Abdullah University Hospital (KAUH) as well as the National Center for Diabetes, Endocrinology, and Genetics.

3.1.1 Ministry of Health

The **MOH** is the largest sub-sector in terms of size, operation, and utilization as compared to other sub-sectors. It undertakes all health affairs in the Kingdom with the following tasks and duties:

- A.** Maintaining public health by offering preventive, curative and health control services.
- B.** Organizing and supervising health services provided by the public and private sectors.
- C.** Providing health insurance for the public within available resources.
- D.** Establishing and controlling the management of health educational and training institutes and centers according to relevant provisions of the legislations enacted.

The MOH provides primary, secondary, and tertiary services. Primary health care services are mainly delivered through a network of health centers around 668 center (111 comprehensive centers, 376 primary centers, 181 Village Clinics), these centers include 506 Maternal and Child Health clinics and 420 oral health clinics. Secondary and tertiary health care services are provided through (32) MOH hospitals distributed over the 10 governorates out of 12 in Jordan with 5208 beds representing (35.3%), of hospital beds in the country.

The MOH is responsible for managing the Civil Insurance Program (CIP) which covers civil servants and their dependents. Individuals certified as poor, disabled, over 60 years old and children under 6 years, and blood donors are also formally covered under the CIP. Taking in consideration that the services provided by the MOH are highly subsidized by the government for Jordanians and partially for the Syrian refugees.

3.1.2 Royal Medical Services

The RMS mainly provides secondary and tertiary care services. It has 16 hospitals, the total number of hospital beds in RMS is 3316 (22.5%) of hospitals beds in Jordan for the year 2018 RMS is responsible for providing health services and a comprehensive medical insurance to military and security personnel.

RMS also acts as a referral center through providing high-quality care, including some advanced procedures and specialty treatment to Jordanians and non-Jordanian patients. It plays a major role politically through contributing in providing health services in disasters and conflict areas through medical teams and field hospitals. There are also nine military health centers and clinics distributed all over the country, in addition to air medical evacuation services.

3.1.3 University Hospitals

The two university hospitals (**UHs**) are the Jordan University Hospital (**JUH**) and King Abdullah University Hospital (**KAUH**), they provide health insurance and services for university employees and their dependents, Also serve as referral centers for other health sectors and as teaching centers for medical students. JUH is one of the most specialized and high-tech medical centers in the public sector; it has 599 beds (4.1% of the total beds) for the year 2018.

KAUH was established in 2002 by Jordan University of Science and Technology (JUST). It has 541 beds (3.7% of the total number of hospital beds in Jordan) for the year 2018. The hospital serves as a teaching hospital to the Faculty of Medicine at JUST and as a referral hospital for all public sectors in the Northern Region.

3.1.4 The National Center for Diabetes, Endocrinology, and Genetics

The National Center for Diabetes, Endocrinology, and Genetics (NCDEG) is an independent, non-for-profit Organization that was established in 1996 as one of the centers affiliated with the Higher Council for Science and Technology. The main goal of NCDEG is to provide high-quality care, education, and training in the fields of diabetes, endocrinology, and genetics.

3.2 Private sector

The private sector provides primary, secondary, and tertiary services through a network of private clinics (PCs), private centers (PCs) and private hospitals (PHs). The private sector has 66 hospitals with nearly one-third of the hospital beds in the country (5077) beds represents about 34.4% of the total beds). The majority of the hospitals, as well as private clinics, are in the capital of Jordan. The private sector contains much of the country's high-tech diagnostic capacity, and it continues to attract significant numbers of foreign patients from nearby Arab nations.

3.3 Non-for-profit organizations

3.3.1 United Nation Relief and Works Agency

The United Nation Relief and Works Agency (UNRWA) is responsible for providing a healthy living environment for more 2.2 million Palestine refugees, guided by the Sustainable Development Goals on health and by the standards of the World Health Organization (WHO). The mandate of UNRWA on health is to protect and promote the health status of Palestine refugees living in Jordan to achieve the highest attainable level of health as indicated in the first Human Development Goal, "Refugees' health is protected, and the disease burden is reduced," of the UNRWA Medium Term Strategy 2016-2021. It delivers primary health care services through (25) primary health care facilities which deal with (1,613,786) million visits each year. Annual antenatal care patients (20,503) and annual perinatal care patients (21,026) it also support nearly (77,482) patients with non-communicable diseases (NCDs), generally diabetes or hypertension.

3.3.2 King Hussein Cancer Center

The King Hussein Cancer Center (KHCC) is a specialized center for cancer care in Jordan, and the region with 352 beds KHCC became the first center outside the United States to have Disease Specific Accreditation. It also works to improve access to education, training, public awareness and research to decrease mortality and alleviate suffering from cancer in accordance with the highest standards and quality of care. The KHCC has established programs that focus on all stages of comprehensive cancer care: from prevention and early detection, through diagnosis and treatment, to palliative care.

The King Hussein Cancer Foundation (**KHCF**), was established in 1997, undertakes various fundraising activities to support and maintain the mission of KHCC as a comprehensive cancer center of excellence. KHCF is a free-standing, independent, non-governmental organization, established by a Royal Decree to combat cancer not only in Jordan but also in the Middle East region.

3.3.3 Other charitable clinics

The non-for-profit organizations also include about 43 charitable clinics distributed all over the country. Jordan has performed better than most countries in the region in terms of accessibility of services and outcomes, otherwise it's concluded that the system is costly, inefficient, and suffering from geographic maldistribution of human resources.

4. HRH Stakeholders in Jordan

HRH governance functions in Jordan are performed by multiple public, semi-public, private and nongovernmental organizations. The governance functions of other organizations and authorities are of prime importance for the assessment of HRH governance. Some Ministries and organizations from outside of the health sector have a direct impact on the performance of the HRH in Jordan. Below are the main health stakeholders and the main governance functions for each:

1. The Parliament

- a) HRH Legislation.
- b) Monitoring health policy implementation.

2. The Cabinet (Council of Ministers)

- a) Proposing and initiating HRH laws and by-laws (through Legislative Bureau.)
- b) Enforcing regulations and monitoring performance of the health sector.
- c) Providing broad policy and strategic directions.
- d) Approval of senior position assignments in the MOH (i.e. undersecretary).
- e) Defining the terms and conditions of public sector employment and the relationship between central and local governments and providers of health services.

3. Ministry of Health

- a) Developing HRH policies and strategies with the cooperation of the HHC.
- b) Regulating and monitoring health services provided by public sectors and private sectors.
- c) Direct management of human resources employed by the MOH
- d) Licensing, monitoring and regulating all health professions and institutions.
- e) Participating in the provision of pre –service and continuing education for HRH.
- f) Setting and controlling health professionals' fees in coordination with other stakeholders.
- g) Setting standards of care and investigating malpractice cases.
- h) Collecting and disseminating HRH statistics.

4. High Education Council

- a) Formulating the general policy of High Education including HRH.
- b) Endorsing the establishment of new education institutions.

- c) Monitoring the quality of HRH education.
- d) Determining the basic admission requirements at HRH education institutions.

5. Ministry of High Education and Scientific Research

- a) Implementing the general policy of high education.
- b) Coordinating between high education institutions and public and private centers for consultations and research.
- c) Recognizing foreign institutions of HRH education and equating certificates issued by them.

6. High Education Accreditation Commission

- e) Setting accreditation standards of high education institutions including HRH, amending and developing them in light of the general policy of High Education.
- f) Monitoring the performance of high education institutions and their commitment to accreditation standards.

7. High Health Council

- g) Proposing and initiating national HRH policy and strategic plans.
- h) Coordinating the major issues related to HRH within health subsectors (MOH, RMS, university hospitals, private health sector, etc....).
- i) Proposing reforms and proposals to strengthen HRH.
- j) Encouraging health system research agenda and facilitating the implementation of this agenda including HRH research.

8. Health Professionals Associations (Jordan Medical Association. Jordan Registered nurses & Midwifery Association, Jordan Dentists Association, Jordan Pharmacists Association)

- a) Registration of health professions (with MOH).
- b) Monitoring practice and professional conduct.
- c) Setting practice standards.
- d) Conducting continuing education programs for health professionals.
- e) Setting professional fees (with MOH).
- f) Investigating malpractice cases and professional misconduct and imposing professional penalties.
- g) Maintaining database for health professionals.

9. Civil Service Bureau

Setting regulations for hiring, compensating, promoting, retirement and monitoring performance of all civil servants including HRH working in MOH.

10. Jordan Medical Council

- a. Setting standards and conditions for teaching hospitals.
- b. Certifying facilities as teaching hospitals.
- c. Regulating and monitoring residency programs in teaching hospitals.
- d. Certifying physicians as general practitioners and specialists.

11.Jordanian Nursing Council

- a)Setting and promoting nursing care standards.
- b)Developing and disseminating criteria for nursing professional classification (professional ladder).
- c)Certifying registered nurses as general practitioners, specialists or consultants.

12.RMS, University Hospitals, Private Hospitals, UNRWA, Philanthropy Health Sector

- a)Direct management of HRH employed by each sector.
- b) Providing continuing medical education.
- c)Provides information about HRH.
- d)Participating in national HRH policy formation and planning through their representatives in the National HRH Policy Forum at the HHC.

13.Consumer Protection Society

- a)Defending and promoting patients' rights and interests.
- b) Monitoring adherence of health professionals to formal fees schedules.

14.International Health Organizations and Donors

- a. Providing technical support to HRH projects, programs, and interventions in collaboration with national stakeholders.
- b. Financing, organizing, implementing and monitoring HRH training projects and studies sponsored by international agencies with the partnership of local organizations.

5. Situation of Health Workforce in Jordan

Human resources development has been made as one of the most valuable assets and strategic pillars for the efficient function of the country's health system. The Jordanian government has stated on many occasions the importance of the Human Resources for Health as a key element in the provision of equitable, high-quality healthcare services. This is manifested clearly in the speech of his Majesty King Abdullah II Ibn Al-Hussein in many occasions.

Jordan as many other countries, is facing acute shortage in certain health workforce categories such as some medical specialties and female nursing workforce. As a response to this challenge, the government established some new nursing colleges and encouraged students to specialize in this field by giving priority in employment for the Jordanian nurses.

The HHC analyzed the health sector in Jordan based on the WHO framework (the six building blocks of the health system), and thus developing the National Strategy for the Health Sector in Jordan 2016-2020, According to this strategy, set HRH priorities after reviewing all documents, studies, and reports related to health in Jordan. The **main HRH are**:

- Deficient endorsed national job descriptions.
- Poor investment in human resources development.
- Difficulty in attracting and retaining qualified health personnel.
- Lack of a clear career path for most of the healthcare professions.
- Skill mix, gender and facility mal-distribution of human resources across the country.
- Weak effective HRH information system especially that of the private sector.
- Inadequate generation of evidence-based HRH decisions.

6. National HRH Observatory in Jordan

In order to respond to HRH challenges, the policymakers made paramount efforts to address challenges concerning human resource for health through establishing a **National HRH Observatory (NHRHO)** in July 2009 to identify HRH gaps and developing effective plans to solve pressing HRH problems.

6.1 Definition of NHRHO

NHRHO is a cooperative initiative among relevant stakeholders to monitor the patterns of the health workforce distribution over the country. It provides reliable and instant data and information needed for evidence-based decision-making and policy development.

6.2 Objectives of NHRHO

1. Establishing a national resource with reliable and up-to-date information pertaining to major dynamics of the health workforce in Jordan
2. Establishing a national platform for effective and coherent coordination among stakeholders for policy dialogue aimed at addressing and collectively solving HRH challenges.
3. Promoting and using evidence-based planning and decision-making processes regarding HRH issues.
4. Installing monitoring and evaluation system to track progress over time based on HRH-related baseline and benchmark indicators.
5. Sharing best lessons and experiences with regional and global HRH observatories.
6. Strengthening the national capacities to produce well qualified and skilled health workforce cadres.

7. Annual HRH Report

7.1 Aim of the report

This is the eighth annual report for the National HRH Observatory. It was prepared by the HRH observatory team to serve as a tool for providing a comprehensive picture of the health workforce situation in Jordan at both the national and sub-national levels in a comparable way to help monitoring HRH stock and trends, and so identify in-equitable geographical distribution of the health workforce in Jordan if any.

7.2 Data Collection Methods

Jordan-specific data collection tools were designed in both Arabic and English languages by the Jordan Observatory team at the HHC. The tools included two main forms; one for collecting data from the public sector and the other for collecting data from the private sector, other customized tools for collecting data from certain institutions were also designed. These tools were reviewed and discussed with the NHRHO Policy forum and focal points. Modification took place according to their feedback. The tools provided information about number and distribution of the main HRH national categories (doctors, dentists, pharmacists, registered nurses, and midwives) by governorate, categories, specialties, qualifications, sex, nationality and place of work.

According to the availability of data from their sources, HRH information was collected at two levels:

- a. **The central level:** the information was collected from the MOH central directorates, RMS, the two university hospitals (UHs), NCDEG, KHCC, JAFPP, JNC, JMC, JPD and UNRWA workforce reports.

b. **The peripheral level:** the information from both public and private sectors were collected directly from the field in the twelve governorates of Jordan (14 directorates) through appointed two focal points from each governorate.

Thirty-nine focal points for data collection were appointed from different governorates and institutions as follows:

- Two focal points from each of the 14 directorates in Jordan (one is responsible for collecting data from the public sector and the other from the private sector), except for Amman Governorate where one focal point was appointed to gather data from the public sector only. The private sector data for Amman Governorate was obtained from Jordan Professional Associations.
- One focal point from each of the independent institutions as MOH central directorate, JUH, KAUH, JFDA, NCDEG, KHCC, JAFPP, JPD, UNRWA, Jordanian Nursing Council, Jordan Medical Association, Jordanian Dental Association, Jordan Pharmacy Association and Jordan Nurses & Midwives Association.

Information was also collected from the Ministry of Higher Education and Scientific Research on number and distribution of enrollees and graduated students from different health faculties in both public and private universities of Jordan.

Training of the focal points on the data collection tools and methodology took place through a national workshop which was held ten days before starting the process of data collection.

The process of data collection started in the 14 directorates at the same time through these well-trained focal points using the following methods:

1. Available HRH reports and records
2. Phone calls.
3. Fields visits

7.3 Data management and statistical analysis

Data entry and verification started immediately after data collection. Data entry, cleaning, and statistical analysis were performed by the Jordan Observatory focal point. Initially, the data were checked for data entry errors. Detected errors were corrected. Descriptive statistics were obtained through excel program and results were presented in tables and graphs.

7.4 Duration of data collection

Fieldwork for data collection took around 12 weeks, and the process of data reviewing and tabulation took another four weeks.

7.5 Operational definitions

For the purpose of this report, the following definitions were used:

Public Sector it involves MOH, RMS, the two university hospitals (JUH and KAUH), JFDA, HHC, JNC, JMC, NCDEG, and JPD.

Private sector it involves all institutions that are not included in the public health sector and Non-for-profit organizations such as private hospitals, clinics, twenty-four hours working centers, pharmacies, private universities, colleges, schools.

Non-for-profit organizations it involves KHCC, JAFPP and UNRW

The physician: is a doctor graduated from the Faculty of Medicine, received a profession from the Ministry of Health of Jordan, and registered in the Medical Association Jordanian, whether Jordanian or non-Jordanian, including practicing doctors, administration, studies and research staff Scientific.

The dentist: is a doctor graduated from the Faculty of Dentistry, obtained a profession from the Jordanian Ministry of Health, and registered in syndicate Jordanian dentists, whether Jordanian or non-Jordanian, including practicing doctors and management and studies staff and scientific research.

Pharmacist: is a pharmacist graduated from the Faculty of Pharmacy, obtained a profession from the Jordanian Ministry of Health, and is registered with the Pharmacists Syndicate Jordanian, whether Jordanian or non-Jordanian, including (pharmacists practitioners and workers in the field of management, research and pharmaceutical studies

Registered Nurse / midwife: are a Nurse and midwife from the Faculty of Nursing. He obtained a profession from the Jordanian Ministry of Health and is registered in the Jordanian Association of Nurses and Midwives, whether Jordanian or non-Jordanian, including nurses, midwives, practitioners, practitioners, management, research and scientific studies.

Laboratory technician: is a technician graduated from the Faculty of Laboratories, received a profession from the Ministry of Health of Jordan, , including practicing Laboratory and management and studies staff and scientific research.

7.6 Strategies for quality assurance of data

To ensure high-quality data, the following strategies were insured:

- 1- The designed tools for data collections were reviewed and discussed with the NHRHO Policy forum and focal points and were modified accordingly.
- 2-Operational definition for each health sector and health workforce category was identified and assured.
- 3- Training of the focal points on the data collection tools and techniques was conducted to ensure standardized methodology and good quality of data.
- 4- Each completed form was reviewed by the NHRH focal point at the HHC to ensure completeness and consistency of data before starting the analysis phase.
- 5- Double and even triple check of data was performed by obtaining and comparing the same data from different sources.
- 6- Data entry, cleaning, and analysis were conducted by NHRH focal point.

7.7 Limitations of the study:

1. Disparity of HRH information between different sources and even from the same source.
2. Lack of accurate and updated information about active health workforce in the private sector.

8. Distribution of Health Workforce at the National Level

Table (1) shows the density of health workforce categories at the national level; It was noticed that the highest ratios per 10.000 pop was found among the registered nurses (26.8) followed by the physicians (22.1), then pharmacists (14.9), dentists (7.2) and the least was found to be among the midwives (3.5).

Table (1): Ratio of Health workforce/10.000 pop at the national level by sector, 2018

CADER	Public	Private	charity sector	TOTAL	RATIO
Physicians	9319	12913	554	22785	22.1
Dentists	1362	6012	32	7406	7.2
Pharmacists	1489	13818	93	15400	14.9
Registered nurses	12256	14405	918	27579	26.8
Midwives	2022	1572	36	3630	3.5

8.1 Health workforce in the public sector:

Public Sector in this report is the sector that provides public services; it involves MOH, Prince Hamza Hospital, RMS, the two university hospitals (JUH and KAH), JFDA, NCDE, JPD, JMC, JNC and the HHC.

As shown in the table below, most of the health workforces are from the MOH as it is the main provider sector for health services in Jordan.

Table (2): Distribution of health workforce in the public sector by category, 2018

Cadre	MOH	*Prince Hamzah	RMS	JUH	KAUH	JFDA	JPD	NCDEG	JNC	JMC	HHC	Total
Physicians	5838	*108	2177	561	596	2	0	34	0	2	1	9319
Dentists	743	0	523	67	26	2	0	0	0	0	1	1362
Pharmacists	805	41	410	34	41	123	17	17	0	0	1	1489
Registered Nurses	6206	373	4268	556	809	4	2	32	5	0	1	12256
Midwives	1612	0	369	18	23	0	0	0	0	0	0	2022
Laboratory technician	614	23	693	53	60	5	0	28	0	0	0	862

*Taking in consideration that around (410) of Prince Hamzeh Hospital staff are assign from MOH and there for they are excluded from the numbers of Prince Hamzah Hospital to prevent double counting of the staff between Prince Hamzah Hospital and MOH.

8.1.1 Health workforce at MOH

Table (3) shows that physicians working at the MOH for the year 2018 are mainly males (80%). The table also reveals that more than half of the dentists at MOH are males, while around three-quarters of the pharmacists and Laboratory technician are females(75%, 76% respectively) nearly the more than half of registered nurses are females (58%).

Table (3): Health workforce at MOH by category and gender, 2018

Cadre					Total
	M	%	F	%	
Physicians	4655	80%	1183	20%	5838
Dentists	360	48%	383	52%	743
Pharmacists	201	25%	604	75%	805
Registered nurses	2636	42%	3570	58%	6206
Midwives	0	0%	1612	100%	1612
Laboratory technician	148	24%	466	76%	614

Table (4) shows the distribution of different health workforce categories at both the central level (MOH main directorates) and the peripheral level (Governorates) for the year 2018. Less than 3% in all categories work at the central level except for Laboratory technician (14%) and Pharmacists (12%)

Table (4): Health workforce at MOH by category and workplace, 2018

Cadre	Central directorates		Governorates		Total
	NO	%	NO	%	
Physicians	173	3%	5665	97%	5838
Dentists	22	3%	721	97%	743
Pharmacists	96	12%	709	88%	805
Registered nurses	110	2%	6096	98%	6206
Midwives	17	1%	1595	99%	1612
Laboratory technician	86	14%	528	86%	614

8.1.1 Health workforce at Royal Medical Services (RMS)

Table (5) shows that 81% of physicians and 54% of dentists at the RMS are males, while about 74% of pharmacists, 72% of registered nurses and Laboratory technician 67% are females.

Table (5): Health workforce at RMS by category and gender, 2018

Cader					Total
	M	%	F	%	
Physicians	1761	81%	416	19%	2177
Dentists	281	54%	242	46%	523
Pharmacists	105	26%	305	74%	410
Registered nurses	1214	28%	3054	72%	4268
Midwives	0	0%	369	100%	369
Laboratory technician	226	33%	467	67%	693

Table (6) shows that RMS services are distributed over twelve governorates. The high percent of health workforce from different categories present in Amman governorate, followed by Irbid and then Zarqa governorates. The least are present in Al-balqa and Madaba Governorate.

Table (6): Health workforce at RMS by category and governorate. 2018

Governorate	Physicians		Dentists		Pharmacists		Registered Nurses		Midwives		Laboratory technician	
	No	%	No	%	No	%	No	%	No	%	No	%
Amman	1357	62%	225	43%	274	67%	2340	55%	133	36%	302	46%
Irbid	163	7%	61	12%	31	8%	465	11%	75	20%	92	14%
Zarqa	139	6%	50	10%	25	6%	321	8%	42	11%	85	13%
Mafrq	94	4%	42	8%	16	4%	255	6%	0	0%	33	5%
Karak	89	4%	35	7%	17	4%	307	7%	22	6%	34	5%
Aqaba	131	6%	30	6%	15	4%	199	5%	40	11%	17	3%
Maan	14	1%	6	1%	3	1%	22	1%	0	0%	11	2%
Tafleh	91	4%	26	5%	9	2%	143	3%	18	5%	16	2%
Jarash	42	2%	19	4%	9	2%	105	2%	19	5%	36	5%
Ajloun	42	2%	18	3%	9	2%	105	2%	19	5%	36	0%
Madaba	7	0%	6	1%	2	0%	5	0%	1	0%	3	0%
Albqla	8	0%	5	1%	0	0%	1	0%	0	0%	28	4%
Total	2177	100%	523	100%	410	100%	4268	100%	369	100%	693	100%

8.1.3 Health workforce at Jordan University Hospital

Table (7) shows that more than one-half of Physicians, Dentists and Laboratory technician at the JUH are males. 65% of the registered nurses and 88% of the pharmacists are females. The number of midwives working at JUH is only 18.

Table (7): Health workforce at JUH by category and gender, 2018

Cadre	Gender				Total
	M	%	F	%	
Physicians	321	57%	240	43%	561
Dentists	46	69%	21	31%	67
Pharmacists	4	12%	30	88%	34
Registered nurses	194	35%	362	65%	556
Midwives	0	0%	18	100%	18
Laboratory technician	28	53%	25	47%	53

8.1. 4 Health workforce at KAUH

Table (8) shows that 68% of physicians and 73 % of the dentists at the KAUH are males, while 85% of the pharmacists , 72% of the Laboratory technician and two-thirds of the registered nurses are females (66%).

Table (8): Health workforce at KAUH by category and gender, 2018

Cadre	Gender				Total
	M	%	F	%	
Physicians	405	68%	191	32%	596
Dentists	19	73%	7	27%	26
Pharmacists	6	15%	35	85%	41
Registered nurses	276	34%	533	66%	809
Midwives	0	0%	23	100%	23
Laboratory technician	17	28%	43	72%	60

8.1.5 Health workforce at JFDA

Table (9) indicates that the health workforce working at the JFDA are mostly pharmacists, more than three-quarters of these pharmacists are females (78%). Only two physicians are working at the JFDA with two male dentists, four registered nurses and five female Laboratory technician.

Table (9): Health workforce at the JFDA by category and gender, 2018

Cadre	Gender				Total
	M	%	F	%	
Physicians	1	50%	1	50%	2
Dentists	2	100%	0	0%	2
Pharmacists	27	22%	96	78%	123
Registered nurses	3	75%	1	25%	4
Laboratory technician	0	0%	5	100%	5

8.1.6 Health workforce at Joint Procurement Department (JPD)

Table (10) indicates that the health workforce working at the **JPD** are mainly pharmacists and they are primarily females (82%). They have only two registered nurse.

Table (10): Health workforce at the JPD by category and gender, 2018

Cadre	Gender				Total
	M	%	F	%	
Pharmacists	3	18%	14	82%	17
Registered nurses	1	50%	1	50%	2

8.1.7 Health workforce at the National Center for Diabetes, Endocrinology, and Genetics (NCDEG)

Table (11) shows that 32% of the physicians, 75% of the registered nurses, and all the pharmacists and Laboratory technician working at the NCDEG are females. No dentists or midwives are working at the NCDEG as this is a specialized Center for Diabetes, Endocrine and Genetic diseases only.

Table (11): Health workforce at NCDEG by category and gender, 2018

cadre	Gender				Total
	M	%	F	%	
Physicians	23	68%	11	32%	34
Pharmacists	0	0%	17	100%	17
Registered nurses	8	25%	24	75%	32
Laboratory technician	0	0%	28	100%	28

8.1.8 Health workforce at the High Health Council (HHC)

Table (12) indicates that there are just four health workforces working at the **HHC** the physicians and dentist are male while one pharmacists and Registered nurses are female).

Table (12): Health workforce at HHC by category and gender, 2018

Cadre	Gender				Total
	M	%	F	%	
Physicians	1	100%	0	0%	1
Dentists	1	100%	0	0%	1
Pharmacists	0	0%	1	100%	1
Registered nurses	0	0%	1	100%	1

8.2 Health workforce in the private sector

According to this report, the private sector means the non-state sector which involves all institutions that are not included in the public health sector. The private sector is composed of private hospitals, clinics, and diagnostic and therapeutic clinics.

Table (13): Health workforce at private sector, 2018

CADER	Private
Physicians	12913
Dentists	6012
Pharmacists	13818
Registered nurses	14405
Midwives	1572

8.3 international and charity sector

The third healthcare provider in Jordan is the international and charity sector included UNRWA, King Hussein Foundation, JAFPP, and KHCC).

Table (14) shows the distribution of physicians, dentists, pharmacists, registered nurses and midwives working in the international and charity sector according to the place of work.

Table (14): Health workforce in the international and charity sector, 2018

Cadre	UNRWA	KING H F	JAFPP	KHCC	TOTAL
Physicians	109	12	23	410	554
Dentists	30	1	0	1	32
Pharmacists	8	1	0	84	93
Registered nurses	45	11	20	842	918
Midwives	34	2	0	0	36
Laboratory technician	13	1	0	67	81

8.3.1 Health workforce at UNRWA

Table (15) shows that physicians, dentists, and pharmacists working at UNRWA are mainly males, while registered nurses are almost females (93%) and (69%) of Laboratory technician are female .

Table (15): Health workforce at UNRWA by category and gender, 2018

cadre	Gender				Total
	M	%	F	%	
Physicians	95	87%	14	13%	109
Dentists	19	63%	11	37%	30
Pharmacists	5	63%	3	38%	8
Registered nurses	3	7%	42	93%	45
Midwives	0	0%	34	100%	34
Laboratory technician	4	31%	9	69%	13

8.3.2 Health workforce at the Jordanian Association for Family Planning & Protection (JAFPP)

Table (16) shows that all the working workforce at the JAFPP (Physicians and registered nurses) are females; this is due to the nature of services that are delivered by JAFPP which are mainly family planning services.

Table (16): Health workforce at JAFPP by category and gender, 2018

cadre	Gender				Total
	M	%	F	%	
Physicians	0	0%	23	100%	23
Registered nurses	0	0%	20	100%	20

Table (17) shows that JAFPP services are distributed over nine governorates (only Ma'an, Balqa & Tafeileh governorates don't have **JAFPP** clinics). The same table shows that more than half of these health workforces are found in Amman Governorate.

Table (17): Health workforce at JAFPP by category and governorate, 2018

Governorate	Physicians		Registered Nurses		Total
	No	%	No	%	
Amman	14	56%	11	44%	25
Zarqa	1	50%	1	50%	2
Madaba	1	50%	1	50%	2
Irbid	2	50%	2	50%	4
Mafrq	1	50%	1	50%	2
Jarash	1	50%	1	50%	2
Ajloun	1	50%	1	50%	2
Karak	1	50%	1	50%	2
Aqaba	1	50%	1	50%	2
TOTAL	23	53%	20	47%	43

8.3.3 Health workforce at KHCC

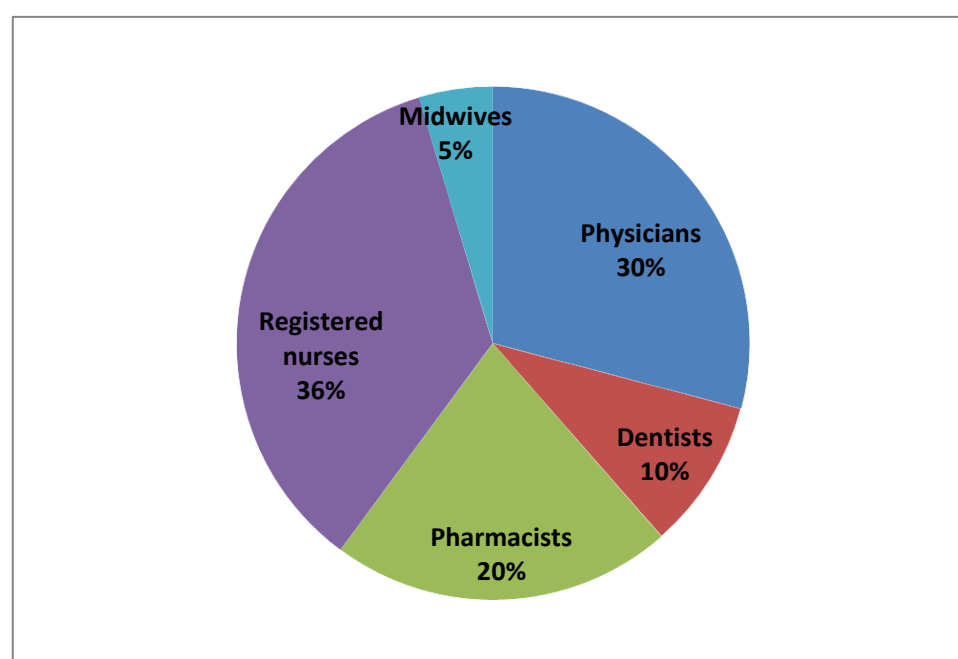
Table (18) shows that (75%) of the physicians working at KHCC are males while (95%) of the Laboratory technician, 88% of the pharmacists , 58% of the registered nurses and all the dentists are females. It also shows that no midwives are working at KHCC .

Table (18): Health workforce at KHCC by category and gender, 2018

Cadre	Gender				Total
	M	%	F	%	
Physicians	306	75%	104	25%	410
Dentists	0	0%	1	100%	1
Pharmacists	10	12%	74	88%	84
Registered nurses	354	42%	488	58%	842
Midwives	0	0%	0	0%	0
Laboratory technician	29	43%	38	57%	67

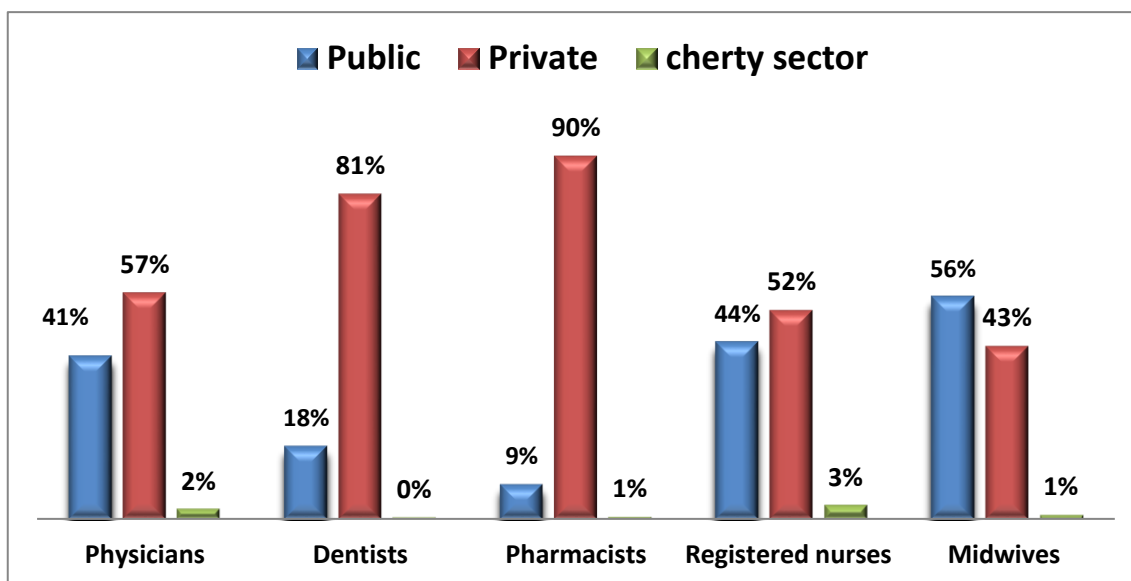
Graph (2) illustrates that most of the health professionals working in Jordan are registered nurses (36%) followed by physicians (30%) , then pharmacists (20%), dentists (10%) while the least are midwives (5%).

Graph (2): Distribution of National Health Workforce by category in Jordan, 2018



Graph (3) shows that the vast majority of physician , dentists , pharmacists and nursing are working in the private sector (57% , 81% , 90% and 52% respectively), while 56% of the midwives are working in the public sector.

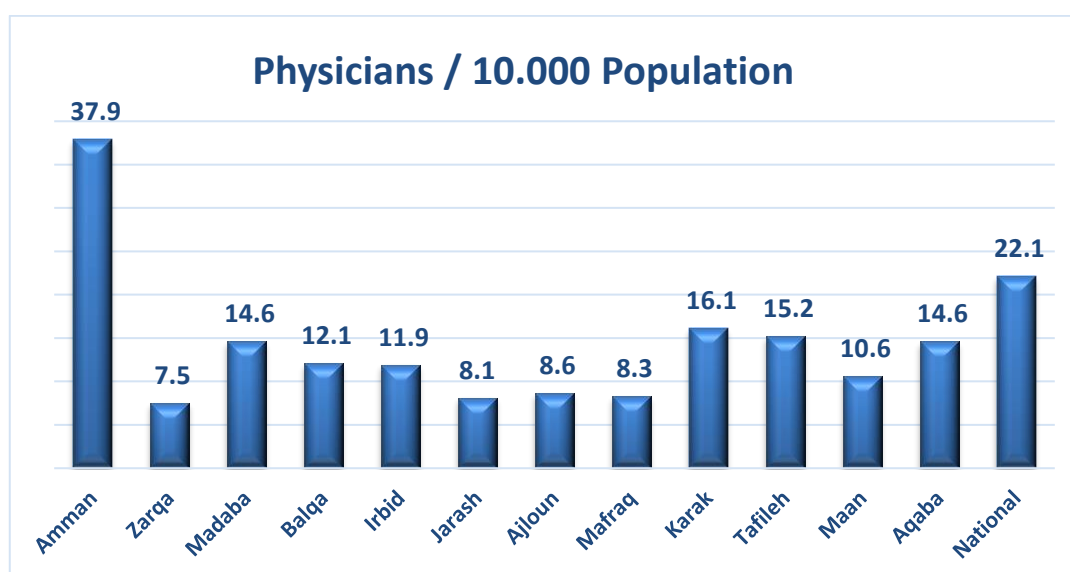
Graph (3): Distribution of National Health workforce by Sector, 2018



8.4 Health workforce indicators at the sub-national level:

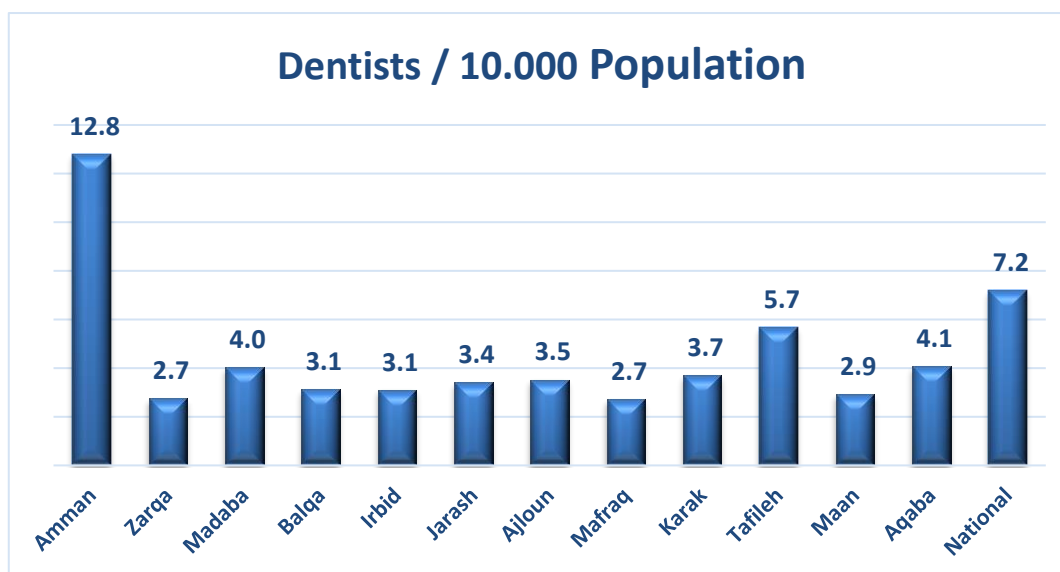
Graph (4) shows that the highest ratio of physicians per 10.000 population is found in Amman reaching nearly 37.9, while the second highest was recorded at Karak 16.1 ,in Tafileh.15.2 and madaba 14.6 in Meanwhile, the lowest ratio has been registered in Zarqa at 7.5 per 10.000 population comparing to the national ratio which was (22.1).

Graph (4): Ratio of physicians per 10.000 population by governorate, 2018



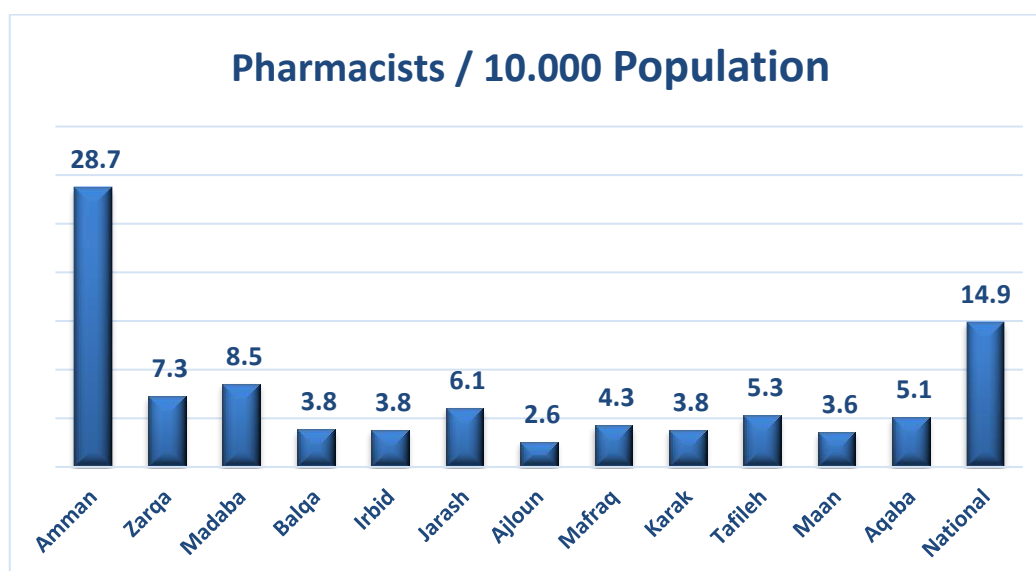
Graph (5) :shows that the highest ratio of dentists per 10.000 population was recorded in Amman reaching nearly (12.8), while the lowest ratio of about (2.7) in Zarqa and Mafraq comparing to the national ratio which reaches(7.2)

Graph (5): Ratio of Dentists per 10.000 population by governorate, 2018



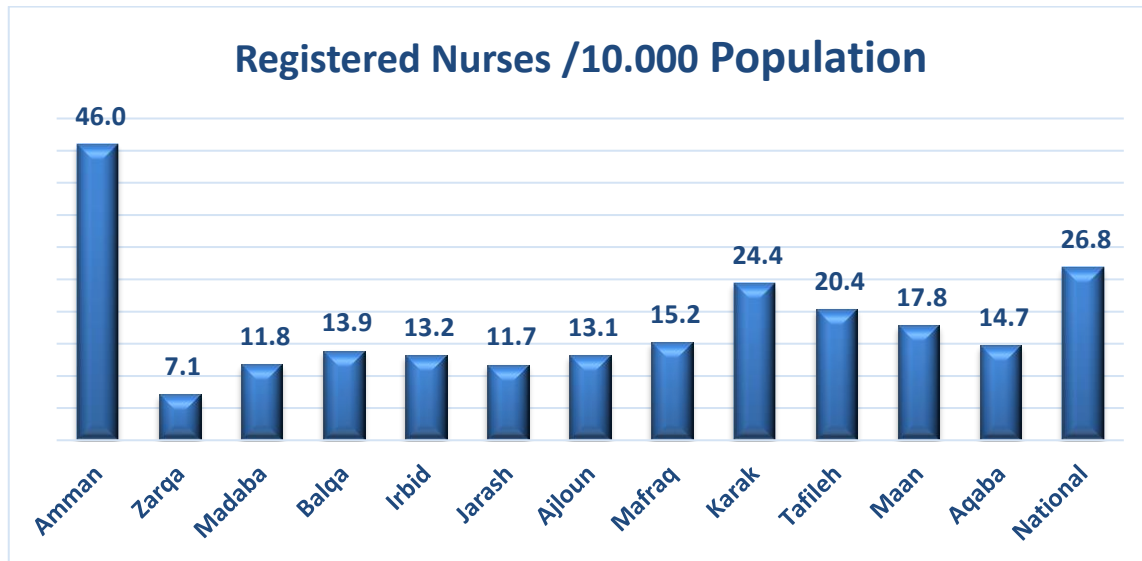
Graph (6) shows that the highest ratio of pharmacists per 10.000 population was recorded in Amman (28.7) while the lowest ratio was found in Ajloun (2.6) followed by Maan (3.6) comparing to the national ratio which reaches (14.9).

Graph (6): Ratio of Pharmacists per 10.000 population by governorate, 2018



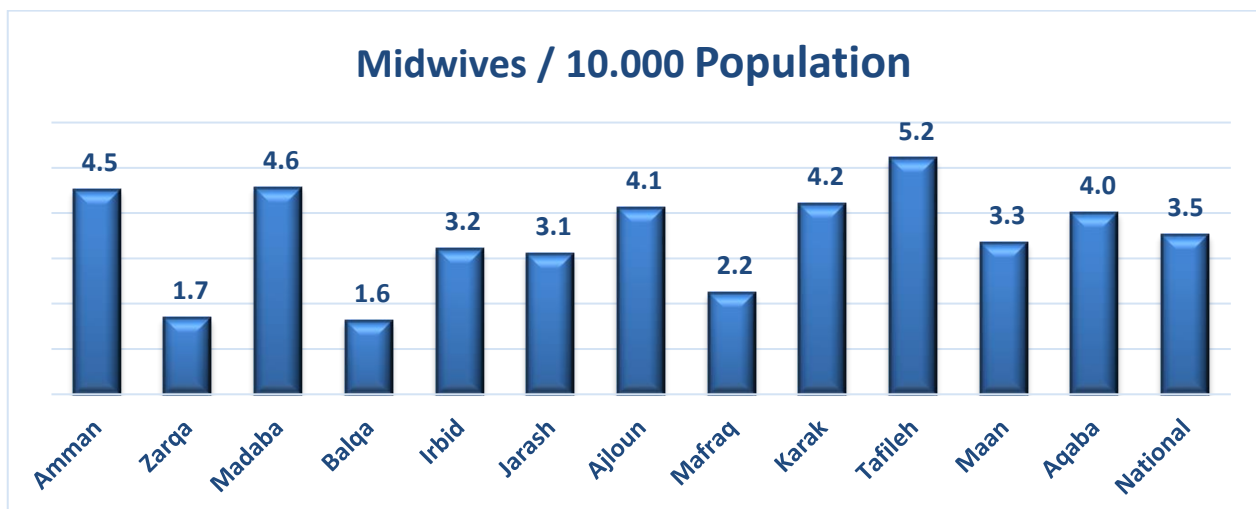
Graph (7) shows that the highest ratio of registered nurses per 10.000 population was found in Amman reaching (46.0) The lowest was found in Zarqa (7.1) while the national ratio reaches (26.8).

Graph (7): Ratio of Registered Nurses per 10.000 population by governorate, 2018



Graph (8) shows that the highest ratio of midwives per 10.000 population was recorded in Tafieleh at (5.2) and then Amman at (4.5). The lowest was recorded in Zarqa (1.7). The national ratio reaches (3.5).

Graph (8): Ratio of Midwives per 10.000 population by governorate, 2018



9. HRH Production

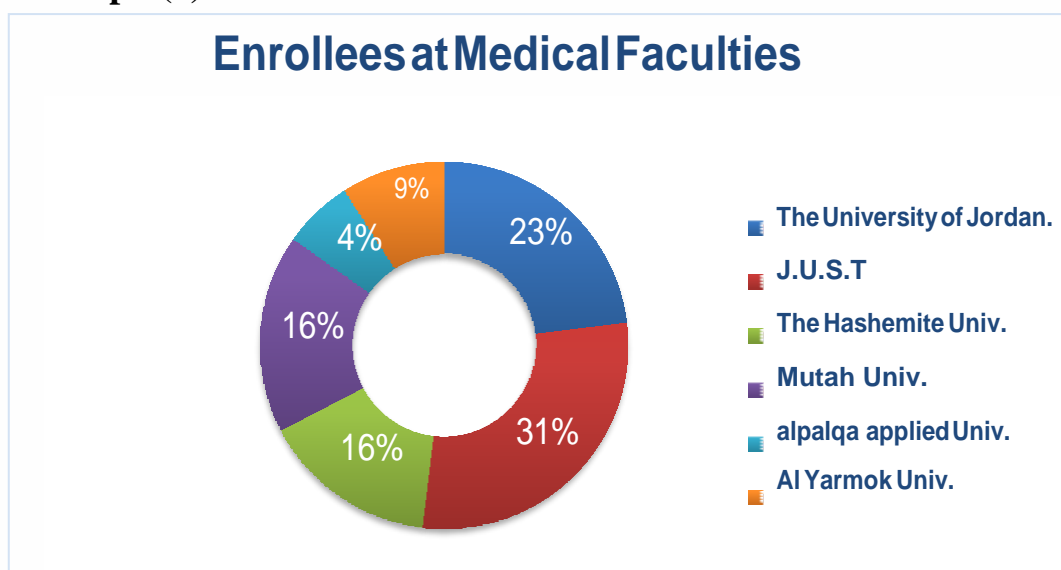
Medical faculties in Jordan conduct undergraduate programs for six academic years, Dentistry Faculties for five academic years and Nursing Faculties for four academic years, leading to a Bachelor's degree. There are eight public universities that enroll the majority of health professionals in Jordan; these are University of Jordan (J.U), the Jordan University of Science and Technology (J.U.S.T), the Hashemite University, Mutah University, Yarmouk University, Al-Hussein Al al-Bayt University ,Bin Talal University and AL-Balqa Applied University, in addition to the presence of number of private universities as Philadelphia University, Middle East University, Al-Isra University, Applied Science University, University of Petra, , Al-Zaytoonah University, Zarqa University, Jerash University, Irbid Uni, Al-Ahliyya Amman University and the American University of Madaba.

9.1 Enrollees from Medicine Faculties for the year 2017/2018

Jordan currently has six Medical Faculties (the University of Jordan, the Jordan University of Science and Technology, the Hashemite University, Mut'ah University, in addition to Al- Yarmouk University and AL-Balqa Applied University which are newly opened and thus have no graduates.

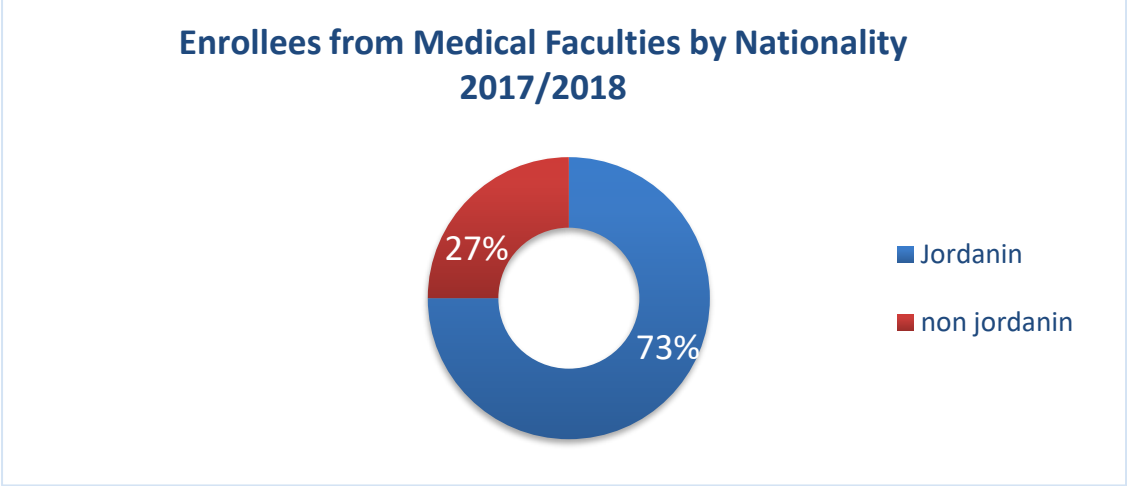
Graph (9) showed that about (11,017) students enrolled in Medical Faculties, most of them (3,449) were enrolled in J.U.S.T. (31%), (2,525) were enrolled in the J.U (23%), (1,814) in Hashemite University(16%) , (1,733) student to Mutah University(16%) , (1,011) in Yarmouk University (9%) and the rest (485) (4%) were enrolled in Al-Balqa Applied University.

Graph (9): Enrollees at Medical Faculties in Jordan Universities, 2017/2018



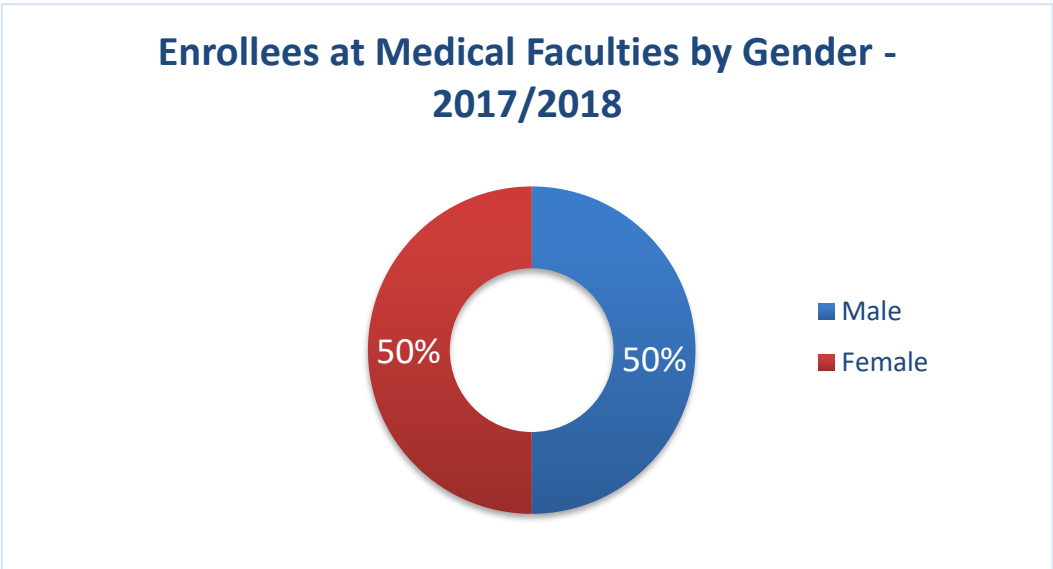
Graph (10) showed that 73% of the enrollees in the Medical faculties were Jordanian students (8,096) compared to 27% non-Jordanian students (2,921).

Graph (10): Enrollees at Medical Faculties by Nationality , 2017/2018



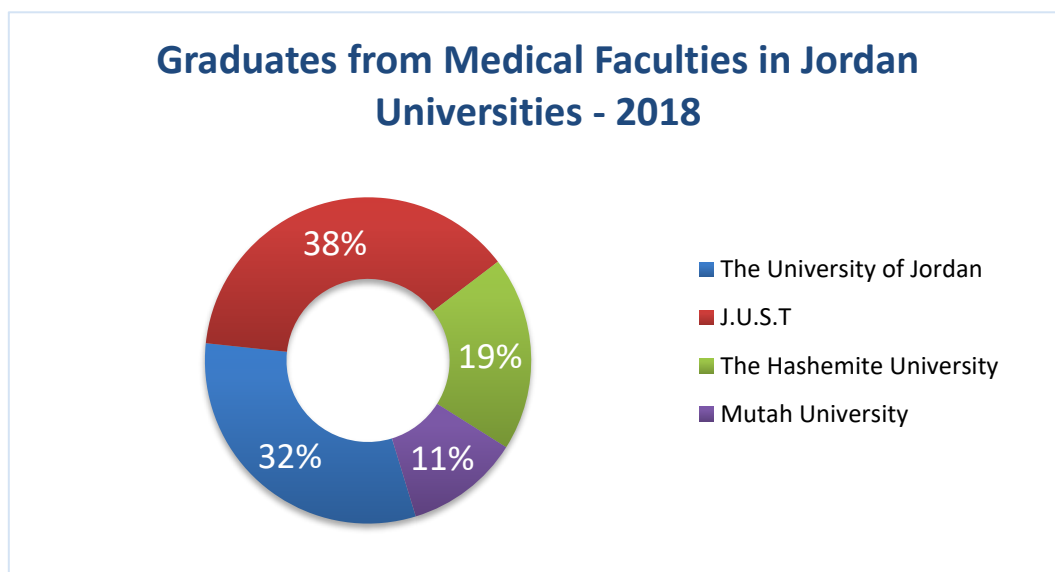
Graph (11) showed that 50% of the enrollees in the Medical faculties were males (5515). compared to50% Females (5502).

Graph (11): Enrollees at Medical Faculties by gender, 2017/2018



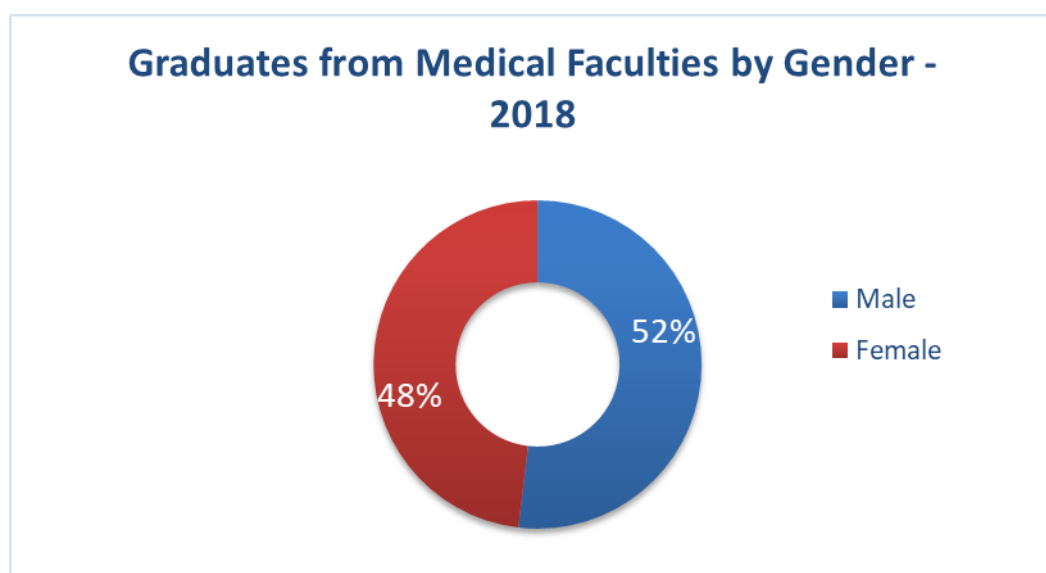
Graph (12) showed that 1525 medical students were graduated from the four medical faculties. (579) were graduated from J.U.S.T (38)%. (479) were graduated from University of Jordan (32)% , the rest were graduated from both the Hashemite University (294), and Mutah University (173) (19% & 11% respectively).

Graph (12): Graduates from Medical Faculties in Jordan Universities/ 2018



Graph (13) showed that about 52% of graduates from Medical Faculties were males (791) compared to 48% females (734).

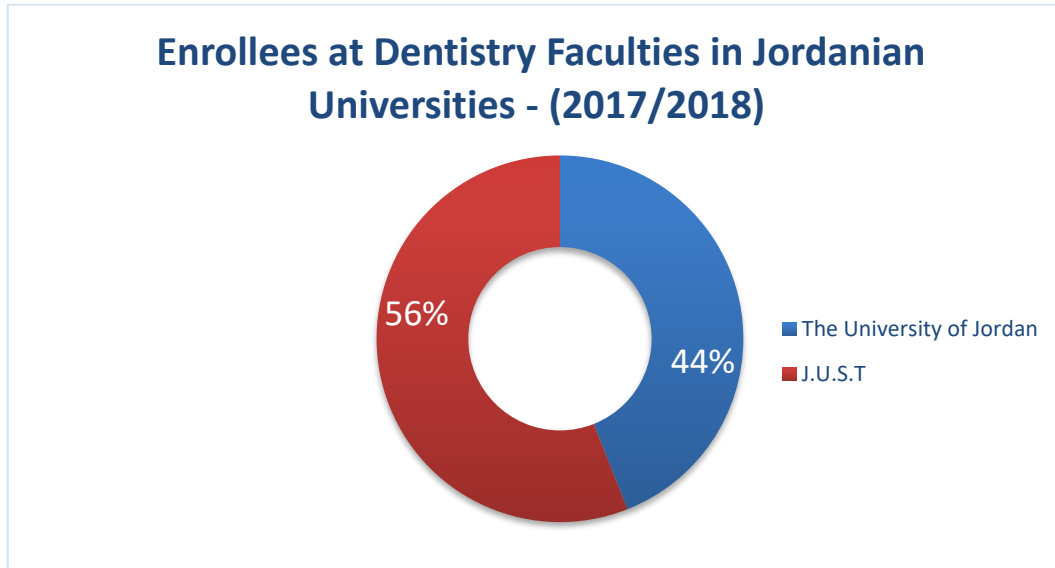
Graph (13): Graduates from Medical Faculties by Gender/ 2018



9.2 Enrolled students from Dentistry Faculties for the year 2017/2018:

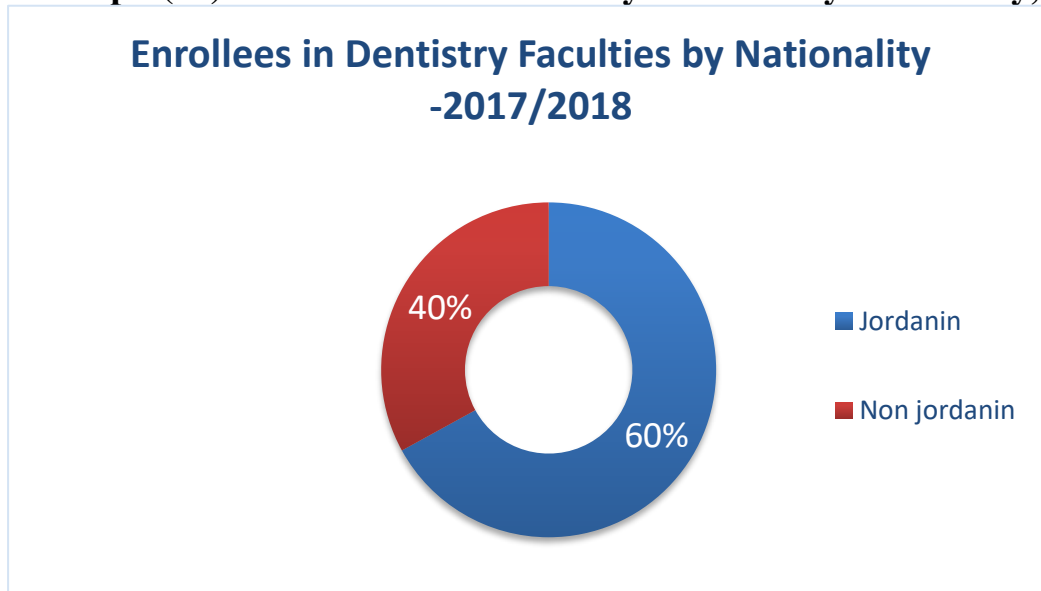
Jordan has only two Dental Faculties in two public universities (J.U and J.U.S.T). They enrolled (2766) students in the year 2017/2018. It is noticed from the graph below (11) the dentists (1,548) (56%) were enrolled from J.U.S.T while the remaining (1,218) (44%) were enrolled from J.U.

Graph (14): Enrollees at Dentistry Faculties in Jordan Universities, 2017/2018



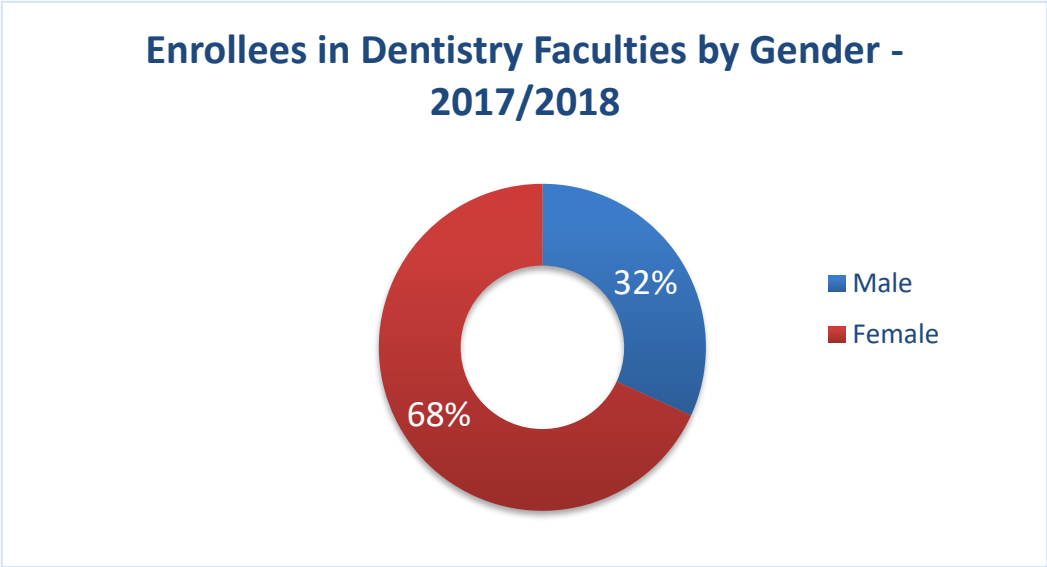
Graph (15) showed that 60% of the enrollees in the Dentistry faculties were Jordanian students (1,654) compared to 40% non-Jordanian students (1,112)

Graph (15): Enrollees from Dentistry Faculties by Nationality, 2017/ 2018



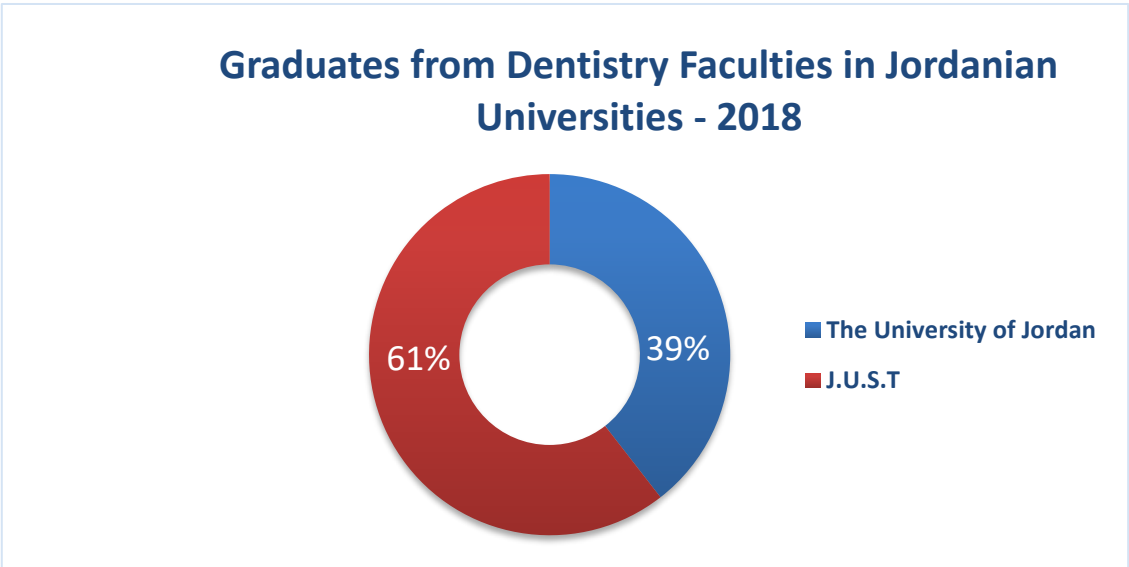
Graph (16) showed that 68% of the enrollees in the dentistry faculties were Females (1885), compared to 32% males (881).

Graph (16): Enrollees in Dentistry Faculties by Gender 2017/2018



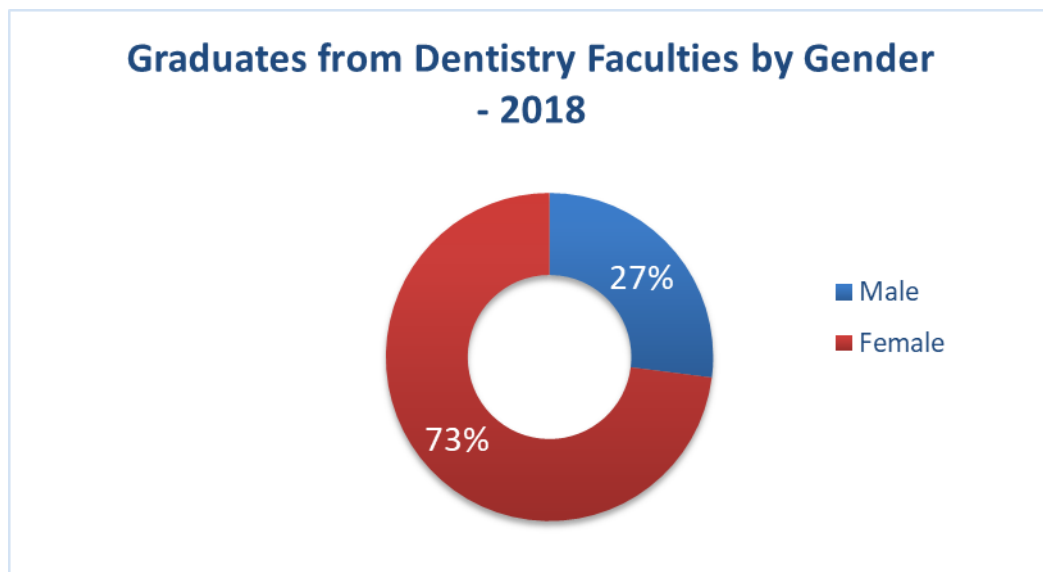
Graph (17) showed that the graduated students from Faculties of Dentistry, They graduated (694) students in the year 2017/2018. It is noticed from the graph below (17) the dentists (420) (61%) were graduated from J.U.S.T while the remaining 274 (39%) were graduated from J.U

Graph (17) :Graduates from Dentistry Faculties in Jordanian Universities / 2018



Graph (18) showed that nearly three quarters 506 (73%) of graduates from the two Faculties of Dentistry in Jordan were females compared to 188 (27%) males

Graph (18) :Graduates from Dentistry Faculties by Gender/2018

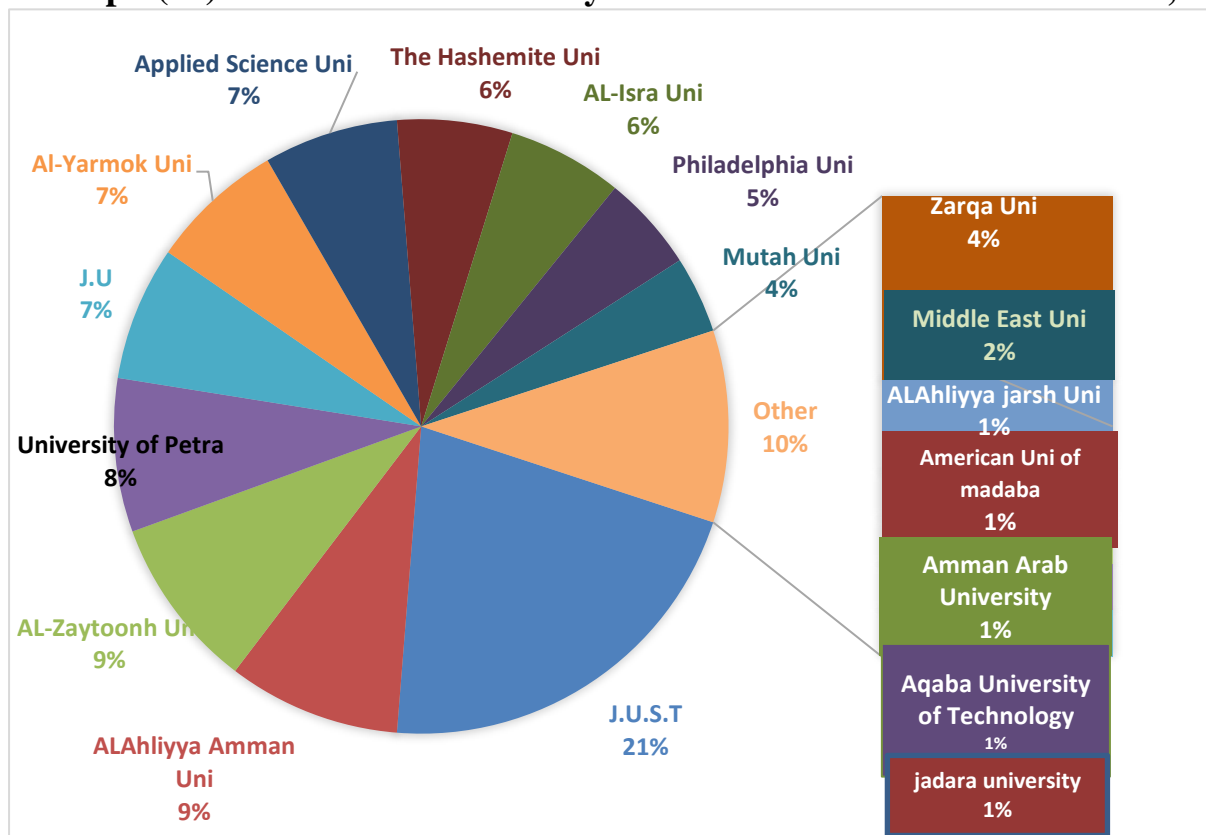


9.3 Enrolled students from Pharmacy Faculties for the year 2017/2018

There are eighteen pharmacy Faculties in Jordan (five in the public universities and thirteen in the private universities) that enrolled pharmacists which were about 13443 students

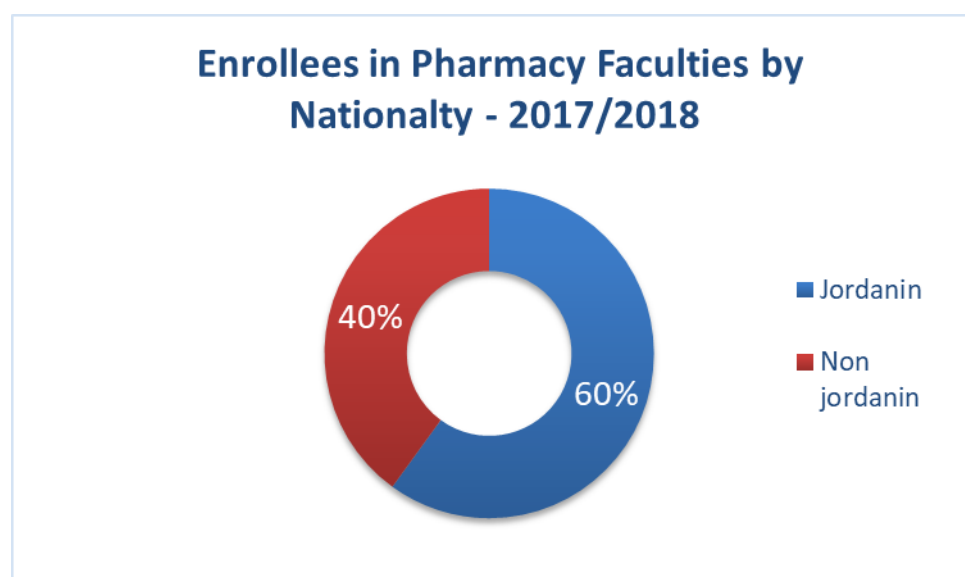
Graph (19) showed that (55%) of this number were enrolled in the private universities ALAhliyya Amman Uni (1272) AL-Zaytoonh Uni(1196) University of Petra(1127), and (45%) were enrolled in the public universities J.U.S.T (2,809) , J.U (975), Al-Yarmouk Univ (942), Hashemite Univ (764) & Mutah Univ (524)

Graph (19): Enrollees at Pharmacy Faculties in Jordanian Universities, 2017/2018



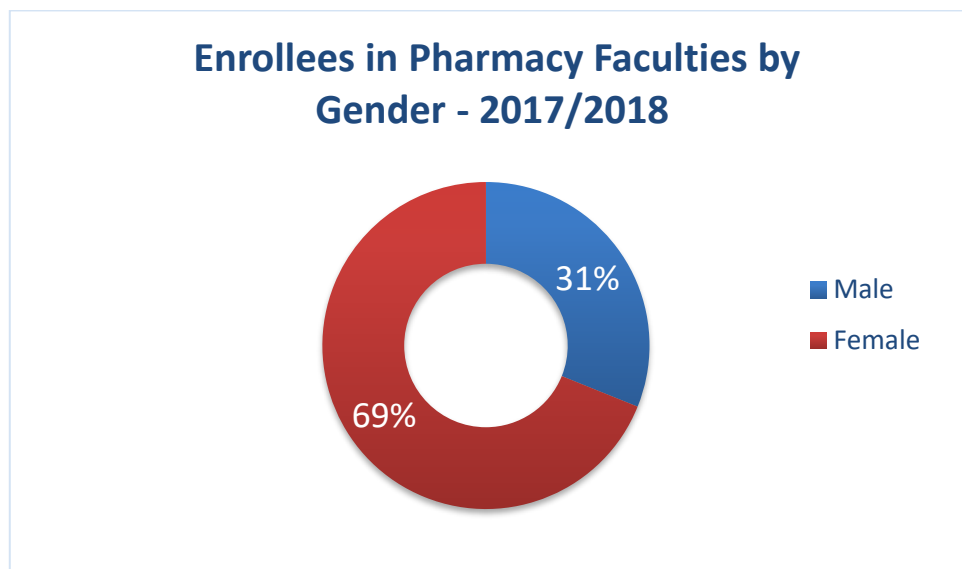
Graph (20) showed that (60%) of the enrolled students to the pharmacy faculties in Jordan were Jordanian student (8,115) compared to (40%) non- Jordanian students (5,328).

Graph (20): Enrollees at Pharmacy Faculties by Nationality, 2017/2018



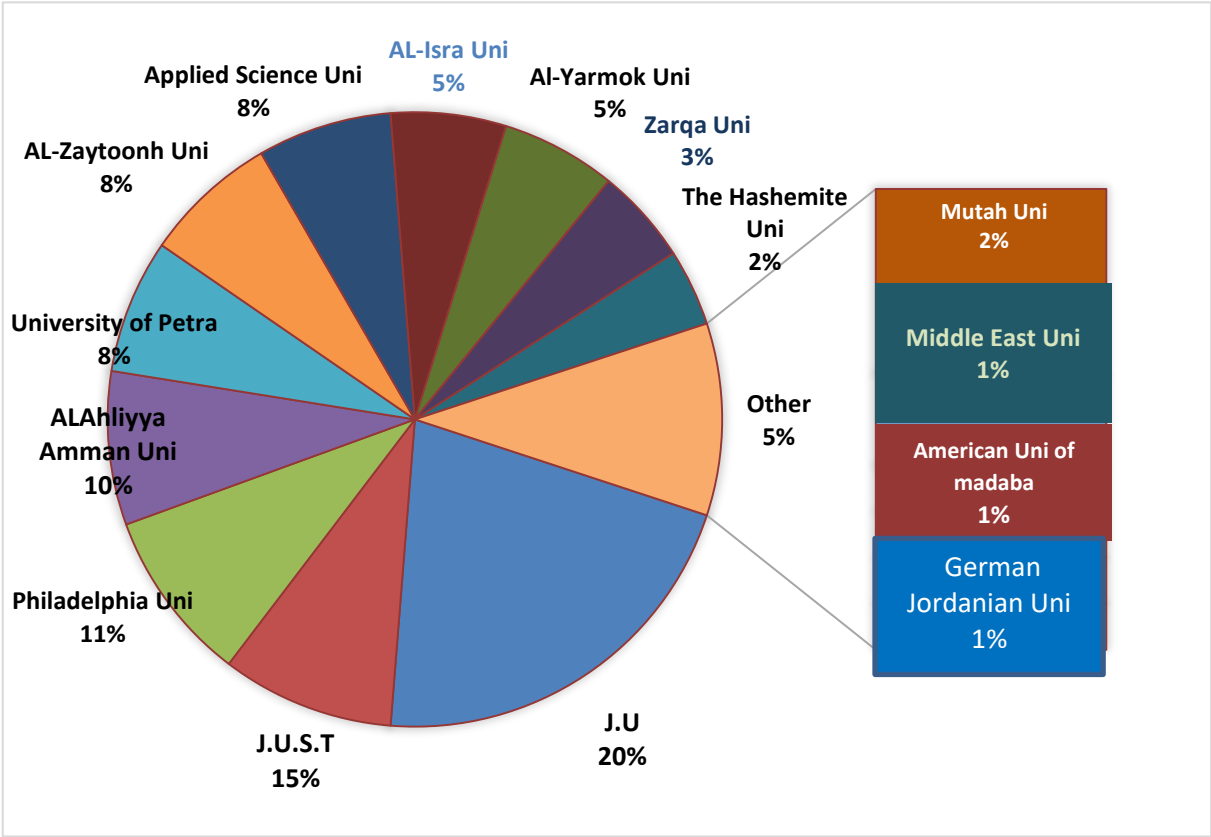
Graph (21) showed that (69%) of the enrolled students to the pharmacy faculties in Jordan were females (9262) compared to (31%) males (4181).

Graph (21): Enrollees in Pharmacy Faculties by Gender 2017/2018



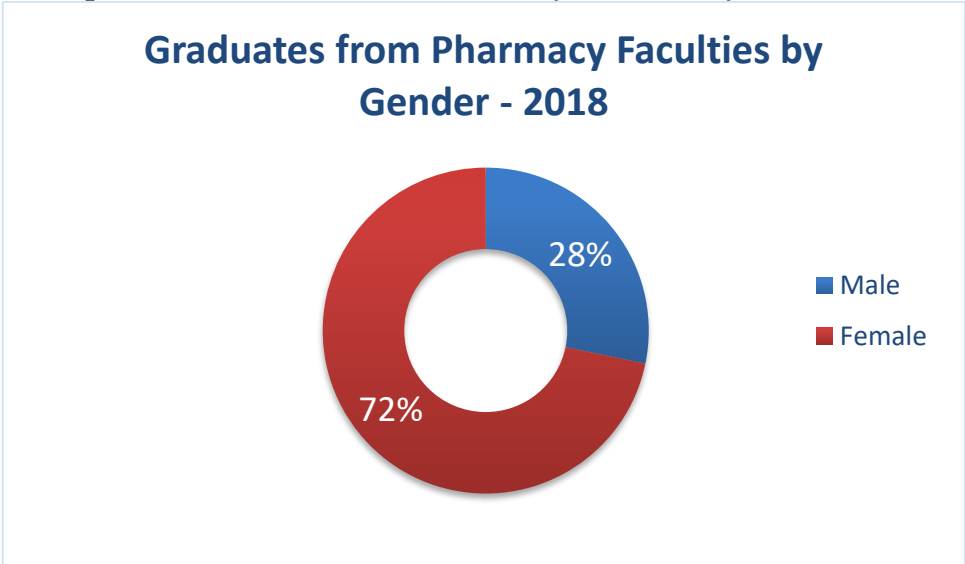
Graph (22) showed that the graduated pharmacists which were about (3,370) students. It is noticed from the graph below that (55%) of the pharmacy students were graduated from the private universities and 45% from public universities.

Graph (22): Graduates from Pharmacy Faculties in Jordanian Universities/ 2018



As shown in **Graph (23)** about 72% of graduates from the pharmacy faculties in Jordan are females (2,418) compared to 28 % males (952).

Graph (23); Graduates from Pharmacy Faculties by Gender /2018

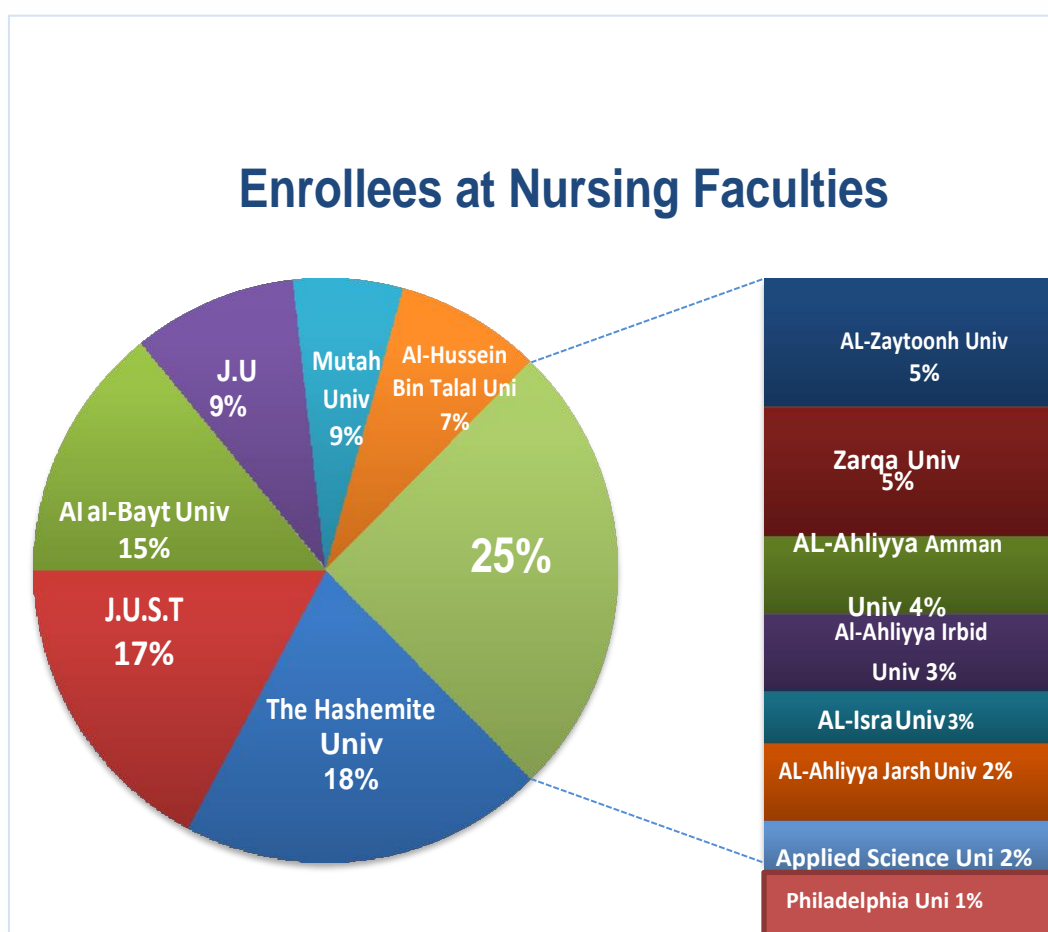


9.4 Enrolled students from Nursing Faculties for the year 2017/2018:

Jordan has fourteen nursing faculties (six public universities and eight private universities).

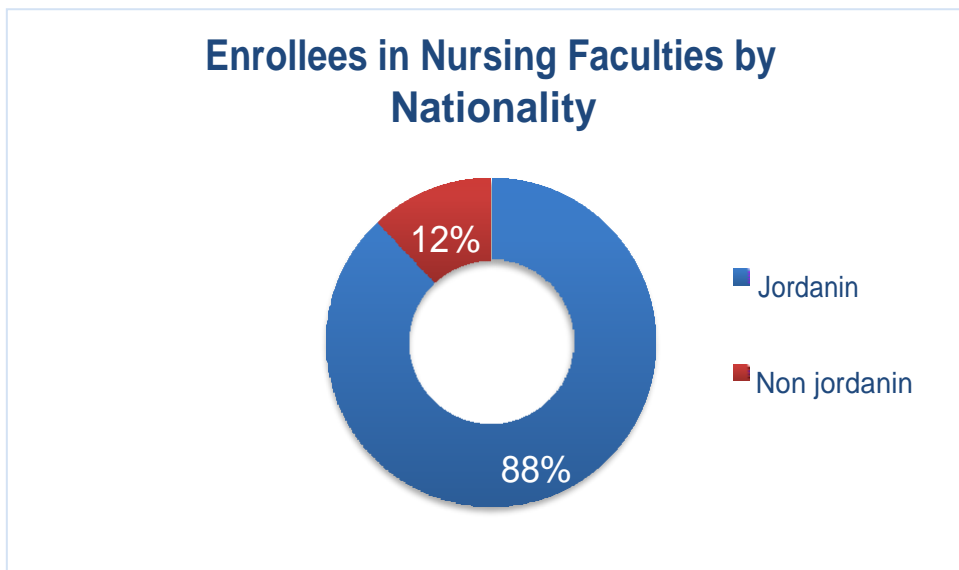
Graph (24) showed the enrolled students to nursing faculties which are around (4,832), about 75% were enrolled in the six public universities Hashemite University (862), J.U.S.T (814), Al- Bayt University (707) , J.U (450), Mut'ah University (441) , and Al-Hussein Bin Talal University (315). (25)% were enrolled in privet universities .

Graph (24): Enrollees at Nursing Faculties in Jordanian Universities, 2017/2018



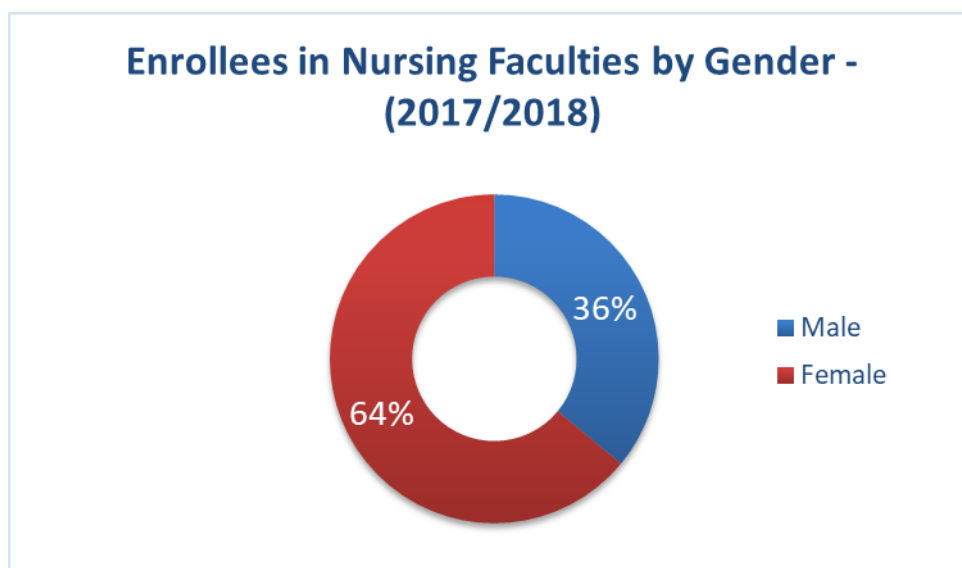
Graph (25) showed that 4,832 (88%) of enrollees in the nursing faculties in Jordan are Jordanian students compared to 599 (12%) non- Jordanian students.

Graph (25): Enrollees in Nursing Faculties by Nationality 2017/2018



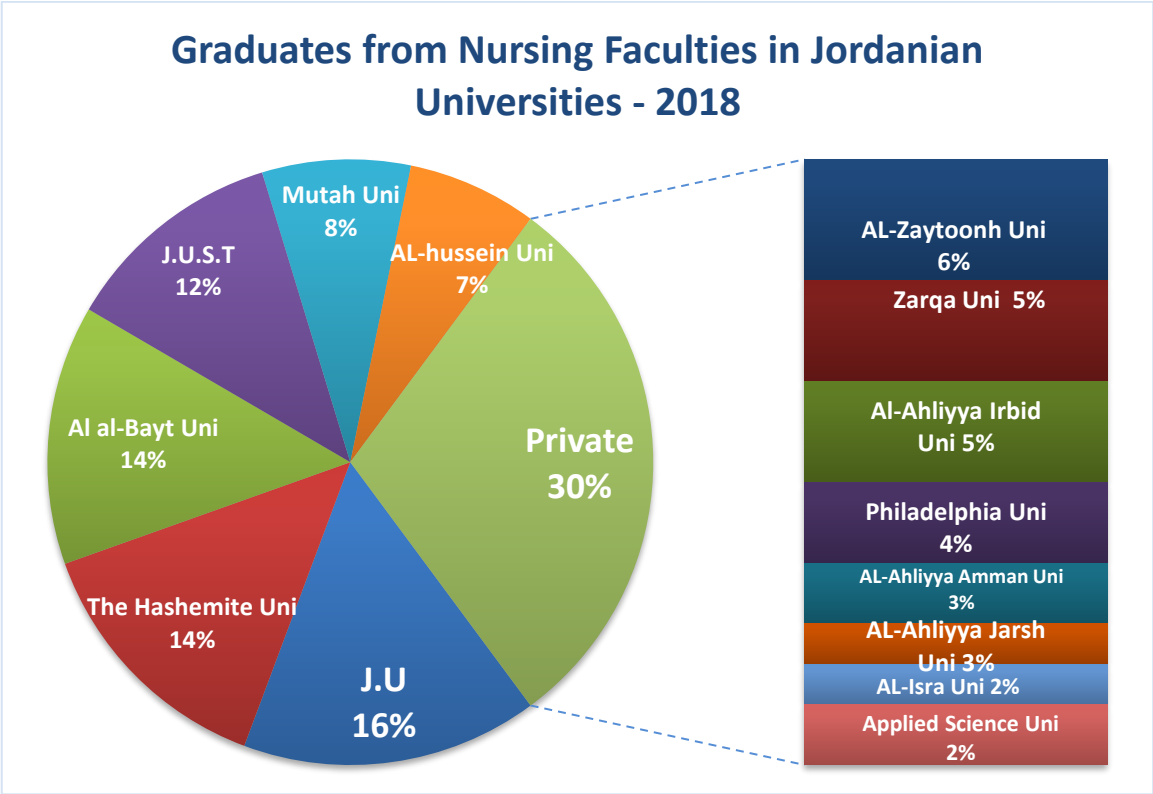
Graph (26) showed that 3,080 (64%) of enrollees in the nursing faculties in Jordan are females compared to 1,752 (36%) males.

Graph (26): Enrollees in Nursing Faculties by gender, 2017/2018



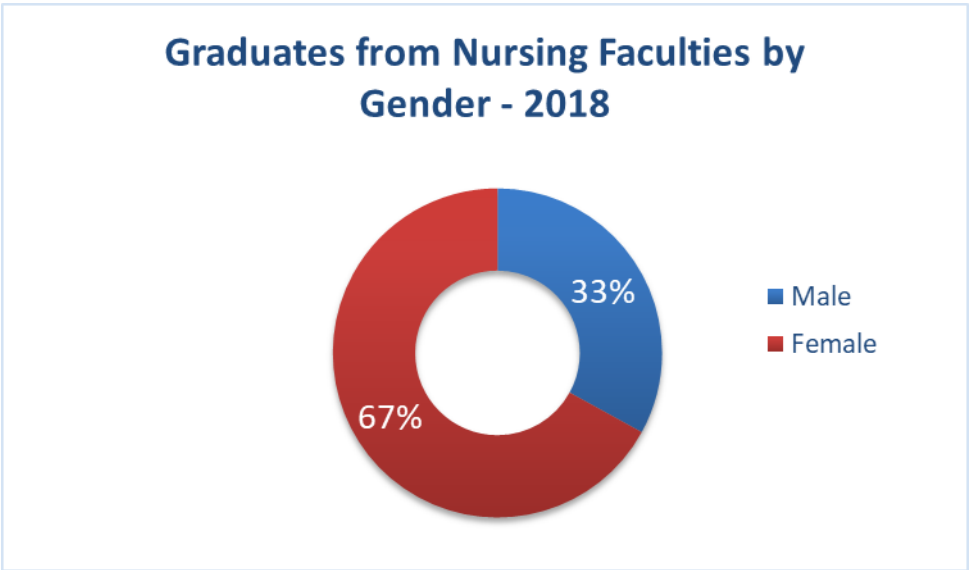
Graph (27) showed the distribution of graduates (1,530 nursing student) from these nursing faculties; about 70% of the nursing students were graduated from the six public universities J.U (250),Hashemite University (219) Alal-Bayt University (208), J.U.S.T (176), Mut’ah University (117), Al-Hussein University (102).

Graph (27): Graduates from Nursing Faculties in Jordanian Universities /2018



Graph (28) shows that 1,026 (67%) of graduates from the nursing faculties in Jordan are females compared to 504 (33%) males

Graph (28): Graduates from Nursing Faculties by Gender, 2018



9. Recommendations

Improve the quality of HRH data and its utilization for decision making:

- Improve quality of data especially that of the private sector
- Develop a dynamic HRH automated centralized reporting system to monitor intra and inter-sectoral health workforce movement.
- Train National HRH Observatory staff and data collection focal points on the new system for e-data collection and reporting.
- Advocate for the National HRH Observatory as a national resource for HRH informed decisions

Improve health workforce distribution all over the kingdom:

- Develop appropriate strategies to ensure equitable workforce distribution among different governorates in the country as geographical disparities in the distribution of health workforce was obviously noticed.
- Implement appropriate policies to attract and retain health workers in the public sector in general and remote areas in specific.

Ensure adequate health workforce production to respond to growing population needs:

- Review acceptance regulation in the universities regarding enrollees in different health colleges to bridge the gap between health professionals' supplies and actual market needs.
- Reconsider the gender issue in the universities' acceptance regulations in all public and private health colleges based on labor market analysis.
- Develop appropriate strategies to motivate enrollment of females in nursing faculties to meet their shortage in the health market.

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