HEALTH WORKFORCE OBSERVATORY

Human Resources for Health Country Profile- Jordan

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ACRONYMS

CC	Community College
CHIP	Civil Health Insurance Plan
CME	Continuing Medical Education
DOS	Department of Statistics
FBOs	Faith Based Organizations
GDP	Gross Domestic Product
JHCAC	Jordan Health Care Accreditation Council
JHEUS	Jordan Health Expenditure and Utilization Survey
HHC	High Health Council
HRD	Human Resources Development
HRH	Human Resources for Health
HRHO	HRH Observatory
JD	Jordan Dinar
JMA	Jordan Medical Association
JMC	Jordan Medical Council
JU	Jordan University
JUH	Jordan University Hospital
JUST	Jordan University for Science and Technology
KAH	King Abdullah University Hospital
KHMC	King Hussein Medical Center
MDGs	Millennium Development Goals
MOHE	Ministry of High Education
MOH	Ministry of Health
NGO	None Government Organization
NHA	National Health Accounts
PHA	Private Hospitals Association
PHC	Primary Health Care
PHR*plus*:	Partner for Health Reform Plus
RMS	Royal Medical Services
RN	Registered Nurse
UNRWA	United Nations Relief Works Agency

EXECUTIVE SUMMARY

Introduction

Jordan is a low-middle income country with limited natural resources, and thus human resources development has been made as one of the most valuable assets and strategic pillars of the country.

This HRH Jordan profile is part of a collaborative work of WHO's Regional Office for the Eastern Mediterranean, through its Division of Health Systems and Services Development.

The purpose of the HRH Jordan profile is to serve as a tool for: providing a comprehensive picture of the Health Workforce situation in Jordan; presenting the HRH policies and management situation; strengthening the human resources information system in Jordan by establishing evidence for baselines and trends; facilitating information sharing and cross-country comparisons; and contributing towards producing regional HRH profiles.

This is a cross –sectional study that adopted a descriptive and analytical methodology. Data was compiled from available reports, studies and statistics related to HRH for public and private health sector stakeholders. Personal and telephone interviews and field studies were conducted with identified representatives from different stakeholders to fill in the HRH information gaps.

Since Jordan HRH Observatory is still in its infancy stage, some data mainly related to gender, age and geographical distribution were not available or not complete. Few estimations by well experienced professionals who are very well familiar with the relevant profession were done to fill such gaps. These estimations were validated by peers from the same profession.

1. Country Interview

Jordan is a low-middle income small country with limited natural resources and semi-arid climate. Jordan population at the end year 2008 was (5850000). The declining mortality rate and the high total fertility rate (3.6) have contributed to overall population growth that averaged 2.2%. The annual income per capita at current prices was US$ 3425 in 2008. Proportion of budget spent on MOH was 7.4% for 2008.

Executive authority is vested in the king and his council of ministers. Legislative power rests in the bicameral National Assembly (Chamber of Deputies and Chamber of Senates).

Jordan's performance is among the better Arab states in terms of life expectancy, adult literacy, school enrolment, female literacy, and according to other basic indicators. Jordan's ranking improved substantially in the Global Competitiveness Index and was 49/131 in 2006.

The Government of Jordan has identified poverty, unemployment and high population growth its most important challenges. Jordan's main development challenges can be summarized in three cross-sectoral objectives: (i) achieving high growth to reduce and

avoid poverty; (ii) improving the quality and efficiency of public services; and (iii) addressing severe resource constraints, beginning with water.

Jordan achieved universal child immunization and has made considerable progress in reducing the major health risks to infants and children. The Country has been polio free since 1995. Major progress was achieved in lowering the infant and child mortality rates, as well as the maternal morality rates. Presently, Jordan is one of the countries with the lowest infant and maternal morality rates in the region.

Jordan, like other middle income countries, is witnessing an epidemiological transition, which is characterized by an increase of non-communicable diseases, particularly cardiovascular diseases, cancer, diabetes and chronic respiratory conditions.

2. Country Health System

Jordan has one of the most modern health care infrastructures in the Middle East. Jordan's health system is a complex amalgam of three major sectors: Public, private, and donors.

The general Health Policy is set by the High Health Council that represents all health care providers. The national health strategy is aimed at creating a comprehensive health care system, utilizing both public and private service providers covering all levels of care and improving the quality of health services by implementing a national health services accreditation program.

In 2007, total health expenditures –both public and private was estimated at 1016 million JD, This is equivalent to 9.05% of GDP. About 79% of the population in Jordan is covered by formal health insurance.

Problems related to accessibility, equity, duplication of services, poor coordination among major providers, unregulated private sector, low utilization rates in the private sector, limited quality improvement programs, inefficient use of available resources ,poor management and inappropriate health information system are the main challenges facing all providers of health care in Jordan.

3. Health Workers Situation

3.1 Health workers stock and trends

The total number of health workers was 91756 (12% of the total employees in the public and private sectors). The country has 2.5 physicians (generalists and specialists), 3.8 nurses (all categories), 0.9 dentists, and 1.3 pharmacists per thousand population. During the last four years the number of most health professions and their percentages to population has been increasing; registered and associate nurses have the highest increase rate per thousand population. The nurse to doctor ratio in the health sector as a whole (1.2 nurses to 1.0 doctor) remains very low and is among the lowest group of countries in the world.

3.2 Gender distribution by health occupation/cadre

Females comprise about 44% of the total health workers in Jordan. Women are high represented (more than 50%) in nursing cadres, dental technicians, pharmacists, lab scientists, and most paramedics. Men are very high represented in some cadres (more

than 70%) as physicians, dentists, pharmacy assistants and environment health workers. The percentage of male RNs is expected to increase during the next four years as male graduates from nursing faculties comprise about 60% of the total graduating nurses. Most of the unemployed nurses are male nurses.

3.3 Age distribution by health occupation/cadre

Most of the health cadres in Jordan (85%) are below 50 years of age. Young health workers(less or equal 30 years of age) constitute about 40% of the total health work force in Jordan.

3.4 Region and geographical distribution by health occupation/cadre

The distribution of health workforce for all categories goes in favor of the Middle Region. There are geographical disparities in the distribution of health workers mainly physicians among urban and rural areas.

3.5 Sector distribution by health occupation/cadre

The non state sector (private sector and faith based organizations) is the main employer of HRH in Jordan (51.2%). The private health sector attracts experienced health professionals from the public sector. Government employed physicians and other health cadres are not allowed to practice in the private sector. The MOH has recently contracted with physicians from the private sector to meet the shortage in some medical specialties.

3.6 Distribution of health occupation/cadre according to work place

There are imbalances in the distribution of health cadres between hospitals and primary healthcare facilities. About 50% of total MOH staff works in hospitals, while this percentage is 80% and 23% for RMS and the private sector respectively. 90% of the MOH registered nurses work in hospitals, while only 6% work at PHC.

4. HRH Production

4.1 Pre-service education of health workforce

Jordan has a strong high education system for physicians, dentists, pharmacists, nurses and allied health sciences. Jordan has three main levels of health workforce formal education: community college/associate degree programs (2 years after secondary school), university/undergraduate (4-6 years after secondary school) and post-graduate (1-4 years after university degree).

There are 38 associate degree programs: 27 programs for nursing and midwifery and 11 programs for allied health professions.

Public and private universities conduct programs of 4-6 academic years leading to a Bachelor's degrees for physicians, dentists, pharmacists, nurses,midewifery, physiotherapy, occupational therapy,nutrition,laboratory sciences, optometry, radiology sciences, otology, speech pathology, health services administration, applied dental sciences and biomedical engineering. Physicians and dentists are educated in public universities only.

Universities, MOH, and RMS have been involved in partnership arrangements for training of health sciences students in local community hospitals.

Few public universities conduct post graduate programs leading to high degrees such as

Masters and PhDs in some health sciences. Jordan University established the first doctorate program for nursing in 2005-2006.

The High Education Council sets high education policies and regulations, Ministry of High Education & Scientific Research implements these policies and the High Education Accreditation Commission sets standards for high education and monitors their implementation. The Ministry of Health is not directly involved in formal policy formulation or decisions related to education plans or student intakes at public or private universities and colleges.

The annual average of input to universities and community colleges in the different health training programs during the last three years was 6869 and 2982 students respectively. About 34% and 63% of the students admitted to universities and community colleges respectively were nursing students. The input of pharmacy students to universities and community colleges ranked second with annual average of 1600 and 320 students respectively.

The annual average of graduates during the last three years for all health professions was 4354 for universities and 2287 for community colleges. Nursing graduates (registered and associate nurses) have the highest percentage of total output during the last three years for both university and community colleges programs, followed by pharmacy staff (pharmacists and pharmacy technicians) and physicians.

The output of the trained health professionals is partially based on the market demand. Other factors as the capacity of health training institutions, students' preferences ,the profitability of the program for the training institutions and the expected salary or income from each profession are the main determinants of health professionals output.

4.2 Post-service and Continuing Education

Formal post-service training programs are confined to physicians and dentists in public and private sectors. These programs are managed and supervised by the Jordan Medical Council. They include programs for: medical residency, medical internship, dentistry residency and dentistry internship.

Formal continuing training programs are not regularly provided by public or private health sector. It is performed on voluntary basis by professional associations, hospitals, teaching institutions and individual practitioners. Most of the training provided is on job-training, seminars, workshops and conferences. The majority of hospitals do not have any budgetary allocations for formal training and research.

Jordan Health Care Accreditation Council (JHCAC), a private non profit organization, is mandated to accredit health training programs which are not under the jurisdiction of the High Education Council or the Jordan Medical Board.

4.3 Health workforce requirements

No formal projections or future plans requirements for HRH exists in Jordan. The Human Resources Project (2004-2006) which was funded by USAID and technically supported by Initiatives Inc provided future staff requirements for MOH for the year 2014 for some health cadres.

The High Health Council has adopted strategic objectives in 2007 for some health work categories per 10000 population (27.5, 8.5, 12, and 35 for physicians, dentists,

pharmacists and nurses respectively).No specific action plan was adopted to achieve these goals.

5. HRH Utilization

5.1 Recruitment

Each sub- health sector in Jordan has its own recruitment regulations and mechanisms. In MOH, the appointment of medical staff and health care professionals is done in accordance with Civil Service Bureau regulations, standards, and salary scale. The MOH has little control on these regulations and standards.

Most physicians, female nurses, midwives and radiology technologists are recruited after short time of graduation. Other graduates as male nurses, dentists, pharmacists, and most paramedics usually stay more than one year after their graduation before being recruited.MOH and RMS is the main employer of new health cadre graduates.

5.2 Deployment and distribution mechanisms

The MOH continuously faces obstacles of placing professionals in rural areas and in the south region. Policies and appropriate incentives should be developed to attract and retain physicians in rural and poor areas.

5.3 The work environment

There is a problem of high turnover among medical and nursing staff in MOH, which has resulted in shortages in health care providers, due to lack of incentives, low salary scale and remunerations in comparison with university hospitals, RMS, private sector and Gulf States offered opportunities.

5.4 Payment mechanisms

MOH and RMS employees are paid salary and benefits according to the civil/army service regulations and the category, grade/level and step or rank to which they have been allocated. In the private health sector, every hospital has its own salary scale regulations. Most physicians working in private hospitals are self employed in their own clinics. They are paid by patients or health insurance programs according to fee-for – service basis. Prospective payment mechanisms are not common in Jordan.

5.5 Supervision systems and mechanisms

The MOH has full authority to license health professionals and withhold or abstain from granting professionals' licensure. Performance appraisals are conducted periodically and documented for the majority of staff. Performance evaluations within the MOH and other public sectors tend to be based on whether an employee abides by working hours and on their behavior, rather than on work performance.

6. Governance for HRH

6.1 HRH policies and plans

The Human Resource Development (HRD) policy is part of the general health policy. However, most components of the HRH policy are not fully implemented; still seem to be developed more for the sake of having a policy and a plan. A policy formulation exercise is meaningful only if its purpose is clearly spelled out and seen as a real opportunity for change. The HRH policy in Jordan has to be translated into a work plan with clearly defined objectives, strategies and expected results, with a time-frame and resources

attached to them.

There are two departments/directorates for HRH in MOH responsible for developing, implementing and monitoring HRH strategies: one for Personnel Administration and the second for Human Resources Development.

All decisions regarding HRH recruitment, placement, termination and compensation are centralized in MOH. Decentralization function as a governmental process is still facing many constraints, due to lateness and inability of local governorates to implement decentralization mechanisms and modules.

6.2 Professional associations' regulations

Registration in the related professional association is mandatory before licensing. The Jordan Medical Council certifies doctors as general practitioners and specialists. Professional bodies are assuming the role of implementing, monitoring and enforcing the approved rules and regulations regarding each profession.

6.3 HRH information and research

Computers and personnel data management systems are available in all health sectors, but human resource information is not produced regularly for management decision-making. The Information and Research Directorate in MOH maintains regular statistics about HRH working in MOH and other health sectors. These statistics do not cover all HRH working in the country. The reliability of the HRH statistics reported by the private health sector is not guaranteed. The HRH statistics is reported in the annual statistical book of the MOH; no analysis is performed on these statistics.

The High Health Council has established the Jordan National HRH Observatory in 2009 with technical support from WHO/EMRO. This Observatory will be the main source of information and statistics on HRH in Jordan.

HRH research is not institutionalized or performed on regular basis. Most of the research performed on HRH is initiated either by International donor agencies like USAID and WHO or by students and academicians.

6.4 Stakeholders in HRH

In addition to MOH, HRH governance functions in Jordan are performed by multiple public, semipublic, private and NGO's. Overlapping and duplication of governance functions within some health organizations is not uncommon. Most forums which are conducted to facilitate dialogue among different stakeholders regarding HRH issues are organized and sponsored by international donors and agencies. Continuity of this process by local initiatives is highly recommended. The HHC is one of the commissioned agencies, which was tasked to work on harmonization and coordination issues via the national forum established as part of the HRH observatory in Jordan. The HHC is hosting the HRH observatory and serves as a coordination body for HRH stakeholders. The national policy forum has been working since July 2008 aimed at addressing and solving together the pressing issues and challenges pertaining to health workforce in Jordan

7. Conclusion and Recommendations

Some policy directions that address challenges and gaps related to health workforce situation, production, utilization and governance were highlighted and proposed.

INTRODUCTION

Background

Jordan is a low-middle income country with limited natural resources, and thus human resources development has been made as one of the most valuable assets and strategic pillars of the country. Subsequently, achievements of Jordan in the provision of health services have been remarkable according to national and international reports. Given its health indicators, Jordan is being ranked today as one of the best countries of the region.

On the other hand, the healthcare system in Jordan is evolving and has to continuously respond to the changing demographic, epidemiologic and risk profile of the population; the rising expectations of a more educated population; the fast growing private health sector; the rapid changes taking place in medical technology; and the desire among the government to expand services and achieve universal health coverage. Accordingly, Jordan has been remarkably investing in human resources for health as a key element for scaling up health interventions to achieve national goals and health-related targets of the Millennium Development Goals (MDGs).

This HRH Jordan profile is part of a collaborative work of WHO's Regional Office for the Eastern Mediterranean, through its Division of Health Systems and Services Development, to support Member States in: strengthening capacity to develop and use evidence-based policy-making strategies; improving the performance of health system functions; and promoting equity, quality and efficiency.

Purpose

- The purpose of the HRH Jordan profile is to serve as a tool for:
- Providing a comprehensive picture of the Health Workforce situation in Jordan.
- Systematically presenting the HRH policies and management situation in a comparable way and to help monitoring of HRH stock and trends in Jordan.
- Communicating with and between policy-makers and stakeholders in the country.
- Strengthening the human resources information system in Jordan by establishing evidence for baselines and trends.
- Facilitating information sharing and cross-country comparisons.
- Contributing towards producing regional HRH profiles.

Methodology and Data Collection

- This is a cross-sectional study that adopted a descriptive and analytical methodology based mainly on secondary information.
- Data was collected using the template for HRH country profile that covers HRH stock, trends, distribution, pre and post-service education, management, and governance which was developed by WHO/EMRO Division of Health Systems and Services Development.
- Before collecting data, the Health Workforce Classification Mapping provided by WHO/EMRO was nationalized using the name of equivalent national category and the national definition for each category (Annex 2).

- A special template provided by WHO/EMRO was used to assess HRH strategic direction, governance, partnership and investment(annex 3)
- Data was compiled and analysed from reports, evaluations and web sites for the Ministry of Health, Royal Medical Services, university hospitals, private hospitals, Ministry of High Education and Scientific Research, High Health Council, Department of Statistics, Ministry of Planning, National and International Organizations. Health Laws and relevant published HRH studies about Jordan were also reviewed.
- The Annual Statistical Reports on High Education in Jordan for the last three years published by the Ministry of High Education and Scientific Research were the main source for the data related to the production of HRH.
- Personal and telephone interviews were conducted with identified representatives from MOH, professional associations, High Health Council, Jordan Medical Council Private Hospital Association, Department of Statistics Administration, and professional societies to fill in the gaps from the reports .
- Field studies to collect HRH data from private hospitals were performed by health management MA students using the HRH templates provided by WHO/EMRO as data collection tools .

Limitations

- Since Jordan HRH Observatory is still in its infancy stage, some data related mainly to gender, age and geographical distribution for some well established health professions as physicians, dentists, nurses, pharmacists, etc. were not available or not complete.
- Most of allied health professions in Jordan do not have professional associations or societies; thus human resources data, especially for those who are working in the private sector, was not available or fragmented.
- Discrepancies in figures among official reports exist sometimes.
- Therefore, estimations by well experienced professionals who are very well familiar with the relevant profession were done sometimes to fill such gaps. These estimations were validated by peers from the same profession.

Report layout

A comprehensive analysis of Jordan HRH profile outlining the following main topics will be presented in this report:

- A country profile giving geography and demography, population and economic situation.
- Jordan health system, its governance and health provision including policy and systems in the context of HRH
- Present HRH stock and trends, imbalances in skill-mix, distribution and mobility of health workers.
- Human Resources for Health production including pre-service and post basic training processes.
- Human Resources for Health utilization.
- Conclusion and recommendations.

1. COUNTRY OVERVIEW

1.1 Geography and demography

Jordan is a small country with limited natural resources and semi-arid climate. Its strategic position connecting Asia, Africa and Europe has played a major role in shaping its past history and it's present. Jordan has a total land territorial area of 89,300 square kilometers, of which only 7.8% is arable land. Jordan's approximately 5.85 million people (2008) are mostly Arabs; with some Circassians, Chechens and Armenians. More than 92% of the population is Moslems and about 6% are Christians.

Based on results from the 2004 census, the estimated population of Jordan at the end year 2008 was (5850000). In 2008 it was estimated that 36.9% of the population falls under 15 years, 59.6% between 15 and 64 years and 3.5% over 65 years. The average annual population growth rate is 2.2%. [1'2'3]

Map of Jordan

The total fertility rate (TFR) is relatively high in Jordan, though it has declined steadily in recent years to 3.6 in 2008 [1, 4]. The declining mortality rate and the high total fertility rate have contributed to overall population growth that averaged 2.2% in 2008.

Over the next 50 years, Jordan's demographics will change dramatically. The country's population is growing rapidly, doubling over the last 20 years and likely to almost double again by 2035. More important, however, is the demographic transition the country is undergoing, as it moves from high fertility and mortality, to low fertility and mortality. This is changing the age structure of the population, as well as leading to fundamental changes in

parents' perceptions of what their children can and should achieve. Over the next 40 years Jordan will see the relative size of its working age population more than double. It can also expect demand for quality education and health care to rise, and for people to save increasing proportions of their income, so that they can maintain a reasonable standard of living in their old age. Policies will be needed to continue to reduce fertility rates, anticipate future retirement needs, and address issues that might impede efficient use of the anticipated new labor, national savings and human capital. [5]

Table 1.1 Percent Population Distribution by Age Group and year (Jordan, 2005-2008)

Age Group	2005	2006	2007	2008
0-14 years	37.3	37.3	37.3	36.9
15-64 years	59.4	59.4	59.4	59.6
65^{+} years	3.3	3.3	3.3	3.5
Total	100.0%	100.0%	100.0%	100.0%
Total population	5473000	5600000	5723000	5850000

Source:DOS, Jordan in Figures (2005, 2006,2007)
http://www.dos.gov.jo,

Table 1.2 Population Distributions by Sex (Jordan, 2005-2008)

Year	Total	Male	Female	Male/Female (%)	Growth rate (%)
2005	5473000	2821100	2651900	106	2.3
2006	5600000	2886600	2713400	104	2.3
2007	5723000	2950000	2773000	106	2.2
2008	5850000	3015000	2835000	106	2.2

Source: DOS (http://www.dos.gov.jo)

1.2. Economic context.

Jordan is a small lower-middle income country with limited natural resources and scarce fresh water supplies (one of the world's 10 most water stressed countries). The GDP at market prices for Jordan in 2008 was US$ 20.04 billion. The annual income per capita at current prices was US$ 3425 in 2008. Proportion of budget spent on MOH was 7.4% for 2008. [1,6,7]

The Jordanian economy displayed a strong improvement over the past few years despite several external shocks such as the surge in the international oil prices, the conditions of uncertainty in the region and the decline in foreign grants over the period (2005-2007). Gross Domestic Product (GDP) recorded an annual growth averaging 7.0 percent, at constant market prices, over the period (2005-2008). Moreover, the productivity and the competitiveness of the national economy have improved and the ratio of public debt to GDP has dropped notably; and the inflation rate remained within acceptable levels until the end of 2007. The currency has been stable with an exchange rate fixed to the U.S. dollar since 1995. [7, 8]

Inflationary pressures on the back of soaring international fuel and food prices were intensified during 2008 .The inflation rate reached about 15% during 2008 .6 The economy's capacity for growth remains vulnerable to external shocks, and the rate of growth is inadequate to resolve long-standing developmental challenges. Despite recent reductions, the stock of external debt remains high. More important, the recent economic growth has not translated into a commensurate increase in job creation or poverty reduction. Unemployment and underemployment remain high, and deep pockets of poverty persist.

The Government of Jordan has identified poverty, unemployment and high population growth its most important challenges. Jordan's main development challenges can be summarized in three cross-sectoral objectives: (i) achieving high growth to reduce and avoid poverty; (ii) improving the quality and efficiency of public services; and (iii) addressing severe resource constraints, beginning with water. [9]

Table: 1.3 Economic indicators (Jordan, 2005-2008)

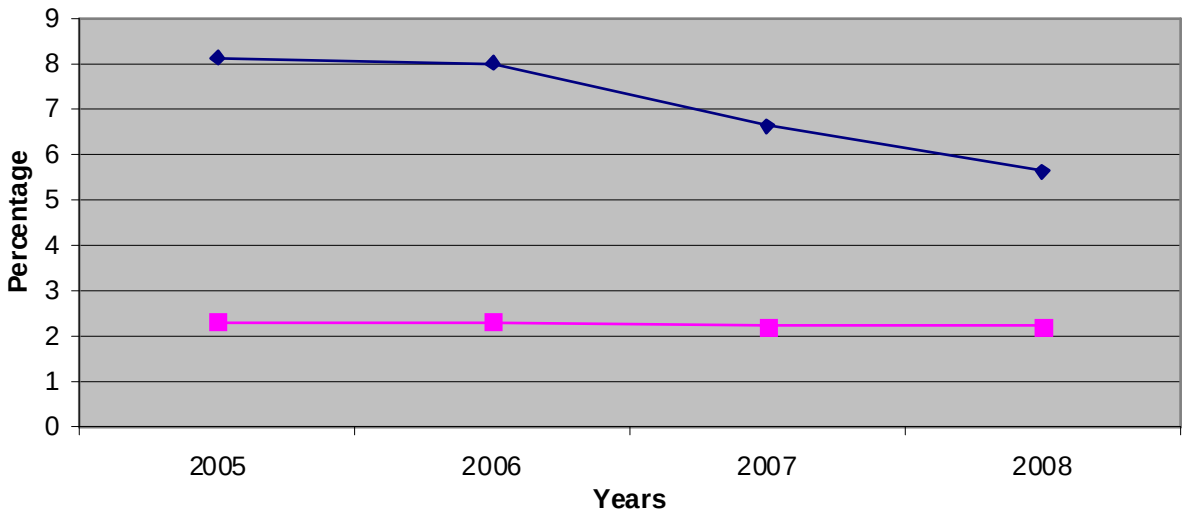
Indicators	2005	2006	2007	2008	Source & year
GDP(at market Prices, (US$ bn)	13.05	14.86	16.55	20.4	Main Economic Indicators, Ministry of Planning and International Cooperation,2009
Real GDP Growth Rate (%)	8.1	8.0	6.6	5.6	Main Economic Indicators, Ministry of Planning and International Cooperation,2009
National Debt (External and Internal, (US$ bn)	10.6	10.4	11.6	11.9	Main Economic Indicators, Ministry of Planning and International Cooperation,2009
Economic Aid(US$ mn)	705.6	429.6	485.0	1014	Main Economic Indicators, Ministry of Planning and International Cooperation,2009
Proportion of Budget spent on health	5.7	6.1	5.6	7.4	MOH Annual Report,2008
Annual income per capita(Current Prices, US$)	2384	2653	2891	3425	Main Economic Indicators, Ministry of Planning and International Cooperation,2009
Poverty incidence (%)	14.7	13	14.3	14.0	Jordan Health System Profile,2008
Unemployment rate (%)	14.8	14.0	13.1	12.7	MOH Annual Report,2008
Inflation rate (%)	3.5	6.3	5.7	14.9	Main Economic Indicators, Ministry of Planning and International Cooperation,2009

1.3 Political context

Jordan is a constitutional monarchy based on the constitution promulgated on January 8, 1952. Executive authority is vested in the king and his council of ministers. The king signs and executes all laws. He appoints and may dismiss all judges by decree, approves amendments to the constitution, declares war, and commands the armed forces. The king, who may dismiss other cabinet members at the prime minister's request, appoints the council of ministers, led by a prime minister. The cabinet is responsible to the Chamber of Deputies on matters of general policy and can be forced to resign by a two-thirds vote of "no confidence" by that body.

Legislative power rests in the bicameral National Assembly. The number of deputies in the current Chamber of Deputies is 110, with a number of seats reserved for various religions, ethnicities, and a women's quota. The Chamber, elected by universal suffrage to a 4-year term, is subject to dissolution by the king. The king appoints the 55-member Senate for a 4-year term. Administratively, Jordan is divided into 12 governorates, each headed by a governor appointed by the king. They are the sole authorities for all government departments and development projects in their respective areas. [10]

Figure 1.1: Trends of Population Growth rate and Economic Growth Rate (Jordan,2005-2008)



Jordan is witnessing a trend towards increasing decentralization of responsibility to "sub-national" levels through the Governorates Development Plan and the Municipalities Reform Program. In February 2005, the King formed the Steering Committee for the National Agenda to determine the kingdom's political and socio-economic reform polices and programs over the next 10 years. The Jordan National Agenda emphasizes the need for structural reforms and fostering to promote private investment and employment

generation, along with emphasis on education and health development and poverty alleviation. [11]

1.4 Health status

Jordan's current population and epidemiological profiles are a result of both the demographic and epidemiological transitions that characterize most middle-income countries. Drastic declines in death rates and continued high birth rates along with the shifting composition of illness away from infectious diseases to non-communicable diseases shape Jordan's population and epidemiological circumstances.

National morbidity data is not available in Jordan since most hospitals and almost all non MOH primary healthcare centers and clinics do not perform any type of coding or classification of diseases. The MOH Annual Statistical Report for 2008 provides a classification of clinical problems in patients presenting to MOH PHC. As shown in Table1.4, the diseases related to respiratory system centers rank 1 and are responsible for 42% of health problems treated in MOH PHC in 2008. [1]

Causes related to cardiovascular (Circulatory), as shown in Table 1.4, were the leading causes of death in Jordan followed by neoplasms, external causes of mortality (injuries) and Endocrine, nutritional and metabolic diseases.[12] It is apparent that non-communicable diseases have become an important cause of registered deaths.

Jordan achieved universal child immunization in 1988 and has made considerable progress in reducing the major health risks to infants and children. The Country has been polio free since 1995.Beginning from the early 1980s; all national socioeconomic plans have emphasized the right to health and health care. Major progress was achieved in lowering the infant and child mortality rates, as well as the maternal morality rates. Presently, Jordan is one of the countries with the lowest infant and maternal morality rates in the region. [13]

Jordan, like other middle income countries, is witnessing an epidemiological transition, which is characterized by an increase of non-communicable diseases, particularly cardiovascular diseases, cancer, diabetes and chronic respiratory conditions. Among the factors contributing to a high prevalence of non-communicable diseases are the increasing elderly in the population as well as the lifestyle changes including unhealthy food consumption pattern, smoking and residential life lacking manual work and physical exercise. [7]

Table 1.4 Main causes of morbidity and mortality, 2008

Main causes of morbidity in patients presenting to MOH PHC*	Value (%)	Main causes of mortality**	Value (%)
1. Disease of the Respiratory System	41.7	1.Diseases of the circulatory system	34.2
2.Diseases of the Digestive System	8.7	2. Neoplasms	14.0
3.Diseases of the Nervous System & Sense Organs	7.9	3.External causes of mortality	9.6
4. Diseases of the Circulatory System	7.2	4.Endocrine, nutritional and metabolic diseases	8.2
5.Diseases of the Musculoskeletal System & connective tissue	6.5	5.Certain conditions originating in the perinatal period	7.3
6.Endocrine, Nutritional & Metabolic Diseases	6.0	6.Diseases of the respiratory system	6.1
Others	22.0	Others	20.6
Total	**100.0**	**Total**	**100.0**

Source:

* MOH Annual Report, 2008

** MOH, Directorate of Information and Research, Mortality in Jordan for the year 2006, Amman, 2008

Table: 1.5 Health indicators, 2008

Indicators	Both sex	Male	Female	Source and Year
Life expectancy	73.0	71.6	74.4	MOH Annual Report,2008
Crude Mortality rate	7.0			
Infant mortality rate (per 1000 live births)	19.0	20.0	18.0	MOH Annual Report,2008
Under five mortality rate(per 1000)	22.0	21.0	23.0	Jordan Health System Profile,2008
Maternal mortality ratio per 100,000 live births	-	-	41.0	MOH Annual Report,2008
HIV/AIDS prevalence rate(per 100000)	11.0	13.2	8.7	MOH Annual Report,2008
% safe water access	98.0	98.0	98.0	Jordan Health System Profile,2008

2. COUNTRY HEALTH SYSTEM

2.1 Governance of health system

Jordan has one of the most modern health care infrastructures in the Middle East. Jordan's health system is a complex amalgam of three major sectors: Public, private, and donors .The public sector consists of two major public programs that finance as well as deliver care: the Ministry of Health (MOH) and Royal Medical Services (RMS). Other smaller public programs include several university-based programs, such as Jordan University Hospital (JUH) in Amman and King Abdullah Hospital (KAH) in Irbid. The extensive private sector includes 60 hospitals and many private clinics. Over 1.6 million Palestinian refugees in Jordan get access to primary care through the United Nations Relief Works Agency (UNRWA). Each of the health care sub-sectors has its own financing and delivery system.

The Ministry of Health (MOH) is the major single institution financer and provider of health care services in Jordan. It is the largest in term of the size of its operation and utilization as compared to RMS, JUH, KAH, or other private sectors. The Ministry of Health is responsible for all health matters in the Kingdom, and in particular: [7]

a) Maintaining public health by offering preventive, treatment and health control services.

b) Organizing and supervising health services offered by the public and private sectors.

c) Providing health insurance for the public within available means.

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 health care services. Primary Health Care services are mainly delivered through an extensive primary health care network. MOH also owns and operates 30 hospitals in 11 governorates, with 4333 hospital beds accounting for 38.7 percent of total hospital beds in Jordan. [1]

In addition to its general public health functions, the MOH has a dual financing function. First, it is responsible for administering the Civil Health Insurance Plan (CHIP) which covers civil servants and their dependents. Individual certified as poor, the disabled, children below the age of six years, and blood donors are also formally covered under the CHIP, which covers about 34 percent of population.

The Royal Medical Services (RMS) mainly provides secondary and tertiary care services. It has 11 hospitals (7 general and 4 specialist), 2131 beds representing 19. % of hospital beds in Jordan. It employs 8.4 percent of all practicing physicians .RMS is responsible for providing health services and a comprehensive medical insurance to military and security personnel. The Military Health Insurance system currently covers 1,500,000 people of whom less than 10% are active military and police personnel. RMS

acts also as a referral center through providing high quality care, including some complex procedures and specialty treatment to Jordanians (including MOH beneficiaries) and Arab patients.

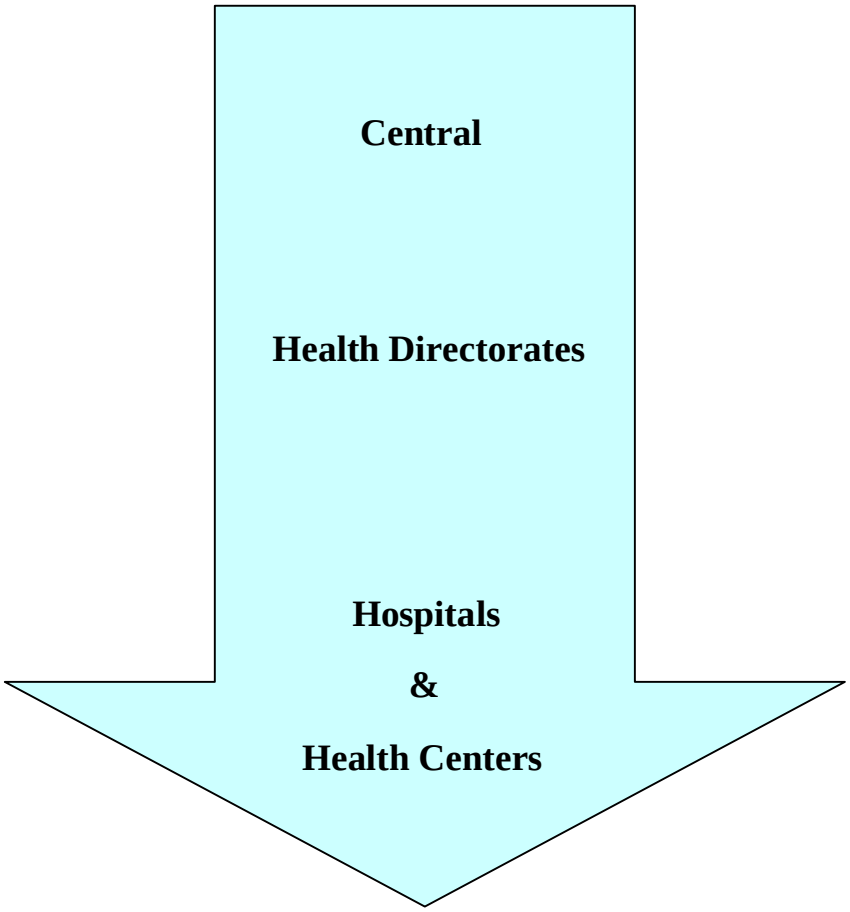


Figure 2.1 MOH Organizational Levels

Jordan University Hospital (JUH) has over 522 beds. It is affiliated with Jordan University and its medical school. Its one of the most specialized and high-tech medical centers in the public sector, along with King Hussein Medical Center and King Abdullah Hospital. It has 4.7 percent of the total number of hospital beds in Jordan and accounts for 3.4 percent of the admissions for the year 2008. It has 5 percent of the total number of hospital beds in Jordan and accounts for 3.2 percent of the admissions for the year 2008. JUH has an occupancy rate of 68 percent and employs 2 percent of physicians. [1]

King Abdullah Hospital (KAH) is affiliated with Jordan University of Science and Technology (JUST). The total bed capacity of the hospital is 650 beds and the operating (opened beds) are 504 beds. It has 4.5 percent of the total number of hospital beds in Jordan and accounts for 3.8 percent of the admissions for the year 2008. 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. [1]

The United Nations Relief and Work Agency (UNRWA) for Palestine Refugees provides basically community health oriented programs that provide comprehensive health care to eligible refugee population (about 600,000) including preventive, curative, and family planning services. Currently, UNRWA operates 25 health centers and MCH centers. For in-patients services, it used to contract with the MOH, RMS and some private hospitals for this service. [7]

The non-state (private) sector plays an important role in terms of both the financing and delivery of services. Many private firms provide health care coverage for their employees either through self insuring or the purchase of private health insurance. In terms of service delivery system, the private sector has 60 hospitals (3712 beds) that account for 33 percent of hospital beds in Jordan with occupancy rate of 53 percent. In addition, the private sector employs 60 percent of all physicians, 94 percent of all pharmacists, 83 percent of all dentists, and 44 percent of registered nurses.[1]

The private sector contains much of the country's high tech diagnostic capacity. This sector continues to attract significant numbers of foreign patients from nearby Arab nations. It was reported that the private sector received about $1000 million in revenue from foreign patients in 2007.[8] This sector under the absence of strict regulatory environment is flourishing and growing steadily.

The general Health Policy is set by the High Health Council .It is chaired by the Prime Minister and has representatives from the different health sectors. The main responsibilities of the Council regarding policy making are: [14]

a) Proposing and initiating national health policy and strategic health plans.
b) Coordinating the major activities of health sub-sectors (MOH, RMS, university hospitals, private health sector, etc.).
c) Proposing solutions to the major problems of the health care system (HCS).
d) Adopting of health system research agenda and facilitating the implementation of this agenda.

The MOH is mandated by the Public Health Law and other legislations to license monitor and regulate all health professions and institutions in the country. In addition to MOH, health governance functions in Jordan are performed by multiple public, semipublic, private, and NGO's. The professional associations, other health councils and independent public organizations (Jordan Medical Council, High Health Council, Jordanian Nursing Council, Jordan Food and Drug Administration, etc…) participate with the MOH in regulating and monitoring functions. The Private Hospitals Associations (PHA) which represents all private hospitals has no effective role in regulating and monitoring private hospitals. Poor cooperation and lack of effective policy coordination among the different health sectors has created overlapping and duplication of governance functions. [7]

The governance of MOH hospitals is highly centralized. Senior level executives at headquarters in Amman decide all significant managerial, personnel, budgetary and procurement matters. It is believed that hospitals may be more efficiently operated and quality of patient care enhanced if greater independence was granted to them. [7]

2.2 Service provision

Over the years, an extensive network of PHC facilities has been formed, including 407 primary health care centers, 243 village health centers, 442 maternal child-health care centers, 94 comprehensive health care centers, 12 chest clinics, 3500 private clinics and 1882 dental clinics (public and private). [1,7]

With about 2.3 centers per 10,000 populations, and with an average patient travel time to the nearest centre of 30 minutes, this represents a high density system by international standards. The private sector is already active in curative primary care, accounting for nearly 40% of all initial patient contacts. [7]

Jordan has 18 inpatient beds per ten thousand population; 13.9 percent of the population is admitted annually to hospitals; hospital lengths of stay average 3.2 days; and the hospital occupancy rate is 65.1 percent. A great variation exists between the occupancy rate in the public sector (73%) and the private sector (53%).[1, 7]

Jordan has no access problems to basic non personal services as safe drinking water supply and sanitary means of excreta management and/or disposal.

Table 2.1: Health infrastructure, 2008

Infrastructure	Public	UNRWA	Private	Total
Hospitals	43	-	60	103
Number of beds	7488	-	3712	11200
Comprehensive Health Centers	69	25	-	94
Primary Health centers	377	30	-	407
Village Health Clinics	240	-	-	243
Maternity and Child Health Care Centers	419	23	-	442
Private Clinics	-	-	3500	3500
Chest Clinics	12	-	-	12
Dental Clinics	325	21	1541	1887
Pharmacies	-	-	2097*	2097*
Labs	-	-	275	275
Radiology Centers	-	-	45	45

Sources: -MOH Annual Report, 2008
-Harnessing the Private health Sector to Achieving Public Health Goals in Jordan, 2007
* Pharmacists Association Log books, 2009

2.3 Health care financing

In 2007, total health expenditures –both public and private was estimated at 1016 million JD, 177.5 JD per capita (253 US dollars). This is equivalent to 9.05% of GDP (Table 2.3). The government share in the financing of health expenditures has increased from 43% in 1998 to 58% in 2007. [14, 15, 16]

Health spending in Jordan is high when compared to other MENA and middle-income countries. Overall spending has increased in nominal terms over the past six years and has grown slightly more rapidly than GDP. Spending has also increased more rapidly than medical specific inflation. Nevertheless, Jordan's health spending, whether measured in per capita U.S. dollar terms or as a share of GDP, is high compared to countries of comparable income levels. [17]

Curative care, in Jordan like many other developing countries, takes up a disproportionately large share of public spending on health. During the period 1998-2007, the share of curative care has been increasing – (about 79 to 82% of the total state health expenditure, while the proportion spent on primary health care was below 20%. Since healthcare facilities in Jordan do not have cost accounting systems in place, these figures are mostly based on estimates and may not reflect the actual spending patterns on different categories.

As shown in Table 2.4, about 79% of the population in Jordan is covered by formal health insurance. MOH is the largest health insurer (34%) followed by RMS (26%), private firms (9%), UNRWA (8.5%), and university hospitals (1.3%). [14]

2.4 Health information system

The Directorate of Information collects basic health information from MOH health facilities and other public and private hospitals. It also runs the National Cancer Registry and the National Death Registry. The Directorate produces the MOH Annual Report which is considered the main source of information about health services in Jordan including health manpower. The Annual Report is quantitative oriented; there is hardly any analysis at, or feedback of information to, the local level. The data collected are often not sufficiently utilized at the central level.

HRH data are collected by the Directorate of Information at MOH for public and private health sectors. The data collected covers the main categories of human resources (i.e. physicians, nurses, pharmacists, dentists, allied health personnel and administrative staff) without other details as age, gender, specialty, etc. The HRH data for the private sector covers hospitals only. However, most of the data are simply collected for onward transmission to the MOH (Directorate of Information). No standardized definitions and procedures to collecting HRH data are available.

Table 2.2: Total Health Expenditure (1998-2007)

Indicators	1998	2000	2001	2003	2005	2006	2007
Total expenditure (JD Million)	530	551	598	729	890	1051	1016
Total health expenditure/capita(JD)	108	109	115	140	162	188	177.5
Total health expenditure as % of GDP	9.1	9.2	9.6	10.4	9.8	10.4	9.05
Public sector expenditure as % of total health expenditure	43	45	45.0	42	43	44	58

Source: - Jordan National Health Accounts for 2000 and 2001, MOH and PHRplus, 2006
-Jordan Public Expenditure Review: Health Sector, Jordan Government and the World Bank, 2004.
- Analysis of Government Health Expenditures (2001-2005), Jamal Abu Saif et al, 2006(Unpublished report).
-High Health Council. Jordan National Health Accounts 2007, Amman,2009.

Table 2.3: Population Formal Coverage (%) by Source (2000-2007)

Source of Coverage	2000 (1)	2004 (2)	2006 (3)	2007(4)
Civil Insurance	18	19.5	26.4	34
RMS Insurance	23	27	25	26
University hospitals	2	1.3	2.4	1.3
Private firms and corporations	11	8.8	9.2	9
UNRWA	13	11	9	8.5
Total % insured/covered	**67**	**67.6**	**72**	**78.8**
Uninsured/uncovered	**33**	**32.4**	**28**	**21.2**
Total	**100**	**100**	**100**	**100**

Sources: (1) JHEUS, 2000
(2) Public Health Expenditure Study, 2004.
(3) General Directorate of Health Insurance, MOH.
(4) High Health Council. Jordan Health Strategy 2008-2012

HRH Observatory (HRHO) was established on June 2008 under the supervision of the HHC. The HRHO aims at building national capacity to provide reliable data needed for evidence-based decision making in addition to having a network for national, regional and global sharing. A national HRH taskforce chaired by the Secretary General for HHC with members representing stakeholders was formed to:

- Review national strategy for HRH to ensure its applicability and consistency with the national goals for health.
- Develop national HRH database that can be continuously updated.
- Establish national HRH observatory
- Support studies and operations research pertaining to HRH.
- Develop national plan for HRH.

3. HEALTH WORKERS SITUATION

3.1 Health workers stock and trends

Jordan has around 16 health workers per thousand population in 2008.The total number of health workers was 91756 (12% of the total employees in the public and private sectors). [18] The country has 2.5 physicians (generalists and specialists), 3.8 nurses (all categories), 0.9 dentists, and 1.3 pharmacists per thousand population (Tables 3.1 and 3.2 and Figure 3.1).Since Jordan does not maintain national registry for health workers who are working abroad, the number of health workers who are practicing in the country may be less than the figures reported in this table. If we consider, for example, physicians who work outside Jordan and those who are retired (about two thousands), the net ratio of physicians per thousand population could be estimated as 2.2. [19]

During the last four years the number of most health professions and their percentages to population has been increasing (Table 3.2). Registered and associate nurses have the highest increase rate per thousand population (0.3 and 0.5 respectively); while the population ratio of practical nurses has witnessed sharp decline between 2005 and 2009(0.9 to 0.6). This is mainly due to the termination of assistant (practical) and diploma nursing programs in 2002 and the opening of new associate (enrolled) and registered (university) nursing programs and faculties.[20] Registered Nurses (RNs) comprised about 54%of the nursing workforce in Jordan in 2008 followed by associate/enrolled nurses(26%) and assistant/practical nurses(20%).Physician and other health workers to population ratios are high than most of MENA region and other lower middle income countries. [20, 22]

Table 3.1 Target ratios for physicians, dentists and registered nurses per 10,000 populations as reported in the Jordan National Agenda.

Health Manpower Indicator	Currently(2006)	Target (2012)	Target (2017)
Number of physicians per 10,000 population	23.3	27.9	30.1
Number of dentists per 10,000 population	6.5	8.1	9
Number of registered nurses and midwives per 10,000 population	16.4	19.4	30

Source: Jordan National Agenda, Government of Jordan, 2006.

Table 3.2: Health worker Population ratios at national level
(See definition of each occupational category in annexes 1, 2).

Health Occupational categories /Cadres	2005		2008	
	Number	HW/ 1000 Population	Number	HW/ 1000 Population
Physicians (generalists,residents,interns)	7734	1.4	8746	1.5
Physicians (specialists)	5156	0.9	5830	1.0
Professional/Registered Nurses	6881	1.3	9512	1.6
Enrolled Nurses(Associate Nurses)	1588	0.3	4627	0.8
Assistant/Practical Nurses	5058	0.9	3338	0.6
Auxiliary Nurses (Non Nursing workforce working in Nursing)	3000	0.6	2709	0.5
Registered, Enrolled Midwives	1436	0.3	1909	0.3
Dentists	3973	0.7	5094	0.9
Dental technician	2597	0.5	2856	0.5
Dental assistant	700	0.1	570	0.1
Pharmacists	6670	1.2	7715	1.3
Pharmacy technician, assistant	5784	1.1	6540	1.1
Lab scientist	2000	0.4	2400	0.4
Laboratory technician, Assistant	2310	0.4	2670	0.5
Radiographer ,Technician	1280	0.2	1465	0.3
Physiotherapist, Technician	540	0.1	630	0.1
Other Technicians and Health Cadres	4493	0.8	6900	1.2
Environment & public Health workers	1412	0.3	1600	0.3
Health management workers/Skilled administrative staff.	3568	0.7	4845	0.8
Other health support staff	8870	1.6	11800	2.0
TOTAL	**75050**	**13.7**	**91756**	**15.7**

Sources:MOH Statistical Annual Reports(2005,2008); http://www.dos.gov.jo; Log Books of Professional Associations; Jordan HRH Mapping for 2005; Situation Analysis: Jordan Human Health Resources Assessment, 2004; Jordan Human Resources for Health Observatory Website,HHC; Personal Interviews .

Jordan National Development Agenda which was endorsed in 2006 adopted a number of objectives related to HRH within the health care sector development framework. [11] The target ratios per 10,000 population for the year 2012 were 27.9, 8.1 and 19.4 for physicians, dentists and nurses respectively (Table 3.1).Compared to the ratios presented in table 3.2 for the year 2008, Jordan is doing very well in achieving the planned targets for the three staff categories. The ratio for dentists is now 9 per 10 thousand population, it exceeds the national target for the year 2012 by 0.9. This indicates that dentistry students' intake should be revised.

The nurse to doctor ratio in the health sector as a whole remains very low and is among the lowest group of countries in the world. Currently the ratio is approximately 1.2 nurses to 1.0 doctor. Clearly this has implications on nursing activity on whether doctors are doing nursing work or that elements of work normally associated with nurses are not being done.[7]

Table 3.3: Distribution of health workers for 5 past years
(See definition of each occupational category in annexes 1, 2).

Health Occupational categories / cadres	2004	2005	2006	2007	2008
Physicians (generalists and Specialists)	11984	12890	13720	14136	14576
Nurses(all categories)	12606	13527	14620	15991	17477
Midwives	1233	1436	1595	1849	1909
Dentists	3683	3973	4597	4891	5094
Pharmacists	6303	6670	6950	7350	7715
Laboratory workers	4140	4310	4460	4680	5070
Other Technicians and Health Cadres	16458	18394	19862	20868	21670
Environment & public health workers	1367	1412	1478	1538	1600
Health management workers/Skilled administrative staff	2840	3568	3890	4408	4845
Other health support staff	7450	8870	9295	10668	11800
TOTAL	**68064**	**75050**	**80467**	**86379**	**91756**

Sources:MOH Statistical Annual Reports(2005,2008); http://www.dos.gov.jo; Log Books of Professional Associations; Jordan HRH Mapping for 2005; Situation Analysis: Jordan Human Health Resources Assessment, 2004; Jordan Human Resources for Health Observatory Website,HHC; Personal Interviews.

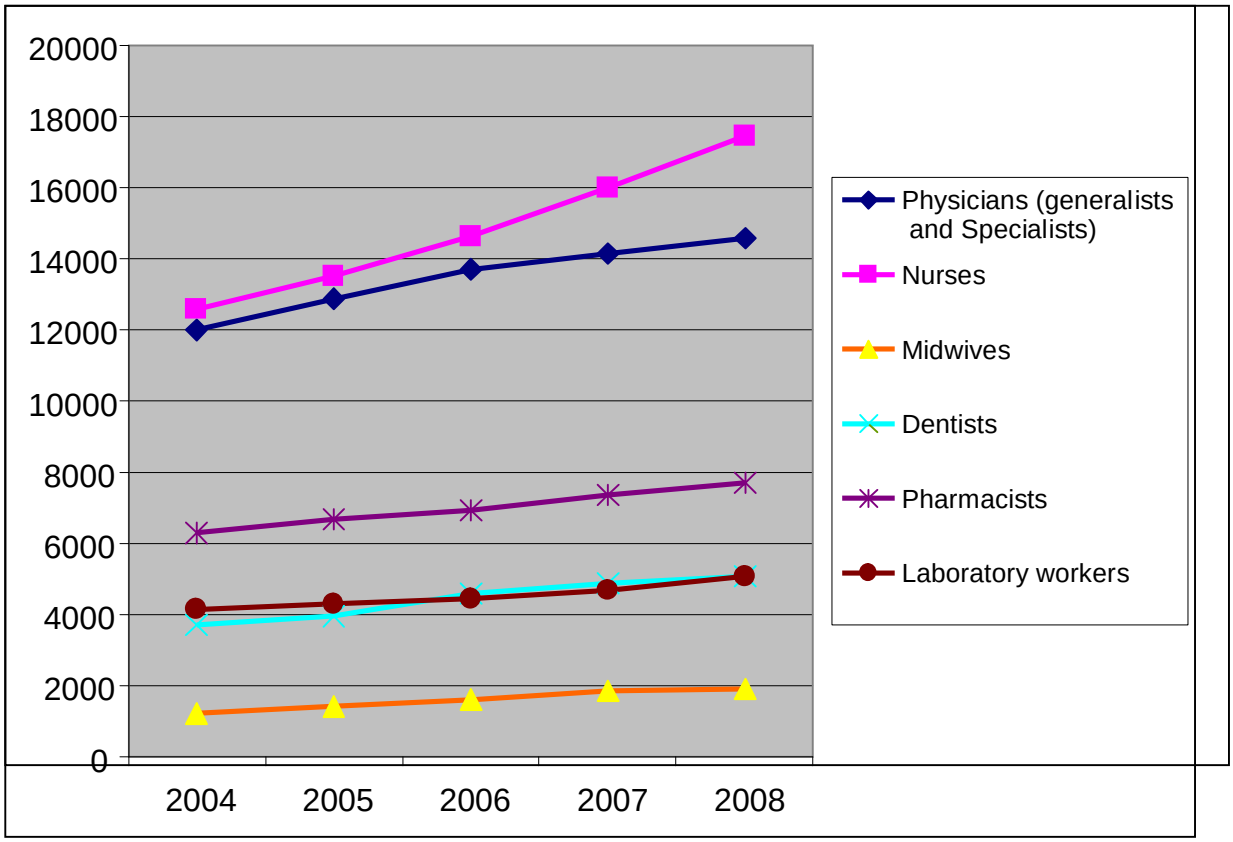


Figure 3.1: Distribution of Selected Health Workers Categories (2004-2008)

3.2 Distribution profile of the workers by category/cadre

3.2.1 Gender distribution by health occupation/cadre

Females comprise about 44% of the total health workers in Jordan (Table 3.4).Women are high represented (more than 50%) in nursing cadres, dental technicians, pharmacists, lab scientists, and most paramedics. Men are very high represented in some cadres (more than 70%) as physicians, dentists, pharmacy assistants and environment health workers. They are also high represented in some other cadres (more than 50%) as laboratory technicians, radiographer technicians, physiotherapists, health management workers and other health support staff.

The percentage of male RNs is expected to increase during the next four years as male graduates from nursing faculties comprise about 60% of the total graduating nurses. By the end of 2012, Jordan will have an extra 5347 male nurses.[20] Male nurses are facing a serious problem of unemployment. Most of the unemployed nurses (95% of all nurses) are male nurses. [23] In order to solve the gender imbalances in nursing education, the Ministry of High Education issued a mandate last year to cut male admissions to nursing faculties by 10% annually. Efforts also should be enhanced to develop a marketing strategy to promote male nurses outside the country. Strategies are also needed to motivate young women to enrol in nursing faculties to meet the shortage of female nurses.

Although there is no significant problems related to physicians' supply in Jordan, there is a shortage of female physicians at primary health care centers and in reproductive health programs. This posed a problem since clients prefer female service providers. Studies showed that 75% of women seeking IUD insertion prefer a female health care provider. The MOH has shortage of female providers to meet the family planning (FP) needs of women who do not prefer male physicians. As a result, women who can't afford paying the fees for private female physicians are more likely to have missed opportunities for FP services. Thus; policy makers should find innovative ways to solve the gender imbalances among physicians at primary health level and some remote areas to promote reproductive health services and decrease the unmet needs for family planning. [21]

3.2.2 Age distribution by health occupation/cadre

Table 3.5 shows that most of the health cadres in Jordan (85%) are below 50 years of age. This is expected since Jordan population is very young and the percentage of population below age 50 constituted about 90% of total population. [26]

Young health workers(less or equal 30 years of age) constitute about 40% of the total health work force in Jordan. This is mainly due to opening of new faculties and teaching programs in nursing, medicine and allied health sciences and the growing demand on health manpower from Jordan and neighbouring health markets.

40% or more of Nurses, laboratory workers, other technicians, support staff and pharmacists are less or equal 30 years of age (Table 3.6).The percentage of young specialist and generalist physicians within the age group of ≤30 years was the lowest (3% and 25% respectively); while they have the highest percentage (36% and 30% respectively) of old cadres within the age group of ≥51 years. This is because: medicine is the oldest health profession; studying medicine requires at least 2-3 years more than any other health profession; and most of the university education programs for other health professions have been recently established in Jordan during the last ten to fifteen years.

Table 3.4: Gender distribution by health occupation/cadre, 2008
(See definition of each occupational category in annexes 1, 2).

Health Occupational categories/cadres	Total	Female	% Female
Physicians (generalists)	8746	1574	18
Physicians (specialists)	5830	758	13
Professional/Registered Nurses	9512	5869	61.7
Enrolled Nurses(Associate Nurses)	4627	2559	55.3
Assistant Nurses	3338	2443	73.2
Auxiliary nurses(Non Nursing workforce working in Nursing)	2709	2013	74.3
Registered Midwives, Enrolled Midwives	1909	1909	100
Dentists	5094	1528	30
Dental technician, assistant	3426	2055	60
Pharmacists	7715	4089	53
Pharmacy technician, assistant	6540	2616	40
Lab scientist	2400	1440	60
Laboratory technician, assistant	2670	935	35
Radiographer Technicians	1465	586	40
Physiotherapist	630	252	40
Other Technicians and Health Cadres	6900	4140	60
Environment & public Health workers	1600	160	10
Health management workers/Skilled administrative staff..	4845	1696	35
Other health support staff	11800	3540	30
TOTAL	**91756**	**40162**	**43.8**

Sources: MOH Statistical Annual Reports(2005,2008); http://www.dos.gov.jo; Log Books of Professional Associations; Jordan HRH Mapping for 2005; Situation Analysis: Jordan Human Health Resources Assessment, 2004; Jordan Human Resources for Health Observatory Website,HHC; Personal Interviews.

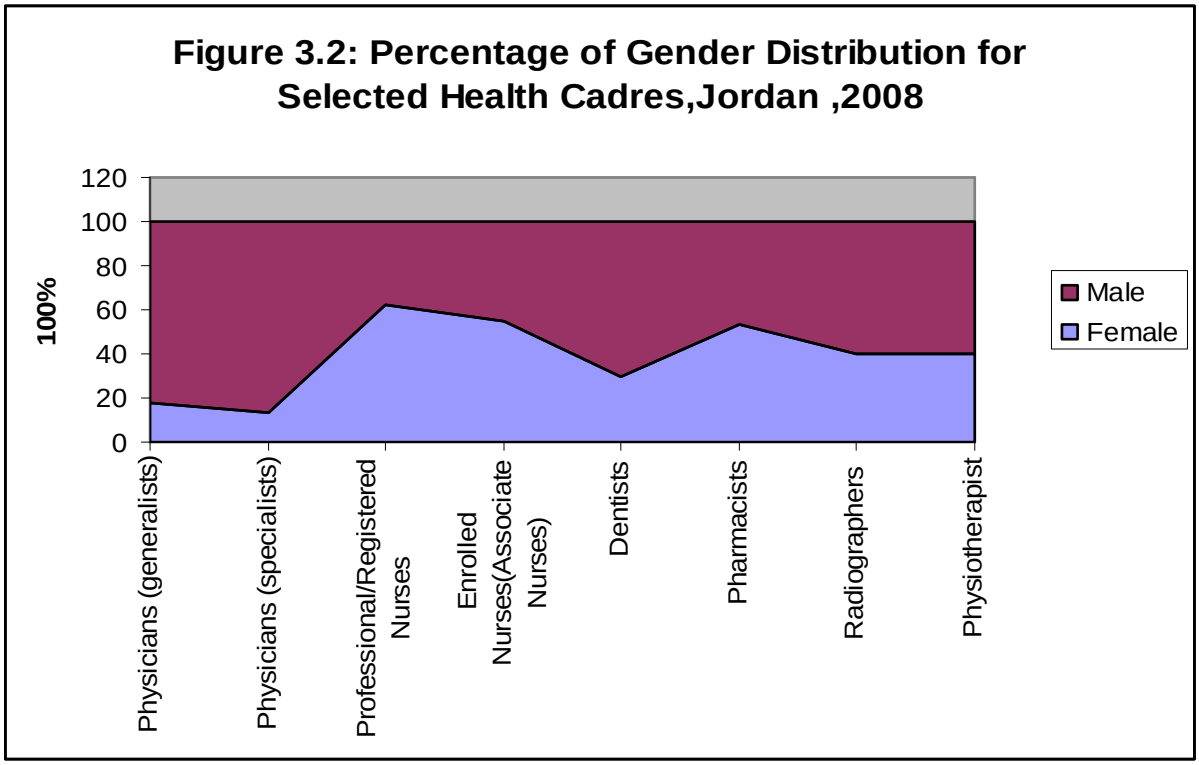


Table 3.5: Health Workers by Age Group and Cadre

(See definition of each occupational category in annexes 1, 2).

Health Occupational Categories	≤30 Yrs	31-40	41-50	≥51	Total
Physicians generalists	2186	2012	1924	2624	8746
Physicians specialists	175	1690	1866	2099	5830
Nurses	8738	4369	2622	1748	17477
Midwives	668	764	286	191	1909
Dentists	1528	1528	1019	1019	5094
Pharmacists	3086	1929	1543	1157	7715
Laboratory workers	2535	1268	760	507	5070
Other technicians and health cadres	9751	6501	3251	2167	21670
Environment & public health workers	480	480	320	320	1600
Health management workers/skilled administrative staff	1453	1696	969	727	4845
Other health workers & support staff	5900	2950	1770	1180	11800
TOTAL	**36500**	**25187**	**16330**	**13739**	**91756**
%	**39.8**	**27.4**	**17.8**	**15.0**	**100**

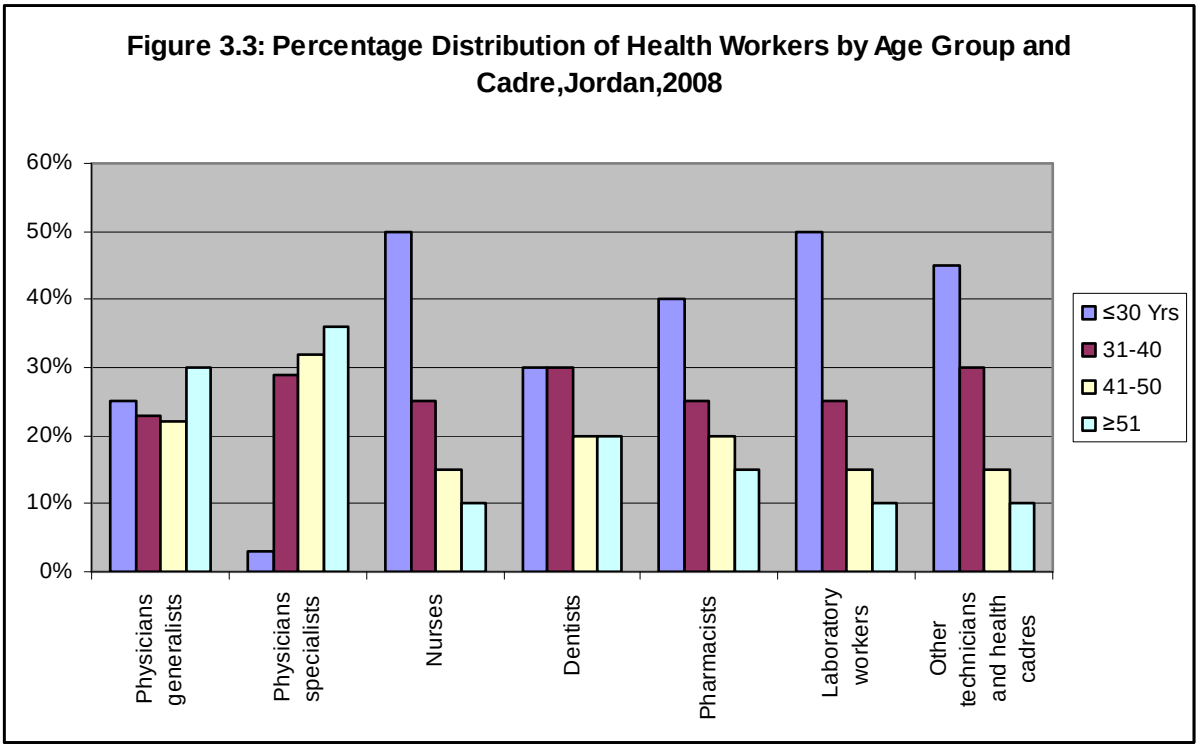
Sources: MOH Statistical Annual Reports(2005,2008); http://www.dos.gov.jo; Log Books of Professional Associations; Jordan HRH Mapping for 2005; Situation Analysis: Jordan Human Health Resources Assessment, 2004; Jordan Human Resources for Health Observatory Website,HHC; Personal Interviews.

Table 3.6: Percentage Distribution of Health Workers by Age Group and Cadre
(See definition of each occupational category in annexes 1, 2).

Health Occupational Categories	≤30 Yrs	31-40	41-50	≥51	Total
Physicians generalists	25%	23%	22%	30%	8746
Physicians specialists	3%	29%	32%	36%	5830
Nurses	50%	25%	15%	10%	17477
Midwives	35%	40%	15%	10%	1909
Dentists	30%	30%	20%	20%	5094
Pharmacists	40%	25%	20%	15%	7715
Laboratory workers	50%	25%	15%	10%	5070
Other technicians and health cadres	45%	30%	15%	10%	21670
Environment & public health workers	30%	30%	20%	20%	1600
Health management workers/skilled administrative staff	30%	35%	20%	15%	4845
Other health workers & support staff	50%	25%	15%	10%	11800
TOTAL	**39.8**	**27.4**	**17.8**	**15.0**	**91756**

Sources: MOH Statistical Annual Reports(2005,2008); http://www.dos.gov.jo; Log Books of Professional Associations; Jordan HRH Mapping for 2005; Situation Analysis: Jordan Human Health Resources Assessment, 2004; Jordan Human Resources for Health Observatory Website,HHC; Personal Interviews.

Figure 3.3: Percentage Distribution of Health Workers by Age Group and Cadre,Jordan,2008



3.2.3 Region distribution by health occupation/cadre

According to Table 3.7 below, there is a variation in distribution of health workers by region. While 62% of Jordan population lives in Middle Region (Amman, Zerka, Balka and Madaba Governorates) it has 72% of the whole health workforce. On the other hand, 19% of the health workforce works in the North Region (Irbed, Ajloun, Jarash and Mafraq Governorates) in spite of the fact that it has 29% of Jordan population. The overall health workforce share of the South Region (Karak, Tafila, Maan and Aqaba Governorates) matches with its population (9%).Extreme imbalances exist in the distribution of pharmacists and dentists as 83% and 80% of them work in the Middle Region.

The distribution of health workforce for all categories goes in favor of the Middle Region except the distribution of midwives which almost matches with population share in the North Region (30%) and favors the South Region (13%).This could be attributed to the high percentage of private obstetricians in the Middle Region specially in Amman the Capital compared to the other two regions. [27]

The region imbalances in the distribution of health workforce in favor of the Middle Region are mainly attributed to the concentration of the private health services in this region, mainly at Amman the Capital and Zerka cities.

Table 3.7: Percentage Distribution of Health Workers by Region
(See definition of each occupational category in annexes 1, 2).

Health Occupational categories	Total Number	% Middle Region	% North Region	% South Region
Population	**5850000**	**62**	**29**	**9**
Physicians generalists	8746	75	16	9
Physicians specialists	5830	71	21	8
Nurses	17477	64	24	13
Midwives	1909	57	30	13
Dentists	5094	80	14	6
Pharmacists	7715	83	11	6
Laboratory workers	5070	75	17	8
Other technicians and health cadres	21670	76	16	8
Environment & public health workers	1600	69	20	11
Health management workers/skilled administrative staff	4845	75	18	7
Other health workers	11800	67	22	11
TOTAL	**91756**	**72**	**19**	**9**

Sources: MOH Statistical Annual Reports(2005,2008); http://www.dos.gov.jo; Log Books of Professional Associations; Jordan HRH Mapping for 2005; Situation Analysis: Jordan Human Health Resources Assessment, 2004; Jordan Human Resources for Health Observatory Website,HHC; Personal Interviews.

3.2.4 Geographical distribution by health occupation

83% of the people of Jordan live in communities that are considered to be 'urban'. Of these, the majority live in the towns and cities of the three most populous governorates: Amman, Zarqa and Irbid. Rural residents, including small numbers of Bedouin, constitute about 17% of the population. [26]

Table 3.8 shows imbalances in the distribution of all categories of health professionals in urban and rural areas. Although 17% of Jordan population lives in rural areas, these people are served by only 8% of the total health workforce. More than 90% of health workers are located in urban areas. Specialist physicians are the least presented in rural

Figure 3.4:Percentage Distribution of All Health Workers by Region,Jordan,2008

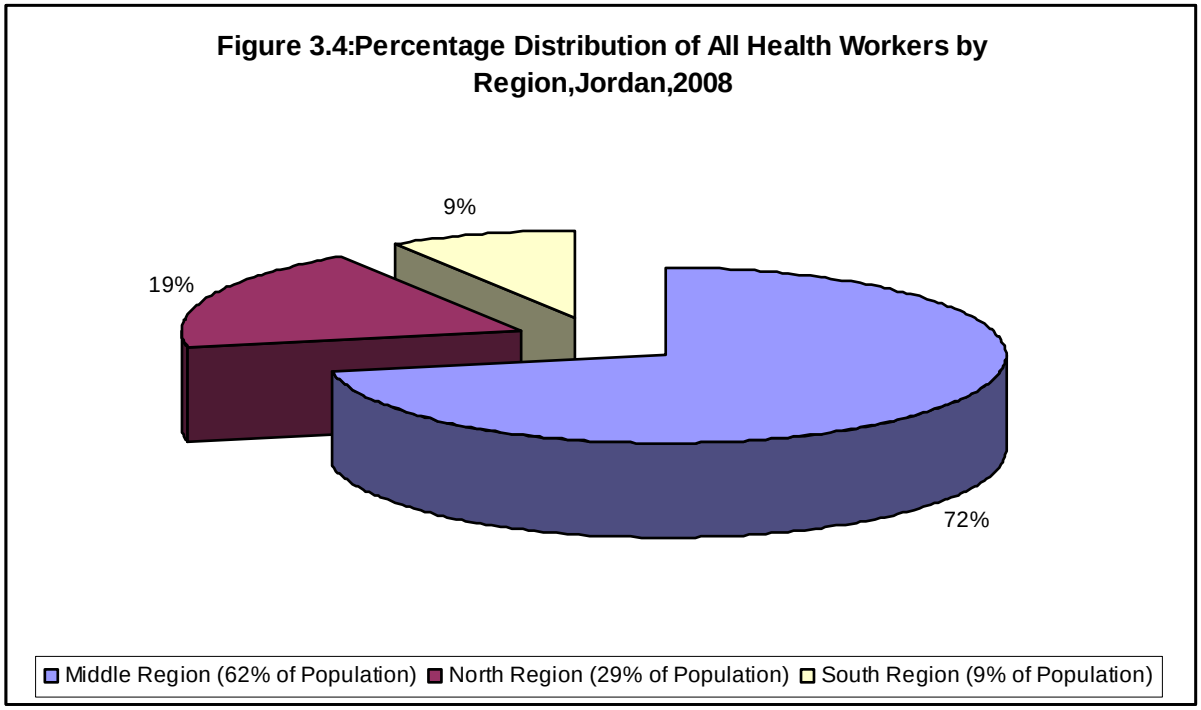
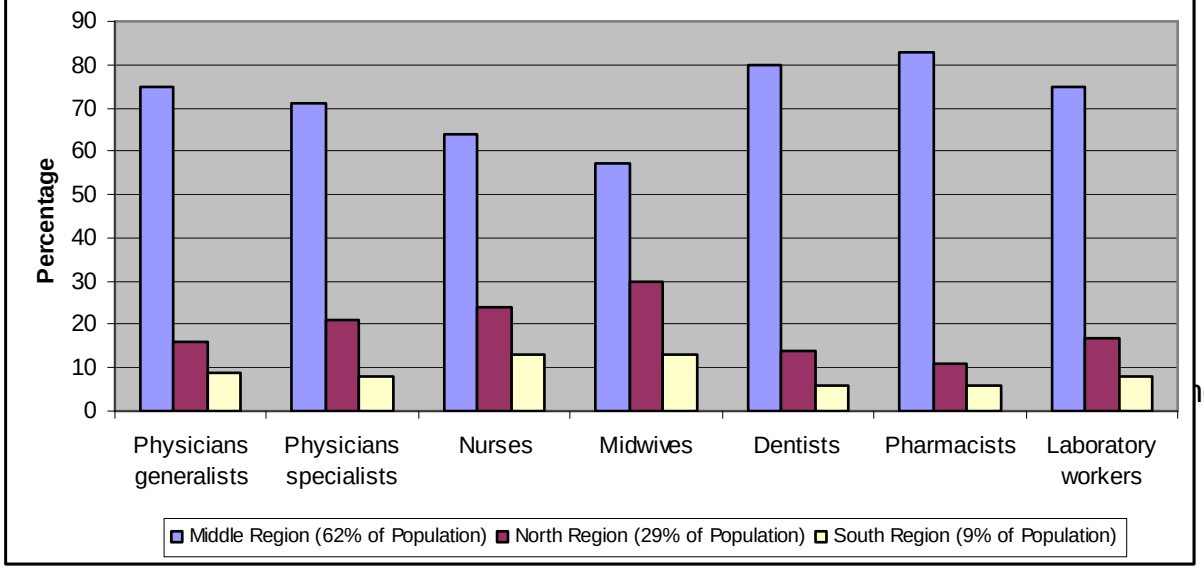


Figure 3.5:Percentage Distribution of Selected Categories of Health Workers by Region,Jordan,2008



Most of the health services in rural and remote areas are provided by the MOH and cover mainly primary healthcare services. The MOH faces serious problems in recruiting and retaining health staff in these areas.

There are geographical disparities in the distribution of health workers mainly physicians as evidenced by the difference in physician population ratios among Amman and some of the rural governorates. While the MOH has done a great deal to place clinics in these rural areas, it continuously faces the usual obstacles of placing professionals. Policies and appropriate incentives should be developed to attract and retain physicians in rural and poor areas.

Without local access to well trained and motivated health workers, it is unlikely that communities will have access to important primary health care services to respond to priority health needs. Health policy makers should develop plans and initiatives to improve retention of health workers in rural areas.

Figure 3.6:Urban/Rural distribution of health workers ,Jordan,2008

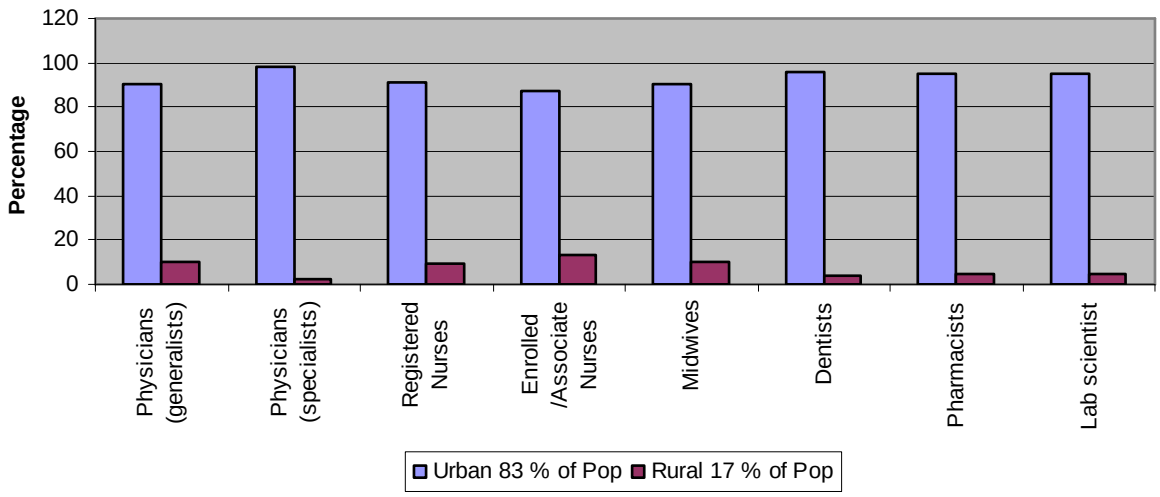


Table 3.8: Urban/Rural distribution of health workers
(See definition of each occupational category in annexes 1, 2).

Health Occupational categories	Total Number	% Urban	% Rural	HW/ 1000 Pop in urban	HW/1000 Pop in rural
Population	**5850000**	**83**	**17**		
Physicians (generalists)	8746	90	10	1.6	0.9
Physicians (specialists)	5830	98	2	1.2	0.1
Professional/Registered Nurses	9512	91	9	1.8	1.0
Enrolled Nurses (Associate Nurses)	4627	87	13	0.9	0.6
Assistant Nurses	3338	90	10	0.6	0.3
Auxiliary (Non nursing workforce working in nursing)	2709	88	12	0.5	0.3
Registered Midwives, Enrolled Midwives	1909	90	10	0.4	0.2
Dentists	5094	96	4	1.0	0.2
Dental technician, assistant	3426	96	4	0.6	0.1
Pharmacists	7715	95	5	1.5	0.4
Pharmacy technician, assistant	6540	93	7	1.3	0.5
Lab scientist	2400	95	5	0.5	0.1
Laboratory technician	2670	91	9	0.5	0.3
Radiographer ,Technician	1465	92	8	0.3	0.1
Physiotherapist, Technician	630	95	5	0.1	0.03
Other Technicians and Health Cadres*	6900	95	5	1.7	0.4
Environment & public Health workers	1600	90	10	0.3	0.2
Health management workers /Skilled administrative staff.	4845	92	8	0.9	0.5
Other health support staff	11800	90	10	3.4	2.3
TOTAL	**91756**	**91.8**	**8.2**	**19.6**	**8.8**

Sources: MOH Statistical Annual Reports(2005,2008); http://www.dos.gov.jo; Log Books of Professional Associations; Jordan HRH Mapping for 2005; Situation Analysis: Jordan Human Health Resources Assessment, 2004; Jordan Human Resources for Health Observatory Website,HHC; Personal Interviews.

3.2.5 Sector distribution by health occupation/cadre

As shown in table 3.9, the non state sector (private sector and faith based organizations) is the main employer of human resources for health (HRH) in Jordan as 51.2% of the HRH works in this sector. The public sector (MOH, RMS and two university hospitals) employs 48.2% of the HRH.

Some imbalances in the distribution of some health cadres do exist. The none state sector does not favor employing associate nurses, assistant nurses , and auxiliary nursing staff, as only 15%, 14% , and 11% of these categories respectively are employed by this sector. The private health sector prefers employing female registered nurses. The percentage of midwives employed by the private sector (33%) compares well with the percentage of deliveries that take place in private hospitals (34%).[1]

On the other hand, the non state health sector is the major employer for pharmacists (85%) and pharmacy assistants (83%) who work in 2097 private pharmacies, 25 pharmaceutical companies, 96 cosmetics and medical supplies factories and 280 drug stores.[1] Most of Jordanian dentists (87%) also work in private dentistry clinics and labs.

Not for profit /faith based organizations (FBO) run 10 hospitals with 702 beds (6.2% of all hospital beds), 75 outpatient medical clinics/centers and 12 dentistry clinics. About 65% and 55% of their beds and clinics respectively is located in Amman.[29] The FBO employs 6.8% of the total health manpower resources in the country; this is not far from their share in the total hospital beds (6.2%) as mentioned above.

The private health sector attracts experienced health professionals from the public sector (i.e. MOH ,RMS,university hospitals).High percentage of medical consultants, qualified nurses and technicians who are working in the private sector were employed by the public sector mainly RMS. During their service in RMS those professionals were exposed to intensive and expensive training programs inside and outside the country. The majority of them were working at King Hussein Medical Centre (the first tertiary care centre in the country and is considered as a center of excellence in the region).

Therefore, the public health sector in Jordan is considered the main supplier of highly trained and well experienced health professionals for the private sector. in other words, the government indirectly subsidies the private health sector by investing in extensive and specialized training of health professionals who eventually leave the public service and join the private sector in fairly young ages (late forties and early fifties) .However, the MOH has recently contracted with physicians from the private sector to work at Prince Hamza hospital in Amman to meet the shortage in some medical specialties as cardiovascular surgery, neurosurgery, constructive surgery ,pediatric surgery and anesthesia.

The private health sector is growing rapidly and its demand for staff is therefore also growing. The private health sector competes with the government for qualified health staff and usually wins this competition since it can afford to pay high salaries.

Government employed physicians and other health cadres are not allowed to practice in the private sector. The majority of private physicians are self employed in their private clinics. A full time assignment in private hospitals is usually confined to general practitioners, radiologists and pathologists.

The health sector in Jordan, public and private, may witness a severe shortage of physicians and nurses in the near future due to the increasing rate of brain drain mainly to Gulf countries. Low salaries, lack of incentives and regulations, and long working hours are the main causes for this drainage. [21]

3.2.6 Distribution of health occupation/cadre according to work place

Of the almost 26,000 total MOH staff, 9% (2,340) are working in the central Ministry of Health. In comparison with some other countries for which data are available, 9% is very high. [21]

There are imbalances in the distribution of health cadres between hospitals and primary healthcare facilities. About 50% of total MOH staff works in hospitals. From the total doctors of all types working for the MOH, 56% are working in hospitals, 37% in health centers and 7% in management positions at the central MOH and health directorates. 90% of the MOH registered nurses work in hospitals, while only 6% work at PHC.About 80% of RMS cadres work in hospitals, while 23 %(10805) of the cadres working in the private health sector are in hospitals. [1]

Table 3.9: Public/Private for profit/Faith based organization distribution of health workers

(See definition of each occupational category in annexes 1, 2).

Health Occupational categories	Total Number	% Public sector*	% Private sector	% Faith based organization
Physicians (generalists)	8746	40%	50%	10%
Physicians (specialists)	5830	54%	40%	6%
Professional/Registered Nurses	9512	47%	46%	7%
Enrolled Nurses (Associate Nurses)	4627	85%	11%	4%
Assistant Nurses	3338	86%	9%	5%
Auxiliary nursing staff (Non nursing workforce working in nursing)	2709	%89	6%	5%
Registered Midwives, Enrolled Midwives	1909	67%	%25	%8
Dentists	5094	18%	87%	5%
Dental technician, assistant	3426	40%	54%	6%
Pharmacists	7715	8%	85%	7%
Pharmacy technician, assistant	6540	48%	45%	7%
Lab scientist	2400	62%	32%	6%
Laboratory technician	2670	70%	23%	7%

Radiographer ,technician	1465	72%	22%	6%
Physiotherapist, technician	630	65%	31%	4%
Other Technicians and Health Cadres	6900	60%	33%	7%
Environment & public Health workers	1600	80%	18%	2%
Health management workers /Skilled administrative staff.	4845	60%	32%	8%
Other health support staff	11800	55%	37%	8%
TOTAL	**91756**	**48.8%**	**44.4%**	**6.8%**

**Public sector includes MOH, RMS and the two university hospitals(JUH and KAH).*

Sources: MOH Statistical Annual Reports(2005,2008); http://www.dos.gov.jo; Log Books of Professional Associations; Jordan HRH Mapping for 2005; Situation Analysis: Jordan Human Health Resources Assessment, 2004; Jordan Human Resources for Health Observatory Website,HHC;RMS Annual Report,2008; Personal Interviews.

Figure 3.7: Percentage Distribution of HRH by Health Sector,Jordan,2008

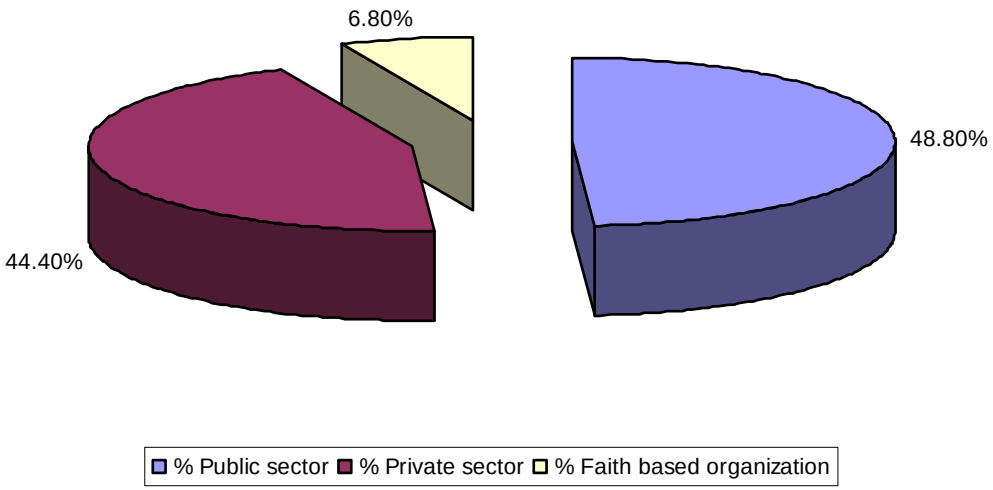
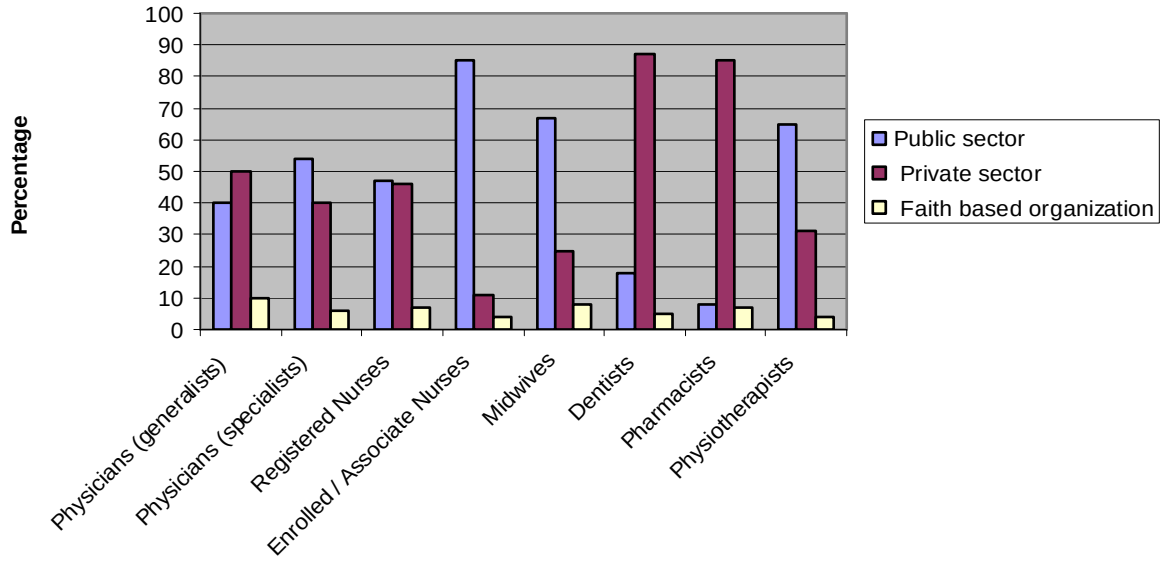


Figure3.8: Distribution of Selected Health Cadres by Health Sector,Jordan,2008



4. HRH PRODUCTION

4.1 Pre-service education of health workforce

Jordan has a strong high education system for physicians, dentists, pharmacists, nurses and allied health sciences. Jordan has three main levels of health workforce formal education: community college, university/undergraduate (4-6 years after secondary school) and post-graduate (1-4 years after university degree), see Figure 3.9.

4.1.1 Community college (Associate Degree Program)

As shown in table 4.1, public and private colleges offer Associate's Degree programs of 2 years duration (after secondary school), for nursing, midwifery and the allied health professions including: laboratory, pharmacy, physiotherapy, anesthesia, respiratory therapy, nutrition, radiography, medical records, biomedical engineering, dentistry, etc. There are now 28 community colleges licensed by Ministry of High Education (MOHE) to conduct associate nursing and allied health programs.

After the introduction of the Associate Degree in nursing, the practical/assistant nursing program (18 months training after secondary school) and the diploma nursing program (3 years after secondary school) were phased out and terminated in 1998 and 2002 respectively. [20] Thus, since 2002 the entry degree for nursing profession in Jordan has been limited to university or associate degrees only.

Associate Degree programs are offered in colleges operated by public (MOH, RMS, MOHE), UNRWA and private organizations. There are 38 Associate Degree programs: 27 programs for nursing and midwifery and 11 programs for allied health professions (Table 4.2).

4.1.2 University Programs (Under-graduate)

Universities conduct programs of 4-6 academic years (126 to 257 credit hours) leading to a Bachelor's Degrees for physicians, dentists, pharmacists, nurses,midewifery, physiotherapy, occupational therapy,nutrition,laboratory sciences, optometry, radiology sciences, otology, speech pathology, and health services administration, applied dental sciences and biomedical engineering. While four public universities are preparing the majority of physicians educated in Jordan, private universities such as Philadelphia and Applied Sciences have plans to introduce medical studies. Dentists are educated in two public universities only: University of Jordan (JU) and Jordan University for Sciences and Technology (JUST). There are 8 pharmacy schools in the country, two in public universities and 6 in private universities (Table 4.3).

Until recently, degree programs for nurses and other health professionals have been conducted mainly in public universities. Eight public universities and eight private

universities are now offering BSc in Nursing. Education of paramedical sciences is conducted in two public universities and two private universities. All private universities in Jordan are for profit organizations.

A gap between nursing education and practice has been reported. One major reason is that improvements in nursing education have been isolated from nursing practice. Students are prepared in relation to the role of the professional nurse, professional standards and policies of practice, and the importance of nursing power, autonomy, decision-making, and collaborating with other health care professionals. In nursing practice the role of the nurses is not well articulated, national nursing standards have been recently developed by Jordanian Nursing Council but not fully practiced, role models are absent which has adversely affected the nurses' socialization process. The gap between education and practice is considered to be one of the major challenges for nurse educators and leaders. In spite of these obstacles and challenges nursing education has rapidly progressed in Jordan.[30]

4.1.3 Training of Medical and Health Sciences Students

Universities, MOH, and RMS have been involved in partnership arrangement for training of health sciences students in local community hospitals .As part of the responsibility toward the community, medical and health sciences education has been integrated within the health services in the local community of each university. This has been supported by providing joint appointment opportunities to some clinicians and qualified professionals in the MOH and RMS hospitals to be involved in mentoring health sciences students in the clinical areas. Academic physicians were offered admission privileges in these hospitals. Nominal payment is provided by the university and the hospital for physicians from both sectors. This was a great achievement for both parties and has led to:

- Improvement of quality of teaching especially in the clinical settings;
- Exposure of students to community problems;
- Development of teaching skills and knowledge for ministry of health staff;
- Incentives for both groups;
- Better quality of services.

4.1.4 Bridging Programs

Bridging programs are offered at public and private universities to enable nurses and other allied health professions from non baccalaureate programs who have the required Tawjihi (High School Certificate) scores to complete the requirements for a bachelor's degree. The scholastic record of associate degree holders entering the bridging program is evaluated to determine the credit hour requirements for the bachelor's; degree. It takes 2-3 academic years to complete the course work for this program. [21]

4.1.6 Student Entry Requirements for University and Associate Programs Cost of Education

Students can enter public universities in either competitive or non-competitive tracks. Acceptance into either track is based upon Tawjihi (High School Certificate) scores, but no student is accepted if their is lower than the established norms, (65% in the humanities and sciences, 75% in nursing and allied health sciences, and 85% in the medical, pharmacy and dental faculties). Since the competitive track is extremely competitive, the scores of students accepted into this track greatly exceed the minimum standard. While Universities have designed the non-competitive track for a variety of audiences, in general, students in noncompetitive programs students have lower Tawjihi scores and pay higher fees. Universities call the non-competitive track a variety of names including; parallel, international, evening and complementary.

In private universities acceptance to humanities and sciences faculties is open to any students who have Tawjihi score 55% or above, while entry requirements to health sciences faculties are the same as public universities.

MOHE established 50% as the minimum Tawjihi score required for entry into Associate Degree programs. Fifteen private colleges were licensed in 2000 and granted permission to accept a maximum of 60 students per year in the nursing program. The entry standards for students applying to private colleges vary among schools, some take all applicants who have the minimum entry score of 50% and other schools are more selective. [21]

4.1.7 Cost of Education

The cost of education in Public Universities is subsidized by the Government of Jordan and students accepted into the government supported competitive track pay significantly lower fees than those in the non competitive track. When University managers plan for the academic year they decided how to apportion seats among competitive (low fee students) and non-competitive, high fee students. The recent reduction in Government subsidies to Universities is likely to result in increased fees for students in both tracks, with the possible consequence that fewer students will be able to afford studies in the health professions. At the Jordan University Medical School, recent fee increases for competitive track students have brought the two fees schedules closer together setting the stage for a one fee structure. Fees charged by private universities for studies in the health professions are comparable to the fees at public universities for non competitive track programs.

While a limited number of scholarships are available from a variety of sources, there is no plan to increase the number of scholarships in the health professions programs to offset the higher fees.

The cost of education in associate degree programs ranges from scholarship programs offered by the MOH to private colleges where cost per credit hour is approximately 20 JD or 1200 JD for a 60 credit course of studies.

Table 0.1: Average Cost of Education for Health Professions / Bachelor's Degree

Profession	Total Study Credit hours	Competitive Cost/Credit Hour	Total JD	Non-Competitive Cost/Credit Hour	Total JD
Medicine	255	45	11,475	150	41,746
Nursing	132	15	1,980	53.30	6,845
Pharmacy	162	29	4,698	83	12,950
Dentistry	195	40	7,800	163	33,247
Laboratory	132	45	5,940	50	6,900
Physiotherapy	132	34	4,488	66.5	8,572
Nutrition	138	35	4,830	63	8,592

Sources: JU and JUST web sites; Jordan Ministry of Health and Initiatives Inc. /USAID.Situation Analysis: Jordan Human Health Resources Assessment, 2004.

4.1.8 Graduate programs

As indicated in table 4.4, few public universities conduct post graduate programs leading to higher degrees such as Masters and PhDs in health sciences. Jordan University and Jordan University for Sciences and Technology run graduate programs for public health, community medicine, anatomy, medical laboratory, toxicology, dentistry, pharmacy, and nursing. Yarmouk University runs the only master program for health services management in the country. This program is performed in affiliation with Dublin University, Ireland.

Faculty of Medicine at Jordan University has established master program for medical residents. According to this program, the resident physician is enrolled as MSc. student in the medical specialty in which he is doing his residency program.

Jordan University established the first doctorate program for nursing in 2005-2006.The intake of this program started with eight nurses and twelve nurses in 2007-2008. [20]

During the last two decades the MOH in collaboration with WHO and Jordan universities have run one-year postgraduate diploma program in Community Medicine for MOH physicians only. This diploma is prerequisite to the first Part of the Arabic Board, another 16 months residency program should be completed in four major community medicine areas. To fulfill the requirements of holding a certificate in Community Medicine, the resident must also submit a dissertation and defend it successfully.

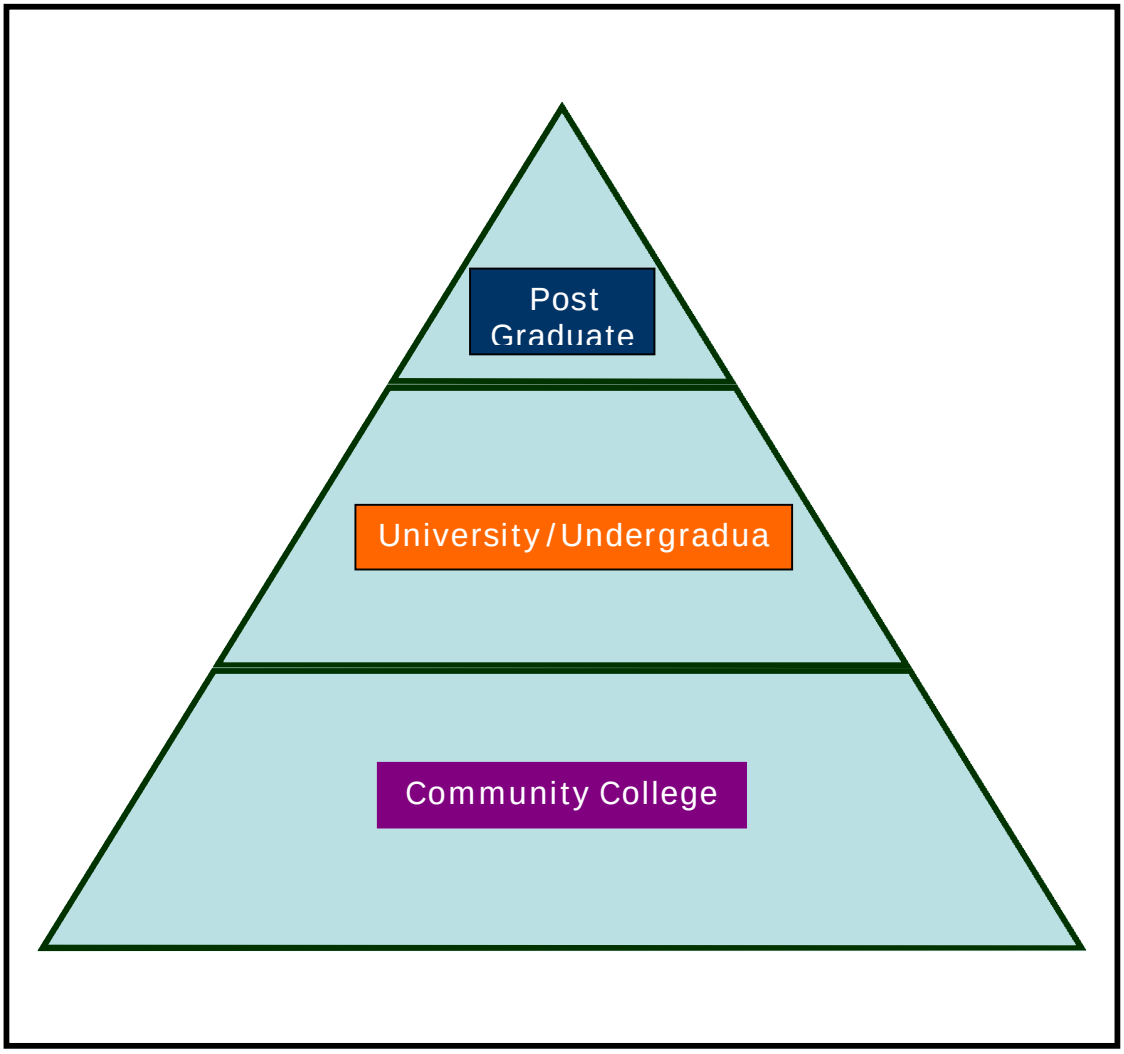


Figure 0.1: Levels of Formal Pre-Service Education of HRH in Jordan

Table 0.2: Number of health Training Institutions (Community Colleges) by Ownership

Type of training institution	Type of ownership			Total
	Public	UNRWA	Private for Profit	
Nursing & Midwifery Colleges	9	1	17	27
Paramedical Colleges (physiotherapy, occupational therapy, nutrition,laboratory,radiology,otology ,pharmacy,medical records,nutrition,environmental health,biomedical maintenance,anesthesia)	4	1	6	11
Total	13	2	23	38

Sources: MOHE Annual Statistical Report,2008; Jordan Ministry of Health and Initiatives Inc. /USAID.Situation Analysis: Jordan Human Health Resources Assessment, 2004.

Table 0.3: Number of health Training Institutions (University) by Ownership

Type of training institution	Type of ownership			Total
	Public	Private not for profit, FBOs	Private for Profit	
Medical Schools	4	-	-	4
Schools of Dentistry	2	-	-	2
Schools of Pharmacy	2	-	6	8
Nursing & Midwifery Schools	8	-	8	16
Health management training schools	2	-	2	4
Paramedical Schools	4	-	4	8
Environnent & public health	2	-	-	2
Total	24	-	20	44

Source: Ministry of Higher Education &Scientific Research. The Annual Statistical Report on Higher Education in Jordan for the year 2007-2008, Amman, 2009.

Table 0.4: Post –Graduate Education Programs for Health Professions

Profession	Programme of Study	Institution/Facility	Duration
Medicine	MSc. Community Medicine	JU	2 years
	MSc. Anatomy& Histology	JU,JUST	2 years
	MSc. Medical Laboratory	JU,JUST	2 years
	MSc. Toxicology	JU,JUST	2 years
	Diploma Community Med	MOH HR Directorate	1 year
Dentistry	MSc. Dentistry	JU,JUST	2 years
Public Health	Masters in Public Health	JU,JUST	2 years
Nursing	MSc. in Nursing	JU,JUST	2 years
	PhD in Nursing	JU	3-4 years
Pharmacy	MSc. Pharmacy	JU,JUST	2 years
	MSc. Pharmacology	JU,JUST	2 years
Management	MSc. Health Services Management	Yarmouk University	2 years

Source: Ministry of Higher Education &Scientific Research. The Annual Statistical Report on Higher Education in Jordan for the year 2007-2008, Amman, 2009.

4.1.9 Governance of High Education (Pre-service education)

Except for the four MOH community colleges that offer associate degrees in nursing, midwifery and allied health professions; the Ministry of Health does not participate in formal policy formulation or decisions related to education plans or student intakes at public or private universities and colleges. The coordination between the MOH and the Ministry of High Education regarding education of health cadres is performed on ministerial level.

The MOH Department of Human Resource Development decides on the type of associate and diploma courses to offer at their institutes and on the maximum number of students to be admitted. These decisions are based upon discussions with the MOH Department of Personnel and analysis of the civil service lists containing qualified candidates awaiting placement.

There is no formal link between the MOH Directorate of Human Resource Development and the institutions providing pre-service training in the health professions. This can, over time, result in difficulties for the MOH in Jordan in ensuring that pre-service training curricula take the Ministry's needs into account. For example, nurse training carried out by the universities tends to be hospital-focused and graduates will leave their training with no experience and little motivation to work in primary health care at health centre level.

The High Education Council sets high education policies and regulations, Ministry of High Education & Scientific Research implements these policies and the High Education Accreditation Commission sets standards for high education and monitors their implementation. Box 4.1 shows in detail the responsibilities of the three arms that govern high education in Jordan, including health professionals' education programs. [31]

4.1.10 Annual Enrolment/Input in the Health Training Institutions

Universities take into consideration the availability of tutors, physical infrastructure (classroom, laboratory, availability of clinical practice sites) and public interest in the program when establishing student intake quotas. Annually all universities in Jordan submit estimates for student intake for each program of study to the High Education Council for approval. The Council accepts or amends university requests and makes an allocation of students to each university.

As indicated in tables 4.5 and 4.6, the total number of students admitted to universities and community colleges (CC) in the different health training programs during the last three years was 20608 and 8947 students respectively. The corresponding annual average was 6869 for universities and 2982 for community colleges. Nursing students have the highest input rates for both university and CC programs. About 34% and 63% of the students admitted to universities and community colleges respectively were nursing students. This reflects the growing demand on nursing cadres in Jordan and neighboring Arab countries and the opening of new colleges for professional and associate nurses. [32]

On the other hand, the input of nursing students to the university program witnessed sharp decline in 2008 compared with 2007 and 2006. The decline (about 30%) could be attributed to the decrease in the total number of male nursing students enrolled in 2008. This was due to the new mandate of the High Education Council, as mentioned before, which imposes ceiling on male admissions to nursing faculties in order to rectify the gender imbalances. In spite of this mandate, the number of female students admitted to the BSc. program in 2008(937 students) was almost the same as in 2007(919 students).Since Jordan has significant shortage in female nurses, policy makers should find other ways and methods to encourage female students to join nursing training programs like providing more scholarships and improving work conditions for female nurses. [32]

The input of pharmacy students to universities and community colleges ranked second with a total input of 4808 and 965 students respectively. The next four health professions with regard to the number of students admitted to university program were: medicine, laboratory sciences, dentistry and biomedical engineering in descended order.

Regarding the total input to community colleges during the last three years; laboratory technicians, dentistry technicians, associate midwives and optometry technicians followed associate nurses and pharmacy technicians in descended order.

4.1.11 Annual output from Health Training Institutions

The total number of health professionals graduated from universities and community colleges (CC) in the different health training programs during the last three years was 13063 and 6862 respectively(Tables 4.7 and 4.8). The annual average of graduates during the same period for all health professions was 4354 for universities and 2287 for community colleges. Nursing graduates (registered and associate nurses) have the highest percentage of total output during the last three years for both university and community colleges programs (36% and 64% respectively), followed by pharmacy staff (pharmacists and pharmacy technicians) and physicians. Physicians accounted for 10% of all graduates from university health training programs. [32]

The output of the trained health professionals is partially based on the market demand. Other factors as the capacity of health training institutions, students' preferences ,the profitability of the program for the training institutions and the expected salary or income from each profession are the main determinants of health professionals output. The Ministry of Health does not have direct control over the production of the training institutions.

Box 4.1: Functions of High Education Governance Bodies in Jordan

High Education Council:

1- **Formulating the general policy of high education in Jordan.**
2- **Endorsing the establishment of new high education institutions.**
3- **Oversight and finance of the high education sector.**
4- **Monitoring the quality of high education.**
5- **Determining the basic admission requirements at high education institutions.**

Ministry of High Education & Scientific Research:

1- **Implementing the general policy of High education in Jordan.**
2- **Coordinating between high education institutions and public and private centers for consultations and research.**
3- **Signing cultural and scientific agreements in the field of High education and scientific research.**
4- **Recognizing foreign institutions of high education and equating certificates issued by them.**
5- **Setting eligibility criteria for scholarships inside and outside Jordan.**
6- **Following up the affairs of Jordanian students abroad through Jordanian cultural counselors.**

High Education Accreditation Commission:

1- **Setting accreditation standards of high education institutions, amending and developing them in light of the general policy of high education.**
2- **Monitoring the performance of high education institutions and their commitment to accreditation standards.**
3- **Appointing the specialized committees needed to carry out the tasks of the Accreditation Commission.**
4- **Ensuring that institutions of high education reach their pre-defined goals through continuous evaluation of their programs.**

Source: Ahmad Abu El-Haija.High Education in Jordan. National Tempus Office, Amman, Jordan
http://eacea.ec.europa.eu/tempus/participating_countries/High/jordan.pdf

Table 4.5: Students Admitted to Health Training Institutions/ Universities from 2005 to 2008

Cadre being trained	Actual Annual Inputs Universities			Total input
	2006	2007	2008	
Physicians	736	893	944	**2573**
Registered Nurses	2476	2443	1755	**6674**
Midwives	42	49	46	**137**
Dentists	389	425	390	**1204**
Pharmacists	1741	1660	1407	**4808**
Laboratory Sciences	273	497	527	**1297**
Radio Techno.	129	123	115	**367**
Physiotherapy	237	206	194	**637**
Occupational Therapy	117	92	77	**286**
Speech Pathology& Audiology	196	119	174	**489**
Optometry	52	56	52	**160**
Dental technology	76	118	119	**313**
Nutrition	85	80	201	**366**
Artificial limbs	10	9	16	**35**
Medical Physics	116	-	-	**116**
Biomedical Engineering	337	311	363	**1011**
Health Administration	45	47	43	**135**
Total	**7057**	**7128**	**6423**	**20608**

Source: Ministry of High Education &Scientific Research. The Annual Statistical Reports on High Education in Jordan for the years:2005-2006,2006-2007, 2007-2008, Amman.

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Table 4.6: Students Admitted to Health Training Institutions/ Community College from 2005 to 2008

Cadre being trained	Actual Annual Inputs Community Colleges			Total input
	2006	2007	2008	
Associate Nurses	1820	2054	1758	**5632**
Associate Midwives	76	123	109	**308**
Laboratory technicians	171	147	311	**629**
Radio technicians	60	63	75	**198**
Anesthesia Technicians	83	53	67	**203**
Optical Technicians	25	69	164	**258**
Dental Technicians	91	108	198	**397**
Pharmacy Technicians	258	323	384	**965**
Public Health Control	92	44	0	**136**
Sterilization Technician	0	0	32	**32**
Medical Records	21	100	68	**189**
Total	**2697**	**3084**	**3166**	**8947**

Source: Ministry of High Education &Scientific Research. The Annual Statistical Reports on High Education in Jordan for the years:2005-2006,2006-2007, 2007-2008, Amman.

Table 4.7: Training outputs in the Health Training Institutions/Universities from 2006 to 2008

Cadre being trained	Actual Annual Output Universities			Total output
	2006	2007	2008	
Physicians	369	416	511	**1296**
Registered Nurses	1200	1530	1930	**4660**
Midwives	39	32	22	**93**
Dentists	204	215	191	**610**
Pharmacists	951	1106	1264	**3321**
Laboratory Sciences	261	293	332	**886**
Radio Techno.	92	58	88	**238**
Physiotherapy	186	180	195	**561**
Occupational Therapy	45	41	72	**158**
Speech Pathology& Audiology	65	84	152	**301**
Optometry	34	34	37	**105**
Dental technology	54	47	48	**149**
Nutrition	46	31	49	**126**
Artificial limbs	12	10	9	**31**
Medical Physics	8	0	0	**8**
Biomedical Engineering	107	212	144	**463**
Health Administration	18	7	32	**57**
Total	**3691**	**4296**	**5076**	**13063**

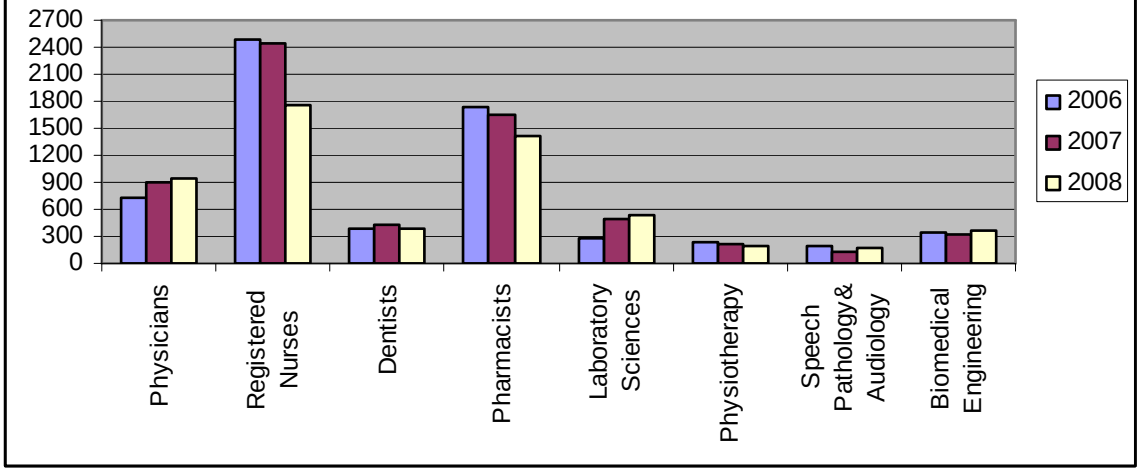
Source: Ministry of High Education &Scientific Research. The Annual Statistical Reports on High Education in Jordan for the years:2005-2006,2006-2007, 2007-2008, Amman.

Table 4.8: Training outputs in the Health Training Institutions/Community Colleges from 2006 to 2008

Cadre being trained	Actual Annual Output Community Colleges			Total input
	2006	2007	2008	
Associate Nurses	1070	1514	1809	**4393**
Associate Midwives	95	92	60	**247**
Laboratory technicians	127	152	128	**407**
Radio technicians	51	47	77	**175**
Anesthesia Technicians	54	132	84	**270**
Optical Technicians	35	37	21	**93**
Physiotherapy	34	28	0	**62**
Dental Technicians	121	81	105	**307**
Pharmacy Technicians	143	222	288	**653**
Emergency Rescuers	0	0	33	**33**
Public Health Control	2	41	46	**89**
Sterilization Technician	0	0	0	**0**
Medical Records	25	25	83	**133**
Total	**1757**	**2371**	**2734**	**6862**

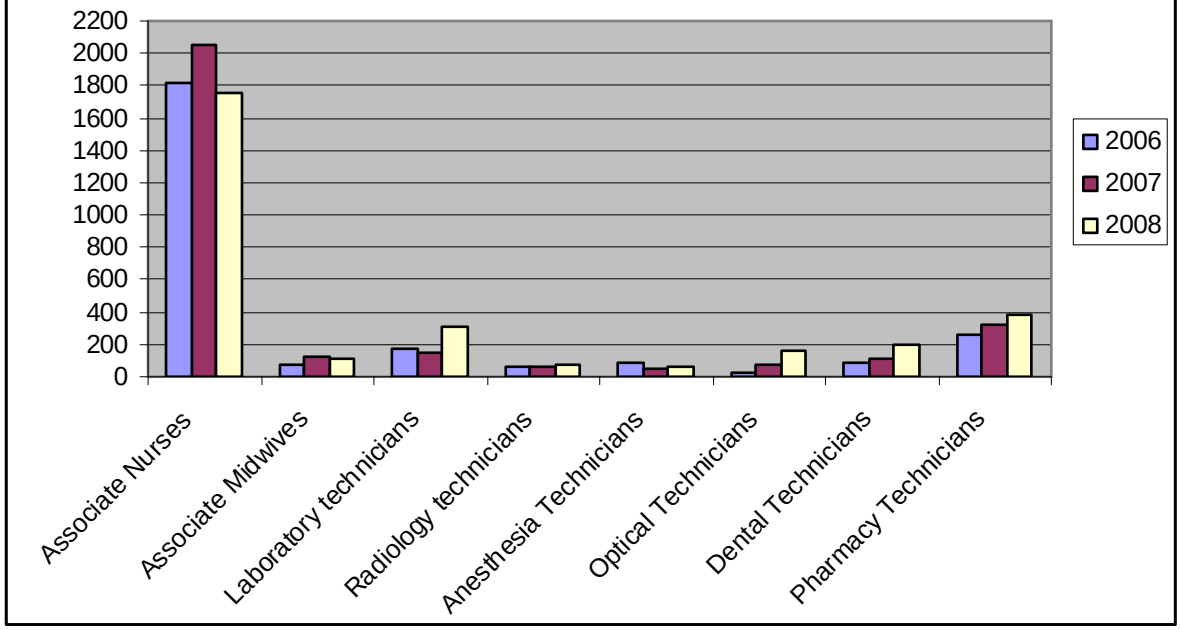
Source: Ministry of High Education &Scientific Research. The Annual Statistical Reports on High Education in Jordan for the years:2005-2006,2006-2007, 2007-2008, Amman.

Figure 4.2: Annual Input to University Programs for Selected Health Cadres from 2006 to 2008



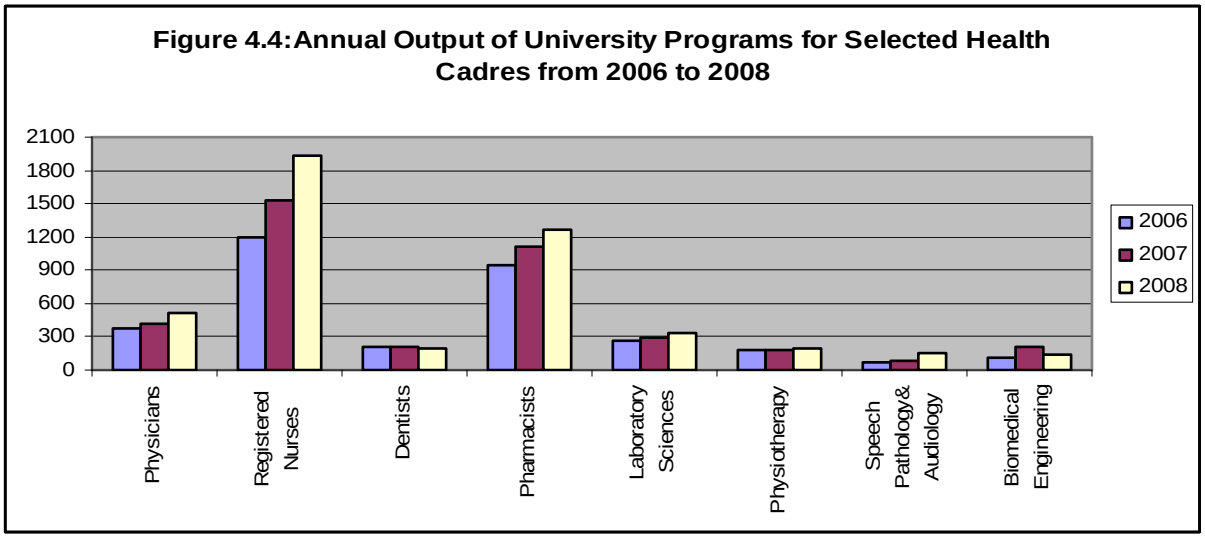
Source: Ministry of High Education &Scientific Research. The Annual Statistical Reports on High Education in Jordan for the years:2005-2006,2006-2007, 2007-2008, Amman.

Figure 4.3: Annual Input to Community Colleges Programs for Selected Health Cadres from 2006 to 2008



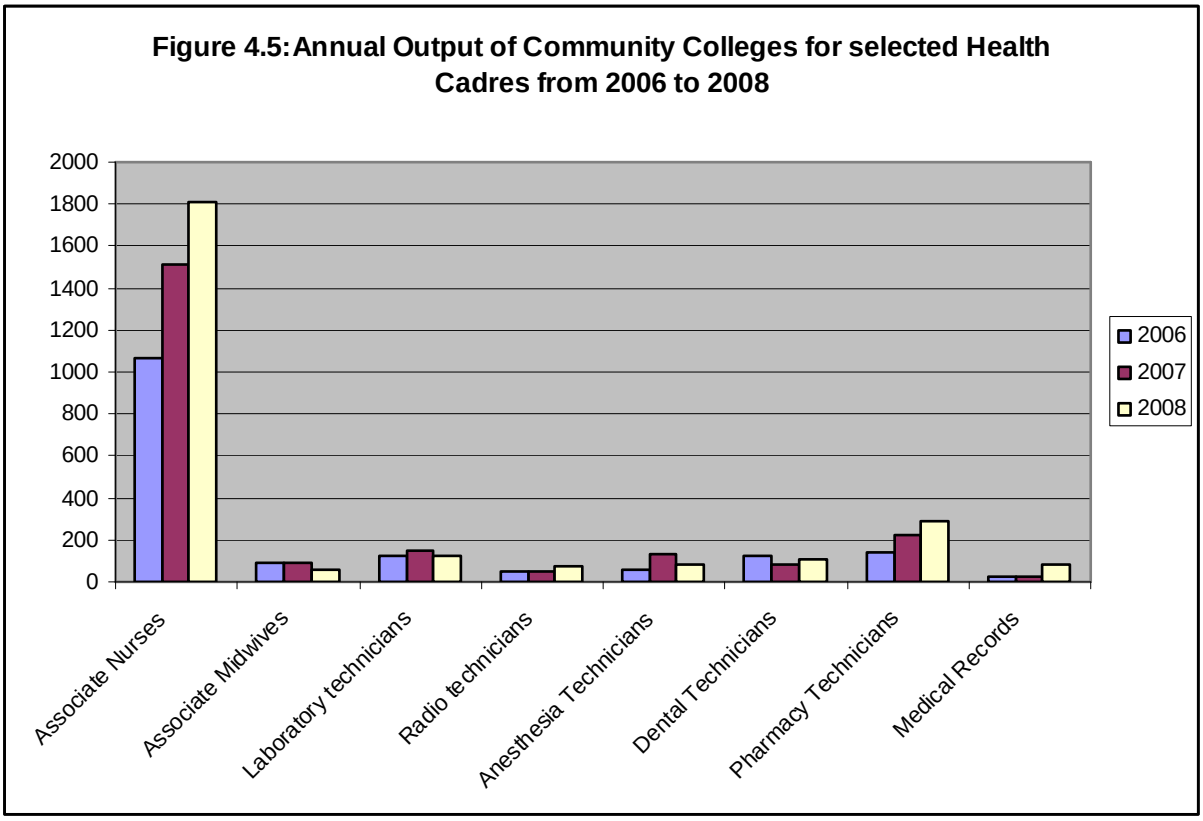
Source: Ministry of High Education &Scientific Research. The Annual Statistical Reports on High Education in Jordan for the years:2005-2006,2006-2007, 2007-2008, Amman.

Figure 4.4: Annual Output of University Programs for Selected Health Cadres from 2006 to 2008



Source: Ministry of High Education &Scientific Research. The Annual Statistical Reports on High Education in Jordan for the years:2005-2006,2006-2007, 2007-2008, Amman.

Figure 4.5: Annual Output of Community Colleges for selected Health Cadres from 2006 to 2008



Source: Ministry of High Education &Scientific Research. The Annual Statistical Reports on High Education in Jordan for the years: 2005-2006, 2006-2007, 2007-2008, Amman.

4.2 Post-service and Continuing Education

In addition to the post graduate programs leading to high degrees such as Masters and PhDs in health sciences as indicated in section 4.1.3, formal post-service training programs are confined to physicians and dentists in public and private sectors (Table 4.9). Except of the Diploma in Community Medicine which is organized by MOH, these programs are managed and supervised by the Jordan Medical Council. They include: medical residency program, medical internship, dentist residency program, dental internship and Diploma in Community Medicine.

Table 4.9: Formal Post-service Training Programs

Training Program	Length of Training	Organizing Institution	Place of Training
Medical Residency Program	4-6 years	Jordan Medical Council(JMC)	Teaching hospitals(RMS hospitals, some MOH hospitals, university hospitals, some private hospitals)
Medical Internship	1 year	JMC	
Dentists Residency Program	4 years	JMC	
Dental Internship	Six months	JMC	
Diploma in Community Medicine	1 year	MOH	MOH hospitals

Sources: Jordan Ministry of Health and Initiatives Inc. /USAID.Situation Analysis: Jordan Human Health Resources Assessment, 2004; JMC web Site.

The Jordan Medical Council (JMC) was formally established in 1982. It consists of: the Minister of Health (President), the deans of the Medicine Faculties and Dentistry Faculties in Public Jordanian Universities, the director of the Royal Medical Services, the president of the Jordanian Medical Association, and the president of the Dentists' Association and the chief of the High Studies Committee at JMC. The objectives of the JMC include: [33]

1- Improving the quality of medical services in the country by raising the scientific and practical levels of the physicians who are working in the different medical branches in corporation with the educational institutions.
2- Organizing seminars and courses for physicians in corporation with the medical organizations and institutions to cope up with the continuous medical education.
3- Supervising the Medical Residency Programs in the country and conducting Specialization Examinations for physicians to grant them the Jordan Medical Council Certificate.

4- Supervising the internship training for physicians and conducting the Internship Examination.
5- Evaluating the hospitals and developing recognition conditions for the purposes of training.

4.2.1 Medical Internship Program

An Internship is a compulsory (statutory) requirement for all graduates from medical and dentistry schools. After graduation, a physician or dentist should enter a one year internship under medical supervision in a certified teaching hospital. After which he or she must pass an exam sponsored by the Jordan Medical Council (JMC). Physicians and dentists who are graduated from Jordan universities are exempted from this exam. After being certified by this council and registered in the Jordan Medical Association or Jordan Dentists Association and MOH, they can serve as general practitioners / general dentists or apply to the JMC for residency program. The JMC organizes the internship training program which involves twelve month rotations in Medicine, Surgery, Obstetrics and Gynecology and Pediatrics in no particular order.

4.2.2 Medical Residency Program

After completion of the internship, physicians can apply to any certified teaching hospital for residency in a specific branch of medicine as dermatology, internal medicine, obstetric and gynecology, pathology, general surgery, psychiatry, physical medicine and rehabilitation, radiology, family medicine, neurology, ophthalmology, orthopedics, neurosurgery, otolaryngology, urology, anesthesiology or other specialties.

Acceptance for a residency is based on the available posts in each specialty, personal characteristics, previous education, and successful completion of written and oral exams. Advancement is based on an annual evaluation and examination.

The JMC conducts two exams for residents in his or her specialty to qualify them for Jordan Board Specialty Certificate. Part one exam is conducted after completing two years of residency, and Part two exam is conducted after completing the residency program. Physicians that had specialty certificates from foreign countries are not certified by the JMC as specialists unless they set for the Jordan board exam and pass it.

As mentioned before, Faculty of Medicine at Jordan University has established master program for medical residents. According to this program, the resident physician is enrolled as MSc. student in the medical specialty in which he is doing his residency program. At the end of the residency program, the physician who passes the JMC exams and meets the postgraduate program requirements will be awarded MSc. degree in medicine and Jordan Board Specialty Certificate.

4.2.3 Community Medicine Program at MOH/the Academy of Health

The MOH has recently established the Academy of Health to respond to the challenges related to primary health care and community medicine. A one-year diploma course in community medicine, supported by WHO, has been in operation for about 10 years. More than 200 physicians have been graduated; most of them are still working in MOH institutions. A similar, WHO-supported program in family medicine has been established.

4.2.4 Continuing Medical Education (CME)

Since medical education does not stop when residency ends, practicing physicians need effective support for lifelong learning. A physician's continuing professional development is critical to keeping up with advances in medicine and with changes in the delivery of care.

Though enhancing the practice of medicine through research and continuing education is one of its main goals, the JMC has not been involved in adopting or enforcing formal CME programs in the country. The JMC does not require from specialist physicians to provide evidence for CME.

Formal continuing training programs are not regularly provided by public or private health sector. It is performed on voluntary basis by professional associations, hospitals, teaching institutions and individual practitioners. Most of the training provided is on job-training, seminars, workshops and conferences. The majority of hospitals do not have any budgetary allocations for formal training and research.

Although there is a directorate for medical continuing education at the MOH in addition to the medical schools and the professional organizations, continuing education in Jordan is still at an early stage of development and many Jordanian hospitals and health institutions lack adequate continuing education programs for physicians, nurses and other health cadres.

It is recommended that the JMC should institutionalize formal CME to help physicians maintain, develop and increase the knowledge, skills and professional performance and relationships they use to provide high quality services .Re-licencing of specialist physicians should also be activated and connected to formal CME .

Jordan Health Care Accreditation Council (JHCAC), a private non profit organization, is mandated to accredit health training programs which are not under the jurisdiction of the High Education Council or the Jordan Medical Board. It is expected that after full implementation of the national accreditation program, formal continuing education will be more common practice in all healthcare facilities in Jordan.

4.3 Health workforce requirements

No formal projections or future plans requirements for HRH exists in Jordan. The High Health Council has adopted strategic objectives for some health work categories per 10000 population as indicated in table 4.10 below. The Strategy does not include the basis on which these objectives were formulated.[14]

The Human Resources Project (2004-2006) which was funded by USAID and technically supported by Initiatives Inc, provided future staff requirements for MOH for the year 2014 for some health cadres as shown in table 4.11. It employed a powerful planning tool modeling developed for the World Health Organization tool to produce strategic and quantified human resource projections. The projections were based upon a number of assumptions about the future, namely: [34]

- Population will increase by 22.5% over the ten-year period with a small shift of the population from rural to urban.
- Health issues will move in part from endemic environmental diseases to those chronic diseases more commonly associated with modern Western societies.
- Public sector services will focus on strengthening primary care roles and with stronger links to the private sector in the provision of hospital services.
- Increased attention to the retention of staff, particularly specialist doctors and registered nurses.

Table 4.10: Strategic Projections for Some Health Work Categories per 10000 as reported in the National Health Strategy (2008-2012)

Cadre	Year 2006 (Rate per 10000 population)	Year 2012 (Rate per 10000 population)
Physicians	24.5	27.5
Dentists	8.2	8.5
Pharmacists	12	12
Nurses and Midwives(all categories)	33	35

Source: the National Health Strategy (2008-2012).High Health Council, 2008.

Table 4.11: Future Staff requirements for the MOH for Selected Health Work Categories

Cadre	Year 2004	Year 2014	Change
Specialist Doctor	1,140	1,522	+ 382
GP	1,066	2,316	+ 1,550
Dentist	521	1,037	+ 516
Registered Nurse	2,236	3,576	+ 1,340
Associate Nurse	589	3,756	+ 3,167
Pharmacist	220	441	+ 221
Assistant Pharmacist	1,009	1,864	+ 855
Laboratory Technician	932	1,286	+ 354
X-Ray Technician	408	786	+ 378

Source: MOH and Initiatives Inc, 2005.Strategic Health Workforce Projections (Jordan Human Resources Project: 2004-2006), Report No.7.

The detailed projection for females and males registered nurses for the years 2008-2012 which was done by the Jordanian Nursing Council, indicated that threw will be a shortage of female registered nurses during this period. The shortage ranges from 3351 females RNs in 2009 to 2572 in 2012.On the other hand, there will be a surplus of more than 2000 male RNs during the years 2010-2012 with a peak in the year 2011 as the surplus amounts 2463 RNs. [20]

5.HRH UTILIZATION: PRIORITY AND PRACTICE

5.1 Recruitment

Each sub- health sector in Jordan has its own recruitment regulations and mechanisms. In MOH, the appointment of medical staff and health care professionals is done in accordance with Civil Service Bureau regulations, standards, and salary scale. The MOH has little control on these regulations and standards.

In RMS, the appointment of all health professionals is done in accordance with Military Service regulations with special chapters for the appointment and salary scales for physicians, nurses and allied health professionals.

University hospitals follow the staff appointment regulations of each university. Physicians have dual appointments as faculty members and hospital medical staff members.

In the private health sector, the appointment of medical staff and other health care professionals is done in accordance with Jordanian Labour laws. Every hospital has its own appointment and salary scale regulations. However, most physicians working in private hospitals are self employed in their own clinics. No formal credentialing of clinical privileges of medical staff exists in private hospitals in Jordan. Physicians have open admission privileges in all private hospitals and admit patients to hospitals according to their preference.

There is no system or requirement for new employees (either those new or those transferred to a new work location) to be given a formal orientation to their workplace, to the workplace policies and procedures, or to the expectations for their performance.

Most physicians, female nurses, midwives and radiology technologists are recruited after short time of graduation. Other graduates as male nurses, dentists, pharmacists, and most paramedics usually stay more than one year after their graduation before being recruited. MOH and RMS are the main employer of new health cadre graduates.

5.2 Deployment and distribution mechanisms

There are regional disparities in the distribution of physicians as evidenced by the difference in physician population ratios among Amman and some of the rural governorates. While the MOH has done a great deal to place clinics in these rural areas, it continuously faces the usual obstacles of placing professionals. Policies and appropriate incentives should be developed to attract and retain physicians in rural and poor areas.

5.3 The work environment

5.3.1 Incentives and motivation systems

Jordan's public sector is characterized by a civil service code that regulates recruitment, selection, performance appraisal, and promotions. Current implementation has led sometimes to appointments of inappropriate staff, promotions not based on merit, and performance appraisals that do not reflect relative performance levels or performance improvement/staff development. It should be noted however, that only part of the problem lies in the recently updated codes. Most problems result from how the codes are applied. [35]

A study about hospital staff motivation in Jordan indicated that income, opportunities for advancement, opportunities for training, good supervisors, opportunities to learn new skills, adequate lighting and ventilation and pleasant co-workers are the main drivers for good performance. Workers perceived their managers to be less open than the managers perceived themselves. [36]

5.3 .2 Staff turnover and stability

There is a problem of high turnover among medical and nursing staff in MOH, which has resulted in shortages in health care providers, due to lack of incentives, low salary scale and remunerations in comparison with university hospitals, RMS, private sector and Gulf States offered opportunities.

The Human Resources Analysis study which was performed by MOH and Initiatives Inc in 2005, indicated that 16% of specialists doctors, 12% of registered nurses, 40% of pharmacists and 18% of technicians were absent from their work in MOH on long leave for one to three years. The majority of them were on unpaid leave (presumably working in other countries). [35]

The above study also reported that total attrition rate across all HRH in MOH over the years (2002-2004) was 4.6% per annum. The highest rate of loss is shown by the laboratory technicians, where the average annual attrition has been 15.5%. Registered Nurses showed the next highest level of attrition, with an average annual loss rate of 10.2%; this equates to 228 registered nurses leaving each year. Other technicians show an average annual attrition rate of 8.7% each year, representing an average annual loss of 72 technicians each year. Specialist doctors have been leaving at an average rate of 7.1% each year, representing a loss of 82 per year. Given the length of time it takes to produce a specialist doctor, this loss is significant. [35]

In comparing the data on attrition rate with the data on those staff currently on long leaves of absence, it appears that health professionals prefer to use the benefit of taking long leave and protecting their government employment, rather than resigning from the MOH.

There are two types of staff turnover in the health care sector, occurring internally as well as externally. Internally, health care professionals move from the public sector (MOH, RMS, University hospitals) to the private sector and from one hospital to another within the private sector based on better job opportunities and salaries. Some health workers (physicians, dentists, pharmacists, nurses, and lab technicians) in the public sector also work illegally for the private sector. Retired personnel, from the public sector, are also moving into the private sector where wages and benefits are much better, especially among physicians.

High staff turnover, intention to move to urban centers and low motivation among medical staff has been found among professionals in rural areas. High turnover is a particular problem among female physicians and nurses in MCH centers, not only in rural areas, but also in cities of three hours' distance from the capital. The poor state of the equipment and buildings, a closed social system (specifically for female health professionals) and lack of incentives are major problems of the rural areas.

Externally, movement is seen from Jordan to the Gulf area and to other developed countries as UK, in particular among nurses and physicians where wages and benefits are more attractive than in Jordan. It is estimated that 18-21 per cent of nursing workforce has left Jordan. The percentage of physicians moving outside the country is not reported but still high. Further, physicians who are sponsored abroad to complete specialties often do not return to Jordan upon completion of their studies.[30]

It is estimated that about 2-3 thousand Jordanian physicians are working outside Jordan. Many of them work in advanced medical centers in the United States of America, United Kingdom and other Western countries. The advancement, expansion and increasing reputation of the private health sector cause many Jordanian physicians, mainly specialists, to return to the country during the last ten years. [29]

Finally, MOH and other health sectors need to actively seek ways to reduce attrition through:

- Improving human resources management processes and practices.

- Decentralization of authority to hospital and directorate managers and ensuring accountability.

- Seeking ways to improve salaries and benefits to reward increased productivity.

- Institutionalizing continuing education programs and professional grading system.

- Improving working conditions and work environment.

5.4 Payment mechanisms

MOH and RMS employees are paid salary and benefits according to the civil/army service regulations and the category, grade/level and step or rank to which they have been allocated.

The salary and benefit system is clearly defined and the rules are well followed and well known by all staff. However, there are two issues in relation to compensation and benefits within the MOH.

The first is that basic salary only represents between 15% (for doctors) to 32% (for non-doctors) of total take home pay. The balance of the take home pay is made up of a variety of allowances and incentive payments, which do not affect an individual's pension entitlement upon retirement.

The second issue is that, due to the differential allowances paid for qualifications, the take home pay for individuals occupying positions of similar levels of responsibility and authority may vary greatly. For example, a non-doctor Director (of a Directorate in the central MOH), may receive one quarter of the amount paid for a doctor-Director. This can be viewed as unfair since the performance expectations for both Directors are the same. [35]

In the private health sector, every hospital has its own salary scale regulations. Most physicians working in private hospitals are self employed in their own clinics. They are paid by patients through the hospital on fee-for –service basis. Prospective payment mechanisms are not common in Jordan.

In University hospitals, salary and benefits for employees are paid according to the university regulations. Most physicians working at university hospitals have joint appointments as faculty and hospital consultants. Therefore; they are paid a monthly salary by the university according to the faculty remuneration system and paid by the university hospital according to a specific arrangement based on fee-for-service.

5.5 Supervision systems and mechanisms

Licensure rules are hindering professionals who are not registered or licensed to practice their respective profession, for protecting the society from malpractice or abuse of clinical privileges. The ministry has full authority to withhold or abstain from granting institution or professionals' licensure.

Performance appraisals are conducted periodically and documented for the majority of staff. Depending upon the overall rating, the result of the performance review varies, from the awarding of an annual pay raise to dismissal from the MOH. Performance evaluations within the MOH and other public sectors tend to be based on whether an employee abides by working hours and on their behavior, rather than on work performance. Most healthcare managers in Jordan have received no training in how to conduct performance appraisals in ways that are intended to encourage high performance and to identify staff development needs. [35]

Although there are formal procedures for taking disciplinary action against an employee, these are time consuming and perhaps not appropriate for most cases of misdemeanor where immediate action is called for. In addition, disciplinary action is rarely connected to poor performance. MOH managers believe that there is little they can do in cases where an employee's performance is not up to expectations. Promotion decisions tend to be made by the top MOH officers and the criteria for decision-making are not transparent. [35]

Increasing the objectivity of the performance evaluation process, and creating a mechanism whereby personal achievements are routinely assessed will aid in enhancing health worker motivation and the quality of care within healthcare institutions. Recruitment, selection, placement and transfer of managers require also unified standardization and evidence based criteria.

6.Governance for HRH

6.1 HRH policies and plans

Jordan, as any other countries, has a formal cycle of health policy formulation and planning with a logical sequence of steps. The National Health Strategy for 2008-2012 ,which was set by the High Health Council, identifies national health priorities, which lead to sectoral and sub-sectoral policies, which are then translated into sectoral and sub-sectoral allocative plans or programmes of work, and finally become operational or activity plans. The Human Resource Development (HRD) policy is part of the general health policy. Thus, the linkage between overall health and HRH policies is therefore ensured, and HRD is recognized as being crucial and central to health systems development.

The main principal HRH policy areas as presented in the National Health Strategy for 2008-2012 were: [14]

Management issues – Development of performance based incentive system for HRH, assessment of HRH management, establishment of HRH Observatory, development of national plan for HRH management, development of job description manual for HRH in MOH as first stage.

Institutionalizing of post service training – development of national continuing education programs for all categories of HRH, development of in-service and abroad training plans.

Rational production and education of HRH – forming of national committee to estimate the needs for HRH, development of policies that are designed to ensure that the health personnel produced are consistent with the needs of the country, a plan for educating and training the required numbers and types of health personnel.

A national stakeholders meeting to secure sufficient support for HRH development held in June 2008 with WHO facilitation from H.E. the Prime Minister, H.E. the Minister of Health, HHC Secretary General, directors of private hospitals, the presidents of health professions associations, NGO's and academic institutions. During this meeting there was national consensus on the need for implementing one consolidated and comprehensive national HRH strategy, and standardization of the HRH policies, management functions and practices in the field. As a key product of the national stakeholders' meeting, a national HRH Task Force was formed with a decree from the Prime Minister of Jordan and terms of reference was developed accordingly (annex 1). Since it was established, the HRH National Task force has been meeting on a regular basis to address and solve pressing issues pertaining to HRH in Jordan.[37]

There is no long-range plan for human resources ;either in terms of numbers of staff needed to provide good quality services, or in terms of human resource development (training) or management activities which can provide a cohesive and progressive program for human resources.

However, most components of the HRH policy are not fully implemented; still seem to be developed more for the sake of having a policy and a plan. A policy formulation exercise is meaningful only if its purpose is clearly spelled out and seen as a real opportunity for change. The HRH policy in Jordan has to be translated into a work plan with clearly defined objectives, strategies and expected results, with a time-frame and resources attached to them.

6.2 Policy development, planning and managing for HR

Ministry of Health is still often working on HRH policies and plans through a small group of people based in the central planning unit and the department of HRH. It is recommended that, formal mechanisms should be established for coordinating health policy and planning activities, including HRH. This could be achieved by creating a dynamic working relationship between policy makers, programme planners, the producers and regulators of health personnel, health care providers and consumers' representatives.

There are two departments/directorates for HRH in MOH responsible for developing, implementing and monitoring HRH strategies: one for Personnel Administration and the second for Human Resources Development (see Annex one).Both departments report to the Director General of Administrative Affairs.

Personnel Administration Directorate is responsible for HRH administrative functions as recruitment, placement, evaluation, compensation and management of HRH information system. This department participates in HRH policy development and planning. It has direct contacts and close working relationships with the Civil Service Bureau. 78 employees work in this department, third of them are university graduates.

The Human Resources Development Directorate is responsible for HRH training and development, studies and research, and continuing education programs. It has 30 employees, 8 of them are university graduates. Training is often offered on an ad hoc basis, but is not based on a formal process of assessing staff needs nor is it linked to the organization's key priorities and changes in the health sector and health practices.

There is little recognition of the need to prepare health professionals to take on management responsibilities (i.e. hospital management, financing, human resource management, etc). Doctors can be appointed as hospital directors without any prior experience or training in management. Management training and development is not

routinely planned for. Although there has been in-service management training provided to certain MOH managers, this has often been in response to donor agency funding rather than a defined need by the MOH itself.[35]

A job classification system exists in MOH, but it is not used as a basis for other human resource management functions (e.g. job descriptions, hiring, salary and benefits).

All decisions regarding HRH recruitment, placement, termination and compensation are centralized in MOH. Decentralization function as a governmental process is still facing many constraints, due to lateness and inability of local governorates to implement decentralization mechanisms and modules.

6.3 Professional Associations Regulations

All health professionals must be licensed by the Ministry of Health. Registration in the related professional association is mandatory before licensing. During the period 1960-1982, the Jordan Medical Association certified doctors after they fulfilled specified requirements. Since 1982 the Jordan Medical Council certifies doctors as general practitioners and specialists. Specialty associations affiliated with the Jordan Medical Association provide voluntary certification to their members. Healthcare quality assessment studies in Jordan have not measured the effect of health professional certification on the quality of healthcare.

Physicians and other healthcare workers are held liable for mistakes or misadventures by the laws of Jordan Health Professional Associations and the bylaws and ethics of health professions. The Health Professional Associations were legally organized by law No. 13-1972 for the Jordan Medical Association, law No. 17-1972 for the Jordan Dentistry Association, law No. 15-1972 for the Jordan Pharmacists Association, law No. 18-1972 for the Jordan Nurses and Midwives Association and law 53-2006 for the Jordanian Nursing Council.

Professional bodies are assuming the role of implementing, monitoring and enforcing the approved rules and regulations regarding each profession. The disciplinary council of each health profession includes representatives of the respective professional association. Most malpractice issues are dealt with by the council and few are settled by the court. The Ministry of Health is also mandated to handle legal, ethical, and malpractice issues related to the practice of all health professionals in the country. Consumer Protection Society defends and promotes patients' rights and interests and monitors adherence of health professionals to formal fees schedules.

There is shortage of managerial skills in MOH and professional associations to manage and monitor adherence with health laws and regulations. As enforcement of health laws is a shared process among all parties concerned, a national program for capacity building in this area is highly needed.

Health and medical ethics have general references in public health law, laws of health professions associations and internal hospital by-laws. However, Jordan does

not have specific legislation for medical and health ethics, patients' rights, information confidentiality, informed consent, medical malpractice or biomedical research.

6.4 HRH information

Computers and personnel data management systems are available in all health sectors, but human resource information is not produced regularly for management decision-making. In MOH, Personnel Directorate maintains a comprehensive database containing all key information about each individual working for the MOH.

This personnel database is updated as changes occur. In theory, the details held on this database and the information held on each employee's computerized salary record in the Directorate of Finance, are capable of being linked through the employee code number (used commonly by both systems) and the employee name.

Although the personnel database holds comprehensive, computerized records, the ability to produce regular reports for senior MOH managers to update them on changes in the staffing situation is limited. Special programs are needed to produce summary analyses that can be easily read, understood and used by decision makers. [35]

The Information and Research Directorate in MOH maintains regular statistics about HRH working in MOH (by categories, place of work, region, healh directorate, governorate, bed/staff ratios, etc.).The HRH statistics which are collected from other health sectors cover the main HRH categories (i.e. physicians, dentists, pharmacists, registered nurses, midwives, associate nurses, assistant nurses) and are collected from hospitals only. These statistics do not cover all HRH working in the country. The reliability of the HRH statistics reported by the private health sector is not guaranteed. The HRH statistics is reported in the annual statistical book of the MOH; no analysis is performed on these statistics.

The High Health Council has established the Jordan National HRH Observatory this year with technical support from WHO/EMRO. This observatory will serve as a national policy forum among key stakeholders to review, and use evidence generated by the observatory for HRH planning and policy formation. It will also serve as the main reference of updated information and statistics on HRH in Jordan.

6.5 HRH research

HRH research is not institutionalized or performed on regular basis. Most of the research performed on HRH is initiated either by International donor agencies like USAID and WHO or by students and academicians.

The Human Resources Project (2004-2006) which was funded by USAID and technically supported by Initiatives Inc, conducted three important studies that cover all aspects of HRH in MOH. These studies are:

1. Assessment of the present situation of health staffing.
2. Assessment of factors that encourage or discourage the recruitment and retention of staff within the Ministry of Health.
3. Alternative projections of staffing needs with the associated implications for pre-service training outputs and steps to retain staff.

The three studies highlighted the need for a long-term policy and plan for the production of a balanced human resource. Despite the existence of procedures for HR, management issues such as recruitment, hiring, firing, transfer and promotion, they were not used consistently. There were major gaps in relation to performance management. Job descriptions may have existed but were not up-to-date and were very general. There was no formal continuing education system. In addition, the relationship between health service provision and pre-service training institutions (medical and other health professional schools) was loose. [35]

Jordan participated in a multi-country study which was conducted in 2007 by the Health Policy Forum of the Middle East and North Africa Region to identify and rank regional policy concerns and research priorities related to three thematic areas (health care financing, human resources for health and the role non-state sector) as perceived by policy makers and civil society organizations. The results of this study with relation to HRH could be summarized as follows: [37]

HRH Challenges:

- Unavailability of long-range plan for human resources.
- High drop out rate of qualified health professionals.
- Lack of relationship between health service provision and pre-service training institutions; regional disparities in the distribution of health personnel.
- No formal continuing education system; absence of re-licensing process for health professionals.
- Lack of national data base for HRH.
- Inequalities of health personnel wages and incentives among public sectors.
- Lack of rigorous appraisal of the current state of HR development in health.

HRH Policy Priorities:

- Develop a national education plan for human resources for health.
- Match out-put of health sciences education programs with the needs of healthcare market.
- Devise a national plan to manage and contain the migration (brain drain) of health professionals.
- Activate recertification of specialized doctors.

- Link financial incentives to actual performance.
- Develop a promotion strategy for all health professionals and link it to re-licensing and continuing education.
- Give incentives to health professionals serving in hardship areas.
- Institutionalize continuing education programs to all health professionals.
- Establish medical accountability law.
- Delineate clinical privileges for private doctors.
- Establish a national observatory for health professionals.

HRH Research Priorities:

- Do existing teaching plans and curricula meet the needs of the health professionals and consumers?
- What are the causes that drive health professionals to leave the country?
- What is the existing situation of human resources for health?
- What are the needs of the health market for human resources?
- What is the magnitude and causes of unemployment among health professionals?
- Do private physicians comply with the fee schedule set by the Jordan Medical Association and MOH?
- What is the impact of continuing education programs on the performance of health professionals?
- What are the causes of violence against MOH health workers and how to avoid it?

In 2008, a study was conducted by a technical team from WHO/EMRO and the High Health Council to assess awareness and perception of stakeholders about existence of HRH strategies, policies and coordination mechanisms within all sectors. The following represent the main findings of this study: [38]

In the field of HRH Policy & Planning, there is a need to develop a national strategy with evidence-based plans and policies for HRH. Although strategy for HRH is being used at the entity level, there are differences in legislations and regulations that need to be streamlined and standardized.

In Education & production, there is clear shortage in the number of health workers. There is a need to establish a database for monitoring numbers and shortages per profession per sector. Furthermore, participants at the national stakeholder meeting reiterated the need to establish national HRH observatory in Jordan.

In HRH management functions, at the entity level, there is emphasis on defining lines of authority, duties and responsibilities and job descriptions. Although areas as salaries and incentives schemes and performance-based evaluation are reflected in most responses, it varies widely from one sector to another. It was repeatedly stated by respondents about need for standardization of current policies and regulations within different sectors related to HRH management practices. Career path development and continuous professional developments are areas which need to be addressed urgently.

6.6 Stakeholders in HRH

In addition to MOH, HRH governance functions in Jordan are performed by multiple public, semipublic, private and NGO's. Though MOH is the main player in the Jordanian healthcare system, understanding the governance functions of other organizations and authorities is of prime importance for the assessment of HRH governance. Some Ministries and organizations from outside of the health sector as the Parliament, the Cabinet, Ministry of Finance, Ministry of High Education and Ministry of Planning and International Cooperation perform important governance functions (i.e. legislative, regulatory, and financing) that have direct impact on the performance of the HRH in Jordan. Box 6.1 shows most of HRH related Laws and by-laws that govern HRH in Jordan and specify the role of different stakeholders in HRH.

Below are the main health governance 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. under secretary).
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 cooperation of the High Health Council.

b) Regulating and monitoring health services provided by public sectors and private sectors.
c) Direct management of human resources employed by the MOH(about 30% of HRH in Jordan)
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

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

7- High Health Council

a) Proposing and initiating national HRH policy and strategic plans.
b) Coordinating the major issues related to HRH within health sub-sectors (MOH, RMS, university hospitals, private health sector, etc.).
c) Proposing reforms and proposals to strengthen HRH.
d) Adopting of health system research agenda and facilitating the implementation of this agenda.
e) Establishment and hosting of the National Observatory for HRH.

8- Health Professionals Associations (i.e. Jordan Medical Association., Jordan Nurses Assoc., Jordan Dentists Association., Jordan Pharmacists Association, etc.)

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 data base for health professionals.

9- Civil Service Bureau

It is charged with 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

e) Setting and promoting nursing care standards.
f) Developing and disseminating criteria for nursing professional classification (professional ladder).
g) Certifying 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 High Health Council.

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) Planning HRH development 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 partnership of local organizations.

6.7 The National Observatory for HRH

In 2008, the High Health Council of Jordan was commissioned to establish national HRH observatory, and in June 2008, the first stakeholders' meeting was held and produced a coherent coordination framework among stakeholders. As a result, a permanent national forum was created and has been meeting on a regular basis since then to address, debate and solve HRH related issues and challenges. In July 2009, the HRH national observatory of Jordan was launched and has been operational with instant updating of HRH data and information www.hhc.gov.jo/nhrho

A national HRH Task Force chaired by HE Dr. Taher Abu El-Samen, Secretary General of High Health Council of Jordan, with members representing national stakeholders was appointed by the Prime Minister in June 2008. The Task Force is responsible for the following tasks:

- Review national strategy for HRH to ensure its applicability and consistency with the national goals for health.
- Develop national HRH database that can be continuously updated.
- Establish national HRH observatory under the supervision of the HHC aimed at building national capacity to provide reliable data needed for evidence-based decision making in addition to having a network for national, regional and global sharing.
- Support studies and operations research pertaining to HRH.
- Develop national plan for HRH.
- Monitor implementation of national HRH plan with regular evaluation and progress reports.

Box 6.1: HRH related Laws and by-laws

HRH Related Laws

- Public Health Law No.54/2002
- High Health Council Law No.9/1999
- Jordan Medical Council Law
- Jordanian Nursing Council Law
- Private Hospitals Law No.85/1980
- Jordan Medical Association Law No.13/1972
- Dentists Association Law No.17 /1972
- Pharmacists Association Law No.51/1972
- Registered Nurses and Midwives Association Law No.18/1972
- Protection from Radioactive Materials Law
- Civil Service Law
- Military Service Law
- Social Security Law
- Jordan Labor Law
- Jordan Universities Law
- High Education Council Law
- High Education Accreditation Commission Law

HRH Related by- Laws

- Audiology Profession by-law No.106/2001
- Licensing and Management of Medical Labs by-law No.23/1983
- Opticians' by-law No.6/1986
- Physiotherapy Practice by- Law No.57/1986
- Dermatology, Skincare, and Hair Removal Practice by- Law
- Regulations for Comprehensive Examinations System for Medical Licensing
- Paramedics Practice by- Law
- Associate and Assistant Nurses Practice by- Law
- Clinical Psychology, Mental Health and Counseling Practice by- Law
- Nutrition Practice by- Law
- Incentive System by- Law

Source: http://www.moh.gov.jo/MOH/En/rules_regulations.php

7. CONCLUSION AND RECOMMENDATIONS

This report provides a comprehensive picture of the health workforce situation, production, utilization and governance in Jordan. It is evident from this study that Jordan has been remarkably investing in human resources for health as a key element for building a robust health care system. The followings are some recommendations to help health policy makers in developing appropriate policy directions to address the challenges and gaps which were highlighted in this report.

1. Health Workers Situation

- Strategies are needed to motivate young women to enroll in nursing faculties to meet the shortage of female nurses, like providing more scholarships and improving work conditions for female nurses.
- Efforts also should be enhanced to develop a marketing strategy to promote male nurses outside the country.
- Policy makers should find innovative ways to solve the gender imbalances among physicians at primary health level to promote reproductive health services and decrease the unmet needs for family planning.
- Policies and appropriate incentives should be developed to attract and retain physicians and other health workers in rural and poor areas.
- A national plan to manage and contain the migration (brain drain) of health professionals should be developed with participation of all stakeholders from public and private sectors.

2. HRH Production

- Restructure teaching curricula for health sciences programs to meet the real needs of patients and local communities and to respond to the challenges facing the Jordanian healthcare system
- A national education plan for human resources for health should be developed and integrated with the national health plan to bridge the gap between the supply and demand for health professionals.
- Partnership between health education and healthcare sectors is highly recommended.
- It is recommended that the Jordan Medical Council should initiate and organize formal continuing medical education and re-licensing of specialist

physicians to maintain, develop and increase knowledge, skills and professional performance of medical staff.

- Continuing education programs (such as conferences jointly sponsored by the MOH, RMS, JUH, and the private sector), need to be strengthened as well, making them more readily available to nurses, paramedical technicians, and other support staff.
- Developing training programs in the area of planning and managing health care services.

3. HRH Utilization: Priority and Practice

- Improving human resources management processes and practices.
- Seeking ways to improve salaries and benefits to reward increased productivity.
- Institutionalizing continuing education programs and professional grading system.
- Improving working conditions and work environment.
- Increasing the objectivity of the performance evaluation process, and creating a mechanism whereby personal achievements are routinely assessed.
- Financial incentives should be linked mainly to actual performance not merely to seniority or the type of the profession.
- Recruitment, selection, placement and transfer of managers and other health cadres require unified standardization and evidence based criteria.
- Developing formal credentialing of clinical privileges for medical staff in private hospitals.

4. Governance for HRH

- A long-range plan for human resources should be developed that covers numbers of staff needed to provide good quality services, human resource development (training), and management activities to provide a cohesive and progressive program for human resources.
- The job classification system should be used as a basis for other human resource management functions (e.g. job descriptions, hiring, salary and benefits).
- Decentralization of authority to hospital and directorate managers and ensuring accountability.
- Overlapping and duplication of governance functions within some health organizations should be minimized.

- A national program for capacity building of managerial skills in MOH and professional associations to manage and monitor adherence with health laws and regulations is highly needed.
- Special programs are needed to produce summary analyses of HRH database that can be easily read, understood and used by decision makers.
- HRH research should be institutionalized and performed on regular basis.

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ANNEXE 1 : DEFINITIONS OF HEALTH WORKFORCE DATA

Health Workforce: Aggregated Data

In the aggregated data, the health workforce is grouped into the following 10 categories:

Physicians
Includes generalists and specialists.

Nurses
Includes professional nurses, auxiliary nurses, enrolled nurses and other nurses, such as dental nurses and primary care nurses.

Midwives
Includes professional midwives, auxiliary midwives and enrolled midwives. Traditional birth attendants, who are counted as community health workers, appear elsewhere.

Dentists
Includes dentists, dental assistants and dental technicians

Pharmacists
Includes pharmacists, pharmaceutical assistants and pharmaceutical technicians

Laboratory workers
Includes laboratory scientists, laboratory assistants, laboratory technicians and radiographers.

Environment & public health workers
Includes environmental and public health officers, sanitarians, hygienists, environmental and public health technicians, district health officers, malaria technicians, meat inspectors, public health supervisors and similar professions.

Community health workers
Includes traditional medicine practitioners, faith healers, assistant/community health education workers, community health officers, family health workers, lady health visitors, health extension package workers, community midwives, institution-based personal care workers and traditional birth attendants.

Other health workers
Includes a large number of occupations such as dieticians and nutritionists, medical assistants, occupational therapists, operators of medical and dentistry equipment,

optometrists and opticians, physiotherapists, podiatrists, prosthetic/orthetic engineers, psychologists, respiratory therapists, speech pathologists, medical trainees and interns.

Health management and support workers
Includes general managers, statisticians, lawyers, accountants, medical secretaries, gardeners, computer technicians, ambulance staff, cleaning staff, building and engineering staff, skilled administrative staff and general support staff.

ANNEXE 2: HEALTH WORKFORCE CLASSIFICATION MAPPING

International Classification			National classification	
Category	**Skill level**	**Definition [ISCO-88]**	**Name of equivalent national category**	**National Definition (s)**
1. **Physicians** **Also called doctors or medical officers**	*Generalist*	At least 5 years of university, some years of internship depending on the country might be compulsory. They have a full array of clinical skills.	Same	At least 6 years of university, one year of compulsory internship. They have a full array of clinical skills. Graduates from non-Jordanian schools should set for exam after the completion of the internship. The Jordanian Medical Council manages this exam.
	Specialist	At least have 5 years of university, some years of internship depending on the country might be compulsory, and specialist training. They have a full array of clinical skills and specialization.	Same Note: Royal Medical Services (RMS), have professional ladder for specialists as follows: Assistant Specialist Specialist Senior Specialist Consultant Senior Consultant	At least 6 years of university, one year of compulsory internship. They should complete four year residency program in the specialty at a teaching hospital accredited by the Jordanian Medical Council (JMC). At the end of the residency program, they should pass the board exam set by the JMC.Doctors who get their specialty certificates outside Jordan (from countries not members in the Arab Medical Council) should pass the specialty exam set by the JMC to be certified as specialists. They have a full array of clinical skills and specialization.
2. **Nurses**	*Professional Registered Nurses*	Also called professional or licensed nurses (or Infirmiers Diplômés d'Etat). Their education last about 3, 4 or more years in nursing school, and lead to a university or postgraduate university degree, or the equivalent. They have full range of nursing skills.	Same	Their education last 4 years in nursing school, and lead to a university degree. They have full range of nursing skills. Note: Before 1998 Jordan used to have in addition to the 4 year university program, a 3 year education program for professional registered nurses. After 1998 the entry level for professional registered nurses is 4-year university program only.

	Enrolled Nurses	Also called nurse technician or associate nurse. Education last about 3 to 4 years and leads to an award not equivalent to a university first degree (post-secondary school). Common nursing skills. They can perform simple as well as complex medical procedures and usually operate under the supervision of professional registered nurses or physicians.	*Associate Nurses*	Education lasts 2 years post-secondary school and leads to an intermediate university degree award, not equivalent to a university first degree. Nurses graduated from intermediate college can continue their university studies under specific conditions. Common nursing skills. They can perform simple as well as complex medical procedures and usually operate under the supervision of professional registered nurses.
	Auxiliary nurses	Also called assistants. Some training in secondary school. A period of on-the-job training may be included, and sometimes formalized in apprenticeships. Basic nursing skills, no training in nursing decision-making.	*Assistant Nurses*	Education lasts 18 months post preparatory or secondary school. Teaching had been performed within schools affiliated with public hospitals. This program was stopped in 1998.Basic and common nursing skills. They can perform simple medical procedures and usually operate under the supervision of professional registered nurses.
			Nurse Aides	Secondary school (nursing branch) and on-job training. The Ministry of Education has decided recently (in 2005) to stop the Secondary Nursing branch. Basic nursing skills, no training in nursing decision-making. Usually they work as orderlies and perform clerical duties in the nursing units. NOTE: JORDAN HAS DECIDED TO HAVE TWO LEVELS OF NURSES: PROFESSONALS (RN) AND ASSOCIATES ONLY. OTHER CATEGORIES (ASSISTANTS AND AIDES) WILL BE PHASED OUT.

3. Midwives	*Registered Midwives*	Also called professional or licensed midwives (or Sage-Femmes Diplômés d'Etat). Their education last about 3, 4 or more years in nursing school, and lead to a university or postgraduate university degree, or the equivalent. They have full range of midwifery skills.	Same	Same
	Enrolled Midwives	Also called nurse technician or associate midwife. Education last about 3 to 4 years and leads to an award not equivalent to a university first degree (post-secondary school). Common midwifery skills	Not available	
	Auxiliary Midwives	Also called assistants. Some secondary school training. A period of on-the-job training may be included, and sometimes formalised in apprenticeships Basic midwifery skills.	Not available	
	Traditional birth Attendants	Mainly, on-the-job training and sometimes formalised in apprenticeships. (Matrones traditionnelles, TBA)	Same	Same
4. Dentists	*Dentists*	At least 5 years of university leading to a dentistry degree. Full array of dentistry skills	*Dentists* (generalist)	At least 5 years of university leading to a dentistry degree, six months of compulsory internship. Full array of dentistry skills,

			Dentists (specialist)	At least 5 years of university leading to a dentistry degree, six months of compulsory internship. They should complete four-year residency program in the specialty at a teaching hospital accredited by the Jordanian Medical Council (JMC). At the end of the residency program, they should pass the board exam set by the JMC.Doctors who get their specialty certificates outside Jordan should pass the specialty exam set by the JMC to be certified as specialists. They have a full array of clinical skills and specialization. Note: Residency program in dentistry has been effective in Jordan since September 2004.Prior to that, the Jordan Dentistry Association was in charge of issuing specialty certificates to dentists who have postgraduate degrees (not less that one year) in the designated specialty.
	Dental technician	From 2 to 3 years in dentistry school, with an award not equivalent to university degree (post-secondary school). Common dentistry skills.	Same	2 years in dentistry in community college, with an award not equivalent to university degree (intermediate university degree, post-secondary school). Common dentistry skills.

	Dental assistant	About 2 to 3 years in secondary school training. A period of on-the-job training may be included, and sometimes formalized in apprenticeships. Basic dentistry skills.	Same	They are usually assistant nurses with on-the-job training in basic dentistry procedures. They also could have secondary school with on-the-job training in basic dentistry procedures.
			Dental Lab. technician	2 years in dentistry school, with an award not equivalent to in community intermediate college university degree (intermediate university degree, post-secondary school).Basic dental lab skills (orthodontic and prosthodontics).
5. Pharmacists	*Pharmacists*	At least 5 years of university leading to a pharmaceutical degree. Full array of pharmaceutical skills	Same	Same
	Pharmaceutical technician	From 2 to 3 years in pharmaceutical school, with an award not equivalent to university degree (post-secondary school). Common pharmaceutical skills.	*Assistant Pharmacist*	2 years in dentistry in community college, with an award not equivalent to community intermediate college university degree (intermediate university degree, post-secondary school). Common pharmaceutical skills. They operate under the supervision of qualified pharmacist.
	Pharmaceutical assistant	About 2 to 3 years in secondary school training. A period of on-the-job training may be included, and sometimes formalised in apprenticeships. Basic pharmaceutical skills.	Same	Secondary school and a period of on-the-job training .At the end of the training they should pass a qualifying exam organized by the Ministry of Health. Basic pharmaceutical skills. They operate under the supervision of qualified pharmacist.

				Note: This program was stopped in 1995.
6. Physiotherapist		From 2 to 3 years in physiotherapy school, with an award not equivalent to university degree (post-secondary school). Common physiotherapy skills.	Same	Their education last 4 years in physiotherapy school, and lead to a university degree. They have full range of physiotherapy skills.
			Assistant physiotherapist	From 2 to 3 years in physiotherapy in community college, with an award not equivalent to university degree (post-secondary school). Common physiotherapy skills. They operate under the supervision of qualified physiotherapist.
7. Medical Assistants, also called assistants medical officer		From to 2 to 3 years in medical post-secondary school plus at least 1.5 years in an up-grading programme. Advanced clinical skills.	Not available	
8. Clinical officers		From to 2 to 3 years in post-secondary school. Common clinical skills.	Not available	
9. Laboratory scientists	*Lab scientist*	At least 5 years of university degree. / Dieticians laboratory procedures.	Same	At least 4 years of university degree. Full array of laboratory procedures.

	Laboratory technician	From 2 to 3 years in laboratory technology school, with an award not equivalent to university degree (post-secondary school). Common range of laboratory procedures	Same	2 years in laboratory in community college, with an award not equivalent to university degree (intermediate university degree, post-secondary school). Common range of laboratory procedures. They operate under the supervision of *Lab scientist*.
	Laboratory assistant	About 2 to 3 years in secondary school training. A period of on-the-job training may be included, and sometimes formalized in apprenticeships. Basic laboratory procedures.	Not Available	
10. Radiographer Technicians		From 2 to 3 years in school of radiography, with an award not equivalent to university degree (post-secondary school). Common range of radiography skills.	Same	From 2 to 3 years in school of radiography, with an award not equivalent to university degree (intermediate university degree, post-secondary school). Common range of radiography procedures. They operate under the supervision of radiographer.
			Radiographer(Radiology Technologist)	At least 4 years of university degree in radiography or medical physics. Full array of radiography procedures.

11. Environmental and Public Health Officers	*Environmental and Public Health Officers Professionals*	At least 5 years in university or equivalent. All health workers involved in providing social services to the community looking for a better environment and therefore promoting health with high skill level. For instance epidemiologists or sanitation engineers, among others.	*Public Health Officer*	At least 4 years in university. All health workers involved in providing social services to the community looking for a better environment and therefore promoting health with high skill level.
	Environmental and Public Health Officers Technicians	From 2-3 years training. This includes all environmental health, health inspectors, health promotion officers, health educators and all who is concerned with public health promotion. (Please provide the full list of what you include under this category	*Public Health Inspector*	2 years in public health in community college, with an award not equivalent to university degree (intermediate university degree, post-secondary school). This includes all environmental health, health inspectors and health promotion officers.
12. Other Technicians and Health Cadres		From 2 to 3 years in a determined health school. This category can be used for health cadres like Nutritionist/ Dieticians, Optometrists, Social Worker, among others. (Please provide the full list of what you include under this category	*Nutritionist/ Dietician*	At least 4 years of university degree in nutrition. Full array of nutrition and clinical diet skills.

			Assistant Dietician	2 years in nutrition in community college, with an award not equivalent to university degree (intermediate university degree, post-secondary school). Common range of nutrition skills. They operate under the supervision of d*ietician*.
			Occupational Therapist	At least 4 years of university degree in occupational therapy. Full array of occupational therapy skills.
			Audiologist	At least 4 years of university degree in audiology. Full array of audiolpgy skills.

			Optician	At least 4 years of university degree in optometry. Full array of optometry skills.
			Optical Technician	2 years in optometry in community college, with an award not equivalent to university degree (intermediate university degree, post-secondary school). Common range of optical skills. They operate under the supervision of optician.
			Speech Pathologist	At least 4 years of university degree in speech pathology. Full array of speech pathology skills.
			Assistant Speech Pathologist	2 years in speech pathology in community college, with an award not equivalent to university degree (intermediate university degree, post-secondary school). Common range of

				speech pathology skills. They operate under the supervision of speech pathologist.
			Artificial Limbs (Orthopedic)Technologist	4 years of university degree in artificial limbs technology or 3 years college (equivalent to university degree). Full array of artificial limbs technology skills.
			Artificial Limbs Technician	2 years in artificial limbs technology in community college, with an award not equivalent to university degree (intermediate university degree, post-secondary school). Common range of artificial limbs technology skills. They operate under the supervision of artificial limbs technologist.
			Respiratory Therapist	B.Sc.in nursing and post-graduate diploma (9-12 months) in respiratory therapy. Full array of respiratory therapy skills.
			Respiratory Therapy Technician	2 years in respiratory therapy in community college, with an award not equivalent to university degree (intermediate university degree, post-secondary school). Common range of respiratory therapy skills. They operate under the supervision of respiratory therapist.

			Anesthesia Technician	2 years in anesthesia in community college, with an award not equivalent to university degree (intermediate university degree, post-secondary school). Common range of anesthesia skills. They operate under the supervision of anesthesiologist.
			Medical records technician	2 years in medical records in community college, with an award not equivalent to university degree (intermediate university degree, post-secondary school). Common range of medical records skills.
			Social Worker	At lest 4 years of university degree in medical sociology. Full array of medical sociology skills.
			Assistant Social worker	2 years in sociology in community college, with an award not equivalent to university degree (intermediate university degree, post-secondary school). Common range of medical sociology skills. They operate under the supervision of social worker.
			Psychologist	At lest master degree in medical psychology. Full array of psychotherapy skills.
13. Community health workers		A period of on-the-job training may be included, and sometimes formalized in apprenticeships.	Same	Same

14. Administrative and support staff	*Skilled administrative staff*	Having obtained a professional degree. All those related with tasks like: directors, management, financial services inspector, accountants, statisticians, economists, engineers.	Same	Same
	Other support staff	Have an associate degree or less. All those related with tasks like: secretaries, electrician, drivers, security guards, cooks.	Same	Same
15. Others	Please list the health workers to be include under this category and provide a definition of them			

Please add one line for each relevant category you would like to add

Annex 3: HRH STRATEGIC DIRECTION AND GOVERNANCE SURVEY TOOL

Country name: JORDAN

Papers reviewed:

1. National Health Strategy(2008-2012), High Health Council
2. Ministry of Health Strategy (2008-2012), MOH.
3. Assessment of Ministry Of Health Human Resource Management Policies and Practices, Initiatives Inc/USAID and MOH, Amman,2005
4. Assessment of human resource for health in Jordan and development of national policy forum. Authors: Sana Naffa, Walid Abubaker, Taher Abu-EI-Samen, Raghad Hadidi, Ghada Kayyali, Ghanim Alsheikh, Hashim ElZein Elmousaad, March 2009

Questions	Findings	Remarks (if any)	Source and web link (if available)
1.STRATEGIC DIRECTION			
1.1 National HRH policy, strategy, plan			
1. Is there a national development policy/strategy/plan for Human Resources for Health (HRH)?	Yes (X) No)		
(a) A Separate HRH plan	No		
(b) A separate chapter devoted to HRH in the National Health Plan	Yes	A chapter (describes the current situation, challenges and general objectives with specific targeted staff - population ratios to be attained by the end of	http://www.moh.gov.jo/MOH/arabic http://www.hhc.gov.jo/HHC/index_e.html

Questions	Findings	Remarks (if any)	Source and web link (if available)
		the plan(2012), and action plan to develop a comprehensive national HRH plan	
(c) A separate plan in a national general HR plan	No		
2. IF NO, is there recognition of the HRH issues and an expressed intention/commitment to develop an HRH development plan?	Yes (X) No ( )		
IF YES,			
3. Is the current plan the first HRH policy/strategy/plan?	Yes ( ) No (X)		
4. What is the period covered by current the plan?	5 years (2008-2012) …… …….		
5. Is it linked to an overall national development plan?	Yes (X) No ( )		
6. Is it linked to a PRSP?	Yes () No (X)		
7. Is it linked to a national health policy	Yes (X) No ( )		
8. Is the plan being implemented?	Yes (X) Partially	Only part of the plan	
Contents:			
9. Does the policy/strategy/plan include projections of the HRH needs for providers of services	Yes (x) Partially	Only for :Physicians,Dentists,pharmacists and registered nurses(targeted staff population ratios)	
10. Do the projections cover the public, private for profit and non-profit sectors?	Yes (X) No ( )		
11. Is the policy/strategy/plan linked to macroeconomic	Yes ( ) No (X)		

Questions	Findings	Remarks (if any)	Source and web link (if available)
context of the country (i.e. MTEF, PRSP, recruitment ceilings, etc)?			
12. Does the policy/strategy/plan address issues of:			
(a) education: pre-service	Yes (X) Not Inclusive		
(b) Education in-service	Yes (X) Not Inclusive		
(c)educational targets (number of health workers to be trained)	Yes (X) Not Inclusive		
(d) recruitment processes	Yes ( ) No (X)		
(d)recruitment targets (number of workers	Yes (X) No ( )Partially		
(e)deployment and distribution			
(e) skill mix	Yes ( ) No (X)		
(f) remuneration	Yes (X) No ( ) Partially		
(g) incentives	Yes (X) No ( ) Partially		
(h) supervision	Yes ( ) No (X)		
(i) learning opportunities	Yes (X) No ( )		
(j)workplace environment	Yes ( ) No (X)		
(k) Career development	Yes (X) No ( )		
(l)Performance management	Yes ( ) No (X)		
(m) mobility of staff	Yes ( ) No (X)		
(n) scope of practice	Yes (X) No ( ) Partially		
(o) regulation	Yes ( ) No (X)		
(p) HRH information	Yes (X) No ( ) Partially		
Other			

Questions	Findings	Remarks (if any)	Source and web link (if available)
13. In decentralized systems, does the policy/strategy/plan address decentralization of decision-making on HRH issues, e.g. management functions such as payroll, promotion, discipline?	Yes ( ) No (X)		
14. Have workload and other studies been performed to address rectifying HRH imbalances between levels of care and the urban rural environment?	Yes ( ) No (X) If yes, what type of studies: ……		
Monitoring and evaluation mechanisms			
15. Is there a monitoring and evaluation mechanism to document the implementation of the policy/strategy/plan?	Yes (X) No ( ) The Monitoring mechanisms are stated in the MOH HRH plan, but not fully activated.		
16. Is there a national plan for monitoring and evaluation of national HRH strategic objectives?	Yes ( ) No (X)		
17. Are there regularly updated HRH statistics?	Yes (X) Partially Yearly updated	Covers main HRH categories(i.e. Physicians,Dentists,pharmacists , registered nurses,midwives,associate nurses, assistant nurses)	http://www.moh.gov.jo/MOH/arabic www.hhc.gov.jo/nhrho
18. What are the sources of HRH data, i.e. administrative data, facility survey, population census,etc?	1. Administrative data sources from: - MOH -.Professional associations - Statistical reports of other health sectors		)

Questions	Findings	Remarks (if any)	Source and web link (if available)

COMMENTS ON SECTION ONE (ABOUT THE PROCESS)

The High Health Council has established the Jordan National HRH observatory this year with technical support from WHO/EMRO. In 2008, the high health council of Jordan was commissioned to establish national HRH observatory, and in June 2008, the first stakeholders' meeting was held and produced a coherent coordination framework among stakeholders. As a result, a permanent national forum was created and has been meeting on a regular basis since then to address, debate and solve HRH related issues and challenges. In July 2009, the HRH national observatory of Jordan was launched and has been operational with instant updating of HRH data and information www.hhc.gov.jo/nhrho It will also serve as the main reference of updated information and statistics on HRH in Jordan.

2. LEADERSHIP AND GOVERNANCE CAPACITIES

Questions	Findings	Remarks (if any)	Source and web link (if available)
2.1 HRH Governance capacity in MOH			
19. Is there an HRH department/unit/team in the MoH responsible for developing, implementing and monitoring HRH strategies?	Yes (X) No ( )	There are two departments for HRH in MOH:one for Personnel Administration and the second for Human Resources Development (see Annex one)	
20. If yes, what are the functions of the department/unit/team?			
HRH policy development	Yes () No (X)		
HRH planning	Yes (X) No ( )		
Personnel administration	Yes (X) No ( )		
Training and development	Yes (X) No ( )		
HRH information system	Yes (X) No ( )		
Research, studies, documentation	Yes (X) No ( )		
Monitoring and evaluation	Yes (X) No ( )		
Other			
21. What is capacity of the HRH unit, in terms of staffing and if the information is available, what are their qualifications?	No of staff: 1.Personnel Administration Directorate(78 employees, third of them are university graduates) 2. Human Resources Development Directorate (30 employees, 8 are university graduates)		
a. Adequate office space	Yes (X) No ( )		
b. Adequate computers, relevant software	Yes (X) No ( )		
c. Internet accesss	Yes (X) No ( )		
d. Others	Please specify ……..		

Questions	Findings	Remarks (if any)	Source and web link (if available)
22. What is the level of the HRH unit in the organizational chart of the MoH?	Please explain: Directorate under the Director General of Administrative Affairs(see Annex one)		
23. Who does the unit report to?	Director General of Administrative Affairs		
24. Are there other HRH unit in other sectors (i.e. defence, etc. or "national Planning Commission" or Civil Service office may have a cross-sector HR offices which influence health.)?	Yes (X) No ( ) The Civil Service Bureau		
25. If yes, is there any relation of these units to the HRH unit in MoH?	Yes (X) No ( ) The Civil Service Bureau sets general rules ,regulations ,salary scales, incentives ,recruitment rules,etc.for all civil servants in the country including HRH who works at MOH		
26. Is there a National HRH Observatory or a similar mechanism bringing together different stakeholder for evidence based policy dialogue, sharing information and monitoring ?	Yes (X) No ( ) The High Health Council has established the Jordan National HRH Observatory this year with technical support from WHO/EMRO. This Observatory will be the main source of information and statistics on HRH in Jordan		
COMMENTS ABOUT SECTION 2			

Questions	Findings	Remarks (if any)	Source and web link (if available)
3. PARTNERSHIP			
3.1 Stakeholders coordination			
27. Is a SWAP or other coordinating mechanism or body in the health sector? (donor coordination, interdepartmental coordination etc)	Yes (X) No ( ) WHO/EMRO has provided technical support to the High Health Council to establish the Jordan National HRH Observatory.		
28. Have various stakeholders (public, private, NGO, CSO, international) been involved in the process of creating the HRH policy/strategy/plan?	Yes (X) No ( ): Public, private, NGO have been involved in the process of creating the Health policy/strategy (HRH plan is part of this strategy) through		

Questions	Findings	Remarks (if any)	Source and web link (if available)
	the High Health Council (HHC). Stakeholders are represented in the HHC Board.		
Public sector			
Ministry of Education	Yes (X) No ( )		
Ministry of Finance	Yes (X) No ( )		
Ministry/commission of public service	Yes (X) No ( )		
Others	Royal Medical Services Public Universities		
Non governmental participation			
Private for profit sector	Yes (X) No ( )		
Private education sector (training schools, universities)	Yes ( ) No (X)		
Private non profit			
International NGO	Yes ( ) No (X)If yes, please specify ……		
Please specify the International Faith Based NGOs	Yes ( ) No (X) If yes, please specify ……		
National NGO	Yes () No (X)		
Please specify the National Faith Based NGO	Yes ( ) No ( )		
CSO	Yes ( ) No (X) If yes, please specify ……		
Professional associations	Yes (X) No () Medical Association Nursing Association Pharmacists Association Dentists Association		
Multilateral Development	Yes ( ) No (X)		

Questions	Findings	Remarks (if any)	Source and web link (if available)
Partners	If yes, please specify ……		
Bilateral Development Partners	Yes ( ) No (X) If yes, please specify ……		
Global Health Initiatives and Foundations	Yes ( ) No ( ) If yes, please specify ……		
29. Has the Plan been approved at inter-ministerial level (Education, Finance, Public Service, MoH)?	Yes (X) No ( )		
COMMENTS ABOUT SECTION 3			

Questions	Findings	Remarks (if any)	Source and web link (if available)
4. COMMITMENT (INVESTMENT)			
4.1 Investment on HRH			
30. Has the policy/strategy/plan been costed?	Yes (X) Partially		
31. Is there an investment plan for training and education?	Yes (X) Not fully implemented		
32. Is there a commitment or strategy for appropriate or increased allocation from national resources?	Yes ( ) No (X)		
33. HRH expenditure as %of public health expenditure	**44%**	-	
34. HRH expenditure as % of GDP	Public HRH expenditure as % of GDP:2.3%		
4.2 Partnership and international support			
35. Has the donor commitment been ensured, at least for part of the plan?	Yes (X) No ( )		
36. List the main international and bilateral partners which support HRH development?	Please specify WHO/EMRO		
37. How much of the donor support is allocated to HRH ?	In USD(No data available)		

Questions	Findings	Remarks (if any)	Source and web link (if available)
38. What percentage of total aid to health this above amount represents?			
39. What types of HRH development activities are supported by the development partners (i.e. policy/plan development, in-service training, pre-service training, recruitment, incentive schemes, etc)?	1.Establishment the Jordan National HRH Observatory 2.Training of community medicine doctors(one year program),		
(a) policy & plan development	Yes ( ) No (X)		
(b) pre-service training	Yes ( ) No (X)		
(c) in-service training	Yes (x) No ( )		
(d) recruitment	Yes ( ) No (X)		
(e) incentive schemes	Yes ( ) No (X)		
(f) HRH information systems	Yes (X) No ( )		
g) other	Yes ( ) No ( ) If yes, please specify		

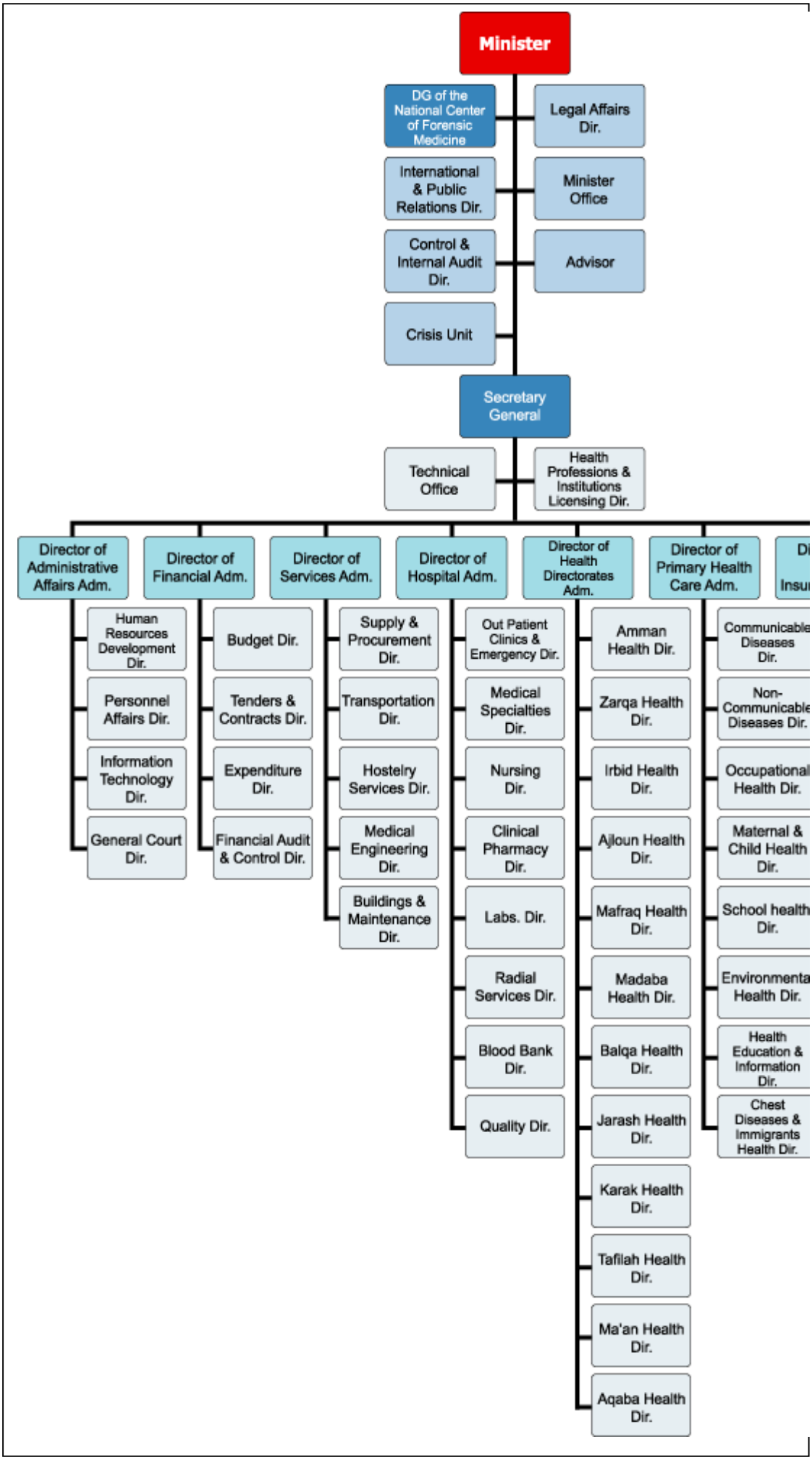
COMMENTS ABOUT SECTION 4

A Common Country Strategy (CCS) was prepared by WHO in November 2007 in partnership with national stakeholders to identify national challenges, priorities and strategic directions for WHO support in Jordan. The area of HRH was considered as one of the main challenges in the health sector. Challenges addressed in the CCS preparation included the followings:

- Coordinating mechanism to bring together all actors/partners in HRH is lacking;
- Existence of a comprehensive and well-integrated national human resources development plan is missing;
- Operationalising the initiated national accreditation system of health professions education is needed ;
- Retention, management and performance linked continuing professional development needs to be standardized across sectors.

Questions	Findings	Remarks (if any)	Source and web link (if available)

Annex 4: Organizational Structure of MOH, Jordan


Minister
DG of the National Center of Forensic Medicine
Legal Affairs Dir.
International & Public Relations Dir.
Minister Office
Control & Internal Audit Dir.
Advisor
Crisis Unit
Secretary General
Technical Office
Health Professions & Institutions Licensing Dir.
Director of Administrative Affairs Adm.
Director of Financial Adm.
Director of Services Adm.
Director of Hospital Adm.
Director of Health Directorates Adm.
Director of Primary Health Care Adm.
Human Resources Development Dir.
Personnel Affairs Dir.
Information Technology Dir.
General Court Dir.
Budget Dir.
Tenders & Contracts Dir.
Expenditure Dir.
Financial Audit & Control Dir.
Supply & Procurement Dir.
Transportation Dir.
Hostelry Services Dir.
Medical Engineering Dir.
Buildings & Maintenance Dir.
Out Patient Clinics & Emergency Dir.
Medical Specialties Dir.
Nursing Dir.
Clinical Pharmacy Dir.
Labs. Dir.
Radial Services Dir.
Blood Bank Dir.
Quality Dir.
Amman Health Dir.
Zarqa Health Dir.
Irbid Health Dir.
Ajloun Health Dir.
Mafraq Health Dir.
Madaba Health Dir.
Balqa Health Dir.
Jarash Health Dir.
Karak Health Dir.
Tafilah Health Dir.
Ma'an Health Dir.
Aqaba Health Dir.
Communicable Diseases Dir.
Non-Communicable Diseases Dir.
Occupational Health Dir.
Maternal & Child Health Dir.
School health Dir.
Environmental Health Dir.
Health Education & Information Dir.
Chest Diseases & Immigrants Health Dir.